IMPORTANT NOTICE

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Confirmation of your representation: In order to be eligible to view the Offering Circular or make an investment decision with respect to the securities, investors must be outside the United States as defined in Regulation S under the Securities Act. The Offering Circular is being sent at your request and by accepting the e-mail and accessing the Offering Circular, you shall be deemed to have represented to us that (1) you and any customers you represent are outside of the United States, (2) the e-mail address that you gave us and to which this e-mail has been delivered is not located in the United States and, to the extent you purchase the securities, you will be doing so pursuant to Regulation S and (3) you consent to delivery of the Offering Circular and any amendments and supplements thereto by electronic transmission.

You are reminded that the following Offering Circular has been delivered to you on the basis that you are a person into whose possession the following Offering Circular may be lawfully delivered in accordance with the laws of jurisdiction in which you are located and you may not, nor are you authorized to, deliver or disclose the contents of the following Offering Circular to any other person. If this is not the case, you must return this Offering Circular to us immediately.

The materials relating to the offering do not constitute, and may not be used in connection with, an offer or solicitation in any place where offers or solicitations are not permitted by law. If a jurisdiction requires that the offering be made by a licensed broker or dealer and the initial purchasers or any affiliate of the initial purchasers is a licensed broker or dealer in that jurisdiction, the offering shall be deemed to be made by the initial purchasers or such affiliate on behalf of the issuer in such jurisdiction.

The following Offering Circular has been sent to you in an electronic form. You are reminded that documents transmitted via this medium may be altered or changed during the process of electronic transmission and consequently, none of Citigroup Global Markets Limited, Crédit Agricole Corporate and Investment Bank and The Hongkong and Shanghai Banking Corporation Limited (collectively, the "Initial Purchasers") nor any person who controls any of them nor any director, officer, employee nor agent of any of them or affiliate of any such person accepts any liability or responsibility whatsoever in respect of any difference between the Offering Circular distributed to you in electronic format and the hard copy version available to you on request from the Initial Purchasers.

You should not reply by e-mail to this announcement, and you may not purchase any securities by doing so. Any reply e-mail communications, including those you generate by using the "Reply" function on your e-mail software, will be ignored or rejected. You are responsible for protecting against viruses and other destructive items. Your use of this e-mail is at your own risk and it is your responsibility to take precautions to ensure that it is free from viruses and other items of a destructive nature.

OFFERING CIRCULAR **STRICTLY CONFIDENTIAL**

Korea South-East Power Co., Ltd.

(incorporated with limited liability under the laws of the Republic of Korea)

US$300,000,000 1.000% Notes due 2026

The US$300,000,000 1.000% Notes due 2026 (the "Notes") of Korea South-East Power Co., Ltd. (the "Company") will mature on February 3, 2026 (the "Maturity Date"). The Notes will bear interest at the rate of 1.000% per annum from, and including, August 3, 2020 to, but excluding, the Maturity Date. Interest will be payable semi-annually in arrears on February 3 and August 3 of each year, commencing February 3, 2021. The Company may, at its option, redeem all, but not some only, of the Notes at any time at their principal amount plus accrued interest in the event of certain changes in tax law as described under "Terms and Conditions of the Notes – Redemption and Purchase – Redemption for Taxation Reasons."

The Notes are rated "Aa2" by Moody's Investors Service, Inc. ("Moody's") and "AA" by Standard & Poor's Ratings Services, a division of the McGraw-Hill Companies, Inc. ("S&P"). A rating is not a recommendation to buy, sell or hold securities and may be subject to revision, suspension or withdrawal at any time by the assigning rating organization.

The Notes will constitute our direct, unconditional, unsubordinated and unsecured obligations and shall at all times rank *pari passu* and without any preference or priority among themselves and with all of our other present and future direct, unconditional, unsubordinated unsecured obligations, except as may be required by mandatory provisions of law.

The Notes are being issued as "Sustainability Bonds" under our Sustainability Financing Framework. See "Use of Proceeds."

Approval in-principle has been received from the Singapore Exchange Securities Trading Limited (the "SGX-ST") for the listing and quotation of the Notes on the SGX-ST. The SGX-ST assumes no responsibility for the correctness of any of the statements made, opinions expressed or reports contained in this Offering Circular. Approval in-principle from, admission to the Official List of, and listing and quotation of the Notes on, the SGX-ST are not to be taken as an indication of the merits of the Company or the Notes.

The Notes have not been and will not be registered under the U.S. Securities Act of 1933, as amended (the "Securities Act"), or the securities laws of any other jurisdiction, and may not be offered or sold directly or indirectly within the United States except pursuant to an exemption from, or in a transaction not subject to, the registration requirements of the Securities Act. Accordingly, the Notes are being offered and sold outside the United States in offshore transactions in reliance on Regulation S under the Securities Act ("Regulation S") and in compliance with applicable laws, regulations and directives. For further details about eligible offers and resale restrictions, see "Plan of Distribution" and "Transfer Restrictions."

Investing in the Notes involves risks. See "Risk Factors" beginning on page 6 to read about certain risk factors you should consider before buying the Notes.

Price: 99.638% per Note plus accrued interest, if any, from August 3, 2020.

Delivery of the Notes in book-entry form will be made on or about August 3, 2020.

Joint Bookrunners and Lead Managers

Citigroup **Crédit Agricole CIB** **HSBC**

The date of this Offering Circular is July 27, 2020.

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You should rely only on the information contained in this Offering Circular. The Company has not authorized anyone to provide you with information that is different. This Offering Circular may only be used where it is legal to sell these securities. The information in this Offering Circular may only be accurate on the date of this Offering Circular.

IN CONNECTION WITH THIS OFFERING, TO THE EXTENT PERMITTED BY, AND IN ACCORDANCE WITH, APPLICABLE LAWS AND REGULATIONS, THE STABILIZING MANAGERS (OR ANY PERSON ACTING ON BEHALF OF ANY STABILIZING MANAGER) MAY OVER-ALLOT OR EFFECT TRANSACTIONS WITH A VIEW TO SUPPORTING THE MARKET PRICE OF THE NOTES AT A LEVEL HIGHER THAN THAT WHICH MIGHT OTHERWISE PREVAIL. HOWEVER, THERE IS NO ASSURANCE THAT THE STABILIZING MANAGERS (OR ANY PERSON ACTING ON BEHALF OF ANY STABILIZING MANAGER) WILL UNDERTAKE SUCH STABILIZATION. ANY STABILIZATION MAY BEGIN ON OR AFTER THE DATE ON WHICH ADEQUATE PUBLIC DISCLOSURE OF THE TERMS OF THE OFFER OF THE NOTES IS MADE AND, IF BEGUN, MAY BE ENDED AT ANY TIME, BUT IT MUST END NO LATER THAN THE EARLIER OF 30 DAYS AFTER THE ISSUE DATE OF THE NOTES AND 60 DAYS AFTER THE DATE OF THE ALLOTMENT OF THE NOTES.

THE NOTES MAY NOT BE OFFERED OR SOLD, DIRECTLY OR INDIRECTLY, IN KOREA OR TO ANY RESIDENT OF KOREA, EXCEPT AS PERMITTED BY APPLICABLE KOREAN LAWS AND REGULATIONS.

No person has been authorized in connection with any offering of the Notes to give any information or make any representation other than as contained in this Offering Circular and, if given or made, that information or representation must not be relied upon as having been authorized by the Company, by any Agent (as defined in the "Terms and Conditions of the Notes") or by the Initial Purchasers (as defined in "Plan of Distribution"). This Offering Circular does not constitute an offer to sell or a solicitation of an offer to buy any Notes by any person except in compliance with all applicable laws and regulations. No representation or warranty, express or implied, is made by the Initial Purchasers or any of their affiliates or advisers, or any Agent, as to the accuracy or completeness of the information contained in this Offering Circular, and nothing contained in this Offering Circular is, or shall be relied upon as, a promise or representation by the Initial Purchasers or their affiliates or advisers, or any Agent. Neither the delivery of this Offering Circular nor any sale made in connection with this Offering Circular shall under any circumstances imply that the information in this Offering Circular is correct as of any date subsequent to the date of this Offering Circular or constitute a representation that there has been no change or development reasonably likely to involve a material adverse change in the Company's affairs since the date of this Offering Circular.

The Company, having made all reasonable enquiries, confirms that (i) this Offering Circular contains all information with respect to the Company and the subsidiaries of the Company taken as a whole (collectively, the "Group") and the Notes which is material in the context of the issue and offering of the Notes and necessary to enable investors to make an informed assessment of the assets and liabilities, financial position, profits and losses and prospects of the Company and the Group and of the rights attaching to the Notes, (ii) the statements of facts contained herein relating to the Company, the Group and the Notes are in every material respect true and accurate and not misleading, (iii) the opinions, intentions, beliefs or expectations expressed in this Offering Circular with regard to the Company and the Group are truly and honestly held and are made after due and careful consideration of all relevant circumstances and are based on reasonable assumptions, (iv) there are no other facts in relation to the Company, the Group or the Notes the omission of which would, in the context of the issue and offering of the Notes, make any statement in this Offering Circular misleading in any material respect, (v) all reasonable enquiries have been made by the Company to ascertain such facts and to verify the accuracy of all such information and statements, (vi) the Offering Circular does not contain any untrue statement of a material fact or omit to state a material fact necessary in order to make the statements therein not misleading and (vii) the statistical, industry and market-related data included in the Offering Circular are based on or derived or extracted from sources which the Company believes to be accurate and reliable in all material respects. The Company has taken reasonable care in reproducing or extracting such data into the Offering Circular and, to the extent required, the Company has obtained the written consent to the use of such data from such sources.

The Initial Purchasers have not separately verified all information contained in this Offering Circular. No representation, warranty or undertaking, express or implied, is made and no responsibility or liability is accepted by any of the Initial Purchasers as to the accuracy or completeness of the information contained in this Offering Circular or any other information provided by us in connection with the offering of the Notes or the Notes or their distribution or for any other statement made or purported to be made by any Initial Purchaser on its behalf in connection with the Issuer or the offering of the Notes. Each Initial Purchaser accordingly disclaims any and all responsibility or liability whether arising in tort or contract or otherwise which it might otherwise have in respect of the information contained in this Offering Circular, any other information provided by the Issuer in connection with the offering of the Notes or any other such statement. Neither this Offering Circular nor any other financial statements are intended to provide the basis of any credit or other evaluation and should not be considered as a recommendation by any of the Issuer or the Initial Purchasers that any recipient of this Offering Circular or any other financial statements should purchase the Notes. Each potential purchaser of Notes should determine for itself the relevance of the information contained in this Offering Circular and its purchase of Notes should be based upon such investigation as it deems necessary. None of the Initial Purchasers undertakes to review the financial condition or affairs of the Issuer during the life of the arrangements contemplated by this Offering Circular nor to advise any investor or potential investor in the Notes of any information coming to the attention of any of the Initial Purchasers.

Information provided in this Offering Circular with respect to Korea and its political status and economy, has been derived from information published by the Korean government and other public sources, and the Company accepts responsibility only for the accurate extraction of information from such sources.

The Notes have not been registered with or approved or disapproved by the U.S. Securities and Exchange Commission, any state securities commission or other regulatory authority, nor have any of the foregoing authorities passed upon or endorsed the merits of this offering or the accuracy or adequacy of this Offering Circular. Any representation to the contrary is a criminal offense.

This Offering Circular does not constitute, and may not be used for purposes of, an offer, invitation or solicitation by anyone in any jurisdiction or in any circumstances in which such offer, invitation or solicitation is not authorized or to any person to whom it is unlawful to make such offer, invitation or solicitation. The distribution of this Offering Circular and the offering of the Notes in certain jurisdictions may be restricted by law. Persons into whose possession this Offering Circular may come are required by the Company and the Initial Purchasers to inform themselves about and to observe the relevant restrictions. For a description of certain restrictions on offers and sales of the Notes and distribution of this Offering Circular, see "Plan of Distribution" and "Transfer Restrictions." No action is being taken in any jurisdiction to permit an offering to the general public of Notes or the distribution of this Offering Circular in any jurisdiction where action would be required for those purposes.

In making an investment decision, prospective investors must rely on their own examination of the Company and the terms of the offering of the Notes, including the merits and risks involved. The Company is not and no Agent is making any representation to any purchaser of the Notes regarding the legality of an investment in the Notes by such purchaser under any legal investment or similar laws or regulations. The contents of this Offering Circular should not be construed as providing legal, business, accounting or tax advice.

Notification under Section 309B(1)(c) of the Securities and Futures Act, Chapter 289 of Singapore (the "SFA") – The Company has determined, and hereby notifies all relevant persons (as defined in Section 309A(1) of the SFA), that the Notes are prescribed capital markets products (as defined in the Securities and Futures (Capital Markets Products) Regulations 2018 of Singapore) and Excluded Investment Products (as defined in MAS Notice SFA 04-N12: Notice on the Sale of Investment Products and MAS Notice FAA-N16: Notice on Recommendations on Investment Products).

MiFID II product governance/Professional investors and ECPs only target market – Solely for the purposes of each manufacturer's product approval process, the target market assessment in respect of the Notes has led to the conclusion that: (i) the target market for the Notes is eligible counterparties and professional clients only, each as defined in Directive 2014/65/EU (as amended, "MiFID II"); and (ii) all channels for distribution of the Notes to eligible counterparties and professional clients are appropriate. Any person subsequently offering, selling or recommending the Notes (a "distributor") should take into consideration the manufacturers' target market assessment; however, a distributor subject to MiFID II is responsible for undertaking its own target market assessment in respect of the Notes (by either adopting or refining the manufacturers' target market assessment) and determining appropriate distribution channels.

CERTAIN DEFINED TERMS AND CONVENTIONS

All references to "Korea" or the "Republic" herein are references to The Republic of Korea. All references to the "Government" herein are references to the Government of The Republic of Korea. All references to "KOSEP," the "Issuer" or the "Company" herein are references to Korea South-East Power Co., Ltd. All references to "we" or "us" herein are references to the Company or to the Company and its subsidiaries, as the context requires.

In this Offering Circular, references to "Won" or "₩" are to the currency of Korea and all references to "U.S. dollars," or "US$" are to the currency of the United States of America. All references to "S$" are to the currency of the Republic of Singapore. This Offering Circular contains a translation of certain Won amounts into U.S. dollars at specified rates solely for the convenience of the reader. These translations should not be construed as representations that the Won amounts actually represent such U.S. dollar amounts or could have been or could be converted into U.S. dollars at any particular rate, or at all. Unless otherwise specified, all conversions of Won into U.S. dollars were made at the base rate under the market average exchange rate system, announced by Seoul Money Brokerage Services, Ltd. in Seoul, between U.S. dollars and Won, rounded to the nearest tenth of one Won (the "Market Average Exchange Rate"). Unless otherwise specified, the translations of Won into U.S. dollars as of and for the three months ended March 31, 2020 have been made at the Market Average Exchange Rate in effect on March 31, 2020, which was Won 1,222.6 to US$1.00. The exchange rate between the U.S. dollar and the Won may be highly volatile from time to time and the U.S. dollar amounts referred to in this report should not be relied upon as an accurate reflection of our results of operations. For a discussion of historical information regarding the rate of exchange between Won and the U.S. dollar, see "Exchange Rates."

Any discrepancies in the tables included in this Offering Circular between the listed amounts and totals thereof are due to rounding.

ENFORCEABILITY OF CIVIL LIABILITIES

The Company is a corporation with limited liability organized under the laws of Korea. All of its directors and officers and certain other persons named in this Offering Circular reside in Korea, and all or a significant portion of the assets of the directors and officers and certain other persons named in this Offering Circular and substantially all of the Company's assets are located in Korea. As a result, it may not be possible for you to effect service of process within the United States upon such persons or to enforce against them or against the Company in U.S. courts judgments predicated upon the civil liability provisions of the federal securities laws of the United States. There is doubt as to the enforceability in Korea, either in original actions or in actions for enforcement of judgments of U.S. courts, of civil liabilities predicated on the U.S. federal securities laws.

PRESENTATION OF FINANCIAL INFORMATION

The Company's consolidated financial statements as of and for the years ended December 31, 2018 and 2019, included in this Offering Circular, have been prepared in accordance with the Rules for Accounting Affairs of Public Corporations and Quasi-governmental Institutions in Korea (the "Government Accounting Standards"), and where accounting provisions have not been specified under the Government Accounting Standards, we have applied the Korean International Financial Reporting Standards ("K-IFRS") as allowed under the Government Accounting Standards, which may differ in certain respects from generally accepted accounting principles in other countries, including generally accepted accounting principles in the

United States ("U.S. GAAP") and International Financial Reporting Standards ("IFRS") applied in other countries. The Company's financial information as of March 31, 2020 and for the three months ended March 31, 2019 and 2020 included in this Offering Circular have been derived from the Company's unaudited interim condensed consolidated financial statements included elsewhere in this Offering Circular. Such financial statements have been prepared in accordance with the Rules for Accounting Affairs of Public Corporations and Quasi-governmental Institutions in Korea, which require application of K-IFRS where specific accounting treatments are not prescribed, and the Company's unaudited interim condensed consolidated financial statements as of March 31, 2020 and for the three months ended March 31, 2019 and 2020 have been prepared in accordance with K-IFRS No. 1034 Interim Financial Reporting. In making an investment decision, investors must rely upon their own independent examination of the Company, the terms of this offering and the most recent financial information, including the risks involved. Potential investors should consult their own professional advisers for an understanding of the differences between K-IFRS and IFRS, and how these differences affect the financial information contained in this Offering Circular.

All financial information in this Offering Circular has been presented on a consolidated basis unless otherwise specified or the context otherwise requires.

FORWARD-LOOKING STATEMENTS

This Offering Circular includes "forward-looking statements," as defined in Section 27A of the Securities Act, and Section 21E of the U.S. Securities Exchange Act of 1934, as amended (the "Exchange Act"), including statements regarding our expectations and projections for future operating performance and business prospects. The words "believe," "expect," "anticipate," "estimate," "project," "will," "aim," "will likely result," "will continue," "intend," "plan," "contemplate," "seek to," "future," "objective," "goal," "should," "will pursue" and similar expressions or variations of these expressions identify forward-looking statements. In addition, all statements other than statements of historical facts included in this Offering Circular, including, without limitation, those regarding our financial position and results, business strategy, plans and objectives of management for future operations, including development plans and objectives relating to our products and services, are forward-looking statements. Such forward-looking statements and any other projections contained in this Offering Circular (whether made by us or any third party) involve known and unknown risks, uncertainties and other factors which may cause the actual results, performance or achievements to be materially different from the future results, performance or achievements expressed or implied by forward-looking statements. Such forward-looking statements are based on current beliefs, assumptions, expectations, estimates and projections regarding our present and future business strategies and the environment in which we will operate in the future. Among the important factors that could cause some or all of those assumptions not to occur or cause our actual results, performance or achievements to differ materially from those in the forward-looking statements include, among other things, our ability to successfully implement our business strategy and our safety policies, the condition of and changes in the Korean, Asian or global economies, our growth and expansion, including whether we succeed in our capital investment program to increase our installed capacity, changes in interest rates and exchange rates and changes in government regulation and licensing of our businesses in Korea and in other jurisdictions where we may operate, and the change in the price of electricity sold by us. Additional factors that could cause our actual results, performance or achievements to differ materially include, but are not limited to, those discussed under "Risk Factors." Any forward-looking statements contained in this Offering Circular speak only as of the date of this Offering Circular. Each of we and the Initial Purchasers expressly disclaim any obligation or undertaking to release, publicly or otherwise, any updates or revisions to any forward-looking statement contained herein to reflect any change in our expectations with regard thereto or any change in events, conditions, assumptions or circumstances on which any such statement was based.

SUMMARY

We were established on April 2, 2001 as one of six wholly-owned generation subsidiaries (the "Generation Subsidiaries") of Korea Electric Power Corporation ("KEPCO"). The Generation Subsidiaries generate over 80% of the electricity in Korea. As of March 31, 2020, we had an aggregate domestic installed generation capacity of 10,376 megawatts, or approximately 8.2% of the total electricity generation capacity in Korea (excluding plants generating electricity primarily for private or emergency use). In 2018, 2019 and the three months ended March 31, 2019 and 2020, we sold 64,128 GWh, 60,361 GWh, 15,372 GWh and 12,877 GWh of electricity, respectively, to KEPCO through the Korea Power Exchange (the "KPX"). KEPCO is currently the sole electricity transmission and distribution company in Korea.

Total demand for electricity in Korea increased by 2.2% in 2017 and 3.6% in 2018 but decreased by 1.1% in 2019, in each case, year on year, according to KEPCO. The consumption of electric power is expected to continue to increase by 2.1% per annum from 2017 to 2031, according to the Government's Eighth Basic Plan (as defined herein). We plan to continue to make substantial capital expenditures to maintain and expand our generation capacity and enhance our generating systems in the future, including with respect to the generation of renewable energy.

Based on our "Clean & Smart Energy Leader" initiative, we aspire to build a brighter future through technological advances and become a leader in the production of environmentally friendly energy. In order to achieve this vision, we intend to secure new technologies to supplement coal as an energy source and increase generation capacity of renewable energy in our production mix to 25% by 2030. Toward this end, we have taken a number of steps, including improving operational control, diversifying the pool of fuel sources and suppliers, increasing generation capacity of renewable energy, upgrading pollution controls, upgrading our facility maintenance standards, strengthening employee training and implementing a number of safety and skills development programs for our employees.

As of March 31, 2020, we had an aggregate domestic installed generation capacity of 10,376 megawatts, of which 9,189 megawatts, 922 megawatts and 265 megawatts were attributable to our coal-fired units, LNG-combined cycle units and renewable energy units, respectively. We generated sales of Won 5,543 billion, Won 5,420 billion, Won 1,681 billion and Won 1,342 billion in 2018, 2019 and the three months ended March 31, 2019 and 2020, respectively, and our net income was Won 30 billion, Won 33 billion, Won 228 billion and Won 141 billion in 2018, 2019 and the three months ended March 31, 2019 and 2020, respectively.

We are a corporation incorporated with limited liability under the laws of Korea. Our registered office is located at 123beon-gil Sadeul-ro, Jinju-si, Gyeongsangnam-do 52852, Korea. Our website address is *www.koenergy.kr*.

THE OFFERING

The following is a brief summary of some of the terms of the Notes. For a more detailed description of the terms of the Notes, see "Terms and Conditions of the Notes." Terms used in this summary and not otherwise defined shall have the meanings given to them in "Terms and Conditions of the Notes."

Company	Korea South-East Power Co., Ltd.
Offering.......................................	US$300,000,000 1.000% Notes due 2026
Issue Price...................................	99.638% of principal amount of the Notes
Issue Date	August 3, 2020
Maturity Date	February 3, 2026
Interest..	1.000% per annum, from, and including, August 3, 2020 to, but excluding, the Maturity Date, payable semi-annually in arrears on February 3 and August 3 in each year. See "Terms and Conditions of the Notes – Interest."
Certain Covenants	The Notes will contain a limitation on liens provision, a limitation on sale and leaseback provision and a consolidation, merger and sale of assets provision as further described in Conditions 3.1, 3.2 and 3.3 of the Terms and Conditions of the Notes.
Ranking of the Notes	The Notes constitute direct, unconditional, unsubordinated and unsecured obligations of the Company and shall at all times rank *pari passu* and without any preference or priority among themselves and with all other present and future direct, unconditional, unsubordinated and unsecured obligations of the Company, except as may be required by mandatory provisions of law. See "Terms and Conditions of the Notes – Status."
Events of Default..........................	Upon the occurrence of certain events as described in Condition 10.1 of the Terms and Conditions of the Notes and upon notice in writing by a Noteholder addressed to the Company and delivered to the Company and the specified office of the Fiscal Agent that the Note is, and such Note shall accordingly forthwith become, immediately due and payable at its principal amount, together with interest accrued to the date of repayment without further action or formality.
Taxation and Additional Amounts...	Payment of principal and interest in respect of the Notes, including payment of any additional amounts, by or on behalf of the Company, shall be made free and clear of, and without withholding or deduction for, or on account of, any present or future taxes, duties, assessments or governmental charges of whatever nature imposed, levied, collected, withheld or assessed by or on behalf of the Relevant Jurisdiction, except as required by applicable law. In that event, the Company will, subject to certain exceptions and limitations, pay to a holder of any Note such additional amounts as may be necessary in order that every net payment by the Company or a paying agent of the principal of and interest on the Note and any other amounts payable on the Note after withholding or deduction for or on account of any present or future tax, duty, assessment or governmental charge imposed or levied by a Relevant Jurisdiction will not be less than the amount provided for in the Note to be then due and payable under the Notes. See "Taxation – Korean Taxation" and as further described in Condition 8 of the Terms and Conditions of the Notes.

Redemption for Taxation Reasons ..	Prior to the Maturity Date, the Notes will be redeemable at the option of the Company at any time in whole, but not in part, at 100% of their principal amount plus accrued and unpaid interest, if any, to the date fixed for redemption, in the event of certain changes in the tax law of the Relevant Jurisdiction. See "Terms and Conditions of the Notes – Redemption and Purchase – Redemption for Taxation Reasons."
Further Issuances	The Company may from time to time, without notice to or the consent of the holders of the Notes, create and issue further debt securities ranking *pari passu* with the Notes in all respects so that such further issue shall be consolidated and form a single series with the outstanding Notes.
Listing..	Approval in-principle has been received from the SGX-ST for the listing and quotation of the Notes on the SGX-ST. For so long as the Notes are listed on the SGX-ST and the rules of the SGX-ST so require, the Notes, if traded on the SGX-ST, will be traded in a minimum board lot size of S$200,000 (or its equivalent in foreign currencies). Accordingly, the Notes, if traded on the SGX-ST, will be traded in a minimum board lot size of US$200,000.
Use of Proceeds	The net proceeds from the sale of the Notes, which will be US$298,164,000 after deducting underwriting commissions but not estimated offering expenses, will be allocated to finance or refinance, in whole or in part, existing and future projects that provide environmental or social benefits that fall under the Green and Social Eligible Categories, including to mitigate the adverse effects of the COVID-19 pandemic. See "Use of Proceeds."
Ratings...	The Notes are expected to be rated "Aa2" by Moody's and "AA" by S&P. Such ratings of the Notes do not constitute a recommendation to buy, sell or hold the Notes and may be subject to revision or withdrawal at any time by either rating organization. Each such rating should be evaluated independently of any other rating of the Notes, of other securities of the Company or of the Company.
Form and Denomination	The Notes offered hereby will be issued in registered form, without detachable coupons, in the minimum denomination of US$200,000 and integral multiples of US$1,000 in excess thereof. The Notes may be held and transferred, and will be offered and sold, in the principal amount of US$200,000 and integral multiples of US$1,000 in excess thereof. The Notes will initially be represented by a Global Note in registered form deposited on the closing date with, and registered in the name of a nominee of, a common depositary for Euroclear Bank SA/NV as operator of the Euroclear System ("Euroclear") and Clearstream Banking, S.A. ("Clearstream"). Beneficial interests in the Global Note will be shown on, and transfers thereof will be effected only through, the records maintained by Euroclear and Clearstream and their respective account holders. Except as described herein, definitive certificates representing the Notes (each, a "Certificated Note") will not be issued in exchange for beneficial interests in the Global Note. See "The Global Note."
Delivery of the Notes	Delivery of the Notes, against payment in same-day funds, is expected on or about August 3, 2020.

Risk Factors	See "Risk Factors" of this Offering Circular for a discussion of certain factors that investors should consider in connection with an investment in the Notes.
Fiscal Agent, Principal Paying Agent and Registrar	Citicorp International Limited will act as the fiscal agent (the "Fiscal Agent") and Citibank, N.A., London Branch will act as the principal paying agent, transfer agent and registrar under the Fiscal Agency Agreement for the Notes.
Governing Law	The Notes and the Fiscal Agency Agreement are governed by, and will be construed in accordance with, the laws of the State of New York.
Security Codes	ISIN: XS2209356398 Common Code: 220935639

SUMMARY FINANCIAL AND OTHER INFORMATION

The summary financial data as of and for the years ended December 31, 2018 and 2019 below are derived from the Company's consolidated financial statements included elsewhere in this Offering Circular, which have been prepared in accordance with K-IFRS. The summary financial data as of March 31, 2020 and for the three months ended March 31, 2019 and 2020 below are derived from the Company's unaudited interim condensed consolidated financial statements included elsewhere in this Offering Circular, which have been prepared in accordance with K-IFRS No. 1034 Interim Financial Reporting.

The Company has adopted K-IFRS No. 1116 Leases from January 1, 2019 using the modified retrospective approach, under which the cumulative effect of initial application is recognized in the Company's retained earnings at January 1, 2019. Accordingly, the comparative information presented for 2018 has not been restated and is presented, as previously reported, under K-IFRS No. 1017 and related interpretations.

	For the year ended December 31,		For the three months ended March 31,	
	2018	**2019**	**2019**	**2020**
	(in billions of Won, except per share data)			
Consolidated Statements of Comprehensive Income:				
Sales	₩5,543	₩5,420	₩1,681	₩1,342
Cost of sales	5,289	5,226	1,340	1,056
Gross profit	254	195	342	286
Selling and administrative expenses	97	70	26	25
Operating income	157	125	316	261
Other income	25	26	2	2
Other expenses	(62)	(8)	(0)	(1)
Other gain (loss)	1	18	(15)	(2)
Finance income	64	61	17	61
Finance costs	(136)	(196)	(42)	(138)
Gain (loss) from investments in associates and joint ventures, net	(3)	11	10	3
Income before income tax expense	52	35	289	186
Income tax expense	22	3	61	45
Net income	30	33	228	141
Other comprehensive income (loss), net of income tax	22	(7)	7	(54)
Total comprehensive income	51	26	234	87
Net earnings per share	₩ 284	₩ 318	₩3,762	₩2,289

	As of December 31,		As of March 31,
	2018	**2019**	**2020**
	(in billions of Won)		
Consolidated Statements of Financial Position:			
Total assets	₩10,202	₩11,452	₩11,930
Total liabilities	5,173	6,399	6,801
Total equity	5,029	5,053	5,129
Total liabilities and equity	10,202	11,452	11,930

RISK FACTORS

Prospective purchasers of the Notes should carefully consider all of the information contained in this Offering Circular, including our financial statements and related notes, in addition to the following risk factors. In particular, investors should pay attention to the fact that we are subject to the legal and regulatory environment of Korea, which in many respects differs from that which prevails in other countries.

Risks Relating to Our Business

The Government may adopt policy measures to substantially restructure the Korean electric power industry or our operational structure, which may have a material adverse effect on our business, operations and profitability.

Since our establishment, the Government has introduced successive policy initiatives to foster efficiency in the Korean electric power industry and has adopted policy measures that have substantially modified our business and operations. However, these policy initiatives have not always been fully implemented as originally planned and in some cases have been amended or replaced by new initiatives, among others, due to economic or policy considerations or a change in administration. There can be no assurance that the initiatives and plans announced by the Government will be implemented as planned or at all, or that the implementation of any such plans will not have a negative effect on our business, results of operations or financial condition.

In June 2016, the Government announced plans to reform state-owned enterprises in the energy and resources development sector, including KEPCO, our parent company, and the electric power industry in general. The Government plan involves, among other things, the gradual liberalization of the electric power industry with respect to the distribution market, as well as the initial public offering of the Generation Subsidiaries, including us, in conjunction with the sale of minority interests (20% to 30%) in such subsidiaries. See "The Korean Electricity Industry – Restructuring of the Electricity Industry in Korea."

Following his election in May 2017, President Moon Jae-In ordered the (i) suspension of coal-fired generation units that have been in service for more than 30 years for the month of June 2017 and staggered, if not suspended, operations of such old coal-fired generation units during the spring season in 2018 and beyond when yellow dust storms are more frequent, (ii) accelerated decommissioning of such old coal-fired generation units and (iii) suspension of construction of new coal-fired generation units and reevaluation of coal-fired generation projects less than 10% into construction.

As of March 31, 2020, approximately 89% in aggregate of our total installed capacity was attributable to our coal-fired generation units. As such, the continued implementation of the above measures, which may reduce our sales and increase our costs, including capital expenditures, may have a material adverse effect on our business, results of operations and financial condition. See "– Our capacity expansion plans, which are based on Government projections on long-term supply and demand of electricity in Korea, may prove to be inadequate."

Environmental regulations may adversely affect our operations.

We are required to comply with numerous laws and regulations relating to the protection of the environment and land use in Korea. See "Business – Environment." These laws and regulations are constantly changing. While we believe we are in compliance with applicable environmental laws and regulations in all material respects and that we have obtained all material environmental approvals currently required to own and operate our facilities, we may incur significant costs as a result of these requirements.

Starting January 2012, the Government has enforced the Renewable Portfolio Standard ("RPS"), under which each generation company, including us, is required to supply 10% of the total energy generated from such generation company in the form of renewable energy by 2023, with interim annual targets for the intervening years. Any generation company failing to do so in the prescribed timeline is subject to penalties. We have met the RPS targets of 5.0% for 2018 and 6.0% for 2019 and thus have not been levied any penalties for non-compliance with respect to such years. While we intend to continue increasing the proportion of generation capacity from renewable energy relative to generation capacity from non-renewable energy in order to meet our future RPS targets, there is no assurance that we will be able to do so quickly enough to meet such targets. Furthermore, while we expect that additional capital expenditures to increase generation capacity from renewable energy will be covered by a corresponding increase in electricity tariff levied on end-users, which will in turn increase the amount payable to us by KEPCO, there is no assurance that the Government will in fact raise the electricity tariff to a level sufficient to fully cover such additional capital expenditures or at all.

In addition, in 2015, the Government implemented a carbon emission trading system in order to reduce the emission of greenhouse gases by 37% from 2030 business-as-usual levels in accordance with the Act on Allocation and Trading of Greenhouse Gas Emission Allowances. Under the Government's emission trading system, the Government allocates emission allowance units to companies in certain industries, including generation companies, and such companies are allowed to emit levels of greenhouse gases based on the number of allowance units that have been allocated to them. If a company emits more than the amount of allowance units that have been allocated to it, the company must purchase additional allowance units on the emission trading system. In 2019, we emitted approximately 53.4 million tons of carbon equivalents, of which 11.6 million tons were additional allowance units that we have purchased or will purchase prior to the requisite deadline. Our continued adherence to such annual emission reduction targets is expected to result in our incurring significant compliance costs.

In December 2016, the Ministry of Trade, Industry and Energy (the "MOTIE") and the five non-nuclear Generation Subsidiaries, including us, entered into an agreement to reduce fine dust and pollutant emissions from coal-fired generation units. The agreement calls for the Generation Subsidiaries to invest a total of Won 11.6 trillion in pollution reduction equipment in existing and new coal-fired generation units.

Korean environmental laws establish emissions standards relating to, among other things, sulfur oxides ("SOx"), nitrogen oxides ("NOx") and dust. Such standards have become more stringent in recent years to reduce the amount of permitted emissions, including through the enactment of the Special Act on the Improvement of Air Quality in Air Control Zones in April 2019. Pursuant to the regulations under such act, which became effective in April 2020, our generation facilities in Samcheonpo, Yeongheung, Bundang and Yeosu power plant complexes became subject to annual emission allowance targets and trading systems of emission allowance units with respect to SOx, NOx and fine dust starting in 2020, similar to those targets and trading systems relating to greenhouse gas emissions. Adhering to such annual emission reduction targets may result in our incurring significant compliance costs.

Failure to comply with environmental laws and regulations could have a material adverse effect on us, including closure of individual facilities not in compliance, as well as the imposition of civil or criminal liability and the imposition of liens, penalties or fines, and expenditures to bring facilities into compliance.

The introduction of the vesting contract system has been indefinitely suspended and may not achieve the desired benefits when fully implemented.

On May 20, 2014, the Electricity Business Act was amended to introduce a vesting contract system to determine the price and quantity of electricity to be sold and purchased through the KPX between the purchaser of electricity (currently, KEPCO) and the sellers of electricity (namely, the Generation Subsidiaries (including us) and independent power producers ("IPPs")).

Under the vesting contract system, electricity generators using low-cost base load fuels (such as nuclear, coal, hydro and by-product gas) at a particular generation unit were to be required to enter into a contract with the purchaser of electricity (currently, KEPCO), which would specify, among other things, the quantity of electricity to be generated and sold from such generation unit and the price at which such electricity would be sold, subject to certain adjustments.

The introduction of the vesting contract system was intended principally to prevent excessive profit-taking by producers of electricity using low-cost base load fuels (such as nuclear, coal, hydro and by-product gas) by replacing the adjusted coefficient as the basis for determining the guaranteed return to generation companies, as well as to enhance the stability of electricity supply by requiring long-term contractual arrangements for the purchase and sale of electricity and promote cost savings, productivity enhancements and operational efficiency by providing incentives and penalties depending on the degree to which the generation companies could supply electricity at costs below the contracted electricity prices.

In order to minimize undue shock to the electricity trading market in Korea, the vesting contract system was to be implemented in phases starting with by-product gas-based electricity in 2015. The rollout of the vesting contract system was further studied by a task force consisting of representatives from the Government, the KPX and generation companies. Following such study, the Government announced in June 2016 that, due to changes in the electricity business environment (including an increase in generation capacity relative to peak usage, reduced fuel costs following a decline in oil prices and greater environmental concerns related to coal-fired electricity generation), it will indefinitely suspend any further rollout of the vesting contract system beyond by-product gas-based electricity, and retain the adjusted coefficient-based electricity pricing adjustment mechanism. No assurance can be given that such system, if re-introduced, will not adversely affect our business, results of operation or financial condition in the future. See "The Korean Electricity Industry – Vesting Contract System."

Our capacity expansion plans, which are based on Government projections on long-term supply and demand of electricity in Korea, may prove to be inadequate.

We make plans for expanding or upgrading our generation capacity based on the Government's Basic National Energy Plan, as well as the Power Supply and Demand Basic Plan (the "Basic Plan"). The Basic Plan is announced and revised generally every two years by the Government.

In June 2019, the Government announced the Third Basic National Energy Plan, which is a comprehensive plan that covers the entire spectrum of energy industries in Korea from 2019 to 2040. The Third Basic National Energy Plan focuses on the following five key tasks: (i) innovating the structure of energy consumption by strengthening the energy demand management of various sectors such as industrial, building and transportation, and streamlining pricing systems with the aim of improving the efficiency of energy consumption by 38% by 2040 and reducing energy demand by 18.6% by 2040, (ii) transitioning to a clean and safe mix of energy through increasing the share of renewable energy by 30~35% while reducing the share of nuclear and coal energy, (iii) expanding decentralized and participatory energy systems by increasing the share of distributed energy resources (such as renewable energy and fuel cells) in areas with demand and strengthening regional management by expanding the roles and responsibilities of local governments, (iv) bolstering the global competitiveness of Korea's energy industry by fostering future energy industries such as renewable energy, hydrogen and efficiency-enhancing industries, as well as through adding value to existing traditional energy industries, and (v) laying the foundation for conversion to clean and safe energy by improving the electricity, gas and heat market systems and building an energy big data platform to promote the creation of new industries.

In December 2017, the Government announced the Eighth Basic Plan for the period from 2017 to 2031, which focuses on, among other things, (i) increasing efforts to address environmental and safety concerns, including reducing greenhouse gas emission and yellow dust, (ii) decreasing the portion of electricity supplied using nuclear and coal energy, (iii) increasing the portion of electricity supplied from renewable energy, in particular solar and wind power, and (iv) promoting the replacement of coal with LNG as an energy source by reducing the gap in expenses incurred in using the respective fuel types, for example, by adjusting the consumption tax rates applicable to the respective fuel types. Furthermore, the Eighth Basic Plan includes the following implementing measures: (i) six new nuclear generation units in planning stages will not be constructed, (ii) the extension of life of ten decrepit nuclear generation units will not be granted, (iii) Wolsong #1 nuclear generation unit will not count as part of domestic energy generation capacity, (iv) seven decrepit coal-fired generation plants will be retired by 2022, (v) six other coal-fired generation plants shall be converted to LNG fuel use and (vi) domestic renewable energy generation capacity shall be expanded to 58.5 gigawatts by 2030. Pursuant to the Eighth Basic Plan, our Samcheonpo units no. 1 and 2 are subject to decommissioning in August 2020. In addition, we are planning to convert our Yeongdong units no. 1 and no. 2 from coal-fired to biomass-fired in 2020 as well as convert our Samcheonpo units no. 3 and 4 from coal-fired to LNG-fired in 2024. The Government commenced preparations for the Ninth Basic Plan in March 2019 and aims to issue the finalized plan within 2020.

We cannot assure you that the Third Basic National Energy Plan, the Eighth Basic Plan or any future plans to be subsequently adopted (including the Ninth Basic Plan) will successfully achieve their intended goals, the foremost of which is to ensure, through carefully calibrated capacity expansion and other means, balanced overall electricity supply and demand in Korea at affordable rates to end users while promoting efficiency and environmental friendliness in the consumption and production of electricity. If there is a significant variance between the projected electricity supply and demand considered in planning our capacity expansions and the actual electricity supply and demand, or if these plans otherwise fail to meet their intended goals or have other unintended consequences, this may result in inefficient use of our capital, mispricing of electricity and undue financing costs on our part, which may have a material adverse effect on our results of operations, financial condition and cash flows.

We are dependent on fuel imported from overseas suppliers in currencies other than Won under contracts with varying quantities and durations, and any increases in fuel costs, if not fully passed through to KEPCO, could adversely affect our results of operations.

Fuel costs, which represent the sum of raw materials used and power purchase costs included in our cost of sales, constituted 75%, 69%, 60% and 59% of our sales, and 79%, 72%, 76% and 75% of our cost of sales, in 2018, 2019 and the three months ended March 31, 2019 and 2020, respectively. A substantial majority of our fuel costs are incurred to purchase bituminous coal from sources outside of Korea at prices determined in part by prevailing market prices in currencies other than Won, primarily the U.S. dollar. In addition, we purchase a significant portion of our fuel requirements under contracts with limited quantity and duration. See "Business – Fuel."

Substantially all of our bituminous coal requirements are imported from approximately 40 suppliers located in Australia, Indonesia, Russia, Canada, South Africa, United States and Colombia under long-term or spot contracts. Approximately 96%, 82%, 84% and 78% of our bituminous coal requirements were purchased under long-term contracts in 2018, 2019 and the three months ended March 31, 2019 and 2020, respectively, with the remaining requirements being purchased on the spot market. Approximately 37%, 32% and 10% of our annual bituminous coal requirements were imported from Indonesia, Australia and Russia, respectively, in the three months ended March 31, 2020. We purchase oil through a competitive open bidding process with other bidders, including Korean refiners, based on the spot market price of oil in Singapore. We purchase all of our LNG for our domestic units from Korea Gas Corporation ("KOGAS") under a long-term supply contract.

In recent years, the prices of fuel, including bituminous coal, oil and LNG, have fluctuated significantly. If fuel prices increase sharply within a short span of time, we may be unable to secure requisite fuel supplies at prices that we were able to obtain during prior periods. In addition, any significant interruption or delay in the supply of fuel (bituminous coal and LNG in particular) from any of our suppliers could cause us to purchase fuel on the spot market at prices higher than the prices available under existing supply contracts, resulting in an increase in fuel cost.

While increases in our fuel costs are fully passed through to KEPCO in its purchase of electricity from us under the current cost-based pool system, such pass-through is subject to a two-month time lag, and accordingly, fuel cost increases, including cost increases resulting from the depreciation of the Won against the U.S. dollar or other currencies, could adversely affect our results of operations if the price of electricity payable to us by KEPCO does not timely capture such fuel cost increases for the relevant financial reporting period. Furthermore, in determining the adjusted coefficient for the marginal price component of the price of electricity sold by us to KEPCO by way of KPX, the Cost Evaluation Committee, a committee composed of representatives from the Government, KEPCO and the Generation Subsidiaries, including us, considers various factors, including the market prices of fuels, electricity tariff rates and their impact on the relative fair investment returns for KEPCO and the Generation Subsidiaries, including us, among others. Therefore, in the event of a sustained or rapid rise in fuel costs which impact is not sufficiently offset by a corresponding rise in electricity tariff rates in a timely manner and as a result would significantly hurt KEPCO's profitability, the adjusted coefficient may be set at a level which would have the effect of lowering the fair investment return for the Generation Subsidiaries, including us, and, in turn, the overall profitability of our operations. For instance, in March 2013, the Cost Evaluation Committee imposed a price cap on the marginal price of electricity sold by us to KEPCO. Such price cap has affected our LNG generation units, which accounted for approximately 8.9% in aggregate of our installed capacity as of March 31, 2020. The price cap has had and may have a material adverse effect on our results of operation and financial condition. See "The Korean Electricity Industry – Power Purchase – Cost-based Pool System – Marginal Price."

We anticipate substantial capital expenditures, which will require additional debt incurrence in the future.

We anticipate that substantial capital expenditures will be required in the future for construction of additional generation facilities as discussed in "Business – Capital Investment Program." In 2018, 2019 and the three months ended March 31, 2019 and 2020, we spent Won 624 billion, Won 909 billion, Won 108 billion and Won 159 billion, respectively, on capital expenditures, which represent the sum of acquisitions of property, plant and equipment and intangible assets in our statements of cash flows. We have budgeted Won 1,003 billion (including amounts already expended in 2020), Won 1,582 billion, Won 1,680 billion and Won 1,084 billion for capital expenditures and investment in associates and joint ventures for 2020, 2021, 2022 and 2023, respectively. The budgeted amounts may vary from the actual amounts of our capital expenditures for a variety of reasons, including changes in the number of units to be constructed and the timing of such construction, changes in rates of exchange between the Won and foreign currencies, changes in interest rates, changes in the Government's policy objectives and other factors. For example, in December 2017, the Government announced its plans to increase the portion of renewable energy generated in Korea to 20% of the total energy generated in Korea by 2030, which calls for the Generation Subsidiaries, including us, to make significant investments in the construction and operation of power plants fueled by renewable energy. In response to such policy objective, we have set an internal target to increase the portion of renewable energy to 25% of our total power generation by 2030 and to expend an estimated total of approximately Won 5.4 trillion through 2030 for such purpose. Although we plan to fund a substantial portion of our capital expenditures with net cash from operating activities, no assurance can be given that we will be able to do so. We expect that a significant portion of our future capital expenditures will need to be financed through foreign currency borrowings in the international capital markets, as well as borrowings of Korean Won in the domestic capital market, which may lead to an increase in our overall debt levels as well as our debt ratio. It is also possible that the required financing may not be available to us or that the cost at which such financing may be available may not be acceptable to us. In addition to funding requirements relating to our capital investment program, payments of principal and interest on indebtedness will require considerable capital resources. If we are unable to obtain debt financing at acceptable rates on a timely basis, or at all, we may be unable to meet our funding requirements or debt repayment obligations, which could have a material adverse impact on our business and results of operations and could lead to a decline in the market value of the Notes.

In recent years, in light of the previous policy guidelines of the Government for public enterprises (including us) in general to reduce their respective overall debt levels, we implemented various measures to reduce our debt levels, including by way of disposing of equity interests in unprofitable subsidiaries and other non-core assets. If the Government reprises such policy guidelines in the future, we cannot provide assurance that we will be able to successfully reduce our debt to a level contemplated by the Government or to a level that would be optimal for our capital structure. If we fail to reduce our debt to a level contemplated by the Government or the measures taken by us to reduce debt levels have unintended adverse consequences, such developments may have an adverse effect on our business, results of operation and financial condition.

Unexpected events, including natural disasters and health epidemics, including the ongoing COVID-19 pandemic, may increase our cost of doing business or disrupt our operations.

The occurrence of one or more unexpected events, including fires, tornadoes, tsunamis, hurricanes, earthquakes, floods and other forms of severe weather, as well as severe health epidemics such as the current global pandemic of a novel strain of coronavirus (referred to as "COVID-19") in Korea or in other countries where we operate or where our suppliers or customers are located could adversely affect our operations and financial performance. In addition, the normal operations of our existing facilities or the construction of our new facilities may be interrupted by accidents caused by operating hazards, power supply disruptions, equipment failures, natural disasters or other events or by disruptions due to health epidemics. Although we have not had any material instances of such interruptions in recent years], any interruption (partial or complete) to our operations at our facilities as a result of any such accidents or otherwise, including potentially as a result of the COVID-19 pandemic, could materially and adversely affect our business, financial condition and results of operations. There can be no assurance that such events will not occur in the future or that our production capacity will not be materially and adversely impacted as a result of such events.

In particular, COVID-19, an infectious disease caused by severe acute respiratory syndrome coronavirus 2 that is known to have been first transmitted to humans in November 2019 and has spread globally, has materially and adversely affected the global economy and financial markets in recent months. The World Health Organization declared the COVID-19 as a pandemic in March 2020.

While we believe that COVID-19 has not caused material disruption to our business operations to date, we expect that it has had a material adverse effect on the overall Korean economy and the demand for electricity in Korea during the first three months of 2020. Partly as a result of such effect, we expect a decrease in our revenues in the first six months of 2020 compared to the first six months of 2019, which in turn will very likely have an adverse effect on our profits. Risks associated with a prolonged outbreak of COVID-19 or other types of widespread infectious diseases include:

- disruption in the normal operations of our industrial and commercial customers, which in turn may decrease in demand for electricity for such uses;
- an increase in unemployment among, and/or decrease in disposable income of, Korean consumers, which may decrease demand for electricity for residential use and the products and services of our industrial and commercial customers, thereby also leading to a decrease in demand for electricity for such uses;
- disruption in the supply of fuel and equipment from our suppliers;
- disruptions or delays in the construction of new generation facilities or maintenance and refurbishment of existing generation facilities;
- disruption in the normal operations of our business resulting from contraction of COVID-19 by our employees, which may necessitate our employees to be quarantined and/or our generation facilities or offices to be temporarily shut down;
- disruption resulting from the necessity for social distancing, including implementation of temporary adjustment of work arrangements requiring employees to work remotely, which may lead to a reduction in labor productivity;
- depreciation of the Won against major foreign currencies, which in turn may increase the cost of imported raw materials and equipment;
- unstable global and Korean financial markets, which may adversely affect our ability to meet our funding needs on a timely and cost-effective basis;
- significant or extended decline in the prices of LNG, which may lead to the replacement of thermal generation with LNG-combined cycle generation; and
- impairments in the fair value of our investments in companies that may be adversely affected by the pandemic.

It is not possible to predict the duration or full magnitude of harm from COVID-19. In the event that COVID-19 or other types of widespread infectious diseases cannot be effectively and timely contained, our business, financial condition and results of operations may be materially adversely affected.

The movement of the Won against the U.S. dollar and other currencies may have a material adverse effect on us.

The Won has fluctuated significantly against major currencies from time to time, including recently in light of the ongoing COVID-19 outbreak in Korea and globally. Depreciation of the Won against the U.S. dollar and other foreign currencies typically results in a material increase in the cost of fuel and equipment purchased by us from overseas since the prices for substantially all of the fuel and a significant portion of the equipment we purchase are denominated in currencies other than the Won, generally in U.S. dollars. Changes in foreign exchange rates may also impact the cost of servicing our foreign currency-denominated debt. As of March 31, 2020, 29% of our current and non-current financial liabilities, excluding derivative liabilities, was denominated in foreign currencies, principally U.S. dollars and Australian dollars. In addition, as is the case with LNG purchased from KOGAS, even if we make payments in Won for certain sources of fuel and equipment, some of these sources of fuel may originate from other countries and their prices may be affected accordingly by the exchange rates between the Won and foreign currencies, especially the U.S. dollar. Since substantially all of our sales are denominated in Won, we must generally obtain foreign currencies through foreign currency-denominated financings or from foreign currency exchange markets to make such purchases or service such debt. As a result, any significant depreciation of the Won against the U.S. dollar or other major foreign currencies may have a material adverse effect on our profitability and results of operations.

Our risk management procedures may not prevent losses in debt and foreign currency positions.

We manage interest rate exposure in our debt positions by limiting our variable-rate and fixed-rate exposures to percentages of total debt and by monitoring the effects of market changes in interest rates. We also actively manage the risks inherent in our foreign currency positions, which incorporate both our foreign currency-denominated assets and debt. For example, we enter into foreign currency contracts to hedge a majority of our imported bituminous coal requirements purchased in U.S. dollars, which is our primary foreign currency exposure. In addition, we hedge all of our U.S. dollar and Australian dollar debt exposure through foreign currency swap contracts. We measure the potential loss using risk analysis software and enter into derivatives to hedge the exposure when the possible loss reaches a certain percentage of our total capitalization. To the extent we have unhedged positions or our hedging and other risk management procedures do not work as planned, our results of operations and financial condition could be adversely affected.

Our insurance coverage may not be sufficient.

We have obtained a general commercial insurance policy to insure against fire and natural disasters up to Won 200 billion and mechanical accidents up to Won 15 billion. In addition, we obtain construction insurance to provide coverage in respect of certain portions of the assets of our generation facilities that are being constructed or refurbished. We also have marine cargo insurance in respect of imported fuel and procurement with insurance coverage of US$25 million per shipment, which amount can be increased with notification prior to shipment, as well as general vehicle insurance. We also maintain directors' and officers' liability insurance.

While we believe that we carry insurance coverage meeting the expected standards in our industry, our insurance and indemnity policies do not cover all of the assets that we own and operate and do not cover all types or amounts of loss which could arise in connection with the ownership and operation of our power plants. We do not maintain insurance for business interruptions, terrorist attacks or war. As a result, significant accidents with damages over our "per occurrence" amount limitations that affect our assets, or other events for which we are not insured, such as an act of terrorism, could have a material adverse impact on our business and results of operations and could lead to a decline in the market value of the Notes. See "Business – Insurance."

An increase in consumption tax on our fuel sources may have a material adverse effect on our business, operations and profitability.

Effective July 2014, largely based on policy considerations of tax equity among different types of fuel sources as well as environmental concerns, the Government applied consumption tax to bituminous coal, which previously had not been subject to consumption tax unlike other types of fuel such as LNG and bunker oil. Pursuant to the amended Individual Consumption Tax Act, effective as of April 1, 2019, the base tax rate (which is subject to certain adjustments) is Won 46 per kilogram for bituminous coal; however, due to concerns on the potential adverse effect on industrial activities, the applicable tax rate is applied differently based on the net heat generation amount. The currently applicable tax rate for bituminous coal is Won 43 per kilogram for net heat generation of less than 5,000 kilocalories, Won 46 per kilogram for net heat generation of 5,000 to 5,500 kilocalories and Won 49 per kilogram for net heat generation of 5,500 kilocalories or more. In contrast, the currently applicable tax rate for LNG for power generation is Won 12 per kilogram, while the currently applicable tax rate for LNG for uses other than power generation is Won 60 per kilogram, subject to certain exceptions.

Bituminous coal represents the largest type of fuel source for our electricity generation in terms of electricity output, as electricity sales from such fuel source accounted for 87%, 86%, 82% and 81% of our total electricity sales in 2018, 2019 and the three months ended March 31, 2019 and 2020, respectively. We paid Won 963 billion, Won 1,079 billion, Won 222 billion and Won 229 billion in consumption taxes with respect to the use of bituminous coal in 2018, 2019 and the three months ended March 31, 2019 and 2020, respectively. While we expect that additional fuel costs due to any further increase in consumption tax on our fuel sources, bituminous coal, oil and LNG in particular, will be covered by a corresponding increase in the system marginal price of electricity sold by us to KEPCO, there is a time lag between our purchase of coal and our sale of electricity, which may adversely affect our cash flow, results of operation and financial condition.

Labor unrest may adversely affect our operations.

As of March 31, 2020, approximately 88.7% of our employees were members of the Korea South-East Power Labor Union, which membership comprises entirely of our employees, and approximately 11.2% of our employees were members of the Korean Power Plant Industry Union, of which employees of other non-nuclear Generation Subsidiaries are also members. In 2002, the Government's plan to restructure and privatize KEPCO's non-nuclear Generation Subsidiaries resulted in a six-week strike by the labor unions of the non-nuclear Generation Subsidiaries to protest the Government's plan. Although the strike did not materially disrupt the supply of electricity or have a material adverse impact on our business and results of operations, and a large-scale strike has not happened since then, we cannot assure you that a large-scale strike will not occur again in the future, that such labor unrest will be satisfactorily resolved or that such labor unrest will not materially disrupt the supply of electricity or have a material adverse effect on our business or results of operations. While we believe that we have trained a sufficient number of alternative staff and employees to run our operations in the event of a strike, there can be no assurances that this would prove to be successful. Labor unrest may adversely affect our results of operations by disrupting the power supply.

Our business may be materially and adversely affected by legal claims and regulatory actions against us.

We are subject to the risk of legal claims and regulatory actions in the ordinary course of business (including with respect to sanctions, anti-corruption and anti-money laundering, among others), which may expose us to substantial monetary damages and legal costs, injunctive relief, criminal and civil penalties, sanctions against our management and employees and regulatory restrictions on our operations, as well as reputational harm. See "– We may be exposed to potential claims made by current or former employees relating to unpaid wages and benefits and may also incur increased labor costs as a result of the expansion of the scope of applicable wages and benefits."

In addition, from 2017 to 2018, the Korea Customs Service ("KCS") conducted an investigation on a group of individuals and companies suspected of illegally importing North Korean coal. We were subject to a written investigation in 2018, as we, through a competitive bidding process, had procured coal, which we believed was of Russian origin, from a direct supplier that had purchased the coal from one of the traders suspected of such illegal activity. The transaction between us and the direct supplier was denominated in U.S. dollars. The KCS concluded the investigation in August 2018 and ultimately accused four individuals and five companies (none of which included us or our direct supplier) of document forgery and violation of applicable customs and compliance law. Neither we nor our direct supplier were found to have committed any wrongdoing. Prosecutors brought charges against these individuals and companies, and in October 2019, the Daegu District Court sentenced these individuals and companies to imprisonment and/or fines, which such individuals and companies have since appealed. While no legal action has been taken against us or any of our directors or officers, we cannot assure you that this matter and/or related events will not have any material adverse effect on us, our reputation or the market value of the Notes. See "Business – Legal and Regulatory Proceedings."

We are unable to predict the final outcome of such proceedings and other lawsuits, arbitration proceedings and regulatory actions. An adverse determination in any such proceedings may result in monetary damages, regulatory sanctions and financial liability as well as reputational harm to us, which in turn may have a material adverse effect on our business, results of operations and financial condition.

We may be exposed to potential claims made by current or former employees relating to unpaid wages and benefits and may also incur increased labor costs as a result of the expansion of the scope of applicable wages and benefits.

From time to time, we have been subject to various lawsuits involving our current and former employees seeking compensation for unpaid wages based on interpretations of relevant labor laws in Korea. For example, under the Labor Standards Act and Labor Severance Payment Security Act of Korea, the amount of compensation to which an employee is legally entitled, such as overtime allowance for night shifts or work performed outside of working hours as well as severance pay, is determined by the definition of "ordinary wage." After a decision by the Supreme Court of Korea in 2013 that provided a standard rule for determining what kinds of payments should be included as part of ordinary wage, we became subject to a number of lawsuits involving hundreds of our current and former employees for unpaid ordinary wages and related retirement benefits, which were decided in the plaintiffs' favor. Pursuant to such decisions, we have made an aggregate payment of Won 36.7 billion to cover the amounts claimed by the plaintiffs, as well as to address substantially all of the other current and former employees that would have had similar claims.

Separately from such prior cases involving ordinary wages, we are currently subject to four lawsuits which were filed in 2019 involving hundreds of our current and former employees seeking compensation for allegedly unpaid retirement benefits in relation to certain employee bonuses based on our institutional performance, based on a decision by the Supreme Court of Korea in 2018 that such bonuses should be a part of "average wage" that determines the applicable amount of retirement benefits. All of the four lawsuits are currently pending before the trial court, and the aggregate claim amount of such lawsuits is Won 9.1 billion. We have not set aside any reserves to cover any potential future payments of additional retirement benefits in relation to the related lawsuits.

We cannot presently assure you that there will not be further lawsuits seeking additional wages or benefits based on current or future interpretations of applicable laws and regulations, or that the foregoing amount of provisions will be sufficient to cover payments of any additional wages, retirement benefits or other compensation and damages arising from the present or future litigation relating to claims for additional wages and benefits.

We may face greater competition in the future.

We compete with other non-nuclear Generation Subsidiaries and, to a lesser extent, with IPPs for the sale of electricity in Korea. According to KEPCO, the IPPs accounted for 26.0%, 26.7%, 26.9% and 29.9% of total power sold in terms of volume in 2018, 2019 and the three months ended March 31, 2019 and 2020, respectively. As of March 31, 2020, there were 20 IPPs in Korea, according to data from the KPX.

Under the Electricity Business Act, the Community Energy System ("CES") enables regional districts to source electricity from IPPs without having to undergo the cost-based pool system used by us to distribute electricity nationwide. A supplier of electricity under the CES must obtain a license from the MOTIE following deliberation by the Korea Electricity Regulatory Commission (the "KOREC"). The purpose of this system is to decentralize electricity supply and thereby reduce transmission costs and improve the efficiency of energy use. These entities do not supply electricity on a national level but are licensed to supply electricity on a limited basis to their respective districts under the CES. As of March 31, 2020, the aggregate generation capacity of suppliers participating in the CES amounted to approximately 5.7% of the total electricity generation capacity in Korea (excluding plants generating electricity primarily for private or emergency use). Wider adoption of the CES would likely erode our market position in the generation of electricity in Korea and may have a material adverse effect on our business, growth, sales and profitability.

While high initial investment costs are an effective barrier to entry for newcomers in the industry, our existing competitors are planning to make substantial investments in expanding their power generation capacity. If such capacity expansion outpaces the general demand for electricity in Korea, the price of electricity in Korea may decrease, which may have a material adverse effect on our results of operations.

We may not be successful in implementing new business strategies.

As part of our overall business strategy, we plan to undertake new, or expand existing, projects such as expanding generation capacity under the applicable Basic Plan, strengthening our renewable energy generation capabilities under the RPS initiative and expanding in overseas markets, particularly in the construction and operation of power plants which may lead to increased potential liabilities.

Due to their inherent uncertainties, such new and expanded strategic initiatives expose us to a number of risks and challenges, including the following:

- unanticipated capital expenditures and additional compliance requirements;
- less growth or profit than we currently anticipate with no assurance that such business activities will become profitable;
- failure to identify and enter into alternative business areas in a timely fashion, putting us at a disadvantage vis-a-vis competitors, particularly in overseas markets; and
- failure to hire or retain personnel who are able to supervise and conduct the relevant business activities.

As part of our business strategy, particularly in relation to overseas expansion, fuel sources procurement and renewable energy development, we may also, on a selective basis, seek, evaluate or engage in potential acquisitions, mergers, combinations or other similar opportunities, including with existing or future joint ventures and strategic alliances. The prospects of these initiatives are uncertain, and there can be no assurance that we will be able to successfully implement or grow new ventures, and these ventures may prove more difficult or costly than we presently expect. In addition, we regularly review the profitability and growth potential of our businesses. As a result of such review, we may decide to exit from or reduce the resources that we allocate to new business ventures in the future. There is a risk that these ventures may not achieve profitability or operational efficiencies to the extent that we presently expect and we may fail to recover investments or expenditures we have already made. Any of the foregoing may have a material adverse effect on our reputation, business, financial condition, results of operations and cash flows.

We plan to pursue international expansion opportunities that may subject us to different or greater risk from those associated with our domestic operations.

While our operations have, to date, been primarily based in Korea, we plan to expand, on a selective basis, our overseas operations in the future. In particular, we plan to further diversify the geographic focus of our operations from Asia to the rest of the world. We also plan to expand our project portfolio, which has to date involved technical advice and development of energy fuels, to include the construction and operation of power plants as well as generation business using biomass and other renewable energy sources pursuant to the Clean Development Mechanism ("CDM"). The CDM is defined in the Kyoto Protocol and allows industrialized countries to meet their emission reduction commitments with reduced impact on their economies by investing in emission reductions wherever it is relatively cheaper and accessible globally.

Overseas operations generally carry risks that are different from those we face in our domestic operations. These risks include:

- challenges of complying with multiple foreign laws and regulatory requirements, including tax laws and laws regulating our operations and investments;
- volatility of overseas economic conditions, including fluctuations in foreign currency exchange rates;
- difficulties in enforcing creditors' rights in foreign jurisdictions;
- risk of expropriation and exercise of sovereign immunity where the counterparty is a foreign government;

- difficulties in establishing, staffing and managing foreign operations;
- differing labor regulations;
- political and economic instability, natural calamities, war and terrorism;
- lack of familiarity with local markets and competitive conditions;
- changes in applicable laws and regulations in Korea that affect foreign operations; and
- obstacles to the repatriation of earnings and cash.

Any failure by us to recognize or respond to these differences may adversely affect the success of our operations in those markets, which in turn could materially and adversely affect our business and results of operations.

Changes in accounting standards could impact our results of operations and financial condition.

The accounting standard setters and other regulatory bodies periodically change the financial accounting and reporting standards that govern the preparation of our consolidated financial statements. For example, K-IFRS 1116, which has been adopted for financial reporting periods beginning on or after January 1, 2019, changes the accounting method for leases by lessees. Under K-IFRS 1116, a lessee is required to recognize a right-of-use asset representing its right to use the underlying leased asset and a lease liability representing its obligation to make lease payments, while previously, lease payments were recognized as an expense. Due to such recognition of leases as financial liabilities, we have experienced a corresponding increase in our debt levels. For the impact of the adoption of K-IFRS 1116, see Note 2(1) to our audited annual consolidated financial statements as of and for the year ended December 31, 2019. Such changes made to accounting standards can materially impact how we record and report our results of operations and, in turn, can adversely affect our financial condition.

Risks Relating to Korea

If economic conditions in Korea deteriorate, our current business and future growth could be materially and adversely affected.

We are incorporated in Korea, where most of our assets are located and most of our income is generated. As a result, we are subject to political, economic, legal and regulatory risks specific to Korea, and our performance and successful fulfillment of our operational strategies are dependent in large part on the overall Korean economy. The economic indicators in Korea in recent years have shown mixed signs of growth and uncertainty, and future growth of the Korean economy is subject to many factors beyond our control, including developments in the global economy. Any future deterioration of the Korean or global economy could adversely affect our business, financial condition and results of operations.

Developments that could have an adverse impact on Korea's economy include:

- declines in consumer confidence and a slowdown in consumer spending;
- adverse conditions or developments in the economies of countries and regions that are important export markets for Korea, such as China, the United States, Europe and Japan, or in emerging market economies in Asia or elsewhere, including as a result of deteriorating economic and trade relations between the United States and China and increased uncertainties resulting from the United Kingdom's exit from the European Union;
- adverse changes or volatility in foreign currency reserve levels, commodity prices (including oil prices), exchange rates (including fluctuation of the U.S. dollar, the Euro or the Japanese Yen exchange rates or revaluation of the Chinese Renminbi), interest rates, inflation rates or stock markets;
- the occurrence of severe health epidemics in Korea and other parts of the world (such as the ongoing global outbreak of COVID-19, which has been characterized as a pandemic by The World Health Organization);

- deterioration in economic or diplomatic relations between Korea and its trading partners or allies, including deterioration resulting from territorial or trade disputes or disagreements in foreign policy (such as the ongoing trade disputes with Japan);

- increased sovereign default risk in select countries and the resulting adverse effects on the global financial markets;

- investigations of large Korean business groups and their senior management for possible misconduct;

- a continuing rise in the level of household debt and increasing delinquencies and credit defaults by retail and small-and medium-sized enterprise borrowers in Korea;

- the economic impact of any pending or future free trade agreements or of any changes to existing free trade agreements;

- social and labor unrest;

- substantial changes in the market prices of Korean real estate;

- a decrease in tax revenue and a substantial increase in the Government's expenditures for fiscal stimulus measures, unemployment compensation and other economic and social programs that, together, would lead to an increased government budget deficit;

- financial problems or lack of progress in the restructuring of Korean business groups, other large troubled companies, their suppliers or the financial sector;

- loss of investor confidence arising from corporate accounting irregularities or corporate governance issues concerning certain Korean companies;

- increases in social expenditures to support an aging population in Korea or decreases in economic productivity due to the declining population size in Korea;

- geo-political uncertainty and the risk of further attacks by terrorist groups around the world;

- political uncertainty or increasing strife among or within political parties in Korea;

- hostilities or political or social tensions involving oil producing countries in the Middle East (including a potential escalation of hostilities between the U.S. and Iran) and Northern Africa and any material disruption in the global supply of oil or sudden increase in the price of oil;

- natural or man-made disasters that have a significant adverse economic or other impact on Korea or its major trading partners;

- political or social tensions involving Russia and any resulting adverse effects on the global supply of oil or the global financial markets; and

- an increase in the level of tensions or an outbreak of hostilities between North Korea and Korea or the United States.

Escalations in tensions with North Korea could have an adverse effect on us and the market value of the Notes.

Relations between Korea and North Korea have been tense throughout Korea's modern history. The level of tension between the two Koreas has fluctuated and may increase abruptly as a result of current and future events. In particular, there have been heightened security concerns in recent years stemming from North Korea's nuclear weapon and ballistic missile programs as well as its hostile military actions against Korea. Some of the significant incidents in recent years include the following:

- North Korea renounced its obligations under the Nuclear Non-Proliferation Treaty in January 2003 and conducted six rounds of nuclear tests since October 2006, including claimed detonations of hydrogen bombs and warheads that can be mounted on ballistic missiles. Over the years, North Korea has continued to conduct a series of missile tests, including ballistic missiles launched from submarines and intercontinental ballistic missiles that it claims can reach the United States mainland. In response, the Government has repeatedly condemned the provocations and flagrant violations of relevant United Nations Security Council resolutions. In February 2016, the Government also closed the inter-Korea Gaesong Industrial Complex in response to North Korea's fourth nuclear test in January 2016. Internationally, the United Nations Security Council has passed a series of resolutions condemning North Korea's actions and significantly expanding the scope of sanctions applicable to North Korea, most recently in December 2017 in response to North Korea's intercontinental ballistic missile test in November 2017. Over the years, the United States and the European Union have also expanded their sanctions applicable to North Korea.

- In March 2010, a Korean naval vessel was destroyed by an underwater explosion, killing many of the crewmen on board. The Government formally accused North Korea of causing the sinking, while North Korea denied responsibility. Moreover, in November 2010, North Korea fired more than one hundred artillery shells that hit Korea's Yeonpyeong Island near the Northern Limit Line, which acts as the de facto maritime boundary between Korea and North Korea on the west coast of the Korean peninsula, causing casualties and significant property damage. The Government condemned North Korea for the attack and vowed stern retaliation should there be further provocation.

North Korea's economy also faces severe challenges, which may further aggravate social and political pressures within North Korea.

Although bilateral summit meetings were held between the two Koreas in April, May and September 2018 and between the United States and North Korea in June 2018, February 2019 and June 2019, there can be no assurance that the level of tensions affecting the Korean peninsula will not escalate in the future. Any increase in tensions, which may occur, for example, if North Korea experiences a leadership crisis, high-level contacts between Korea and North Korea break down or military hostilities occur, could have a material adverse effect on the Korean economy and on our business, financial condition and results of operations and the price of the Notes, including a downgrade in our credit rating or of the Notes.

There are special risks involved with investing in securities of Korean companies.

As we are a Korean company and operate in a business and cultural environment that is different from that of other countries, there are risks associated with investing in its securities that are not typical for investments in securities of companies in other jurisdictions.

Under the Foreign Exchange Transactions Act of Korea and its Enforcement Decree and regulations under that Act and Decree (collectively referred to as the "Foreign Exchange Transaction Laws"), if the Government deems that certain emergency circumstances, including sudden fluctuations in interest rates or exchange rates, extreme difficulty in stabilizing the balance of payments or substantial disturbance in the Korean financial and capital markets, are likely to occur, it may impose any necessary restriction such as requiring Korean or foreign investors to obtain prior approval from the Ministry of Economy and Finance for the acquisition of Korean securities or for the repatriation of interest, dividends or sales proceeds arising from Korean securities or other types of capital transactions. Moreover, if the Government deems it necessary on account of war, armed conflict, natural disaster or grave and sudden changes in domestic or foreign economic circumstances or similar events or circumstances, the Minister of Economy and Finance may temporarily suspend performance under any or all foreign exchange transactions, in whole or in part, to which the Foreign Exchange Transaction Laws apply (including suspension of payment and receipt of foreign exchange) or impose an obligation to deposit or sell any means of payment to the Bank of Korea or certain other governmental agencies or financial institutions.

In addition, our audited consolidated financial statements and unaudited interim condensed consolidated financial statements included in this Offering Circular are presented in accordance with K-IFRS, and our future financial statements will be prepared in accordance with K-IFRS, which differ in certain respects from accounting principles applicable to companies in certain other countries, including the United States. There may also be less publicly available information about Korean companies, such as us, than is regularly made available by companies in other countries. In making an investment decision, investors must rely upon their own examination of us, the terms of the offering and the financial and other information contained in this Offering Circular.

Risks Relating to the Notes

The Notes may not be a suitable investment for all investors seeking exposure to "green," "social," or "sustainability" assets.

The net proceeds from the sale of the Notes will be allocated to finance or refinance, in whole or in part, existing and future projects that provide environmental or social benefits that fall under the Green and Social Eligible Categories, including to mitigate the adverse effects of the COVID-19 pandemic. See "Use of Proceeds." The examples of Green and Social Eligible Categories in "Use of Proceeds" are for illustrative purposes only and no assurance can be provided that disbursements for projects with these specific characteristics will be made by us during the term of the Notes. Our Sustainability Finance Framework and the Second Party Opinion (as defined in "Use of Proceeds") are not incorporated into, and do not form a part of, this Offering Circular.

There is currently no market consensus on what precise attributes are required for a particular project or series of notes to be defined as "green," "social" or "sustainability" and therefore no assurance can be provided to potential investors that selected the Green and Social Eligible Categories will meet all investor expectations regarding environmental or social performance. Although the Green and Social Eligible Categories will be selected in accordance with the categories recognized under our Sustainability Finance Framework, and will be developed in accordance with relevant legislation and standards, there can be no guarantee that the projects will deliver the environmental or social benefits as anticipated, or that adverse environmental or social impacts will not occur during the design, construction, commissioning or operation of any such projects. In addition, where any negative impacts are insufficiently mitigated, the projects may become controversial and may be criticized by activist groups or other stakeholders.

The Second Party Opinion may not reflect the potential impact of all risks related to the structure, market, additional risks discussed above and other factors that may affect the value of the Notes. The Second Party Opinion is not a recommendation to buy, sell or hold securities and is only current as of the date that the Second Party Opinion was initially issued. In addition, although we have agreed to certain reporting and use of proceeds obligations in connection with certain environmental and social criteria, our failure to comply with such obligations will not constitute a breach or an event of default under the Notes. A withdrawal of the Second Party Opinion or any failure by us to use an amount equivalent to the net proceeds from the issuance of the Notes on Green and Social Eligible Categories or to meet or continue to meet the investment requirements of certain environmentally-or socially-focused investors with respect to the Notes may affect the value of the Notes and may have consequences for certain investors with portfolio mandates to invest in "green," "social" or "sustainability" assets.

No assurance can be provided with respect to the suitability of the Second Party Opinion or that the Notes will fulfill the criteria required to qualify as "green," "social" or "sustainability" bonds. Each potential purchaser of Notes should determine for itself the relevance of the information contained in this Offering Circular regarding the use of the net proceeds from the issuance of the Notes and its purchase of Notes should be based upon such investigation as it deems necessary.

The Notes are unsecured obligations.

As the Notes are unsecured obligations, their repayment may be compromised if:

- we enter into bankruptcy, liquidation, reorganization or other winding-up proceedings;
- there is a default in payment under our secured indebtedness or other unsecured indebtedness; or
- there is an acceleration of any of our indebtedness.

If any of these events were to occur, our assets and any amounts received from the sale of such assets may not be sufficient to pay amounts due on the Notes.

The Notes are subject to transfer restrictions.

The Notes will not be registered under the Securities Act or any state securities laws and may not be offered or sold within the United States except pursuant to an exemption from, or in a transaction not subject to, the registration requirements of the Securities Act and, in each case, in accordance with applicable state securities laws. In addition, subject to the conditions set forth in the Fiscal Agency Agreement (as defined in "Terms and Conditions of the Notes"), a Note may be transferred only if the principal amount of Notes transferred is at least US$200,000. For a further discussion of the transfer restrictions applicable to the Notes, see "Terms and Conditions of the Notes" and "Transfer Restrictions."

The Notes have not been and will not be registered under the Financial Investment Services and Capital Markets Act (the "FSCMA"). Accordingly, the Notes may not be offered, sold or delivered, directly or indirectly, in Korea or to, or for the account or benefit of, any resident of Korea (as such term is defined under the Foreign Exchange Transactions Act of Korea and the regulations thereunder), or to others for re-offering or resale, directly or indirectly, in Korea or to any residents of Korea, except as otherwise permitted under applicable Korean laws and regulations.

In addition, during the first year after the issuance of the Notes, the Notes may not be transferred to any resident of Korea other than a "qualified institutional buyer" (a "Korean QIB", as defined in the Regulation on the Issuance, Public Disclosure, Etc. of Securities of Korea) who is registered with the Korea Financial Investment Association ("KOFIA") as a Korean QIB, provided that the amount of the Notes acquired by such Korean QIBs in the primary market is limited to no more than 20% of the aggregate issue amount of the Notes.

The Notes are subject to prescription regulations in Korea.

Failure to exercise a right of action for more than a certain period of time may operate as a bar to exercise of such right. Under Korean laws, claims against the issuer in respect of the payment of principal of notes or bonds are prescribed upon the expiry of ten years, and claims for payment of interest in respect of notes or bonds are prescribed upon the expiry of five years, in each case, from the relevant due date as adjusted by any acceleration or otherwise, in respect thereof. If the Note holders fail to exercise his or her right of payment for more than the period set forth above, the Korean courts may not enforce a claim for payment for principal or interest in respect of the Notes.

There is no existing trading market for the Notes and, therefore, the Notes offer limited liquidity.

The Notes constitute a new issue of securities for which there is no existing market. Approval in-principle has been received from the SGX-ST for the listing and quotation of the Notes on the SGX-ST. The offer and sale of the Notes is not conditioned on obtaining a listing and quotation of the Notes on the SGX-ST or any other exchange. Although the Initial Purchasers have advised us that they currently intend to make a market in the Notes, they are not obligated to do so, and any market-making activity with respect to the Notes, if commenced, may be discontinued at any time without notice in their sole discretion. For a further discussion of the Initial Purchasers' planned market-making activities, see "Plan of Distribution."

No assurance can be given as to the liquidity of, or the development and continuation of an active trading market for, the Notes. If an active trading market for the Notes does not develop or is not maintained, the market price and liquidity of the Notes may be adversely affected. If such a market were to develop, the Notes could trade at prices that may be higher or lower than the price at which the Notes are issued depending on many factors, including:

- prevailing interest rates;
- our results of operations and financial condition;
- the rate of exchange between Won and the currency of the Notes;
- political and economic developments in and affecting Korea and other regions;
- the market conditions for similar securities; and
- the financial condition and stability of the Korean financial and other sectors.

The Notes are not protected by restrictive covenants.

The Notes and the Fiscal Agency Agreement relating to the Notes do not contain restrictive financial or operating covenants or restrictions on the payment of dividends, the incurrence of indebtedness, the sale of assets or the issuance or repurchase of securities by us.

USE OF PROCEEDS

The net proceeds from the sale of the Notes, after deducting a combined management and underwriting commission but not estimated expenses of the offering, will be US$298,164,000. An amount equal to the net proceeds of the Notes ("Sustainability Bond Proceeds") will be allocated to finance or refinance, in whole or in part, existing and future projects that provide environmental or social benefits, including to mitigate the adverse effects of the COVID-19 pandemic, relating to (i) renewable energy, (ii) pollution prevention and control, (iii) terrestrial and aquatic biodiversity conservation, (iv) green buildings, (v) small-and medium-sized enterprise financing and microfinance, (vi) employment generation and (vii) socioeconomic advancement and empowerment ("Green and Social Eligible Categories") in accordance with our Sustainability Finance Framework, which is in alignment with the Green Bond Principles 2018, the Social Bond Principles 2018 and the Sustainability Bond Guidelines 2018 as administered by the International Capital Markets Association and the Green Loan Principles as administered by the Loan Market Association.

While the Company's Sustainability Bonds typically focus on certain target populations as defined in the Company's Sustainability Finance Framework, the Notes may also address the needs of the general population affected by the COVID-19 pandemic, alleviating any socioeconomic crisis caused by such pandemic. The Company may re-allocate certain portions of its proceeds from the issuance of the Notes to other projects as described in the Company's Sustainability Finance Framework once the spread of COVID-19 has substantially been contained.

Examples of Green and Social Eligible Categories include the following:

- renewable energy: development and investment in technology and related infrastructure supporting the production of energy from renewable sources, such as solar, hydro (less than 25 megawatt), wind and biomass.

- pollution prevention and control: (i) development and investment in technology and related services to create sustainable environments by restoring the environment and minimizing pollution by eliminating or significantly mitigating environmental pollutants; (ii) production of energy from waste-to-energy power plants; (iii) investment in R&D activities to develop technologies to reduce fine dust emissions and improve air pollution prevention facilities and (iv) investment in waste management and recycling projects, excluding landfilling.

- terrestrial and aquatic biodiversity conservation: development and investment in activities that protect and improve biodiversity.

- green buildings: construction and renovation of green buildings that meet recognized Green Building Standards.

- small- and medium-sized enterprise financing and microfinance: provide financial support to small- and medium-sized enterprises.

- employment generation: create employment opportunities for underprivileged groups, including the youth, the elderly, and the disabled through foundations, job training and knowledge sharing.

- socioeconomic advancement and empowerment: provide financing to social enterprises.

Project Evaluation and Selection Process

Green and Social Eligible Categories will be initially identified and proposed by our business units if they have met all lending criteria established by us for lending in the ordinary course of our business. Our Sustainable Financing Steering Committee ("SFSC"), which is made up of representatives from our ethics & culture department, job creation department, finance department, civil & architecture engineering department, new & renewable energy department, small & medium enterprise support department and community cooperation department, will review the proposed Green and Social Eligible Categories to determine their compliance with our Sustainable Financing Framework. The SFSC will review the allocation of proceeds on an annual basis to determine whether any changes or updates to the existing allocations would be necessary.

Management of Proceeds

The proceeds of each Sustainable Financing Transaction ("SFT") will be deposited in our general funding accounts for allocation to Green and Social Eligible Categories. The allocation of Green and Social Eligible Categories will be recorded in our Sustainable Financing Register, which will be reviewed by our SFSC on an annual basis. Any balance of the Sustainability Bond Proceeds not yet allocated to Green and Social Eligible Categories will be managed in accordance with our general liquidity management policies and may be invested domestically or internationally in money market instruments with satisfactory credit ratings and market liquidity until they are allocated to Green and Social Eligible Categories.

Reporting

We will disclose our use of proceeds from SFTs on an annual basis on our website, annual reports or sustainability reports. The allocation reporting will comprise the list and breakdown of Green and Social Eligible Categories along with the balance of unallocated proceeds. The impact reporting will be disclosed where possible and will comprise relevant impact indicators per each Green and Social Eligible Category. Sustainalytics, an external consultant, issued an opinion dated March 13, 2019 regarding the suitability of the Notes as an investment in connection with certain environmental criteria (the "Second Party Opinion"). The Second Party Opinion and our Green Bond Framework are publicly available on our investor relations website: *https://www.koenergy.kr/kosep/en/iv/enivBoard/main.do?menuCd=EN0403*.

EXCHANGE RATES

The table below sets forth, for the periods and dates indicated, information concerning the Market Average Exchange Rate, announced by Seoul Money Brokerage Services, Ltd., between Won and U.S. dollars and rounded to the nearest tenth of one Won. No representation is made that the Won or U.S. dollar amounts referred to herein could have been or could be converted into U.S. dollars or Won, as the case may be, at any particular rate or at all.

Period	At End of Period	Average Rate(1)	High	Low
	(Won per US$1.00)			
2015	1,172.0	1,131.5	1,203.1	1,068.1
2016	1,208.5	1,160.5	1,240.9	1,093.2
2017	1,071.4	1,130.8	1,208.5	1,071.4
2018	1,118.1	1,100.3	1,142.5	1,057.6
2019	1,157.8	1,165.7	1,218.9	1,111.6
2020 (through July 23)	1,193.7	1,206.2	1,280.1	1,153.1
January	1,183.5	1,164.3	1,183.5	1,153.1
February	1,215.9	1,193.8	1,217.7	1,179.8
March	1,222.6	1,220.1	1,280.1	1,185.0
April	1,225.2	1,225.2	1,237.6	1,212.3
May	1,239.4	1,228.7	1,242.0	1,217.7
June	1,200.7	1,210.0	1,237.6	1,192.8
July (through July 23)	1,193.7	1,199.8	1,206.4	1,192.9

Source: Seoul Money Brokerage Services, Ltd.

(1) The average rate for each year is calculated as the average of the Market Average Exchange Rates on each business day during the relevant year (or portion thereof). The average rate for a month is calculated as the average of the Market Average Exchange Rates on each business day during the relevant month (or portion thereof).

CAPITALIZATION

The following table sets forth the Company's capitalization (1) as derived from the Company's unaudited interim condensed consolidated financial statements as of March 31, 2020 included in this Offering Circular and (2) as adjusted to give effect to the net proceeds of US$298,164,000 from the issuance of the Notes on the assumption that proceeds from the issuance of the Notes are not used for immediate repayment of outstanding indebtedness.

The table below should be read in connection with the Company's unaudited interim condensed consolidated financial statements as of March 31, 2020 included in this Offering Circular.

	As of March 31, 2020			
	Actual		As Adjusted	
	(in billions of Won and millions of U.S. dollars(1), except share par value)			
Long-term debt:				
Borrowings (excluding current portion), net of discount	₩ 493	US$ 403	₩ 493	US$ 430
Debt Securities (excluding current portion), net of discount	2,630	2,151	2,994	2,449
Total long-term debt	₩3,123	US$2,554	₩3,487	US$2,879
Equity:				
Contributed capital	₩1,154	US$ 944	₩1,154	US$ 944
Retained earnings:				
Legal reserves	133	109	133	109
Voluntary reserves	2,432	1,989	2,432	1,989
Unappropriated retained earnings	1,168	955	1,168	955
Hybrid securities	399	326	399	326
Other components of equity	(196)	(160)	(196)	(160)
Non-controlling interests	39	32	39	32
Total equity	₩5,129	US$4,195	₩5,129	US$4,195
Total capitalization(2)(3)	₩8,252	US$6,749	₩8,616	US$7,074

Notes:

(1) Translated Won and U.S. dollar amounts at the Market Average Exchange Rate of Won 1,222.6 to US$1.00 on March 31, 2020.

(2) Total capitalization is defined as total long-term debt plus total equity.

(3) Except as disclosed herein, there has been no material change in the Company's capitalization since March 31, 2020.

THE KOREAN ELECTRICITY INDUSTRY

Background

Total demand for electricity in Korea increased by 2.2% in 2017 and 3.6% in 2018 but decreased by 1.1% in 2019, in each case, year on year, according to KEPCO. The consumption of electric power is expected to increase by 2.1% per year from 2017 to 2031, according to the Eighth Basic Plan.

Historically, KEPCO and the Generation Subsidiaries have made substantial expenditures for the construction of power plants and other facilities to meet increased demand for electric power. Subject to the Restructuring Plan as defined and discussed in "– Restructuring of the Electricity Industry in Korea" below, KEPCO and the Generation Subsidiaries plan to continue to make substantial expenditures to expand and enhance their generation, transmission and distribution system in the future.

The Korean electric utility industry traces its origin to the establishment of the first electric utility company in Korea in 1898. On July 1, 1961, the industry was reorganized by the merger of Korea Electric Power Company, Seoul Electric Company and South Korea Electric Company, which resulted in the formation of Korea Electric Company. From 1976 to 1981, the Government acquired the private minority shareholdings in Korea Electric Company. After the Government had acquired all of the outstanding shares of Korea Electric Company, Korea Electric Company dissolved, and KEPCO was incorporated in 1981, assuming the assets and liabilities of Korea Electric Company. KEPCO ceased to be wholly owned by the Government in 1989 when the Government sold 21.0% of its common stock. As of March 31, 2020, the Government owned 51.1% (including indirect holdings by Korea Development Bank, which is wholly owned by the Government) of the outstanding shares of KEPCO's common stock.

The Korea Electric Power Corporation Act requires that the Government own at least 51% of KEPCO's capital stock. Direct or indirect ownership of more than 50% of KEPCO's outstanding common stock enables the Government to control the approval of certain corporate matters which require a stockholders' resolution, including approval of dividends. The rights of the Government and Korea Development Bank as holders of KEPCO's common stock are exercised by the MOTIE in consultation with the Ministry of Economy and Finance (the "MOEF"). To our knowledge, the Government currently has no plan to cease to own, directly or indirectly, at least 51% of KEPCO's outstanding common stock.

Prior to the corporate reorganization effected on April 2, 2001, which created six generation subsidiaries wholly owned by KEPCO (including us), KEPCO was the principal electricity generation company in Korea. KEPCO continues to be the principal electricity transmission and distribution company in Korea, subject to the implementation of the Restructuring Plan.

Restructuring of the Electricity Industry in Korea

On January 21, 1999, the MOTIE published a plan to restructure the electricity industry (the "Restructuring Plan"). The overall objectives of the Restructuring Plan were to:

- introduce competition and thereby increase efficiency in the Korean electricity industry,
- ensure a long-term, inexpensive and stable electricity supply, and
- promote consumer convenience through the expansion of consumer choice.

The following is a description of the Restructuring Plan and the Government's position relating to the Restructuring Plan.

Phase I

During Phase I, which was the preparation stage for Phase II and lasted from January 1, 1999 to April 2, 2001, KEPCO continued to be the principal electricity generator, with several IPPs supplying electricity to it under existing power purchase agreements. On February 23, 2001, KEPCO's board of directors approved a plan to split its non-nuclear and non-hydroelectric generation capacity into five separate wholly owned generation subsidiaries, namely, Korea East-West Power Co., Ltd. ("EWP"), Korea Southern Power Co., Ltd. ("KOSPO"), Korea Western Power Co., Ltd. ("KOWEPO"), Korea Midland Power Co., Ltd. ("KOMIPO") and us, each with its own management structure, assets and liabilities. KEPCO's hydroelectric and nuclear generation capacity was transferred into a separate wholly owned generation subsidiary, Korea Hydro & Nuclear Power Co., Ltd. ("KHNP"). On March 16, 2001, KEPCO's shareholders approved the plan to establish the Generation Subsidiaries effective as of April 2, 2001.

The Government's objectives in dividing the power generation capacity into separate generation subsidiaries were principally to:

- introduce competition and thereby increase efficiency in the electricity generation industry in Korea, and

- ensure the stable supply of electricity in Korea.

Following the implementation of Phase I, KEPCO retained, until the adoption of the CES in July 2004, its monopoly position with respect to the transmission and distribution of electricity in Korea.

While KEPCO's ownership percentage of the non-nuclear and non-hydroelectric generation subsidiaries was to be decided by the ultimate form of the Restructuring Plan approved by the Government, to our knowledge, KEPCO plans to continue to retain 100% ownership of both KHNP and the transmission and distribution business.

Phase II

Phase II of the Restructuring Plan began on April 2, 2001. For Phase II, the Government introduced a competitive or bidding pool system under which KEPCO purchases power from the Generation Subsidiaries and other companies for transmission and distribution to customers. Such competitive bidding pool system, which is a cost-based system, was established on April 2, 2001. For a further description of the pool system, see "– Power Purchase – Cost-based Pool System" below.

Pursuant to the Electricity Business Act amended on December 23, 2000, the Government established the KPX on April 2, 2001 to deal with the sale of electricity and implement regulations governing the electricity market to allow for electricity distribution through a competitive bidding process. The Government also established the KOREC on April 27, 2001 to regulate the restructured Korean electricity industry and to ensure fair competition. As part of this process, the KPX established the Electricity Market Rules relating to the operation of the bidding pool system. To amend the Electricity Market Rules, the KPX must have the proposed amendment reviewed by the KOREC and then obtain the approval of the MOTIE.

The KOREC's main functions include implementation of necessary standards and measures for electricity market operation and review of matters relating to licensing participants in the Korean electricity industry. The KOREC also acts as an arbitrator in disputes involving utility rates and participants in the Korean electricity industry and consumers and investigates illegal or deceptive activities of the participants in the Korean electricity industry.

Privatization of Non-nuclear Generation Subsidiaries

In April 2002, the MOTIE released the basic privatization plan for the five non-nuclear Generation Subsidiaries, including us. KEPCO commenced the process for selling its interest in us in 2002. According to the original plan, this process was, in principle, to take the form of a sale of management control, potentially supplemented by an initial public offering as a way of broadening the investor base.

Suspension of the Plan to Form and Privatize Distribution Subsidiaries

In September 2003, the Tripartite Commission, which included, among others, representatives from the Government and the leading businesses and labor unions in Korea, established the Joint Study Group on Reforming Electricity Distribution Network to propose a methodology of introducing competition within the industry for distribution of electricity. In June 2004, based on a report published by this Joint Study Group, the Tripartite Commission issued a resolution that recommended halting the plan to form and privatize the distribution subsidiaries, and in lieu thereof, creating independent business divisions within KEPCO, namely, the "strategy business units," as a way of improving operational efficiency and internal competition among the district divisions. This resolution was adopted by the MOTIE in June 2004, and KEPCO subsequently commissioned a third party consultant to conduct a study on implementing plans related to the creation of the strategy business units and solicited comments on the study from various parties, including labor unions and the Government. Based on this study and the related comments, in September 2006, KEPCO established nine strategy business units (which, together with KEPCO's other business units, were subsequently restructured into 14 business units in February 2012) having a separate management structure with limited autonomy and separate financial accounting and performance evaluation criteria. Based on whether the strategy business units successfully achieve their intended goals of improving operational efficiency and internal competition, KEPCO may expand the use of strategy business units.

Introduction of Market-based Public Enterprise System

On August 25, 2010, the Government announced an electricity industry development plan through which the Government aims to increase efficiency through fostering competition and strengthen the autonomy of public companies. Pursuant to this plan, in December 2010, the MOTIE announced guidelines for a cooperative framework between KEPCO and the Generation Subsidiaries, and in January 2011, the five non-nuclear Generation Subsidiaries formed a "joint cooperation unit" and transferred their pumped-storage hydroelectric business units to KHNP. Furthermore, in January 2011, the six Generation Subsidiaries were officially designated as "market-oriented public enterprises," whereupon the president of each such subsidiary is required to enter into a management contract directly with the minister of the MOTIE, performance evaluation of such subsidiaries is conducted by the Public Enterprise Management Evaluation Commission, and the president and the statutory auditor of each such subsidiary are appointed by the President of Korea while the selection of outside directors is subject to approval by the minister of the MOEF. Previously, the president of each such subsidiary entered into a management contract with KEPCO's president, performance evaluation of such subsidiaries was conducted by KEPCO's evaluation committee, and the president and the statutory auditor of each such subsidiary were appointed by, and the selection of outside directors was subject to approval by, KEPCO's president.

Power Purchase

Cost-based Pool System

Since April 2001, the purchase and sale of electricity in Korea is generally required to be made through the KPX, which is a statutory not-for-profit organization established under the Electricity Business Act responsible for setting the price of electricity, handling the trading and collecting relevant data for the electricity market in Korea. The suppliers of electricity in Korea primarily consist of the Generation Subsidiaries, including us, which were spun-off from KEPCO in April 2001, and IPPs, which numbered 20 as of March 31, 2020 according to data from the KPX. KEPCO distributes electricity purchased through the KPX to end users.

The price of electricity in the Korean electricity market is determined principally based on the cost of generating electricity using a system known as the "cost-based pool" system, under which the Generation Subsidiaries, including us, fully pass through changes in fuel costs to KEPCO in its purchase through KPX of electricity from the Generation Subsidiaries, including us. Under the cost-based pool system, the price of electricity has two principal components, namely the marginal price (representing, in principle, the variable cost of generating electricity) and the capacity price (representing, in principle, the fixed cost of generating electricity).

Marginal Price

The primary purpose of the marginal price is to compensate the generation companies for fuel costs, which represents the principal component of the variable costs of generating electricity. Such marginal price is referred to as the "system marginal price." The concept of marginal price under the cost-based pool system has undergone several changes in recent years in large part due to the sharp fluctuations in fuel prices. For example, prior to December 31, 2006, the marginal price operated on a two-tiered structure, namely, a "base load" marginal price applicable to electricity generated from nuclear fuels and coals, which tend to be less expensive per unit of electricity than electricity generated from LNG, oil and hydroelectric power to which a "non-base load" marginal price applied. The base load marginal price and the non-base load marginal price were generally set at levels so that electricity generated from cheaper fuels could be utilized first while ensuring a relatively fair rate of return to all generation units. However, when the price of coal rose sharply beginning in the second half of 2006, the pre-existing base load marginal price was abolished and a market cap by the name of "regulated market price" was introduced in its stead for electricity generated from base load fuels, with the regulated market price being set at a level higher than the pre-existing base load marginal price in order to compensate the Generation Subsidiaries for the rapid rise in the price of coal. However, when the price of coal continued to rise sharply above the level originally assumed in setting the regulated market price, this had the effect of undercutting KEPCO's profit margin as the purchaser of electricity from the Generation Subsidiaries, although the Generation Subsidiaries were able to maintain a better margin under the regulated market price regime than under the pre-existing base load marginal price regime. Accordingly, on May 1, 2008, the regulated market price regime was abolished, and the current system of "system marginal price" was introduced in order to set the marginal price in a more flexible way by using the concept of an "adjusted coefficient" tailored to each fuel type.

Under the system marginal price regime currently in effect, the marginal price of electricity at which the Generation Subsidiaries sell electricity to KEPCO is determined using the following formula:

Marginal Price = Variable Cost + [System Marginal Price – Variable Cost] * Adjusted Coefficient

The system marginal price represents, in effect, the marginal price of electricity at a given hour at which the projected demand for electricity and the projected supply of electricity for such hour intersect, as determined by the merit order system, which is a system used by the KPX to allocate which generation units will supply electricity for which hour and at what price. The projected demand for electricity for a given hour is determined by the KPX based on a forecast made one day prior to trading, and such forecast takes into account, among others, historical statistics relating to demand for electricity nationwide by day and by hour, after taking into account, among others, seasonality and peak-hour versus non-peak hour demand analysis. The projected supply of electricity at a given hour is determined as the aggregate of the available capacity of all generation units that have submitted bids to supply electricity for such hour. These bids are submitted to the KPX one day prior to trading.

Under the merit order system, the generation unit with the lowest variable cost of producing electricity among all the generation units that have submitted a bid for a given hour is first awarded a purchase order for electricity up to the available capacity of such unit as indicated in its bid. The generation unit with the next lowest variable cost is then awarded a purchase order up to its available capacity in its bid, and so forth, until the projected demand for electricity for such hour is met. The variable cost of the generation unit that is the last to receive the purchase order for such hour is referred to as the system marginal price, which also represents the most expensive price at which electricity can be supplied at a given hour based on the demand and supply for such hour. Generation units whose variable costs exceed the system marginal price for a given hour do not receive purchase orders to supply electricity for such hour. The variable cost of each generation unit is determined by the Cost Evaluation Committee on a monthly basis and reflected in the following month based on the fuel costs as of two months prior to such determination. The final allocation of electricity supply, however, is further adjusted on the basis of other factors, including the proximity of a generation unit to the geographical area to which power is being supplied, network and fuel constraints and the amount of power loss.

The purpose of the merit order system is to encourage generating units to reduce their electricity generation costs by making their generation process more efficient, sourcing fuels from more cost-effective sources or adopting other cost savings programs. The additional adjustment mechanism is designed to improve the overall cost-efficiency in the distribution and transmission of electricity to the end-users by adjusting for losses arising from the distribution and transmission process.

Under the merit order system, the electricity purchase allocation, the system marginal price and the final allocation adjustment are automatically determined based on an objective formula. The adjusted coefficient, the capacity price and the variable costs are determined in advance of trading by the Cost Evaluation Committee. Accordingly, a supplier of electricity cannot exercise control over the merit order system or its operations to such supplier's strategic advantage.

An adjusted coefficient applies in principle to all generation units operated by the Generation Subsidiaries and the coal-fired generation units operated by IPPs. The adjusted coefficient applicable to the generation units operated by the Generation Subsidiaries is determined based on considerations of, among others, electricity tariff rates, the differential generation costs for different fuel types and the relative fair returns on investment in respect of KEPCO compared to the Generation Subsidiaries. The purpose of the adjusted coefficient here is to prevent electricity trading from resulting in undue imbalances as to the relative financial results among the Generation Subsidiaries as well as between KEPCO (as the purchaser of electricity) and the Generation Subsidiaries (as sellers of electricity). Such imbalances may arise from excessive profit taking by base load generators (on account of their inherently cheaper fuel cost structure compared to non-base load generators) as well as from fluctuations in fuel prices (it being the case that during times of rapid and substantial rises in fuel costs which are not offset by corresponding rises in electricity tariff rates charged by KEPCO to end-users, on a non-consolidated basis, the profitability of KEPCO will decline compared to that of the Generation Subsidiaries since the Generation Subsidiaries are entitled to sell electricity to KEPCO at cost plus a guaranteed margin). In comparison, the adjusted coefficient applicable to the coal-fired generation units operated by IPPs is determined to enable such IPPs to recover the total costs of building and operating such units.

The adjusted coefficient applicable to the Generation Subsidiaries is currently set at the highest level for the marginal price of electricity generated using LNG and oil, followed by coal and nuclear fuel. The differentiated adjusted coefficients reflect the Government's prevailing energy policy objectives and have the effect of setting priorities in the fuel types to be used in electricity generation.

The adjusted coefficient is determined by the Cost Evaluation Committee in principle on an annual basis, although in exceptional cases driven by external or structural factors such as rapid and substantial changes in fuel costs, adjustments to electricity tariff rates or changes in the electricity pricing structure, the adjusted coefficient may be adjusted on a quarterly basis.

Previously, it was contemplated that the vesting contract system would gradually replace the application of the adjusted coefficient. However, since the implementation of the vesting contract system has been suspended indefinitely, it is unlikely to impact the application of the adjusted coefficient in the foreseeable future.

Capacity Price

In addition to payment in respect of the variable cost of generating electricity, the Generation Subsidiaries receive payment in the form of capacity price, the purpose of which is to compensate them for the costs of constructing generation facilities and to provide incentives for new construction. The capacity price is determined annually by the Cost Evaluation Committee based on the construction costs and maintenance costs of a standard generation unit and is paid to each generation company for the amount of available capacity indicated in the bids submitted the day before trading. From time to time, the capacity price is adjusted in ways to soften the impact of changes in the marginal price over time based on the expected rate of return for the Generation Subsidiaries. The reference capacity price and the time-of-the-day capacity coefficient are determined annually before the end of December for the subsequent 12-month period. The reserve capacity factor and the fuel switching factor are determined annually before the end of June for the subsequent 12-month period. Currently, the capacity price is determined using the following formula:

Capacity Price = Reference Capacity Price * Reserve Capacity Factor * Time of the Day Capacity Factor * Fuel Switching Factor

In the three months ended March 31, 2020, the average capacity price of our generation units was Won 11.57/kWh.

The reference capacity price refers to the Korean Won amount per kilowatt-hour payable annually for annualized available capacity indicated in the bids submitted the day before trading (provided that such capacity is actually available on the relevant day of trading), and is determined based on the construction costs and maintenance costs of a standard generation unit and related transmission access facilities, and a base rate for loading electricity. Prior to October 2016, the same reference capacity price applied uniformly to all generation units. Since October 2016, the reference capacity price applies differentially to each generation unit depending on the start year of its commercial operation.

The reserve capacity factor relates to the requirement to maintain a standard capacity reserve margin in the range of 15% in order to prevent excessive capacity build-up as well as induce optimal capacity investment at the regional level. The capacity reserve margin is the ratio of peak demand to the total available capacity. Under this system, generation units in a region where available capacity is insufficient to meet demand for electricity, as evidenced by a failure to meet the standard capacity reserve margin, receive an increased capacity price. Conversely, generation units in a region where available capacity exceeds demand for electricity, as evidenced by exceeding the standard capacity reserve margin, receive a reduced capacity price. Since October 2016, the reserve capacity factor also factors in the transmission loss per generation unit in order to favor transmission of electricity from a nearby generation unit.

The time-of-the-day capacity coefficient allows hourly and seasonal adjustments in order to incentivize the Generation Subsidiaries to operate their generation facilities at full capacity during periods of highest demand. For example, the capacity price paid differs depending on whether the relevant hour is an "on-peak" hour, a "mid-peak" hour or an "off-peak" hour (the capacity price being highest for the on-peak hours and lowest for the off-peak hours) and the capacity price paid is highest during the months of January, July and August when electricity usage is highest due to weather conditions.

The fuel switching factor, which was introduced in October 2016 to promote environmental sensitivities to climate change, seeks to encourage reduced carbon emission by penalizing generation units (mostly coal-fired units) for excessive carbon emission.

Other than subject to the aforementioned variations, the same capacity pricing mechanism applies to all generation units regardless of fuel types used.

Vesting Contract System

On May 20, 2014, the Electricity Business Act was amended, with effect from November 21, 2014, to introduce a vesting contract system to determine the price and quantity of electricity to be sold and purchased through the KPX between the purchaser of electricity (currently, KEPCO) and the sellers of electricity (namely, the Generation Subsidiaries (including us) and IPPs). The application of the adjusted coefficient under the cost-based pool system is planned to be gradually replaced by the vesting contract system.

Under the vesting contract system, electricity generators using low-cost base load fuels (such as nuclear, coal, hydro and by-product gas) at a particular generation unit were to be required to enter into a contract with the purchaser of electricity (currently, KEPCO), which would specify, among other things, the quantity of electricity to be generated and sold from such generation unit and the price at which such electricity would be sold, subject to certain adjustments.

The introduction of the vesting contract system was intended principally to prevent excessive profit-taking by producers of electricity using low-cost base load fuels (such as nuclear, coal, hydro and by-product gas) by replacing the adjusted coefficient as the basis for determining the guaranteed return to generation companies, as well as to enhance the stability of electricity supply by requiring long-term contractual arrangements for the purchase and sale of electricity and promote cost savings, productivity enhancements and operational efficiency by providing incentives and penalties depending on the degree to which the generation companies could supply electricity at costs below the contracted electricity prices.

In order to minimize undue shock to the electricity trading market in Korea, the vesting contract system was to be implemented in phases starting with by-product gas-based electricity in 2015. The rollout of the vesting contract system was further studied by a task force consisting of representatives from the Government, the KPX and generation companies. Following such study, the Government announced in June 2016 that, due to changes in the electricity business environment (including an increase in generation capacity relative to peak usage, reduced fuel costs following a decline in oil prices and greater environmental concerns related to coal-fired electricity generation), it will indefinitely suspend any further rollout of the vesting contract system beyond by-product gas-based electricity, and retain the adjusted coefficient-based electricity pricing adjustment mechanism.

Renewable Portfolio Standard

In order to expand the utilization of renewable energy resources for generating electrical energy, to reduce greenhouse gas emission and to protect the environment, the Government adopted the RPS in December 2010, under which 10% of all electricity generated by the power generation companies in Korea will be required to be sourced from renewable energy by 2023. Generation companies receive Renewable Energy Certificates ("RECs"), based on a weighted scheme, for energy generated from an eligible renewable energy source, which can be used to satisfy their own RPS requirements or traded on the KPX to other generation companies to satisfy their RPS requirements. Penalties are levied on any generation company with generation capacities of 500 megawatts or more that fails to do so in the prescribed timeline.

Third Basic National Energy Plan

On June 4, 2019, the MOTIE adopted the Third Basic National Energy Plan following consultations with representatives from civic groups, the power industry and academia. The Third Basic National Energy Plan, which is a comprehensive plan that covers the entire spectrum of energy industries in Korea, covers the period from 2019 to 2040 (compared to 2013 to 2035 under the Second Basic National Energy Plan) and focuses on the following five key tasks: (i) innovating the structure of energy consumption by strengthening the energy demand management of various sectors such as industrial, building and transportation, and streamlining pricing systems with the aim of improving the efficiency of energy consumption by 38% by 2040 and reducing energy demand by 18.6% by 2040, (ii) transitioning to a clean and safe mix of energy through increasing the share of renewable energy by 30~35% while reducing the share of nuclear and coal energy, (iii) expanding decentralized and participatory energy systems by increasing the share of distributed energy resources (such as renewable energy and fuel cells) in areas with demand and strengthening regional management by expanding the roles and responsibilities of local governments, (iv) bolstering the global competitiveness of Korea's energy industry by fostering future energy industries such as renewable energy, hydrogen and efficiency-enhancing industries, as well as through adding value to existing traditional energy industries, and (v) laying the foundation for conversion to clean and safe energy by improving the electricity, gas and heat market systems and building an energy big data platform to promote the creation of new industries.

Eighth Basic Plan Relating to the Long-Term Supply and Demand of Electricity

In December 2017, the Government released the Eighth Basic Plan which serves as the guideline for stable medium and long-term supply of electric power. The Eighth Basic Plan replaced and superseded the Seventh Basic Plan, which covered the period from 2015 to 2029 and focused on, among other things, (i) ensuring a stable supply of electricity, (ii) increasing the portion of low carbon electricity supply sources, (iii) active consumer demand management, (iv) permanent closing of operations of the Kori #1 nuclear power unit, and (v) diversifying electricity supply sources by utilizing renewable energy sources.

The objectives of the Eighth Basic Plan include, among other things, (i) increasing efforts to address environmental and safety concerns, including reducing greenhouse gas emission and yellow dust, (ii) decreasing the portion of electricity supplied using nuclear and coal energy sources, (iii) increasing the portion of electricity supplied from renewable energy, in particular solar and wind power, and (iv) promoting the replacement of coal with LNG as an energy source by reducing the gap in expenses incurred in using the respective fuel types, for example, by adjusting the consumption tax rates applicable to the respective fuel types. Furthermore, the Eighth Basic Plan includes the following implementing measures: (i) six new nuclear generation units in planning stages will not be constructed, (ii) the extension of life of 10 decrepit nuclear generation units will not be granted, (iii) Wolsong #1 nuclear generation unit will not count as part of domestic energy generation capacity, (iv) seven decrepit coal-fired generation plants will be retired by 2022, (v) six other coal-fired generation plants shall be converted to LNG fuel use and (vi) domestic renewable energy generation capacity shall be expanded to 58.5 gigawatts by 2030. Pursuant to the Eighth Basic Plan, our Samcheonpo units no. 1 and 2 are subject to decommissioning in August 2020. In addition, we are planning to convert our Yeongdong units no. 1 and no. 2 from coal-fired to biomass-fired in 2020 as well as convert our Samcheonpo units no. 3 and 4 from coal-fired to LNG-fired in 2024.

The Government commenced preparations for the Ninth Basic Plan in March 2019 and aims to issue the finalized plan within 2020. On May 14, 2020, the MOTIE gave preliminary administrative notice of the strategic environmental impact assessment report of the Ninth Basic Plan in accordance with the Environmental Impact Assessment Act. The Ninth Basic Plan is currently undergoing a strategic environmental impact assessment process in accordance with the Environmental Impact Assessment Act.

Plan to Reform State-owned Enterprises in the Energy and Resources Development Sector

On June 14, 2016, the Government announced broad plans to overhaul state-owned enterprises in the energy and resources development sector, including KEPCO, in response to reported losses and inefficiencies among state-owned enterprises. The Government aimed to streamline overlapping energy and resources development roles and functions among the state-owned enterprises by divesting from businesses not essential to the core purpose for which a stated-owned enterprise was established, while also encouraging competition by gradually opening up the energy and resources development industry to the private sector. With respect to the electric power industry, the plans call for, among other things, (i) KEPCO's divesture of its overseas businesses to the Generation Subsidiaries, (ii) the designation and specialization among the Generation Subsidiaries on the areas of business to pursue overseas, (iii) the gradual liberalization of the electricity distribution market and (iv) the initial public offering of the Generation Subsidiaries, including us, in conjunction with the sale of minority interests (20% to 30%) in such subsidiaries, by 2020. Pursuant to such plans, KEPCO considered a sale in the public market of a minority stake of its shares in the Generation Subsidiaries. However, to our knowledge, the planned sales have been put on hold. In any event, we believe that KEPCO plans to maintain a controlling interest in each of the Generation Subsidiaries.

BUSINESS

Overview

We were established on April 2, 2001 as one of six Generation Subsidiaries of KEPCO. The Generation Subsidiaries generate over 80% of the electricity in Korea. As of March 31, 2020, we had an aggregate domestic installed generation capacity of 10,376 megawatts, or approximately 8.2% of the total electricity generation capacity in Korea (excluding plants generating electricity primarily for private or emergency use). In 2018, 2019 and the three months ended March 31, 2019 and 2020, we sold 64,128 GWh, 60,361 GWh, 15,372 GWh and 12,877 GWh of electricity, respectively, to KEPCO through the KPX. KEPCO is currently the sole electricity transmission and distribution company in Korea.

Total demand for electricity in Korea increased by 2.2% in 2017 and 3.6% in 2018 but decreased by 1.1% in 2019, in each case, year on year, according to KEPCO. The consumption of electric power is expected to continue to increase by 2.1% per annum from 2017 to 2031, according to the Government's Eighth Basic Plan. We plan to continue to make substantial capital expenditures to maintain and expand our generation capacity and enhance our generating systems in the future, including with respect to the generation of renewable energy.

Based on our "Clean & Smart Energy Leader" initiative, we aspire to build a brighter future through technological advances and become a leader in the production of environmentally friendly energy. In order to achieve this vision, we intend to secure new technologies to supplement coal as an energy source and increase generation capacity of renewable energy in our production mix to 25% by 2030. Toward this end, we have taken a number of steps, including improving operational control, diversifying the pool of fuel sources and suppliers, increasing generation capacity of renewable energy, upgrading pollution controls, upgrading our facility maintenance standards, strengthening employee training and implementing a number of safety and skills development programs for our employees.

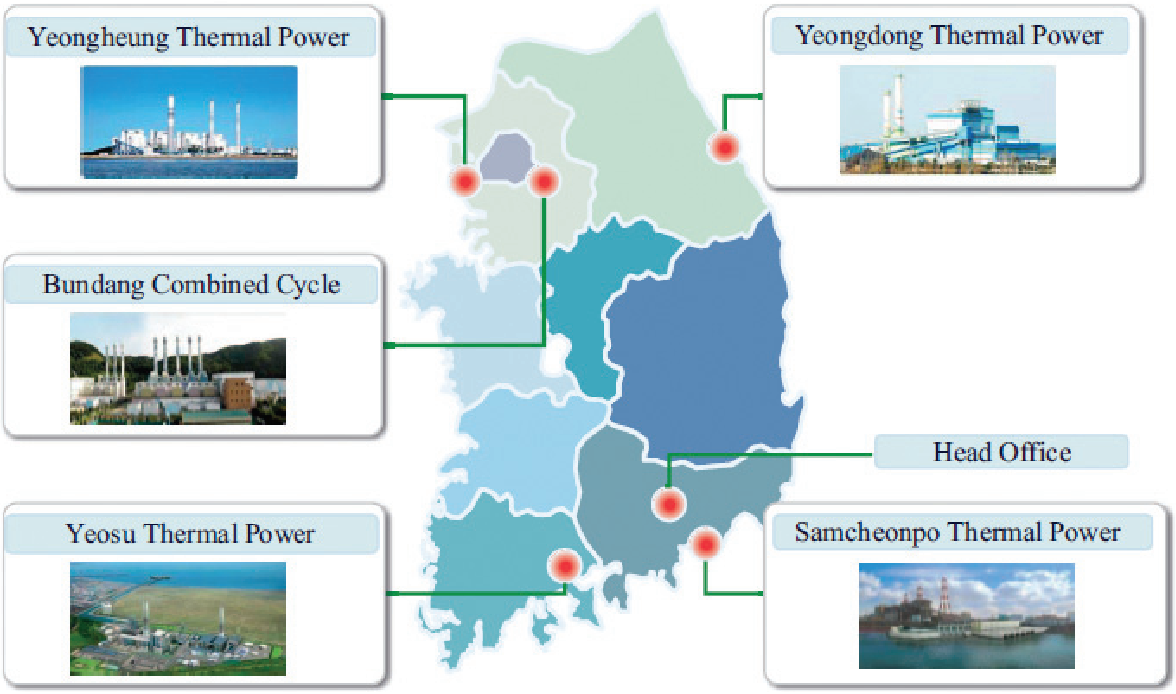
As of March 31, 2020, we had an aggregate domestic installed generation capacity of 10,376 megawatts, of which 9,189 megawatts, 922 megawatts and 265 megawatts were attributable to our coal-fired units, LNG-combined cycle units and renewable energy units, respectively. We generated sales of Won 5,543 billion, Won 5,420 billion, Won 1,681 billion and Won 1,342 billion in 2018, 2019 and the three months ended March 31, 2019 and 2020, respectively, and our net income was Won 30 billion, Won 33 billion, Won 228 billion and Won 141 billion in 2018, 2019 and the three months ended March 31, 2019 and 2020, respectively.

We are a corporation incorporated with limited liability under the laws of Korea. Our registered office is located at 123beon-gil Sadeul-ro, Jinju-si, Gyeongsangnam-do 52852, Korea. Our website address is *www.koenergy.kr*.

Power Generation

As of March 31, 2020, we owned and operated 15 thermal generation units at our power plant complexes located in Samcheonpo, Yeongheung, Yeongdong and Yeosu and 10 LNG-combined cycle units at our power plant complex located in Bundang. Our thermal units produce electricity using steam turbine generators and include units fired by coal. Our combined-cycle units produce electricity using gas turbine generators and steam turbine generators fired by LNG.

We have also invested in the generation of renewable energy. We have one biomass unit and one photovoltaic unit at our Yeongdong complex, three photovoltaic units, two wind power units and three mini-hydropower facilities at our Yeongheung complex and five photovoltaic units, a wind power unit and a mini-hydro power unit at our Samcheonpo complex. We also have five LNG fuel cell units at our Bundang complex. Our photovoltaic units utilize solar cells to directly convert sunlight into electricity and our fuel cell units convert chemical energy from fuel sources such as LNG into electricity through a chemical reaction with oxygen with hydrogen. Our wind power units convert wind energy into electricity using wind turbines that generate electricity by the rotation of its blades that are connected to a power generator. Our mini-hydropower units utilize the coolant water discharged from our thermal generation units to spin water turbines to produce electricity. Our LNG fuel cell unit generates electricity through a chemical reaction of LNG. The following map shows the geographic locations of our power plants as of March 31, 2020 in Korea.



The table below sets forth for each domestic plant type and location, the weighted average age of units, installed capacity, the average capacity factor and the average fuel cost based upon the net amount of electricity generated as of March 31, 2020:

	Weighted Average Age of Units	**Installed Capacity[1]**	**Average Capacity Factor[2]**	**Average Fuel Cost**
	(years)	**(megawatts)**	**(%)**	**(Won/kWh)**
Thermal:				
Bituminous:[3]				
Samcheonpo units no. 1, 2, 3, 4, 5, 6[4]	28.4	3,240	51.4	56.3
Yeongheung units no. 1, 2, 3, 4, 5, 6	10.9	5,080	69.2	51.5
Yeosu unit no. 1, 2	6.0	669	72.3	68.9
Anthracite:[5]				
Yeongdong unit no. 2[6]	40.4	200	–	–
Total thermal	19.2	9,189	63.0	54.3
Combined cycle:[7]				
LNG:				
Bundang gas turbine units no. 1, 2, 3, 4, 5, 6, 7, 8; steam turbine units no. 1, 2	26.2	922	49.3	113.3
Total combined cycle	26.2	922	49.3	113.3
Renewable:				
Yeongdong biomass unit no. 1	3.3	125	79.9	179.6
Wind units no. 1, 2[8]	8.6	47	9.1	–
Photovoltaic units[9]	5.7	33	15.1	–
Mini hydro units[10]	10.7	19	38.8	–
LNG fuel cell units[11]	3.0	42	89.2	113.6
Total renewable	5.0	265	54.8	141.4
Total	18.3	10,376	60.5	60.9

Notes:

(1) Installed capacity represents the level of output that may be sustained continuously without significant risk of damage to plant and equipment.

(2) Average capacity factor represents the total number of kilowatt hours of electricity generated in the period divided by the total number of kilowatt hours that would have been generated assuming continuous operation of generation units at installed capacity expressed as a percentage.

(3) Bituminous units are fueled by bituminous coal supplemented by refuse-derived fuels and wood pellets.

(4) Pursuant to the Eighth Basic Plan, our Samcheonpo units no. 1 and 2 are subject to decommissioning in August 2020.

(5) Anthracite units are fueled by anthracite coal supplemented by bituminous coal.

(6) In October 2018, we commenced construction to convert Yeongdong unit no. 2 to a biomass unit. Construction is expected to be completed in September 2020.

(7) Combined cycle units are fueled by LNG.

(8) Includes our Yeongheung wind units no. 1 and 2 and Samcheonpo wind unit no. 1.

(9) Mainly includes our Samcheonpo photovoltaic units no. 1, 2, 3, 4 and 5, Yeongheung photovoltaic units no. 1, 2 and 3 and our Yeongdong unit.

(10) Includes our Samcheonpo mini hydro unit no. 1 and Yeongheung mini hydro facility no. 1 (consisting of units no. 1, 2 and 3), Yeongheung mini hydro facility no. 2 (consisting of units no. 4, 5 and 6) and Yeongheung mini hydro facility no. 3 (consisting of units 7 and 8).

(11) Mainly includes our Bundang fuel cell units no. 2, 3, 4, 5 and 6.

As of March 31, 2020, we had an aggregate domestic installed generation capacity of 10,376 megawatts. In 2018, 2019 and the three months ended March 31, 2019 and 2020, the average capacity factor of our generation units was 74.9%, 70.4%, 72.4% and 60.5%, respectively. In 2018, 2019 and the three months ended March 31, 2019 and 2020, our power generation amounted to 67,964, GWh, 64,019 GWh, 16,223 GWh and 13,706 GWh, respectively.

The useful life of each type of units without substantial refurbishment is over 30 years for thermal and LNG-combined cycle units. Substantial refurbishment can extend the useful lives of thermal units by an additional ten years or more. See "– Capital Investment Program."

The maintenance cycle for our power generation units ranges from approximately 12 to 24 months depending on the type and installed capacity of units. The duration of maintenance depends on the nature and degree of maintenance involved and may last from 12 days to 52 days depending on the unit. In 2018, 2019 and the three months ended March 31, 2019 and 2020, our maintenance expenses were Won 112 billion, Won 102 billion, Won 18 billion and Won 9 billion, respectively. Our forced (unplanned) outage factor, which is a percentage of total forced (unplanned) outage time over total available operating time, was 0.09%, 0.02%, 0.02% and 0.03% in 2018, 2019 and the three months ended March 31, 2019 and 2020, respectively. We have received ISO 22301 and 9001 certifications for our business continuity management system.

Efficient operation of generation units requires that such units be run continuously at relatively constant energy output levels. As electricity output cannot be stored in significant amounts, generation must be continuously managed to match demand. Within each day there is a certain level below which demand does not fall. This minimum level of demand throughout the day is known as "base load" while "peak load" refers to the maximum level of demand during the course of a day and "intermediate load" refers to the level of demand between base load and peak load. Base load generation units are those that can generate power in dependable amounts to consistently meet demand. Electricity demand, however, constantly fluctuates by time and region. Accordingly, peak and intermediate load power plants are also coordinated into our system in order to meet such changing demand for power.

Base load power plants, which are typically fueled by coal, produce continuous, reliable and efficient power at low cost. They often take a relatively long time to start up and are relatively inefficient in terms of cost-to-output ratio when operated at less than full output. Base load plants run at all times throughout the year except in the case of repairs or scheduled maintenance. Their reliability to provide the base demand helps keep their operation costs low and offers stable, attractive pricing through long-term agreements. Peak load power plants provide power during times of peak demand. These plants can speedily respond to changes in electricity demand as they can be started up relatively quickly and vary the quantity of electrical output by the minute and therefore, are principally used to meet short-term surges in demand. Peak load power plants, which are typically fueled by LNG, are expensive to operate relative to the amount of power they produce and the cost of fuel to power them. Intermediate load plants, which are typically fueled by oil, fill the gap between base load and peak load plants.

Coal-fired units in our Samcheonpo, Yeongheung and Yeosu complexes operate at base load, while the LNG combined cycle units at our Bundang complex operate at intermediate to peak load.

The table below sets forth our installed capacity in Korea at the end of each period and peak and average load in the periods indicated below.

	As of and for the year ended December 31,		As of and for the three months ended March 31,	
	2018	2019	2019	2020
	(megawatts)			
Installed capacity	10,377	10,376	10,377	10,376
Peak-load(1)	10,127	9,447	8,804	7,176
Average load(2)	7,757	7,308	7,511	6,276

Notes:

(1) Peak load represents the highest load in the relevant period.

(2) Average load represents the total number of megawatts of electricity generated in the period divided by the total number of hours in that period.

Fuel

Fuel costs constituted 75%, 69%, 60% and 59% of our sales, and 79%, 72%, 76% and 75% of our cost of sales, in 2018, 2019 and the three months ended March 31, 2019 and 2020, respectively. The table below sets forth the total fuel costs, which represent the sum of raw materials used and power purchase costs included in our cost of sales, for the periods indicated.

	For the year ended December 31,				For the three months ended March 31,			
	2018		2019		2019		2020	
	(billions of Won)	(%)	(billions of Won)	(%)	(billions of Won)	(%)	(billions of Won)	(%)
Bituminous coal	3,525	84.7	3,107	83.0	782	77.0	599	76.0
Anthracite coal	11	0.3	–	–	–	–	–	–
LNG(1)	309	7.4	342	9.1	167	16.5	121	15.4
Others(2)	317	7.6	295	7.9	66	6.5	68	8.6
Total fuel cost(3)	4,162	100.0	3,744	100.0	1,015	100.0	788	100.0

Notes:

(1) LNG is used as fuel for the combined cycle units and the LNG fuel cell unit.

(2) Consists of wood pellets and refuse-derived fuels used as supplemental fuel for our bituminous units and diesel oil to initially start up our generation units. The cost of wood pellets amounted to Won 139 billion, Won 136 billion, Won 33 billion and Won 34 billion in 2018, 2019 and the three months ended March 31, 2019 and 2020, respectively. The cost of fuel oil amounted to Won 30 billion, Won 15 billion, Won 2 billion and Won 3 billion in 2018, 2019 and the three months ended March 31, 2019 and 2020, respectively.

(3) These figures represent gross amounts of fuel costs without taking into account payments received from the Electricity Industry Infrastructure Fund amounting to Won 1.0 billion, Won 1.0 billion, Won 0.3 billion and Won 0.2 billion in 2018, 2019 and the three months ended March 31, 2019 and 2020, respectively.

In order to ensure stable supplies of fuel, we enter into long-term and medium-term contracts with various suppliers, and supplement such supplies with purchases of fuel on the spot market. Substantially all of the fuel we use (other than anthracite coal) comes from sources outside Korea, and the fuel cost is impacted by the exchange rates between the Won and the relevant foreign currency in which prices are set. See "Risk Factors – Risks Relating to Our Business – We are dependent on fuel imported from overseas suppliers in currencies other than Won under contracts with varying quantity and duration, and rising fuel costs, if not fully passed through to KEPCO, could adversely affect our results of operations."

Cost increases resulting from the depreciation of the Won against the U.S. dollar or other currencies, or supply disruptions have adversely affected our results of operations in the past and may do so in the future. In recent years, we have reduced the cost of fuel procurement while maintaining a stable fuel supply through our SMART Fuel Center, a centralized inventory management control tower system that utilizes big data to forecast our supply needs. Generally, we pay for fuel on a cash-on-delivery basis and finance such payments in part with bank usance or on a letter of credit basis.

Coal

As of March 31, 2020, 87% of our total installed generation capacity was represented by units burning bituminous coal and 2% was represented by units burning anthracite coal.

Bituminous coal

In 2018, 2019 and the three months ended March 31, 2019 and 2020, we purchased 26.5 million tons, 24.6 million tons, 6.1 million tons and 5.0 million tons of bituminous coal, the main type of coal we use as the raw material for our coal-fired generation of power, amounting to Won 3,196 billion, Won 3,555 billion, Won 3,231 billion, Won 818 billion and Won 623 billion, respectively. Substantially all of our bituminous coal requirements are imported from approximately 40 suppliers located in Australia, Indonesia, Russia, Canada, South Africa, United States and Colombia under long-term or spot contracts. Approximately 37%, 32% and 10% of our annual bituminous coal requirements were imported from Indonesia, Australia and Russia, respectively, in the three months ended March 31, 2020. Approximately 96%, 82%, 84% and 78% of our bituminous coal requirements in 2018, 2019 and the three months ended March 31, 2019 and 2020 were purchased under long-term contracts, respectively, with the remaining requirements being purchased on the spot market. See "Risk Factors – Risks Relating to Our Business – We are dependent on fuel imported from overseas suppliers in currencies other than Won under contracts with varying quantity and duration, and rising fuel costs, if not fully passed through to KEPCO, could adversely affect our results of operations."

Pursuant to the terms of our long-term supply contracts, prices may be adjusted monthly, quarterly or annually depending on market conditions. In the case of term contracts, the obligation to purchase contracted annual amounts of fuel automatically terminates at the end of the year if the parties cannot reach an agreement in respect of price. Depending on the type of contract, we are able to increase or decrease the quantity of bituminous coal under the relevant supply contract. In addition, under the long-term contracts, we have the option to reduce the required annual purchase quantity in the event of a revision in plant construction schedule, fluctuations in spot market prices, suspension of plant operation and alteration of the power generation plan as a result of an accident or an unavoidable cause. The average cost of bituminous coal per ton purchased by us was approximately Won 133,920, Won 132,546, Won 136,444 and Won 124,829 in 2018, 2019 and the three months ended March 31, 2019 and 2020, respectively. We may, if necessary, augment our supplies by entering into new short-term import contracts or by making spot purchases. We estimate that the delivery time for bituminous coal imported from our foreign suppliers ranges from approximately 5 days to two weeks. Currently, we maintain a reserve of bituminous coal of approximately 14 days.

Anthracite coal

In 2018, we purchased 0.07 million tons of anthracite coal, amounting to Won 11 billion. Our anthracite coal requirements were sourced from two suppliers located in Russia and Australia and three domestic suppliers, which includes the Korea Coal Association. In 2018, approximately 100% of our anthracite coal requirements were purchased from overseas suppliers on the spot market. We have discontinued our purchase and use of anthracite coal since October 2018.

Under our contract with Korea Coal Association, which is renewed biannually, we are required to notify the suppliers, on a monthly basis, of an estimate of our requirements based on the Government's coal supply and demand plan. Pursuant to the Coal Industry Act of Korea, we are subject to the MOTIE's direction in respect of the specific volume of anthracite coal we must use for electricity generation purposes to support the domestic coal industry. The price for anthracite coal is typically set by the Government at the highest selling price of domestic anthracite coal announced by the Government. The average cost of anthracite coal per ton purchased by us was approximately Won 147,207 in 2018.

LNG

In 2018, 2019 and the three months ended March 31, 2019 and 2020, we purchased approximately 0.39 million tons, 0.45 million tons, 0.19 million tons and 0.19 million tons of LNG, amounting to Won 309 billion, Won 342 billion, Won 167 billion and Won 121 billion, respectively. In each of 2018, 2019 and the three months ended March 31, 2019 and 2020, 100% of our total LNG requirements was purchased under long-term supply contracts.

We purchase all of our LNG requirements from KOGAS, a Korean corporation of which KEPCO owns 20.47%, under a 20-year LNG supply contract (the "LNG Contract"), which is scheduled to expire in 2026. Under the terms of the LNG Contract, our purchase quantity is determined through negotiations with KOGAS, subject to the Government's approval. We are under an obligation to purchase LNG quantities within a 10% plus or minus range from our previously agreed purchase quantity. If we purchase LNG outside this range, we are required to pay a penalty to KOGAS. All our purchases have been within such range in the past five years. The purchase price for LNG is determined monthly, subject to approval by the MOTIE. KOGAS imports LNG primarily from Australia, Oman, Qatar and the United States and supplies LNG to us, other Generation Subsidiaries and other Korean gas companies. However, we are reviewing the direct import of LNG for our Samcheonpo units no. 3 and 4 upon the conversion of these units from coal-fired to LNG-fired pursuant to the Eighth Basic Plan in 2024.

The average cost per ton of LNG purchased by us was approximately Won 787,168, Won 756,946, Won 872,552 and Won 646,505 in 2018, 2019 and the three months ended March 31, 2019 and 2020, respectively.

Sales and Purchase of Power

Generation Companies' Combined Sales of Electricity

Pursuant to Article 31 of the Electricity Business Act of Korea, we sell all of the electricity we generate to KEPCO through the KPX. KEPCO is currently the only company engaged in the transmission and distribution of electricity in Korea. According to KEPCO, the results of power trading for the generation subsidiaries, including us, and IPPs for 2018, 2019 and the three months ended March 31, 2019 and 2020 are as follows:

	For the year ended December 31, 2018				
	Volume[(1)]	**Percentage of Total Volume**	**Sales[(2)(3)]**	**Percentage of Total Sales**	**Unit Price[(3)]**
	(Gigawatt hours)	**(%)**	**(in billions of Won)**	**(%)**	**(Won/kWh)**
Generation Companies:					
KHNP	131,931	24.6	8,503	17.5	64.45
KOSEP	64,128	12.0	5,441	11.2	84.85
KOMIPO	45,569	8.5	4,238	8.7	93.00
KOWEPO	49,222	9.2	4,765	9.8	96.81
KOSPO	55,525	10.4	5,438	11.2	97.94
EWP	50,697	9.5	4,776	9.8	94.21
IPPs	139,216	26.0	15,470	31.8	111.12
Total	536,287	100.0	48,631	100.0	90.68

	For the year ended December 31, 2018				
	Volume(1)	Percentage of Total Volume	Sales(2)(3)	Percentage of Total Sales	Unit Price(3)
	(Gigawatt hours)	(%)	(in billions of Won)	(%)	(Won/kWh)
Energy Sources:					
Nuclear	126,883	23.7	7,889	16.2	62.18
Bituminous coal	226,585	42.3	18,793	38.6	82.94
Anthracite coal	2,420	0.5	258	0.5	106.61
Oil	6,834	1.3	1,185	2.4	173.40
LNG-combined cycle	144,039	26.9	17,485	36.0	121.39
Hydro	2,763	0.5	302	0.6	109.30
Pumped storage	3,892	0.7	490	1.0	125.90
Renewables	22,165	4.1	2,161	4.4	97.50
Others	709	0.1	68	0.1	95.91
Total	536,287	100.0	48,631	100.0	90.68

Source: KEPCO.
Notes:
(1) Includes surplus electricity generated under the CES and traded on the KPX.
(2) Excludes sale of RPSs by generation companies.
(3) Excludes account payments received from the Electricity Industry Infrastructure Fund.

	For the year ended December 31, 2019				
	Volume(1)	Percentage of Total Volume	Sales(2)(3)	Percentage of Total Sales	Unit Price(3)
	(Gigawatt hours)	(%)	(in billions of Won)	(%)	(Won/kWh)
Generation Companies:					
KHNP	142,949	27.0	8,608	18.1	60.22
KOSEP	60,361	11.4	5,354	11.2	88.70
KOMIPO	43,342	8.2	4,435	9.3	102.33
KOWEPO	44,178	8.4	4,354	9.1	98.56
KOSPO	48,932	9.2	4,987	10.5	101.92
EWP	48,144	9.1	4,658	9.8	96.75
IPPs	141,168	26.7	15,290	32.1	108.31
Total	529,075	100.0	47,686	100.0	90.13
Energy Sources:					
Nuclear	138,607	26.2	8,094	17.0	58.40
Bituminous coal	215,012	40.6	18,808	39.4	87.47
Anthracite coal	2,331	0.4	240	0.5	102.96
Oil	4,011	0.8	918	1.9	228.87
LNG-combined cycle	138,655	26.2	16,519	34.6	119.14
Hydro	2,193	0.4	236	0.5	107.62
Pumped storage	3,444	0.7	419	0.9	121.66
Renewables	24,314	4.6	2,408	5.0	99.04
Others	508	0.1	45	0.1	88.58
Total	529,075	100.0	47,686	100.0	90.13

Source: KEPCO.
Notes:
(1) Includes surplus electricity generated under the CES and traded on the KPX.
(2) Excludes sale of RPSs by generation companies.
(3) Excludes account payments received from the Electricity Industry Infrastructure Fund.

	For the three months ended March 31, 2019				
	Volume(1)	Percentage of Total Volume	Sales(2)(3)	Percentage of Total Sales	Unit Price(3)
	(Gigawatt hours)	(%)	(in billions of Won)	(%)	(Won/kWh)
Generation Companies:					
KHNP	36,586	26.8	2,503	17.4	68.41
KOSEP	15,372	11.2	1,567	10.9	101.94
KOMIPO	11,512	8.4	1,278	8.9	111.01
KOWEPO	9,627	7.0	1,110	7.7	115.30
KOSPO	13,660	10.0	1,626	11.3	119.03
EWP	13,201	9.7	1,484	10.3	112.42
IPPs	36,784	26.9	4,800	33.4	130.49
Total	136,742	100.0	14,368	100.0	105.07
Energy Sources:					
Nuclear	35,502	26.0	2,343	16.3	66.00
Bituminous coal	54,425	39.8	5,403	37.6	99.27
Anthracite coal	677	0.5	86	0.6	127.03
Oil	1,834	1.3	376	2.6	205.02
LNG-combined cycle	36,913	27.0	5,317	37.0	144.04
Hydro	432	0.3	60	0.4	138.89
Pumped storage	911	0.7	137	1.0	150.38
Renewables	5,932	4.3	635	4.4	107.05
Others	116	0.1	13	0.1	112.07
Total	136,742	100.0	14,368	100.0	105.07

Source: KEPCO.
Notes:
(1) Includes surplus electricity generated under the CES and traded on the KPX.
(2) Excludes sale of RPSs by generation companies.
(3) Excludes account payments received from the Electricity Industry Infrastructure Fund.

	For the three months ended March 31, 2020				
	Volume(1)	Percentage of Total Volume	Sales(2)(3)	Percentage of Total Sales	Unit Price(3)
	(Gigawatt hours)	(%)	(in billions of Won)	(%)	(Won/kWh)
Generation Companies:					
KHNP	38,172	28.6	2,409	19.7	63.11
KOSEP	12,877	9.6	1,235	10.1	95.91
KOMIPO	11,051	8.3	1,177	9.6	106.51
KOWEPO	10,224	7.7	1,034	8.5	101.13
KOSPO	10,093	7.6	1,139	9.3	112.85
EWP	11,181	8.4	1,097	9.0	98.11
IPPs	39,857	29.9	4,108	33.7	103.07
Total	133,453	100.0	12,199	100.0	91.41
Energy Sources:					
Nuclear	37,026	27.7	2,259	18.5	61.01
Bituminous coal	45,790	34.3	4,221	34.6	92.18
Anthracite coal	490	0.4	46	0.4	93.88
Oil	645	0.5	151	1.2	234.11
LNG-combined cycle	41,631	31.2	4,768	39.1	114.53
Hydro	496	0.4	53	0.4	106.85
Pumped storage	931	0.7	127	1.0	136.41
Renewables	6,298	4.7	562	4.6	89.23
Others	145	0.1	12	0.1	82.76
Total	133,453	100.0	12,199	100.0	91.41

Source: KEPCO.

Notes:

(1) Includes surplus electricity generated under the CES and traded on the KPX.

(2) Excludes sale of RPSs by generation companies.

(3) Excludes account payments received from the Electricity Industry Infrastructure Fund.

Our Sales of Electricity

The tables below set forth our electricity sales, depending on the energy sources and a breakdown of base load and non-base load electricity sales in 2018, 2019 and the three months ended March 31, 2019 and 2020 based on our internal data.

	For the year ended December 31, 2018				
	Volume	**Percentage of Total Volume**	**Sales to KEPCO**	**Percentage of Total Sales**	**Unit Price**
	(Gigawatt hours)	**(%)**	**(in billions of Won)**	**(%)**	**(Won/kWh)**
Energy Sources:					
Bituminous coal	60,622	94.5	5,101	93.7	84.14
Anthracite coal	449	0.7	36	0.7	80.18
LNG	2,050	3.2	229	4.2	111.71
Renewable	1,007	1.6	76	1.4	75.47
Total	64,128	100.0	5,441	100.0	84.85
Load:					
Base load	62,078	96.8	5,212	95.8	83.96
Non-base load	2,050	3.2	229	4.2	111.71
Total	64,128	100.0	5,441	100.0	84.85

	For the year ended December 31, 2019				
	Volume	**Percentage of Total Volume**	**Sales to KEPCO**	**Percentage of Total Sales**	**Unit Price**
	(Gigawatt hours)	**(%)**	**(in billions of Won)**	**(%)**	**(Won/kWh)**
Energy Sources:					
Bituminous coal	56,901	94.2	4,902	91.6	86.16
LNG	2,273	3.8	340	6.3	149.60
Renewable	1,187	2.0	112	2.1	94.33
Total	60,361	100.0	5,354	100.0	88.70
Load:					
Base load	56,901	94.2	4,902	91.6	86.16
Non-base load	3,460	5.8	452	8.4	130.63
Total	60,361	100.0	5,354	100.0	88.70

	For the three months ended March 31, 2019				
	Volume	**Percentage of Total Volume**	**Sales to KEPCO**	**Percentage of Total Sales**	**Unit Price**
	(Gigawatt hours)	**(%)**	**(in billions of Won)**	**(%)**	**(Won/kWh)**
Energy Sources:					
Bituminous coal	14,057	91.4	1,386	88.5	98.60
LNG	1,014	6.6	149	9.5	146.94
Renewable	301	2.0	32	2.0	106.31
Total	15,372	100.0	1,567	100.0	101.94
Load:					
Base load	14,057	91.4	1,386	88.5	98.60
Non-base load	1,315	8.6	181	11.5	137.64
Total	15,372	100.0	1,567	100.0	101.94

	For the three months ended March 31, 2020				
	Volume	**Percentage of Total Volume**	**Sales to KEPCO**	**Percentage of Total Sales**	**Unit Price**
	(Gigawatt hours)	**(%)**	**(in billions of Won)**	**(%)**	**(Won/kWh)**
Energy Sources:					
Bituminous coal	11,597	90.1	1,092	88.4	94.16
LNG	978	7.6	117	9.5	119.63
Renewable	302	2.3	26	2.1	86.09
Total	12,877	100.0	1,235	100.0	95.91
Load:					
Base load	11,597	90.1	1,092	88.4	94.16
Non-base load	1,280	9.9	143	11.6	111.72
Total	12,877	100.0	1,235	100.0	95.91

Cost-Based Pool System

Currently, other than in limited circumstances under the CES and certain exceptional transactions stipulated under the Enforcement Decree of the Electricity Business Act, the purchase and sale of electricity in Korea is required to be made through the KPX. The pricing of electricity in the Korean electricity market is based on the "cost-based pool" system and is determined principally based on the variable cost of generating electricity, adjusted by an adjustment factor that varies depending on fuel sources. See "The Korean Electricity Industry – Power Purchase – Cost-based Pool System."

Demand Trends in Korea

The rapid growth in Korea's economy since the early 1960s has resulted in substantial growth in the demand for electricity. Consumption levels, particularly during periods of peak demand, continue to press the limits of available supply.

According to KEPCO, demand for electricity in Korea grew at a compounded average rate of 1.8% per annum for the five years ended December 31, 2019, and total demand for electricity in Korea increased by 2.2% in 2017 and 3.6% in 2018 but decreased by 1.1% in 2019, in each case, year on year. The GDP growth rate at chained 2010 year prices was 3.1% in 2017, 2.7% in 2018 and 2.0% in 2019, in each case, year on year based on preliminary data from the Bank of Korea.

The table below sets forth, for the periods indicated, the annual rate of growth in Korea's GDP as published by the Bank of Korea and the annual rate of growth in electricity demand (measured in total annual electricity consumption) as published by KEPCO.

	2015	2016	2017	2018	2019
Growth in GDP (at chained 2010 year prices)	2.6%	2.9%	3.1%	2.7%	2.0%
Growth in electricity consumption	1.3%	2.8%	2.2%	3.6%	(1.1)%

Source: KEPCO; Bank of Korea

The demand for electricity varies depending on the season and the time of day. Demand is generally higher during the summer and winter seasons due to the use of air conditioners and heaters, respectively, and during daylight hours due to commercial and industrial activity. Variations in weather conditions may also cause significant variations in demand for electricity.

Demand by Class of Customer

The table below sets forth the consumption of electric power by class of customer for the periods indicated.

	For the year ended December 31,					
	2015	2016	2017	2018	2019	% of Total 2019
	(gigawatt hours)					
Industrial	273,548	278,828	285,969	292,999	289,240	55.6
Public & Service	103,679	108,617	111,298	116,934	116,227	22.3
Residential	65,619	68,057	68,544	72,895	72,639	14.0
Agricultural	15,702	16,580	17,251	18,504	18,882	3.6
Others[1]	25,107	24,957	24,684	24,818	23,511	4.5
Total	483,655	497,039	507,746	526,149	520,499	100.0

Source: KEPCO

Note:

(1) Consists of consumption for education, street lighting and overnight power.

The industrial sector represents the largest segment of electricity consumption in Korea. While demand from the industrial sector has generally increased historically as well as in recent years as a result of a general increase in industrial production, it decreased by 1.3% to 289,240 gigawatt hours in 2019 compared to 2018, mainly due to a slowdown in the Korean manufacturing industries.

Demand from the public and service sector has also generally increased in recent years. The continued expansion of the service sector of the Korean economy has resulted in increased office building construction, office automation and use of air conditioners. Growth in the public and service sector was also attributable to the construction industry and the expansion of the leisure and distribution industries. However, demand from the public and service sector slightly decreased by 0.6% to 116,227 gigawatt hours in 2019 compared to 2018, primarily due to a general slowdown in the Korean economy.

Increase in demand from the residential sector in recent years was due primarily to increased use of air conditioners and other electrical appliances. However, demand from the residential sector slightly decreased by 0.4% to 72,639 gigawatt hours in 2019 compared to 2018, which was mainly attributable to relatively benign weather conditions in 2019 leading to decreased residential uses of air conditioners in the summer and electrical heating devices in the winter.

Power Development

In June 2019, the Government announced the Third Basic National Energy Plan, which is a comprehensive plan that covers the entire spectrum of energy industries in Korea from 2019 to 2040. The Third Basic National Energy Plan focuses on the following five key tasks: (i) innovating the structure of energy consumption by strengthening the energy demand management of various sectors such as industrial, building and transportation, and streamlining pricing systems with the aim of improving the efficiency of energy consumption by 38% by 2040 and reducing energy demand by 18.6% by 2040, (ii) transitioning to a clean and safe mix of energy through increasing the share of renewable energy by 30~35% while reducing the share of nuclear and coal energy, (iii) expanding decentralized and participatory energy systems by increasing the share of distributed energy resources (such as renewable energy and fuel cells) in areas with demand and strengthening regional management by expanding the roles and responsibilities of local governments, (iv) bolstering the global competitiveness of Korea's energy industry by fostering future energy industries such as renewable energy, hydrogen and efficiency-enhancing industries, as well as through adding value to existing traditional energy industries, and (v) laying the foundation for conversion to clean and safe energy by improving the electricity, gas and heat market systems and building an energy big data platform to promote the creation of new industries.

In December 2017, the Government released the Eighth Basic Plan which serves as the guideline for stable medium-and long-term supply of electric power. The objectives of the Eighth Basic Plan include, among other things, (i) increasing efforts to address environmental and safety concerns, including reducing greenhouse gas emission and yellow dust, (ii) decreasing the portion of electricity supplied using nuclear and coal energy sources, (iii) increasing the portion of electricity supplied from renewable energy, in particular solar and wind power, and (iv) promoting the replacement of coal with LNG as an energy source by reducing the gap in expenses incurred in using the respective fuel types, for example, by adjusting the consumption tax rates applicable to the respective fuel types. Furthermore, the Eighth Basic Plan includes the following implementing measures: (i) six new nuclear generation units in planning stages will not be constructed, (ii) the extension of life of 10 decrepit nuclear generation units will not be granted, (iii) Wolsong #1 nuclear generation unit will not count as part of domestic energy generation capacity, (iv) seven decrepit coal-fired generation plants will be retired by 2022, (v) six other coal-fired generation plants shall be converted to LNG fuel use and (vi) domestic renewable energy generation capacity shall be expanded to 58.5 gigawatts by 2030.

The Government commenced preparations for the Ninth Basic Plan in March 2019 and aims to issue the finalized plan within 2020. On May 14, 2020, the MOTIE gave preliminary administrative notice of the strategic environmental impact assessment report of the Ninth Basic Plan in accordance with the Environmental Impact Assessment Act. The Ninth Basic Plan is currently undergoing a strategic environmental impact assessment process in accordance with the Environmental Impact Assessment Act.

Capital Investment Program

According to the Eighth Basic Plan, the ratio of reserve power required to peak power demand at any future point in time is set at 19% from 2018 to 2025, and 22% from 2026 to 2031, and the total nominal capacity of all generating facilities in Korea in 2031 is expected to be 174.5 gigawatts, of which nuclear power plants are expected to contribute 11.7%, coal-fired plants 22.9%, LNG plants 27.2%, renewable energy plants 33.6% and other plants 4.6%. In accordance with the objectives of the Eighth Basic Plan, we intend to add new installed capacity, primarily in renewable energy.

Our capital expenditures, which represent the sum of acquisitions of property, plant and equipment and intangible assets in our statements of cash flows, were Won 624 billion, Won 909 billion, Won 108 billion and Won 159 billion in 2018, 2019 and for the three months ended March 31, 2019 and 2020 respectively, of which Won 67.4 billion, Won 111.8 billion, Won 28.2 billion and Won 12.6 billion in 2018, 2019 and the three months ended March 31, 2019 and 2020 were used to develop renewable energy sources, such as wind power and solar energy, and we are planning to increase our investments in renewable energy generation, respectively. In 2017, we changed the fuel source of our Yeongdong unit no. 1 from anthracite coal to biomass. We plan to change the fuel source of our Yeongdong unit no. 2 from anthracite coal to biomass in 2020.

The actual number and capacity of generation units we construct and the timing of such construction will depend upon a variety of factors, including demand growth projections, availability and cost of financing, changes in fuel prices and availability of fuel, ability to acquire necessary plant sites, environmental considerations, community opposition and other factors.

The table below sets forth for 2020, 2021, 2022 and 2023, the budgeted amounts of capital expenditures pursuant to our capital investment program. The budgeted amounts may vary from the actual amounts of our capital expenditures for a variety of reasons, including changes in the number of units to be constructed and the timing of such construction, changes in rates of exchange between the Won and foreign currencies, changes in interest rates and other factors.

	For the year ended December 31,			
	2020(1)	2021	2022	2023
	(in billions of Won)			
Maintenance of existing generation facilities	551	546	643	480
Construction of new renewable generation facilities	126	173	75	137
Investments in domestic and overseas IPP projects	155	521	605	35
Others(2)	171	342	357	432
Total	1,003	1,582	1,680	1,084

Notes:

(1) Includes amounts expended through March 31, 2020.

(2) Miscellaneous expenditures for investments and maintenance of non-generation and ancillary facilities.

Power Plant Refurbishment and Recommissioning

We supplement power generation capacity through refurbishing or recommissioning our power plant units, which includes installation of anti-pollution devices, modification of control systems and overall rehabilitation of existing equipment. Ensuring the reliability of our equipment is critical to our operations.

The useful life of each type of units without substantial refurbishment is over 30 years for thermal and LNG-combined cycle units. Substantial refurbishment can extend the useful lives of thermal units by an additional ten years or more. For example, in 2017, we converted our Yeongdong unit no. 1, a coal-fired unit at our Yeongdong complex, into an environmentally friendly biomass-fired unit, and also plan to convert Yeongdong unit no. 2 from coal-fired to biomass-fired in 2020. Pursuant to the Eighth Basic Plan, our Samcheonpo units no. 1 and 2 are subject to decommissioning in August 2020. In addition, we are planning to convert our Samcheonpo units no. 3 and 4 from coal-fired to LNG-fired in 2024.

Independent Power Producer Projects and Community Energy System Projects

Based on our more than 30 years of experience in operating and maintaining power plants, we have become involved in a number of domestic and overseas IPP projects in recent years, both as an investor and plant operator.

We collaborate with a number of IPPs that specialize in the construction and operation of power plants fueled by renewable energy. The major projects that we are currently pursuing with IPPs are as follows:

- Goseong Green Power Co., Ltd. is currently constructing two coal-fired units along with photovoltaic and mini-hydro units in Gyeongsangnam-do with an installed capacity of 2,080 megawatts. The first coal-fired unit is scheduled to come into operation in 2021, and we will operate and manage the Goseong complex once construction has been completed. As of March 31, 2020, we held a 1.1% equity interest in Goseong Green Power Co., Ltd.

- Gangneung Eco Power Co., Ltd. is currently constructing two coal-fired units along with photovoltaic units in Gangwon-do with an installed capacity of 2,080 megawatts. The first coal-fired unit is scheduled to come into operation in 2022, and we will operate and manage the Gangneung complex once construction has been completed. As of March 31, 2020, we held a 1.6% equity interest in Gangneung Eco Power Co., Ltd.

We expect to leverage our expertise in other IPP projects in the future. We believe that such activities will help us to diversify our revenue streams and leverage our operational experience gathered from overseeing our power plants. Please see "– Overseas Activities" for a description of our overseas IPP projects.

We also participate in community energy system projects in Yeosu through IPPs. As of March 31, 2020, we held a 30.7% equity interest in Hyundai Energy, a consolidated energy project aimed at supplying processing steam to companies located within the Yeosu national industrial complex. The facility is located in the Yeosu Thermal Power Site Division and has an installed capacity of 48.4 megawatts (24.2 megawatts per each unit) for electricity and 700 tons per hour (350 tons per hour per each unit) for steam.

Overseas Activities

We are actively engaged in a number of overseas IPP and resource development projects. Our overseas IPP projects help us apply our operational experience and add new revenue streams, while our overseas resource development activities help us establish strategic relationships with companies that are supplying or may supply fuel to us. The table and descriptions set forth below summarize the overseas projects that we were pursuing as of March 31, 2020.

Country	Project Period	Project Description	Invested Capital to March 31, 2020	Equity Interest as of March 31, 2020
Australia (Moolarben) ..	2008~2028	Resource development	AUD25.5 million	1.25%
Australia (Bylong)	2016~	Resource development	AUD7.0 million	2.0%
Bulgaria	2012~2032	IPP solar power	₩31.7 billion	50.0%
Indonesia (Adaro)	2009~	Resource development	₩65 billion	1.5%
Indonesia (Bayan)	2016~	Resource development	₩80.5 billion	4.0%
Nepal (UT-1)	2012~2052	IPP hydro power	US$45.1 million	60.4%
Pakistan (Gulpur)	2015~2049	IPP hydro power	US$87.3 million	76.0%
Pakistan (Asrit Kedam)	2019~2056	IPP hydro power	US$13.5 million	100.0%

Asia

Mira Power Limited, our subsidiary, is currently constructing a 102 megawatt hydro-power plant in Gulpur, Pakistan, which has commenced operations in March 2020. We are acting as the operator and manager of the Gulpur power plant. As of March 31, 2020, we held a 76.0% equity interest in Mira Power Limited.

KOAK Power Limited, our subsidiary established in December 2019, has been developing a 215 megawatt hydro-power plant in Mingora, Pakistan, which is scheduled to come into operation in July 2027. We will operate and manage the power plant once construction has been completed. As of March 31, 2020, we held a 100.0% equity interest in KOAK Power Limited.

Nepal Water & Energy Development Company Pty., Ltd., our subsidiary, is currently constructing a 216 megawatt hydro-power plant in Rasuwa, Nepal, which is scheduled to come into operation in 2025. We will operate and manage the power plant once construction has been completed. As of March 31, 2020, we held a 60.4% equity interest in Nepal Water & Energy Development Company Pty., Ltd.

In July 2009, we purchased 0.3% of the share capital of PT Adaro Energy Tbk ("Adaro") for a purchase price of Won 14 billion as part of our efforts to secure stable coal supplies. Adaro is a leading coal producer in Indonesia and one of the largest coal exporters in the world. In December 2016, pursuant to the June 2016 Government Plan, KEPCO divested its 1.2% equity interest in Adaro and sold it to us for Won 50.7 billion. As of March 31, 2020, we held a 1.5% equity interest in Adaro and are entitled to an annual bituminous coal procurement of 3 million tons per year.

In December 2016, pursuant to the June 2016 Government Plan, KEPCO divested its 20% equity interest in PT Bayan Resources Tbk ("Bayan") and sold a 4% equity interest for Won 80.5 billion to each of the five non-nuclear Generation Subsidiaries, including us. Bayan is a leading coal producer in Indonesia.

Australia

In January 2008, we and three other non-nuclear Generation Subsidiaries and KEPCO were part of a Korean consortium that acquired a 5% interest in a coal mine project located in Moolarben, New South Wales, Australia. The Moolarben project began production of bituminous coal in June 2010. In December 2016, pursuant to the June 2016 Government Plan, KEPCO divested its 1% interest in the Moolarben project and sold 0.25% to each of the four Generation Subsidiaries, including us, raising each of our interests to 1.25%. The four Generation Subsidiaries have a coal off-take agreement for 2.5 million tons of bituminous coal per annum.

In December 2016, pursuant to the June 2016 Government Plan, KEPCO sold a 2% equity interest in KEPCO Bylong Australia Pt., Ltd., a KEPCO subsidiary developing the Bylong coal mines located in New South Wales, Australia, to each of the five non-nuclear Generation Subsidiaries, including us, for AUD7.0 million each. The Bylong project is still in the developmental stage.

Europe

In 2011, we, together with SDN Company Ltd., purchased 50% of the share capital of RES Technology Ad and ASM-BG Investicii Ad for an aggregate purchase price of EUR 18.8 million, to expand our renewable energy sources, and have invested an additional EUR 1.6 million in 2013. Together with the Korea Development Bank, Korea Trade Insurance Corporation, and SDN Company Ltd, we constructed a photovoltaic park near Veliko Tarnovo, Bulgaria, which was completed in February 2012. The facility features an installation capacity of 41 megawatts.

Environment

The Environment Policy Basic Act and other related legislation and regulations (the "Environment Acts"), which are principally administered by the Ministry of Environment, regulate atmospheric emissions, waste water and other emissions from our generation units. See "Risk Factors – Environmental regulations may adversely affect our operations." We believe that our generation units are currently in substantial compliance with the requirements of the Environment Acts.

Atmospheric emissions from generation plants burning fossil fuels include, among other things, SOx, NOx and dust. The Environment Acts establish emissions standards relating to, among other things, SOx, NOx and dust. Such standards have become more stringent in recent years to reduce the amount of permitted emissions, including pursuant to the enactment of the Special Act on the Improvement of Air Quality in Air Control Zones in April 2019. Currently, Flue Gas Desulfurization ("FGD") systems are installed at our Samcheonpo, Yeongheung, Yeongdong and Yeosu power plant complexes to reduce SOx emissions. We have installed Electrostatic Precipitation systems at our power plant complexes in Samcheonpo, Yeongheung, Yeongdong and Yeosu to reduce dust emissions, and systems at our power plant complexes in Samcheonpo, Yeongheung, Yeongdong and Yeosu to minimize the unintended dispersion of powderized coal. We have also installed Selective Catalytic Reduction systems, which reduces NOx emissions, at our power plant complexes at Samcheonpo, Yeongheung and Yeosu. In addition, we have installed DeNOx systems, such as the Low NOx Burner and Over Fired Air systems at our power plant complexes in Samcheonpo and Yeongheung. The installation of such emissions control equipment may also result in increased operating costs. The actual costs of installation and operation of such equipment will depend upon a variety of factors, including, among other things, modifications to emissions limits and the amount of power such equipment will consume. In order to comply with current and expected environmental standards and address related legal and social concerns, we intend to continue to install additional equipment and make related capital expenditures. Our currently budgeted amounts for facilities related to compliance with environmental regulations are Won 165 billion, Won 178 billion and Won 289 billion for 2020, 2021 and 2022, respectively.

The Environment Acts also prescribe maximum permissible levels of pollutants that can be contained in waste water. We operate waste water purification facilities so that the level of waste water discharged from our power plant complexes fall within permissible levels. All waste materials discharged from our power plant complexes are collected, separated and temporarily stored until they are safely transported to appropriate waste sites. In addition, all of our coal-fired units are equipped with ash-ponds to store coal ashes.

In order to minimize the level of noise and vibration pollution, we have erected sound barrier walls at strategic locations and installed silencers and vibration mufflers on certain equipment.

To ensure compliance with the requirements of the Environment Acts, we have installed automatic computerized monitoring systems at strategic locations at our power plant complexes. These monitoring systems constantly measure the level of pollutants being discharged from our power plant complexes and transmit such information via modem to a main server, which then further transmits such information to our headquarters and the relevant governmental agencies through the Internet.

Prior to the construction of a power generation unit, we must perform an environmental impact assessment which is designed to evaluate public hazards, damage to the environment and concerns of local residents. A report reflecting this evaluation and proposed measures to address the problems identified must be submitted to and approved by the Ministry of Environment prior to the construction of the unit. We are then required to implement the measures reflected in the approved report.

We have received ISO 14001 certification for our environmental management system. We are also taking steps to ensure compliance with the Kyoto Protocol and the Paris Agreement, including planned constructions of biomass power, wind power, photovoltaic power, fuel cell, bio-dual fuel and carbon capture and electricity storage system units.

Competition

The electricity industry is in the process of liberalization and deregulation, beginning with the establishment of the Generation Subsidiaries, including us, in April 2001, in accordance with the Restructuring Plan. In 2019, over 80% of electricity demand in Korea was supplied by us and the other Generation Subsidiaries. We compete principally with the four other non-nuclear Generation Subsidiaries and, to a lesser extent, as described below, KHNP. In addition, we compete with IPPs on a limited basis. As of March 31, 2020, there were 20 IPPs in Korea according to data from the KPX.

High initial investment costs are an effective barrier to entry for newcomers in the industry. Cost and service quality are the most important determining factors in respect of competition in the Korean electricity generation industry. For the respective market shares of the Generation Subsidiaries, including us, in terms of sales to KEPCO based on trading results in 2018, 2019 and the three months ended March 31, 2019 and 2020, see "– Sales and Purchase of Power – Sales to KEPCO." Historically, demand for electricity has grown at a rate exceeding the growth of Korea's GDP. However, the rate of growth in demand for electricity has slowed in recent years as Korean economy has matured, and we expect that competition for the sale of electricity generated will become more intense as the other Generation Subsidiaries and the IPPs ramp up their installed capacity of LNG and renewable energy generation in their product mix in accordance with the Eighth Basic Plan.

Our major power plant complexes, namely Samcheonpo, Bundang and Yeongheung, are located near large cities and/or large industrial complexes. We believe that the proximity of our major plant complexes to customers provide a competitive advantage in terms of merit order.

We believe that we and the other non-nuclear Generation Subsidiaries do not compete directly with KHNP due to the inherent difference in cost structures between non-nuclear Generation Subsidiaries and the nuclear Generation Subsidiary. In general, the cost of generating power is lower for the nuclear Generation Subsidiary than for non-nuclear Generation Subsidiaries.

Deregulation

The Korean electricity industry has been undergoing deregulation since 1999. For a description of the deregulation process, see "The Korean Electricity Industry – Restructuring of the Electricity Industry in Korea."

Pursuant to the Electricity Business Act, the Government established the KOREC in April 2001 to regulate the Korean electricity industry and to ensure fair competition. All of the Generation Subsidiaries, including us, are under the general supervision of the KOREC.

The Electricity Business Act administered by the MOTIE requires that licenses be obtained in relation to the generation of electricity for sale to others, with limited exceptions. Each of the Generation Subsidiaries, including us, is deemed to possess an electricity generation license and other governmental approvals (which KEPCO possessed prior to April 2, 2001, pursuant to the Law on Promotion of Restructuring of Electricity Power Industry).

Our operations are subject to a number of laws and regulations relating to environmental protection and safety. See "– Environment" above.

Research and Development

We maintain a research and development ("R&D") program concentrated on developing self-reliant core technology and, in cooperation with KEPCO, leading national technology advancement in the electric power generation business.

Our R&D activities and those of the other Generation Subsidiaries are principally carried out by the Korea Electric Power Research Institute ("KEPRI"), KEPCO's research center in Daejeon, Korea. Similar to the other Generation Subsidiaries, we supervise and finance R&D activities being performed by KEPRI, including joint studies co-sponsored by the other Generation Subsidiaries.

We incurred R&D expenses of approximately Won 12.7 billion, Won 9.7 billion, Won 3.0 billion and Won 3.3 billion, constituting approximately 0.2%, 0.2%, 0.2% and 0.2% of our sales, in 2018, 2019 and the three months ended March 31, 2019 and 2020, respectively. In 2020, we plan to invest approximately Won 15 billion in R&D.

Patents, Utility and Trademark

As of March 31, 2020, we owned 330 patents and 5 utility model rights, including co-owned patents and utility model rights, and had 135 patent applications and 1 utility model rights applications pending in Korea. Most of the patents and utility model rights relate to generation processes and generator maintenance tools. We believe that our patents and utility model rights are vital to our power generation and R&D activities.

The period of protection offered under current Korean legislation (i) with respect to a patent commences upon registration thereof and ends 20 years from the filing date, (ii) with respect to a utility model right commences upon registration thereof and ends ten years from the filing date and (iii) with respect to a trademark is ten years from registration with the option to renew for an additional ten years indefinitely.

Insurance

We have obtained a general commercial insurance policy to insure against fire and natural disasters up to Won 200 billion and mechanical accidents up to Won 15 billion. In addition, we obtain construction insurance to provide coverage in respect of certain portions of the assets of our generation facilities that are being constructed or refurbished. We also have marine cargo insurance in respect of imported fuel and procurement with insurance coverage of US$25 million per shipment, which amount can be increased with notification prior to shipment, as well as general vehicle insurance. We also maintain directors' and officers' liability insurance.

Our insurance and indemnity policies do not cover all of the assets that we own and operate and do not cover all types or amounts of loss which could arise in connection with the ownership and operation of our power plants, and material financial consequences could result from a significant accident. We also do not carry insurance for business interruptions. In addition, we do not carry insurance against terrorist attacks. As a result, significant accidents with damages over our "per occurrence" limit, or the occurrence of events for which we are not insured, may have a material adverse impact on our financial condition and results of operations.

Property, Plant and Equipment

Our property consists mainly of power generation equipment and facilities in Korea. See "– Power Generation" and "– Capital Investment Program." As of March 31, 2020, the net book value of our property, plant and equipment was Won 8,972 billion including the right-of-use assets amounting to Won 937 billion, which were recognized as a result of the initial application of K-IFRS 1116. No significant portion of our properties is leased.

In June 2005, the Korean government announced its policy to relocate the headquarters of select government-invested enterprises, including KEPCO and the Generation Subsidiaries, from their current locations in the Seoul metropolitan area to other provinces in Korea. Pursuant to this policy, we relocated our headquarters to Jinju in Gyeongsangnam-do in 2014.

Legal and Regulatory Proceedings

We are subject to the risk of legal claims and regulatory actions in the ordinary course of business (including with respect to sanctions, anti-corruption and anti-money laundering, among others), which may expose us to substantial monetary damages and legal costs, injunctive relief, criminal and civil penalties, sanctions against our management and employees and regulatory restrictions on our operations, as well as reputational harm. As of March 31, 2020, we have been named as a defendant in 19 lawsuits for claimed damages of approximately Won 15.3 billion in the aggregate.

In addition, from 2017 to 2018, the KCS conducted an investigation on a group of individuals and companies suspected of illegally importing North Korean coal. We were subject to a written investigation in 2018, as we, through a competitive bidding process, had procured coal, which we believed was of Russian origin, from a direct supplier that had purchased the coal from one of the traders suspected of such illegal activity. The transaction between us and the direct supplier was denominated in U.S. dollars. The KCS concluded the investigation in August 2018 and ultimately accused four individuals and five companies (none of which included us or our direct supplier) of document forgery and violation of applicable customs and compliance law. Neither we nor our direct supplier were found to have committed any wrongdoing. Prosecutors brought charges against these individuals and companies, and in October 2019, the Daegu District Court sentenced these individuals and companies to imprisonment and/or fines, which such individuals and companies have since appealed. While no legal action has been taken against us or any of our directors or officers, we cannot assure you that this matter and/or related events will not have any material adverse effect on us, our reputation or the market value of the Notes.

We are also subject to four class action lawsuits which were filed in 2019 involving hundreds of our current and former employees with an aggregate claim amount of Won 9.1 billion based on claims for allegedly unpaid retirement benefits in relation to certain employee bonuses based on our institutional performance. See "Risk Factors – We may be exposed to potential claims made by current or former employees relating to unpaid wages and benefits and may also incur increased labor costs as a result of the expansion of the scope of applicable wages and benefits." We have not set aside any reserves to cover any potential future payments of additional retirement benefits in relation to the related lawsuits.

The outcome of these proceedings cannot presently be determined. We cannot presently assure you that there will not be further lawsuits in relation to aforementioned matters or that the reserve amount that we have set aside will be sufficient to cover any compensation or damages arising from the present or future litigation. However, our management believes that the ultimate disposition of these cases will not have a materially adverse impact on our operations or financial position.

Employees

As of March 31, 2020, we had approximately 2,510 regular employees, including both full-time and part-time employees. The following table sets forth the number of our employees at our various work locations as of March 31, 2020:

Location	**Number of Employees**
Head office in Jinju	481
Samcheonpo Thermal Power Plant	467
Yeongheung Thermal Power Plant	858
Yeongdong Thermal Power Plant	208
Yeosu Thermal Power Plant	202
Bundang Combined Cycle Power Plant	239
Overseas	34
Other branches	21
Total	2,510

We grant our employees annual increases in basic wages and quarterly bonuses in accordance with the wage guidelines set by the Government. Under the guidelines applicable to Public Enterprises pursuant to the Act on the Management of Public Institutions, we may increase average wages up to 2.8% on a year-on-year basis for 2020. Although we are not obligated to follow these Government-issued guidelines, it is our policy to increase our budget for labor cost within these guidelines. Wages increased by an average of 2.6% in 2018 and 1.8% in 2019 in accordance with the Government guidelines then in effect.

We provide our employees with the national pension plan and medical insurance. With respect to the national pension plan, we generally match our employees' contributions in the amount of 4.5% of each employee's salary, and with respect to medical insurance, we match our employees' contributions in the amount of 3.6% of each employee's salary. In addition, we provide other benefits such as company housing, low-interest housing loans and high-school and university tuition support.

As of March 31, 2020, approximately 88.7% of our employees were members of the Korea South-East Power Labor Union, which membership comprises entirely of our employees, and approximately 11.2% of our employees were members of the Korean Power Plant Industry Union, of which employees of other non-nuclear Generation Subsidiaries are also members. We negotiate a collective bargaining agreement every two years, except for wages, which are negotiated every year, with the Korea South-East Power Labor Union. The current collective bargaining agreement with the Korea South-East Power Labor Union was entered into in December 2017, with a supplementary agreement entered into in January 2019. Pursuant to applicable Korean law, an Employee-Employer Cooperation Committee, which is composed of up to ten representatives of management and up to ten union employee representatives, is required to be, and has been, established. The Committee meets periodically to discuss various labor issues.

The Restructuring Plan and the privatization plan for the Generation Subsidiaries have generated labor unrest. Labor unions to which our employees belong have voiced their opposition to the Restructuring Plan from its inception, in particular with respect to the prospect of our privatization and the privatization of the other Generation Subsidiaries. On February 25, 2002, employees belonging to labor unions of the non-nuclear Generation Subsidiaries, including us, commenced a strike, which lasted six weeks, to protest the Government's plans to privatize us and the other Generation Subsidiaries. The Korean Confederation of Trade Unions ("KCTU"), the largest governing body of labor unions in Korea with over 800,000 members, negotiated with the Government on behalf of the labor unions. After prolonged negotiations with the Government, KCTU directed the labor unions of the non-nuclear Generation Subsidiaries to end their strike on April 2, 2002. We cannot assure you that a large-scale strike or any other work stoppages will not occur again in the future or that any such labor unrest will be satisfactorily resolved. Labor unrest may adversely affect our results of operations by severely disrupting the power supply as well as substantially hinder the implementation of the Government's plans.

Related Party Transactions

For our sale of electricity to KEPCO through KPX, see "– Sales and Purchase of Power" above.

As of March 31, 2020, we had a 7.1% ownership of KPX, which represents the carrying amount of our investment of Won 9 billion.

We employ KEPCO KPS Co., Ltd., KEPCO E&C Inc. and KEPCO KDN Co., Ltd., affiliates of KEPCO, for maintenance services for all our power generation facilities, design for power plant construction and data processing services.

For transactions and related account balances with related parties, including KEPCO and its subsidiaries, see Note 40 of our audited annual consolidated financial statements as of and for the years ended December 31, 2018 and 2017, Note 40 of our audited annual consolidated financial statements as of and for the year ended December 31, 2019 and Note 39 of our unaudited interim condensed consolidated financial statements as of March 31, 2020 and for the three months ended March 31, 2019 and 2020 included elsewhere in this Offering Circular.

We have an LNG purchase contract with KOGAS, a related party, with the quantity to be determined by mutual agreement. In addition, we have several contracts with Korea Coal Corporation and others with the quantity to be set by the Korean government.

We also provide housing and tuition loans to our employees, the aggregate amount of which was Won 29 billion as of March 31, 2020.

Share Ownership

The following table sets forth certain information relating to our shareholder as of March 31, 2020 and as of the date hereof:

Title of Class	Identity of Person or Group	Shares Owned	Percentage
Common stock	Korea Electric Power Corporation	59,523,126	100.0%

None of our directors and members of the administrative, supervisory or management bodies owns any share of our common stock.

MANAGEMENT

Directors and Senior Management

Under our articles of incorporation, our board of directors, consisting of not less than three and not more than fifteen directors, including the president, is vested with the power of management. The directors are classified into two categories: standing directors and non-standing directors. The number of standing directors must be less than one half the number of directors, which includes the president. The standing directors also presently constitute our executive officers.

The representative director, who acts as our president and a standing director, is appointed by the President of Korea through the following nomination process: the recommendation of two or more candidates by the officer recommendation committee, followed by the resolution of the Committee for Management of Public Institutions established under the Act on the Management of Public Institutions, followed by the resolution of our shareholders at the general meeting, followed by the nomination by the Minister of MOTIE. The standing directors are appointed by the president following the resolution of shareholders at a general meeting, except that any standing director who is to become a member of the audit committee must be appointed by the President of Korea following the nomination of two or more candidates by the officer recommendation committee, the resolution by the Committee for Management of Public Institutions, the resolution by our shareholders and the nomination by the Minister of MOEF. The non-standing directors are appointed by the Minister of MOEF following the nomination of two or more candidates by the officer recommendation committee, the resolution by the Committee for Management of Public Institutions and the resolution by our shareholders. The president serves as our chief executive officer, represents us and administers our day-to-day business in all matters not specifically designated as responsibilities of the board of directors.

The term of office of the president is three years and the term of office of a director is two years. Officers may be reappointed each year to one-year terms in accordance with the Act on the Management of Public Institutions. If an officer is reappointed, the recommendation of the officer recommendation committee is not required. If the president is reelected, the management contract set forth in article 37(3) of our articles of incorporation must be re-executed, but the discussion of the officer recommendation committee is not required.

The presence at board meetings of a majority of the board members constitutes a voting quorum and resolutions can be passed by a majority of the board members.

The names, titles, and outside occupations, if any, of the directors as of March 31, 2020, and the respective dates on which they took office are set forth below.

Name	Age	Title	Outside Occupation	Position Held Since
Lyu, Hyang-reol	63	President & CEO	–	February 13, 2018
Kim, Bong-Chul	54	Standing Director & Statutory Auditor	–	December 24, 2018
Jung, Kwang-sung	59	Standing Director	–	February 1, 2019
Bae, Young-Jin	61	Standing Director	–	October 30, 2019
Lee, Jong-eun	52	Non-Standing Director	Head, Kyongnam Information Society Institute	April 9, 2018
Lee, In-ok	63	Non-Standing Director & Statutory Auditor	–	February 13, 2019
Choi, Jin-bong	63	Non-Standing Director	–	February 13, 2019
Lim, Seung-Tai	63	Non-Standing Director & Statutory Auditor	–	October 21, 2019
Cho, Il-Hyun	61	Non-Standing Director	–	October 21, 2019

Hyang-reol Lyu has served as our president and CEO since February 13, 2018. Mr. Lyu received a bachelor's degree in public administration from the University of Seoul and a master's degree in business administration from Aalto University School of Business. Previously, he served as the vice president of the international business division of Korea Electric Power Corporation.

Bong-Chul Kim has served as our standing director and statutory auditor since December 24, 2018. Previously, he served as the president of Platform Kyungnam.

Kwang-sung Jung has served as our standing director since February 1, 2019. Mr. Jung received a bachelor's degree in mechanical engineering from Chonnam National University and a master's degree in power engineering from Hanyang University. Previously, he served as the head of our Samcheonpo complex.

Young-Jin Bae has served as our standing director since October 30, 2019. Mr. Bae received a bachelor's degree in English literature from Dong-A University and a master's degree in international business from the University of South Carolina. Previously, he served as the head of the Paju complex of Korea Electric Power Corporation.

Jong-eun Lee has been our non-standing director since April 9, 2018. Mr. Lee received a bachelor's degree in material engineering from Changwon National University and a bachelor's degree in social welfare from the Korean Educational Development Institute. He is currently also the head of the Kyongnam Information Society Institute.

In-ok Lee has been our non-standing director and statutory auditor since February 13, 2019. Ms. Lee received a bachelor's degree in political science from Ewha Womans University and a master's degree in public policy from The State University of New York. Previously, she served as the head of the fund management division of the Korea Lottery Commission at the MOEF.

Jin-bong Choi has been our non-standing director since February 13, 2019. Mr. Choi received a bachelor's degree in chemical engineering from Korea University and a master's degree in chemical engineering from Yonsei University. Previously, he served as the managing director of the Japan/Korea offices of Ecolab.

Seung-Tai Lim has been our non-standing director since October 21, 2019. Mr. Lim received a bachelor's degree in Chinese from Hankuk University of Foreign Studies. Previously, he served as the CEO of Shin Pyeongtaek Power Co., Ltd.

Il-Hyun Cho has been our non-standing director since October 21, 2019. Mr. Cho received a bachelor's degree in mechanical engineering from Pusan National University. Previously, he served as an executive officer in charge of construction technology at Samsung C&T Corporation's Qatar power plant construction division.

Board Committees and Practices

Our articles of incorporation provide for the establishment of the audit committee, the officer recommendation committee and other committees as deemed necessary by our board of directors. The audit committee consists of three directors, at least two of whom must be non-standing directors. At least one of the audit committee members must be an accounting or financial expert under article 37(2) of the Enforcement Decree of the Korean Commercial Act. Currently, other than the audit committee and the officer recommendation committee, we maintain a number of committees whose members are non-standing directors tasked with advising on certain specialized matters regarding our management.

The president's management contract provides for benefits upon termination of his employment. The president is only eligible for retirement and severance pay after more than one year of continuous service. For each year's employment, the payment amount for retirement and severance pay is equal to the average income for one month.

The terms for retirement and severance pay for standing directors (including the president) are determined in accordance with the internal regulations for executive benefits. Standing directors are only eligible for retirement and severance pay after retirement or upon death following one year of continuous service. Retiring standing directors receive an average month's worth of salary for every year served as a standing director.

Compensation of Directors and Executive Officers

For the year ended December 31, 2019, the aggregate amount of remuneration paid and accrued to the directors and executive officers, including the statutory auditor, as a group, was Won 540 million. The aggregate amount we set aside or accrued during the year ended December 31, 2019 to provide retirement and severance benefits for directors and executive officers, including the statutory auditor, was Won 134 million.

TERMS AND CONDITIONS OF THE NOTES

The following is a description of the Terms and Conditions of the Notes, which (subject to modification and except for the paragraphs in italics) will be endorsed on the Notes in definitive form (if issued).

The Notes, which expression shall in these Terms and Conditions, unless the context otherwise requires, include any further notes issued pursuant to Condition 14 and forming a single series with the Notes of Korea South-East Power Co., Ltd. (the "Company"), will be issued by the Company (or any successor to the Company) subject to and with the benefit of a Fiscal Agency Agreement dated August 3, 2020 (such agreement as amended and/or supplemented and/or restated from time to time, the "Fiscal Agency Agreement") made between the Company and Citicorp International Limited, as the Fiscal Agent, and Citibank, N.A., London Branch as principal paying and transfer agent (in such capacity, the "Principal Paying Agent"), and as registrar (in such capacity, the "Registrar").

The statements in these Terms and Conditions include summaries of, and are subject to, the detailed provisions of and definitions in the Fiscal Agency Agreement. Copies of the Fiscal Agency Agreement are available for inspection during normal business hours by the holders of the Notes at the specified office of the Principal Paying Agent or any other paying agent that the Principal Paying Agent may appoint, as may be required from time to time (references herein to "Paying Agents" shall refer to the Principal Paying Agent and any paying agents so appointed). The holders are entitled to the benefit of, are bound by, and are deemed to have notice of, all the provisions of the Fiscal Agency Agreement applicable to them. In these Terms and Conditions, references to the Fiscal Agent and the Paying Agents shall include any successor appointed under the Fiscal Agency Agreement, and references to the Company shall include any successor company or business entity succeeding to obligations under the Notes as contemplated by the Fiscal Agency Agreement.

In acting under the Fiscal Agency Agreement the agents appointed by the Company (the "Agents" and each an "Agent") thereunder are acting solely as agents for the Company and do not assume any obligation or relationship of agency or trust for or with the Noteholders except as specifically described in the Fiscal Agency Agreement or below.

1 FORM, DENOMINATION AND TITLE

1.1 Form and Denomination

The Notes are issued in registered form, without detachable coupons, in the minimum denomination of US$200,000 and integral multiples of US$1,000 in excess thereof. Upon issuance, the Notes will be represented by a global note (the "Global Note") deposited with and registered in the name of a nominee of a common depositary (the "Common Depositary") for Euroclear Bank SA/NV as operator of the Euroclear System ("Euroclear") and Clearstream Banking, S.A. ("Clearstream"). The Notes shall be tradeable only in principal amounts of at least US$200,000 and integral multiples of US$1,000 in excess thereof. For so long as the Notes are listed on the Singapore Exchange Securities Trading Limited (the "SGX-ST") and the rules of the SGX-ST so require, the Notes, if traded on the SGX-ST, will be traded in a minimum board lot size of S$200,000 (or its equivalent in foreign currencies). Except in the limited circumstances described in Condition 1.3 below, owners of beneficial interests in the Global Note will not be entitled to receive physical delivery of certificates representing their Notes. The laws of certain jurisdictions require that certain purchasers of the Notes take physical delivery of such Notes in certificated form. Accordingly, the ability of beneficial owners to own, transfer or pledge beneficial interests in the Global Note may be limited by such laws.

1.2 Title

Upon the issuance of the Global Note, Euroclear and Clearstream will credit their respective account holders with the respective principal amounts of the individual interests represented by such Global Note. Ownership of beneficial interests in the Global Note will be limited to persons who have accounts with Euroclear or Clearstream ("participants") or persons who hold interests through such participants. Ownership of beneficial interests in the Global Note will be shown on the records maintained by Euroclear and

Clearstream (with respect to interests of their respective account holders) and the records of such participants (with respect to interests of persons other than such participants). "Noteholder" and (in relation to a Note) "holder" means the person in whose name the beneficial ownership of a Note is shown on the records maintained by Euroclear and Clearstream or the records of the participants.

1.3 Certificated Notes

The Company will execute and deliver to the Fiscal Agent, and the Fiscal Agent or any Paying Agent as agent of the Fiscal Agent will authenticate, physical definitive certificates representing the Notes (the "Certificated Notes") in exchange for the Global Note, if: (i) either Euroclear or Clearstream or a successor clearing system is closed for business for a continuous period of 14 days (other than by reason of holidays, statutory or otherwise) or announces an intention permanently to cease business or does in fact do so; or (ii) an Event of Default (as defined below) has occurred and is continuing.

For so long as the Notes are listed on the SGX-ST and the rules of the SGX-ST so require, in the event that the Global Note is exchanged for Certificated Notes, the Company will appoint and maintain a paying agent in Singapore (the "Singapore Paying Agent"), where the Notes may be presented or surrendered for payment or redemption. In addition, in the event that the Global Note is exchanged for Certificated Notes, an announcement of such exchange will be made by or on behalf of the Company through the SGX-ST and such announcement will include all material information with respect to the delivery of the Certificated Notes, including details of the Singapore Paying Agent.

2 STATUS

The Notes constitute direct, unconditional, unsubordinated and, subject to the provisions of Condition 3, unsecured obligations of the Company and shall at all times rank *pari passu* and without any preference or priority among themselves and, subject to the provisions of Condition 3, with all other present and future direct, unconditional, unsubordinated and unsecured obligations of the Company, except as may be required by mandatory provisions of law.

3 CERTAIN COVENANTS

3.1 Limitation on Liens

So long as any of the Notes remains outstanding (as defined in the Fiscal Agency Agreement), the Company will not, and will not permit any of its Subsidiaries (as defined below) to, create or have outstanding any mortgage, charge, lien, pledge or other security interest (each a "Security Interest") on any Principal Property owned by the Company or any Restricted Subsidiary or on any shares of stock or any External Indebtedness of any Restricted Subsidiary (such shares of stock or External Indebtedness of any Restricted Subsidiary being called "Restricted Securities") without in any such case effectively providing that the Notes (together with, if the Company shall so determine, any other indebtedness of the Company or the Subsidiary then existing or thereafter created which is not subordinate to the Notes) shall be secured equally and ratably with or prior to such secured External Indebtedness unless, after giving effect thereto, the aggregate principal amount of all such secured External Indebtedness, plus Attributable Debt of the Company and its Restricted Subsidiaries in respect of sale and leaseback transactions involving Principal Properties as described under the Condition 3.2 below, would not exceed 10% of Consolidated Net Tangible Assets.

The foregoing restriction will not apply to External Indebtedness secured by:

(a) Security Interests existing as of the date of the Fiscal Agency Agreement and Security Interests on any property, shares of stock or indebtedness of any corporation existing at the time such corporation becomes a Restricted Subsidiary or arising thereafter pursuant to contractual commitments entered into prior to and not in contemplation of such corporation's becoming a Restricted Subsidiary;

(b) Security Interests on any property, shares of stock or indebtedness existing at the time of acquisition thereof (including acquisition through merger or consolidation) or arising thereafter pursuant to contractual commitments entered into prior to and not in contemplation of the acquisition thereof, and certain Security Interests for the purpose of financing all or any part of the purchase price or cost of construction or improvement of a Principal Property;

(c) Security Interests which secure indebtedness owing to the Company or to a Restricted Subsidiary;

(d) Security Interests securing External Indebtedness incurred with respect to the improvement of Principal Property after the date of the Fiscal Agency Agreement in connection with environmental law obligations; provided that such External Indebtedness does not exceed 3% of Consolidated Net Tangible Assets; and

(e) any extension, renewal, alteration or replacement (or successive, extensions, renewals, alterations or replacements) in whole or in part, of any Security Interest referred to in the foregoing clauses (a) through (d) inclusive or any refinancing of External Indebtedness, or a portion thereof, secured by a Security Interest referred to in the foregoing clauses (a) through (d) inclusive, which External Indebtedness, or portion thereof, was paid, extinguished or satisfied not more than 90 days prior to the date of such refinancing; *provided* that the principal amount of External Indebtedness secured thereby shall not exceed the principal amount of External Indebtedness so secured at the time of such extension, renewal, alteration or replacement or the principal amount of External Indebtedness being refinanced, and that such extension, renewal, alteration, replacement or refinancing shall be limited to all or a part of the property (plus improvements on such property) which secured the Security Interest so extended, renewed, altered or replaced or relating to the External Indebtedness so refinanced.

3.2 Limitation on Sale and Leaseback Transactions

So long as any of the Notes remains outstanding, the Company will not, and will not permit any of its Subsidiaries to, enter into any arrangement, after the date of the Fiscal Agency Agreement, with any Person providing for the leasing by the Company or any Restricted Subsidiary of any Principal Property which has been or is to be sold or transferred to such Person or to any other Person to whom funds are advanced by such Person on the security of such Principal Property (a "sale and leaseback transaction") unless:

(i) the Company's Attributable Debt and the Attributable Debt of the Restricted Subsidiaries in respect thereof and in respect of all other sale and leaseback transactions entered into after the date of the Fiscal Agency Agreement (other than transactions permitted by clause (ii) below) plus the aggregate principal amount of External Indebtedness secured by Security Interests on Principal Properties and Restricted Securities then outstanding (excluding any such External Indebtedness secured by Security Interests described in clauses (a) through (e) under Condition 3.1 above) without equally and ratably securing the Notes, would not exceed 10% of Consolidated Net Tangible Assets, or

(ii) the Company or a Restricted Subsidiary, within twelve months after the sale or transfer, apply to the retirement of the Company's External Indebtedness or the External Indebtedness of the Restricted Subsidiary which is not subordinate to the Notes an amount (subject to credits for certain voluntary retirements of External Indebtedness) equal to the greater of (A) the net proceeds of the sale or transfer of the Principal Property leased pursuant to such arrangement or (B) the fair market value of the Principal Property so leased (in each case as determined by the Company).

The foregoing restriction shall not apply to any transaction (x) between the Company and a Restricted Subsidiary or between Restricted Subsidiaries or (y) involving a lease for a temporary period not exceeding three years by the end of which it is intended that the use of such Principal Property by the lessee will be discontinued.

3.3 Consolidation, Merger and Sale of Assets

The Company will not consolidate with, or merge or amalgamate into, or sell, transfer, lease or convey all or substantially all of its property or assets to any person, except as provided herein and in the Fiscal Agency Agreement. The Company, without the consent of the holders of any of the Notes, may consolidate with, or merge into, or sell, transfer, lease or convey all or substantially all of its property as an entirety to any corporation or business entity organized under the laws of the Republic of Korea; *provided* that (a) any successor corporation or business entity expressly assumes the Company's obligations under the Notes and the Fiscal Agency Agreement, (b) immediately after giving effect to the transaction, no Event of Default and no event which, after notice or lapse of time or both, would become an Event of Default, shall have occurred and be continuing, (c) if, as a result of any such transaction, the properties or assets of the Company or any successor corporation or business entity would become subject to any Security Interest which would not be permitted by the Notes, the Company or such successor corporation or business entity, as the case may be, shall take such steps as shall be necessary to secure the Notes equally and ratably with (or prior to) all indebtedness secured thereby, and (d) the Company has delivered to the Fiscal Agent a certificate executed by a duly authorized officer of the Company and an opinion of counsel as to matters of law stating that such consolidation, merger, sale, transfer, lease or conveyance and, if any supplemental agreement(s) is/are required in connection with such transaction, such supplemental agreement(s) comply with the Fiscal Agency Agreement and the Notes and that all conditions precedent herein provided for relating to such transaction have been complied with. The Fiscal Agent shall be entitled to accept such certificate and opinion as sufficient and conclusive evidence of such compliance.

3.4 Interpretation

For the purposes of these Conditions:

"Attributable Debt" means, as to any lease, at the date of determination, the total net amount of rent required to be paid under such lease during the remaining term thereof including renewal terms at the option of the lessor (excluding amounts on account of maintenance and repairs, insurance, taxes, assessments, water rates and similar charges and contingent rents), discounted from their respective due dates at the rate of interest borne by the Notes compounded annually.

"Consolidated Net Tangible Assets" means the total amount of the Company's assets and those of its consolidated Subsidiaries, if any, including investments in unconsolidated Subsidiaries, after deducting therefrom (i) all current liabilities (excluding any current liabilities constituting Long-term Debt by reason of their being renewable or extendible at the Company's option or the option of its Subsidiaries), and (ii) all goodwill, trade names, trademarks, patents, unamortized debt discount and expense and other like intangible assets, all as set forth on the most recent balance sheets of the Company and its consolidated Subsidiaries and computed in accordance with K-IFRS.

"External Indebtedness" means any obligation for the payment or repayment of money borrowed which is denominated in a currency other than the currency of Korea and which has a final maturity of one year or more from its date of incurrence or issuance.

"Long-term Debt" means any note, bond, debenture or other indebtedness for money borrowed having a maturity of more than one year from the date such indebtedness was incurred or having a maturity of less than one year but by its terms being renewable or extendible, at the option of the borrower, beyond one year from the date such evidence of indebtedness was incurred.

"Principal Property" means any generation facility located in Korea, whether owned at the date of the Fiscal Agency Agreement or thereafter acquired, including any land, buildings, structures or machinery and other fixtures that constitute any such facility, or portion thereof, other than any such facility, or portion thereof, reasonably determined by the Company's board of directors not to be of material importance to the total business conducted by the Company and its Subsidiaries as a whole.

"Restricted Subsidiary" means any Subsidiary that owns a Principal Property.

"Subsidiary" means any corporation or other entity of which securities or other ownership interests having ordinary voting power to elect a majority of the board of directors or other persons performing similar functions are at the time directly or indirectly owned by the Company.

4 INTEREST

4.1 Interest Payment Dates

The Notes will be issued in an initial aggregate principal amount of US$300,000,000 and will mature at a price equal to 100% of the principal amount on February 3, 2026 (the "Maturity Date"). The Notes will bear interest at a rate of 1.000% per annum from and including August 3, 2020 or from the most recent interest payment date to which interest has been paid or provided for. Interest on the Notes will be payable semi-annually in arrears on February 3 and August 3 of each year (each an "Interest Payment Date") with the first interest payment to be made on February 3, 2021.

4.2 Interest Accrual

Each Note will cease to bear interest from and including its due date for redemption unless, upon due presentation, payment of the principal in respect of the Note is improperly withheld or refused or unless default is otherwise made in respect of payment. In such event, interest will continue to accrue until whichever is the earlier of:

(a) the date on which all amounts due in respect of such Note have been paid; and

(b) five days after the date on which the full amount of the moneys payable in respect of such Notes has been received by the Fiscal Agent and notice to that effect has been given to the Noteholders in accordance with Condition 12.

4.3 Calculation of Broken Interest

When interest is required to be calculated in respect of a period of less than a full year, it shall be calculated on the basis of a 360-day year consisting of 12 months of 30 days each and, in the case of an incomplete month, the number of days elapsed on the basis of a month of 30 days.

5 PAYMENTS

5.1 Payment

Principal and interest payments on the Notes represented by the Global Note registered in the name of the Common Depositary or its nominee will be made to the Common Depositary or its nominee, as the case may be, as the registered owner of such Global Note. Interest on Notes due on an Interest Payment Date will be paid on the due date for the payment of interest to the holder shown on the records maintained by Euroclear and Clearstream and the records of the participants at the close of business on the date (the "Interest Record Date") being the fifteenth day before the due date for the payment of interest; provided that, the record date for any Interest Payment Date will be, with respect to Notes represented by a Global Note, the close of business on the Clearing System Business Day immediately prior to the Interest Payment Date, where "Clearing System Business Day" means Monday to Friday inclusive except December 25 and January 1. Payment of all other amounts will be made as provided in these Conditions.

5.2 Agents

The names of the initial agents (together with the Registrar, the "Agents" and each an "Agent") and the Registrar and their specified offices are set out in the Fiscal Agency Agreement. The Company reserves the right under and in accordance with the terms of the Fiscal Agency Agreement at any time to remove any Agent, and to appoint other or further agents or a replacement Registrar, *provided that* it will at all times maintain (i) a Fiscal Agent, (ii) a Paying Agent, (iii) a Registrar, and (iv) (for so long as the Notes are listed on the SGX-ST and the rules of the SGX-ST so require, in the event that the Global Note is exchanged for Certificated Notes) a Singapore Paying Agent. Notice of any such removal or appointment and of any change in the specified office of any Agent will be given promptly by the Company to Noteholders.

5.3 Payment subject to fiscal laws

All payments in respect of the Notes are subject in all cases to any applicable fiscal or other laws and regulations, but without prejudice to the provisions of Condition 8. No commissions or expenses shall be charged to the Noteholders in respect of such payments.

5.4 Payment date convention

If any Interest Payment Date or the Maturity Date would fall on a day that is not a Payment Business Day, that Interest Payment Date or the Maturity Date will be postponed to the following day that is a Payment Business Day, and no interest shall be payable in respect of any such delay.

5.5 Payment Business Day

In these Conditions, "Payment Business Day" means a day (other than a Saturday or Sunday) on which commercial banks and financial institutions are generally open for business in New York City, London, Seoul and (for so long as the Notes are listed on the SGX-ST and the rules of the SGX-ST require the Company to maintain a Singapore Paying Agent) Singapore and, in the case of the surrender of a Certificated Note, in the place where the Certificated Note is surrendered.

6 TRANSFERS OF NOTES

6.1 Transfers

The transfer of ownership of beneficial interests in the Global Note will be effected only through the records maintained by Euroclear and Clearstream (with respect to interests of their respective account holders) and the records of such account holders (with respect to interests of persons other than such account holders). Each Global Note (and any Notes issued in exchange thereof) will be subject to certain restrictions on transfer set forth therein and described under "*Transfer Restrictions.*" Transfers of book-entry interests in the Notes will be effected through the records of Euroclear and Clearstream and their respective participants in accordance with the rules and procedures of Euroclear and Clearstream and their respective direct and indirect participants. Although Euroclear and Clearstream have agreed to the foregoing procedures in order to facilitate transfers of interests in the Global Note among participants and account holders of Euroclear and Clearstream, they are under no obligation to perform or continue to perform such procedures, and such procedures may be discontinued at any time. None of the Company, the Fiscal Agent, the Common Depositary, the Registrar, any Paying Agent, any Transfer Agent nor any other Agent will have any responsibility for the performance by Euroclear, Clearstream or their respective participants, indirect participants or account holders, of their respective obligations under the rules and procedures governing their operations.

6.2 Closed Periods

If Certificated Notes are to be issued in exchange for the Global Note, no Noteholder may require the transfer of a Certificated Note to be registered during the period of (i) 15 days ending on (and including) the due date for any payment of principal in respect of that Note or (ii) seven days ending on (and including) any Interest Record Date (as defined in Condition 5.1).

6.3 Regulations

All transfers of Notes will be made subject to the detailed provisions concerning transfer of Notes set forth in the Fiscal Agency Agreement. The provisions may be changed by the Company with the prior written approval of the Fiscal Agent. A copy of the current provisions will be mailed (free of charge) by uninsured mail at the risk of the relevant Noteholder by the Fiscal Agent to any Noteholder upon request and is available at the specified offices of the Transfer Agents.

7 REDEMPTION AND PURCHASE

7.1 Redemption at Maturity

Unless the Notes have been previously redeemed or repurchased and cancelled as provided below, the Company will redeem the Notes at 100% of their principal amount in U.S. dollars on the Maturity Date. The Notes may be redeemed prior to that date only as provided in Conditions 7.2 and 7.3 below, but without prejudice to Condition 10.

7.2 Redemption for Taxation Reasons

At any time, the Company may, having given not less than 30 or more than 60 days' notice to the holders of the Notes (which notice shall be irrevocable and delivered in accordance with Condition 12), redeem the Notes in whole, but not in part, at 100% of their principal amount plus accrued and unpaid interest, if any, to the date fixed for redemption, *provided that* prior to the delivery of any notice of redemption pursuant to this Condition 7.2, the Company shall deliver to the Fiscal Agent (1) a certificate signed by an authorized officer stating that the obligation to pay Additional Amounts (as defined in Condition 8.1) is as a result of any change in, or amendment to, the laws or regulations of a Relevant Jurisdiction (as defined in Condition 8.2), or any change in the general application or official interpretation of such laws or regulations, which change or amendment becomes effective after the date of the original issuance of the Notes cannot be avoided by the Company taking reasonable measures available to it and (2) an opinion addressed to the Fiscal Agent by an independent law firm of recognized standing admitted to practice in the Republic of Korea to the effect that the Company has or will become obliged to pay such Additional Amounts as a result of a change or amendment referred to above, and the Fiscal Agent shall be entitled to accept such certificate and opinion or advice as sufficient and conclusive evidence of the conditions precedent referred to in this Condition 7.2, in which event it shall be conclusive and binding on the holders of the Notes.

7.3 Purchases

The Company or any of its Subsidiaries may at any time and from time to time repurchase Notes in the open market or otherwise at any price. Such Notes may be held by the Company, resold or surrendered to any Paying Agent for cancellation. If purchases are made by tender, tenders must be available to all Noteholders alike.

7.4 Cancellations

All Notes that are redeemed, repurchased or converted and surrendered to any Paying Agent for cancellation shall forthwith be cancelled. In the case of Notes represented by Certificated Notes, certificates in respect of all Notes cancelled shall be forwarded to or to the order of the Registrar or the Fiscal Agent. Notes cancelled may not be reissued or resold.

7.5 Redemption Procedures

In the event that the Company is required to deliver a notice to the holders of the Notes under this Condition 7, the Company shall provide, or procure the provision by the Fiscal Agent of, the notice to each holder of the Notes in accordance with Condition 12 and the provisions of the Fiscal Agency Agreement, which notice shall state, to the extent applicable:

(a) the date fixed for redemption;

(b) the applicable redemption price of a Note on the redemption date; and

(c) the names and addresses of all Paying Agents.

7.6 Notices Final

Upon the expiry of any notice as is referred to in Condition 7.2 above, the Company shall be bound to redeem the Notes to which the notice refers in accordance with the terms of such paragraph.

8 TAXATION

8.1 Additional Amounts

All payments of principal and interest in respect of the Notes, including any Additional Amounts (as defined below), by or on behalf of the Company shall be made free and clear of and without withholding or deduction for, or on account of, any present or future taxes, duties, assessments or governmental charges of whatever nature ("Taxes") imposed, levied, collected, withheld or assessed by or on behalf of the Relevant Jurisdiction, as defined in Condition 8.2 below, except as required by applicable law. The Company will, subject to the exceptions and limitations set forth below, pay to a holder of any Note such additional amounts (the "Additional Amounts") as may be necessary in order that every net payment by the Company or a Paying Agent of the principal of and interest on the Note and any other amounts payable on the Note after withholding or deduction for or on account of any present or future tax, duty, assessment or governmental charge imposed or levied by a Relevant Jurisdiction, as defined in Condition 8.2 below, will not be less than the amount provided for in the Note to be then due and payable under the Notes.

However, the obligation to pay Additional Amounts shall not apply:

- to the holder or beneficial owner of the Notes who would not be liable for or subject to such deduction or withholding by making a declaration of non-residence or other similar claim for exemption to the relevant tax authority if, after having been requested in writing by the Company to make such a declaration or claim, such holder or beneficial owner of the Notes fails to do so within 30 days; or

- to the holder or beneficial owner of the Notes who is subject to Taxes in respect of the Notes by reason of the existence of any present or former connection between the holder (or between a fiduciary, settlor, beneficiary, member or shareholder of the holder, if the holder is an estate, a trust, a partnership, a limited liability company or a corporation) and a Relevant Jurisdiction, other than merely holding a Note or receiving a payment in respect of a Note, including, without limitation, the holder (or such fiduciary, settlor, beneficiary, member or shareholder) being or having been a citizen or resident of a Relevant Jurisdiction or being or having been engaged in a trade or business or present in a Relevant Jurisdiction or having, or having had, a permanent establishment in a Relevant Jurisdiction; or

- to the holder or beneficial owner of the Notes who presents the relevant Notes, where presentation is required, for payment on a date more than 30 days after the date on which payment became due and payable or the date on which payment thereof is duly provided for, whichever occurs later; or

- to any estate, inheritance, gift, sales, transfer, capital gains, excise or personal property tax or any similar tax, duty, assessment or governmental charge; or

- to any tax, duty, assessment or other governmental charge that is payable otherwise than by withholding or deduction from payments on or in respect of any Note; or

- to any tax, duty, assessment or other governmental charge that would not have been imposed but for the failure to comply with certification, information or other reporting requirements concerning the nationality, residence or identity of the holder or beneficial owner of that Note, if compliance is required by statute or by regulation of a Relevant Jurisdiction as a precondition to relief or exemption from the tax, duty, assessment or other governmental charge, and proper notice has been sent to the holder; or

- to any tax, duty, assessment or other governmental charge required to be withheld by any Paying Agent from any payment of the principal of, or interest on any Note, to the extent such tax, duty, assessment or other governmental charge results from the presentation (where presentation is required) of any Note for payment and the payment can be made without such withholding or deduction by the presentation of the Note for payment by at least one other Paying Agent; or

- to any combination of the items listed above.

Nor will Additional Amounts be paid with respect to any payment on a Note to a holder who is a fiduciary, a partnership, a limited liability company or other than the sole beneficial owner of that payment to the extent that payment would be required by the laws of a Relevant Jurisdiction to be included in the income, for tax purposes, of a beneficiary or settlor with respect to the fiduciary, a member of that partnership, an interestholder in a limited liability company or a beneficial owner who would not have been entitled to the Additional Amounts had that beneficiary, settlor, member, interestholder or beneficial owner been the holder.

References in these Conditions to payments in respect of the Notes shall be deemed to refer to any Additional Amounts that may be payable in respect thereof under this Condition 8.1.

8.2 Interpretation

For purposes of these Conditions:

(a) "Relevant Date" in relation to any Notes means (i) the due date for payment in respect thereof or (ii) if the full amount of the moneys payable on such due date has not been received by the Fiscal Agent or the Principal Paying Agent on or prior to such due date, the date on which notice is duly given to the holders of the Notes that such moneys have been so received; and

(b) "Relevant Jurisdiction" means the Republic of Korea or any political subdivision or any authority thereof or therein having power to tax or any other jurisdiction or any political subdivision or any authority thereof or therein having power to tax to which the Company becomes subject in respect of payments made by it of principal and interest on the Notes.

9 PRESCRIPTION

Claims against the Company in respect of the payment of principal and interest on the Notes shall be prescribed unless made within 10 years (in the case of principal) and five years (in the case of interest) from the Relevant Date (as defined in Condition 8).

10 EVENTS OF DEFAULT

10.1 Events of Default

The holder of any Note may give written notice addressed to the Company and delivered to the Company and the specified office of the Fiscal Agent that the Note is, and it shall accordingly forthwith become, immediately due and repayable at its principal amount, together with interest accrued to the date of repayment, if any of the following events (an "Event of Default") shall have occurred and be continuing:

(a) the Company fails to pay the principal or interest, if any, on, any of the Notes, and in the case of principal, the failure continues for a period of seven days and in the case of interest, the failure continues for a period of 30 days; or

(b) the Company fails to perform or observe any of its other obligations under these Conditions or in the Fiscal Agency Agreement and the failure continues for a period of 60 days following the service by any Noteholder on the Company of a notice requiring the same to be remedied; or

(c) if (i) any Indebtedness for Borrowed Money (as defined below) of the Company or any Restricted Subsidiary becomes due and repayable prematurely by reason of an event of default (however described); (ii) the Company or any Restricted Subsidiary fails to make any payment in respect of any Indebtedness for Borrowed Money on the due date for payment; (iii) any security given by the Company or any Restricted Subsidiary for any Indebtedness for Borrowed Money becomes enforceable or proceedings are commenced to enforce any security; or (iv) default is made by the Company or any Restricted Subsidiary in making any payment due under any guarantee and/or indemnity given by it in relation to any Indebtedness for Borrowed Money of any other person; *provided, that* no event described in this Condition 10.1(c) shall constitute an Event of Default unless the relevant amount of Indebtedness for Borrowed Money or other relative liability due and unpaid, either alone or when aggregated (without duplication) with other amounts of Indebtedness for Borrowed Money and/or other liabilities due and unpaid relative to all (if any) other events specified in (i) to (iv) above which have occurred and are continuing, amounts to at least US$10,000,000 (or its equivalent in any other currency); or

(d) if any order is made by any competent court or resolution is passed for the winding up or dissolution of the Company or any Restricted Subsidiary; or

(e) if (i) proceedings are initiated against the Company or any Restricted Subsidiary under any applicable liquidation, insolvency, composition, reorganization or other similar laws or an application is made (or documents filed with a court) for the appointment of an administrative or other receiver, manager, administrator or other similar official, or an administrative or other receiver, manager, administrator or other similar official is appointed, in relation to the Company or any Restricted Subsidiary or, as the case may be, in relation to the whole or any part of its undertaking or assets or an encumbrancer takes possession of the whole or any part of its undertaking or assets, or a distress, execution, attachment, sequestration or other process is levied, enforced upon, sued out or put in force against the whole or any part of its undertaking or assets and (ii) in any such case (other than the appointment of an administrator) unless initiated by the relevant company, is not discharged within 60 days; or

(f) if the Company or any Restricted Subsidiary (or any of its respective directors or shareholders) initiates or consents to juridical proceedings relating to itself under any applicable liquidation, insolvency, composition, reorganization or other similar laws (including the obtaining of a moratorium) or makes a conveyance or assignment for the benefit of, or enters into any composition or other arrangement with, its creditors generally (or any class of its creditors) or any meeting is convened to consider a proposal for an arrangement or composition with its creditors generally (or any class of its creditors).

10.2 Interpretation

For the purposes of these Conditions:

"Indebtedness for Borrowed Money" means any indebtedness (whether being principal, premium, interest or other amounts) for or in respect of any notes, bonds, debentures, debenture stock, loan stock or other securities or any borrowed money or any liability under or in respect of any acceptance or acceptance credit.

11 REPLACEMENT OF CERTIFICATES

If any Certificated Note is lost, stolen, mutilated, defaced or destroyed it may be replaced at the specified office of the Registrar upon payment by the claimant of the expenses incurred in connection with such replacement and on such terms as to evidence, security, indemnity and otherwise as the Company and Registrar may require (*provided that* the requirement is reasonable in the light of prevailing market practice). Mutilated or defaced Certificated Note must be surrendered before replacements will be issued.

12 NOTICES

All notices to holders of the Notes shall be validly given if mailed to them at their respective addresses in the record of holders of the Notes maintained by Euroclear and Clearstream and by the participants, or published in a leading newspaper having general circulation in Asia (which is expected to be the *Asian Wall Street Journal*). Notwithstanding the foregoing, so long as the Notes are represented by the Global Note and the Global Note is held on behalf of Euroclear and Clearstream, notice to Noteholders may be given by delivery of the relevant notice to Euroclear and Clearstream, for communication by them to entitled accountholders in substitution for notification as required by the foregoing sentence. The Company shall also ensure that notices are duly given or published in a manner which complies with the rules and regulations of any stock exchange on which the Notes are for the time being listed. Any such notice shall be deemed to have been given on the seventh day after being so mailed or on the date of such publication.

13 MEETINGS OF NOTEHOLDERS, MODIFICATION AND WAIVER

13.1 Meetings of Noteholders

The Fiscal Agency Agreement contains provisions for convening meetings of the Noteholders to consider any matter affecting their interests, including the modification by Extraordinary Resolution (as defined below) of any of these Conditions or any of the provisions of the Fiscal Agency Agreement. Such a meeting may be convened by Noteholders holding not less than 10% of the principal amount of the Notes then outstanding. The quorum at any meeting for passing an Extraordinary Resolution will be one or more persons present holding or representing more than 50% of the principal amount of the Notes then outstanding, or at any adjourned meeting, one or more persons present holding or representing more than 25% of the principal amount of the Notes then outstanding; *provided, however,* that no such meeting shall consider the modification, amendment or waiver to the Fiscal Agency Agreement or any Note to (i) change the stated maturity of the Notes or the scheduled dates for payment of principal of or interest on any Note; (ii) reduce the principal of or interest on any such Note; (iii) change the currency of payment of the principal of or interest on such Note; or (iv) reduce the above-stated percentage of the aggregate principal amount of the Notes outstanding or reduce the quorum requirements or the percentage of votes required for the taking of any action, in which case the necessary quorum for passing an Extraordinary Resolution will be one or more persons present holding or representing not less than two-thirds, or at any adjourned meeting not less than one-third, of the principal amount of the Notes for the time being outstanding. An Extraordinary Resolution passed at any meeting of the Noteholders will be binding on all Noteholders, whether or not they are present at the meeting.

"Extraordinary Resolution" means a resolution duly passed by the lesser of (i) a majority in aggregate principal amount of the Notes then outstanding or (ii) 75% in aggregate principal amount of the Notes represented and voting at the meeting.

13.2 Modification

The Company and the Fiscal Agent may agree, without the consent of the Noteholders, to any modification of any of these Conditions or any of the provisions of the Fiscal Agency Agreement either (i) for the purpose of curing any ambiguity or of curing, correcting or supplementing any manifest or proven error or any other defective provision contained herein or therein or (ii) in any other manner which is not materially prejudicial to the interests of the Noteholders. Any modification shall be binding on the Noteholders and, unless the Fiscal Agent determines otherwise, any modification shall be notified by the Company to the Noteholders as soon as practicable thereafter in accordance with Condition 12.

14 FURTHER ISSUANCES

The Company may from time to time, without notice to or the consent of the holders of the Notes, create and issue further debt securities ranking *pari passu* with the Notes in all respects (or in all respects except for the payment of interest accruing prior to the issue date of the additional Notes or except for the first payment of interest following the issue date of the additional Notes). The Company may consolidate such further debt securities with the outstanding Notes to form a single series to the extent permitted under the applicable laws. References in these Conditions to the Notes include (unless the context requires otherwise) any other securities issued pursuant to this Condition 14 and forming a single series with the Notes.

15 GOVERNING LAW AND SUBMISSION TO JURISDICTION

15.1 Governing Law

The Fiscal Agency Agreement and the Notes are governed by, and shall be construed in accordance with, the laws of the State of New York.

15.2 Jurisdiction

The Company agrees that any legal suit, action or proceeding arising out of or based upon the Fiscal Agency Agreement or the Notes may be instituted in any state or federal court in the Borough of Manhattan, the State and City of New York.

The Company, to the fullest extent it is permissible to do so under applicable law, (a) waives any objection which it may have now or hereafter to the laying of the venue of any such suit, action or proceeding in any such court and (b) irrevocably submits to the non-exclusive jurisdiction of any such court in any suit, action or proceeding.

15.3 Appointment of Process Agent

The Company has agreed to irrevocably appoint Capitol Services, Inc., located at 1218 Central Avenue, Suite 100, Albany NY 12205, United States, as its authorized agent in the State of New York to receive service of process in any proceedings in the State of New York based on any of the Notes or the Fiscal Agency Agreement. The Company agrees to take any and all action as may be necessary, including the filing of any and all documents that may be necessary, to maintain such designation and appointment of the authorized agent in full force and effect for a period of six years from the date of issuance of the Notes.

15.4 Sovereign Immunity

To the extent that the Company has or hereafter may acquire any immunity (sovereign or otherwise) from any legal action, suit or proceeding, from jurisdiction of any court or from set-off or any legal process (whether service or notice, attachment in aid or otherwise) against the Company or any of its assets which may arise in connection with the Fiscal Agency Agreement or the Notes, to the fullest extent it is able to do so under applicable law, the Company (a) hereby irrevocably waives and agrees not to plead or claim such immunity with respect to the Fiscal Agency Agreement and the Notes and (b) irrevocably and unconditionally consents to the giving of any relief or the issue of any process, including, without limitation, the making, enforcement or execution against any property whatsoever (irrespective of its use or intended use) of any order or judgment made or given in connection with any suit, action or proceeding in connection with the Fiscal Agency Agreement or the Notes.

15.5 Currency Indemnity

The Company's obligations under the Notes to make all payments in U.S. dollars will not be satisfied by any payment, recovery or any other realization of proceeds in any currency other than the U.S. dollar. If pursuant to any such judgment, conversion shall be made on a date (the "Substitute Date") other than the date of entry of judgment (the "Judgment Date") and there shall occur a change between the market exchange rate for the U.S. dollar as in effect on the Substitute Date and the market exchange rate as in effect on the Judgment Date, the Company agrees to pay such additional amounts (if any) in U.S. dollars as may be necessary to ensure that the amount paid is equal to the amount in such other currency or currency unit which, when converted at the market exchange rate as in effect on the Judgment Date, is the amount due under any Notes. To the extent permitted by applicable law, any amount due from the Company under this Condition shall be due as a separate debt and is not to be affected by or merged into any judgment being obtained for any other sums due in respect of any Notes. In no event, however, shall the Company be required to pay more in U.S. dollars due under the Notes at the market exchange rate as in effect on the Judgment Date than the amount of U.S. dollars stated to be due under the Notes so that in any event the Company's obligations under the Notes will be effectively maintained as obligations in U.S. dollars and the Company shall be entitled to withhold (or be reimbursed for, as the case may be) any excess of the amount actually realized upon any such conversion on the Substitute Date over the amount due on the Judgment Date.

THE GLOBAL NOTE

Capitalized terms used in this section and not otherwise defined shall have the meanings given to them in "Terms and Conditions of the Notes."

The Notes will initially be represented by the Global Note. The Global Note will be deposited with and registered in the name of a nominee of the Common Depositary, and Euroclear and Clearstream will credit their respective account holders with the respective principal amounts of the individual interests represented by such Global Note. Such accounts will be designated initially by or on behalf of the representative of the Initial Purchasers. Ownership of beneficial interests in the Global Note will be limited to persons who have accounts with Euroclear or Clearstream or persons who hold interests through such account holders. Ownership of beneficial interests in the Global Note will be shown on, and the transfer of that ownership will be effected only through, the records maintained by Euroclear and Clearstream (with respect to interests of their respective account holders) and the records of such account holders (with respect to interests of persons other than such account holders).

Each Global Note (and any Notes issued in exchange thereof) will be subject to certain restrictions on transfer set forth therein and described under "Transfer Restrictions." Except in the limited circumstances described in the terms and conditions of the Notes, owners of beneficial interests in the Global Note will not be entitled to receive physical delivery of certificates representing their Notes. The laws of certain jurisdictions require that certain purchasers of the Notes take physical delivery of such Notes in certificated form. Accordingly, the ability of beneficial owners to own, transfer or pledge beneficial interests in the Global Note may be limited by such laws.

Payments in respect of the Notes represented by the Global Note will be made to the Common Depositary or its nominee as the registered owner thereof. None of the Company, the Fiscal Agent, the Common Depositary, the Registrar, any Paying Agent, any Transfer Agent or any other Agent will have any responsibility or liability for the accuracy of any of the records relating to, or payments made on account of, ownership interests in the Global Note or for any notice permitted or required to be given to persons with beneficial interests in the Global Note or any consent given or actions taken by such persons. The Company expects that the Common Depositary, upon receipt of any payment in respect of any Notes represented by the Global Note held by it or its nominee, will promptly credit the accounts of the participants of Euroclear and Clearstream with payments proportionate to their respective interests in the principal amount of the Notes represented by the Global Note as shown on its records.

Transfers of book-entry interests in the Notes will be effected through the records of Euroclear and Clearstream and their respective participants in accordance with the rules and procedures of Euroclear and Clearstream and their respective direct and indirect participants.

Although Euroclear and Clearstream have agreed to the foregoing procedures in order to facilitate transfers of interests in the Global Note among participants and account holders of Euroclear and Clearstream, they are under no obligation to perform or continue to perform such procedures, and such procedures may be discontinued at any time. None of the Company, the Fiscal Agent, the Common Depositary, the Registrar, any Paying Agent, any Transfer Agent or any other Agent will have any responsibility for the performance by Euroclear, Clearstream or their respective participants, indirect participants or account holders, of their respective obligations under the rules and procedures governing their operations.

Euroclear and Clearstream each holds the Notes for participating organizations and facilitates the clearance and settlement of Note transactions between its respective participants through electronic book-entry changes in accounts of such participants. Euroclear and Clearstream provide to their respective participants, among other things, services for safekeeping, administration, clearance and settlement of internationally traded securities and securities lending and borrowing. Participants of Euroclear and Clearstream are financial institutions throughout the world, including underwriters, securities brokers and dealers, banks, trust companies, clearing corporations and certain other organizations. Indirect access to Euroclear and Clearstream is also available to others, such as banks, brokers, dealers and trust companies which clear through or maintain a custodial relationship with a participant of Euroclear or Clearstream, either directly or indirectly.

Certificated Notes

The Company will execute and deliver to the Fiscal Agent, and the Fiscal Agent or any Paying Agent as agent of the Fiscal Agent will authenticate, the Certificated Notes in exchange for the Global Note, if:

(i) either Euroclear or Clearstream or a successor clearing system is closed for business for a continuous period of 14 days (other than by reason of holidays, statutory or otherwise) or announces an intention permanently to cease business or does in fact do so; or

(ii) an Event of Default has occurred and is continuing.

Upon receipt of the relevant notice from Euroclear, Clearstream or the Fiscal Agent, as the case may be, the Company will use its best efforts to make arrangements for the exchange of interests in the relevant Global Note for Certificated Notes and cause the requested Certificated Notes to be executed and delivered to the Fiscal Agent in sufficient quantities and authenticated by the Fiscal Agent for delivery to holders or persons to whom such delivery is requested by holders. Persons exchanging interests in the Global Note for Certificated Notes will be required to provide to the Fiscal Agent, through the relevant clearing system, written instructions and other information required by the Company and the Fiscal Agent to complete, execute, authenticate and deliver such Certificated Notes. Any Certificated Notes delivered in exchange for the Notes represented by the Global Note or beneficial interests therein will be registered in the names requested and issued in the principal amount of US$200,000 and integral multiples of US$1,000 in excess thereof.

The Clearing Systems

Euroclear

Euroclear was created in 1968 to hold securities for its participants and to clear and settle transactions between its participants through simultaneous electronic book-entry delivery against payment, thereby eliminating the need for physical movement of certificates and any risk from lack of simultaneous transfers of securities and cash. Euroclear includes various other services, including securities lending and borrowing, and interfaces with domestic markets in several countries. Euroclear is operated by Euroclear Bank SA/NV (the “Euroclear Operator”), under contract with Euroclear Clearance Systems, S.C., a Belgian cooperative corporation (the “Cooperative”). All operations are conducted by the Euroclear Operator, and all Euroclear securities clearance accounts and Euroclear cash accounts are accounts with the Euroclear Operator, not the Cooperative. The Cooperative establishes policy for Euroclear on behalf of Euroclear participants. Euroclear participants include banks (including central banks), securities brokers and dealers and other professional financial intermediaries and may include the Initial Purchaser. Indirect access to Euroclear is also available to others that clear through or maintain a custodial relationship with a Euroclear participant, either directly or indirectly.

The Euroclear Operator was granted a banking license by the Belgian Banking and Finance Commission in 2000, authorizing it to carry out banking activities on a global basis. It took over operation of Euroclear from the Brussels, Belgium office of Morgan Guaranty Trust Company of New York on December 31, 2000.

Securities clearance accounts and cash accounts with the Euroclear Operator are governed by the Terms and Conditions Governing Use of Euroclear and the related Operating Procedures of the Euroclear System, and applicable Belgian law (collectively, the “Euroclear Terms and Conditions”). The Euroclear Terms and Conditions govern transfers of securities and cash within Euroclear, withdrawals of securities and cash from Euroclear, and receipts of payments with respect to securities in Euroclear. All securities in Euroclear are held on a fungible basis without attribution of specific certificates to specific securities clearance accounts.

The Euroclear Operator acts under the Euroclear Terms and Conditions only on behalf of Euroclear participants and has no record of or relationship with persons holding through Euroclear participants. Distributions with respect to the Notes held beneficially through Euroclear will be credited to the cash accounts of Euroclear participants in accordance with the Euroclear Terms and Conditions, to the extent received by Euroclear.

Clearstream

Clearstream was incorporated under the laws of The Grand Duchy of Luxembourg as a professional depositary. Clearstream holds securities for its participants and facilitates the clearance and settlement of securities transactions between its participants through electronic book-entry changes in accounts of its participants, thereby eliminating the need for physical movement of certificates. Clearstream provides to its participants, among other things, services for safekeeping, administration, clearance and settlement of internationally traded securities and securities lending and borrowing. Clearstream interfaces with domestic markets in several countries. As a professional depositary, Clearstream is subject to regulation by the Luxembourg Monetary Institute. Clearstream participants are financial institutions around the world, including securities brokers and dealers, banks, trust companies, clearing corporations and certain other organizations and may include the Initial Purchasers. Indirect access to Clearstream is also available to others that clear through or maintain a custodial relationship with a Clearstream participant either directly or indirectly.

Distributions with respect to the Notes held beneficially through Clearstream will be credited to cash accounts of Clearstream participants in accordance with its rules and procedures, to the extent received by Clearstream.

Initial Settlement

Initial settlement for the Notes will be made in immediately available funds. All Notes will be represented by the Global Note which will be deposited with and registered in the name of a nominee of the Common Depositary, as custodian for Euroclear and Clearstream. Euroclear and Clearstream will hold such Notes on behalf of their participants, which are financial institutions. As a result, investors' interests in Notes held in book-entry form through Euroclear and Clearstream will be held through accounts at financial institutions acting on their behalf as direct and indirect participants in Euroclear and Clearstream.

Investors will follow the settlement procedures applicable to conventional Eurobonds in registered form. Notes will be credited to the securities custody accounts of Euroclear holders and of Clearstream holders on the business day following the settlement date against payment for value on the settlement date.

Secondary Market Trading

Secondary market trading between Euroclear participants and/or Clearstream participants will occur in the ordinary way in accordance with the applicable rules and operating procedures of Euroclear and Clearstream and will be settled using the procedures applicable to conventional Eurobonds in same-day funds.

TAXATION

Korean Taxation

The information provided below does not purport to be a complete summary of Korean tax law and practice currently applicable. This summary is based on laws, regulations, rulings and decision in effect as of the date of this Offering Circular. These laws, regulations, rulings and/or decisions may change; any such change could apply retroactively and could affect the continued validity of this summary. In addition, this summary does not describe all of the tax considerations that may be relevant to you or your situation, particularly if you are subject to special tax rules. Prospective investors who are in any doubt as to their tax position should consult with their own professional advisers.

The taxation of non-resident individuals and non-Korean corporations ("Non-Residents") depends on whether they have a "permanent establishment" (as defined under Korean law and applicable tax treaty) in Korea to which the relevant Korean source income is attributable or with which such income is effectively connected. Non-Residents without a permanent establishment in Korea are taxed in the manner described below. Non-Residents with permanent establishments in Korea are taxed in accordance with different rules.

Tax on Interest

Interest paid to Non-Residents (excluding payments to their permanent establishment in Korea) on the Notes, being foreign currency denominated bonds issued outside Korea, is exempt from income tax and corporation tax (whether payable by withholding or otherwise) pursuant to the Special Tax Treatment Control Law of Korea (the "STTCL").

If the tax exemption under the STTCL referred to above were to cease to be in effect, the rate of income tax or corporation tax applicable to interest on the Notes, for a Non-Resident without a permanent establishment in Korea, would be 14% of income. In addition, a tax surcharge called a local income tax would be imposed at the rate of 10% of the income tax or corporation tax (raising the total tax rate to 15.4%).

The tax is withheld by the payer or the Company.

The tax rates may be reduced by an applicable tax treaty, convention or agreement between Korea and the country of the recipient of the income. The relevant tax treaties are discussed below.

Tax on Capital Gains

Korean tax laws currently exclude from Korean taxation gains made by a Non-Resident without a permanent establishment in Korea from the sale of the Notes to Non-Residents (other than to their permanent establishments in Korea). In addition, capital gains earned by Non-Residents with or without permanent establishments in Korea from the transfer taking place outside Korea of the Notes are currently exempt from taxation by virtue of the STTCL, provided that the issuance of the Notes is deemed to be an overseas issuance under the STTCL.

If the exclusion or exemption from Korean taxation referred to above were to cease to be in effect, in the absence of an applicable treaty reducing or eliminating tax on capital gains, the applicable rate of tax would be the lower of 11% (including local income tax) of the gross realization proceeds and (subject to the production of satisfactory evidence of the acquisition cost and certain direct transaction costs of the relevant Note) 22% (including local income tax) of the realized gain (i.e., the excess of the gross realization proceeds over the acquisition cost and certain direct transaction costs) made. If such evidence shows that no gain (or a loss) was made on the sale, no Korean tax is payable. With respect to computing the above-mentioned 22% withholding tax (including local income tax) on the realized gain, please note that there is no provision under relevant Korean law for offsetting gains and losses or otherwise aggregating transactions for the purpose of computing the net gain attributable to sales of Notes issued by Korean companies. The purchaser or any other designated withholding agent of Notes is obliged under Korean law to withhold the applicable amount of Korean tax and make payment thereof to the relevant Korean tax authority. Unless the seller can claim the benefit of an exemption from tax under an applicable tax treaty or on the failure of the seller to produce satisfactory evidence of his acquisition cost and certain direct transaction costs in relation to the instruments being sold, the purchaser or such withholding agent must withhold an amount equal to 11% (including local income tax) of the gross realization proceeds. Any amounts withheld by the purchaser or withholding agent must be paid to the competent Korean tax office. The purchaser or withholding agent must pay any withholding tax no later than the tenth day of the month following the month in which the payment for the purchase of the relevant instruments occurred. Failure to transmit the withheld tax to the Korean tax authorities in time subjects the purchaser or the withholding agent to penalties under Korean tax laws. The Korean tax authorities may attempt to collect such tax from a Non-Resident who is liable for payment of any Korean tax on gains, as a purchaser or withholding agent who is obliged to withhold such tax, through proceedings against payments due to the Non-Resident from its Korean investments and the assets or revenues of any of the Non-Resident's branch or representative offices in Korea.

Inheritance Tax and Gift Tax

Korean inheritance tax is imposed upon (a) all assets (wherever located) of the deceased if at the time of his death he was domiciled in Korea or resided in Korea for at least 183 days immediately prior to his death and (b) all property located in Korea which passes on death (irrespective of the domicile of the deceased). Gift tax is imposed in similar circumstances to the above. The taxes are imposed if the value of the relevant property is above a certain limit and the rate varies from 10% to 50% according to the value of the relevant property and the identity of the persons involved. At present, Korea has not entered into any tax treaties regarding its inheritance or gift taxes.

Under Korean inheritance and gift tax laws, bonds issued by Korean corporations are deemed located in Korea irrespective of where they are physically located or by whom they are owned. Consequently, the Korean inheritance and gift taxes will be imposed on transfers of the Notes by inheritance or gift. Holders should consult their personal tax advisers regarding the consequences of the imposition of the Korean inheritance or gift tax.

Stamp Duty and Securities Transaction Tax

No stamp, issue or registration duties will be payable in Korea by the Holders in connection with the issue of the Notes except for a nominal amount of stamp duty on certain documents executed in Korea which will be paid by the Company. No securities transaction tax will be imposed upon the transfer of the Notes.

Tax Treaties

At the date of this Offering Circular, Korea has tax treaties with, *inter alia*, Australia, Austria, Belgium, Brazil, Bulgaria, Canada, China, Czech Republic, Denmark, Egypt, Finland, France, Germany, India, Indonesia, Ireland, Italy, Japan, Luxembourg, Malaysia, Mexico, Mongolia, the Netherlands, New Zealand, Norway, Pakistan, Philippines, Poland, Republic of Fiji, Romania, Singapore, Spain, Sri Lanka, Sweden, Switzerland, Thailand, Tunisia, Turkey, the United Kingdom, the United States of America and Vietnam under which the rate of withholding tax on interest is reduced, generally to between 5 and 16.5% (including local income tax), and the tax on capital gains is often eliminated.

Each Holder should inquire whether he is entitled to the benefit of a tax treaty with respect to any transaction involving the Notes. It is the responsibility of the party claiming the benefits of a tax treaty in respect of interest payments to file with the payer or the Company a certificate as to his country of tax residence. In the absence of sufficient proof, the payer or the Company, as the case may be, must withhold taxes in accordance with the above discussion.

Further, in order for a non-resident to obtain the benefit of a tax exemption under an applicable tax treaty, Korean tax law requires such non-resident (or its agents) to submit to the payer of such Korean source income an application for tax exemption under a tax treaty along with a certificate of tax residency of such non-resident issued by a competent authority of the non-resident's country of residence, subject to certain exceptions. The payer of such Korean source income, in turn, is required to submit such exemption application to the relevant district tax office in Korea by the ninth day of the month following the date of the first payment of such income. However, this requirement does not apply to tax exemptions under Korean tax law such as the STTCL. Furthermore, in order to obtain a reduced rate of withholding tax on interest, a Non-Resident as a beneficial owner of the interest, must submit to the payer of the interest, prior to the payment date, the Application for Entitlement to Reduced Tax Rate. If interest is paid to an overseas investment vehicle, the overseas investment vehicle must submit a Report of Overseas Investment Vehicle and a Schedule of Beneficial Owners, with certain exceptions.

Withholding and Gross Up

As mentioned above, interest on the Notes is exempt from any withholding or deduction on account of income tax or corporation tax pursuant to the STTCL. However, in the event that the payer or the Company is required by law to make any withholding or deduction for or on account of any Korean taxes (as more fully described in "Terms and Conditions of the Notes – Additional Amounts"), the Company has agreed to pay (subject to the customary exceptions as set out in "Terms and Conditions of the Notes – Additional Amounts") such Additional Amounts as may be necessary in order that the net amounts received by the Holder of any Note after such withholding or deduction shall equal the respective amounts which would have been received by such Holder in the absence of such withholding or deduction.

PLAN OF DISTRIBUTION

The Company and the initial purchasers named below (the “Initial Purchasers”) have entered into a Purchase Agreement dated July 27, 2020 (the “Purchase Agreement”) with respect to the Notes. Citigroup Global Markets Limited, Crédit Agricole Corporate and Investment Bank and The Hongkong and Shanghai Banking Corporation Limited are acting as joint bookrunners and lead managers in this offering and are the representatives of the Initial Purchasers (the “Representatives”). Subject to the terms and conditions set forth in the Purchase Agreement, each of the Initial Purchasers has severally agreed to purchase the principal amount of the Notes set out opposite its name below.

Initial Purchasers	Principal Amount of the Notes
Citigroup Global Markets Limited	US$100,000,000
Crédit Agricole Corporate and Investment Bank	100,000,000
The Hongkong and Shanghai Banking Corporation Limited	100,000,000
Total	US$300,000,000

The Purchase Agreement provides that the obligation of the Initial Purchasers to pay for and accept delivery of the Notes is subject to certain conditions precedent. The Initial Purchasers are obligated to take and pay for the entire principal amount of the Notes, if any such Notes are purchased. The purchase price for the Notes will be the initial offering price set forth on the cover page of this Offering Circular less an underwriting discount. If all the Notes are not sold at the initial offering price, the Representatives may change the offering price and the other selling terms at any time without notice.

The Purchase Agreement provides that the Company will indemnify the Initial Purchasers against certain liabilities, including liabilities under the Securities Act, and will contribute to payments the Initial Purchasers may be required to make in respect thereof.

The Company has agreed for a period of 30 days after the date of the Purchase Agreement, not to offer, sell, contract to sell, pledge or otherwise dispose of, directly or indirectly, any debt securities (other than those denominated in Won) issued or guaranteed by us and having a maturity of more than one year from the date of issue, or publicly disclose the intention to make any such offer, sale, pledge or disposition, without the prior written consent of the Initial Purchasers.

New Issue of Notes

The Notes are a new issue of securities with no established trading market. Approval in-principle has been received from the SGX-ST for the listing and quotation of the Notes on the SGX-ST. The Initial Purchasers have advised the Company that they intend to make a market in the Notes as permitted by applicable laws and regulations. The Initial Purchasers are not obligated, however, to make a market in the Notes and any such market-making may be discontinued at any time at the sole discretion of the Initial Purchasers. Accordingly, no assurance can be given as to the liquidity of, or trading market for, the Notes.

Delivery of the Notes

Delivery of the Notes, against payment in same-day funds, is expected on or about August 3, 2020.

Short Positions

In connection with the offering, the Initial Purchasers may purchase and sell the Notes in the open market. These transactions may include short sales and purchases on the open market to cover positions created by short sales. Short sales involve the sale by the Initial Purchasers of a greater principal amount of Notes than they are required to purchase in the offering. The Initial Purchasers must close out any short position by purchasing Notes in the open market. A short position is more likely to be created if the Initial Purchasers are concerned that there may be downward pressure on the price of the Notes in the open market after pricing that could adversely affect investors who purchase in the offering.

Similar to other purchase transactions, the Initial Purchasers' purchases to cover the syndicate short sales may have the effect of raising or maintaining the market price of the Notes or preventing or retarding a decline in the market price of the Notes. As a result, the price of the Notes may be higher than the price that might otherwise exist in the open market.

None of us and the Initial Purchasers make any representation or prediction as to the direction or magnitude of any effect that the transactions described above may have on the price of the Notes. In addition, none of the Company and the Initial Purchasers make any representation that the Initial Purchasers will engage in these transactions or that these transactions, once commenced, will not be discontinued without notice.

Selling Restrictions

General

No action has been or will be taken in any jurisdiction that would permit a public offering of the Notes, or the possession, circulation or distribution of this Offering Circular or any amendment or supplement to this Offering Circular, in any country or jurisdiction where action for any such purposes is required. Accordingly, the Notes may not be offered or sold, directly or indirectly, and neither this Offering Circular nor any other offering material or advertisements in connection with the Notes may be distributed or published, in or from any country or jurisdiction except under circumstances that will result in compliance with applicable laws and regulations.

United States

The Notes have not been and will not be registered under the Securities Act and may not be offered or sold within the United States except in certain transactions exempt from the registration requirements of the Securities Act. Accordingly, the Notes are being offered and sold outside the United States in reliance on Regulation S. Terms used in this paragraph have the meanings given to them by Regulation S.

Each Initial Purchaser has agreed that, except as permitted by the Purchase Agreement, it will not offer, sell or deliver the Notes within the United States.

In addition, until 40 days after commencement of the offering, an offer or sale of Notes within the United States by an Initial Purchaser (whether or not participating in the offering) may violate the registration requirements of the Securities Act.

European Economic Area

In relation to each Member State of the European Economic Area, each Initial Purchaser has represented and agreed that it has not made and will not make an offer of Notes which are the subject of the offering contemplated by this Offering Circular to the public in that Member State other than:

(a) to any legal entity which is a qualified investor as defined in the Prospectus Regulation;

(b) to fewer than 150 natural or legal persons (other than qualified investors as defined in the Prospectus Regulation), subject to obtaining the prior consent of the relevant Initial Purchaser or Initial Purchasers nominated by the Company for any such offer; or

(c) in any other circumstances falling within Article 1(4) of the Prospectus Regulation,

provided that no such offer of Notes shall require the Company or any Initial Purchaser to publish a prospectus pursuant to Article 3 of the Prospectus Regulation or supplement a prospectus pursuant to Article 23 of the Prospectus Regulation.

For the purposes of this provision, the expression an "offer of Notes to the public" in relation to any Notes in any Member State means the communication in any form and by any means of sufficient information on the terms of the offer and the Notes to be offered so as to enable an investor to decide to purchase or subscribe for the Notes and the expression "Prospectus Regulation" means Regulation (EU) 2017/1129.

United Kingdom

Each Initial Purchaser has represented and agreed that:

(a) it has only communicated or caused to be communicated and will only communicate or cause to be communicated an invitation or inducement to engage in investment activity (within the meaning of Section 21 of the Financial Services and Markets Act of 2000 (the "FSMA")) received by it in connection with the issue or sale of the Notes in circumstances in which Section 21(1) of the FSMA does not apply to the Company; and

(b) it has complied and will comply with all applicable provisions of the FSMA with respect to anything done by it in relation to the Notes in, from or otherwise involving the United Kingdom.

Korea

The Notes have not been registered with the FSC under the FSCMA. Accordingly, the Notes have not been and will not be offered, delivered, or sold directly or indirectly in Korea or to any resident of Korea (as defined in the Foreign Exchange Transactions Act of Korea and the regulations thereunder) or to others for re-offering or resale directly or indirectly in Korea or to any resident of Korea except as otherwise permitted under applicable Korean laws and regulations. In addition, within one year following the issuance of the Notes, the Notes may not be transferred to any resident of Korea other than a Korean QIB registered with the KOFIA as a Korean QIB, provided that the amount of the Notes acquired by such Korean QIBs in the primary market is limited to no more than 20% of the aggregate issue amount of the Notes.

Japan

The Notes have not been and will not be registered under the Financial Instruments and Exchange Act of Japan (Act No. 25 of 1948, as amended, the "Financial Instruments and Exchange Act"). Accordingly, each Initial Purchaser has represented and agreed that it has not, directly or indirectly, offered or sold and will not, directly or indirectly, offer or sell any Notes in Japan or to, or for the benefit of, any resident of Japan (which term as used herein means any person resident in Japan, including any corporation or other entity organized under the laws of Japan) or to others for re-offering or re-sale, directly or indirectly, in Japan or to, or for the benefit of, any resident of Japan except pursuant to an exemption from the registration requirements of, and otherwise in compliance with, the Financial Instruments and Exchange Act and other relevant laws and regulations of Japan.

Hong Kong

Each Initial Purchaser has represented and agreed that:

(a) it has not offered or sold and will not offer or sell in Hong Kong, by means of any document, any Notes other than (i) to "professional investors" as defined in the Securities and Futures Ordinance (Cap. 571) of Hong Kong (the "SFO") and any rules made under the SFO; or (ii) in other circumstances which do not result in the document being a "prospectus" as defined in the Companies (Winding Up and Miscellaneous Provisions) Ordinance (Cap. 32) of Hong Kong (the "C(WUMP)O") or which do not constitute an offer to the public within the meaning of the C(WUMP)O; and

(b) it has not issued or had in its possession for the purposes of issue, and will not issue or have in its possession for the purposes of issue, whether in Hong Kong or elsewhere, any advertisement, invitation or document relating to the Notes, which is directed at, or the contents of which are likely to be accessed or read by, the public of Hong Kong (except if permitted to do so under the securities laws of Hong Kong) other than with respect to the Notes which are or are intended to be disposed of only to persons outside Hong Kong or only to "professional investors" as defined in the SFO and any rules made under the SFO.

Singapore

Each Initial Purchaser has acknowledged that this Offering Circular has not been and will not be registered as a prospectus with the Monetary Authority of Singapore under the Securities and Futures Act, Chapter 289 of Singapore (the "SFA"). Accordingly, each Initial Purchaser has represented and agreed that it has not offered or sold any Notes or caused the Notes to be made the subject of an invitation for subscription or purchase and will not offer or sell any Notes or cause the Notes to be made the subject of an invitation for subscription or purchase, and has not circulated or distributed, nor will it circulate or distribute, this Offering Circular or any other document or material in connection with the offer or sale, or invitation for subscription or purchase, of the Notes, whether directly or indirectly, to any person in Singapore other than (i) to an institutional investor under Section 274 of the SFA, (ii) to a relevant person pursuant to Section 275(1) of the SFA, or any person pursuant to Section 275(1A) of the SFA, and in accordance with the conditions specified in Section 275 of the SFA and (where applicable) Regulation 3 of the Securities and Futures (Classes of Investors) Regulations 2018 of Singapore, or (iii) otherwise pursuant to, and in accordance with the conditions of, any other applicable provision of the SFA.

Where the Notes are subscribed or purchased under Section 275 of the SFA by a relevant person which is:

(a) a corporation (which is not an accredited investor (as defined in Section 4A of the SFA)) the sole business of which is to hold investments and the entire share capital of which is owned by one or more individuals, each of whom is an accredited investor; or

(b) a trust (where the trustee is not an accredited investor) whose sole purpose is to hold investments and each beneficiary of the trust is an individual who is an accredited investor,

securities or securities-based derivatives contracts (each term as defined in the SFA) of that corporation or the beneficiaries' rights and interest (howsoever described) in that trust shall not be transferred within six months after that corporation or that trust has acquired the Notes pursuant to an offer made under Section 275 of the SFA, except:

(1) to an institutional investor or to a relevant person defined in Section 275(2) of the SFA or to any person arising from an offer referred to in Section 275(1A) or Section 276(4)(i)(B) of the SFA;

(2) where no consideration is or will be given for the transfer;

(3) where the transfer is by operation of law;

(4) as specified in Section 276(7) of the SFA; or

(5) as specified in Regulation 37A of the Securities and Futures (Offers of Investments) (Securities and Securities-based Derivatives Contracts) Regulations 2018 of Singapore.

Other Relationships

Some of the Initial Purchasers and their affiliates have engaged in, and may in the future engage in, investment banking and other commercial dealings in the ordinary course of business with the Company or its affiliates. They have received, or may in the future receive, customary fees and commissions for these transactions.

The Initial Purchasers or certain of their affiliates may purchase Notes and be allocated Notes for asset management and/or proprietary purposes but not with a view to distribution. The Initial Purchasers or their respective affiliates may purchase Notes for its or their own account and enter into transactions, including credit derivatives, such as asset swaps, repackaging and credit default swaps relating to Notes and/or the Company's other securities at the same time as the offer and sale of Notes or in secondary market transactions. Such transactions would be carried out as bilateral trades with selected counterparties and separately from any existing sale or resale of Notes to which this Offering Circular relates (notwithstanding that such selected counterparties may also be purchasers of Notes). The Company has been advised by the Initial Purchasers that they may offer and sell Notes to or through any of their respective affiliates and any such affiliate may offer and sell Notes purchased by it to or through any Initial Purchaser.

In addition, in the ordinary course of their business activities, the Initial Purchasers and their affiliates may make or hold a broad array of investments and actively trade debt and equity securities (or related derivative securities) and financial instruments (including bank loans) for their own account and for the accounts of their customers. Such investments and securities activities may involve securities and/or instruments of the Company and its affiliates. Certain of the Initial Purchasers or their affiliates that have a lending relationship with the Company routinely hedge their credit exposure to the Company consistent with their customary risk management policies. Typically, such Initial Purchasers and their affiliates would hedge such exposure by entering into transactions which consist of either the purchase of credit default swaps or the creation of short positions in the Company's securities, including potentially the Notes. Any such short positions could adversely affect future trading prices of the Notes. The Initial Purchasers and their affiliates may also make investment recommendations and/or publish or express independent research views in respect of such securities or financial instruments and may hold, or recommend to clients that they acquire, long and/or short positions in such securities and instruments.

TRANSFER RESTRICTIONS

Because of the following restrictions, investors are advised to consult legal counsel prior to making any offer, resale, pledge or other transfer of the Notes offered pursuant to this Offering Circular.

Transfer Restrictions Applicable to the Notes

The Notes have not been and will not be registered under the Securities Act or the securities laws of any state of the United States. The Notes may not be offered or sold directly or indirectly within the United States, as defined in Regulation S except pursuant to an exemption from, or in a transaction not subject to, the registration requirements of the Securities Act.

Except in certain limited circumstances, interest in the Notes may only be held through interest in the Global Note. Such interest in the Global Note will be shown on, and transfers thereof will be effected only through, records maintained by Euroclear, Clearstream and their respective direct and indirect participants. See "Terms and Conditions of the Notes."

Transfer Restrictions under Korean Laws and Regulations

Each purchaser of the Notes, by accepting delivery of this Offering Circular, will be deemed to have acknowledged, represented and agreed as follows:

> THE NOTES HAVE NOT BEEN AND WILL NOT BE REGISTERED UNDER THE FINANCIAL INVESTMENT SERVICES AND CAPITAL MARKETS ACT (THE "FSCMA"). ACCORDINGLY, THE NOTES MAY NOT BE OFFERED, SOLD OR DELIVERED, DIRECTLY OR INDIRECTLY, IN KOREA OR TO, OR FOR THE ACCOUNT OR BENEFIT OF, ANY RESIDENT OF KOREA (AS DEFINED IN THE FOREIGN EXCHANGE TRANSACTIONS ACT OF KOREA AND THE REGULATIONS THEREUNDER) OR TO OTHERS FOR RE-OFFERING OR RESALE DIRECTLY OR INDIRECTLY IN KOREA OR TO ANY RESIDENT OF KOREA EXCEPT AS OTHERWISE PERMITTED UNDER APPLICABLE KOREAN LAWS AND REGULATIONS.
>
> IN ADDITION, WITHIN ONE YEAR FOLLOWING THE ISSUANCE OF THE NOTES, THE NOTES MAY NOT BE TRANSFERRED TO ANY RESIDENT OF KOREA OTHER THAN A QUALIFIED INSTITUTIONAL BUYER (OR A "KOREAN QIB," AS DEFINED IN THE REGULATION ON THE ISSUANCE, PUBLIC DISCLOSURE, ETC. OF SECURITIES OF KOREA) REGISTERED WITH THE KOREA FINANCIAL INVESTMENT ASSOCIATION (THE "KOFIA") AS A KOREAN QIB, PROVIDED THAT THE AMOUNT OF THE NOTES ACQUIRED BY SUCH KOREAN QIBS IN THE PRIMARY MARKET IS LIMITED TO NO MORE THAN 20% OF THE AGGREGATE ISSUE AMOUNT OF THE NOTES.

Transfer Restrictions under the laws of Singapore

Where the Notes are initially subscribed or purchased by (i) an institutional investor under Section 274 of the SFA, or (ii) a relevant person pursuant to Section 275(1) of the SFA, or any person pursuant to Section 275(1A) of the SFA, and in accordance with the conditions specified in Section 275 of the SFA and (where applicable) Regulation 3 of the Securities and Futures (Classes of Investors) Regulations 2018 of Singapore, the Notes may only be sold or transferred: (a) at any time, to an institutional investor under Section 274 of the SFA; (b) at any time, to a relevant person defined in Section 275(2) of the SFA, or to any person pursuant to an offer referred to in Section 275(1A) of the SFA; or (c) otherwise pursuant to, and in accordance with the conditions of, any other applicable provision of the SFA.

Further, where the Notes are subscribed or purchased under Section 275 of the SFA by a relevant person which is:

(a) a corporation (which is not an accredited investor (as defined in Section 4A of the SFA)) the sole business of which is to hold investments and the entire share capital of which is owned by one or more individuals, each of whom is an accredited investor; or

(b) a trust (where the trustee is not an accredited investor) whose sole purpose is to hold investments and each beneficiary of the trust is an individual who is an accredited investor,

securities or securities-based derivatives contracts (each term as defined in the SFA) of that corporation or the beneficiaries' rights and interest (howsoever described) in that trust shall not be transferred within six months after that corporation or that trust has acquired the Notes pursuant to an offer made under Section 275 of the SFA except:

(1) to an institutional investor or to a relevant person defined in Section 275(2) of the SFA or to any person arising from an offer referred to in Section 275(1A) or Section 276(4)(i)(B) of the SFA;

(2) where no consideration is or will be given for the transfer;

(3) where the transfer is by operation of law;

(4) as specified in Section 276(7) of the SFA; or

(5) as specified in Regulation 37A of the Securities and Futures (Offers of Investments) (Securities and Securities-based Derivatives Contracts) Regulations 2018 of Singapore.

LEGAL MATTERS

Cleary Gottlieb Steen & Hamilton LLP, U.S. counsel to the Initial Purchasers, will pass upon certain legal matters as to United States law relating to the Notes. Lee & Ko, the Company's Korean counsel, will pass upon certain matters as to Korean law for the Company. Cleary Gottlieb Steen & Hamilton LLP may rely as to all matters of Korean law on Lee & Ko. Lee & Ko may rely on Cleary Gottlieb Steen & Hamilton LLP as to all matters of New York law.

INDEPENDENT AUDITORS

The consolidated financial statements of the Company as of and for the years ended December 31, 2018 included in this Offering Circular have been audited by Deloitte Anjin LLC ("Deloitte"), independent auditors, as stated in their report appearing herein.

Ernst & Young Han Young ("EY") has been appointed as independent auditors for the audit of our financial statements as of and for the year ended December 31, 2019. The consolidated financial statements of the Company as of and for the year ended December 31, 2019 included in this Offering Circular have been audited by EY. EY has reviewed the interim condensed consolidated financial statements as of and for the three months ended March 31, 2020 included elsewhere in this Offering Circular, in accordance with the review standards for interim financial statements in Korea. In its review report included elsewhere in this Offering Circular, EY states that it did not audit and it does not express an opinion on such interim financial information. Accordingly, the degree of reliance on its review report on such information should be restricted in light of the limited nature of the review procedures applied.

GENERAL INFORMATION

1. Approval in-principle has been received from the SGX-ST for the listing and quotation of the Notes on the SGX-ST. For so long as the Notes are listed on the SGX-ST and the rules of the SGX-ST so require, the Notes, if traded on the SGX-ST, will be traded in a minimum board lot size of S$200,000 (or its equivalent in foreign currencies). Accordingly, the Notes, if traded on the SGX-ST, will be traded in a minimum board lot size of US$200,000.

2. For so long as the Notes are listed on the SGX-ST and the rules of the SGX-ST so require, in the event that the Global Note is exchanged for Certificated Notes, the Company will appoint and maintain a paying agent in Singapore, where the Notes may be presented or surrendered for payment or redemption. In addition, in the event that the Global Note is exchanged for Certificated Notes, an announcement of such exchange will be made by or on behalf of the Company through the SGX-ST and such announcement will include all material information with respect to the delivery of the Certificated Notes, including details of the paying agent in Singapore.

3. Copies of the English translation of the Articles of Association of the Company and the Fiscal Agency Agreement may be inspected, and the most recently published annual audit reports of the Company's independent auditors (including the related financial statements) may be obtained during normal business hours, on any business day (except Saturdays and Sundays and legal holidays) at the specified office of the Fiscal Agent for the time being in Hong Kong.

4. The Notes have been given the following security codes:

ISIN	XS2209356398
Common Code	220935639

INDEX TO CONSOLIDATED FINANCIAL STATEMENTS

INTERIM FINANCIAL STATEMENTS

ANNUAL FINANCIAL STATEMENTS

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Report on review of interim condensed consolidated financial statements

The Shareholder and the Board of Directors

Korea South-East Power Co., Ltd.

We have reviewed the accompanying interim condensed consolidated financial statements of Korea South-East Power Co., Ltd. (the "Company") and its subsidiaries (collectively referred to as the "Group"), which comprise the interim condensed consolidated statement of financial position as of March 31, 2020, and the related interim condensed consolidated statements of comprehensive income for the three months ended March 31, 2020 and 2019, interim condensed consolidated statement of changes in equity and interim condensed consolidated statement of cash flows for the three months then ended, and a summary of significant accounting policies and other explanatory information.

Management's responsibility for the interim condensed consolidated financial statements
Management is responsible for the preparation and fair presentation of these interim condensed consolidated financial statements in accordance with the Rules for Accounting Affairs of Public Corporations and Quasi-governmental Institutions in the Republic of Korea, and for such internal control as management determines is necessary to enable the preparation of the interim condensed consolidated financial statements that are free from material misstatement, whether due to fraud or error.

Auditor's responsibility
Our responsibility is to express a conclusion on these interim condensed consolidated financial statements based on our review.

We conducted our review in accordance with the review standards for interim financial statements in the Republic of Korea. A review of interim financial statements consists of making inquiries, primarily of persons responsible for financial and accounting matters, and applying analytical and other review procedures. A review is substantially less in scope than an audit conducted in accordance with Korean Auditing Standards ("KGAAS") and, consequently, does not enable us to obtain assurance that we would become aware of all significant matters that might be identified in an audit. Accordingly, we do not express an audit opinion.

Conclusion
Based on our review, nothing has come to our attention that causes us to believe that the accompanying interim condensed consolidated financial statements are not prepared, in all material respects, in accordance with the Rules for Accounting Affairs of Public Corporations and Quasi-governmental Institutions.

Emphasis of matter

As described in Note 2 to the interim condensed consolidated financial statements, the Group's interim condensed consolidated financial statements were prepared in accordance with the Rules for Accounting Affairs of Public Corporations and Quasi-governmental Institutions. Pursuant to its Article 2-5, the Group applies Korean International Financial Reporting Standards ("KIFRS") where specific accounting treatments are not prescribed by the Rules for Accounting Affairs of Public Corporations and Quasi-governmental Institutions. There are no accounts of which accounting treatment is different compared to KIFRS in order for the Group to be in full compliance with the Rules for Accounting Affairs of Public Corporations and Quasi-governmental Institutions. Our conclusion is not modified in respect of this matter.

Other matter

We have audited the consolidated statement of financial position of the Group as of December 31, 2019, and the related consolidated statement of comprehensive income, consolidated statement of changes in equity and consolidated statement of cash flows for the year then ended in accordance with KGAAS (not presented herein), and our report dated March 16, 2020 expressed an unqualified opinion thereon. The accompanying consolidated statement of financial position as of December 31, 2019 presented for comparative purposes is not different, in all material respects, from the above audited consolidated statement of financial position.

Very truly yours,

Ernst & Young Han Young

Ernst & Young Han Young
Seoul, the Republic of Korea

May14, 2020

This review report is effective as of May 14, 2020, the independent auditor's review report date. Accordingly, certain material subsequent events or circumstances may have occurred during the period from the independent auditor's review report date to the time this review report is used. Such events and circumstances could significantly affect the accompanying interim condensed consolidated financial statements and may result in modification to this review report.

KOREA SOUTH-EAST POWER CO., LTD. AND ITS SUBSIDIARIES
INTERIM CONDENSED CONSOLIDATED STATEMENTS OF FINANCIAL POSITION
AS OF MARCH 31, 2020 AND DECEMBER 31, 2019

	Note	Korean won March 31, 2020 (Unaudited)	Korean won December 31, 2019
ASSETS			
CURRENT ASSETS:			
Cash and cash equivalents	5,6,33,38	₩ 85,568,491,627	₩ 100,191,307,880
Current financial assets, net	5,7,8,11,33,38	434,141,176,791	68,691,441,737
Trade and other receivables, net	5,9,33,38,39	1,220,014,212,972	1,050,015,222,377
Inventories	12	301,096,103,173	296,398,424,569
Current non-financial assets	13	249,933,022,382	196,637,983,052
Current tax assets	35	175,937,964	41,838,411,300
		2,290,928,944,909	1,753,772,790,915
NON-CURRENT ASSETS:			
Non-current financial assets, net	5,7,8,10,11,33,38	240,262,423,686	287,028,863,710
Non-current trade and other receivables, net	5,9,33,38	25,443,851,944	24,152,439,978
Property, plant and equipment, net	16,20,23	8,971,708,196,616	9,012,167,062,643
Intangible assets, net	17	69,831,167,297	49,227,283,768
Investments in associates and joint ventures	15	328,482,720,533	299,429,916,514
Deferred tax assets	35	986,966,341	767,587,707
Non-current non-financial assets	13	2,823,252,255	25,800,928,433
		9,639,538,578,672	9,698,574,082,753
Total assets		₩ 11,930,467,523,581	₩ 11,452,346,873,668

(Continued)

KOREA SOUTH-EAST POWER CO., LTD. AND ITS SUBSIDIARIES
INTERIM CONDENSED CONSOLIDATED STATEMENTS OF FINANCIAL POSITION
(CONTINUED)
AS OF MARCH 31, 2020 AND DECEMBER 31, 2019

	Note	Korean won March 31, 2020 (Unaudited)	Korean won December 31, 2019
LIABILITIES			
CURRENT LIABILITIES:			
Trade and other payables	5,18,20,38,39	₩ 519,275,085,423	₩ 639,799,746,123
Current financial liabilities, net	5,8,19,34,38	905,649,274,452	773,621,374,037
Current tax liabilities	35	9,542,867,826	3,829,931,086
Current non-financial liabilities	24	56,110,525,965	21,275,275,077
Current provisions	22	474,714,971,437	410,006,985,023
		1,965,292,725,103	1,848,533,311,346
NON-CURRENT LIABILITIES:			
Non-current trade and other payables	5,18,20,38	949,902,769,258	929,362,159,704
Non-current financial liabilities, net	5,19,34,38	3,122,872,490,809	2,854,394,801,001
Non-current non-financial liabilities	24	64,512,039,509	64,322,673,359
Employee benefits obligations, net	21,38	164,369,019,963	152,721,937,517
Non-current provisions	22	5,965,934,000	5,965,934,000
Deferred tax liabilities		528,489,434,481	543,828,494,544
		4,836,111,688,020	4,550,596,000,125
Total liabilities		₩ 6,801,404,413,123	₩ 6,399,129,311,471
EQUITY			
Equity attributable to owners of the Parent:			
Contributed capital	1,25	₩ 1,154,104,199,175	₩ 1,154,104,199,175
Retained earnings	26	3,732,659,494,745	3,613,096,135,607
Hybrid securities	27	398,910,000,000	398,910,000,000
Other components of equity	28	(195,696,292,794)	(147,240,048,670)
		5,089,977,401,126	5,018,870,286,112
Non-controlling interests	14	39,085,709,332	34,347,276,085
Total equity		5,129,063,110,458	5,053,217,562,197
Total liabilities and equity		₩11,930,467,523,581	₩11,452,346,873,668

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

KOREA SOUTH-EAST POWER CO., LTD. AND ITS SUBSIDIARIES
INTERIM CONDENSED CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME
FOR THE THREE MONTHS ENDED MARCH 31, 2020 AND 2019

	Note	Korean Won			
			March 31, 2020 (Unaudited)		March 31, 2019 (Unaudited)
Sales	4,29,39	₩	1,341,559,746,114	₩	1,681,490,569,681
Cost of sales	12,36,39		1,055,716,241,396		1,339,738,363,915
Gross profit			285,843,504,718		341,752,205,766
Selling and administrative expenses	30,36		24,873,062,413		26,098,801,671
Operating profit			260,970,442,305		315,653,404,095
Other income	31		2,419,940,502		2,290,934,569
Other expenses	31		(1,070,998,452)		(289,902,678)
Other gain (loss)	32		(2,431,735,087)		(14,509,354,410)
Finance income	5,8,33		60,824,922,702		17,459,327,013
Finance costs	5,8,34		(137,812,407,643)		(42,216,894,325)
Gain on investments in associates and joint ventures, net	15		2,662,233,848		10,373,712,657
Profit before income tax			185,562,398,175		288,761,226,921
Income tax expense	35		(44,976,628,483)		(60,992,268,895)
Profit for the period		₩	140,585,769,692	₩	227,768,958,026
Other comprehensive income (loss), net of tax	5,8,10,21,28				
Items that will not be reclassified subsequently to profit or loss:					
Remeasurement of defined benefit plans, net of tax		₩	(4,781,855,552)	₩	(1,695,240,016)
Net change in fair value of financial assets at FVOCI			(43,993,977,570)		3,357,879,277
Items that are or may be reclassified subsequently to profit or loss:					
Net change in the unrealized fair value of derivatives using cash flow hedge accounting, net of tax			(2,041,370,239)		2,655,446,534
Foreign currency translation of foreign operation, net of tax			(5,652,498,622)		1,754,099,176
Share in other comprehensive income of associates and joint ventures, net of tax			2,596,615,359		625,553,687
			(53,873,086,624)		6,697,738,658
Total comprehensive income for the period		₩	86,712,683,068	₩	234,466,696,684

(Continued)

KOREA SOUTH-EAST POWER CO., LTD. AND ITS SUBSIDIARIES
INTERIM CONDENSED CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME
(CONTINUED)
FOR THE THREE MONTHS ENDED MARCH 31, 2020 AND 2019

	Note	Korean Won			
		March 31, 2020 (Unaudited)		March 31, 2019 (Unaudited)	
Profit for the period attributable to:	14				
Owners of the Parent		₩	139,596,030,890	₩	227,253,564,664
Non-controlling interests			989,738,802		515,393,362
Total comprehensive income for the period attributable to:					
Owners of the Parent		₩	86,357,931,214	₩	233,634,220,823
Non-controlling interests			354,751,854		832,475,861
Earnings per share:	37				
Basic and diluted earnings per share		₩	2,289	₩	3,762

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

KOREA SOUTH-EAST POWER CO., LTD. AND ITS SUBSIDIARIES
INTERIM CONDENSED CONSOLIDATED STATEMENTS OF CHANGES IN EQUITY
FOR THE THREE MONTHS ENDED MARCH 31, 2020 AND 2019

	Korean won						
	Equity attributable to owners of the Parent						
	Contributed capital	Retained earnings	Hybrid securities	Other components of equity	Subtotal	Non-controlling interests	Total
Balance at January 1, 2019	₩ 1,154,104,199,175	₩ 3,595,862,729,620	₩ 398,910,000,000	₩ (141,286,633,764)	₩ 5,007,590,295,031	₩ 21,357,437,555	₩ 5,028,947,732,586
Total comprehensive income:							
Profit for the period	-	227,253,564,664	-	-	227,253,564,664	515,393,362	227,768,958,026
Comprehensive income (loss):							
Remeasurement of defined benefit plan, net of tax	-	(1,695,240,016)	-	-	(1,695,240,016)	-	(1,695,240,016)
Net change in fair value of financial assets at FVOCI	-	-	-	3,357,879,277	3,357,879,277	-	3,357,879,277
Net change in the unrealized fair value of derivatives using cash flow hedge accounting, net of tax	-	-	-	2,655,446,534	2,655,446,534	-	2,655,446,534
Foreign currency translation of foreign operation, net of tax	-	-	-	1,437,016,677	1,437,016,677	317,082,499	1,754,099,176
Share in other comprehensive income of associates and joint ventures, net of tax	-	-	-	625,553,687	625,553,687	-	625,553,687
Total comprehensive income	-	225,558,324,648	-	8,075,896,175	233,634,220,823	832,475,861	234,466,696,684
Transactions with owners recognized directly in equity:							
Dividends paid (hybrid securities)	-	(3,346,191,000)	-	-	(3,346,191,000)	-	(3,346,191,000)
Dividends paid	-	(7,142,775,120)	-	-	(7,142,775,120)	-	(7,142,775,120)
Dividends paid by subsidiary	-	-	-	-	-	(2,833,112,955)	(2,833,112,955)
Change in scope of Group	-	-	-	-	-	15,349,631,702	15,349,631,702
Balance at March 31, 2019 (Unaudited)	₩ 1,154,104,199,175	₩ 3,810,932,088,148	₩ 398,910,000,000	₩ (133,210,737,589)	₩ 5,230,735,549,734	₩34,706,432,163	₩ 5,265,441,981,897

(Continued)

KOREA SOUTH-EAST POWER CO., LTD. AND ITS SUBSIDIARIES
INTERIM CONDENSED CONSOLIDATED STATEMENTS OF CHANGES IN EQUITY (CONTINUED)
FOR THE THREE MONTHS ENDED MARCH 31, 2020 AND 2019

	Korean won						
	Equity attributable to owners of the Parent						
	Contributed capital	Retained earnings	Hybrid securities	Other components of equity	Subtotal	Non-controlling interests	Total
Balance at January 1, 2020	₩1,154,104,199,175	₩3,613,096,135,607	₩398,910,000,000	₩ (147,240,048,670)	₩5,018,870,286,112	₩34,347,276,085	₩5,053,217,562,197
Total comprehensive income:							
Profit for the period	-	139,596,030,890	-	-	139,596,030,890	989,738,802	140,585,769,692
Comprehensive income (loss):							
Remeasurement of defined benefit plan, net of tax	-	(4,781,855,552)	-	-	(4,781,855,552)	-	(4,781,855,552)
Net change in fair value of financial assets at FVOCI	-	-	-	(43,993,977,570)	(43,993,977,570)		(43,993,977,570)
Net change in the unrealized fair value of derivatives using cash flow hedge accounting, net of tax	-	-	-	(2,041,370,239)	(2,041,370,239)	-	(2,041,370,239)
Foreign currency translation of foreign operation, net of tax	-	-	-	(5,017,511,674)	(5,017,511,674)	(634,986,948)	(5,652,498,622)
Share in other comprehensive income of associates and joint ventures, net of tax	-	-	-	2,596,615,359	2,596,615,359	-	2,596,615,359
Total comprehensive income	-	134,814,175,338	-	(48,456,244,124)	86,357,931,214	354,751,854	86,712,683,068
Transactions with owners recognized directly in equity:							
Dividends paid (hybrid securities)	-	(3,346,191,000)	-	-	(3,346,191,000)	-	(3,346,191,000)
Dividends paid	-	(11,904,625,200)	-	-	(11,904,625,200)	-	(11,904,625,200)
Dividends paid by subsidiary	-	-	-	-	-	(1,550,921,670)	(1,550,921,670)
Increase in paid-in capital of subsidiary	-	-	-	-	-	5,934,603,063	5,934,603,063
Balance at March 31, 2020 (Unaudited)	₩1,154,104,199,175	₩3,732,659,494,745	₩398,910,000,000	₩ (195,696,292,794)	₩5,089,977,401,126	₩ 39,085,709,332	₩5,129,063,110,458

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

KOREA SOUTH-EAST POWER CO., LTD. AND ITS SUBSIDIARIES
INTERIM CONDENSED CONSOLIDATED STATEMENTS OF CASH FLOWS
FOR THE THREE MONTHS ENDED MARCH 31, 2020 AND 2019

	Korean won	
	March 31, 2020 (Unaudited)	March 31, 2019 (Unaudited)
CASH FLOWS FROM OPERATING ACTIVITIES:		
Profit for the period	₩ 140,585,769,692	₩ 227,768,958,026
Adjustments for non-cash transaction:		
Income tax expense	44,976,628,483	60,992,268,895
Depreciation and amortization	200,933,698,239	207,642,229,696
Retirement benefit expense	5,602,880,709	4,905,901,714
Dividend income	(41,500,001)	(1,301,452,955)
Interest income	(2,597,751,597)	(1,318,001,782)
Interest expense	29,139,926,184	30,612,937,514
Loss on foreign currency translation, net	65,111,751,609	28,260,640,089
Gain on valuation and transaction of derivatives, net	(15,522,695,050)	(14,681,231,463)
Gain on financial guarantee income	-	(6,863,320)
Gain on disposal of financial assets at FVTPL	(222,772)	(195,876)
Gain on valuation of investments in associates and joint ventures	(3,848,478,214)	(6,293,853,835)
Loss on valuation of investments in associates and joint ventures	1,186,244,366	2,054,555,088
Loss on disposal of investments in associates and joint ventures	-	(6,134,413,910)
Gain on disposal of property, plant and equipment	(111,558,709)	-
Loss on disposal of property, plant and equipment	633,287,022	306,063,326
Accretion expense to provisions (reversal)	(44,362,870,124)	14,505,570,739
Others	95,478	-
Changes in operating assets and liabilities:		
Trade receivables	₩ 53,684,701,975	₩ 39,841,644,716
Other receivables	(216,833,497,594)	(56,444,997,466)
Current non-financial assets	(77,277,281,633)	37,195,457,210
Non-current non-financial assets	849,453,243	156,019,603
Inventories	(4,721,765,767)	29,758,673,623
Trade payables	(80,670,119,727)	(116,574,489,620)
Other payables	(23,443,720,453)	25,568,933,175
Current non-financial liabilities	16,073,430,426	41,714,752,038
Non-current non-financial liabilities	(610,610,088)	123,418,690
Provisions	103,571,099,692	7,074,968,247
Retirement benefits paid	(259,868,430)	(879,827,160)
Cash generated from operating activities	₩ 192,047,026,959	₩ 554,847,665,002

(Continued)

KOREA SOUTH-EAST POWER CO., LTD. AND ITS SUBSIDIARIES
INTERIM CONDENSED CONSOLIDATED STATEMENTS OF CASH FLOWS (CONTINUED)
FOR THE THREE MONTHS ENDED MARCH 31, 2020 AND 2019

	Korean won	
	March 31, 2020 (Unaudited)	March 31, 2019 (Unaudited)
Interest received	₩ 2,039,110,136	₩ 1,178,370,452
Interest paid	(27,141,795,110)	(32,527,978,007)
Dividends received	41,500,001	3,341,399,901
Income taxes refunded (paid)	3,132,436,930	(4,436,917,393)
Net cash provided by operating activities	170,118,278,916	522,402,539,955
CASH FLOWS FROM INVESTING ACTIVITIES:		
Acquisition of financial assets at FVTPL	(344,200,000,000)	(146,900,000,000)
Proceeds from disposals of financial assets at FVTPL	37,659,399	-
Acquisition of property, plant and equipment	(158,753,738,306)	(104,268,398,761)
Proceeds from disposals of property, plant and equipment	176,343,000	1,237,270,365
Acquisition of intangible assets	(524,605,275)	(3,269,324,644)
Proceeds from disposals of intangible assets	47,086	-
Increase in loans	(1,866,482,033)	(1,988,560,086)
Decrease in loans	972,167,130	897,492,514
Increase in other receivables	(733,713,465)	(4,035,374,366)
Decrease in other receivables	808,451,508	2,460,020,790
Acquisition of investments in associates and joint ventures	(2,637,200,000)	(2,900,000,000)
Net cash from changes in scope of consolidation	-	9,689,132,102
Net cash used in investing activities	(506,721,070,956)	(249,077,742,086)
CASH FLOWS FROM FINANCING ACTIVITIES:		
Proceeds from borrowings and debt securities	353,406,683,618	3,398,256,000
Repayment of borrowings and debt securities	(2,851,010,000)	(232,851,010,000)
Payment of lease liabilities	(30,912,016,246)	(24,931,391,029)
Settlement of derivatives, net	2,279,891,091	1,473,998,143
Dividends paid	(3,346,442,670)	(3,346,191,000)
Increase in non-controlling interests	5,934,603,063	-
Net cash provided by (used in) financing activities	324,511,708,856	(256,256,337,886)
NET INCREASE (DECREASE) IN CASH AND CASH EQUIVALENTS	(12,091,083,184)	17,068,459,983
EFFECT OF EXCHANGE RATE CHANGES ON CASH HELD	(2,531,733,069)	569,431,694
CASH AND CASH EQUIVALENTS, BEGINNING OF THE PERIOD	100,191,307,880	43,203,189,823
CASH AND CASH EQUIVALENTS, END OF THE PERIOD	₩ 85,568,491,627	₩ 60,841,081,500

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

1. GENERAL:

Korea South-East Power Co., Ltd.

Korea South-East Power Co., Ltd. (the "Company") was incorporated on April 2, 2001, through the spin-off of the power generation division of Korea Electric Power Corporation ("KEPCO") in accordance with a restructuring plan dated January 21, 1999, for the energy industry in the Republic of Korea announced by the Ministry of Commerce, Industry and Energy and the Law on Promotion of Restructuring of the Electricity Industry promulgated on December 23, 2000. The Company engages in the generation of electricity and development of electric power resources and sells all generated electricity to KEPCO through the Korea Power Exchange ("KPX").

As of March 31, 2020, the Company operates five power plants with a total capacity of 10,376 MW. The Company's headquarters is located at Jinju-si, Gyeongsangnam-do. As of March 31, 2020, the Company's share capital amounts to ₩ 297,616 million, and outstanding shares are wholly owned by KEPCO.

The interim condensed consolidated financial statements comprise the Company's and its subsidiaries' (together referred to as the "Group") and the Group's interests in associates and joint ventures.

2. BASIS OF PREPARATIONS AND SIGNIFICANT ACCOUNTING POLICIES:

(1) Basis of preparation of interim condensed consolidated financial statements

The Group maintains its official accounting records in Korean won and prepares its interim condensed consolidated financial statements in conformity with Rules for Accounting Affairs of Public Corporations and Quasi-governmental Institutions, in the Korean language. Accordingly, these interim condensed consolidated financial statements are intended for use by those who are informed about these Regulations and Standards and Korean practices. The accompanying interim condensed consolidated financial statements have been condensed, restructured and translated into English with certain expanded descriptions from the Korean language interim condensed consolidated financial statements. Certain information included in the Korean language interim condensed consolidated financial statements, but not required for a fair presentation of the Group's consolidated statements of financial position, comprehensive income, changes in equity or cash flows, is not presented in the accompanying interim condensed consolidated financial statements.

The interim condensed consolidated financial statements have been prepared in accordance with the Rules for Accounting Affairs of Public Corporations and Quasi-governmental Institutions, and the Group applies Korean International Financial Reporting Standards ("KIFRS") for specific accounting treatments that are not prescribed by the Rules for Accounting Affairs of Public Corporations and Quasi-governmental Institutions in accordance with the Articles 2-5 of the rules. There are no accounts of which accounting treatment is different compared to KIFRS in order for the Group to be in full compliance with the Rules for Accounting Affairs of Public Corporations and Quasi-governmental Institutions.

2. BASIS OF PREPARATIONS AND SIGNIFICANT ACCOUNTING POLICIES (CONT'D):

The Group's interim condensed consolidated financial statements for the three months ended March 31, 2020 are prepared in accordance with KIFRS 1034, *Interim Financial Reporting*. The interim condensed consolidated financial statements should be read in conjunction with the annual consolidated financial statements for the year ended December 31, 2019, which have been prepared in accordance with the Rules for Accounting Affairs of Public Corporations and Quasi-governmental Institutions.

The significant accounting policies used for the preparation of the interim condensed consolidated financial statements are consistent with those applied to the annual consolidated financial statements for the year ended December 31, 2019, except for the adoption effect of the new and revised accounting standards and interpretations described below.

1) New and revised standards that have been applied from the period beginning on January 1, 2020 are as follows;

KIFRS 1103 – *Business Combinations (Amendments)*

The amendment clarifies that to be considered a business, an integrated set of activities and assets must include, at a minimum, an input and a substantive process that together significantly contribute to the ability to create output. Furthermore, it clarified that a business can exist without including all of the inputs and processes needed to create outputs. Upon the adoption of this amendment, there is no significant impact on the Group's consolidated financial statements. However, there may be a significant impact on the consolidated financial statements if a business combination is occurred.

K-IFRS 1107 – *Financial Instrument: Disclosures (Amendments)*

K-IFRS 1109 – *Financial Instrument (Amendments)*

K-IFRS 1039 – *Financial Instrument: Recognition and Measurement (Amendments)*

Interest Rate Benchmark Reform

The amendments to KIFRS 1107 and KIFRS 1039 provide a number of reliefs, which apply to all hedging relationship that are directly affected by interest rate benchmark reform. A hedging relationship is affected if the reform gives rise to uncertainties about the timing and or amount of benchmark-based cash flows of the hedged item or the hedging instrument.

Upon the adoption of the amendments, there is no significant impact on the Group's consolidated financial statements.

K-IFRS 1001 – *Presentation of Financial Statements (Amendments)*

K-IFRS 1008 – *Accounting Policies, Changes in Accounting Estimates and Errors (Amendments)*

The amendments provide a new definition of material. According to the new definition, information is material if omitting, misstating or obscuring it could reasonably be expected to influence decisions that the primary users of general purpose financial statements make on the basis of those financial statements, which provide financial information about a specific reporting entity.

The amendments clarify that materiality depends on the nature or magnitude of information, or both, and an entity assess whether information, either individually or in combination, with other information is material in the context of its financial statements taken as a whole. Information is material if misstating it could reasonably be expected to influence decision that the primary users of general purpose financial statements make on the basis of those financial statements.

2. BASIS OF PREPARATIONS AND SIGNIFICANT ACCOUNTING POLICIES (CONT'D):

Upon the adoption of the amendments, there is no significant impact on the Group's consolidated financial statements.

Conceptual Framework for Financial Reporting (2018)

The Conceptual Framework is not a standard, none of the concepts contained therein override the concepts or requirements in any standard. The purpose of the Conceptual Framework is to assist the Korea Accounting Standards Board to develop KIFRS, to help preparers develop consistent accounting policies where there is no applicable standard in place and to assist all parties to understand and interpret the standards.

The revised Conceptual Framework includes some new concepts, provides updated definitions and recognition criteria for assets and liabilities and clarifies some important concepts.

Upon the adoption of the amendments, there is no significant impact on the Group's consolidated financial statements.

2) There are no major new accounting standards or amendments issued that are effective for the reporting period and have not been early adopted by the Group.

3. CRITICAL ACCOUNTING JUDGMENTS AND KEY SOURCES OF ESTIMATION UNCERTAINTY:

In the preparation of interim condensed consolidated financial statements, management is required to make judgments, estimates and assumptions that affect the application of accounting policies and the reported amounts of assets and liabilities or income and expenses. Actual results may differ from these estimates. The management's significant judgements about the application of the Group's accounting policies and the main resources of the uncertainty are consistent with those of the annual consolidated financial statements for the year ended December 31, 2019.

4. OPERATING SEGMENT:

According to KIFRS 1108 *Operating Segments*, the reporting part of operating segment is applied to single segment; therefore, it does not report operating segment information separately. Sales attributable to KEPCO, the major customer, which accounts for more than 10% of the revenue, constitute ₩1,287,372 million and ₩1,621,512 million of consolidated sales for the three months ended March 31, 2020 and 2019, respectively.

5. **CLASSIFICATION OF FINANCIAL INSTRUMENTS:**

(1) Classification of financial assets as of March 31, 2020 and December 31, 2019, is as follows (Korean won):

	March 31, 2020				
	Financial assets at FVTPL	Financial assets at amortized cost	Financial assets at FVOCI	Derivative assets (using hedge accounting)	Total
Current assets:					
Cash and cash equivalents	₩ -	₩ 85,568,491,627	₩ -	₩ -	₩ 85,568,491,627
Current financial assets:					
Current financial assets at FVTPL	381,900,000,000	-	-	-	381,900,000,000
Loans	-	2,581,672,224	-	-	2,581,672,224
Short-term financial instruments	-	25,000,000,000	-	-	25,000,000,000
Derivative assets	349,125,642	-	-	24,310,378,925	24,659,504,567
Trade and other receivables	-	1,220,014,212,972	-	-	1,220,014,212,972
	382,249,125,642	1,333,164,376,823	-	24,310,378,925	1,739,723,881,390
Non-current assets:					
Non-current financial assets:					
Non-current financial assets at FVTPL	3,710,350,421	-	-	-	3,710,350,421
Non-current financial assets at FVOCI	-	-	196,929,416,868	-	196,929,416,868
Loans	-	28,801,583,226	-	-	28,801,583,226
Derivative assets	-	-	-	10,821,073,171	10,821,073,171
Trade and other receivables	-	25,443,851,944	-	-	25,443,851,944
	3,710,350,421	54,245,435,170	196,929,416,868	10,821,073,171	265,706,275,630
	₩ 385,959,476,063	₩1,387,409,811,993	₩ 196,929,416,868	₩ 35,131,452,096	₩2,005,430,157,020

5. CLASSIFICATION OF FINANCIAL INSTRUMENTS (CONT'D):

	December 31, 2019				
	Financial assets at FVTPL	Financial assets at amortized cost	Financial assets at FVOCI	Derivative assets (using hedge accounting)	Total
Current assets:					
Cash and cash equivalents	₩ -	₩100,191,307,880	₩ -	₩ -	₩100,191,307,880
Current financial assets:					
Current financial assets at FVTPL	37,700,000,000	-	-	-	37,700,000,000
Loans	-	2,174,730,907	-	-	2,174,730,907
Short-term financial instruments	-	25,000,000,000	-	-	25,000,000,000
Derivative assets	-	-	-	3,816,710,830	3,816,710,830
Trade and other receivables,	-	1,050,015,222,377	-	-	1,050,015,222,377
	37,700,000,000	1,177,381,261,164	-	3,816,710,830	1,218,897,971,994
Non-current assets:					
Non-current financial assets:					
Non-current financial assets at FVTPL	3,747,787,048	-	-	-	3,747,787,048
Non-current financial assets at FVOCI	-	-	254,968,965,113	-	254,968,965,113
Loans	-	28,312,111,549	-	-	28,312,111,549
Trade and other receivables,	-	24,152,439,978	-	-	24,152,439,978
	3,747,787,048	52,464,551,527	254,968,965,113	-	311,181,303,688
	₩41,447,787,048	₩1,229,845,812,691	₩254,968,965,113	₩ 3,816,710,830	₩1,530,079,275,682

5. CLASSIFICATION OF FINANCIAL INSTRUMENTS (CONT'D):

(2) Classification of financial liabilities as of March 31, 2020 and December 31, 2019, is as follows (Korean won):

	March 31, 2020			
	Financial liabilities at FVTPL	Financial liabilities at amortized cost	Derivative liabilities (using hedge accounting)	Total
Current liabilities:				
Current financial liabilities:				
Borrowings	₩ -	₩ 30,765,903,749	₩ -	₩ 30,765,903,749
Debt securities	-	790,999,906,342	-	790,999,906,342
Derivative liabilities	1,653,099,448	-	82,230,364,913	83,883,464,361
Trade and other payables	-	519,275,085,423	-	519,275,085,423
	1,653,099,448	1,341,040,895,514	82,230,364,913	1,424,924,359,875
Non-current liabilities:				
Non-current financial liabilities:				
Borrowings	-	492,539,765,226	-	492,539,765,226
Debt securities	-	2,630,332,725,583	-	2,630,332,725,583
Trade and other payables	-	949,902,769,258	-	949,902,769,258
	-	4,072,775,260,067	-	4,072,775,260,067
	₩ 1,653,099,448	₩5,413,816,155,581	₩ 82,230,364,913	₩5,497,699,619,942

	December 31, 2019			
	Financial liabilities at FVTPL	Financial liabilities at amortized cost	Derivative liabilities (using hedge accounting)	Total
Current liabilities:				
Current financial liabilities:				
Borrowings	₩ -	₩ 20,840,277,593	₩ -	₩ 20,840,277,593
Debt securities	-	690,011,795,611	-	690,011,795,611
Derivative liabilities	3,442,027,766	-	59,327,273,067	62,769,300,833
Trade and other payables	-	639,799,746,123	-	639,799,746,123
	3,442,027,766	1,350,651,819,327	59,327,273,067	1,413,421,120,160
Non-current liabilities:				
Non-current financial liabilities:				
Borrowings	-	488,156,629,159	-	488,156,629,159
Debt securities	-	2,366,238,171,842	-	2,366,238,171,842
Trade and other payables	-	929,362,159,704	-	929,362,159,704
	-	3,783,756,960,705	-	3,783,756,960,705
	₩ 3,442,027,766	₩ 5,134,408,780,032	₩ 59,327,273,067	₩5,197,178,080,865

5. CLASSIFICATION OF FINANCIAL INSTRUMENTS (CONT'D):

(3) Income and expense from financial instruments for the three months ended March 31, 2020 and 2019, are as follows (Korean won):

	Accounts	March 31, 2020
Financial assets:		
Cash and cash equivalents	Interest income	₩ 32,213
	Loss on changes in foreign exchange rates	(2,531,733,069)
Financial assets at FVOCI	Loss on valuation of financial assets at FVOCI (equity before tax)	(58,039,548,245)
Financial assets at amortized cost	Interest income of receivables	1,286,710,876
	Interest income of loans	161,515,930
Financial assets at FVTPL	Interest income	1,149,492,578
	Dividend income	41,500,001
	Gain on disposal of financial assets at FVTPL	222,772
	Gain on valuation of derivatives	438,322,205
	Gain on transaction of derivatives	8,480,196,203
Derivative assets (using hedge accounting)	Gain on valuation of derivatives (profit or loss)	29,880,000,000
	Gain on valuation of derivatives (equity before tax)	1,434,741,267
Financial liabilities:		
Financial liabilities at amortized cost	Loss on changes in foreign exchange rates	(70,184,487,533)
	Interest expenses of borrowings and debt securities	(20,817,033,843)
	Interest expenses of other liabilities	(8,322,892,341)
Financial liabilities at FVTPL	Loss on valuation of derivatives	(1,653,099,448)
	Loss on transaction of derivatives	(2,847,473,910)
Derivative liabilities (using hedge accounting)	Loss on valuation of derivatives (profit or loss)	(18,775,250,000)
	Loss on valuation of derivatives (equity before tax)	(4,127,841,846)

5. CLASSIFICATION OF FINANCIAL INSTRUMENTS (CONT'D):

	Accounts		March 31, 2019
Financial assets:			
Cash and cash equivalents	Interest income	₩	162,362,854
	Gain on changes in foreign exchange rates		569,431,694
Financial assets at FVOCI	Dividend income		1,264,452,954
	Gain on valuation of financial assets at FVOCI (equity before tax)		4,429,919,891
Financial assets at amortized cost	Interest income of receivables		116,548,032
	Interest income of loans		156,083,722
Financial assets at FVTPL	Dividend income		37,000,001
	Interest income		883,007,174
	Gain on disposal of financial assets at FVTPL		195,876
	Gain on valuation of derivatives		640,221,835
	Gain on transaction of derivatives		2,499,241,245
Financial liabilities:			
Financial liabilities at amortized cost	Loss on changes in foreign exchange rates		(30,226,712,953)
	Interest expenses of borrowings and debt securities		(24,354,895,975)
	Interest expenses of other liabilities		(6,258,041,539)
Financial liabilities at FVTPL	Loss on transaction of derivatives		(6,981,617)
Derivative liabilities (using hedge accounting)	Gain on valuation of derivatives (profit or loss)		11,548,750,000
	Gain on valuation of derivatives (equity before tax)		3,503,227,617

6. CASH AND CASH EQUIVALENTS:

(1) Cash and cash equivalents as of March 31, 2020 and December 31, 2019, are as follows (Korean won):

		March 31, 2020		December 31, 2019
Petty cash	₩	64,470	₩	15,929,959,470
Other demand deposits		85,560,590,629		84,252,849,637
Short-term deposits classified as cash equivalents		7,836,528		8,498,773
	₩	85,568,491,627	₩	100,191,307,880

(2) There are no cash and cash equivalents restricted in use as of March 31, 2020.

7. FINANCIAL ASSETS AT FVTPL:

(1) Financial assets at FVTPL as of March 31, 2020 and December 31, 2019, are as follows (Korean won):

	March 31, 2020		December 31, 2019	
	Current	Non-current	Current	Non-current
Restricted money trust	₩ 381,900,000,000	₩ -	₩ 37,700,000,000	₩ -
Beneficiary certificates	-	3,710,350,421	-	3,747,787,048
	₩ 381,900,000,000	₩ 3,710,350,421	₩ 37,700,000,000	₩ 3,747,787,048

8. DERIVATIVES:

(1) Derivatives as of March 31, 2020 and December 31, 2019, are as follows (Korean won):

	March 31, 2020		December 31, 2019	
	Current	Non-current	Current	Non-current
Derivative assets:				
Currency forward	₩ 349,125,642	₩ -	₩ -	₩ -
Currency swap	24,310,378,925	10,821,073,171	3,816,710,830	-
	24,659,504,567	10,821,073,171	3,816,710,830	-
Derivative liabilities:				
Currency forward	1,653,099,448	-	3,442,027,766	-
Currency swap	82,230,364,913	-	59,327,273,067	-
	₩ 83,883,464,361	₩ -	₩ 62,769,300,833	₩ -

(2) Currency forward contracts as of March 31, 2020, are as follows (Korean won and USD):

			Contract amount		
Counterparty	Contract date	Maturity date	Sale price	Purchase price	Contract exchange rate
For trading:					
Woori Bank	2020.03.10	2020.04.08	₩5,965,700,000	USD 5,000,000	1,193.14
Hana Bank	2020.03.18	2020.04.09	6,166,000,000	USD 5,000,000	1,233.20
Kookmin Bank	2020.03.19	2020.04.10	6,295,500,000	USD 5,000,000	1,259.10
Hana Bank	2020.03.19	2020.04.10	6,366,500,000	USD 5,000,000	1,273.30
Hana Bank	2020.03.19	2020.04.10	3,822,900,000	USD 3,000,000	1,274.30
Hana Bank	2020.03.20	2020.04.13	6,352,750,000	USD 5,000,000	1,270.55
Hana Bank	2020.03.20	2020.04.13	6,322,750,000	USD 5,000,000	1,264.55
China Construction Bank Corporation	2020.03.20	2020.04.16	6,270,000,000	USD 5,000,000	1,254.00
Morgan Stanley	2020.03.20	2020.04.17	6,236,500,000	USD 5,000,000	1,247.30
Woori Bank	2020.03.20	2020.04.22	6,206,000,000	USD 5,000,000	1,241.20
Kookmin Bank	2020.03.23	2020.04.20	3,792,000,000	USD 3,000,000	1,264.00
Hana Bank	2020.03.27	2020.04.24	6,125,750,000	USD 5,000,000	1,225.15
Korea Development Bank	2020.03.31	2020.04.27	6,096,000,000	USD 5,000,000	1,219.20
Hana Bank	2019.07.31	2020.07.14	4,993,461,000	USD 4,257,000	1,173.00

8. DERIVATIVES (CONT'D):

(3) Currency swap contracts as of March 31, 2020, are as follows (Korean won, USD and AUD):

Counterparty	Terms of the contract	Contract amount: Sale price		Contract amount: Purchase price		Contract interest rate (%): Sell	Contract interest rate (%): Buy	Contract exchange rate
For cash-flow hedging:								
HSBC	2014–2020	₩	99,901,206,000	AUD	100,000,000	3.52	5.75	999.01
HSBC	2014–2020	₩	100,481,652,000	AUD	100,000,000	3.48	5.75	1,004.82
Standard Chartered	2013–2020	USD	117,250,000	AUD	125,000,000	LIBOR(3M) +1.25	5.75	0.938
Standard Chartered	2014–2020	₩	126,032,025,000	USD	117,250,000	3.55	LIBOR(3M) +1.25	1,074.90
Korea Development Bank	2017–2020	₩	114,580,000,000	USD	100,000,000	1.75	2.375	1,145.80
Hana Bank	2017–2020	₩	114,580,000,000	USD	100,000,000	1.75	2.375	1,145.80
KEXIM	2017–2020	₩	114,580,000,000	USD	100,000,000	1.75	2.375	1,145.80
Kookmin Bank	2020–2025	₩	118,780,000,000	USD	100,000,000	1.293	2.125	1,187.80
Shinhan Bank	2020–2025	₩	118,780,000,000	USD	100,000,000	1.293	2.125	1,187.80
Hana Bank	2020–2025	₩	118,780,000,000	USD	100,000,000	1.293	2.125	1,187.80

(4) Gain and loss on valuation and transaction of derivatives for three months ended March 31, 2020 and 2019, are as follows (Korean won):

	March 31, 2020					
	Profit or loss effects of valuation gain (loss)		Profit or loss effects of transaction gain (loss)		Other comprehensive income (loss) (*)	
Currency forward	₩	(1,214,777,243)	₩	5,632,722,293	₩	-
Currency swap		11,104,750,000		-		(2,693,100,579)
	₩	9,889,972,757	₩	5,632,722,293	₩	(2,693,100,579)

	March 31, 2019					
	Profit or loss effects of valuation gain (loss)		Profit or loss effects of transaction gain (loss)		Other comprehensive income (loss) (*)	
Currency forward	₩	640,221,835	₩	2,492,259,628	₩	-
Currency swap		11,548,750,000		-		3,503,227,617
	₩	12,188,971,835	₩	2,492,259,628	₩	3,503,227,617

(*) OCI is presented before tax effect.

9. TRADE AND OTHER RECEIVABLES :

(1) Trade and other receivables as of March 31, 2020 and December 31, 2019, are as follows (Korean won):

	March 31, 2020			
	Gross amount	Allowance for doubtful accounts	Present value discount	Book value
Current assets				
Trade receivables	₩ 365,300,344,839	₩ (2,559,253,012)	₩ -	₩ 362,741,091,827
Other receivables	938,857,527,296	(81,541,987,473)	(42,418,678)	857,273,121,145
	1,304,157,872,135	(84,101,240,485)	(42,418,678)	1,220,014,212,972
Non-current assets				
Other receivables	47,958,084,432	(22,158,076,244)	(356,156,244)	25,443,851,944
	₩1,352,115,956,567	₩ (106,259,316,729)	₩ (398,574,922)	₩1,245,458,064,916

	December 31, 2019			
	Gross amount	Allowance for doubtful accounts	Present value discount	Book value
Current assets				
Trade receivables	₩ 415,869,680,929	₩ (2,559,253,012)	₩ -	₩ 413,310,427,917
Other receivables	718,329,155,636	(81,527,108,668)	(97,252,508)	636,704,794,460
	1,134,198,836,565	(84,086,361,680)	(97,252,508)	1,050,015,222,377
Non-current assets				
Other receivables	46,680,573,820	(22,158,076,244)	(370,057,598)	24,152,439,978
	₩ 1,180,879,410,385	₩ (106,244,437,924)	₩ (467,310,106)	₩ 1,074,167,662,355

The above trade and other receivables are classified as financial assets at amortized cost.

(2) Other receivables as of March 31, 2020 and December 31, 2019, are as follows (Korean won):

	March 31, 2020			
	Gross amount	Allowance for doubtful accounts	Present value discount	Book value
Current assets:				
Other receivables	₩ 522,830,693,986	₩ (81,541,987,473)	₩ -	₩ 441,288,706,513
Accrued income	402,176,374,320	-	-	402,176,374,320
Deposits	13,850,458,990	-	(42,418,678)	13,808,040,312
	938,857,527,296	(81,541,987,473)	(42,418,678)	857,273,121,145
Non-current assets:				
Other receivables	23,693,784,768	(22,158,076,244)	-	1,535,708,524
Deposits	4,248,501,950	-	(356,156,244)	3,892,345,706
Others	20,015,797,714	-	-	20,015,797,714
	47,958,084,432	(22,158,076,244)	(356,156,244)	25,443,851,944
	₩ 986,815,611,728	₩ (103,700,063,717)	₩ (398,574,922)	₩ 882,716,973,089

9. TRADE AND OTHER RECEIVABLES (CONT'D):

	December 31, 2019			
	Gross amount	Allowance for doubtful accounts	Present value discount	Book value
Current assets:				
Other receivables	₩ 427,923,117,193	₩ (81,527,108,668)	₩ -	₩ 346,396,008,525
Accrued income	275,176,712,747	-	-	275,176,712,747
Deposits	15,229,325,696	-	(97,252,508)	15,132,073,188
	718,329,155,636	(81,527,108,668)	(97,252,508)	636,704,794,460
Non-current assets:				
Other receivables	23,693,784,768	(22,158,076,244)	-	1,535,708,524
Deposits	2,970,991,338	-	(370,057,598)	2,600,933,740
Others	20,015,797,714	-	-	20,015,797,714
	46,680,573,820	(22,158,076,244)	(370,057,598)	24,152,439,978
	₩ 765,009,729,456	₩(103,685,184,912)	₩ (467,310,106)	₩ 660,857,234,438

(3) Aging analysis of trade receivables as of March 31, 2020 and December 31, 2019, is as follows (Korean won):

	March 31, 2020	December 31, 2019
Trade receivables (not overdue and not impaired):	₩ 362,307,401,839	₩ 412,970,417,668
Trade receivables (overdue, but not impaired):	433,689,988	340,010,249
- 60–90 days	93,679,739	-
- 90–120 days	-	-
- 120 days–1 year	-	-
- More than 1 year	340,010,249	340,010,249
Trade receivables (impairment loss recognized):	2,559,253,012	2,559,253,012
- Less than 120 days	-	-
- 120 days–1 year	-	-
- More than 1 year	2,559,253,012	2,559,253,012
	365,300,344,839	415,869,680,929
Less: Allowance for doubtful accounts	(2,559,253,012)	(2,559,253,012)
	₩ 362,741,091,827	₩ 413,310,427,917

(4) Changes in allowance for doubtful accounts for the three months ended March 31, 2020 and for the year ended December 31, 2019, are as follows (Korean won):

	March 31, 2020		December 31, 2019	
	Trade receivables	Other receivables	Trade receivables	Other receivables
Beginning balance	₩ 2,559,253,012	₩ 103,685,184,912	₩ 2,559,253,012	₩ 131,204,387,618
Allowance for bad debts (reversal), net	-	-	-	(41,876,648,890)
Write off	-	(7,651,395)	-	-
Others	-	22,530,200	-	14,357,446,184
Ending balance	₩ 2,559,253,012	₩ 103,700,063,717	₩ 2,559,253,012	₩ 103,685,184,912

The Group considers changes in the credit rating of trade receivables from the date of commencement of credit to the end of the reporting period in determining the collectability of trade receivables.

10. FINANCIAL ASSETS AT FVOCI:

(1) Changes in financial assets at FVOCI for the three months ended March 31, 2020 and for the year ended December 31, 2019, are as follows (Korean won):

	March 31, 2020		
	Beginning balance	Valuation	Ending balance
Equity securities:			
Listed	₩ 238,197,848,809	₩ (58,039,548,245)	₩ 180,158,300,564
Unlisted	16,771,116,304	-	16,771,116,304
	₩ 254,968,965,113	₩ (58,039,548,245)	₩ 196,929,416,868

	December 31, 2019			
	Beginning balance	Valuation	Others (*)	Ending balance
Equity securities:				
Listed	₩ 248,309,770,176	₩ (10,111,921,367)	₩ -	₩ 238,197,848,809
Unlisted	21,812,539,092	(5,215,112,000)	173,689,212	16,771,116,304
	₩ 270,122,309,268	₩ (15,327,033,367)	₩ 173,689,212	₩ 254,968,965,113

(*) Others are due to change in exchange rate.

(2) Financial assets at FVOCI as of March 31, 2020 and December 31, 2019, are as follows (Korean won):

			March 31, 2020 (Non-current)		
	Number of stock	Ownership (%)	Acquisition cost	Book value	Fair value
Equity securities					
Listed:					
PT Adaro Energy TBK (Indonesia)	480,000,000	1.5	₩ 65,027,820,453	₩ 35,544,960,000	₩ 35,544,960,000
PT. Bayan Resources TBK (Indonesia)	133,333,340	4.0	80,560,295,915	144,613,340,564	144,613,340,564
Unlisted:					
KPX	-	7.1	9,131,374,714	16,363,918,000	16,363,918,000
KEPCO-Uhde Inc.	103,230	2.4	516,150,000	14,198,304	14,198,304
HeeMang Sunlight Power Co., Ltd.	78,600	8.3	393,000,000	393,000,000	393,000,000
KEPCO Bylong Australia Pty., Ltd.	3,537,000	2.0	6,331,601,392	-	-
KODE NOVUS I LLC	-	10.0	-	-	-
			₩ 161,960,242,474	₩196,929,416,868	₩196,929,416,868

10. FINANCIAL ASSETS AT FVOCI (CONT'D):

	Number of stock	Ownership (%)	December 31, 2019 (Non-current) Acquisition cost	Book value	Fair value
Equity securities					
Listed:					
PT Adaro Energy TBK (Indonesia)	480,000,000	1.5	₩ 65,027,820,453	₩ 62,025,840,000	₩ 62,025,840,000
PT. Bayan Resources TBK (Indonesia)	133,333,340	4.0	80,560,295,915	176,172,008,809	176,172,008,809
Unlisted:					
KPX	-	7.1	9,131,374,714	16,363,918,000	16,363,918,000
KEPCO-Uhde Inc.	103,230	2.4	516,150,000	14,198,304	14,198,304
HeeMang Sunlight Power Co., Ltd.	78,600	8.3	393,000,000	393,000,000	393,000,000
KEPCO Bylong Australia Pty., Ltd.	3,537,000	2.0	6,331,601,392	-	-
KODE NOVUS I LLC	-	10.0	-	-	-
			₩ 161,960,242,474	₩ 254,968,965,113	₩ 254,968,965,113

11. LOANS AND FINANCIAL INSTRUMENTS:

(1) Loans included in current and non-current financial assets as of March 31, 2020 and December 31, 2019, are as follows (Korean won):

	March 31, 2020 Gross amount	Allowance for doubtful accounts	Present value discount	Book value
Current assets:				
Loans for tuition	₩ 1,609,226,427	₩ -	₩ (39,285,913)	₩ 1,569,940,514
Loans for housing	1,011,731,710	-	-	1,011,731,710
	2,620,958,137	-	(39,285,913)	2,581,672,224
Non-current assets:				
Loans for tuition	13,544,546,306	-	(569,111,720)	12,975,434,586
Loans for housing	12,781,148,640	-	-	12,781,148,640
Others	5,510,000,000	(2,465,000,000)	-	3,045,000,000
	31,835,694,946	(2,465,000,000)	(569,111,720)	28,801,583,226
	₩ 34,456,653,083	₩ (2,465,000,000)	₩ (608,397,633)	₩ 31,383,255,450

11. LOANS AND FINANCIAL INSTRUMENTS (CONT'D):

	December 31, 2019							
		Gross amount		Allowance for doubtful accounts		Present value discount		Book value
Current assets:								
Loans for tuition	₩	1,319,373,867	₩	-	₩	(84,506,070)	₩	1,234,867,797
Loans for housing		939,863,110		-		-		939,863,110
		2,259,236,977		-		(84,506,070)		2,174,730,907
Non-current assets:								
Loans for tuition		13,174,828,883		-		(525,989,654)		12,648,839,229
Loans for housing		12,618,272,320		-		-		12,618,272,320
Others		5,510,000,000		(2,465,000,000)		-		3,045,000,000
		31,303,101,203		(2,465,000,000)		(525,989,654)		28,312,111,549
	₩	33,562,338,180	₩	(2,465,000,000)	₩	(610,495,724)	₩	30,486,842,456

(2) Changes allowance for doubtful accounts of the Group's loans for the three months ended March 31, 2020 and for the year ended December 31, 2019, are as follows (Korean won):

		March 31, 2020		December 31, 2019
Beginning balance	₩	2,465,000,000	₩	2,465,000,000
Bad debt expenses		-		-
Ending balance	₩	2,465,000,000	₩	2,465,000,000

(3) Long-term and short-term financial instruments included in current and non-currents financial assets as of March 31, 2020 and December 31, 2019, are as follows (Korean won):

	March 31, 2020				December 31, 2019			
		Current		Non-current		Current		Non-current
Time deposit	₩	25,000,000,000	₩	-	₩	25,000,000,000	₩	-
	₩	25,000,000,000	₩	-	₩	25,000,000,000	₩	-

(4) Financial instruments that are restricted in use as of March 31, 2020 and December 31, 2019, are as follows (Korean won):

	Description		March 31, 2020		December 31, 2019
Time deposit	Small and medium enterprises support deposits	₩	25,000,000,000	₩	25,000,000,000
		₩	25,000,000,000	₩	25,000,000,000

12. INVENTORIES:

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

	March 31, 2020		December 31, 2019	
	Gross amount	Carrying value	Gross amount	Carrying value
Raw materials	₩ 124,580,155,932	₩ 124,580,155,932	₩ 131,044,967,448	₩ 131,044,967,448
Supplies	65,239,081,426	65,239,081,426	60,138,447,998	60,138,447,998
Inventories-in-transit	111,276,865,815	111,276,865,815	105,215,009,123	105,215,009,123
	₩ 301,096,103,173	₩ 301,096,103,173	₩ 296,398,424,569	₩ 296,398,424,569

The cost of inventories, which was included in cost of sales, amounted to ₩783,334 million and ₩1,008,874 million for the three months ended March 31, 2020 and 2019, respectively.

13. NON-FINANCIAL ASSETS:

Non-financial assets as of March 31, 2020 and December 31, 2019, are as follows (Korean won):

	March 31, 2020		December 31, 2019	
	Current	Non-current	Current	Non-current
Advanced payments	₩ 32,587,311,524	₩ -	₩ 34,696,632,261	₩ -
Prepaid expenses	5,318,728,125	2,734,506,498	6,215,307,405	3,606,016,659
Greenhouse gas emission right	205,303,802,918	-	136,452,385,250	-
Value-added tax refund receivables	-	-	16,437,284,257	-
Others	6,723,179,815	88,745,757	2,836,373,879	22,194,911,774
	₩ 249,933,022,382	₩ 2,823,252,255	₩ 196,637,983,052	₩ 25,800,928,433

14. INVESTMENTS IN SUBSIDIARIES:

(1) Investments in subsidiaries as of March 31, 2020 and December 31, 2019 are as follows (Korean won) :

			March 31, 2020		December 31, 2019	
Subsidiaries	Location	Key operation activities	Percentage of ownership (%)	Percentage of non-controlling interests (%)	Percentage of ownership (%)	Percentage of non-controlling interests (%)
KOSEP Australia Pty., Ltd.	Australia	Resources development	100.0%	-	100.0%	-
KOSEP USA, INC.	USA	Wind power generation	100.0%	-	100.0%	-
Mira Power Limited(*1)	Pakistan	Hydroelectric power generation	76.0%	24.0%	76.0%	24.0%
KOSEP Material Co., Ltd.	Korea	Manufacturing industrial material with fly ash	86.2%	13.8%	86.2%	13.8%
VI Carbon Professional Private Special Asset Investment Trust 1	Korea	Investment management	96.7%	3.3%	96.7%	3.3%
KOEN Bylong Pty., Ltd.	Australia	Resources development	100.0%	-	100.0%	-
PT. Korea Energy Indonesia	Indonesia	Thermal power generation and operation of utility plant	95.0%	5.0%	95.0%	5.0%
KOLAT	Chile	Solar energy generation	100.0%	-	100.0%	-
KOEN Service Co., Ltd.	Korea	Facility maintenance and service	100.0%	-	100.0%	-
Tamra Offshore Wind Power Co., Ltd(*2)(*3)	Korea	Wind power generation	63.0%	37.0%	63.0%	37.0%
SE Green Energy Co., Ltd(*2)	Korea	Power generation and support	84.8%	15.2%	84.8%	15.2%
KOAK Power Limited	Pakistan	Hydroelectric power generation	100.0%	-	100.0%	-

(*1) The Group acquired additional shares with additional investments for the three months ended March 31, 2020.

(*2) It was reclassified from associates to subsidiaries due to acquisition of control with acquisition of additional shares, and all of shares are transferred to investments in subsidiaries during the year ended December 31, 2019.

(*3) In relation to the acquisition of additional shares, there is a settlement condition due on September 14, 2020 depending on an average utilization rate (Electric power generation). If the average utilization rate is less than the standard utilization rate, it can terminate the stock purchase agreement.

14. INVESTMENTS IN SUBSIDIARIES (CONT'D):

(2) Summary of financial information of subsidiaries as of and for the three months ended March 31, 2020 and as of and for the year ended December 31, 2019, is as follows (Korean won):

	March 31, 2020			
Subsidiaries	Total assets	Total liabilities	Sales	Profit (loss) for the period
KOSEP Australia Pty., Ltd.	₩ 31,147,928,256	₩ 3,914,320,058	₩ 3,285,908,074	₩ (528,586,171)
KOSEP USA, INC.	1,204,261	5,435,447,343	-	-
Mira Power Limited	389,700,403,159	299,075,835,457	-	(2,012,044,609)
KOSEP Material Co., Ltd.	2,457,452,078	1,213,909,669	531,410,117	(344,147,429)
VI Carbon Professional Private Special Asset Investment Trust 1	2,997,052,403	4,401,550	-	(1,428,343)
KOEN Bylong Pty., Ltd.	1,505	36,202,004	-	-
PT. Korea Energy Indonesia	1,499,289,130	114,036,037	617,238,702	69,405,858
KOLAT	28,917,640,295	325,954,281	100,392,041	3,778,412
KOEN Service Co., Ltd.	5,220,973,075	4,416,244,961	7,888,099,472	292,411,328
Tamra Offshore Wind Power Co., Ltd.	157,739,370,950	122,854,289,307	4,155,925,235	685,968,643
SE Green Energy Co., Ltd.	132,812,918,399	105,674,928,946	-	1,847,248
KOAK Power Limited	15,366,978,026	8,971,441	-	(103,611,785)

	December 31, 2019			
Subsidiaries	Total assets	Total liabilities	Sales	Profit (loss) for the period
KOSEP Australia Pty., Ltd.	₩ 32,782,203,337	₩ 2,911,459,857	₩ 15,513,680,363	₩ 3,935,046,952
KOSEP USA, INC.	1,140,433	5,147,358,853	-	(118,578,218)
Mira Power Limited	356,111,190,622	285,576,911,552	-	(970,851,268)
KOSEP Material Co., Ltd.	2,788,018,899	1,185,797,409	3,357,389,628	21,990,973
VI Carbon Professional Private Special Asset Investment Trust 1	3,001,630,845	1,550	-	11,887,489
KOEN Bylong Pty., Ltd.	1,621	38,981,001	-	(14,294,434)
PT. Korea Energy Indonesia	1,591,695,065	121,392,957	2,462,023,109	322,682,177
KOLAT	31,177,697,771	167,356,192	655,855,723	(295,732,337)
KOEN Service Co., Ltd.	5,347,304,829	4,252,154,103	25,889,635,886	542,667,278
Tamra Offshore Wind Power Co., Ltd.	156,708,160,891	121,724,253,469	19,670,443,737	1,154,416,336
SE Green Energy Co., Ltd.	132,727,259,698	105,619,015,218	-	816,023,194
KOAK Power Limited	15,929,595,000	-	-	-

14. INVESTMENTS IN SUBSIDIARIES (CONT'D):

(3) Details of non-controlling interests as of March 31, 2020 and December 31, 2019, are as follows (Korean won):

	March 31, 2020							
Description	Mira Power Limited	KOSEP Material Co., Ltd.	VI Carbon Professional Private Special Asset Investment Trust 1	Koen Bylong Pty., Ltd.	PT. Korea Energy Indonesia	Tamra Offshore Wind Power Co., Ltd.	SE Green Energy Co., Ltd.	Total
Percentage of non-controlling interests	24.00%	13.78%	3.33%	-	5.00%	37.00%	15.20%	
Current assets	36,461,508,290	2,300,362,707	52,052,403	1,505	1,475,738,540	29,166,197,739	6,351,220,605	75,807,081,789
Non-current assets	353,238,894,869	157,089,371	2,945,000,000	-	23,550,590	128,573,173,211	126,461,697,794	611,399,405,835
Current liabilities	26,277,430,231	398,600,347	4,401,550	36,202,004	114,036,037	12,229,289,307	2,880,733,464	41,940,692,940
Non-current liabilities	272,798,405,226	815,309,322	-	-	-	110,625,000,000	102,794,195,482	487,032,910,030
Net assets	90,624,567,702	1,243,542,409	2,992,650,853	(36,200,499)	1,385,253,093	34,885,081,643	27,137,989,453	158,232,884,654
Book value of non-controlling interests	21,749,896,249	171,332,510	99,755,028	(36,202,243)	69,262,655	12,907,480,205	4,124,184,928	39,085,709,332
Sales	-	531,410,117	-	-	617,238,702	4,155,925,235	-	5,304,574,054
Profit (loss) for the period	(2,012,044,609)	(344,147,429)	(1,428,343)	-	69,405,858	685,968,643	1,847,248	(1,600,398,632)
Total comprehensive income (loss) for the period	(4,637,224,129)	(344,147,429)	(1,428,343)	2,778,881	(85,049,015)	685,968,643	1,847,248	(4,377,254,144)
Profit (loss) for the period attributable to non-controlling interests	(482,890,706)	(47,415,868)	(47,611)	-	3,470,293	253,808,398	280,728	(530,354,185)
Total comprehensive income (loss) for the period attributable to non-controlling interests	(1,112,933,792)	(47,415,868)	(47,611)	2,778,881	(4,252,450)	253,808,398	280,728	(1,164,649,721)
Cash flows from operating activities	(4,227,171,904)	(570,407,101)	11,957,762	-	192,874,286	6,034,073,568	(156,926,446)	1,284,400,165
Cash flows from investing activities	(44,083,201,109)	10,000,000	-	-	-	-	(1,376,228,529)	(45,449,429,638)
Cash flows from financing activities before dividends to non-controlling interests	45,667,807,961	(5,469,792)	(7,550,099)	-	-	(2,375,000,000)	(34,521,809)	43,245,266,261
Effect of exchange rate fluctuation on cash held	(1,226,215,888)	-	-	(116)	(131,199,869)	-	-	(1,357,415,873)
increase (decrease) in cash ıd cash equivalents	(3,868,780,940)	(565,876,893)	4,407,663	(116)	61,674,417	3,659,073,568	(1,567,676,784)	(2,277,179,085)

14. INVESTMENTS IN SUBSIDIARIES (CONT'D):

	December 31, 2019							
Description	Mira Power Limited	KOSEP Material Co., Ltd.	VI Carbon Professional Private Special Asset Investment Trust 1	Koen Bylong Pty., Ltd.	PT. Korea Energy Indonesia	Tamra Offshore Wind Power Co., Ltd.	SE Green Energy Co., Ltd.	Total
Percentage of non-controlling interests	24.00%	13.78%	3.33%	-	5.00%	37.00%	15.20%	
Current assets	41,588,740,975	2,623,951,075	56,630,845	1,621	1,562,838,310	26,306,180,398	7,815,802,412	79,954,145,636
Non-current assets	314,522,449,647	164,067,824	2,945,000,000	-	28,856,755	130,401,980,493	124,911,457,286	572,973,812,005
Current liabilities	19,856,652,393	415,567,322	1,550	38,981,001	121,392,957	11,099,253,469	661,015,218	32,192,863,910
Non-current liabilities	265,720,259,159	770,230,087	-	-	-	110,625,000,000	104,958,000,000	482,073,489,246
Net assets	70,534,279,070	1,602,221,490	3,001,629,295	(38,979,380)	1,470,302,108	34,983,907,422	27,108,244,480	138,661,604,485
Book value of non-controlling interests	16,928,226,978	220,750,516	100,054,310	(38,981,124)	73,515,105	12,944,045,743	4,119,664,557	34,347,276,085
Sales	-	3,357,389,628	-	-	2,462,023,109	19,670,443,737	-	25,489,856,474
Profit (loss) for the period	(970,851,268)	21,990,973	11,887,489	(14,294,434)	322,682,177	1,154,416,336	816,023,194	1,341,854,467
Total comprehensive income (loss) for the period	(4,095,673,326)	(10,293,722)	11,887,489	(5,557,074,778)	416,965,304	1,154,416,336	816,023,194	(7,263,749,503)
Profit (loss) for the period attributable to non-controlling interests	(233,004,304)	3,029,867	396,250	(14,294,434)	12,642,381	427,134,044	124,011,787	319,915,591
Total comprehensive income (loss) for the period attributable to non-controlling interests	(982,961,599)	(1,418,246)	396,250	(5,557,074,778)	17,356,537	427,134,044	124,011,787	(5,972,556,005)
Cash flows from operating activities	7,100,442,899	(103,442,545)	11,789,229	-	117,013,805	10,718,524,530	(976,769,509)	16,867,558,409
Cash flows from investing activities	(101,191,422,740)	(5,000,000)	-	-	(5,250,465)	-	(99,285,254,707)	(200,486,927,912)
Cash flows from financing activities before dividends to non-controlling interests	98,683,303,056	(17,312,000)	(11,788,641)	-	-	(17,156,000,000)	106,759,136,700	188,257,339,115
Effect of exchange rate fluctuation on cash held	(1,975,056,073)	-	-	45	75,955,748	-	-	(1,899,100,280)
Other increase (decrease) in cash and cash equivalents (*)	-	-	-	-	-	31,736,132,102	657,013,036	32,393,145,138
Net increase (decrease) in cash and cash equivalents	2,617,267,142	(125,754,545)	588	45	187,719,088	25,298,656,632	7,154,125,520	35,132,014,470

(*) The amount represents the cash and cash equivalents balance at the time of obtaining control over Tamra Offshore Wind Power Co., Ltd., and SE Green Energy Co., Ltd. which were reclassified from associates to subsidiaries due to acquisition of additional shares during the year ended December 31, 2019.

15. INVESTMENTS IN ASSOCIATES AND JOINT VENTURES:

(1) Investments in associates and joint ventures as of March 31, 2020 and December 31, 2019, are as follows (Korean won):

			March 31, 2020		
Investees	Key operation activities	Location	Percentage of ownership (%)	Acquisition cost	Book value
Associates:					
Hyundai Energy Co., Ltd. (*1,2)	Energy production	Korea	30.7	₩ 71,070,000,000	₩ -
S-Power Co., Ltd.	Energy production	Korea	49.0	132,300,000,000	118,139,514,728
Ecollite Co., Ltd. (*3)	Energy production, construction and others	Korea	36.1	1,516,074,400	-
Korea Offshore Wind Power Co., Ltd. (*4)	Wind power generation	Korea	12.5	26,600,000,000	20,916,751,603
Jinbhuvish Power Generations Pvt. Ltd. (*4,7)	Thermal power generation	India	5.2	9,000,154,032	-
Nepal Water & Energy Development Company Pty., Ltd. (*5,8)	Hydroelectric power generation and operation of utility plant	Nepal	60.4	50,268,132,816	48,055,006,416
Goseong Green Power Co., Ltd. (*4)	Coal thermal power generation	Korea	1.1	2,900,000,000	2,308,383,698
Gangneung Eco Power Co., Ltd. (*4)	Coal thermal power generation	Korea	1.6	2,900,000,000	2,410,896,054
KEPCO Energy Solution Co., Ltd. (*4)	Energy Efficiency	Korea	8.3	25,000,000,000	25,574,732,312
Solar School Plant Co., Ltd. (*4)	Solar power generation	Korea	8.3	16,650,000,000	17,137,714,454
PND solar., Ltd.	Solar power generation	Korea	29.0	1,249,900,000	987,658,616
Hyundai Eco Energy Co., Ltd. (*4)	Solar power generation	Korea	19.0	3,610,000,000	3,594,902,777
				343,064,261,248	239,125,560,658
Joint ventures:					
ASM-BG Investicii AD	Solar power generation	Bulgaria	50.0	16,101,188,249	20,582,666,482
RES Technology AD	Solar power generation	Bulgaria	50.0	15,594,778,376	17,055,584,379
Global Trade of Power System Co., Ltd. (*6)	Exporting products and technology of small- or medium-sized business by proxy	Korea	29.0	290,000,000	549,594,258
Expressway Solar-light Power Generation Co., Ltd. (*6)	Solar power generation	Korea	29.0	1,856,000,000	2,710,919,418
Chile Solar JV SpA	Solar power generation	Chile	50.0	37,689,063,915	32,681,429,745
Cheongsong Myeonbong Mt Wind Power, Co, Ltd. (*6)	Wind power generation	Korea	29.0	2,900,000,000	4,303,389,575
Jaeun People Wind Power Co., Ltd (*6)	Wind power generation	Korea	29.0	2,494,000,000	2,376,376,018
Yeongam Solar Power Co., Ltd (*6)	Solar power generation	Korea	19.0	6,460,000,000	6,460,000,000
Samsu Wind Power Co., Ltd (*6)	Wind power generation	Korea	19.0	2,637,200,000	2,637,200,000
				86,022,230,540	89,357,159,875
				₩ 429,086,491,788	₩ 328,482,720,533

15. INVESTMENTS IN ASSOCIATES AND JOINT VENTURES (CONT'D):

Investees	Key operation activities	Location	December 31, 2019 Percentage of ownership (%)	Acquisition cost	Book value
Associates:					
Hyundai Energy Co., Ltd. (*1,2)	Energy production	Korea	30.7	₩ 71,070,000,000	₩ -
S-Power Co., Ltd.	Energy production	Korea	49.0	132,300,000,000	115,784,303,601
Ecollite Co., Ltd. (*3)	Energy production, construction and others	Korea	36.1	1,516,074,400	-
Korea Offshore Wind Power Co., Ltd. (*4)	Wind power generation	Korea	12.5	26,600,000,000	21,295,840,981
Jinbhuvish Power Generations Pvt. Ltd. (*4,7)	Thermal power generation	India	5.2	9,000,154,032	-
Nepal Water & Energy Development Company Pty., Ltd. (*5)	Hydroelectric power generation and operation of utility plant	Nepal	57.8	35,571,378,004	31,144,649,008
Goseong Green Power Co., Ltd. (*4)	Coal thermal power generation	Korea	1.1	2,900,000,000	2,339,784,105
Gangneung Eco Power Co., Ltd. (*4)	Coal thermal power generation	Korea	1.6	2,900,000,000	2,429,778,953
KEPCO Energy Solution Co., Ltd. (*4)	Energy Efficiency	Korea	8.3	25,000,000,000	25,507,964,656
Solar School Plant Co., Ltd. (*4)	Solar power generation	Korea	8.3	16,650,000,000	17,104,578,226
PND solar., Ltd.	Solar power generation	Korea	29.0	1,249,900,000	1,144,190,890
Hyundai Eco Energy Co., Ltd. (*4)	Solar power generation	Korea	19.0	3,610,000,000	3,781,253,843
				328,367,506,436	220,532,344,263
Joint ventures:					
ASM-BG Investicii AD	Solar power generation	Bulgaria	50.0	16,101,188,249	19,376,008,669
RES Technology AD	Solar power generation	Bulgaria	50.0	15,594,778,376	16,247,709,243
Global Trade of Power System Co., Ltd. (*6)	Exporting products and technology of small- or medium-sized business by proxy	Korea	29.0	290,000,000	570,767,729
Expressway Solar-light Power Generation Co., Ltd. (*6)	Solar power generation	Korea	29.0	1,856,000,000	2,882,710,413
Chile Solar JV SpA	Solar power generation	Chile	50.0	37,689,063,915	34,858,510,189
Cheongsong Myeonbong Mt Wind Power, Co, Ltd. (*6)	Wind power generation	Korea	29.0	2,900,000,000	2,763,863,806
Jaeun People Wind Power Co., Ltd (*6)	Wind power generation	Korea	29.0	2,494,000,000	2,198,002,202
				76,925,030,540	78,897,572,251
				₩ 405,292,536,976	₩ 299,429,916,514

15. INVESTMENTS IN ASSOCIATES AND JOINT VENTURES (CONT'D):

(*1) As of March 31, 2020 and December 31, 2019, 15.6% of ownership of Hyundai Energy Co., Ltd. is held by NH Power ll Co., Ltd. and NH Bank. According to the shareholders' agreement entered in March 2011, not only does the Group has a call option to acquire the investment in Hyundai Energy Co., Ltd. from NH Power ll Co., Ltd. and NH Bank with a certain rate of return, NH Power ll Co., Ltd. and NH Bank also have put options to dispose of their investments to the Group. In connection with this agreement, the Group applied the equity method on the investment in Hyundai Energy Co., Ltd. with 46.3% of ownership.

(*2) As Hyundai Energy Co., Ltd. incurred operating loss continuously, the Group assessed the recoverable amount. As a result, the Group recognized impairment loss of the difference between carrying amount and recoverable amount before the year ended December 31, 2019 and classified it as a loss on investments in associates and joint ventures in the consolidated statement of comprehensive income.

(*3) The Group recognized impairment loss in full as Ecollite Co., Ltd. discontinued its operating activities.

(*4) The effective percentage of ownership is less than 20%. However, the Group can exercise significant influence by virtue of its contractual right to appoint directors to the board of directors of the entity, and by strict decision criteria of the Group's financial and operating policy of the Board of Directors. With this reason, the Group has classified the investees as its associates.

(*5) The effective percentage of ownership is more than 50%, but the Group does not hold control over the entity according to the shareholders' agreement. For this reason, the Group has classified the investee as an associate.

(*6) In accordance with the shareholders' agreement, the Group makes all critical financial and operating decisions jointly with other investors. Therefore, the entities are classified as joint ventures.

(*7) Due to discontinuance of operations, the Group recognized impairment loss on investments in associates and joint ventures previous to the year ended December 31, 2019.

(*8) For the three months ended March 31, 2020, the Group's ownership increased due to an uneven increase in preferred stocks.

15. INVESTMENTS IN ASSOCIATES AND JOINT VENTURES (CONT'D):

(2) Changes in investments in associates and joint ventures for the three months ended March 31, 2020 and for the year ended December 31, 2019, are as follows (Korean won):

	March 31, 2020				
Investees	Beginning balance	Acquisition	Gain (loss) on valuation	Share in other comprehensive income	Ending balance
Associates:					
Hyundai Energy Co., Ltd. (*1)	₩ -	₩ -	₩ -	₩ -	₩ -
S-Power Co., Ltd.	115,784,303,601	-	2,355,211,127	-	118,139,514,728
Ecollite Co., Ltd. (*2)	-	-	-	-	-
Korea Offshore Wind Power Co., Ltd.	21,295,840,981	-	(379,089,378)	-	20,916,751,603
Jinbhuvish Power Generations Pvt. Ltd. (*2)	-	-	-	-	-
Nepal Water & Energy Development Company Pty., Ltd.	31,144,649,008	14,696,754,812	(168,690,290)	2,382,292,886	48,055,006,416
Goseong Green Power Co., Ltd.	2,339,784,105	-	(31,400,407)	-	2,308,383,698
Gangneung Eco Power Co., Ltd.	2,429,778,953	-	(18,882,899)	-	2,410,896,054
KEPCO Energy Solution Co., Ltd.	25,507,964,656	-	66,767,656	-	25,574,732,312
Solar School Plant Co., Ltd.	17,104,578,226	-	33,136,228	-	17,137,714,454
PND solar., Ltd.	1,144,190,890	-	(156,532,274)	-	987,658,616
Hyundai Echo Energy Co., Ltd.	3,781,253,843		(186,351,066)	-	3,594,902,777
Joint ventures:				-	
ASM-BG Investicii AD	19,376,008,669	-	486,056,047	720,601,766	20,582,666,482
RES Technology AD	16,247,709,243	-	200,621,319	607,253,817	17,055,584,379
Global Trade of Power System Co., Ltd.	570,767,729	-	(21,173,471)	-	549,594,258
Expressway Solar-light Power Generation Co., Ltd.	2,882,710,413	-	(171,790,995)	-	2,710,919,418
Chile Solar JV SpA	34,858,510,189	-	528,312,021	(2,705,392,465)	32,681,429,745
Cheongsong Myeonbong Mt Wind Power, Co, Ltd.	2,763,863,806	-	(52,333,586)	1,591,859,355	4,303,389,575
Jaeun People Wind Power Co., Ltd	2,198,002,202	-	178,373,816	-	2,376,376,018
Yeongam Solar Power Co., Ltd	-	6,460,000,000	-	-	6,460,000,000
Samsu Wind Power Co., Ltd	-	2,637,200,000	-	-	2,637,200,000
	₩ 299,429,916,514	₩ 23,793,954,812	₩2,662,233,848	₩ 2,596,615,359	₩328,482,720,533

15. INVESTMENTS IN ASSOCIATES AND JOINT VENTURES (CONT'D):

	December 31, 2019						
Investees	Beginning balance	Acquisition	Gain (loss) on valuation	Share in other comprehensive income	Dividends	Transfer	Ending balance
Associates:							
Hyundai Energy Co., Ltd. (*1)	₩ -	₩ -	₩ -	₩ -	₩ -	₩ -	₩ -
S-Power Co., Ltd.	114,565,834,887	-	1,218,468,714	-	-	-	115,784,303,601
Ecollite Co., Ltd. (*2)	-	-	-	-	-	-	-
Korea Offshore Wind Power Co., Ltd.	22,467,059,439	-	(1,171,218,458)	-	-	-	21,295,840,981
SE Green Energy Co., Ltd (*3).	3,365,999,620	-	(74,957,650)	-	-	(3,291,041,970)	-
Jinbhuvish Power Generations Pvt. Ltd. (*2)	-	-	-	-	-	-	-
Nepal Water & Energy Development Company Pty., Ltd.	30,960,686,313	-	(854,519,959)	1,038,482,654	-	-	31,144,649,008
Goseong Green Power Co., Ltd.	2,459,184,751	-	(119,400,646)	-	-	-	2,339,784,105
Gangneung Eco Power Co., Ltd.	2,494,749,943	-	(64,970,990)	-	-	-	2,429,778,953
Tamra Offshore Wind Power Co., Ltd.(*3)	10,400,836,090	-	-	-	-	(10,400,836,090)	-
KEPCO Energy Solution Co., Ltd.	25,271,190,072	-	236,774,584	-	-	-	25,507,964,656
Solar School Plant Co., Ltd.	16,892,726,416	-	211,851,810	-	-	-	17,104,578,226
PND solar., Ltd.	1,019,782,969	-	124,407,921	-	-	-	1,144,190,890
Hyundai Echo Energy Co., Ltd.	3,388,008,144	-	393,245,699	-	-	-	3,781,253,843
Joint ventures:							
ASM-BG Investicii AD	21,379,137,961	-	2,441,694,750	315,052,166	(4,759,876,208)	-	19,376,008,669
RES Technology AD	15,208,842,076	-	962,685,256	76,181,911	-	-	16,247,709,243
Global Trade of Power System Co., Ltd.	515,148,578	-	55,619,151	-	-	-	570,767,729
Expressway Solar-light Power Generation Co., Ltd.	2,676,033,278	-	206,677,135	-	-	-	2,882,710,413
Chile Solar JV SpA	36,865,046,348	-	842,794,080	(2,849,330,239)	-	-	34,858,510,189
Cheongsong Myeonbong Mt Wind Power, Co, Ltd.	-	2,900,000,000	(136,136,194)	-	-	-	2,763,863,806
Jaeun People Wind Power Co., Ltd	-	2,494,000,000	(296,217,473)	219,675	-	-	2,198,002,202
	₩ 309,930,266,885	₩ 5,394,000,000	₩3,976,797,730	₩ (1,419,393,833)	₩ (4,759,876,208)	₩ (13,691,878,060)	₩299,429,916,514

(*1) The Group fully recognized an impairment loss on investment in the investee previous to the year ended December 31, 2019.

(*2) The Group fully recognized an impairment loss on investments as the investee discontinued its operation previous to the year ended December 31, 2019.

(*3) The Group has reclassified its investments in the investees as investments in subsidiaries due to obtaining control over the investees through the acquisition of additional shares during to the year ended December 31, 2019.

15. INVESTMENTS IN ASSOCIATES AND JOINT VENTURES (CONT'D):

(3) Summary of financial information of associates and joint ventures as of and for the three months ended March 31, 2020 and as of and for the year ended December 31, 2019, is as follows (Korean won):

	March 31, 2020			
Investees	Total assets	Total liabilities	Sales	Profit (loss) for the period
Associates:				
Hyundai Energy Co., Ltd.	₩ 463,779,041,480	₩ 547,338,246,491	₩ 26,927,483,577	₩ 1,143,474,162
S-Power Co., Ltd.	816,552,242,348	572,203,658,357	159,854,210,778	5,248,207,099
Ecollite Co., Ltd.	1,810,924,702	293,407,084	-	(16,782,717)
Korea Offshore Wind Power Co., Ltd.	333,352,085,423	166,018,072,606	6,092,140,682	365,445,492
Jinbhuvish Power Generations Pvt. Ltd.	64,032,145,796	13,223,678,910	-	-
Nepal Water & Energy Development Company Pty., Ltd.	105,852,641,857	28,613,662,644	-	(323,302,339)
Goseong Green Power Co., Ltd.	3,691,132,071,081	3,472,099,177,089	-	(1,556,881,179)
Gangneung Eco Power Co., Ltd.	1,598,994,949,684	1,441,677,130,000	-	(982,693,514)
KEPCO Energy Solution Co., Ltd.	312,305,300,695	5,408,512,951	895,121,641	850,861,325
Solar School Plant Co., Ltd.	209,247,135,772	3,388,703,901	351,206,225	398,032,771
P&D Solar Col., Ltd	39,865,205,621	36,989,979,545	502,009,074	(677,437,663)
Hyundai Echo Energy Co., Ltd.	209,187,282,058	191,395,363,159	6,229,177,733	831,627,955
Joint ventures:				
ASM-BG Investicii AD	₩ 82,482,780,184	₩ 41,317,447,221	₩ 2,918,377,284	₩ 972,112,093
RES Technology AD	69,936,914,013	35,825,745,255	1,897,611,195	401,242,651
Global Trade of Power System Co., Ltd.	2,032,274,727	137,122,113	458,955,927	(85,229,957)
Expressway Solar-light Power Generation Co., Ltd.	16,713,150,906	7,365,152,913	250,469,209	(493,044,838)
Chile Solar JV SpA	69,705,703,415	4,342,843,926	2,143,978,105	1,677,036,162
Cheongsong Myeonbong Mt Wind Power, Co, Ltd.	27,428,656,857	18,732,798,186	-	(587,722,263)
Jaeun People Wind Power Co., Ltd	31,519,250,125	23,324,850,064	-	(19,769,873)
Yeongam Solar Power Co., Ltd	189,053,905,254	159,124,036,170	-	(1,123,457,710)
Samsu Wind Power Co., Ltd	26,242,363,404	12,827,282,200	-	(61,404,393)

15. INVESTMENTS IN ASSOCIATES AND JOINT VENTURES (CONT'D):

	December 31, 2019			
Investees	Total assets	Total liabilities	Sales	Profit (loss) for the period
Associates:				
Hyundai Energy Co., Ltd.	₩ 465,237,668,625	₩ 549,940,347,798	₩ 91,841,932,789	₩ (27,882,133,273)
S-Power Co., Ltd.	805,622,023,530	566,024,637,172	576,553,691,182	2,318,617,382
Ecollite Co., Ltd.	1,837,930,919	303,630,584	-	(97,290,952)
Korea Offshore Wind Power Co., Ltd.	285,493,480,299	115,126,752,450	-	(9,369,747,661)
Jinbhuvish Power Generations Pvt. Ltd.	64,111,149,061	13,239,994,368	-	-
Nepal Water & Energy Development Company Pty., Ltd.	78,308,956,933	26,783,481,599	-	(1,380,429,475)
Goseong Green Power Co., Ltd.	3,399,057,967,293	3,177,209,864,439	-	(10,275,972,454)
Gangneung Eco Power Co., Ltd.	1,362,691,684,884	1,204,201,823,158	-	(3,829,722,537)
KEPCO Energy Solution Co., Ltd.	308,237,255,765	2,141,679,897	2,843,429,141	2,855,027,812
Solar School Plant Co., Ltd.	208,729,610,117	3,269,211,017	1,962,309,595	2,553,300,035
P&D Solar Col., Ltd	40,940,915,359	37,525,922,820	6,908,060,220	1,664,592,107
Hyundai Echo Energy Co., Ltd.	209,394,872,963	190,622,158,979	13,342,768,851	1,306,069,236
Joint ventures:				
ASM-BG Investicii AD	78,191,184,983	39,439,167,645	13,199,712,360	4,894,372,772
RES Technology AD	66,820,878,336	34,325,459,850	8,383,974,900	1,914,254,126
Global Trade of Power System Co., Ltd.	2,993,438,632	1,025,274,048	3,322,954,014	133,941,708
Expressway Solar-light Power Generation Co., Ltd.	17,652,678,872	7,712,298,139	2,990,539,642	708,915,807
Chile Solar JV SpA	69,902,770,503	185,750,126	590,596,225	1,685,588,159
Cheongsong Myeonbong Mt Wind Power, Co, Ltd.	27,658,665,279	24,271,516,154	-	(1,365,079,152)
Jaeun People Wind Power Co., Ltd	31,402,203,885	23,822,885,946	-	(843,774,973)

15. INVESTMENTS IN ASSOCIATES AND JOINT VENTURES (CONT'D):

(4) Reconciliation between carrying amounts of investments in associates and joint ventures and the Group's interests in their net assets as of March 31, 2020 and December 31, 2019, is as follows (Korean won):

	March 31, 2020						
Investees	Net assets	Percentage of Ownership(%)	Share in net assets	Investment differential	Intercompany transaction	Others	Carrying amount
Associates:							
Hyundai Energy Co., Ltd.	₩ (83,559,205,011)	30.7	₩ (25,619,252,256)	₩ -	₩ (943,991,919)	₩ 26,563,244,175	₩ -
S-Power Co., Ltd.	244,348,583,991	49.0	119,730,806,156	-	(1,591,291,428)	-	118,139,514,728
Ecollite Co., Ltd.	1,517,517,618	36.1	547,835,403	-	-	(547,835,403)	-
Korea Offshore Wind Power Co., Ltd.	167,334,012,817	12.5	20,916,751,603	-	-	-	20,916,751,603
Jinbhuvish Power Generations Pvt. Ltd.	50,808,466,886	5.2	2,621,132,445	-	-	(2,621,132,445)	-
Nepal Water & Energy Development Company Pty., Ltd.	77,238,979,213	60.4	47,083,260,395	971,746,021	-	-	48,055,006,416
Goseong Green Power Co., Ltd.	219,032,893,992	1.1	2,443,059,202	-	(134,675,504)	-	2,308,383,698
Gangneung Eco Power Co., Ltd.	157,317,819,684	1.6	2,534,564,873	-	(123,668,819)	-	2,410,896,054
KEPCO Energy Solution Co., Ltd.	306,896,787,744	8.3	25,574,732,312	-	-	-	25,574,732,312
Solar School Plant Co., Ltd.	205,858,431,871	8.3	17,137,714,454	-	-	-	17,137,714,454
PND solar., Ltd.	2,875,226,076	29.0	833,815,562	153,843,054	-	-	987,658,616
Hyundai Eco Energy Co., Ltd.	17,791,918,899	19.0	3,380,464,591	214,438,186	-	-	3,594,902,777
Joint ventures:							
ASM-BG Investicii AD	41,165,332,963	50.0	20,582,666,482	-	-	-	20,582,666,482
RES Technology AD	34,111,168,758	50.0	17,055,584,379	-	-	-	17,055,584,379
Global Trade of Power System Co., Ltd.	1,895,152,614	29.0	549,594,258	-	-	-	549,594,258
Expressway Solar-light Power Generation Co., Ltd.	9,347,997,993	29.0	2,710,919,418	-	-	-	2,710,919,418
Chile Solar JV SpA	65,362,859,489	50.0	32,681,429,745	-	-		32,681,429,745
Cheongsong Myeonbong Mt Wind Power, Co, Ltd.	8,695,858,671	29.0	2,521,799,015	1,781,590,560	-	-	4,303,389,575
Jaeun People Wind Power Co., Ltd	8,194,400,061	29.0	2,376,376,018	-	-	-	2,376,376,018
Yeongam Solar Power Co., Ltd	29,929,869,084	19.0	5,686,675,126	773,324,874	-	-	6,460,000,000
Samsu Wind Power Co., Ltd	13,415,081,204	19.0	2,548,865,429	88,334,571	-	-	2,637,200,000

15. INVESTMENTS IN ASSOCIATES AND JOINT VENTURES (CONT'D):

Investees	Net assets	Percentage of ownership(%)	Share in net assets	Investment differential	Intercompany transaction	Others	Carrying amount
	December 31, 2019						
Associates:							
Hyundai Energy Co., Ltd.	₩ (84,702,679,173)	30.7	₩(25,969,841,434)	₩ -	₩ (954,365,457)	₩26,924,206,891	₩ -
S-Power Co., Ltd.	239,597,386,358	49.0	117,402,719,315	-	(1,618,415,714)	-	115,784,303,601
Ecollite Co., Ltd.	1,534,300,335	36.1	553,894,091	-	-	(553,894,091)	-
Korea Offshore Wind Power Co., Ltd.	170,366,727,849	12.5	21,295,840,981	-	-	-	21,295,840,981
Jinbhuvish Power Generations Pvt. Ltd.	50,871,154,693	5.2	2,624,366,415	-	-	(2,624,366,415)	-
Nepal Water & Energy Development Company Pty., Ltd.	51,525,475,334	57.8	30,172,902,987	971,746,021	-		31,144,649,008
Goseong Green Power Co., Ltd.	221,848,102,854	1.1	2,474,459,609	-	(134,675,504)	-	2,339,784,105
Gangneung Eco Power Co., Ltd.	158,489,861,726	1.6	2,553,447,772	-	(123,668,819)	-	2,429,778,953
KEPCO Energy Solution Co., Ltd.	306,095,575,868	8.3	25,507,964,656	-	-	-	25,507,964,656
Solar School Plant Co., Ltd.	205,460,399,100	8.3	17,104,578,226	-	-	-	17,104,578,226
PND solar., Ltd.	3,414,992,539	29.0	990,347,836	153,843,054	-	-	1,144,190,890
Hyundai Eco Energy Co., Ltd.	18,772,713,984	19.0	3,566,815,657	214,438,186	-	-	3,781,253,843
Joint ventures:							
ASM-BG Investicii AD	38,752,017,338	50.0	19,376,008,669	-	-	-	19,376,008,669
RES Technology AD	32,495,418,486	50.0	16,247,709,243	-	-	-	16,247,709,243
Global Trade of Power System Co., Ltd.	1,968,164,584	29.0	570,767,729	-	-	-	570,767,729
Expressway Solar-light Power Generation Co., Ltd.	9,940,380,733	29.0	2,882,710,413	-	-	-	2,882,710,413
Chile Solar JV SpA	69,717,020,377	50.0	34,858,510,189	-	-		34,858,510,189
Cheongsong Myeonbong Mt Wind Power, Co, Ltd.	3,387,149,125	29.0	982,273,246	1,781,590,560	-	-	2,763,863,806
Jaeun People Wind Power Co., Ltd	7,579,317,939	29.0	2,198,002,202	-	-	-	2,198,002,202

16. PROPERTY, PLANT AND EQUIPMENT:

(1) Property, plant and equipment as of March 31, 2020 and December 31, 2019, are as follows (Korean won):

	March 31, 2020				
	Acquisition cost	Government grants	Accumulated depreciation	Accumulated impairment losses	Book value
Land	₩ 1,256,834,653,077	₩ -	₩ -	₩ -	₩ 1,256,834,653,077
Buildings	1,221,690,078,608	(777,021,107)	(497,533,653,828)	-	723,379,403,673
Structures	1,442,643,890,647	(1,261,698,321)	(596,465,997,258)	-	844,916,195,068
Machinery	7,679,851,548,575	(3,186,848,293)	(3,823,034,201,596)	(2,365,738,857)	3,851,264,759,829
Vehicles	20,601,582,806	(16,916,666)	(18,519,867,611)	-	2,064,798,529
Furniture and fixtures	57,224,003,269	-	(45,466,127,039)	-	11,757,876,230
Tools and equipment	18,243,895,586	-	(16,096,071,164)	-	2,147,824,422
Right-of-use assets	1,732,889,801,783	-	(533,190,763,758)	-	1,199,699,038,025
Construction-in-progress	1,079,643,647,763	-	-	-	1,079,643,647,763
	₩ 14,509,623,102,114	₩ (5,242,484,387)	₩ (5,530,306,682,254)	₩ (2,365,738,857)	₩ 8,971,708,196,616

	December 31, 2019				
	Acquisition cost	Government grants	Accumulated depreciation	Accumulated impairment losses	Book value
Land	₩ 1,256,180,708,494	₩ -	₩ -	₩ -	₩ 1,256,180,708,494
Buildings	1,219,928,500,294	(784,653,191)	(485,483,209,067)	-	733,660,638,036
Structures	1,440,950,298,885	(1,279,013,395)	(584,302,513,965)	-	855,368,771,525
Machinery	7,660,721,779,912	(3,324,150,453)	(3,692,277,760,100)	(2,365,738,857)	3,962,754,130,502
Vehicles	20,538,636,808	(12,166,666)	(18,085,592,198)	-	2,440,877,944
Furniture and fixtures	57,129,879,134	-	(44,006,351,268)	-	13,123,527,866
Tools and equipment	18,135,826,572	-	(15,647,026,149)	-	2,488,800,423
Right-of-use assets	1,729,829,296,414	-	(495,737,089,711)	-	1,234,092,206,703
Construction-in-progress	952,057,401,150	-	-	-	952,057,401,150
	₩ 14,355,472,327,663	₩ (5,399,983,705)	₩ (5,335,539,542,458)	₩ (2,365,738,857)	₩ 9,012,167,062,643

16. PROPERTY, PLANT AND EQUIPMENT (CONT'D):

(2) Changes in property, plant and equipment for the three months ended March 31, 2020 and for the year ended December 31, 2019, are as follows (Korean won):

	March 31, 2020					
	Beginning balance	Acquisition	Disposal	Depreciation	Others (*1,2)	Ending balance
Land	₩ 1,256,180,708,494	₩ 25,231,532	₩ (19,078,991)	₩ -	₩ 647,792,042	₩ 1,256,834,653,077
Buildings	734,445,291,227	-	(45,705,300)	(12,136,878,888)	1,893,717,741	724,156,424,780
(Government grants)	(784,653,191)	-	-	7,632,084	-	(777,021,107)
Structures	856,647,784,920	-	-	(12,163,483,293)	1,693,591,762	846,177,893,389
(Government grants)	(1,279,013,395)	-	-	17,315,074	-	(1,261,698,321)
Machinery	3,966,078,280,955	7,516,915,228	(633,263,022)	(132,704,034,896)	14,193,709,857	3,854,451,608,122
(Government grants)	(3,324,150,453)	-	-	137,302,160	-	(3,186,848,293)
Vehicles	2,453,044,610	4,000	-	(435,066,479)	63,733,064	2,081,715,195
(Government grants)	(12,166,666)	(9,000,000)	-	4,250,000	-	(16,916,666)
Furniture and fixtures	13,123,527,866	42,301,019	(23,000)	(1,727,064,187)	319,134,532	11,757,876,230
(Government grants)	-	-	-	-	-	-
Tools and equipment	2,488,800,423	-	(1,000)	(454,788,484)	113,813,483	2,147,824,422
Right-of-use assets	1,234,092,206,703	-	-	(37,463,051,247)	3,069,882,569	1,199,699,038,025
Construction-in-progress	952,057,401,150	129,834,990,891	-	-	(2,248,744,278)	1,079,643,647,763
	₩ 9,012,167,062,643	₩ 137,410,442,670	₩ (698,071,313)	₩ (196,917,868,156)	₩ 19,746,630,772	₩ 8,971,708,196,616

(*1) Others consist of transfer to property, plant and equipment from construction-in-progress, capitalized borrowing costs, foreign currency translation, and others.

(*2) Capitalized borrowing cost is ₩8,855 million, and the weighted-average capitalization rate of interest for the three months ended March 31, 2020 is 2.90~6.09%.

	December 31, 2019					
	Beginning balance	Acquisition	Disposal	Depreciation	Others (*1,2)	Ending balance
Land	₩ 1,243,763,943,950	₩ -	₩ (536,306,914)	₩ -	₩ 12,953,071,458	₩ 1,256,180,708,494
Buildings	745,223,436,671	94,905,469	(1,197,710,375)	(49,552,097,423)	39,876,756,885	734,445,291,227
(Government grants)	(815,181,525)	-	-	30,528,334	-	(784,653,191)
Structures	878,279,443,318	-	(129,101,760)	(49,420,057,654)	27,917,501,016	856,647,784,920
(Government grants)	(1,348,273,692)	-	-	69,260,297	-	(1,279,013,395)
Machinery	4,044,868,899,100	39,543,966,171	(2,262,472,366)	(548,966,791,185)	432,894,679,235	3,966,078,280,955
(Government grants)	(3,878,067,332)	-	4,019,227	549,897,652	-	(3,324,150,453)
Vehicles	3,519,515,686	128,133,507	(2,311,647)	(1,945,938,842)	753,645,906	2,453,044,610
(Government grants)	(26,766,666)	-	-	14,600,000	-	(12,166,666)
Furniture and fixtures	15,069,904,453	190,771,430	(3,431,498)	(6,835,974,634)	4,702,258,115	13,123,527,866
(Government grants)	-	-	-	-	-	-
Tools and equipment	4,173,299,854	-	(1,318,751)	(2,372,660,704)	689,480,024	2,488,800,423
Finance leased assets	298,195,997,335	-	-	-	(298,195,997,335)	-
Right-of-use assets	-	39,021,336,242	-	(148,663,103,564)	1,343,733,974,025	1,234,092,206,703
Construction-in-progress	460,229,656,295	885,006,499,197	-	-	(393,178,754,342)	952,057,401,150
	₩ 7,687,255,807,447	₩ 963,985,612,016	₩ (4,128,634,084)	₩ (807,092,337,723)	₩ 1,172,146,614,987	₩ 9,012,167,062,643

(*1) Others consist of the effect of the change in accounting standards resulting from the application of KIFRS 1116, the transfer to property, plant and equipment from construction-in-progress, capitalized borrowing costs, foreign currency translation, and others.

(*2) Capitalized borrowing cost is ₩28,075 million, and the weighted-average capitalization rate of interest for the year ended December 31, 2019 is 3.01~6.91%.

17. INTANGIBLE ASSETS:

(1) Intangible assets other than goodwill as of March 31, 2020 and December 31, 2019, are as follows (Korean won):

	March 31, 2020		
	Acquisition cost	Accumulated amortization	Book value
Software	₩ 61,185,450,162	₩ (49,747,923,473)	₩ 11,437,526,689
Copyright, patent right and other industrial property rights	43,966,833	(5,953,629)	38,013,204
Mining right	17,194,113,286	(6,266,713,605)	10,927,399,681
Others	48,442,931,155	(1,014,703,432)	47,428,227,723
	₩ 126,866,461,436	₩ (57,035,294,139)	₩ 69,831,167,297

	December 31, 2019		
	Acquisition cost	Accumulated amortization	Book value
Software	₩ 60,912,076,787	₩ (48,015,188,387)	₩ 12,896,888,400
Copyright, patent right and other industrial property rights	41,436,178	(5,038,727)	36,397,451
Mining right	17,973,093,771	(5,463,619,297)	12,509,474,474
Others	24,748,423,092	(963,899,649)	23,784,523,443
	₩ 103,675,029,828	₩ (54,447,746,060)	₩ 49,227,283,768

(2) Changes in intangible assets other than goodwill for the three months ended March 31, 2020 and for the year ended December 31, 2019, are as follows (Korean won):

	March 31, 2020						
	Beginning balance	Acquisition	Disposal	Amortization	Transfer (*1)	Others (*2)	Ending balance
Software	₩ 12,896,888,400	₩ 1,225,200	₩ (47,086)	₩(1,738,827,815)	₩ 278,459,687	₩ (171,697)	₩11,437,526,689
Copyright, patent right and other industrial property rights	36,397,451	-	-	(1,539,905)	3,155,658	-	38,013,204
Mining right	12,509,474,474	523,380,075	-	(1,051,046,353)	-	(1,054,408,515)	10,927,399,681
Others	23,784,523,443	-	-	(1,224,416,010)	24,887,567,450	(19,447,160)	47,428,227,723
	₩ 49,227,283,768	₩ 524,605,275	₩ (47,086)	₩ (4,015,830,083)	₩ 25,169,182,795	₩ (1,074,027,372)	₩69,831,167,297

(*1)It includes the amounts transferred from construction-in-progress and the amounts transferred to current greenhouse gas emission rights.

(*2)It includes the changes in exchange rate.

17. INTANGIBLE ASSETS (CONT'D):

	December 31, 2019						
	Beginning balance	Acquisition	Disposal	Amortization	Transfer (*1)	Others (*2,3)	Ending balance
Software	₩ 13,215,189,278	₩ 55,530,602	₩ (377,690)	₩(5,964,559,120)	₩ 5,591,019,109	₩ 86,221	₩12,896,888,400
Copyright, patent right and other industrial property rights	16,392,318	10,147,488	-	(5,435,126)	15,292,771	-	36,397,451
Mining right	11,345,374,867	2,145,673,454	-	(809,790,752)	-	(171,783,095)	12,509,474,474
Others	11,293,236,109	5,284,033	(140,673,950)	(179,439,400)	(5,910,674,350)	18,716,791,001	23,784,523,443
	₩ 35,870,192,572	₩ 2,216,635,577	₩(141,051,640)	₩ (6,959,224,398)	₩ (304,362,470)	₩ 18,545,094,127	₩49,227,283,768

(*1)It includes the amounts transferred from construction-in-progress and the amounts transferred to current greenhouse gas emission rights.

(*2)It includes the investment differential in acquiring shares of Tamra Offshore Wind Power Co., Ltd., which was reclassified from associates to subsidiaries by acquiring additional shares during the year ended December 31, 2019.

(*3)It includes the changes in exchange rate.

(3) Major intangible assets as of March 31, 2020, are as follows (Korean won):

Accounts	Contents	Book value	Residual amortization period
Software	ERP system	198,539,079	11 months
Software	SAP professional license	145,816,667	13 months
Mining right	Mining right on Mullaben coal mine	10,927,399,681	(*)

(*) Mining right is amortized by using the units of production method.

18. TRADE AND OTHER PAYABLES:

Trade and other payables as of March 31, 2020 and December 31, 2019, are as follows (Korean won):

	March 31, 2020		December 31, 2019	
	Current	Non-current	Current	Non-current
Trade payables	₩ 194,220,445,683	₩ -	₩ 275,000,623,805	₩ -
Other payables				
Non-trade payables	129,319,551,877	45,827,475,314	174,436,379,797	44,999,572,722
Accrued expenses	42,164,232,281	-	62,185,333,167	-
Leasehold deposits received	5,417,818	-	9,979,413	-
Other deposits received	175,304,021	-	195,367,233	-
Lease liabilities	136,085,056,488	904,075,293,944	126,762,610,653	884,362,586,982
Dividends payable	17,305,077,255	-	1,209,452,055	-
	₩ 519,275,085,423	₩ 949,902,769,258	₩ 639,799,746,123	₩ 929,362,159,704

19. BORROWINGS AND DEBT SECURITIES:

(1) Borrowings and debt securities as of March 31, 2020 and December 31, 2019, are as follows (Korean won):

	March 31, 2020	December 31, 2019
Current liabilities:		
Current portion of long-term borrowings	₩ 30,765,903,749	₩ 20,840,277,593
Current portion of debt securities	791,365,250,000	690,700,500,000
Less: Current portion of discount on debt securities	(365,343,658)	(688,704,389)
	821,765,810,091	710,852,073,204
Non-current liabilities:		
Long-term borrowings	495,724,839,751	491,652,048,807
Less: Discount on long-term borrowings	(3,185,074,525)	(3,495,419,648)
Debt securities	2,636,780,000,000	2,370,000,000,000
Less: Discount on debt securities	(6,447,274,417)	(3,761,828,158)
	3,122,872,490,809	2,854,394,801,001
	₩ 3,944,638,300,900	₩ 3,565,246,874,205

(2) The repayment schedule of the Group's borrowings and debt securities as of March 31, 2020 and December 31, 2019 are as follows (Korean won):

	March 31, 2020		
	Borrowings	Debt securities	Total
Within 1 year	₩ 30,765,903,749	₩ 791,365,250,000	₩ 822,131,153,749
1 year–5 years	71,837,680,000	1,756,780,000,000	1,828,617,680,000
5 years thereafter	423,887,159,751	880,000,000,000	1,303,887,159,751
	₩ 526,490,743,500	₩ 3,428,145,250,000	₩ 3,954,635,993,500

	December 31, 2019		
	Borrowings	Debt securities	Total
Within 1 year	₩ 20,840,277,593	₩ 690,700,500,000	₩ 711,540,777,593
1 year–5 years	74,366,570,000	1,490,000,000,000	1,564,366,570,000
5 years thereafter	417,285,478,807	880,000,000,000	1,297,285,478,807
	₩ 512,492,326,400	₩ 3,060,700,500,000	₩ 3,573,192,826,400

19. BORROWINGS AND DEBT SECURITIES (CONT'D):

(3) Long-term borrowings as of March 31, 2020 and December 31, 2019, are as follows (Korean won and USD):

Creditor	Type of borrowings	Type of interest rate	Interest rate (%)	Maturity	March 31, 2020 Foreign currency	March 31, 2020 Local currency
Domestic borrowings:						
Hana Bank	Facility	Floating rate	3-year KTB rate–1.25	2019~2021	-	₩ 708,200,000
	Facility	Floating rate	3-year KTB rate–1.25	2019~2028	-	5,648,080,000
Korea Resources Corporation	Facility	Floating rate	3-year KTB rate–2.25	2019~2023	-	898,200,000
	Facility	Floating rate	3-year KTB rate–2.25	2019~2023	-	36,400,000
	Facility	Floating rate	3-year KTB rate–2.25	2019~2024	-	49,300,000
	Facility	Floating rate	3-year KTB rate–2.25	2019~2024	-	941,220,000
KYOBO LIFE INSURANCE CO., LTD.	Facility	Fixed rate	4.10	2019~2028	-	31,937,500,000
NongHyup Life Insurance Co.,Ltd.	Facility	Fixed rate	4.10	2019~2028	-	31,937,500,000
Hanwha-KOEN	Facility	Fixed rate	4.10	2019~2028	-	16,875,000,000
Renewable Energy Specialized Private Equity Investment Trust 1	Facility	Fixed rate	6.80	2019~2033	-	37,000,000,000
Hyundai Marine&Fire Insurance Co.,Ltd.	Facility	Fixed rate	4.40	2019~2035	-	23,739,128,000
Energy Infra energy	Facility	Fixed rate	4.40	2019~2035	-	11,827,563,000
National Credit Union Federation of Korea	Facility	Fixed rate	4.40	2019~2035	-	21,913,050,000
DB Damage insurance Co.,Ltd	Facility	Fixed rate	4.40	2019~2035	-	23,739,128,000
Hana Bank	Facility	Fixed rate	4.00	2019~2035	-	23,739,131,000
Foreign borrowings:						
International Finance Corporation	Facility	Floating rate	6-month LIBOR + 5%	2020-2031	USD 91,000,000	112,137,707,500
Korea Export-Import Bank	Facility	Floating rate	6-month LIBOR + 5%	2020-2031	USD 77,400,000	95,378,665,500
Asian Development Bank	Facility	Floating rate	6-month LIBOR + 5%	2020-2031	USD 56,599,999	69,747,188,268
CDC Group Plc	Facility	Floating rate	6-month LIBOR + 5%	2020-2031	USD 14,800,001	18,237,782,232
						526,490,743,500
Less: Discount on long-term borrowings						(3,185,074,525)
Less: Current portion of long-term borrowings						(30,765,903,749)
						₩ 492,539,765,226

19. BORROWINGS AND DEBT SECURITIES (CONT'D):

Creditor	Type of borrowings	Type of interest rate	Interest rate (%)	Maturity	December 31, 2019 Foreign currency	Local currency
Domestic borrowings:						
Hana Bank	Facility	Floating rate	3-year KTB rate– 1.25	2019~2021	-	₩ 885,250,000
	Facility	Floating rate	3-year KTB rate– 1.25	2019~2028	-	5,814,200,000
Korea Resources Corporation	Facility	Floating rate	3-year KTB rate– 2.25	2019~2023	-	973,050,000
	Facility	Floating rate	3-year KTB rate– 2.25	2019~2023	-	39,200,000
	Facility	Floating rate	3-year KTB rate– 2.25	2019~2024	-	52,200,000
	Facility	Floating rate	3-year KTB rate– 2.25	2019~2024	-	993,510,000
KYOBO LIFE INSURANCE CO., LTD.	Facility	Fixed rate	4.10	2019~2028	-	31,937,500,000
NongHyup Life Insurance Co.,Ltd.	Facility	Fixed rate	4.10	2019~2028	-	31,937,500,000
Hanwha-KOEN	Facility	Fixed rate	4.10	2019~2028	-	19,250,000,000
Renewable Energy Specialized Private Equity Investment Trust 1	Facility	Fixed rate	6.80	2019~2033	-	37,000,000,000
Hyundai Marine&Fire Insurance Co.,Ltd.	Facility	Fixed rate	4.40	2019~2035	-	23,739,128,000
Energy Infra energy	Facility	Fixed rate	4.40	2019~2035	-	11,827,563,000
National Credit Union Federation of Korea	Facility	Fixed rate	4.40	2019~2035	-	21,913,050,000
DB Damage insurance Co.,Ltd	Facility	Fixed rate	4.40	2019~2035	-	23,739,128,000
Hana Bank	Facility	Fixed rate	4.00	2019~2035	-	23,739,131,000
Foreign borrowings:						
International Finance Corporation	Facility	Floating rate	6-month LIBOR + 5%	2020-2031	USD 91,000,000	105,743,638,000
Korea Export-Import Bank	Facility	Floating rate	6-month LIBOR + 5%	2020-2031	USD 77,400,000	89,940,193,200
Asian Development Bank	Facility	Floating rate	6-month LIBOR + 5%	2020-2031	USD 56,599,999	65,770,218,800
CDC Group Plc	Facility	Floating rate	6-month LIBOR + 5%	2020-2031	USD 14,800,001	17,197,866,400
						512,492,326,400
Less: Discount on long-term borrowings						(3,495,419,648)
Less: Current portion of long-term borrowings						(20,840,277,593)
						₩ 488,156,629,159

19. BORROWINGS AND DEBT SECURITIES (CONT'D):

(4) Debt securities as of March 31, 2020 and December 31, 2019, are as follows (Korean won, AUD, and USD):

					March 31, 2020	
Type of bond	Issue date	Maturity	Type of interest rate	Interest rate (%)	Foreign currency	Local currency
26th Public bonds	2011.10.26	2021.10.26	Fixed rate	4.32	-	₩ 100,000,000,000
27-3rd Public bonds	2012.02.23	2022.02.23	Fixed rate	4.09	-	170,000,000,000
28-2nd Public bonds	2012.07.30	2022.07.30	Fixed rate	3.40	-	110,000,000,000
29-1st Public bonds	2012.11.29	2027.11.29	Fixed rate	3.27	-	100,000,000,000
29-2nd Public bonds	2012.11.29	2032.11.29	Fixed rate	3.35	-	100,000,000,000
32nd Public bonds	2013.04.25	2023.04.25	Fixed rate	2.97	-	120,000,000,000
33rd Public bonds	2013.05.21	2023.05.21	Fixed rate	3.05	-	100,000,000,000
35-2nd Public bonds	2013.06.25	2020.06.25	Fixed rate	3.70	-	80,000,000,000
37-2nd Public bonds	2013.11.12	2023.11.12	Fixed rate	3.81	-	90,000,000,000
38-2nd Public bonds	2014.03.26	2021.03.26	Fixed rate	3.50	-	100,000,000,000
38-3rd Public bonds	2014.03.26	2024.03.26	Fixed rate	3.67	-	70,000,000,000
39th Public bonds	2014.05.28	2024.05.28	Fixed rate	3.48	-	100,000,000,000
40th Public bonds	2014.06.26	2024.06.26	Fixed rate	3.31	-	110,000,000,000
42nd Public bonds	2014.12.15	2034.12.15	Fixed rate	3.10	-	100,000,000,000
43-1st Public bonds	2018.04.12	2021.04.12	Fixed rate	2.46	-	120,000,000,000
43-2nd Public bonds	2018.04.12	2028.04.12	Fixed rate	2.77	-	50,000,000,000
43-3rd Public bonds	2018.04.12	2038.04.12	Fixed rate	2.79	-	100,000,000,000
43-4th Public bonds	2018.04.12	2048.04.12	Fixed rate	2.77	-	30,000,000,000
44-1st Public bonds	2018.07.26	2021.07.26	Fixed rate	2.20	-	100,000,000,000
44-2nd Public bonds	2018.07.26	2038.07.26	Fixed rate	2.64	-	70,000,000,000
44-3rd Public bonds	2018.07.26	2048.07.26	Fixed rate	2.60	-	120,000,000,000
45-1st Public bonds	2018.11.09	2021.11.09	Fixed rate	2.16	-	200,000,000,000
45-2nd Public bonds	2018.11.09	2038.11.09	Fixed rate	2.32	-	50,000,000,000
45-3rd Public bonds	2018.11.09	2048.11.09	Fixed rate	2.19	-	30,000,000,000
46-1st Public bonds	2019.06.26	2029.06.26	Fixed rate	1.66	-	30,000,000,000
46-2nd Public bonds	2019.06.26	2039.06.26	Fixed rate	1.68	-	20,000,000,000
46-3rd Public bonds	2019.06.26	2049.06.26	Fixed rate	1.69	-	80,000,000,000
4th Foreign bonds	2013.09.25	2020.09.25	Fixed rate	5.75	AUD 325,000,000	244,585,250,000
5th Foreign bonds	2017.04.12	2020.04.12	Fixed rate	2.38	USD 300,000,000	366,780,000,000
6th Foreign bonds	2020.02.03	2025.02.03	Fixed rate	2.13	USD 300,000,000	366,780,000,000
						3,428,145,250,000
Less: Discount on debt securities						(6,812,618,075)
Less: Current portion of debt securities						(791,365,250,000)
Add: Current portion of discount on debt securities						365,343,658
						₩ 2,630,332,725,583

19. BORROWINGS AND DEBT SECURITIES (CONT'D):

Type of bond	Issue date	Maturity	Type of interest rate	Interest rate (%)	December 31, 2019 Foreign currency	Local currency
26th Public bonds	2011.10.26	2021.10.26	Fixed rate	4.32	-	₩ 100,000,000,000
27-3rd Public bonds	2012.02.23	2022.02.23	Fixed rate	4.09	-	170,000,000,000
28-2nd Public bonds	2012.07.30	2022.07.30	Fixed rate	3.40	-	110,000,000,000
29-1st Public bonds	2012.11.29	2027.11.29	Fixed rate	3.27	-	100,000,000,000
29-2nd Public bonds	2012.11.29	2032.11.29	Fixed rate	3.35	-	100,000,000,000
32nd Public bonds	2013.04.25	2023.04.25	Fixed rate	2.97	-	120,000,000,000
33rd Public bonds	2013.05.21	2023.05.21	Fixed rate	3.05	-	100,000,000,000
35-2nd Public bonds	2013.06.25	2020.06.25	Fixed rate	3.70	-	80,000,000,000
37-2nd Public bonds	2013.11.12	2023.11.12	Fixed rate	3.81	-	90,000,000,000
38-2nd Public bonds	2014.03.26	2021.03.26	Fixed rate	3.50	-	100,000,000,000
38-3rd Public bonds	2014.03.26	2024.03.26	Fixed rate	3.67	-	70,000,000,000
39th Public bonds	2014.05.28	2024.05.28	Fixed rate	3.48	-	100,000,000,000
40th Public bonds	2014.06.26	2024.06.26	Fixed rate	3.31	-	110,000,000,000
42nd Public bonds	2014.12.15	2034.12.15	Fixed rate	3.10	-	100,000,000,000
43-1st Public bonds	2018.04.12	2021.04.12	Fixed rate	2.46	-	120,000,000,000
43-2nd Public bonds	2018.04.12	2028.04.12	Fixed rate	2.77	-	50,000,000,000
43-3rd Public bonds	2018.04.12	2038.04.12	Fixed rate	2.79	-	100,000,000,000
43-4th Public bonds	2018.04.12	2048.04.12	Fixed rate	2.77	-	30,000,000,000
44-1st Public bonds	2018.07.26	2021.07.26	Fixed rate	2.20	-	100,000,000,000
44-2nd Public bonds	2018.07.26	2038.07.26	Fixed rate	2.64	-	70,000,000,000
44-3rd Public bonds	2018.07.26	2048.07.26	Fixed rate	2.60	-	120,000,000,000
45-1st Public bonds	2018.11.09	2021.11.09	Fixed rate	2.16	-	200,000,000,000
45-2nd Public bonds	2018.11.09	2038.11.09	Fixed rate	2.32	-	50,000,000,000
45-3rd Public bonds	2018.11.09	2048.11.09	Fixed rate	2.19	-	30,000,000,000
46-1st Public bonds	2019.06.26	2029.06.26	Fixed rate	1.66	-	30,000,000,000
46-2nd Public bonds	2019.06.26	2039.06.26	Fixed rate	1.68	-	20,000,000,000
46-3rd Public bonds	2019.06.26	2049.06.26	Fixed rate	1.69	-	80,000,000,000
4th Foreign bonds	2013.09.25	2020.09.25	Fixed rate	5.75	AUD 325,000,000	263,360,500,000
5th Foreign bonds	2017.04.12	2020.04.12	Fixed rate	2.38	USD 300,000,000	347,340,000,000
						3,060,700,500,000
Less: Discount on debt securities						(4,450,532,547)
Less: Current portion of debt securities						(690,700,500,000)
Add: Current portion of discount on debt securities						688,704,389
						₩ 2,366,238,171,842

20. LEASE:

(1) Right-of-use assets as of March 31, 2020 and December 31, 2019, are as follows (Korean won):

	March 31, 2020		
	Acquisition cost	Accumulated depreciation	Book value
Land	₩ 2,580,845,226	₩ (265,466,820)	₩ 2,315,378,406
Buildings	1,508,833,453	(439,511,985)	1,069,321,468
Structures	648,547,749,023	(386,576,950,381)	261,970,798,642
Vessels	1,066,705,174,840	(144,435,476,458)	922,269,698,382
Vehicles	368,511,952	(163,835,929)	204,676,023
Others	13,178,687,289	(1,309,522,185)	11,869,165,104
	₩ 1,732,889,801,783	₩ (533,190,763,758)	₩ 1,199,699,038,025

	December 31, 2019		
	Acquisition cost	Accumulated depreciation	Book value
Land	₩ 2,580,845,226	₩ (212,373,456)	₩ 2,368,471,770
Buildings	382,675,054	(147,438,932)	235,236,122
Structures	646,685,574,414	(378,653,947,241)	268,031,627,173
Vessels	1,066,705,174,840	(115,548,381,166)	951,156,793,674
Vehicles	296,339,591	(127,331,168)	169,008,423
Others	13,178,687,289	(1,047,617,748)	12,131,069,541
	₩ 1,729,829,296,414	₩ (495,737,089,711)	₩ 1,234,092,206,703

(2) Changes in right-of-use assets for the three months ended March 31, 2020 and for the year ended December 31, 2019, are as follows (Korean won):

	March 31, 2020				
	Beginning balance	Addition	Depreciation	Others(*)	Ending balance
Land	₩ 2,368,471,770	₩ -	₩ (53,093,364)	₩ -	₩ 2,315,378,406
Buildings	235,236,122	1,126,158,399	(301,450,253)	9,377,200	1,069,321,468
Structures	268,031,627,173	1,862,174,609	(7,923,003,140)	-	261,970,798,642
Vessels	951,156,793,674	-	(28,887,095,292)	-	922,269,698,382
Vehicles	169,008,423	72,172,361	(36,504,761)	-	204,676,023
Others	12,131,069,541	-	(261,904,437)	-	11,869,165,104
	₩ 1,234,092,206,703	₩ 3,060,505,369	₩ (37,463,051,247)	₩ 9,377,200	₩ 1,199,699,038,025

(*) Changes in exchange rate

	December 31, 2019				
	Beginning balance	Change in accounting policies (*)	Addition	Depreciation	Ending balance
Land	₩ -	₩ 2,580,845,226	₩ -	₩ (212,373,456)	₩ 2,368,471,770
Buildings	-	382,675,054	-	(147,438,932)	235,236,122
Structures	-	298,195,997,335	1,415,590,932	(31,579,961,094)	268,031,627,173
Vessels	-	1,029,175,406,637	37,529,768,203	(115,548,381,166)	951,156,793,674
Vehicles	-	220,362,484	75,977,107	(127,331,168)	169,008,423
Others	-	13,178,687,289	-	(1,047,617,748)	12,131,069,541
	₩ -	₩ 1,343,733,974,025	₩ 39,021,336,242	₩ (148,663,103,564)	₩ 1,234,092,206,703

(*) Including ₩ 298,196 million of the right-of-use assets of structures, which were classified as finance lease assets as of December 31, 2019.

20. LEASE (CONT'D):

(3) Lease liabilities as of March 31, 2020 and December 31, 2019 are as follows (Korean won):

	March 31, 2020	
	Minimum lease payment	Present value of minimum lease payment
Within 1 year	₩ 137,556,586,066	₩ 136,085,056,488
1 year–5 years	506,574,214,330	476,194,812,313
5 years thereafter	511,192,037,420	427,880,481,631
	₩ 1,155,322,837,816	₩ 1,040,160,350,432

	December 31, 2019	
	Minimum lease payment	Present value of minimum lease payment
Within 1 year	₩ 128,194,851,753	₩ 126,762,610,653
1 year–5 years	484,785,529,382	435,978,305,461
5 years thereafter	512,584,129,064	448,384,281,521
	₩ 1,125,564,510,199	₩ 1,011,125,197,635

(4) Current and non-current lease liabilities as of March 31, 2020 and December 31, 2019, are as follows (Korean won):

	March 31, 2020	December 31, 2019
Current liabilities	₩ 136,085,056,488	₩ 126,762,610,653
Non-current liabilities	904,075,293,944	884,362,586,982
	₩ 1,040,160,350,432	₩ 1,011,125,197,635

(5) Changes in lease liabilities for the three months ended March 31, 2020 and for the year ended December 31, 2019, are as follows (Korean won):

	March 31, 2020	December 31, 2019
Beginning balance	₩ 1,011,125,197,635	₩ -
Change in accounting policies	-	1,045,537,976,690
Increase	387,232,917	37,605,745,311
Decrease	(30,912,016,246)	(131,564,227,300)
Interest expenses	5,384,273,802	22,162,772,437
Effects of changes in foreign exchange rates	54,175,662,324	37,382,930,497
Ending balance	₩ 1,040,160,350,432	₩ 1,011,125,197,635

(6) Profit or loss related to lease account for the three months ended March 31, 2020 and 2019, are as follows (Korean won):

	March 31, 2020	March 31, 2019
Depreciation of right-of-use assets	₩ 37,463,051,247	₩ 34,427,638,113
Interest expenses on lease liabilities	5,384,273,802	5,137,331,246
	₩ 42,847,325,049	₩ 39,564,969,359

21. EMPLOYMENT BENEFITS:

(1) Defined contribution plans

The Group operates a defined contribution plan that is subject to the employees' option. A defined contribution fund is separately managed by the plan's administrator. When employees terminate their employment before the benefits have been vested, the Group's obligation to make contributions to the plan decreases on a pro rata basis.

The Group contributed the following amount for the three months ended March 31, 2020 and 2019 (Korean won):

	March 31, 2020	March 31, 2019
Cost of sales	₩ 1,713,825,557	₩ 1,022,309,250
Selling and administrative expenses	48,798,161	385,744,326
	₩ 1,762,623,718	₩ 1,408,053,576

(2) Defined benefit plans

① Principal assumptions on actuarial valuation as of March 31, 2020 and December 31, 2019, are as follows:

	March 31, 2020	December 31, 2019
Discount rate	2.02% ~ 2.71%	2.03% ~ 2.71%
Future salary increase rate	3.19% ~ 5.65%	3.19% ~ 5.65%

21. EMPLOYMENT BENEFITS (CONT'D):

② Details of gains and losses relating to defined benefit plans for the three months ended March 31, 2020 and 2019, are as follows (Korean won):

	March 31, 2020	March 31, 2019
Current service cost	₩ 4,851,818,078	₩ 4,138,568,202
Interest cost	805,497,333	823,363,259
Expected return on plan assets	(54,434,702)	(56,029,747)
	₩ 5,602,880,709	₩ 4,905,901,714

Gains or losses recognized in cost of sales and selling and administrative expenses for the three months ended March 31, 2020 and 2019 are as follows (Korean won):

	March 31, 2020	March 31, 2019
Cost of sales	₩ 5,118,065,312	₩ 4,469,127,092
Selling and administrative expense	467,173,608	436,774,622
Construction in progress	17,641,789	-
	₩ 5,602,880,709	₩ 4,905,901,714

③ Net defined benefit liabilities as of March 31, 2020 and December 31, 2019, are as follows (Korean won):

	March 31, 2020	December 31, 2019
Present value of defined benefit obligations from funded plans	₩ 176,308,834,197	₩ 164,610,352,275
Fair value of plan assets	(12,202,469,991)	(12,155,516,907)
Net employee benefit liabilities from defined benefit plans	₩ 164,106,364,206	₩ 152,454,835,368

④ Changes in the present value of defined benefit obligations for the three months ended March 31, 2020 and for the year ended December 31, 2019, are as follows (Korean won):

	March 31, 2020	December 31, 2019
Beginning balance	₩ 164,610,352,275	₩ 140,873,471,315
Current service cost	4,851,818,078	18,955,264,993
Interest cost	805,497,333	3,425,811,268
Remeasurement	6,313,043,293	(7,285,044,535)
Retirement benefits paid	(271,876,782)	(3,698,089,759)
Loss on settlement	-	12,338,938,993
Ending balance	₩ 176,308,834,197	₩ 164,610,352,275

21. EMPLOYMENT BENEFITS (CONT'D):

⑤ Changes in the fair value of plan assets for the three months ended March 31, 2020 and for the year ended December 31, 2019, are as follows (Korean won):

	March 31, 2020	December 31, 2019
Beginning balance	₩ 12,155,516,907	₩ 9,482,477,007
Expected return on plan assets	54,434,702	238,850,566
Remeasurement	4,526,739	(65,810,666)
Retirement benefits paid	(12,008,357)	-
Contributions by the employers	-	2,500,000,000
Ending balance	₩ 12,202,469,991	₩ 12,155,516,907

⑥ Fair values of major categories of plan assets as of March 31, 2020 and December 31, 2019, are as follows (Korean won):

	March 31, 2020	December 31, 2019
Equity instrument	₩ 1,220,128,687	₩ 1,336,931,735
Debt instrument	1,345,656,628	1,474,690,953
Real estates	159,561,250	-
Deposits	2,488,307,658	2,590,615,330
Others	6,988,815,768	6,753,278,889
	₩ 12,202,469,991	₩ 12,155,516,907

Actual returns from plan assets for the three months ended March 31, 2020 and for the year ended December 31, 2019, amounted to ₩59 million and ₩173 million, respectively.

⑦ Remeasurement recognized in OCI for the three months ended March 31, 2020 and 2019, are as follows (Korean won):

	March 31, 2020	March 31, 2019
Actuarial loss arising from changes in financial assumptions	₩ 205,420,838	₩ 3,778,513,972
Experience adjustments	6,107,622,460	(1,548,064,377)
Return on plan assets	(4,526,739)	6,014,806
	₩ 6,308,516,559	₩ 2,236,464,401

Remeasurement recognized as OCI is included in retained earnings.

(3) Other long-term employee benefit obligations as of March 31, 2020 and December 31, 2019, are as follows (Korean won):

	March 31, 2020	December 31, 2019
Long-service leave	₩ 262,655,757	₩ 267,102,149

22. PROVISIONS:

(1) Provisions as of March 31, 2020 and December 31, 2019, are as follows (Korean won):

	March 31, 2020		December 31, 2019	
	Current	Non-current	Current	Non-current
Provisions for employee salaries (*1)	₩ 47,420,731,719	₩ -	₩ 40,621,525,926	₩ -
Provisions for financial guarantee(*6)	-	5,965,934,000	-	5,965,934,000
Provisions for litigations (*2)	3,100,052,806	-	3,100,052,806	-
Provisions for greenhouse gas emission obligation (*3)	395,477,408,223	-	337,568,627,602	-
Other current provisions:				
Provisions for RPS (*4)	-	-	-	-
Others(*5)	28,716,778,689	-	28,716,778,689	-
	₩ 474,714,971,437	₩ 5,965,934,000	₩ 410,006,985,023	₩ 5,965,934,000

(*1) The Group estimates provisions for employee salaries based on the results of the individual performance evaluation and management assessment. Such estimate may subject to change.

(*2) As of March 31, 2020, the Group recognized provisions for litigations for such amount expected to be paid to employees in relation to the ongoing litigation over the ordinary wage. As a defendant of a pending litigation on ordinary wages, the Group has recognized the estimated amount to be paid to employees, including incentives and others that were previously excluded from the ordinary wages as a provision for litigation as of March 31, 2020.

(*3) Provisions for greenhouse gas emission obligation are recognized for the governmental regulations to submit emission right as emit greenhouse gas. Government will reimburse expenses paid by the Group in order to comply with the obligation at standard price, and the Group recorded such amount as other receivables. As of March 31, 2020 and December 31, 2019, provisions and other receivables, which will be reimbursed from the government are ₩395,477 million and ₩417,889 million, and ₩337,569 million and ₩321,117 million, respectively.

(*4) RPS program is required to generate a specified percentage of total electricity to be generated in the form of renewable energy, and provisions are recognized for the governmental regulations to require the production of energies from renewable energy sources, such as solar, wind and biomass. Government will reimburse expenses paid by the Group in order to comply with the obligation at standard price, and the Group recorded such amount as accrued income and other receivables. As of March 31, 2020, other receivables that will be reimbursed from the government is ₩401,690 million (₩275,130 million as of December 31, 2019).

(*5) The Group has provided fund supplement arrangements for Hyundai Energy Co., Ltd. The Group believes that it is highly probable that cash outflow will be made in accordance with the fund supplement agreement as of March 31, 2020. The Group has recognized the estimated amount as a provision.

(*6) The amount is a total amount of guarantees to KEPCO Bylong pty., Ltd. that will be covered by the Group in the event of a financial guarantee as of the March 31, 2020.

22. PROVISIONS (CONT'D):

(2) Changes in provisions for the three months ended March 31, 2020 and for the year ended December 31, 2019, are as follows (Korean won):

	March 31, 2020				
	Beginning balance	Provision made	Provision reversed	Provision used	Ending balance
Current:					
Provisions for employee salaries	₩ 40,621,525,926	₩ 6,799,205,793	₩ -	₩ -	₩ 47,420,731,719
Provisions for litigations	3,100,052,806	-	-	-	3,100,052,806
Provisions for greenhouse gas emission obligation	337,568,627,602	57,908,780,621	-	-	395,477,408,223
Provisions for others	28,716,778,689	-	-	-	28,716,778,689
Non-current:					
Provisions for financial guarantee	5,965,934,000	-	-	-	5,965,934,000
	₩ 415,972,919,023	₩ 64,707,986,414	₩ -	₩ -	₩ 480,680,905,437

	December 31, 2019				
	Beginning balance	Provision made(*1)	Provision reversed	Provision used	Ending balance
Current:					
Provisions for employee salaries	₩ 40,477,358,578	₩ 144,167,348	₩ -	₩ -	₩ 40,621,525,926
Provisions for short-term financial guarantee	82,741,133	-	(82,741,133)	-	-
Provisions for litigations	251,339,495	3,100,052,806	-	(251,339,495)	3,100,052,806
Provisions for greenhouse gas emission obligation	123,660,216,775	373,763,795,707	(19,919,301,690)	(139,936,083,190)	337,568,627,602
Provisions for others	40,898,000,000	-	(12,181,221,311)	-	28,716,778,689
Non-current:					
Provisions for financial guarantee	-	5,965,934,000	-	-	5,965,934,000
	₩ 205,369,655,981	₩382,973,949,861	₩ (32,183,264,134)	₩ (140,187,422,685)	₩ 415,972,919,023

23. GOVERNMENT GRANTS:

(1) Government grants whose primary condition is that the Group purchases, constructs or, otherwise, acquires long-term assets are deducted from the carrying amount of the asset.

(2) Government grants as of March 31, 2020 and December 31, 2019, are as follows (Korean won):

	March 31, 2020		December 31, 2019	
	Assets	Liabilities	Assets	Liabilities
Buildings	₩ (777,021,107)	₩ -	₩ (784,653,191)	₩ -
Structures	(1,261,698,321)	-	(1,279,013,395)	-
Machinery	(3,186,848,293)	-	(3,324,150,453)	-
Vehicles	(16,916,666)	-	(12,166,666)	-
	₩ (5,242,484,387)	₩ -	₩ (5,399,983,705)	₩ -

(3) Changes in government grants for the three months ended March 31, 2020 and for the year ended December 31, 2019, are as follows (Korean won):

	March 31, 2020			
	Beginning balance	Acquisition	Offset of depreciation expense	Ending balance
Buildings	₩ (784,653,191)	₩ -	₩ 7,632,084	₩ (777,021,107)
Structures	(1,279,013,395)	-	17,315,074	(1,261,698,321)
Machinery	(3,324,150,453)	-	137,302,160	(3,186,848,293)
Vehicles	(12,166,666)	(9,000,000)	4,250,000	(16,916,666)
	₩ (5,399,983,705)	₩ (9,000,000)	₩ 166,499,318	₩ (5,242,484,387)

	December 31, 2019			
	Beginning balance	Disposal	Offset of depreciation expense	Ending balance
Buildings	₩ (815,181,525)	₩ -	₩ 30,528,334	₩ (784,653,191)
Structures	(1,348,273,692)	-	69,260,297	(1,279,013,395)
Machinery	(3,878,067,332)	4,019,227	549,897,652	(3,324,150,453)
Vehicles	(26,766,666)	-	14,600,000	(12,166,666)
	₩ (6,068,289,215)	₩ 4,019,227	₩ 664,286,283	₩ (5,399,983,705)

24. NON-FINANCIAL LIABILITIES:

(1) Non-financial liabilities as of March 31, 2020 and December 31, 2019, are as follows (Korean won):

	March 31, 2020		December 31, 2019	
	Current	Non-current	Current	Non-current
Advance received	₩ 4,664,192,742	₩ 62,481,570,575	₩ 4,944,286,805	₩ 62,481,570,575
Unearned revenue	8,532,605,842	-	7,978,629,182	-
Withholdings	5,467,162,203	1,024,421,690	4,109,106,852	1,024,421,690
Value-added tax withholdings	37,320,279,617	-	4,138,784,330	-
Others	126,285,561	1,006,047,244	104,467,908	816,681,094
	₩ 56,110,525,965	₩ 64,512,039,509	₩ 21,275,275,077	₩ 64,322,673,359

25. CONTRIBUTED CAPITAL:

(1) Details of contributed capital as of March 31, 2020 and December 31, 2019, are as follows (Korean won):

	March 31, 2020	December 31, 2019
Share capital	₩ 297,615,630,000	₩ 297,615,630,000
Paid-in capital in excess of par value	856,488,569,175	856,488,569,175
	₩ 1,154,104,199,175	₩ 1,154,104,199,175

(2) Details of shares issued as of March 31, 2020 and December 31, 2019, are as follows (Korean won, except for number of shares):

	March 31, 2020	December 31, 2019
Shares authorized	100,000,000	100,000,000
Number of shares issued	59,523,126	59,523,126
Par value	5,000	5,000
	₩ 297,615,630,000	₩ 297,615,630,000

(3) There are no changes in number of outstanding capital during the three months ended March 31, 2020 and for the year ended December 31, 2019.

26. RETAINED EARNINGS:

(1) Details of retained earnings as of March 31, 2020 and December 31, 2019, are as follows (Korean won):

	March 31, 2020	December 31, 2019
Legal reserve (*)	₩ 132,536,113,917	₩ 131,345,651,397
Voluntary reserves	2,432,320,937,509	2,412,294,512,616
Unappropriated retained earnings	1,167,802,443,319	1,069,455,971,594
	₩ 3,732,659,494,745	₩ 3,613,096,135,607

(*) The Commercial Code of the Republic of Korea requires the Group to appropriate as a legal reserve an amount equal to a minimum of 10% of annual cash dividends paid until the reserve equals 50% of its share capital stock. The reserve is not available for the payment of cash dividends, but may be transferred to share capital through a resolution of the Board of Directors or used to reduce accumulated deficit, if any, with the ratification of the shareholder.

(2) Details of voluntary reserves as of March 31, 2020 and December 31, 2019, are as follows (Korean won):

	March 31, 2020	December 31, 2019
Sinking fund reserve	₩ 732,696,390,220	₩ 722,683,177,773
Reserve for business expansion	1,699,624,547,289	1,689,611,334,843
	₩ 2,432,320,937,509	₩ 2,412,294,512,616

(3) Changes in retained earnings for the three months ended March 31, 2020 and for the year ended December 31, 2019, are as follows (Korean won):

	March 31, 2020	December 31, 2019
Beginning balance	₩ 3,613,096,135,607	₩ 3,595,862,729,620
Profit for the period attributable to owner of the Parent	139,596,030,890	32,288,765,834
Dividends paid	(11,904,625,200)	(7,142,775,120)
Dividends paid (hybrid securities)	(3,346,191,000)	(13,384,764,000)
Remeasurement of defined benefit plan	(4,781,855,552)	5,472,179,273
Ending balance	₩ 3,732,659,494,745	₩ 3,613,096,135,607

(4) Dividends paid for the three months ended March 31, 2020 and for the year ended December 31, 2019, are as follows (Korean won):

	March 31, 2020		
	Number of shares eligible for dividends	Dividends paid per share	Dividends paid
Common shares	59,523,126	₩ 200	₩ 11,904,625,200

	December 31, 2019		
	Number of shares eligible for dividends	Dividends paid per share	Dividends paid
Common shares	59,523,126	₩ 120	₩ 7,142,775,120

26. RETAINED EARNINGS (CONT'D):

(5) Changes in remeasurement of defined benefit plan for the three months ended March 31, 2020 and the year ended December 31, 2019, are as follows (Korean won):

	March 31, 2020	December 31, 2019
Beginning balance	₩ (29,730,722,732)	₩ (35,202,902,005)
Changes	(6,308,516,559)	7,219,233,869
Income tax effect	1,526,661,007	(1,747,054,596)
Ending balance	₩ (34,512,578,284)	₩ (29,730,722,732)

27. HYBRID SECURITIES:

Details of hybrid securities classified as equity as of March 31, 2020 and December 31, 2019, are as follows (Korean won):

	Issue date	Maturity	Interest rate (%)	March 31, 2020	December 31, 2019
1st hybrid securities	2012.12.07	2042.12.06	4.38	₩ 170,000,000,000	₩ 170,000,000,000
2nd hybrid securities	2012.12.07	2042.12.06	4.44	230,000,000,000	230,000,000,000
Less : issuance cost				(1,090,000,000)	(1,090,000,000)
				₩ 398,910,000,000	₩ 398,910,000,000

The Group holds the right to extend the maturity dates on hybrid securities under existing conditions. Furthermore, the Group is exempt from interest payments on the face value of bonds when the Group decides not to declare dividends attributable to common shares.

28. OTHER COMPONENTS OF EQUITY:

(1) Other components of equity as of March 31, 2020 and December 31, 2019, are as follows (Korean won):

	March 31, 2020	December 31, 2019
Other capital surplus	₩ (239,336,565)	₩ (239,336,565)
Accumulated other comprehensive income (loss)	(10,741,347,997)	37,714,896,127
Other equity	(184,715,608,232)	(184,715,608,232)
	₩ (195,696,292,794)	₩ (147,240,048,670)

(2) Changes in accumulated OCI (loss) for the three months ended March 31, 2020 and the year ended December 31, 2019, are as follows (Korean won):

	March 31, 2020				
	Financial assets at FVOCI valuation reserve	Reserve for gain (loss) on valuation of derivatives	Reserve for gain (loss) on foreign currency translation of foreign operation	Share in OCI (loss) of investments in associates and joint ventures	Total
Beginning balance	₩ 75,299,965,617	₩ (8,969,271,676)	₩ (16,030,955,920)	₩ (12,584,841,894)	₩ 37,714,896,127
Net change in the financial assets at FVOCI	(58,039,548,245)	-	-	-	(58,039,548,245)
Net change in the unrealized fair value of derivatives using cash flow hedge accounting	-	(2,693,100,579)	-	-	(2,693,100,579)
Share in other comprehensive income of associates and joint ventures	-	-	-	2,596,615,359	2,596,615,359
Foreign currency translation of foreign operations	-	-	(5,017,511,674)	-	(5,017,511,674)
Income tax effect	14,045,570,675	651,730,340	-	-	14,697,301,015
Ending balance	₩ 31,305,988,047	₩ (11,010,641,915)	₩ (21,048,467,594)	₩ (9,988,226,535)	₩ (10,741,347,997)

28. OTHER COMPONENTS OF EQUITY (CONT'D):

	December 31, 2019				
	Financial assets at FVOCI valuation reserve	Reserve for gain (loss) on valuation of derivatives	Reserve for gain (loss) on foreign currency translation of foreign operation	Share in OCI (loss) of investments in associates and joint ventures	Total
Beginning balance	₩ 82,585,299,459	₩ (12,787,550,072)	₩ (14,963,990,293)	₩ (11,165,448,061)	₩ 43,668,311,033
Net change in the financial assets at FVOCI	(9,611,258,367)	-	-	-	(9,611,258,367)
Net change in the unrealized fair value of derivatives using cash flow hedge accounting	-	5,037,306,591	-	-	5,037,306,591
Share in other comprehensive loss of associates and joint ventures	-	-	-	(1,419,393,833)	(1,419,393,833)
Foreign currency translation of foreign operations	-	-	(1,066,965,627)	-	(1,066,965,627)
Income tax effect	2,325,924,525	(1,219,028,195)	-	-	1,106,896,330
Ending balance	₩ 75,299,965,617	₩ (8,969,271,676)	₩ (16,030,955,920)	₩ (12,584,841,894)	₩ 37,714,896,127

(3) Details of other equity as of March 31, 2020 and December 31, 2019, are as follows (Korean won):

	March 31, 2020	December 31, 2019
Loss on capital reduction	₩ (184,715,608,232)	₩ (184,715,608,232)

There are no changes in other equity as of March 31,2020 and December 31, 2019.

29. SALES:

Details of sales for the three months ended March 31, 2020 and 2019, are as follows (Korean won):

	March 31, 2020	
	Domestic	Overseas
Sales of goods	₩ 1,329,288,194,890	₩ -
Sales of service	8,320,271,992	3,951,279,232
	₩ 1,337,608,466,882	₩ 3,951,279,232

	March 31, 2019	
	Domestic	Overseas
Sales of goods	₩ 1,670,691,268,643	₩ -
Sales of service	6,619,900,136	4,179,400,902
	₩ 1,677,311,168,779	₩ 4,179,400,902

30. SELLING AND ADMINISTRATIVE EXPENSES:

Selling and administrative expenses for the three months ended March 31, 2020 and 2019, are as follows (Korean won):

	March 31, 2020	March 31, 2019
Salaries	₩ 6,620,962,611	₩ 8,914,067,813
Retirement benefit expense	497,081,548	814,125,842
Welfare and benefit expense	669,429,584	804,676,150
Insurance expense	642,295,972	792,949,066
Depreciation	2,738,065,389	2,457,438,765
Amortization	2,781,695,268	1,355,405,711
Commission	3,410,470,625	2,725,323,189
Advertising expense	319,556,563	410,791,520
Training expense	6,580,428	45,475,526
Vehicle maintenance expense	53,831,606	63,105,534
Publishing expense	69,607,564	86,872,929
Business promotion expense	81,139,360	70,777,445
Rent expense	253,854,501	254,809,785
Telecommunication expense	301,092,536	330,547,987
Taxes and dues	83,146,394	105,656,665
Expendable supplies expense	53,347,085	126,312,977
Water, light and heating expense	182,080,631	170,577,519
Repairs and maintenance expense	1,765,855,548	1,618,172,749
Ordinary development expense	3,134,587,107	2,772,175,096
Travel expense	276,703,056	294,762,868
Survey and analysis expense	2,523,466	3,396,034
Membership fee	37,765,900	24,100,000
Others	891,389,671	1,857,280,501
Total	₩ 24,873,062,413	₩ 26,098,801,671

31. OTHER INCOME AND EXPENSE:

(1) Other income for the three months ended March 31, 2020 and 2019, is as follows (Korean won):

	March 31, 2020	March 31, 2019
Government grants income	₩ 70,800,000	₩ 71,400,000
Compensation and reparations revenue	491,988,950	846,430,024
Rental income	1,826,938,622	1,303,210,865
Others	30,212,930	69,893,680
	₩ 2,419,940,502	₩ 2,290,934,569

(2) Other expenses for the three months ended March 31, 2020 and 2019, are as follows (Korean won):

	March 31, 2020	March 31, 2019
Donations	₩ 1,070,998,452	₩ 289,902,678

32. OTHER PROFIT AND LOSS:

Details of other profit and loss for the three months ended March 31, 2020 and 2019, are as follows (Korean won):

	March 31, 2020	March 31, 2019
Other profit:		
Gain on disposal of property, plant and equipment	₩ 111,558,709	₩ -
Gain on foreign currency translations	909,337,894	1,464,296
Gain on foreign currency transactions	752,175,329	1,254,524,715
Others	5,233,687,103	4,569,004,805
Other loss:		
Loss on disposal of property, plant and equipment	(633,287,022)	(306,063,326)
Loss on foreign currency translations	(800,318,324)	(16,745,801,674)
Loss on foreign currency transactions	(7,638,293,123)	(2,715,093,373)
Others	(366,595,653)	(567,389,853)
	₩ (2,431,735,087)	₩ (14,509,354,410)

33. FINANCE INCOME:

(1) Finance income for the three months ended March 31, 2020 and 2019, is as follows (Korean won):

	March 31, 2020	March 31, 2019
Interest income	₩ 2,597,751,597	₩ 1,318,001,782
Dividend income	41,500,001	1,301,452,955
Gain on disposal of financial assets at FVTPL	222,772	195,876
Gain on valuation of derivatives	30,318,322,205	12,188,971,835
Gain on derivative transactions	8,480,196,203	2,499,241,245
Gain on foreign currency translations	18,873,418,432	29
Gain on foreign currency transactions	513,511,492	144,599,971
Financial guarantee income	-	6,863,320
	₩ 60,824,922,702	₩ 17,459,327,013

(2) Interest income included in finance income for the three months ended March 31, 2020 and 2019, is as follows (Korean won):

	March 31, 2020	March 31, 2019
Cash and cash equivalents	₩ 32,213	₩ 162,362,854
Trade and other receivables	1,286,710,876	116,548,032
Loans	161,515,930	156,083,722
Financial assets at FVTPL	1,149,492,578	883,007,174
	₩ 2,597,751,597	₩ 1,318,001,782

34. FINANCE COSTS:

(1) Finance costs for the three months ended March 31, 2020 and 2019, are as follows (Korean won):

	March 31, 2020	March 31, 2019
Interest expense	₩ 29,139,926,184	₩ 30,612,937,514
Loss on valuation of derivatives	20,428,349,448	-
Loss on derivative transactions	2,847,473,910	6,981,617
Loss on foreign currency translations	84,094,189,611	11,516,302,740
Loss on foreign currency transactions	1,231,862,691	80,672,454
Others	70,605,799	-
	₩ 137,812,407,643	₩ 42,216,894,325

(2) Interest expenses included in finance costs for the three months ended March 31, 2020 and 2019, are as follows (Korean won):

	March 31, 2020	March 31, 2019
Short-term borrowings	₩ 87,905,282	₩ 347,455,780
Long-term borrowings	5,254,452,999	4,158,329,959
Debt securities	24,328,945,757	25,374,200,551
Other financial liabilities	8,322,892,341	6,258,041,539
	37,994,196,379	36,138,027,829
Less: Capitalized borrowing costs	(8,854,270,195)	(5,525,090,315)
	₩ 29,139,926,184	₩ 30,612,937,514

35. INCOME TAX EXPENSE:

Income tax expense is recognized based on the best estimate of the weighted average annual income tax rate for the financial year. As of March 31, 2020, the estimated average annual tax rate for the year ending December 31, 2020 is 24.24%.

36. EXPENSES CLASSIFIED BY NATURE:

Expenses classified by nature for the three months ended March 31, 2020 and 2019, are as follows (Korean won):

	March 31, 2020		
	Selling and administrative expenses	Cost of sales	Total
Raw materials used	₩ -	₩ 783,334,393,414	₩ 783,334,393,414
Power purchase	-	4,408,800,590	4,408,800,590
Salaries	6,620,962,611	39,754,235,622	46,375,198,233
Retirement benefit expense	497,081,548	6,850,781,090	7,347,862,638
Welfare and benefit expense	669,429,584	4,521,123,691	5,190,553,275
Insurance expense	642,295,972	987,136,608	1,629,432,580
Depreciation	2,738,065,389	194,179,802,767	196,917,868,156
Amortization	2,781,695,268	1,234,134,815	4,015,830,083
Reversal of provisions	-	(44,362,870,124)	(44,362,870,124)
Commission	3,410,470,625	11,419,135,348	14,829,605,973
Advertising expense	319,556,563	258,941,539	578,498,102
Training expense	6,580,428	29,978,368	36,558,796
Vehicle maintenance expense	53,831,606	39,210,910	93,042,516
Publishing expense	69,607,564	21,062,792	90,670,356
Business promotion expense	81,139,360	54,960,158	136,099,518
Rent expense	253,854,501	3,818,900,810	4,072,755,311
Telecommunication expense	301,092,536	46,435,392	347,527,928
Transportation expense	-	5,319,545	5,319,545
Taxes and dues	83,146,394	4,729,443,219	4,812,589,613
Expendable supplies expense	53,347,085	148,825,611	202,172,696
Water, light and heating expense	182,080,631	55,152,458	237,233,089
Repairs and maintenance expense	1,765,855,548	37,605,866,934	39,371,722,482
Ordinary development expense	3,134,587,107	6,403,518,177	9,538,105,284
Travel expense	276,703,056	52,450,001	329,153,057
Others	931,679,037	119,501,661	1,051,180,698
	₩ 24,873,062,413	₩ 1,055,716,241,396	₩ 1,080,589,303,809

36. EXPENSES CLASSIFIED BY NATURE (CONT'D):

	March 31, 2019		
	Selling and administrative expenses	Cost of sales	Total
Raw materials used	₩ -	₩ 1,008,874,048,107	₩ 1,008,874,048,107
Power purchase	-	5,911,161,110	5,911,161,110
Salaries	8,914,067,813	39,683,743,931	48,597,811,744
Retirement benefit expense	814,125,842	5,499,829,448	6,313,955,290
Welfare and benefit expense	804,676,150	4,249,299,285	5,053,975,435
Insurance expense	792,949,066	932,137,354	1,725,086,420
Depreciation	2,457,438,765	202,820,135,337	205,277,574,102
Amortization	1,355,405,711	1,009,249,883	2,364,655,594
Accretion expense to provisions	-	14,505,570,739	14,505,570,739
Commission	2,725,323,189	10,049,655,071	12,774,978,260
Advertising expense	410,791,520	294,695,087	705,486,607
Training expense	45,475,526	18,431,114	63,906,640
Vehicle maintenance expense	63,105,534	38,417,261	101,522,795
Publishing expense	86,872,929	26,858,565	113,731,494
Business promotion expense	70,777,445	52,616,981	123,394,426
Rent expense	254,809,785	4,650,048,706	4,904,858,491
Telecommunication expense	330,547,987	40,577,465	371,125,452
Transportation expense	-	6,568,900	6,568,900
Taxes and dues	105,656,665	5,122,473,465	5,228,130,130
Expendable supplies expense	126,312,977	135,485,165	261,798,142
Water, light and heating expense	170,577,519	43,689,890	214,267,409
Repairs and maintenance expense	1,618,172,749	28,364,191,563	29,982,364,312
Ordinary development expense	2,772,175,096	7,198,030,214	9,970,205,310
Travel expense	294,762,868	76,361,088	371,123,956
Others	1,884,776,535	135,088,186	2,019,864,721
	₩ 26,098,801,671	₩ 1,339,738,363,915	₩ 1,365,837,165,586

37. EARNINGS PER SHARE:

(1) Basic earnings per share for the three months ended March 31, 2020 and 2019, are as follows (Korean won):

	March 31, 2020	March 31, 2019
Basic earnings per share	₩ 2,289	₩ 3,762

There are no potential dilutive instruments, and diluted earnings per share are same as basic earnings per share for the three months ended March 31, 2020 and 2019.

(2) Basic earnings per share

Profit for the period and weighted-average number of common shares used in the calculation of basic earnings per share for the three months ended March 31, 2020 and 2019, are as follows (Korean won):

	March 31, 2020	March 31, 2019
Profit for the period attributable to owners of the Parent	₩ 139,596,030,890	₩ 227,253,564,664
Dividends of hybrid securities	(3,346,191,000)	(3,346,191,000)
Earnings used in the calculation of total basic earnings per share	136,249,839,890	223,907,373,664
Weighted-average number of common shares	59,523,126	59,523,126

38. RISK MANAGEMENT:

(1) Capital risk management

The primary objective of the Group's capital management is to ensure that it maintains a strong credit rating and healthy capital ratios in order to support its business and maximize shareholder's value. The Group manages its capital structure and makes adjustments to it in light of changes in economic conditions. To maintain or adjust the capital structure, the Group may adjust the dividend payment to shareholders, return capital to shareholder or issue new shares. The Group manages capital based on a gearing ratio, which is net debt divided by total equity. The Group defines net debt as interest-bearing loans and borrowings and debt securities, less cash and cash equivalents and total equity as equity plus net debt.

Details of the Group's capital management accounts as of March 31, 2020 and December 31, 2019, are as follows (Korean won):

	March 31, 2020	December 31, 2019
Total borrowings and debt securities (A)	₩ 3,944,638,300,900	₩ 3,565,246,874,205
Cash and cash equivalents (B)	85,568,491,627	100,191,307,880
Net borrowings and debt securities (C=A-B)	3,859,069,809,273	3,465,055,566,325
Total equity (D)	5,129,063,110,458	5,053,217,562,197
Total equity (E=C+D)	₩ 8,988,132,919,731	₩ 8,518,273,128,522
Debt to equity ratio (C/E)	42.94%	40.68%

(2) Financial risk management

The Board of Directors is responsible for establishing and overseeing the Group's risk management system. The Group's risk management policy is designed to identify and analyze the risks it faces, to establish appropriate risk limits and controls, and to ensure that risks do not exceed these limits. Risk management policies and systems are regularly reviewed to reflect changes in market conditions and the Group's activities. The Group aims to establish a rigorous and structured control environment where all employees understand their roles and obligations through training, management standards and procedures.

The Group's auditors oversee how management manages compliance with its risk management policies and procedures and review the appropriateness of its risk management system. Internal auditors carry out regular and special reviews of risk management controls and procedures.

1) Credit risk

Credit risk is the risk of finance loss to the Group if a customer or counterparty to a financial instrument fails to meet its contractual obligations and arises primarily from the sales activities, securities and derivatives. In addition, credit risk exposure may exist within financial guarantees and unused line of credits. As the Group makes transactions with the reputable financial institutions, the credit risk from them are considered limited. The Group decides credit transaction limits based on evaluation of client's credit, through information obtained from the credit bureau and disclosed financial position at committing contracts.

38. RISK MANAGEMENT (CONT'D):

Book values of the financial assets represent the maximum exposed amounts of the credit risk. Details of the Group's level of maximum exposure to credit risk as of March 31, 2020 and December 31, 2019, are as follows (Korean won):

	March 31, 2020	December 31, 2019
Cash and cash equivalents	₩ 85,568,491,627	₩ 100,191,307,880
Current financial assets at FVTPL	381,900,000,000	37,700,000,000
Short-term financial instruments	25,000,000,000	25,000,000,000
Non-current financial assets at FVTPL	3,710,350,421	3,747,787,048
Long-/short-term loans	31,383,255,450	30,486,842,456
Trade and other receivables	1,245,458,064,916	1,074,167,662,355
Derivative assets (trading)	349,125,642	-
Derivative assets (using hedge accounting)	35,131,452,096	3,816,710,830

As of March 31, 2020, the total amount of guarantee to be borne by the Group is ₩7,091 million under the financial guarantee contract. As of March 31, 2020, the Group recognized ₩5,966 million as a provision for financial guarantees

2) Market risk

Market risk is the risk that the Group's fair values of the financial instruments or future cash flows are affected by the changes in the market. Market risk consists of interest rate risk, currency risk and other price risk.

3) Sensitivity analysis

a) Significant assets and liabilities with uncertainties in underlying assumptions

① Defined benefit obligation

A sensitivity analysis of defined benefit obligation assuming 1% increase and decrease movements in the actuarial valuation assumptions as of March 31, 2020 and December 31, 2019, is as follows (Korean won):

		March 31, 2020		December 31, 2019	
Type	Account	1% Increase	1% Decrease	1% Increase	1% Decrease
Future salary increase rate	Defined benefit obligation	₩ 22,343,406,612	₩ (19,129,474,794)	₩ 19,430,189,279	₩ (16,610,336,017)
Discount rate	Defined benefit obligation	(19,544,522,822)	23,356,513,567	(17,290,096,728)	20,719,313,391

Changes in retirement benefit expense assuming 1% increase and decrease movements in discount rate on plan assets as of March 31, 2020 and 2019, are ₩27 million and ₩24 million, respectively.

38. RISK MANAGEMENT (CONT'D):

b) Management judgment affected by uncertainties in underlying assumptions

① Foreign currency risk

The Group undertakes transactions denominated in foreign currencies; consequently, exposures to currency exchange rate fluctuations arise. The carrying amount of the Group's foreign currency-denominated monetary assets and monetary liabilities as of March 31, 2020 and December 31, 2019, is as follows (Korean won):

	March 31, 2020		December 31, 2019	
	USD	AUD/IDR	USD	AUD/IDR
Assets:				
Cash and cash equivalents	₩ 31,395,874,582	₩ 116,556,054	₩ 44,006,572,384	₩ 104,881,637
Liabilities:				
Trade and other payables	939,543,490,915	-	863,503,208,969	-
Borrowings	295,501,343,500	-	278,651,916,400	-
Debt securities	730,608,487,697	244,296,330,099	347,135,456,105	262,892,164,807
Total liabilities denominated in foreign currencies	1,965,653,322,112	244,296,330,099	1,489,290,581,474	262,892,164,807
Net exposure	₩ (1,934,257,447,530)	₩ (244,179,774,045)	₩ (1,445,284,009,090)	₩ (262,787,283,170)

The average exchange rate for the three months ended March 31, 2020 and 2019, and the exchange rate of end of period as of March 31, 2020 and December 31, 2019, are as follows (Korean won):

	Average exchange rate		Exchange rate of end of period	
	March 31, 2020	March 31, 2019	March 31, 2020	December 31, 2019
USD	1,193.60	1,125.08	1,222.60	1,157.80
AUD	784.09	800.90	752.57	810.34
IDR	0.084	0.080	0.075	0.083

A sensitivity analysis on the Group's profit for the period assuming a 10% increase and decrease in currency exchange rates with all other variables held constant as of March 31, 2020 and December 31, 2019, is as follows (Korean won):

	March 31, 2020		December 31, 2019	
	10% Increase	10% Decrease	10% Increase	10% Decrease
Increase (decrease) in profit before income tax	₩ (217,843,722,157)	₩ 217,843,722,157	₩ (170,807,129,226)	₩ 170,807,129,226
Increase (decrease) in equity (*)	(217,843,722,157)	217,843,722,157	(170,807,129,226)	170,807,129,226

(*) The impact on the equity before the effect of income tax.

38. RISK MANAGEMENT (CONT'D):

The sensitivity analysis above is conducted for monetary assets and liabilities denominated in foreign currencies other than functional currency, without consideration of hedge effect of related derivatives as of March 31, 2020 and December 31, 2019.

To manage its foreign currency risk related to foreign currency denominated in long-term borrowings and debt securities, the Group has a policy to enter into currency swap agreements. In addition, to manage its foreign currency risk related to foreign currency-denominated purchase transactions, the Group enters into currency forward contracts.

② Interest rate risk

The Group is exposed to interest rate risk due to its borrowings with floating interest rates. A 1% increase or decrease is used when reporting interest rate risk internally to key management personnel, which represents management's assessment of the reasonably possible change in interest rates.

The Group's borrowings with floating interest rates as of March 31, 2020 and December 31, 2019, are as follows (Korean won):

	March 31, 2020	December 31, 2019
Long-term borrowings	₩ 303,782,743,500	₩ 287,409,326,400

Sensitivity analysis on the Group's long-term borrowings assuming a 1% increase and decrease in interest rates with all other variables held constant as of March 31, 2020, and December 31, 2019, is as follows (Korean won):

	March 31, 2020		December 31, 2019	
	1% Increase	1% Decrease	1% Increase	1% Decrease
Increase (decrease) in profit before income tax	₩ (3,037,827,435)	₩ 3,037,827,435	₩ (2,874,093,264)	₩ 2,874,093,264
Increase (decrease) in equity (*)	(3,037,827,435)	3,037,827,435	(2,874,093,264)	2,874,093,264

(*) The impact on the equity before the effect of income tax.

4) Liquidity risk

The Group has established an appropriate liquidity risk management framework for the management of the Group's short-, medium- and long-term funding and liquidity management requirements. The Group manages liquidity risk by maintaining adequate reserves, banking facilities and reserve borrowing facilities by continuously monitoring forecast and actual cash flows and by matching the maturity profiles of financial assets and liabilities. In addition, the Group has established credit lines on its trade financing and bank overdrafts; and through payment guarantees it has received, it maintains an adequate credit (borrowing) line. In addition, in case of major construction investment, the Group has the ability to use reserve cash or utilize long-term borrowings.

38. RISK MANAGEMENT (CONT'D):

a) The expected maturities of non-derivative financial liabilities

Details of remaining maturities of non-derivative financial liabilities based on agreement terms as of March 31, 2020 and December 31, 2019, are as follows (Korean won).

	March 31, 2020				
Type	Less than 1 year	1–2 years	2–5 years	More than 5 years	Total
Borrowings and debt securities	₩ 822,131,153,749	₩ 700,695,840,000	₩1,127,921,840,000	₩1,303,887,159,751	₩3,954,635,993,500
Interest expenses related to borrowings and debt securities	125,635,437,643	94,713,114,252	185,175,579,746	431,587,294,767	837,111,426,408
Trade and other payables	520,746,615,001	132,396,993,610	374,177,220,720	557,019,512,734	1,584,340,342,065
Financial guarantee contracts(*)	-	7,091,080,000	-	-	5,965,934,000
	₩1,468,513,206,393	₩ 933,771,881,862	₩1,687,274,640,466	₩2,292,493,967,252	₩6,382,053,695,973

	December 31, 2019				
Type	Less than 1 year	1–2 years	2–5 years	More than 5 years	Total
Borrowings and debt securities	₩ 711,540,777,593	₩ 630,872,890,000	₩ 933,493,680,000	₩1,297,285,478,807	₩3,573,192,826,400
Interest expenses related to borrowings and debt securities	127,606,622,059	100,087,836,552	201,246,639,138	486,283,553,251	915,224,651,000
Trade and other payables	641,231,987,223	125,557,173,676	359,228,355,706	557,583,701,786	1,683,601,218,391
Financial guarantee contracts(*)	-	6,715,240,000	-	-	6,715,240,000
	₩1,480,379,386,875	₩ 863,233,140,228	₩1,493,968,674,844	₩2,341,152,733,844	₩6,178,733,935,791

(*)The amount is the total amount of guarantee to be borne by the Group under the financial guarantee contract. As of March 31, 2020 and December 31, 2019, the Group recognized ₩5,966 million as a provision for financial guarantees

38. RISK MANAGEMENT (CONT'D):

b) The expected maturities of non-derivative financial assets

Since the Group manages liquidity on a net asset and net liability basis, it is necessary to include information on non-derivative financial assets in order to understand liquidity risk management.
The expected maturities for non-derivative financial assets as of March 31, 2020 and December 31, 2019 in detail are as follows (Korean won):

	March 31, 2020				
Type	Less than 1 year	1–5 years	More than 5 years	Others	Total
Cash and cash equivalents	₩ 85,568,491,627	₩ -	₩ -	₩ -	₩ 85,568,491,627
Current financial assets at FVTPL	381,900,000,000	-	-	-	381,900,000,000
Long-/short-term financial instruments	25,000,000,000	-	-	-	25,000,000,000
Non-current financial assets at FVTPL	-	-	-	3,710,350,421	3,710,350,421
Non-current financial assets at FVOCI	-	-	-	196,929,416,868	196,929,416,868
Long-/short-term loans	2,620,958,137	11,936,788,680	19,898,906,266	-	34,456,653,083
Trade and other receivables	1,304,157,872,135	47,321,084,432	637,000,000	-	1,352,115,956,567
	₩1,799,247,321,899	₩ 59,257,873,112	₩ 20,535,906,266	₩ 200,639,767,289	₩2,079,680,868,566

	December 31, 2019				
Type	Less than 1 year	1–5 years	More than 5 years	Others	Total
Cash and cash equivalents	₩ 100,191,307,880	₩ -	₩ -	₩ -	₩ 100,191,307,880
Current financial assets at FVTPL	37,700,000,000	-	-	-	37,700,000,000
Long-/short-term financial instruments	25,000,000,000	-	-	-	25,000,000,000
Non-current financial assets at FVTPL	-	-	-	3,747,787,048	3,747,787,048
Non-current financial assets at FVOCI	-	-	-	254,968,965,113	254,968,965,113
Long-/short-term loans	2,259,236,977	11,936,788,680	19,366,312,523	-	33,562,338,180
Trade and other receivables	1,134,198,836,565	46,043,573,820	637,000,000	-	1,180,879,410,385
	₩1,299,349,381,422	₩ 57,980,362,500	₩ 20,003,312,523	₩ 258,716,752,161	₩1,636,049,808,606

38. RISK MANAGEMENT (CONT'D):

c) The expected maturities of derivative financial liabilities

Derivative liabilities classified by maturity periods from the reporting date to maturity date of contract as of March 31, 2020 and December 31, 2019, are as follows (Korean won):

	March 31, 2020				
Type	Less than 1 year	1–2 years	2–5 years	More than 5 years	Total
Gross settlement					
Hedging	₩ (82,230,364,913)	₩ -	₩ -	₩ -	₩ (82,230,364,913)
Trading	(1,653,099,448)	-	-	-	(1,653,099,448)

	December 31, 2019				
Type	Less than 1 year	1–2 years	2–5 years	More than 5 years	Total
Gross settlement					
Hedging	₩ (59,327,273,067)	₩ -	₩ -	₩ -	₩ (59,327,273,067)
Trading	(3,442,027,766)	-	-	-	(3,442,027,766)

(3) Fair value risk

The fair value of the Group's actively traded financial instruments (financial assets at FVOCI, etc.) is based on the traded market price as of the reporting year-end. The fair value of the Group's financial assets is the amount an asset could be exchanged for or the amount a liability could be settled for.

The fair values of financial instruments (financial assets at FVTPL, OTC derivatives etc.) where no active market exists or where quoted prices are not otherwise available are determined by using valuation techniques.
The Group uses various valuation techniques and makes assumptions based on market conditions as of the reporting date.

For trade receivables and payables, the Group considers the carrying value, net of impairment, as fair value. While for disclosure purposes, the fair value of financial liabilities is estimated by discounting a financial instrument with similar contractual cash flows using the effective interest method.

38. **RISK MANAGEMENT (CONT'D):**

1) Fair value and book value

Fair value and book value of financial assets and liabilities as of March 31, 2020 and December 31, 2019, are as follows (Korean won):

	March 31, 2020		December 31, 2019	
Type	Book value	Fair value	Book value	Fair value
Assets recognized at fair value				
Current financial assets at FVTPL	₩ 381,900,000,000	₩ 381,900,000,000	₩ 37,700,000,000	₩ 37,700,000,000
Non-current financial assets at FVTPL	3,710,350,421	3,710,350,421	3,747,787,048	3,747,787,048
Non-current financial assets at FVOCI	196,929,416,868	196,929,416,868	254,968,965,113	254,968,965,113
Derivative assets (trading)	349,125,642	349,125,642	3,816,710,830	3,816,710,830
Derivative assets (using hedge accounting)	35,131,452,096	35,131,452,096	-	-
	₩ 618,020,345,027	₩ 618,020,345,027	₩ 300,233,462,991	₩ 300,233,462,991
Assets carried at amortized cost				
Long/short-term financial instruments	₩ 25,000,000,000	₩ 25,000,000,000	₩ 25,000,000,000	₩ 25,000,000,000
Long/short-term loans	31,383,255,450	31,383,255,450	30,486,842,456	30,486,842,456
Trade and other receivables	1,245,458,064,916	1,245,458,064,916	1,074,167,662,355	1,074,167,662,355
Cash and cash equivalents	85,568,491,627	85,568,491,627	100,191,307,880	100,191,307,880
	₩1,387,409,811,993	₩1,387,409,811,993	₩1,229,845,812,691	₩1,229,845,812,691
Liabilities recognized at fair value				
Derivative liabilities (trading)	₩ 1,653,099,448	₩ 1,653,099,448	₩ 3,442,027,766	₩ 3,442,027,766
Derivative liabilities (using hedge accounting)	82,230,364,913	82,230,364,913	59,327,273,067	59,327,273,067
	₩ 83,883,464,361	₩ 83,883,464,361	₩ 62,769,300,833	₩ 62,769,300,833
Liabilities carried at amortized cost				
Debt securities	₩3,421,332,631,925	₩3,603,543,967,965	₩3,056,249,967,453	₩3,243,377,814,630
Borrowings	523,305,668,975	523,305,668,975	508,996,906,752	508,996,906,752
Trade and other payables	1,469,177,854,681	1,469,177,854,681	1,569,161,905,827	1,569,161,905,827
Financial guarantee contracts	5,965,934,000	5,965,934,000	5,965,934,000	5,965,934,000
	₩5,419,782,089,581	₩5,601,993,425,621	₩5,140,374,714,032	₩5,327,502,561,209

38. RISK MANAGEMENT (CONT'D):

2) Interest rates used for determining fair value

The interest rates used to discount estimated cash flows, when applicable, are based on the government yield curve at the reporting date plus an adequate credit spread. The discount rate used for calculating fair value as of March 31, 2020 and December 31, 2019, is as follows (Korean won):

	March 31, 2020 (%)	December 31, 2019 (%)
Derivatives	(-)0.71 ~ 0.93	0.75 ~ 1.92
Debt securities	1.30 ~ 1.96	1.55 ~ 2.15

3) Fair value hierarchy

The following table provides an analysis of financial instruments that are measured subsequent to initial recognition at fair value, classified as Levels 1, 2 or 3, based on the degree to which the fair value is observable.

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; and

Level 3: Inputs that are not based on observable market data.

Fair values of financial instruments by hierarchy level as of March 31, 2020 and December 31, 2019, are as follows (Korean won):

	March 31, 2020			
Type	Level 1	Level 2	Level 3	Total
Financial assets at FVOCI	₩ 180,158,300,564	₩ -	₩ 16,771,116,304	₩ 196,929,416,868
Current financial assets at FVTPL	-	381,900,000,000	-	381,900,000,000
Non-current financial assets at FVTPL	-	3,710,350,421	-	3,710,350,421
Derivative assets	-	35,480,577,738	-	35,480,577,738
Derivative liabilities	-	(83,883,464,361)	-	(83,883,464,361)

	December 31, 2019			
Type	Level 1	Level 2	Level 3	Total
Financial assets at FVOCI	₩ 238,197,848,809	₩ -	₩ 16,771,116,304	₩ 254,968,965,113
Current financial assets at FVTPL	37,700,000,000	-	-	37,700,000,000
Non-current financial assets at FVTPL	-	3,747,787,048	-	3,747,787,048
Derivative assets	-	3,816,710,830	-	3,816,710,830
Derivative liabilities	-	(62,769,300,833)	-	(62,769,300,833)

38. RISK MANAGEMENT (CONT'D):

There are no changes in hierarchy level for the three months ended March 31, 2020 and for the year ended December 31, 2019.

The fair values of financial instruments that are not actively traded in the market are determined by using valuation techniques. Fair values of financial assets at FVOCI and financial assets at FVTPL are measured by discount cash flow technique.

a) Derivative
In principle, the fair value of derivative instruments is measured based on the forward exchange rates quoted in the market as of the reporting date, consistent with the remainder of the measurement derivatives.

If the forward exchange rate of the period, consistent with the remaining term of the derivatives, is not disclosed in the market, the fair value is estimated by assuming the forward exchange rate for the period similar to the remaining period of the currency forward, using the interpolation method.

The inputs used in the fair value measurement of derivatives are derived from the forward exchange rates which is observable in the market as of the end of the reporting period. Therefore, the fair value measurement of derivatives is classified as Level 2 in the fair value hierarchy.

b) Unlisted stock
The fair value of unlisted stocks is measured using the discounted cash flow model. To estimate future cash flows, the Group uses observable market price with assumptions or estimates of sales growth, pretax profit margins, and weighted average cost of capital, based on business plans and business conditions. Some assumptions are used that are not based on observable market prices or ratios.

The weighted average cost of capital used to discount future cash flows is calculated by applying the Capital Asset Pricing Model (CAPM), using data from similar listed companies.

The Group classifies the fair value measurement of unlisted stocks as Level 3 of the fair value hierarchy because the major assumption or estimate mentioned above has a significant impact on the fair value of unlisted stocks.

Changes in financial instruments classified as Level 3 for the three months ended March 31, 2020, are as follows (Korean won):

	March 31, 2020				
	Beginning balance	Acquisition	Valuation	Others(*)	Ending balance
Financial assets at FVOCI	₩ 16,771,116,304	₩ -	₩ -	₩ -	₩ 16,771,116,304

(*) Changes in exchange rate.

39. RELATED PARTIES:

(1) Related parties of the Group as of March 31, 2020, are as follows (Korean won):

Type	Related party
Parent	KEPCO
Associates	Hyundai Energy Co., Ltd.
	S-power Co., Ltd.
	Ecollite Co., Ltd.
	Korea Offshore Wind Power Co., Ltd.
	Jinbhuvish Power Generations Pvt. Ltd.
	Nepal Water & Energy Development Company Pty., Ltd.
	Goseong Green Power Co., Ltd.
	Gangneung Eco Power Co., Ltd.
	KEPCO Energy Solution Co., Ltd.
	Solar School Plant Co., Ltd.
	PND solar., Ltd
	Hyundai Echo Energy Co., Ltd.
Joint ventures	ASM-BG Investicii AD
	RES Technology AD
	Global Trade of Power System Co., Ltd.
	Expressway Solar-light Power Generation Co., Ltd.
	Cheongsong Myeonbong Mt Wind Power, Co, Ltd.
	CHILE SOLAR JV SpA
	Jaeun People Wind Power Co., Ltd
	Yeongam Solar Power Co., Ltd.
	Samsu Wind Power Co., Ltd
Others	Korea Hydro & Nuclear Power Co., Ltd.
	Korea Midland Power Co., Ltd.
	Korea Western Power Co., Ltd.
	Korea Southern Power Co., Ltd.
	Korea East-West Power Co., Ltd.
	KEPCO Engineering & Construction Company, Inc.
	KEPCO Plant Service & Engineering Co., Ltd.
	Korea Electric Power Data Network Co., Ltd.
	Korea Gas Corporation
	Korea Electric Power Industrial Development Co., Ltd.
	KPX and others

39. **RELATED PARTIES (CONT'D):**

(2) Related party transactions for the three months ended March 31, 2020 and 2019, are as follows (Korean won):

		March 31, 2020	
Company name	Transaction type	Sales and others	Purchase and others
KEPCO	Electricity trading and others	₩ 1,454,070,445,384	₩ 11,919,763,310
Hyundai Energy Co., Ltd.	Service fee related to power generation and others	748,154,090	-
S-Power Co., Ltd.	Service fee related to power generation	1,080,027,180	27,601
Hyundai Echo Energy Co., Ltd.	REC Purchase and others	-	4,923,309,575
Goseong Green Energy Co., Ltd.	Service fee related to power generation	2,991,554,566	-
Gangneung Eco Power Co., Ltd.	Service fee related to power generation	1,750,000,000	92,286,166
PND solar., Ltd	REC Purchase	95,310,250	590,168,119
Solar School Plant Co., Ltd.	Service fee related to power generation and others	-	266,513,398
ASM-BG Investicii AD	Service fee related to power generation and others	53,230,339	-
Global Trade of Power System Co., Ltd.	Others	-	7,640,000
Express Solar-light Power Generation Co., Ltd.	REC Purchase	-	431,325,000
Korea West Power Co., Ltd	Others	-	1,684,500
Korea South Power Co., Ltd	Others	-	14,042,629
KEPCO Engineering & Construction Company, Inc.	Service expense and others	23,010,430	5,111,545
KEPCO Plant Service & Engineering Co., Ltd.	Repairs and maintenance expense and others	233,633,987	11,394,239,640
Korea Electric Power Data Network Co., Ltd.	Repairs and maintenance expense and others	-	2,349,419,140
Korea Gas Corporation	LNG Purchase and others	62,418,051	120,639,573,229
Korea Electric Power Industrial Development Co., Ltd.	Service expense and others	22,778,709	4,923,915,000
KPX	Electricity trading commissions	-	1,581,534,791
		₩ 1,461,130,562,986	₩ 159,140,553,643

39. RELATED PARTIES (CONT'D):

Company name	Transaction type	March 31, 2019 Sales and others		Purchase and others	
KEPCO	Electricity trading and others	₩	1,621,931,233,422	₩	10,458,121,452
Hyundai Energy Co., Ltd.	Service fee related to power generation and others		221,327,654		285,349,885
S-Power Co., Ltd.	Service fee related to power generation		1,080,027,180		30,000
Nepal Water & Energy Development Company Pty., Ltd.	Service fee related to power generation		144,650,934		3,106,554
Goseong Green Energy Co., Ltd.	Service fee related to power generation		2,101,834,000		-
Gangneung Eco Power Co., Ltd.	Service fee related to power generation		2,094,029,700		-
ASM-BG Investicii AD	Service fee related to power generation and others		56,592,833		486,227
ASM-BG Investicii AD	Dividend		1,916,190,000		-
Global Trade of Power System Co., Ltd.	Others		-		90,000,000
Korea Hydro & Nuclear Power Co., Ltd.	Others		-		5,057,000
Korea Midland Power Co., Ltd.	Others		-		62,107,430
Korea West Power Co., Ltd	Others		-		1,048,200
Korea South Power Co., Ltd	Others		-		31,843,622
Korea East-West Power Co., Ltd.	Others		16,510,000		19,660,081
KEPCO Engineering & Construction Company, Inc.	Service expense and others		-		386,477,773
KEPCO Plant Service & Engineering Co., Ltd.	Repairs and maintenance expense and others		196,919,534		18,091,842,312
Korea Electric Power Data Network Co., Ltd.	Repairs and maintenance expense and others		-		1,004,105,148
Korea Gas Corporation	LNG Purchase and others		137,751,999		166,291,052,663
Korea Electric Power Industrial Development Co., Ltd.	Service expense and others		22,296,960		7,739,017,291
KPX	Electricity trading commissions		-		1,672,415,793
		₩	1,629,919,364,216	₩	206,141,721,431

39. RELATED PARTIES (CONT'D):

(3) Receivables and payables arising from related-party transactions as of March 31, 2020 and December 31, 2019, are as follows (Korean won):

		Receivables		Payables	
Company name	Type	March 31, 2020	December 31, 2019	March 31, 2020	December 31, 2019
KEPCO	Trade receivables	₩ 337,302,250,022	₩ 395,641,856,571	₩ -	₩ -
	Other receivables, etc.	819,713,669,767	596,382,321,783	-	-
	Trade payables	-	-	931,375,096	755,866,188
	Other payables, etc.	-	-	13,523,917,593	1,188,330,409
Hyundai Energy Co., Ltd.	Other receivables, etc. (*)	12,045,608,577	12,532,364,567	-	-
	Other payables, etc.	-	-	9,718,176,863	9,177,832,622
Korea Offshore Wind Power Co., Ltd.	Other receivables, etc.	158,612,200	158,612,200	-	-
Ecollite Co., Ltd.	Other receivables, etc.	210,400,561	210,400,561	-	-
Nepal Water & Energy Development Company Pty., Ltd.	Other receivables, etc.	368,662,887	368,662,887	-	-
Goseong Green Energy Co., Ltd.	Other receivables, etc.	5,285,135,900	5,285,135,900	-	-
	Other payables, etc.	-	-	65,626,939,074	65,626,356,881
Gangreong Eco power	Other receivables, etc.	1,925,000,000	-	-	-
Hyundai Eco Energy Co.,Ltd	Other payables, etc.	-	-	1,429,247,594	-
ASM-BG Investicii AD	Other receivables, etc.	47,907,298	46,329,657	-	-
Global Trade of Power System Co., Ltd.	Other payables, etc.	-	-	2,904,000	-
Korea Midland Power Co., Ltd.	Other payables, etc.	-	-	393,128,658	-
Korea South Power Co., Ltd	Other payables, etc.	-	-	-	-
Korea East-West Power Co., Ltd.	Other payables, etc.	1,327,515	-	-	-
KEPCO Engineering & Construction Company, Inc.	Other payables, etc.	-	-	3,990,933,899	7,007,393,499
KEPCO Plant Service & Engineering Co., Ltd..	Other receivables, etc.	8,083,859	-	-	-
	Other payables, etc.	-	-	1,245,862,227	5,678,745,600
Korea Electric Power Data Network Co.	Other payables, etc.	-	-	624,238,433	624,238,433
Korea Gas Corporation	Other receivables, etc.	3,312,890	11,717,380	-	-
	Trade payables	-	-	31,009,156,620	48,750,291,825
Korea Electric Power Industrial Development Co., Ltd.	Other receivables, etc.	2,021,913	2,046,788	-	-
	Other payables, etc.	-	-	68,836,763	-
KPX	Other receivables, etc.	-	92,816,240	-	-
	Other payables, etc.	-	-	127,767,295	2,591,325
Total	Trade receivables	₩ 337,302,250,022	₩ 395,641,856,571	₩ -	₩ -
	Other receivables, etc.	839,769,743,367	615,090,407,963	-	-
	Trade payables	-	-	31,940,531,716	49,506,158,013
	Other payables, etc.	-	-	96,751,952,399	89,305,488,769

(*) As of March 31, 2020 and December 31, 2019, receivables to Hyundai Energy Co., Ltd. are the book value excluding allowance for doubtful accounts of ₩80,930 million.

39. RELATED PARTIES (CONT'D):

(4) There are no changes in long/short-term loans to related parties for the three months ended March 31, 2020 and for the year ended December 31, 2019. Long/short-term loans to related parties as of March 31, 2020 are as follows (Korean won):

		March 31, 2020		
Type	Company name	Beginning balance	Others	Ending balance
Associate(*1)	Hyundai Energy Co., Ltd.	₩ 2,465,000,000	₩ -	₩ 2,465,000,000

(*1) The Group recognized ₩2,465 million as loss on impairment before the year ended December 31, 2019.

(5) Details of compensation to key management personnel of the Group for the three months ended March 31, 2020 and 2019, are as follows (Korean won):

	March 31, 2020	March 31, 2019
Salaries	₩ 216,078,581	₩ 192,790,230
Retirement benefit expense	12,227,910	7,989,901
	₩ 228,306,491	₩ 200,780,131

39. RELATED PARTIES (CONT'D):

(6) Guarantees and collateral provided to associates (Korean won and USD)

Primary guarantor	Principal obligor	Type of guarantee	Amount		Guarantee
Korea South-East Power Co., Ltd	KEPCO Bylong Australia Pty., Ltd.	Debt guarantees(*5)	USD	5,800,000	Export-Import Bank of Korea and others
Korea South-East Power Co., Ltd.	Hyundai Energy Co., Ltd.	Capital contribution pledged as collateral (*1)	KRW	-	Industrial Bank of Korea
Korea South-East Power Co., Ltd.	Hyundai Energy Co., Ltd.	Guarantees for supplemental funding and others (*2, *3)	KRW	76,800,000,000	NH Investment& Securities Co.,Ltd
Korea South-East Power Co., Ltd.	S-Power Co., Ltd.	Capital contribution pledged as collateral	KRW	118,139,514,728	Korea Development Bank and others
Korea South-East Power Co., Ltd.	RES Technology AD	Capital contribution pledged as collateral	KRW	17,055,584,379	UniCredit Bulbank and others
Korea South-East Power Co., Ltd.	ASM-BG Investicii AD	Capital contribution pledged as collateral	KRW	20,582,666,482	UniCredit Bulbank and others
Korea South-East Power Co., Ltd.	Express Solar-light Power Generation Co., Ltd.	Guarantees for supplemental funding and others (*2, *4)	KRW	2,500,000,000	Woori Bank
Korea South-East Power Co., Ltd	Goseong Green Energy Co., Ltd.	Capital contribution pledged as collateral	KRW	2,308,383,698	Kyobo life insurance co., ltd and others
Korea South-East Power Co., Ltd	Gangneung Eco Power Co., Ltd.	Capital contribution pledged as collateral	KRW	2,410,896,054	Kyobo life insurance co., ltd and others
Korea South-East Power Co., Ltd	PND solar., Ltd	Capital contribution pledged as collateral	KRW	987,658,616	Industrial Bank of Korea
Korea South-East Power Co., Ltd.	Hyundai Echo Energy Co., Ltd.	Capital contribution pledged as collateral	KRW	3,594,902,777	Samsung Life Insurance Co., Ltd. and others
Korea South-East Power Co., Ltd.	Korea Offshore Wind Power Co., Ltd.	Capital contribution pledged as collateral	KRW	20,916,751,603	Woori Bank and others
Korea South-East Power Co., Ltd.	Jaeun Resident Wind Power Co., Ltd	Capital contribution pledged as collateral	KRW	2,376,376,018	Industrial Bank of Korea
Korea South-East Power Co., Ltd.	Chungsongmyeon Bongsan Wind Power Co., Ltd	Capital contribution pledged as collateral	KRW	4,303,389,575	Kyobo Life Insurance Co., Ltd and others
Korea South-East Power Co., Ltd	Yeongam Solar Power Co., Ltd.	Capital contribution pledged as collateral	KRW	6,460,000,000	Kookmin Bank
Korea South-East Power Co., Ltd	Samsu Wind Power Co.,Ltd	Capital contribution pledged as collateral	KRW	2,637,200,000	Shinhan Bank

(*1) The Group fully recognized impairment loss on all of the equity securities of Hyundai Energy Co., Ltd. Before the year ended December 31, 2019, and the acquisition cost of the securities provided as collateral is ₩47,067 million.

(*2) The Group guarantees to provide supplemental funding for the principal obligors with respect to excessive business expenses or insufficient repayment of borrowings.

(*3) Pursuant to the guarantee agreement, the Group recognized other provisions of ₩28,717 million as the possibility of economic outflow to fulfill the obligation was probable and the amount could be reasonably estimated.

(*4) The Group has granted Hana Financial Investment Co., Ltd., an financial institution agent of creditors, a right to sell or dispose of shares of Express Solar-light Power Generation Co., Ltd. ("ESPG") held by the Group to repay the borrowings of ESPG if it has to accelerate repayment obligations for its borrowings.

(*5) As of March 31, 2020, the Group recognizes provisions for financial guarantee contracts of ₩ 5,966 million.

40. CASH FLOW:

(1) Significant non-cash investment and finance transactions excluded from the interim condensed consolidated statements of cash flows for the three months ended March 31, 2020 and 2019, are as follows (Korean won):

Transactions	March 31, 2020	March 31, 2019
Transfer of long-term borrowings and debt securities from non-current to current	₩ 100,421,698,379	₩ 592,383,199
Transfer from construction in progress to depreciable assets	31,944,994,622	50,979,585,823
Transfer from acquisition of property, plant and equipment to other payables	(21,343,295,636)	9,713,250,004
Transfer from investments in associates to investments in subsidiaries	-	10,400,836,090
Transfer from advanced payment to investments in joint ventures	21,156,754,812	-

(2) The adjustments of liabilities arising from financing activities for the three months ended March 31, 2020, are as follows:

	Beginning balance	Cash flow	Non-cash flow: Change in exchange rate	Non-cash flow: Change in fair value	Non-cash flow: Transfer and others	Ending balance
Dividends payable	₩ 1,209,452,055	₩ (3,346,442,670)	₩ -	₩ -	₩ 19,442,067,870	₩ 17,305,077,255
Long-term borrowings	508,996,906,752	(2,851,010,000)	16,849,427,100	-	310,345,123	523,305,668,975
Debt securities	3,056,249,967,453	353,406,683,618	11,028,958,906	-	647,021,948	3,421,332,631,925
Derivatives	58,952,590,003	2,279,891,091	-	(12,829,594,471)	-	48,402,886,623
Lease liabilities	1,011,125,197,635	(30,912,016,246)	54,175,662,324	-	5,771,506,719	1,040,160,350,432
	₩ 4,636,534,113,898	₩ 339,517,400,993	₩ 61,113,753,130	₩ (12,829,594,471)	₩ 26,170,941,660	₩ 5,050,506,615,210

41. COMMITMENTS FOR EXPENDITURE:

The agreements for acquisition of property, plant and equipment as of March 31, 2020 and December 31, 2019, are as follows (Korean won):

Contracts	March 31, 2020: Amount	March 31, 2020: Balance	December 31, 2019: Amount	December 31, 2019: Balance
Other construction (27 contracts)	₩ 346,700,000,000	₩ 116,728,000,000	₩ 352,710,000,000	₩ 122,890,000,000

42. CONTINGENCIES AND COMMITMENTS:

(1) Details of pending litigations as of March 31, 2020, are as follows (Korean won):

Court	Plaintiff	Defendant	Contents of case	Litigation amount
Litigations as a plaintiff:				
Seoul High Court	Korea South-East Power Co., Ltd.	Inchon Port authority	Request change of port facility fee and others	₩ 4,087,230
Supreme Court	Korea South-East Power Co., Ltd.	Samsung Display Co., Ltd. and 1 other	Claim for damages	3,506,768,045
Seoul High Court	Korea South-East Power Co., Ltd. and 6 others	Jinju Tax chief and 6 others	Revocation of refusal disposition of Income Tax(*1)	1,700,647,919
Seoul Central District Court	Korea South-East Power Co., Ltd. and 4 others	Dongil Rubber Belt Co., Ltd. and 6 others	Claim for damages(*2)	40,000,100
Seoul Administrative Court	Korea South-East Power Co., Ltd. and 2 others	Incheon Tax chief and 6 others	Cancellation of imposed tax	3,132,221,357
Changwon District Court	Korea South-East Power Co., Ltd.	Tongyoung Tax chief	Revocation of refusal disposition of value-added Tax	507,965,333
Incheon District Court	Korea South-East Power Co., Ltd.	Incheon Tax chief	Revocation of refusal disposition of value-added Tax	2,000,000,000
Busan District Court	Korea South-East Power Co., Ltd.	Korea Asset Management Corp.	Loan payments	24,440,900
Chuncheon District Court	Korea South-East Power Co., Ltd.	Donghae Customs Chief	Administrative action against canceling coal items	1,285,826,306
Gwangju District Court	Korea South-East Power Co., Ltd.	-	Industrial Safety and Health Act Criminal Procedure	-
Ansan District Court	Korea South-East Power Co., Ltd.	Jung Min-gi	Lease deposit	200,000,000
Seoul Central District Court	Korea South-East Power Co., Ltd.	Hanjin Transportaion Co.,Ltd and 7 others	Price fixing to transportation service bidding	200,000,400
Litigations as a defendant:				
Changwon District Court	Piti Lima Tungal	Korea South-East Power Co., Ltd.	Excessive profits	3,236,302,702
Seoul Central District Court	Lee seong yong and 5 others	Korea South-East Power Co., Ltd.	Salaries	15,837,877
Seoul Eastern District Court	Kim dong ill and 42 others	Korea South-East Power Co., Ltd.	Salaries	280,907,577
Seoul Central District Court	Kim su seok and 312 others	Korea South-East Power Co., Ltd.	Claim for interim payment of retirement	1,229,627,192
Peshawar High Court	M/S Y B Pakistan Limited	Korea South-East Power Co., Ltd.	Invalidity check	5,293,245,493
Changwon District Court	Kim chi hwan and 1 other	Korea South-East Power Co., Ltd. and 3 others	Claim for damages	320,000,000
Busan High Court	Kolob Global Co., Ltd.	Korea South-East Power Co., Ltd.	Excessive profits	1,704,591,676

42. CONTINGENCIES AND COMMITMENTS (CONT'D):

Court	Plaintiff	Defendant	Contents of case	Litigation amount
Changwon District Court	RK Global Co., Ltd.	Korea South-East Power Co., Ltd.	Verification of debt existence	754,685,120
Busan High Court	Kim hark hyun	Korea South-East Power Co., Ltd.	Confirmation of invalidity of shareholder meeting resolution and others	100,000,000
Seoul Eastern District Court	Choe seok hwan	Korea South-East Power Co., Ltd.	Confirmation of dismissal nullity	182,518,917
Seoul South District Court	Lim Hyo Hyuk and 279 others	Korea South-East Power Co., Ltd. and 3 others	Salaries	1,815,716,246
Seoul Central District Court	Korea Technology	Korea South-East Power Co., Ltd.	Bill of goods	2,077,065,925
Changwon District Court	Kim jung ki	Korea South-East Power Co., Ltd.	Request for performance of contract	94,858,450
Seoul Central District Court	Kang seok deok and 575 others	Korea South-East Power Co., Ltd.	Claim for retirement pension	576,000,000
Seoul Central District Court	Kang doe hwan and 82 others	Korea South-East Power Co., Ltd.	Claim for interim payment of retirement	83,000,000
Changwon District Court	Juwonfe Co,.Ltd	Korea South-East Power Co., Ltd.	Cancellation of bidding qualification restrictions	50,000,000
Seoul Central District Court	Nonghyup Bank	Korea South-East Power Co., Ltd.	Contract deposit	1,031,969,362
Changwon District Court	Kim Dae Heung and 54 others	Korea South-East Power Co., Ltd.	Salaries	156,337,070

(*1) Five power generation companies, including the Group, are co-plaintiffs, and the total litigation amount is ₩4,719,019,577.

(*2) Five power generation companies, including the Group, are co-plaintiffs, and the total litigation amount is ₩200,000,500.

42. CONTINGENCIES AND COMMITMENTS (CONT'D):

(2) Credit lines provided by financial institutions as of March 31, 2020 are as follows (Korean won and USD):

Commitments	Financial institutions	Currencies	Limit amount
Commitments on bank overdraft	Nonghyup Bank	KRW	200,000,000,000
Payment guarantees on Letter of credit (L/C)	Woori Bank	USD	60,000,000
	Nonghyup Bank	USD	20,000,000
	Shinhan Bank	USD	50,000,000
	Kookmin Bank	USD	60,000,000
	Hana Bank	USD	44,000,000
	Hana Bank	USD	56,000,000
Loan limit	DBS	USD	100,000,000
	SMBC	USD	50,000,000
	Mizuho Bank	USD	50,000,000
	Standard Chartered Bank Korea	USD	150,000,000
	Shinhan Bank	USD	50,000,000
	The Export-Import bank of Korea	USD	100,000,000
Bidding guarantees	Hana Bank	USD	10,000,000
Loan secured by trade receivables (*)	Nonghyup Bank	KRW	30,000,000,000
	Hana Bank	KRW	7,000,000,000
	Woori Bank	KRW	8,000,000,000
	Shinhan Bank	KRW	10,000,000,000
	Kookmin Bank	KRW	10,000,000,000
	Industrial bank of Korea	KRW	5,000,000,000

(3) Contracts for raw materials purchase

Details of contracts for raw materials purchase as of March 31, 2020, are as follows (in thousands of tons, kiloliters):

	Supplier	Periods	Contracted amounts
Bituminous coal	Australia	2009.07 ~ 2021.12	6,005
	Indonesia	2009.06 ~ 2022.05	14,960
	Canada, USA and others	2009.08 ~ 2021.12	10,765
Oil	GS Caltex Corporation and others	2020.01 ~ 2020.12	27
LNG	Korea Gas Corporation and others	2007.01–2035.01	Annually determined
Wood pellet	Mokpo Gas Corporation and others	2018.10–2021.10	785

42. CONTINGENCIES AND COMMITMENTS (CONT'D):

(4) Long-term marine transportation commitments for bituminous coal

The long-term marine transportation commitments for bituminous coal as of March 31, 2020 and the details are as follows (Korean won):

Company name	Vessel	Contract periods
Polaris Shipping Co., Ltd.	Oriental Enterprise	2009.09–2024.08
Korea Line Corporation	Rosemary	2010.04–2025.03
Pan Ocean Co., Ltd.	Pan Flower	2010.08–2020.07
H-LINE Shipping Co., Ltd.	HL Samarinda	2011.10~2031.09
Korea Shipping Corporation	Youngheung	2012.08~2032.07
Pan Ocean Co., Ltd.	Pan Iris	2013.03–2028.02
Five Ocean Corporation	F.Star	2013.06–2023.05
Daebo International Shipping Co., Ltd.	Daebo Gladstone	2013.11–2023.10
Hanaro Shipping Co., Ltd.	Sea Empire	2014.10–2024.09
Woo Yang Shipping Co., Ltd.	Wooyang Friend	2014.11–2029.10
Daebo International Shipping Co., Ltd.	Glovis Desire	2015.07–2030.06
SK Shipping Co., Ltd.	K. Younghung	2015.08–2033.07
Hyundai Glovis Co., Ltd.	Glovis Diamond	2016.03–2031.02
Five Ocean Corporation	F. Sun	2016.12–2026.11
Five Ocean Corporation	F.Fortune	2016.12~2026.11
H-LINE Shipping Co., Ltd.	Okra	2017.04~2027.03
H-LINE Shipping Co., Ltd.	HD Samcheonpo	2017.11~2035.10
GNS Shipping Co., Ltd	GNS Harmony	2018.01~2032.12
Korea Shipping Corporation	SM Samcheonpo	2019.04~2029.03

(5) As of March 31, 2020, the Group carries long-term borrowings up to the limit of USD 275,600 thousand from International Finance Corporation and others. The Group has a guarantee investment of USD 69,808 thousand and additional investment of USD 19,000 thousand for contingencies. The Group has provided guarantee for Central Power Purchasing Agency Guarantee Ltd., an electricity buyer, up to a limit of USD 2,777 thousand for completion delay or shortfall capacity. Meanwhile, the Group has provided its investment securities in Mira Power Limited as a collateral to International Finance Corporation and others.

(6) As of March 31, 2020, the Group has entered into loan agreements of ₩132,000 million with lenders, such as Kyobo Life Insurance Co., Ltd. and others. The Group provides all the shares of Tamra Offshore Wind Power Co., Ltd. and property, plant and equipment related to the business as collateral up to the limit of ₩171,600 million to the lenders in connection with these loan agreements.

(7) As of March 31, 2020, the Group carries borrowings of ₩115,000 million from DB Damage insurance Co., Ltd. and others. The Group provides all the shares of SE Green Energy Co., Ltd. and property, plant and equipment related to the business as collateral up to the limit of ₩149,500 million to the lenders in connection with these loan agreements.

43. UNCERTAINTY OF THE IMPACT OF COVID-19:

Preventions and controls, including movement restrictions, to prevent the spread of COVID-19 are enforced in much of the world. Consequently, COVID-19 pandemic is having a far-reaching impact on the global economy. In addition, a range of government support packages is released to cope with COVID-19. As of March 31, 2020, the Group was unable to reasonably estimate the impacts of COVID-19 and the government support packages on the impairment of property, plant and equipment and the recognition of provisions in the future. Therefore, such impacts are not reflected in the Group's interim condensed consolidated financial statements.

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Independent auditor's report

The Shareholder and the Board of Directors
Korea South-East Power Co., Ltd.

We have audited the accompanying consolidated financial statements of Korea South-East Power Co., Ltd. (the "Company") and its subsidiaries (collectively referred to as the "Group"), which comprise the consolidated statement of financial position as of December 31, 2019, and the consolidated statement of comprehensive income, consolidated statement of changes in equity and consolidated statement of cash flows for the year then ended, and the notes to the financial statements, including a summary of significant accounting policies.

In our opinion, the consolidated financial statements present fairly, in all material respects, the consolidated financial position of the Group as of December 31, 2019, and its consolidated financial performance and its consolidated cash flows for the year then ended in accordance with the Rules for Accounting Affairs of Public Corporations and Quasi-governmental Institutions of the Republic of Korea.

Basis for opinion

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

Emphasis of Matter

We draw attention to Note 2 to the consolidated financial statements which states that the Group applies Korean International Financial Reporting Standards (KIFRS) where specific accounting treatments are not prescribed by the Rules for Accounting Affairs of Public Corporations and Quasi-governmental Institutions. No material matter has been applied differently from KIFRS. Our audit opinion is not modified in respect of this matter.

Other matter

The consolidated statement of financial position as of December 31, 2018, and the related consolidated statement of comprehensive income, consolidated statement of changes in equity and consolidated statement of cash flows for the year then ended, which have been audited by Deloitte Anjin LLC, in accordance with KGAAS (not presented herein), whose report dated March 26, 2019 expressed an unqualified opinion.

Responsibilities of management and those charged with governance for the consolidated financial statements

Management is responsible for the preparation and fair presentation of the consolidated financial statements in accordance with the Rules for Accounting Affairs of Public Corporations and Quasi-governmental Institutions, and for such internal control as management determines is necessary to enable the preparation of the consolidated financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the consolidated financial statements, management is responsible for assessing the Group's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless management either intends to liquidate the Group or to cease operations, or has no realistic alternative but to do so.

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

Auditor's responsibilities for the audit of the consolidated financial statements

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

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

- Identify and assess the risks of material misstatement of the consolidated financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances. But not for the purpose of expressing an opinion on the effectiveness of the Group's internal control.
- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.
- Conclude on the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Group's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the consolidated financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the Group to cease to continue as a going concern.
- Evaluate the overall presentation, structure and content of the consolidated financial statements, including the disclosures, and whether the consolidated financial statements represent the underlying transactions and events in a manner that achieves fair presentation.
- Obtain sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the Group to express an opinion on the consolidated financial statements. We are responsible for the direction, supervision and performance of the group audit. We remain solely responsible for our audit opinion.

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

Ernst & Young Han Young

March 16, 2020

This audit report is effective as of March 16, 2020, the independent auditor's report date. Accordingly, certain material subsequent events or circumstances may have occurred during the period from the independent auditor's report date to the time this report is used. Such events and circumstances could significantly affect the accompanying consolidated financial statements and may result in modification to this audit report.

KOREA SOUTH-EAST POWER CO., LTD. AND ITS SUBSIDIARIES
CONSOLIDATED STATEMENTS OF FINANCIAL POSITION
AS OF DECEMBER 31, 2019 AND 2018

	Note	Korean won	
		December 31, 2019	December 31, 2018
ASSETS			
CURRENT ASSETS:			
Cash and cash equivalents	5,6,34,39	₩ 100,191,307,880	₩ 149,803,189,823
Current financial assets, net	5,7,8,11,34,39	68,691,441,737	21,375,743,886
Trade and other receivables, net	5,9,22,34,39,40	1,050,015,222,377	1,088,601,066,333
Inventories	12	296,398,424,569	433,717,575,948
Current non-financial assets	13	196,637,983,052	150,844,472,456
Prepaid income taxes	36	41,838,411,300	770,809,041
		1,753,772,790,915	1,845,112,857,487
NON-CURRENT ASSETS:			
Non-current financial assets, net	5,7,10,11,34,39	287,028,863,710	301,021,421,463
Non-current trade and other receivables, net	5,9,34,39,40	24,152,439,978	18,005,219,006
Property, plant and equipment, net	16,20,23,41	9,012,167,062,643	7,687,255,807,447
Intangible assets, net	17	49,227,283,768	35,870,192,572
Investments in associates and joint ventures	15	299,429,916,514	309,930,266,885
Deferred tax assets	36	767,587,707	429,539,998
Non-current non-financial assets	13	25,800,928,433	4,192,224,962
		9,698,574,082,753	8,356,704,672,333
Total assets		₩ 11,452,346,873,668	₩ 10,201,817,529,820

(Continued)

KOREA SOUTH-EAST POWER CO., LTD. AND ITS SUBSIDIARIES
CONSOLIDATED STATEMENTS OF FINANCIAL POSITION
(CONTINUED)
AS OF DECEMBER 31, 2019 AND 2018

		Korean won	
	Note	December 31, 2019	December 31, 2018
LIABILITIES			
CURRENT LIABILITIES:			
Trade and other payables	5,18,20,35,39,40	₩ 639,799,746,123	₩ 553,561,711,121
Current financial liabilities, net	5,8,19,35,39	773,621,374,037	432,826,454,668
Current tax liabilities	36	3,829,931,086	2,809,713,312
Current non-financial liabilities	24	21,275,275,077	60,024,488,354
Current provisions	22	410,006,985,023	205,369,655,981
		1,848,533,311,346	1,254,592,023,436
NON-CURRENT LIABILITIES:			
Non-current trade and other payables	5,18,20,35,39,40	929,362,159,704	41,805,629,884
Non-current financial liabilities, net	5,8,19,35,39	2,854,394,801,001	3,196,887,989,774
Non-current non-financial liabilities	24	64,322,673,359	1,707,337,926
Employee benefits obligations, net	21,39	152,721,937,517	131,868,266,737
Non-current provisions	22	5,965,934,000	-
Deferred tax liabilities	36	543,828,494,544	546,008,549,477
		4,550,596,000,125	3,918,277,773,798
Total liabilities		₩ 6,399,129,311,471	₩ 5,172,869,797,234
EQUITY			
Equity attributable to the owner of the Company:			
Contributed capital	1,25	1,154,104,199,175	1,154,104,199,175
Retained earnings	26,27	3,613,096,135,607	3,595,862,729,620
Hybrid securities	28	398,910,000,000	398,910,000,000
Other components of equity	29	(147,240,048,670)	(141,286,633,764)
		5,018,870,286,112	5,007,590,295,031
Non-controlling interests	14	34,347,276,085	21,357,437,555
Total equity		5,053,217,562,197	5,028,947,732,586
Total liabilities and equity		₩11,452,346,873,668	₩10,201,817,529,820

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

KOREA SOUTH-EAST POWER CO., LTD. AND ITS SUBSIDIARIES
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME (LOSS)
FOR YEARS ENDED DECEMBER 31, 2019 AND 2018

		Korean Won			
	Notes		December 31, 2019		December 31, 2018
Sales	4,30,40	₩	5,420,487,920,571	₩	5,542,593,847,256
Cost of sales	12,37,40		5,225,867,180,403		5,289,076,286,702
Gross profit (loss)			194,620,740,168		253,517,560,554
Selling and administrative expenses	31,37		69,661,258,429		96,811,874,736
Operating income (loss)			124,959,481,739		156,705,685,818
Other income	32,40		25,626,043,731		25,165,144,553
Other expenses	11,32		(8,130,656,944)		(61,880,537,373)
Other gain (loss)	33		17,740,270,542		1,051,572,328
Finance income	5,8,34,40		60,578,203,964		64,208,711,785
Finance costs	5,8,35		(196,257,036,246)		(136,017,616,188)
Gain on investments in joint ventures and associates, net	15		10,640,969,670		2,667,403,818
Income before profit (loss) tax			35,157,276,456		51,900,364,741
Income tax expense (benefit)	36		2,548,595,031		22,228,722,891
Profit (loss) for the period		₩	32,608,681,425	₩	29,671,641,850
Other comprehensive income (loss), net of tax	5,8,10,21,26,29				
Items that will not be reclassified subsequently to profit or loss:					
Remeasurement of defined benefit plans, net of tax		₩	5,472,179,273	₩	(8,845,968,978)
Net change in fair value of equity investments measured at FVOCI			(13,001,108,842)		50,131,455,827
Items that are or may be reclassified subsequently to profit or loss:					
Net change in the unrealized fair value of derivatives using cash flow hedge accounting, net of tax			3,818,278,396		(5,964,429,248)
Foreign currency translation of foreign operation, net of tax			(1,643,662,223)		(10,668,909,629)
Share in other comprehensive income of associates and joint ventures, net of tax			(1,419,393,833)		(2,858,016,569)
			(6,773,707,229)		21,794,131,403
Total comprehensive income (loss)		₩	25,834,974,196	₩	51,465,773,253

(Continued)

KOREA SOUTH-EAST POWER CO., LTD. AND ITS SUBSIDIARIES
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME (LOSS)
(CONTINUED)
FOR THE YEARS ENDED DECEMBER 31, 2019 AND 2018

		Korean Won			
	Notes	December 31, 2019		December 31, 2018	
Profit (loss) for the period attributable to:	38				
Owner of the Company		₩	32,288,765,834	₩	30,263,145,821
Non-controlling interests			319,915,591		(591,503,971)
Total comprehensive income (loss) for the period attributable to:					
Owner of the Company			31,807,530,201		55,172,999,775
Non-controlling interests			(5,972,556,005)		(3,707,226,522)
Earnings (loss) per share:	38				
Basic and diluted earnings (loss) per share		₩	318	₩	284

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

KOREA SOUTH-EAST POWER CO., LTD. AND ITS SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CHANGES IN EQUITY
FOR THE YEARS ENDED DECEMBER 31, 2019 AND 2018

Korean won

	Equity attributable to owner of the Company						
	Contributed capital	Retained earnings	Hybrid securities	Other components of equity	Subtotal	Non-controlling interests	Total
Balance at January 1, 2018	₩ 1,154,104,199,175	₩ 3,613,679,785,519	₩ 398,910,000,000	₩ (166,963,743,618)	₩ 4,999,730,241,076	₩ 17,202,762,867	₩ 5,016,933,003,943
Total comprehensive income:							
Profit for the period	-	30,263,145,821	-	-	30,263,145,821	(591,503,971)	29,671,641,850
Comprehensive income (loss):							
Remeasurement of defined benefit plan, net of tax	-	(8,836,730,441)	-	-	(8,836,730,441)	(9,283,537)	(8,845,968,978)
Net change in fair value of equity investments measured at FVOCI	-	-	-	50,131,455,827	50,131,455,827	-	50,131,455,827
Net change in the unrealized fair value of derivatives using cash flow hedge accounting, net of tax	-	-	-	(5,964,429,248)	(5,964,429,248)	-	(5,964,429,629)
Foreign currency translation of foreign operation, net of tax	-	-	-	(7,562,425,615)	(7,562,425,615)	(3,106,484,014)	(10,668,909,629)
Share in other comprehensive income of associates and joint ventures, net of tax	-	-	-	(2,858,016,569)	(2,858,016,569)	-	(2,858,016,569)
Total comprehensive income (loss)	-	21,426,415,380	-	33,746,584,395	55,172,999,775	(3,707,226,522)	51,465,773,253
Transactions with owners recognized directly in equity:							
Dividends paid (hybrid securities)	-	(13,384,764,000)	-	-	(13,384,764,000)	-	(13,384,764,000)
Dividends paid	-	(33,928,181,820)	-	-	(33,928,181,820)	-	(33,928,181,820)
Dividends paid by subsidiary	-	-	-	-	-	(394,425)	(394,425)
Issuance of share capital by subsidiary	-	-	-	-	-	7,816,147,180	7,816,147,180
Change in scope of Group	-	-	-	-	-	46,148,455	46,148,455
Effect of change in accounting policy	-	8,069,474,541	-	(8,069,474,541)	-	-	-
Balance at December 31, 2018	₩ 1,154,104,199,175	₩ 3,595,862,729,620	₩ 398,910,000,000	₩ (141,286,633,764)	₩ 5,007,590,295,031	₩21,357,437,555	₩ 5,028,947,732,586

(Continued)

KOREA SOUTH-EAST POWER CO., LTD. AND ITS SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CHANGES IN EQUITY
(CONTINUED)
FOR THE YEARS ENDED DECEMBER 31, 2019 AND 2018

	Korean won						
	Equity attributable to owner of the Company						
	Contributed capital	Retained earnings	Hybrid securities	Other components of equity	Subtotal	Non-controlling interests	Total
Balance at January 1, 2019	₩1,154,104,199,175	₩3,595,862,729,620	₩398,910,000,000	₩ (141,286,633,764)	₩5,007,590,295,031	₩21,357,437,555	₩5,028,947,732,586
Total comprehensive income:							
Profit for the period	-	32,288,765,834	-	-	32,288,765,834	319,915,591	32,608,681,425
Comprehensive income (loss):							
Remeasurement of defined benefit plan, net of tax	-	5,472,179,273	-	-	5,472,179,273	-	5,472,179,273
Net change in fair value of equity investments measured at FVOCI	-	-	-	(7,285,333,842)	(7,285,333,842)	(5,715,775,000)	(13,001,108,842)
Net change in the unrealized fair value of derivatives using cash flow hedge accounting, net of tax	-	-	-	3,818,278,396	3,818,278,396	-	3,818,278,396
Foreign currency translation of foreign operation, net of tax	-	-	-	(1,066,965,627)	(1,066,965,627)	(576,696,596)	(1,643,662,223)
Share in other comprehensive income of associates and joint ventures, net of tax	-	-	-	(1,419,393,833)	(1,419,393,833)	-	(1,419,393,833)
Total comprehensive income (loss)	-	37,760,945,107	-	(5,953,414,906)	31,807,530,201	(5,972,556,005)	25,834,974,196
Transactions with owners recognized directly in equity:							
Dividends paid (hybrid securities)	-	(13,384,764,000)	-	-	(13,384,764,000)	-	(13,384,764,000)
Dividends paid	-	(7,142,775,120)	-	-	(7,142,775,120)	-	(7,142,775,120)
Dividends paid by subsidiary	-	-	-	-	-	(2,833,112,955)	(2,833,112,955)
Issuance of share capital by subsidiary	-	-	-	-	-	2,450,223,017	2,450,223,017
Change in scope of Group	-	-	-	-	-	19,345,284,473	19,345,284,473
Balance at December 31, 2019	₩1,154,104,199,175	₩3,613,096,135,607	₩398,910,000,000	₩ (147,240,048,670)	₩5,018,870,286,112	₩ 34,347,276,085	₩5,053,217,562,197

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

KOREA SOUTH-EAST POWER CO., LTD. AND ITS SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CASH FLOWS
FOR YEARS ENDED DECEMBER 31, 2019 AND 2018

	Korean won	
	December 31, 2019	December 31, 2018
CASH FLOWS FROM OPERATING ACTIVITIES:		
Profit for the period	₩ 32,608,681,425	₩ 29,671,641,850
Adjustments for non-cash transaction:		
Income tax expense	2,548,595,031	22,228,722,891
Depreciation and amortization	814,051,562,121	677,482,937,577
Retirement benefit expense	34,481,164,688	18,169,682,756
Dividend income	(20,430,847,503)	(10,951,776,053)
Interest income	(5,749,372,637)	(3,318,250,962)
Interest expense	120,886,040,358	92,439,622,347
Loss on foreign currency translation, net	54,012,496,448	(1,352,271,624)
Gain on valuation and transaction of derivatives, net	(23,043,780,532)	(11,239,979,758)
Gain on financial guarantee income	(21,183,840)	(27,278,461)
Contract cost on financial guarantee	6,216,236,000	-
Gain on disposal of financial assets measured at FVTPL	(874,505)	-
Gain on disposal of financial assets measured at FVOCI	-	(8,123,792)
Gain on valuation of investments in associates and joint ventures	(6,694,219,100)	(9,909,586,079)
Loss on valuation of investments in associates and joint ventures	2,717,421,370	5,058,462,668
Gain on disposal of investments in associates and joint ventures	(6,664,171,940)	-
Loss on disposal of investments in associates and joint ventures	-	2,183,719,593
Gain on disposal of property, plant and equipment	(456,618,553)	(269,317,795)
Gain on disposal of intangible assets	(109,080,550)	-
Loss on disposal of property, plant and equipment	1,179,375,904	1,269,506,686
Reversal of allowance for bad debts	(41,876,648,890)	-
Other bad debt expense	-	17,747,886,760
Accretion expense to provisions	87,643,322,903	119,948,942,521
Reversal of accretion expense to provisions	-	(216,803,655,764)
Gain on condoned liabilities	-	(4,837,565,193)
Others	198,443,314	-
Changes in operating assets and liabilities:		
Trade receivables	₩ 37,104,951,054	₩ 36,631,600,931
Other receivables	319,452,702,598	196,365,809,290
Current non-financial assets	(187,375,672,929)	(289,571,940,474)
Non-current non-financial assets	(19,335,328,995)	31,539,317,506
Inventories	137,328,368,667	(185,256,247,614)
Trade payables	(57,313,496,463)	83,783,864,667
Other payables	10,309,470,890	75,640,928,957
Current non-financial liabilities	22,742,848,755	(13,742,865,488)
Non-current non-financial liabilities	124,799,426	(18,143,088)
Provisions	(107,172,147)	5,829,521,734
Retirement benefits paid	(6,408,260,039)	(7,555,422,899)
Cash generated from operating activities	₩ 1,308,019,752,329	₩ 661,129,743,690

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KOREA SOUTH-EAST POWER CO., LTD. AND ITS SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CASH FLOWS
(CONTINUED)
FOR THE YEARS ENDED DECEMBER 31, 2019 AND 2018

	Korean won	
	December 31, 2019	December 31, 2018
Interest received	5,102,139,867	2,461,478,731
Interest paid	(106,140,656,590)	(123,379,783,366)
Dividends received	22,761,533,763	11,926,311,053
Income taxes refunded (paid)	(51,395,934,342)	56,805,769,172
Net cash provided by operating activities	1,178,346,835,027	608,943,519,280
CASH FLOWS FROM INVESTING ACTIVITIES:		
Acquisition of financial assets at FVTPL	(106,618,936,732)	-
Proceed from disposals of financial assets at FVTPL	69,025,905,197	527,841,464
Increase in short-term financial instruments	(5,000,000,000)	-
Decrease in short-term financial instruments	19,500,000,000	-
Acquisition of investments in associates and joint ventures	(2,494,000,000)	(41,299,063,915)
Acquisition of property, plant and equipment	(906,997,419,848)	(623,917,952,218)
Proceed from disposals disposal of property, plant and equipment	3,405,876,733	768,306,867
Acquisition of intangible assets	(2,216,635,577)	(487,699,552)
Proceeds from disposals of intangible assets	250,132,190	-
Increase in loans	(5,275,922,371)	(5,762,233,750)
Decrease in loans	3,100,052,005	1,328,277,933
Increase in other receivables	(7,652,112,803)	(10,308,905,008)
Decrease in other receivables	4,773,818,902	5,776,704,000
Increase in other payables	-	5,543,160,223
Decrease in other payables	-	(312,533,146)
Acquisition of non-current financial assets	(21,156,754,812)	-
Net cash from changes in scope of consolidation	(4,753,854,862)	-
Net cash used in investing activities	(962,109,851,978)	(668,144,097,102)
CASH FLOWS FROM FINANCING ACTIVITIES:		
Proceeds from borrowings and debt securities	423,432,040,485	1,865,931,527,277
Repayment of borrowings and debt securities	(541,853,500,000)	(1,695,685,880,000)
Payment of lease liabilities	(131,564,004,745)	-
Settlement of derivatives, net	6,247,801,586	5,572,353,501
Dividends paid	(23,360,652,075)	(51,586,576,245)
Issuance of share capital	2,450,223,017	-
Increase of non-controlling interests	-	7,816,147,180
Net cash used in financing activities	(264,648,091,732)	132,047,571,713
NET INCREASE IN CASH AND CASH EQUIVALENTS	(48,411,108,683)	72,846,993,891
EFFECT OF EXCHANGE RATE CHANGES ON CASH HELD	(1,200,773,260)	(7,445,286,398)
CASH AND CASH EQUIVALENTS, BEGINNING OF THE PERIOD	149,803,189,823	84,401,482,330
CASH AND CASH EQUIVALENTS, END OF THE PERIOD	₩ 100,191,307,880	₩ 149,803,189,823

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

1. GENERAL:

Korea South-East Power Co., Ltd.

Korea South-East Power Co., Ltd. (the "Company") was incorporated on April 2, 2001, through the spin-off of the power generation division of Korea Electric Power Corporation ("KEPCO") in accordance with a restructuring plan dated January 21, 1999, for the energy industry in the Republic of Korea announced by the Ministry of Commerce, Industry and Energy and the Law on Promotion of Restructuring of the Electricity Industry promulgated on December 23, 2000. The Company engages in the generation of electricity and development of electric power resources and sells all generated electricity to KEPCO through the Korea Power Exchange ("KPX").

As of December 31, 2019, the Company operates five power plants with a total capacity of 10,376 MW. The Company's headquarters is located at Jinju-si, Gyeongsangnam-do. As of December 31, 2019, the Company's share capital amounts to ₩ 297,616 million, and outstanding shares are wholly owned by KEPCO.

The consolidated financial statements comprise the Company's and its subsidiaries (together referred to as the "Group") and the Group's interests in associates and joint ventures.

2. BASIS OF PREPARATIONS AND SIGNIFICANT ACCOUNTING POLICIES:

(1) Basis of preparation of consolidated financial statements

The Group maintains its official accounting records in Korean won and prepares its consolidated financial statements in conformity with Rules for Accounting Affairs of Public Corporations and Quasi-governmental Institutions, in the Korean language. Accordingly, these consolidated financial statements are intended for use by those who are informed about these Regulations and Standards and Korean practices. The accompanying consolidated financial statements have been condensed, restructured and translated into English with certain expanded descriptions from the Korean language consolidated financial statements. In the event of any differences in interpreting the financial statements or the independent auditors' report thereon, the Korean version, which is used for regulatory reporting purposes, shall prevail. Certain information included in the Korean language consolidated financial statements, but not required for a fair presentation of the Group's consolidated statements of financial position, comprehensive income, changes in equity or cash flows, is not presented in the accompanying consolidated financial statements.

The consolidated financial statements have been prepared in accordance with the Rules for Accounting Affairs of Public Corporations and Quasi-governmental Institutions, and the Group applies Korean International Financial Reporting Standards ("KIFRS") for specific accounting treatments that are not prescribed by the Rules for Accounting Affairs of Public Corporations and Quasi-governmental Institutions in accordance with the Articles 2-5 of the rules.

The Group prepares its financial statements in accordance with Korean International Financial Reporting Standards ("KIFRS") 1027, *'Separate Financial Statements'*. The consolidated financial statements require investors with joint control or significant influence over the parent or investee to invest their assets in accordance with the cost method or the method prescribed in KIFRS 1109 *'Financial Instruments'* or using the equity method of accounting as prescribed in KIFRS 1028 *'Investments in Associates and Joint Ventures'*.

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

2. BASIS OF PREPARATIONS AND SIGNIFICANT ACCOUNTING POLICIES (CONT'D):

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

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 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 realisable value in KIFRS 1002 *Inventories* or value in use in KIFRS 1036 *Impairment of Assets*.

The consolidated financial statements were approved by the Board of Directors on March 12, 2020 and are expected to be approved by the annual general meeting of shareholders on March 30, 2020.

1) New and revised standards that have been applied from the period beginning on January 1, 2019 are as follows;

<u>KIFRS 1116 – *Lease (Enactment)*</u>

KIFRS 1116 replaces existing leases guidance, including KIFRS 1017 *'Lease,'* 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.'* The standard sets out the principles for the recognition, measurement, presentation and disclosure of leases and requires lessees to account for most leases under a single on-balance sheet model.

Lessor accounting under KIFRS 1116 is substantially unchanged from KIFRS 1017. Lessors will continue to classify leases as either operating or finance leases using similar principles as in KIFRS 1017.

The Group adopted KIFRS 1116 using the modified retrospective method of adoption with the date of initial application of January 1, 2019. Under this method, the standard is applied retrospectively with the cumulative effect of initially applying the standard recognized at the date of initial application. The Group elected to use the recognition exemptions for lease contracts that, at the commencement date, have a lease term of 12 months or less and do not contain a purchase option ('short-term leases'), and lease contract for which the underlying asset is of low value ('low-value assets')

2. BASIS OF PREPARATIONS AND SIGNIFICANT ACCOUNTING POLICIES (CONT'D):

The impacts on the Group's consolidated statement of financial position on the date of initial application (January 1, 2019) are as follows:

	January 1, 2019		
	Original carrying amount under KIFRS 1017	Adjustment	New carrying amount under KIFRS 1116
ASSETS			
Current assets	₩ 1,845,112,857,487	₩ -	₩ 1,845,112,857,487
Non-current assets	8,356,704,672,333	1,045,537,976,690	9,402,242,649,023
Total assets	10,201,817,529,820	1,045,537,976,690	11,247,355,506,510
LIABILITIES			
Current liabilities	1,254,592,023,436	104,473,468,355	1,359,065,491,791
Non-current liabilities	3,918,277,773,798	941,064,508,335	4,859,342,282,133
Total liabilities	5,172,869,797,234	1,045,537,976,690	6,218,407,773,924
Total equity	5,028,947,732,586	-	5,028,947,732,586
Total liabilities and equity	₩ 10,201,817,529,820	₩ 1,045,537,976,690	₩ 11,247,355,506,510

① Effects of adoption of KIFRS 1116

The Group has lease contracts for various items such as Consecutive Voyage Charter ("CVC") contract, real estate lease contracts and other lease contracts including machinery and other equipment. Before adoption of KIFRS 1116, the Group, as a lessee, classified a lease contract as a finance lease if it transferred substantially all of the risks and rewards incidental to ownership of the leased asset to the Group; otherwise as an operating lease. For a finance lease, at the commencement of the lease term, the Group recognized finance leases as assets and liabilities in their statements of financial position at amount equal to the fair value of the leased property or, if lower, the present value of the minimum lease payment, each determined at the inception of the lease. Minimum lease payment had been classified into an interest portion ("finance cost") and a principal portion of the lease liability. For an operating lease, lease payments were recognized as an expense on a straight-line basis over the lease term. Lease payments which were already paid or were not paid at the date of initial application, is reclassified as Advanced payments or Other payables.

Upon adoption of KIFRS 1116, the Group applied a single recognition and measurement approach for all leases, except for short-term leases and leases of low-value assets. The standard provides specific transition requirements and practical expedients, which has been applied by the Group.

A. Leases previously classified as finance leases

The Group did not change the initial carrying amounts of recognized assets and liabilities at the date of initial application for leases previously classified as finance leases (i.e., the right-of-use assets and lease liabilities equal the lease assets and liabilities recognized under KIFRS 1017). The requirements of KIFRS 1116 was applied to these leases January 1, 2019.

2. BASIS OF PREPARATIONS AND SIGNIFICANT ACCOUNTING POLICIES (CONT'D):

B. Leases previously accounted for as operating leases

The Group recognized right-of-use assets and lease liabilities for those leases previously classified as operating leases, except for short-term leases and leases of low-value assets. The right-of-use assets were recognized based on the amount equal to the lease liabilities, adjusted for any related prepaid and accrued lease payments previously recognized. Lease liabilities were recognized based on the present value of the remaining lease payments, discounted using the incremental borrowing rate at the date of initial application.

The Group also applied the available practical expedients wherein it:

a) Applied the short-term leases exemptions to leases with lease term that ends within 12 months at the date of initial application
b) Excluded the initial direct costs from the measurement of the right-of-use asset at the date of initial application
c) Used hindsight in determining the lease term where the contract contains options to extend or terminate the lease

② Summary of new accounting policy

Set out below are the new accounting policies of the Group upon adoption of KIFRS 1116, which have been applied from the date of initial application.

A. Right-of-use assets

The Group has recognized right-of-use assets at the commencement date of the lease. Right-of-use assets are measured at cost, less any accumulated depreciation and impairment losses, and adjusted for any re-measurement of lease liabilities. The cost of right-of-use assets includes the amount of lease liabilities recognized, initial direct costs incurred, and lease payments made at or before the commencement date less any lease incentives received. Unless the Group is reasonably certain to obtain ownership of the leased asset at the end of the lease term, the recognized right-of-use assets are depreciated on a straight-line basis over the shorter of its estimated useful life and the lease term. Right-of-use assets are subject to impairment.

B. Lease liabilities

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

In calculating the present value of lease payments, the Group uses the incremental borrowing rate at the lease commencement date if the interest rate implicit in the lease is not readily determinable. After the commencement date, the amount of lease liabilities is increased to reflect the accretion of interest and reduced for the lease payments made. In addition, the carrying amount of lease liabilities is remeasured if there is a modification, a change in the lease term, a change in the in-substance fixed lease payments or a change in the assessment to purchase the underlying asset.

2. BASIS OF PREPARATIONS AND SIGNIFICANT ACCOUNTING POLICIES (CONT'D):

C. Short-term leases and leases of low-value assets

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

D. Significant judgement when determining the duration of the contract with an extension option

The Group determines the lease term, including the period of the extension option if it is significantly certain that it will exercise and the period of the termination option if it is significantly certain that it will not be exercised. The Group applies judgement when assessing whether this option is significantly certain to exercise. In other words, consider all relevant factors that may give rise to the economic incentive to exercise the extension option. If, after the beginning of the lease, the events or circumstances that have a significant impact or change in the circumstances under control affect the probability of exercise (or, a probability of non-exercise) of the option (for example, a change in the business strategy), the Group revalues the lease term.

Book value and change in book value of right-of-use assets and lease liabilities are described in Note 20.

KIFRS 2123 –*Uncertainty over Income Tax Treatment (Enactment)*

The interpretation addresses the accounting for income taxes when tax treatments involve uncertainty that affects the application of KIFRS 1012 *Income Taxes*. It does not apply to taxes or levies outside the scope of KIFRS 1012, nor does it specifically include requirements relating to interest and penalties associated with uncertain tax treatments. The Interpretation specifically addresses the following:

- Whether an entity considers uncertain tax treatments separately
- The assumptions an entity makes about the examination of tax treatments by taxation authorities
- How an entity determines taxable profit (tax loss), tax bases, unused tax losses, unused tax credits and tax rates
- How an entity considers changes in facts and circumstances

The Group has to determine whether to consider each uncertain tax treatment separately or together with one or more other uncertain tax treatments. The approach that better predicts the resolution of the uncertainty needs to be followed. Upon the adoption of the enactments, there is no significant impact on the Group's consolidated financial statements.

KIFRS 1109 –*Financial Instruments (Amendments)*

Under KIFRS 1109, a debt instrument can be measured at amortized cost or at fair value through other comprehensive income, provided that the contractual cash flows are 'solely payments of principal and interest on the principal amount outstanding' (the SPPI criterion) and the instrument is held within the appropriate business model for that classification. The amendments to KIFRS 1109 clarify that a financial asset passes the SPPI criterion regardless of an event or circumstance that causes the early termination of the contract and irrespective of which party pays or receives reasonable compensation for the early termination of the contract. Upon the adoption of the amendments, there is no significant impact on the Group's consolidated financial statements.

2. BASIS OF PREPARATIONS AND SIGNIFICANT ACCOUNTING POLICIES (CONT'D):

KIFRS 1019 –*Employee Benefits (Amendments)*

The amendments to KIFRS 1019 address the accounting when a plan amendment, curtailment or settlement occurs during a reporting period. The amendments specify that when a plan amendment, curtailment or settlement occurs during the annual reporting period, an entity is required to determine the current service cost for the remainder of the period after the plan amendment, curtailment or settlement, using the actuarial assumptions used to remeasure the net defined benefit liability (asset) reflecting the benefits offered under the plan and the plan assets after that event. An entity is also required to determine the net interest for the remainder of the period after the plan amendment, curtailment or settlement using the net defined benefit liability (asset) reflecting the benefits offered under the plan and the plan assets after that event, and the discount rate used to remeasure that net defined benefit liability (asset). Upon the adoption of the amendments, there is no significant impact on the Group's consolidated financial statements.

KIFRS 1028 –*Long-term Interests in Associates and Joint Ventures (Amendments)*

The amendments clarify that an entity applies KIFRS 1109 to long-term interests in an associate or joint venture to which the equity method is not applied but that, in substance, form part of the net investment in the associate or joint venture (long-term interests). This clarification is relevant because it implies that the expected credit loss model in KIFRS 1109 applies to such long-term interests. The amendments also clarified that, in applying KIFRS 1109, an entity does not take account of any losses of the associate or joint venture, or any impairment losses on the net investment, recognized as adjustments to the net investment in the associate or joint venture that arise from applying KIFRS 1028 *Investments in Associates and Joint Ventures*. Upon the adoption of the amendments, there is no significant impact on the Group's consolidated financial statements.

Annual Improvements to KIFRS 2015-2017 Cycle

① KIFRS 1103 – *Business Combinations (Amendments)*

The amendments clarify that, when an entity obtains control of a business that is a joint operation, it applies the requirements for a business combination achieved in stages, including remeasuring previously held interests in the assets and liabilities of the joint operation at fair value. In doing so, the acquirer remeasures its entire previously held interest in the joint operation. The Group applies those amendments to business combinations for which the acquisition date is on or after the beginning of the first annual reporting period beginning on or after January1, 2019 with early application permitted. Upon the adoption of the amendments, there is no significant impact on the Group's consolidated financial statements.

② KIFRS 1111 – *Joint Arrangements (Amendments)*

A party that participates in, but does not have joint control of, a joint operation might obtain joint control of the joint operation in which the activity of the joint operation constitutes a business as defined in KIFRS 1103. The amendments clarify that the previously held interests in that joint operation are not remeasured. The Group applies those amendments to transactions in which it obtains joint control on or after the beginning of the first annual reporting period beginning on or after January 1, 2019 with early application permitted. Upon the adoption of the amendments, there is no significant impact on the Group's consolidated financial statements.

2. BASIS OF PREPARATIONS AND SIGNIFICANT ACCOUNTING POLICIES (CONT'D):

③ KIFRS 1012 – *Income Taxes (Amendments)*

The amendments clarify that the income tax consequences of dividends are linked more directly to past transactions or events that generated distributable profits than to distributions to owners. Therefore, a Group recognizes the income tax consequences of dividends in profit or loss, other comprehensive income or equity according to where it originally recognized those past transactions or events. The Group applies the amendments for annual reporting periods beginning on or after January1, 2019 with early application permitted. When the Group first applies those amendments, it applies them to the income tax consequences of dividends recognized on or after the beginning of the earliest comparative period. Upon the adoption of the amendments, there is no significant impact on the Group's consolidated financial statements.

④ KIFRS 1023 – *Borrowing Costs (Amendments)*

The amendments clarify that an entity treats as part of general borrowings any borrowing originally made to develop a qualifying asset when substantially all the activities necessary to prepare that asset for its intended use or sale are complete. The Group applies the amendments to borrowing costs incurred on or after the beginning of the annual reporting period in which the entity first applies those amendments. An entity applies those amendments for annual reporting periods beginning on or after January 1, 2019 with early application permitted. Upon the adoption of the amendments, there is no significant impact on the Group's consolidated financial statements.

2) Standards issued but not yet effective

KIFRS 1113 – *Definition of a business (Amendment)*
In October 2018, the Korea Accounting Standards Board (KASB) revised the Business Definition of Business Accounting Standard No. 1103, Business Combination, to help determine whether a set of activities and assets acquired by a business is a business. The amendments clarified the minimum requirements to meet the definition of the business and eliminated the assessment of whether 'market participants have the ability to replace missing inputs'. In addition, guidelines for companies to evaluate whether the acquired 'process' is real have been added, and the definition of business and deliverables has been narrowed and a selective intensive test has been established. According to this revision, new cases of application have been added. Since these amendments are applied prospectively to transactions or events occurring after the first application date, it is expected that the amendments will not have any effect on the Group's consolidated financial statements.

KIFRS 1001 and 1008(Revised) – *Definition of material (Amendment)*
In October 2018, the KASB issued amendments to KIFRS 1001 Presentation of Financial Statements and KIFRS 1008 Accounting Policies, Changes in Accounting Estimates and Errors to align the definition of 'material' across the standards and to clarify certain aspects of the definition. The new definition states that, 'Information is material if omitting, misstating or obscuring it could reasonably be expected to influence decisions that the primary users of general purpose financial statements make on the basis of those financial statements, which provide financial information about a specific reporting entity.'

The amendments to the definition of material is not expected to have a significant impact on the Group's consolidated financial statements.

(2) Revenue recognition

Revenue is measured at the fair value of the consideration received or receivable. Revenue is reduced for estimated customer returns, rebates and other similar allowances. The Group recognizes revenue when the amount of revenue can be reliably measured; when it is probable that future economic benefits will flow to the entity; and when specific criteria have been met for each of the Group's activities, as described below.

2. **BASIS OF PREPARATION AND SIGNIFICANT ACCOUNTING POLICIES (CONT'D):**

1) Sale of goods

Revenue from the sale of goods is recognized when the Group has transferred the significant risks and rewards of ownership of the goods to the buyer. The Group's revenue primarily composed of sales of electricity through operation of the thermal power plants.

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 Group 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 and interest income

Dividend income from investments is recognized when the shareholder's right to receive payment has been established (provided that it is probable that the economic benefits will flow to the Group and the amount of income can be measured reliably).

Interest income from a financial asset is recognized when it is probable that the economic benefits will flow to the Group and the amount of income can be measured reliably. Interest income is accrued on a time 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 carrying amount on initial recognition.

The financial impact of KIFRS 1115 on the Group's separate financial statements is as follows:

① Identify the performance obligations in the contract

The Group is engaged in the generation, transmission of electricity and electricity sales revenue accounts for 95% of revenue for the year ended December 31, 2019.

Under KIFRS 1115, supplying electricity is a series of distinct goods or services identified as a single performance obligation. In addition to supplying electricity, The Group perform heat supply business and service business through contract with customers. that are identified as different performance obligations for each contract.

There is no impact of identification of performance obligations on Group's revenue.

② Variable consideration

If the variable amount is included, the transaction price consists of fixed and variable consideration. The transaction price is determined by estimating the variable consideration at the expected or most likely amount. Variable consideration is included in the transaction price some or all of an amount of variable consideration only to the extent that it is highly probable that a significant reversal in the amount of cumulative revenue recognized will not occur when the uncertainty associated with the variable consideration is subsequently resolved. There is no impact of variable consideration on Group's revenue.

③ Performance obligations satisfied over time

The Group satisfies its performance obligations for contracts such as Operation & Maintenance, etc., over time.

2. BASIS OF PREPARATION AND SIGNIFICANT ACCOUNTING POLICIES (CONT'D):

The Group recognizes revenue over time if one of the following criteria is met:
- The customer simultaneously receives and consumes the benefits provided by the Group's performance as the entity performs
- The Group's performance creates or enhances an asset that the customer controls as the asset is created or enhanced
- The Group's performance does not create an asset with an alternative use to the entity and the entity has an enforceable right to payment for performance completed to date.

There is no impact of performance obligations satisfied over time on Group's revenue.

(3) Leases

The Group determines whether the contract itself is a lease or whether the contract includes a lease at the time of the contract's contract, taking into account whether or not the contract controls the use of the identified assets in exchange for a certain period of time.

1) The Group as lessee

The Group applies one perception over-measurement approach to all leases except short-term leases and small underlying leases. The Group recognizes lease liabilities representing the obligation to pay lease payments and license assets representing the right to use underlying assets.

① Right-of-use assets

The Group has recognized right-of-use assets at the commencement date of the lease. Right-of-use assets are measured at cost, less any accumulated depreciation and impairment losses, and adjusted for any re-measurement of lease liabilities. The cost of right-of-use assets includes the amount of lease liabilities recognized, initial direct costs incurred, and lease payments made at or before the commencement date less any lease incentives received. Unless the Group is reasonably certain to obtain ownership of the leased asset at the end of the lease term, the recognized right-of-use assets are depreciated on a straight-line basis over the shorter of its estimated useful life and the lease term.

Depreciation is calculated using the estimated useful life of the underlying asset of the asset if the ownership of the underlying asset is transferred to the Group at the end of the lease term or if the cost of the licensed asset reflects that the Group will exercise the option to buy.

② Lease liabilities

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

In calculating the present value of lease payments, the Group uses the incremental borrowing rate at the lease commencement date if the interest rate implicit in the lease is not readily determinable. After the commencement date, the amount of lease liabilities is increased to reflect the accretion of interest and reduced for the lease payments made. In addition, the carrying amount of lease liabilities is remeasured if there is a modification, a change in the lease term, a change in the in-substance fixed lease payments or a change in the assessment to purchase the underlying asset.

2. BASIS OF PREPARATION AND SIGNIFICANT ACCOUNTING POLICIES (CONT'D):

③ Short-term leases and leases of low-value assets

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

2) The Group as lessor

The Group classifies leases that do not transfer most of the risks and rewards associated with ownership of underlying assets as operating leases. Lease income is recognized on a straight-line basis over the lease term and is included in sales in the income statement according to the nature of the operation. The direct cost of the lease established in the process of entering into an operating lease is added to the carrying amount of the underlying asset and recognized as an expense over the lease term on the same basis as the lease income. Conditional rent is recognized as revenue at the time the rent is received.

(4) Foreign currencies

For the purpose of the separate financial statements, the results and financial position are expressed in Korean won, which is the functional currency of the Group and the presentation currency for the separate financial statements.

In preparing the separate financial statements of the Group, transactions in currencies other than the Group'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, and
- exchange differences on transactions entered into in order to hedge certain foreign currency risks.

(5) 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.

(6) Government grants

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

2. BASIS OF PREPARATION AND SIGNIFICANT ACCOUNTING POLICIES (CONT'D):

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 whose primary condition is that the Group purchase, construct or otherwise acquire long-term assets are deducted in calculating the carrying amount of the asset. The grant is recognized in profit or loss over the life of a depreciable asset as a reduced depreciation expense.

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

(7) Retirement benefit costs and termination benefits

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

For defined retirement benefit plans, 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 statements of financial position with a charge or credit recognized in OCI in the period in which it occurs. Remeasurement recognized in OCI 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 and past service cost, as well as gains and losses on curtailments and settlements), net interest expense (income) and remeasurement.

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

The retirement benefit obligation recognized in the separate statements of financial position represents the actual deficit or surplus in the Group'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.

(8) Taxation

Income tax burden for the current period is calculated based on taxable income for the current period. The difference between the taxable income and the net income is due to the items of profit or loss that will be added or deducted in other taxable periods, and non-taxable or non-deductible items. The liabilities related to the Group's current tax are calculated based on tax rates and tax laws enacted or substantially enacted by the end of the reporting period.

Provisions are recognized when it is uncertain to determine the corporate tax, but it is probable that cash outflows will likely occur to tax authorities in the future. Provisions are measured as the best estimate of the amount expected to be paid. This evaluation is based on the judgment of the tax expert of the parent Group based on past experience, and in certain cases, on the basis of the judgment of an independent tax expert.

2. BASIS OF PREPARATION AND SIGNIFICANT ACCOUNTING POLICIES (CONT'D):

1) Deferred tax

Deferred tax is recognized on temporary differences between the carrying amounts of assets and liabilities in the financial separate 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 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.

Deferred tax liabilities are recognized for taxable temporary differences associated with investments in subsidiaries and associates and interests in joint ventures, except where the Group is able to control the reversal of the temporary difference and it is probable that the temporary difference will not reverse in the foreseeable future. Deferred tax assets arising from deductible temporary differences associated with such investments and interests are only recognized to the extent it is probable that there will be sufficient taxable profits against which the benefits of the temporary differences can be utilized and they are expected to reverse in the foreseeable future.

The carrying amount of deferred tax assets is reviewed at the end of each reporting period and reduced to the extent it is no longer probable that sufficient taxable profits will be available to allow all or part of the assets 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 is 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 Group expects to recover or settle the carrying amount of its assets and liabilities at the end of the reporting period.

Deferred tax assets and liabilities are offset if, and only if, the Group has a legally enforceable right to set off current tax assets against current tax liabilities, and the deferred tax assets and liabilities relate to income taxes levied by the same taxation authority on either the same taxable entity or different taxable entities which intend either to settle current tax liabilities and assets on a net basis or to realize the assets and settle the liabilities simultaneously in each future period in which significant amounts of deferred tax liabilities or assets are expected to be settled or recovered.

2) Current and deferred taxes for the year

Current and deferred taxes are recognized in profit or loss, except when they relate to items that are recognized in OCI or directly in equity, in which case the current and deferred taxes are also recognized in OCI or directly in equity. 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.

(9) Property, plant and equipment

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

Subsequent costs are recognized in the carrying 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 Group and the cost of an asset can be measured reliably. Routine maintenance and repairs are expensed as incurred.

2. BASIS OF PREPARATION AND SIGNIFICANT ACCOUNTING POLICIES (CONT'D):

The Group 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 (years)
Buildings	8–30
Structures	8–30
Machineries	4–24
Vehicles	4
Others	4
Lease assets	2–24

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, it is depreciated separately.

The Group 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 carrying amount of the asset) is included in profit or loss in the period in which the property is derecognized.

(10) 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 of intangible assets is recognized on a straight-line basis over their estimated useful lives.

The estimated useful lives and amortization methods of the Group's intangible assets with finite useful lives are as follows:

	Estimated useful lives (years)	Amortization
Software	4, 5	Straight-line method
Development cost	5	Straight-line method
Copyright, patent right and other industrial property	5, 10	Straight-line method
Others	4-20	Straight-line method
Mining rights	-	Production proportional method

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 - research and development expenditure

Expenditure on research activities is recognized as an expense in the period in which it is incurred.

2. BASIS OF PREPARATION AND SIGNIFICANT ACCOUNTING POLICIES (CONT'D):

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 Group can demonstrate the technical and economic feasibility and measure reliably the resources attributable to the intangible asset during its development.

The amount initially recognized for internally generated intangible assets is the sum of the expenditure incurred from the date when the intangible asset first meets the recognition criteria. Where no internally generated intangible asset can be recognized, development expenditure is recognized in profit or loss in the period in which it is incurred.

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 are recognized separately from goodwill and are initially recognized at their fair value at the acquisition date (which is regarded as their cost). 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 carrying amount of the asset, are recognized in profit or loss when the asset is derecognized.

5) Patent rights and trademarks

Patents and trademarks are initially measured at acquisition cost and are amortized at a straight-line method over the estimated useful life.

(11) Impairment of tangible and intangible assets other than goodwill

At the end of each reporting period, the Group reviews the carrying 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 Group estimates the recoverable amount of the cash-generating unit to which the asset belongs. Where a reasonable and consistent basis of allocation can be identified, corporate assets are also allocated to individual cash-generating units; or otherwise, they are allocated to the smallest group of cash-generating units for which a reasonable and consistent allocation basis can be identified.

Intangible assets with indefinite useful lives and intangible assets 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, or value in use. If the recoverable amount of an asset (or a cash-generating unit) is estimated to be less than its carrying amount, the carrying amount of the asset (or the cash-generating unit) is reduced to its recoverable amount and the reduced amount is recognized in profit or loss.

2. BASIS OF PREPARATION AND SIGNIFICANT ACCOUNTING POLICIES (CONT'D):

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

(12) Inventories

Inventories are stated at the lower of cost or net realizable value. Cost of inventories, except for those in in-transit, is measured using the weighted-average 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 carrying 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 are 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.

(13) Provisions

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

The 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 carrying 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 pre-tax 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 finance costs.

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.

1) Provision for employment benefits

The Group determines the provision for employment benefits as the incentive payments based on the results of the individual performance evaluation or management assessment.

2) Litigation provisions

The Group recognizes litigation provisions when it is probable that an outflow of resources embodying economic benefits will be required to settle the obligation and a reliable estimate can be made of the amount of the obligation.

2. BASIS OF PREPARATION AND SIGNIFICANT ACCOUNTING POLICIES (CONT'D):

3) Provision for Renewable Energy Portfolio Standard ("RPS")

For governmental regulation to require the production of energies from renewable energy sources, such as solar, wind and bio-mass, the Group recognized the provision of obligation to supply new renewable energy more than certain amount of total annual power generation, annually.

(14) Financial instruments

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

(15) Financial assets

All regular-way purchases or sales of financial assets are recognized and derecognized on a trade-date basis. Regular-way purchases or sales are purchases or sales of financial assets that require delivery of assets within the time frame established by regulation or convention in the marketplace.

All recognized financial assets are subsequently measured at amortized cost or fair value, depending on the classification of the financial asset.

1) Classification of financial assets

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

- The financial asset is held within a business model whose objective is to hold assets to collect contractual cash flows
- The contractual terms of the financial asset give rise on specified dates to cash flows that are SPPI on the principal amount outstanding

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

- The financial asset is held within a business model whose objective is achieved by both collecting contractual cash flows.
- The contractual terms of the financial asset give rise on specified dates to cash flow that are SPPI on the principal amount outstanding.

All financial assets not classified as measured at amortized cost or FVOCI as described above, are measured at FVTPL.

Notwithstanding the foregoing, at initial recognition of a financial asset, the Group may make the following irrevocable choices or designations:

- If a particular requirement is met (see 1-3 below), the Group may choose to present in OCI subsequent changes in the fair value of the equity instrument.
- If an item is designated as at FVTPL, a debt instrument that meets the requirements of an amortized cost measurement financial asset or a FVOCI may be designated as at FVTPL if the accounting mismatch is removed or significantly reduced (see 1-4 below).

There are no debt instruments designated as at FVTPL that meet the requirements of amortized cost financial assets or FVOCI during the current period.

2. BASIS OF PREPARATION AND SIGNIFICANT ACCOUNTING POLICIES (CONT'D):

1-1) Amortized cost and 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. Except for financial assets that are credit-impaired at the time of acquisition, effective interest rate is the rate at which the present value of the expected future cash receipts, including the fees and points paid or received (if appropriate) and the principal component of the effective interest rate, transaction costs and other premiums or discounts, is exactly the same as the gross carrying amount at initial recognition, without taking into account ECLs. For financial assets that are credit-impaired at the time of acquisition, the credit-adjusted effective interest rate is calculated by discounting the present value of expected cash flows taking into account ECLs to amortized cost at initial recognition.

The amortized cost of a financial asset is the amount of the loss allowance adjusted for the amount of principal repayable at initial recognition plus the accumulated amortization calculated by applying the effective interest method to the difference between the initial recognized amount and the maturity amount. The total carrying amount of a financial asset is the amortized cost of the financial asset before adjusting the loss allowance.

Interest income is recognized using the effective interest method for debt instruments that are subsequently measured at amortized cost and at FVOCI. Except for financial assets that are credit-impaired at the time of acquisition, for financial assets, interest revenue is calculated by applying the effective interest rate to the total carrying amount of the financial asset (except for financial assets that are subsequently credit-impaired). Subsequently, for credit-impaired financial assets, interest revenue is recognized using the effective interest rate at the amortized cost of the financial asset. If the credit risk of the credit-impaired financial instrument improves in subsequent reporting periods and the financial asset is no longer impaired, interest revenue is recognized by applying the effective interest rate to the total carrying amount of the financial asset. Subsequently, an entity does not change the calculation of interest revenue to the gross carrying amount even if the credit risk of the financial asset improves and the financial asset is no longer impaired.

For financial assets that are credit-impaired at the time of acquisition, interest income is recognized using the credit-adjusted effective interest rate at amortized cost of the financial asset from initial recognition.

Interest income is recognized in profit or loss and is accounted for as 'Finance income'.

1-2) Debt instruments classified as FVOCI

Fair value is determined by the method described in Note 39. At initial recognition, the debt instrument is measured by adding transaction costs to its fair value. Subsequently, changes in the carrying amount of the debt instrument resulting from foreign currency translation gains and losses (returns) and interest income under the effective interest method are recognized in profit or loss. The amount recognized in profit or loss is the same amount that would have been recognized in profit or loss if the debt instrument had been measured at amortized cost. Except this, all changes in the carrying amount of the debt instrument are recognized in OCI and are accumulated in accumulated valuation gains and losses. When a debt instrument is derecognized, the cumulative gain or loss recognized in OCI is reclassified to profit or loss.

1-3) Equity instruments designated as at FVOCI measurement items

At initial recognition, the Group may make an irrevocable choice (by instrument) to designate its investment in equity instruments as at FVOCI. If the equity instrument is held for trading or is a contingent consideration recognized by the acquirer in a business combination, the designation as FVOCI is not permitted.

Financial assets are held for trading as follows if:
- they are acquired or incurred principally for the purpose of selling or repurchasing in the near term
- on initial recognition, they are part of a portfolio of identified financial instruments that are managed together and for which there is evidence of a recent actual pattern of short-term profit taking; or
- they are a derivative (except for a derivative that is a financial guarantee contract or a designated and effective hedging instrument).

2. BASIS OF PREPARATION AND SIGNIFICANT ACCOUNTING POLICIES (CONT'D):

Investments in equity instruments at FVOCI are initially recognized by adding transaction costs to They are subsequently measured at fair value with gains or losses arising from changes in fair value are recognized in OCI and accumulated in valuation gains and losses. Accumulated profit or loss is not reclassified to profit or loss at the time the equity instruments are disposed of, but is replaced by profit or loss.

If a dividend on an investment in an equity instrument does not clearly represent a recovery of the investment cost, that dividend is recognized in profit or loss in accordance with KIFRS 1109. Dividends are counted as 'finance gain.

1-4) Financial assets measured at FVTPL

Financial assets that do not meet the measurement requirements at amortized cost or FVOCI are measured at FVTPL.

- If equity instruments that are not held for trading are not designated as at FVOCI at initial recognition, those equity instruments are classified as at FVTPL (see 1-3 above).
- Debt instruments that do not meet the requirements of amortized cost measurement items or FVOCI are classified as FVTPL. In addition, if the designation as at FVTPL results in the measurement or recognition of an asset or liability on a different basis (i.e., an accounting mismatch) being eliminated or significantly reduced, a liability instrument that meets the requirements of an amortized cost measurement item or FVOCI may be designated as at FVTPL on initial recognition.

Financial assets measured at FVTPL are measured at fair value at the end of each reporting period and gains or losses on changes in fair value less costs to sell are recognized in profit or loss, excluding those designated as hedging relationships. Net profit or loss recognized in profit or loss includes dividends obtained from financial assets and is counted as 'finance income'. On the other hand, interest income from financial assets measured at FVTPL is counted as 'finance income-interest income'. Fair value is determined by the method described in Note 39.

2) Foreign currency translation gains and losses

The carrying amount of a financial asset denominated in a foreign currency is determined in a foreign currency and translated into spot exchange at the end of the reporting period.

- For financial assets measured at amortized cost (excluding those designated as hedging relationships), the exchange rate difference is recognized in profit or loss in the 'financial gains and losses' item.
- For debt instruments measured at FVOCI (excluding those designated as hedging relationships), the exchange rate difference of amortized cost of debt instruments is recognized in profit or loss in the 'financial gains and losses' line item. Excluding these, the difference in exchange rates is recognized in OCI in the accumulated valuation gains and losses.
- For financial assets measured at FVTPL (other than those designated as hedging relationships), the exchange rate difference is recognized in profit or loss in the 'financial gains and losses' line item.
- For equity instruments measured at FVOCI, accumulated gains and losses are recognized in OCI.

3) Impairment of financial assets

The Group applies a forward-looking ECL model for debt instruments, lease receivables, contractual assets, loan commitments and financial guarantee contracts.

The Group recognizes loss allowances measured on either of the 12-month or lifetime ECL based on the extent of increase in credit risk since inception as shown in the below table.

2. **BASIS OF PREPARATION AND SIGNIFICANT ACCOUNTING POLICIES (CONT'D):**

	Classification	Loss allowances
Stage 1	Credit risk has not increased significantly since the initial recognition	12-month ECL: ECLs that resulted from possible default events within the 12 months after the reporting date
Stage 2	Credit risk has increased significantly since the initial recognition	Lifetime ECL: ECL that resulted from all possible default events over the expected life of a financial instrument
Stage 3	Credit-impaired	

Under KIFRS 1109, the Group always measures the loss allowance at an amount equal to lifetime ECLs for trade receivables or contract assets that result from transactions that are within the scope of KIFRS 1115 and that do not contain a significant financing component in accordance with KIFRS 1115. If the trade receivables or contract assets include a significant financing component, the Group may choose as its accounting policy to measure the loss allowance at an amount equal to lifetime ECLs.

The Group has chosen to measure the loss allowance at an amount equal to lifetime ECLs for the trade receivables, contract assets and lease receivables that contain a significant financing component.

4) Derecognition of financial assets

The Group derecognizes a financial asset when the contractual rights to the cash flows from the financial asset expire, when it transfers the rights to receive the contractual cash flows in a transaction in which substantially all of the risks and rewards of ownership of the financial asset are transferred or in which the Group neither transfers nor retains substantially all of the risks and rewards of ownership and it does not retain control of the financial asset. The Group enters into transactions whereby it transfers assets recognized in its separate statements of financial position, but retains either all or substantially all of the risks and rewards of the transferred assets. In these cases, the transferred assets are not derecognized.

When an entity derecognizes a financial asset measured at amortized cost, the difference between the carrying amount of the asset and the sum of the consideration received or receivable is recognized in profit or loss. If an investment in a debt instrument measured at FVOCI is eliminated, the cumulative amount of profit or loss previously recognized is reclassified to profit or loss. On the other hand, investments in equity instruments designated at FVOCI at initial recognition are not reclassified to profit or loss, but are replaced by retained earnings.

(16) Financial liabilities and equity instruments

1) Classification as debt or equity

Debt or 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) 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 Group are recognized as the proceeds are received, net of direct issue costs.

Repurchase of the Group'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, issuance or cancellation of the Group's own equity instruments.

2. BASIS OF PREPARATION AND SIGNIFICANT ACCOUNTING POLICIES (CONT'D):

3) Financial liabilities

All financial liabilities are subsequently measured at amortized cost using the effective interest method or at FVTPL. However, financial liabilities and financial guarantee contracts issued in the event that the transfer of financial assets does not meet the derecognition requirements or that the continuing involvement approach is applied are measured in accordance with the particular accounting policies described below.

4) Financial liabilities at FVTPL

Financial liabilities are classified as at financial liabilities measured at FVTPL when they are designated as consideration, held for trading or at FVTPL on initial recognition by the acquirer in a business combination.

A financial liability is classified as held for trading if:

- it has been acquired principally for the purpose of repurchasing in the near term;
- on initial recognition, it is part of a portfolio of identified financial instruments that are managed together and for which there is evidence of a recent actual pattern of short-term profit-taking; or
- it is a derivative that is not designated and effective as a hedging instrument.

A financial liability other than a financial liability held for trading or contingent consideration that may be paid by an acquirer as part of a business combination may be designated as at FVTPL upon initial recognition if:

- such designation eliminates or significantly reduces a measurement or recognition inconsistency that would otherwise arise;
- the financial liability forms part of a group of financial assets or financial liabilities, or both, which is managed, and its performance is evaluated on a fair value basis, in accordance with the Group's documented risk management or investment strategy, and information about the grouping is provided internally on that basis; or
- it forms part of a contract containing one or more embedded derivatives, and KIFRS 1109 *Financial Instruments: Recognition and Measurement* permits the entire combined contract (asset or liability) to be designated as at FVTPL.

The financial liability measured at FVTPL is measured at fair value and any gain or loss arising from changes in fair value other than those designated as hedging relationships is recognized in profit or loss. Interest expenses paid for financial liabilities measured at FVTPL are recognized in 'Other non-operating expenses' as an item of 'profit or loss on financial liabilities measured at FVTPL.'

However, when a financial liability is designated as at FVTPL, the amount of change in the fair value of the financial liability attributable to changes in the liability's credit risk is recognized in OCI unless recognizing the effects of changes in the liability's credit risk in OCI creates or expands an accounting mismatch in profit or loss. The remaining fair value changes of the liability are recognized in profit or loss. Fair value due to credit risk of financial liabilities recognized in OCI.

The change in value is not subsequently reclassified to profit or loss, but is instead replaced by retained earnings when the financial liability is derecognized.

Fair value is determined by the method described in Note 39.

5) Amortized cost measurement financial liability

Financial liabilities are subsequently measured at amortized cost using the effective interest method unless they are contingent consideration of the acquirer in a business combination, held for trading or designated at FVTPL on initial recognition.

2. BASIS OF PREPARATION AND SIGNIFICANT ACCOUNTING POLICIES (CONT'D):

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

6) Financial guarantee contracts

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 instruments.

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

- loss allowance determined in accordance with KIFRS 1109 (see 'Financial Assets' above); or
- the amount initially recognized less, cumulative profit recognized in accordance with the KIFRS 1115.

7) Foreign currency translation gains and losses

Financial liabilities denominated in a foreign currency are measured at amortized cost at the end of the reporting period and foreign currency translation gains and losses are determined on the basis of amortized cost of the financial instrument. Foreign currency translation gains and losses on financial liabilities other than those designated as hedging relationships are recognized in profit or loss in the 'financial gains and losses' line item. When designated as a hedging instrument to hedge foreign currency risk, foreign currency translation gains and losses are recognized in OCI and are accumulated in equity as separate items.

The fair value of a financial liability denominated in a foreign currency is determined in foreign currency and translated into spot exchange at the end of the reporting period. For financial liabilities measured at FVTPL, the foreign currency translation component forms part of the fair value gain or loss and is recognized in profit or loss (excluding those designated as hedging relationships).

8) Derecognition of financial liabilities

The Group derecognize financial liabilities when its obligations are discharged, canceled or expired. The difference between the carrying amount of the financial liability derecognized and the consideration paid and payable is recognized in profit or loss.

(17) Derivative financial instruments

The Group enters into a variety of derivative financial instruments to manage its exposure to interest rate and foreign exchange rate risks, 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, and 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.

2. BASIS OF PREPARATION AND SIGNIFICANT ACCOUNTING POLICIES (CONT'D):

1) Embedded derivatives

An embedded derivative is a component of a hybrid instrument that contains a host contract rather than a derivative, which has the effect of causing some of the cash flows of a compound instrument to fluctuate similarly to an independent derivative.

Derivatives embedded in a hybrid contract that includes financial assets within the scope of KIFRS 1109 as host contracts are not separated. They are classified based on the composite contract as a whole and subsequently measured at amortized cost or fair value.

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.

An embedded derivative is presented as a non-current asset or a non-current liability if the remaining maturity of the hybrid instrument to which the embedded derivative relates is more than 12 months and it is not expected to be realized or settled within 12 months. Other embedded derivatives are presented as current assets or current liabilities.

2) Hedge accounting

The Group designates certain hedging instruments, which include derivatives, embedded derivatives and non-derivatives in respect of foreign currency risk, as either fair value hedges, cash flow hedges or hedges of net investments in foreign operations. Hedges of foreign exchange risk on firm commitments are accounted for as cash flow hedges.

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 Group documents whether the hedging instrument is highly effective in offsetting changes in fair values or cash flows of the hedged item. The hedging relationship meets all of the following hedge effectiveness requirements:

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

If the hedging relationship no longer meets the hedge effectiveness requirements associated with the hedge ratio, but the risk management objective for the designated hedging relationship remains the same, the hedge ratio of the hedging relationship is adjusted (hedge rebalancing) to ensure that the hedging relationship meets the qualifying criteria again.
The Group designates the entire fair value of forward contracts (i.e., including forward elements) as hedging instruments for the entire hedging relationship that includes forward contracts.

The Group designated only the intrinsic value of the option as the hedging instrument when using an option contract to hedge the forecast transaction. In KIFRS 1039, changes in the fair value of an option (i.e., an unspecified element) were immediately recognized in profit or loss. KIFRS 1109 requires changes in the time value of options related to the hedged item ('aligned time value') to be recognized in OCI and the amount accumulated in equity is recognized in OCI.
The hedged item is reclassified to profit or loss in the period it affects profit or loss or is derecognized from equity and included directly in the carrying amount of the non-financial item

2. BASIS OF PREPARATION AND SIGNIFICANT ACCOUNTING POLICIES (CONT'D):

The Group designated only the intrinsic value of the option contract as the hedging instrument (i.e., except for the time value). The time value of the aligned option is recognized in OCI and is accumulated in the hedge cost reserve. If the hedged item is related to a transaction, the time value is reclassified to profit or loss when the hedged item affects profit or loss. If the hedged item is related to the period, the accumulated amount in the hedge cost reserve is reclassified to profit or loss on a reasonable basis, and the Group applies a straight-line amortization basis. The reclassified amount is recognized in profit or loss as the same item as the hedged item. If the hedged item is a non-financial item, the accumulated amount in the hedge cost reserve is derecognized directly from equity and included in the initial carrying amount of the recognized non-financial item. In addition, if the hedge cost reserve is a loss and it is expected that all or part of the loss will not be recovered in a future period, that amount will be reclassified to profit or loss immediately.

Note 39 provides details of the fair value of derivatives used for hedge purposes.

3) Fair value hedges

The gain or loss on the eligible hedging instrument is recognized in profit or loss. However, if the hedging instrument hedges equity instruments designated as at FVOCI, the gain or loss on the hedging instrument is recognized in OCI.

The carrying amount of the hedged item that is not measured at fair value is adjusted for changes in fair value attributable to the hedged risk and recognized in profit or loss. For FVOCI measurement debt instruments, gains and losses on the hedged risk are recognized in profit or loss rather than in OCI without adjusting the carrying amount because their carrying amount is already at fair value. Hedge when the hedged item is an equity instrument designated as at FVOCI. The gain or loss from the target risk is left in OCI to be aligned with the hedging instrument.

If the gain or loss attributable to the hedged risk is recognized in profit or loss, it is recognized as an item related to the hedged item.

An entity discontinues hedge accounting only if the hedging relationship (or part of the hedging relationship) does not qualify (if applicable, even after considering rebalancing of the hedging relationship). This includes the extinguishment, sale, termination and exercise of the hedging instrument and the discontinuation is accounted for prospectively. The fair value adjustment for the carrying amount of the hedged item attributable to the hedged risk is amortized to profit or loss from the date of discontinuation.

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 OCI. The gain or loss relating to the ineffective portion is recognized immediately in profit or loss and is included in the 'finance income and costs' line item.

Amounts previously recognized in OCI 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. However, when the forecast transaction that is hedged results in the recognition of a non-financial asset or a non-financial liability, the gains and losses previously accumulated in equity are transferred from equity and included in the initial measurement of the cost of the non-financial asset or non-financial liability. This transfer does not affect OCI. If that amount is a loss and an entity expect that all or a portion of that loss will not be recovered in one or more future periods, it shall immediately reclassify the amount that is not expected to be recovered into profit or loss as a reclassification adjustment.

Hedge accounting is discontinued when the Group revokes the hedging relationship, when the hedging instrument expires or is sold, terminated, or exercised, or when 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. BASIS OF PREPARATION AND SIGNIFICANT ACCOUNTING POLICIES (CONT'D):

(18) Greenhouse gas emissions rights (allowances) and obligations

In connection with Enforcement of Allocation and Trading of Greenhouse Gas Emissions Allowances, the Group applies the following accounting policies for greenhouse gas emissions rights and obligations.

1) Greenhouse gas emissions rights

Greenhouse gas emissions rights consist of the allowances received free of charge from the government and the ones purchased. The cost of the greenhouse gas emissions rights includes expenditures arising directly from the acquisition and any other costs incurred during normal course of the acquisition.

Greenhouse gas emissions rights are held by the Group to fulfill the legal obligation and recorded as intangible assets. To the extent that the portion must be submitted to the government within one year from the end of reporting period, the greenhouse gas emissions rights are classified as current assets. Greenhouse gas emissions rights recorded as intangible assets are initially measured at cost and substantially remeasured at cost less accumulated impairment losses.

Greenhouse gas emissions rights are derecognized on submission to the government or when no future economic benefits are expected from its use or disposal.

2) Greenhouse gas emissions obligations

Greenhouse gas emissions obligations are the Group's present legal obligations to submit the greenhouse gas emissions allowances to the government and recognized when an outflow of resources is probable and a reliable estimate can be made of the amount of the obligations. Greenhouse gas emissions obligations are measured as the sum of the carrying amount of the allocated rights that will be submitted to the government and the best estimate of expenditure required to settle the obligations at the end of the reporting period for any excess emission.

3. CRITICAL ACCOUNTING JUDGMENTS AND KEY SOURCES OF ESTIMATION UNCERTAINTY:

In the application of the Group's accounting policies, which are described in Note 2, management is required to make judgments, estimates and assumptions about the carrying amounts of assets and liabilities that are not readily apparent from other sources. The estimates and associated assumptions are based on historical experience and other factors that are considered to be relevant. 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.

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

(1) Useful lives of property, plant and equipment and intangible assets

The Group reviews the estimated useful lives of property, plant and equipment and intangible assets at the end of each annual reporting period. For estimating the useful lives of tangible and intangible assets, significant management judgment is required.

3. CRITICAL ACCOUNTING JUDGMENTS AND KEY SOURCES OF ESTIMATION UNCERTAINTY (CONT'D):

(2) Taxation

The Group recognized the current taxation and deferred income tax through the best estimation of expected tax effect, which is bore in future as the results of business activities as of December 31, 2016. However, the final taxation may differ with the estimation, this difference may influence taxation and deferred tax assets and liabilities when the final tax effect is decided.

(3) Fair value of financial instruments

The Group's accounting policies and disclosures require the measurement of fair values, for both financial and non-financial assets and liabilities. The Group has an established control framework with respect to the measurement of fair values. This includes a valuation team that has overall responsibility for overseeing all significant fair value measurements, including Level 3 fair values, and reports directly to the financial officer. The Group regularly reviews significant unobservable inputs and valuation adjustments. If third-party information, such as broker quotes or pricing services, is used to measure fair values, then the Group assesses the evidence obtained from the third parties to support the conclusion that such valuations meet the requirements of KIFRS, including the level in the fair value hierarchy in which such valuation techniques should be classified.

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

If the inputs used to measure the fair value of an asset or a liability are categorized into different levels of the fair value hierarchy, then the fair value measurement is categorized in its entirety in the same level of the fair value hierarchy as the lowest-level input that is significant to the entire measurement. The Group recognizes transfers between levels of the fair value hierarchy at the end of the reporting period during which the change has occurred.

(4) Employee benefits

The Group'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 Group's best estimates of the variables in determining the cost of providing postretirement benefits, such as discount rates, rates of expected future salary increases and mortality rates. Significant estimation uncertainty is likely to persist in making such assumptions due to the long-term nature of postretirement benefit plan.

4. OPERATING SEGMENT:

According to KIFRS 1108 *Operating Segments*, the reporting part of operating segment is applied to single segment; therefore, it does not report operating segment information separately. Sales attributable to KEPCO, the major customer, constitute ₩5,260,559 million and ₩5,398,519 million of consolidated sales for the years ended December 31, 2019 and 2018, respectively.

5. CLASSIFICATION OF FINANCIAL INSTRUMENTS (CONT'D):

(1) Classification of financial liabilities as of December 31, 2019 and 2018, is as follows (Korean won):

	December 31, 2019			
	Financial liabilities at FVTPL	Financial liabilities at amortized cost	Derivative liabilities (using hedge accounting)	Total
Current liabilities:				
Current financial liabilities:				
Borrowings	₩ -	₩ 20,840,277,593	₩ -	₩ 20,840,277,593
Debt securities	-	690,011,795,611	-	690,011,795,611
Derivative liabilities	3,442,027,766	-	59,327,273,067	62,769,300,833
Trade and other payables	-	639,799,746,123	-	639,799,746,123
	3,442,027,766	1,350,651,819,327	59,327,273,067	1,413,421,120,160
Non-current liabilities:				
Non-current financial liabilities:				
Borrowings	-	488,156,629,159	-	488,156,629,159
Debt securities	-	2,366,238,171,842	-	2,366,238,171,842
Trade and other payables	-	929,362,159,704	-	488,156,629,159
	-	3,783,756,960,705	-	3,783,756,960,705
	₩ 3,442,027,766	₩ 5,134,408,780,032	₩ 59,327,273,067	₩ 5,197,178,080,865

	December 31, 2018			
	Financial liabilities at FVTPL	Financial liabilities at amortized cost	Derivative liabilities (using hedge accounting)	Total
Current liabilities:				
Current financial liabilities:				
Borrowings	₩ -	₩ 101,904,040,000	₩ -	₩ 101,904,040,000
Debt securities	-	329,905,843,556	-	329,905,843,556
Derivative liabilities	1,016,571,112	-	-	1,016,571,112
Trade and other payables	-	553,561,711,121	-	553,561,711,121
	1,016,571,112	985,371,594,677	-	986,388,165,789
Non-current liabilities:				
Non-current financial liabilities:				
Borrowings	-	211,695,480,013	-	211,695,480,013
Debt securities	-	2,905,412,390,934	-	2,905,412,390,934
Derivative liabilities	-	-	79,780,118,827	79,780,118,827
Trade and other payables	-	41,805,629,884	-	41,805,629,884
	-	3,158,913,500,831	79,780,118,827	3,238,693,619,658
	₩ 1,016,571,112	₩ 4,144,285,095,508	₩ 79,780,118,827	₩4,225,081,785,447

5. CLASSIFICATION OF FINANCIAL INSTRUMENTS (CONT'D):

(2) Profit and loss from financial instruments for years ended December 31, 2019 and 2018, are as follows (Korean won):

	Accounts		December 31, 2019
Financial assets:			
Cash and cash equivalents	Interest income	₩	276,885,625
	Loss on changes in foreign exchange rates		(1,200,773,260)
Financial assets at FVOCI	Dividend income		20,125,847,499
	Gain on valuation of financial assets at FVOCI (equity before tax)		(9,611,258,367)
Financial assets at amortized cost	Interest income of receivables		827,037,054
	Interest income of loans		419,540,781
Financial assets at FVTPL	Interest income		4,225,909,177
	Dividend income		305,000,004
	Gain on disposal of Financial assets at FVTPL		874,505
	Gain on transaction of derivatives		14,369,615,352
Derivative assets (using hedge accounting)	Gain on valuation of derivatives (profit or loss)		11,910,000,000
	Gain on valuation of derivatives (equity before tax)		4,121,290,495
Financial liabilities:			
Financial liabilities at amortized cost	Loss on changes in foreign exchange rates		(58,068,334,730)
	Interest expenses of borrowings and debt securities		(89,129,732,047)
	Interest expenses of other liabilities		(31,756,308,311)
Financial liabilities at FVTPL	Loss on valuation of derivatives		(3,442,027,766)
	Loss on transaction of derivatives		(7,116,057,054)
Derivative liabilities (using hedge accounting)	Gain (loss) on valuation of derivatives (profit or loss)		7,322,250,000
	Gain (loss) on valuation of derivatives (equity before tax)		916,016,096

5. CLASSIFICATION OF FINANCIAL INSTRUMENTS (CONT'D):

	Accounts		December 31, 2018
Financial assets:			
Cash and cash equivalents	Interest income	₩	34,658,257
	Gain(Loss) on changes in foreign exchange rates		(7,089,067,735)
Financial assets at FVOCI	Dividend income		10,740,058,176
	Gain on valuation of financial assets at FVOCI (equity before tax)		66,136,485,260
Financial assets at amortized cost	Interest income of receivables		440,032,972
	Interest income of loans		597,801,230
	Other bad debt expenses		(17,747,886,760)
	Reversal of allowance for bad debt		18,139,121
Financial assets at FVTPL	Interest income		2,245,758,503
	Dividend income		211,717,877
	Gain on disposal of Financial assets at FVTPL		8,123,792
	Gain(Loss) on valuation of derivatives		10,814,399
	Gain on transaction of derivatives		12,348,330,938
Derivative assets (using hedge accounting)	Gain on transaction of derivatives (profit or loss)		14,010,000,000
Financial liabilities:			
Financial liabilities at amortized cost	Gain(Loss) on changes in foreign exchange rates		(12,171,615,613)
	Interest expenses of borrowings and debt securities		(92,436,230,472)
	Interest expenses of other liabilities		(3,391,875)
Financial liabilities at FVTPL	Gain (Loss) on valuation of derivatives		(1,016,571,112)
	Gain on transaction of derivatives		(5,483,844,467)
Derivative liabilities (using hedge accounting)	Gain (Loss) on valuation of derivatives (profit or loss)		(15,388,750,000)
	Gain on transaction of derivatives		(7,868,640,169)
	Gain on valuation of derivatives (equity before tax)		6,760,000,000

6. CASH AND CASH EQUIVALENTS:

(1) Cash and cash equivalents as of December 31, 2019 and 2018, are as follows (Korean won):

		December 31, 2019		December 31, 2018
Petty cash	₩	15,929,959,470	₩	183,470
Other demand deposits		84,252,849,637		43,171,559,411
Short-term deposits classified as cash equivalents		8,498,773		31,446,942
Short-term investments classified as cash equivalents		-		106,600,000,000
	₩	100,191,307,880	₩	149,803,189,823

(2) There are no cash and cash equivalents restricted in use as of December 31, 2019.

7. FINANCIAL ASSETS AT FVTPL:

(1) Financial assets at FVTPL as of December 31, 2019 and 2018, are as follows (Korean won):

	December 31, 2019		December 31, 2018	
	Current	Non-current	Current	Non-current
Restricted money trust	₩ 37,700,000,000	₩ -	₩ -	₩ -
Beneficiary certificates	-	3,747,787,048	-	3,852,780,540
	₩ 37,700,000,000	₩ 3,747,787,048	₩ -	₩ 3,852,780,540

8. DERIVATIVES:

(1) Derivatives as of December 31, 2019 and 2018, are as follows (Korean won):

	December 31, 2019		December 31, 2018	
	Current	Non-current	Current	Non-current
Derivative assets:				
Currency forward	₩ -	₩ -	₩ 10,814,399	₩ -
Currency swap	3,816,710,830	-	-	-
	3,816,710,830	-	10,814,399	-
Derivative liabilities:				
Currency forward	3,442,027,766	-	1,016,571,112	-
Currency swap	59,327,273,067	-	-	79,780,118,827
	₩ 62,769,300,833	₩ -	₩ 1,016,571,112	₩ 79,780,118,827

(2) Currency forward contracts as of December 31, 2019, are as follows (Korean won, USD):

			Contract amount		
Counterparty	Contract date	Maturity date	Sale price	Purchase price	Contract exchange rate
For trading:					
NongHyup Bank	2019.12.02	2020.01.03	9,436,400,000	USD 8,000,000	1,179.55
Mizuho	2019.12.03	2020.01.06	9,482,000,000	USD 8,000,000	1,185.25
KEB Hana Bank	2019.12.04	2020.01.07	8,349,740,000	USD 7,000,000	1,192.82
KB Bank	2019.12.05	2020.01.09	11,894,500,000	USD 10,000,000	1,189.45
China Construction Bank Corporation	2019.12.05	2020.01.09	11,895,000,000	USD 10,000,000	1,189.50
Standard Chartered	2019.12.06	2020.01.10	11,890,500,000	USD 10,000,000	1,189.05
Credit Agricole	2019.12.09	2020.01.13	11,884,700,000	USD 10,000,000	1,188.47
KEB Hana Bank	2019.12.10	2020.01.14	11,912,300,000	USD 10,000,000	1,191.23
KDB Development Bank	2019.12.11	2020.01.15	11,925,000,000	USD 10,000,000	1,192.50
NongHyup Bank	2019.12.11	2020.01.15	5,962,250,000	USD 5,000,000	1,192.45
Mizuho	2019.12.11	2020.01.15	5,962,500,000	USD 5,000,000	1,192.50
China Construction Bank Corporation	2019.12.12	2020.01.16	7,118,100,000	USD 6,000,000	1,186.35
Morgan Stanley	2019.12.16	2020.01.17	5,854,250,000	USD 5,000,000	1,170.85
Woori Bank	2019.12.19	2020.01.22	11,635,500,000	USD 10,000,000	1,163.55
Shinhan Bank	2019.12.19	2020.01.22	11,634,500,000	USD 10,000,000	1,163.45
China Construction Bank Corporation	2019.12.27	2020.01.31	11,596,500,000	USD 10,000,000	1,159.65
KB Bank	2019.12.30	2020.02.03	5,786,000,000	USD 5,000,000	1,157.20
KEB Hana Bank	2019.07.31	2020.07.14	4,993,461,000	USD 4,257,000	1,173.00

8. DERIVATIVES (CONT'D):

(3) Currency swap contracts as of December 31, 2019, are as follows (Korean won, USD, AUD):

Counterparty	Terms of the contract	Contract amount: Sale price		Contract amount: Purchase price		Contract interest rate (%): Sale price	Contract interest rate (%): Purchase price	Contract exchange rate
For cash-flow hedging:								
HSBC	2014–2020	₩	99,901,206,000	AUD	100,000,000	3.52	5.75	999.01
HSBC	2014–2020	₩	100,481,652,000	AUD	100,000,000	3.48	5.75	1,004.82
Standard Chartered	2013–2020	USD	117,250,000	AUD	125,000,000	LIBOR(3M) +1.25	5.75	0.94
Standard Chartered	2014–2020	₩	126,032,025,000	USD	117,250,000	3.55	LIBOR(3M) +1.25	1,074.90
Korea Development Bank	2017–2020	₩	114,580,000,000	USD	100,000,000	1.75	2.375	1,145.80
KEB Hana Bank	2017–2020	₩	114,580,000,000	USD	100,000,000	1.75	2.375	1,145.80
Export-Import Bank of Korea	2017–2020	₩	114,580,000,000	USD	100,000,000	1.75	2.375	1,145.80

(4) The gain and loss on valuation and transaction of derivatives for the years ended December 31, 2019 and 2018, are as follows (Korean won):

	December 31, 2019					
	Net income effects of valuation gain (loss)		Net income effects of transaction gain (loss)		Other comprehensive income (loss) (*)	
Currency forward	₩	(3,442,027,766)	₩	7,253,558,298	₩	-
Currency swap		19,232,250,000		-		5,037,306,591
	₩	15,790,222,234	₩	7,253,558,298	₩	5,037,306,591

	December 31, 2018					
	Net income effects of valuation gain (loss)		Net income effects of transaction gain (loss)		Other comprehensive income (loss) (*)	
Currency forward	₩	(1,005,756,713)	₩	6,864,486,471	₩	-
Currency swap		(1,378,750,000)		6,760,000,000		(7,868,640,169)
	₩	(2,384,506,713)	₩	13,624,486,471	₩	(7,868,640,169)

(*) OCI is presented before tax effect

9. TRADE AND OTHER RECEIVABLES:

(1) Trade and other receivables as of December 31, 2019 and 2018, are as follows (Korean won):

	December 31, 2019			
	Gross amount	Allowance for doubtful accounts	Present value discount	Book value
Current assets				
Trade receivables	₩ 415,869,680,929	₩ (2,559,253,012)	₩ -	₩ 413,310,427,917
Other receivables	718,329,155,636	(81,527,108,668)	(97,252,508)	636,704,794,460
	1,134,198,836,565	(84,086,361,680)	(97,252,508)	1,050,015,222,377
Non-current assets				
Other receivables	46,680,573,820	(22,158,076,244)	(370,057,598)	24,152,439,978
	₩ 1,180,879,410,385	₩ (106,244,437,924)	₩ (467,310,106)	₩ 1,074,167,662,355

	December 31, 2018			
	Gross amount	Allowance for doubtful accounts	Present value discount	Book value
Current assets				
Trade receivables	₩ 482,275,286,881	₩ (2,559,253,012)	₩ -	₩ 479,716,033,869
Other receivables	717,940,490,790	(109,046,311,374)	(9,146,952)	608,885,032,464
	1,200,215,777,671	(111,605,564,386)	(9,146,952)	1,088,601,066,333
Non-current assets				
Other receivables	40,912,901,128	(22,158,076,244)	(749,605,878)	18,005,219,006
	₩ 1,241,128,678,799	₩ (133,763,640,630)	₩ (758,752,830)	₩ 1,106,606,285,339

The above trade and other receivables are classified as financial assets at amortized cost and measured by amortized cost.

(2) Other receivables as of December 31, 2019 and 2018, are as follows (Korean won):

	December 31, 2019			
	Gross amount	Allowance for doubtful accounts	Present value discount	Book value
Current assets:				
Other receivables	₩ 427,923,117,193	₩ (81,527,108,668)	₩ -	₩ 346,396,008,525
Accrued income	275,176,712,747	-	-	275,176,712,747
Deposits	15,229,325,696	-	(97,252,508)	15,132,073,188
	718,329,155,636	(81,527,108,668)	(97,252,508)	636,704,794,460
Non-current assets:				
Other receivables	23,693,784,768	(22,158,076,244)	-	1,535,708,524
Deposits	2,970,991,338	-	(370,057,598)	2,600,933,740
Others	20,015,797,714	-	-	20,015,797,714
	46,680,573,820	(22,158,076,244)	(370,057,598)	24,152,439,978
	₩ 765,009,729,456	₩ (103,685,184,912)	₩ (467,310,106)	₩ 660,857,234,438

9. TRADE AND OTHER RECEIVABLES (CONT'D):

	December 31, 2018			
	Gross amount	Allowance for doubtful accounts	Present value discount	Book value
Current assets:				
Other receivables	₩ 455,442,706,065	₩(109,046,311,374)	₩ -	₩ 346,396,394,691
Accrued income	258,094,943,231	-	-	258,094,943,231
Deposits	4,402,841,494	-	(9,146,952)	4,393,694,542
	717,940,490,790	(109,046,311,374)	(9,146,952)	608,885,032,464
Non-current assets:				
Other receivables	23,693,784,768	(22,158,076,244)	-	1,535,708,524
Deposits	16,582,116,360	-	(749,605,878)	15,832,510,482
Others	637,000,000	-	-	637,000,000
	40,912,901,128	(22,158,076,244)	(749,605,878)	18,005,219,006
	₩ 758,853,391,918	₩(131,204,387,618)	₩ (758,752,830)	₩ 626,890,251,470

(3) Aging analysis of trade receivables as of December 31, 2019 and 2018, is as follows (Korean won):

	December 31, 2019	December 31, 2018
Trade receivables (not overdue and not impaired):	₩ 412,970,417,668	₩ 478,043,527,918
Trade receivables (overdue, but not impaired):	340,010,249	1,672,505,951
- 60–90 days	-	1,332,495,702
- 90–120 days	-	-
- 120 days–1 year	-	-
- More than 1 year	340,010,249	340,010,249
Trade receivables (impairment loss recognized):	2,559,253,012	2,559,253,012
- Less than 120 days	-	-
- 120 days–1 year	-	-
- More than 1 year	2,559,253,012	2,559,253,012
	415,869,680,929	482,275,286,881
Less: Allowance for doubtful accounts	(2,559,253,012)	(2,559,253,012)
	₩ 413,310,427,917	₩ 479,716,033,869

The average credit period for product sales is 60 days. Interest is not charged on trade receivables for the first 60 days from the date of billing, but interest is then charged on the outstanding balance. At the end of each reporting period, the Group evaluates whether credit on receivables has been impaired. As there is objective evidence on the occurrence of impairment of trade receivables, provisions are made for credit loss individually for significant items. Trade receivables excluding individual valuation are classified as trade receivables subject to collective valuation, and credit loss provisions are set according to the expected credit loss model.

9. TRADE AND OTHER RECEIVABLES (CONT'D):

(4) Aging analysis of other receivables as of December 31, 2019 and 2018 is as follows (Korean won):

	December 31, 2019	December 31, 2018
Other receivables (not overdue and not impaired)	₩ 644,435,415,958	₩ 621,410,723,283
Other receivables (overdue but not impaired):	16,889,128,586	6,238,281,017
- 60–90 days	14,466,013	505,743,914
- 90–120 days	1,626,763,868	28,597,650
- 120 days–1 year	1,737,416,022	4,091,752
- More than 1 year	13,510,482,683	5,699,847,701
Other receivables (impairment loss recognized):	103,685,184,912	131,204,387,618
- Less than 120 days	-	10,632,926,700
- 120 days–1 year	14,384,608,794	20,057,653,044
- More than 1 year	89,300,576,118	100,513,807,874
	765,009,729,456	758,853,391,918
Less: Allowance for doubtful accounts	(103,685,184,912)	(131,204,387,618)
Less: Present value discount	(467,310,106)	(758,752,830)
	₩ 660,857,234,438	₩ 626,890,251,470

All other financial assets measured at amortized cost excluding lease receivables are considered to have a low credit risk, and as a result, credit loss was recognized as a 12-month expected credit loss. Management considers publicly traded corporate bonds that have an investment rating of at least one major credit rating agency to be 'low credit risk'. Other financial instruments are considered to have a low credit risk if the risk of default is low and the issuer has sufficient ability to pay contractual cash flows in a short period of time. Lease receivables apply a simple method of recognizing expected credit losses for the entire period as provisions.

(5) Changes in allowance for doubtful accounts for the years ended December 31, 2019 and 2018, are as follows (Korean won):

	December 31, 2019		December 31, 2018	
	Trade receivables	Other receivables	Trade receivables	Other receivables
Beginning balance	₩ 2,559,253,012	₩ 131,204,387,618	₩ 8,349,964,121	₩ 90,623,762,257
Allowance for bad debts	-	23,351,110	-	17,747,886,760
Reversal of allowance for bad debts	-	(41,900,000,000)	-	-
Write off	-	-	(5,790,711,109)	-
Others	-	14,357,446,184	-	22,832,738,601
Ending balance	₩ 2,559,253,012	₩ 103,685,184,912	₩ 2,559,253,012	₩ 131,204,387,618

The Group considers changes in the credit rating of trade receivables from the date of commencement of credit to the end of the reporting period in determining the collectability of trade receivables.

10. FINANCIAL ASSETS AT FVOCI:

(1) Changes in financial assets at FVOCI for the years ended December 31, 2019 and 2018, are as follows (Korean won):

	December 31, 2019			
	Beginning balance	Valuation	Others (*)	Ending balance
Equity securities:				
Listed	₩ 248,309,770,176	₩ (10,111,921,367)	₩ -	₩ 238,197,848,809
Unlisted	21,812,539,092	(5,215,112,000)	173,689,212	16,771,116,304
	₩ 270,122,309,268	₩ (15,327,033,367)	₩ 173,689,212	₩ 254,968,965,113

(*) Others are due to change in exchange rate.

	December 31, 2018				
	Beginning balance	Effect of change in Accounting policy	Valuation	Others (*)	Ending balance
Equity securities:					
Listed	₩182,184,538,916	₩ -	₩ 66,125,231,260	₩ -	₩ 248,309,770,176
Unlisted	26,506,881,084	(4,327,739,642)	11,254,000	(377,856,350)	21,812,539,092
	₩208,691,420,000	₩ (4,327,739,642)	₩ 66,136,485,260	₩ (377,856,350)	₩ 270,122,309,268

(*) Others are due to change in exchange rate.

(2) Financial assets at FVOCI as of December 31, 2019 and 2018, are as follows (Korean won):

			December 31, 2019 (Non-current)		
	Number of stock	Ownership (%)	Acquisition cost	Book value	Fair value
Equity securities					
Listed:					
PT Adaro Energy TBK (Indonesia)	480,000,000	1.5	₩ 65,027,820,453	₩ 62,025,840,000	₩ 62,025,840,000
PT. Bayan Resources TBK (Indonesia)	133,333,340	4.0	80,560,295,915	176,172,008,809	176,172,008,809
Unlisted:					
KPX	-	7.1	9,131,374,714	16,363,918,000	16,363,918,000
KEPCO-Uhde Inc.	103,230	2.4	516,150,000	14,198,304	14,198,304
HeeMang Sunlight Power Co., Ltd.	78,600	8.3	393,000,000	393,000,000	393,000,000
KEPCO Bylong Australia Pty., Ltd. (*)	3,537,000	2.0	6,331,601,392	-	-
KODE NOVUS I LLC	-	10.0	-	-	-
			₩161,960,242,474	₩254,968,965,113	₩254,968,965,113

(*) The Group has estimated the fair value of KEPCO Bylong Australia Pty., Ltd. by using the discounted cash flow method (income approach) and recognized changes in fair value as accumulated OCI.

10. FINANCIAL ASSETS AT FVOCI (CONT'D):

	Number of stock	Ownership (%)	December 31, 2018 (Non-current) Acquisition cost	Book value	Fair value
Equity securities					
Listed:					
PT Adaro Energy TBK (Indonesia)	480,000,000	1.5	₩ 65,027,820,453	₩ 44,789,760,000	₩ 44,789,760,000
PT. Bayan Resources TBK (Indonesia)	133,333,340	4.0	80,560,295,915	203,520,010,176	203,520,010,176
Unlisted:					
KPX	-	7.1	9,131,374,714	15,863,255,000	15,863,255,000
KEPCO-Uhde Inc.	103,230	2.4	516,150,000	14,198,304	14,198,304
HeeMang Sunlight Power Co., Ltd.	78,600	8.3	393,000,000	393,000,000	393,000,000
KEPCO Bylong Australia Pty., Ltd.	3,537,000	2.0	6,331,601,392	5,542,085,788	5,542,085,788
KODE NOVUS I LLC	-	10.0	-	-	-
			₩ 161,960,242,474	₩ 270,122,309,268	₩ 270,122,309,268

11. LOANS AND FINANCIAL INSTRUMENTS:

(1) Loans included in current and non-current financial assets as of December 31, 2019 and 2018, are as follows (Korean won):

	December 31, 2019 Gross amount	Allowance for doubtful accounts	Present value discount	Book value
Current assets:				
Loans for tuition	₩ 1,319,373,867	₩ -	₩ (84,506,070)	₩ 1,234,867,797
Loans for housing	939,863,110	-	-	939,863,110
	2,259,236,977	-	(84,506,070)	2,174,730,907
Non-current assets:				
Loans for tuition	13,174,828,883	-	(525,989,654)	12,648,839,229
Loans for housing	12,618,272,320	-	-	12,618,272,320
Others	5,510,000,000	(2,465,000,000)	-	3,045,000,000
	31,303,101,203	(2,465,000,000)	(525,989,654)	28,312,111,549
	₩ 33,562,338,180	₩ (2,465,000,000)	₩ (610,495,724)	₩ 30,486,842,456

11. LOANS AND FINANCIAL INSTRUMENTS (CONT'D):

	December 31, 2018			
	Gross amount	Allowance for doubtful accounts	Present value discount	Book value
Current assets:				
Loans for tuition	₩ 748,388,720	₩ -	₩ (39,285,913)	₩ 709,102,807
Loans for housing	655,826,680	-	-	655,826,680
	1,404,215,400	-	(39,285,913)	1,364,929,487
Non-current assets:				
Loans for tuition	13,571,699,004	-	(470,920,759)	13,100,778,245
Loans for housing	10,900,553,410	-	-	10,900,553,410
Others	5,510,000,000	(2,465,000,000)	-	3,045,000,000
	29,982,252,414	(2,465,000,000)	(470,920,759)	27,046,331,655
	₩ 31,386,467,814	₩ (2,465,000,000)	₩ (510,206,672)	₩ 28,411,261,142

(2) Changes allowance for doubtful accounts of the Group's loans for the years ended December 31, 2019 and 2018, are as follows (Korean won):

	Year ended December 31, 2019	Year ended December 31, 2018
Beginning balance	₩ 2,465,000,000	₩ 6,482,750,000
Write-off	-	(4,017,750,000)
Ending balance	₩ 2,465,000,000	₩ 2,465,000,000

(3) Long-term and short-term financial instruments included in current and non-currents financial assets as of December 31, 2019 and 2018, are as follows (Korean won):

	December 31, 2019		December 31, 2018	
	Current	Non-current	Current	Non-current
Time deposit	₩ 25,000,000,000	₩ -	₩ 20,000,000,000	₩ -

(4) Financial instruments that are restricted in use as of December 31, 2019 and 2018, are as follows (Korean won):

	Description	December 31, 2019	December 31, 2018
Time deposit	Small and medium enterprises support deposits	₩ 25,000,000,000	₩ 20,000,000,000

12. INVENTORIES:

Inventories as of December 31, 2019 and 2018, are as follows (Korean won):

	December 31, 2019		December 31, 2018	
	Gross amount	Carrying value	Gross amount	Carrying value
Raw-materials	₩ 131,044,967,448	₩ 131,044,967,448	₩ 143,068,768,849	₩ 143,068,768,849
Supplies	60,138,447,998	60,138,447,998	62,199,423,673	62,199,423,673
Inventories-in-transit	105,215,009,123	105,215,009,123	228,449,383,426	228,449,383,426
	₩ 296,398,424,569	₩ 296,398,424,569	₩ 433,717,575,948	₩ 433,717,575,948

The cost of inventories, which was included in the cost of sales, amounted to ₩3,721,172million and ₩4,137,718 million for the years ended December 31, 2019 and 2018, respectively.

13. NON-FINANCIAL ASSETS:

Non-financial assets as of December 31, 2019 and 2018, are as follows (Korean won):

	December 31, 2019		December 31, 2018	
	Current	Non-current	Current	Non-current
Advanced payments	₩ 34,696,632,261	₩ -	₩ 44,737,220,504	₩ -
Prepaid expenses	6,215,307,405	3,606,016,659	5,955,097,176	3,496,273,608
Greenhouse gas emission right	136,452,385,250	-	56,963,845,940	-
Value-added tax refund receivables	16,437,284,257	-	41,675,836,115	-
Others	2,836,373,879	22,194,911,774	1,512,472,721	695,951,354
	₩ 196,637,983,052	₩ 25,800,928,433	₩ 150,844,472,456	₩ 4,192,224,962

14. INVESTMENTS IN SUBSIDIARIES:

(1) Investments in subsidiaries as of December 31, 2019 and 2018 are as follows (Korean won) :

Subsidiaries	Location	Key operation activities	December 31, 2019 Percentage of ownership (%)	December 31, 2019 Percentage of non-controlling interest (%)	December 31, 2018 Percentage of ownership (%)	December 31, 2018 Percentage of non-controlling interest (%)
KOSEP Australia Pty., Ltd.	Australia	Resources development	100.0%	-	100.0%	-
KOSEP USA, INC.	USA	Wind power generation	100.0%	-	100.0%	-
Mira Power Limited(*1)	Pakistan	Hydroelectric power generation	76.0%	24.0%	76.0%	24.0%
KOSEP Material Co., Ltd.	Korea	Manufacturing industrial material with fly ash	86.2%	13.8%	86.2%	13.8%
VI Carbon Professional Private Special Asset Investment Trust 1	Korea	Investment management	96.7%	3.3%	96.7%	3.3%
KOEN Bylong Pty., Ltd.	Australia	Resources development	100.0%	-	100.0%	-
PT. Korea Energy Indonesia	Indonesia	Thermal power generation and operation of utility plant	95.0%	5.0%	95.0%	5.0%
KOLAT	Chile	Solar energy generation	100.0%	-	100.0%	-
KOEN Service Co., Ltd.	Korea	Facility maintenance and service	100.0%	-	100.0%	-
Tamra Offshore Wind Power Co., Ltd(*2)(*3)	Korea	Wind power generation	63.0%	37.0%	-	-
SE Green Energy Co., Ltd(*2)	Korea	Power generation and support	84.8%	15.2%	-	-
KOAK Power Limited(*4)	Pakistan	Hydroelectric power generation	100.0%	-	-	-

(*1) The Group acquires additional shares with additional investment for the year ended December 31, 2019.

(*2) It is reclassified from associates to subsidiaries due to acquisition of control power with additional shares and all of shares are transferred to investment in subsidiary during the year ended December 31, 2019.

(*3) In relation to the acquisition of additional shares, there is a settlement condition due on September 14, 2020 according to average utilization rate (Electric power generation). And, if the average utilization rate is less than the standard utilization rate, it can terminate the stock purchase agreement.

(*4) The Group acquires shares of newly established company for the year ended December 31, 2019.

14. INVESTMENTS IN SUBSIDIARIES (CONT'D):

(2) Summary of financial information of subsidiaries as of and for the years ended December 31, 2019 and 2018, is as follows (Korean won):

	December 31, 2019			
Subsidiaries	Total assets	Total liabilities	Sales	Profit (loss) for the period
KOSEP Australia Pty., Ltd.	₩ 32,782,203,337	₩ 2,911,459,857	₩ 15,513,680,363	₩ 3,935,046,952
KOSEP USA, INC.	1,140,433	5,147,358,853	-	(118,578,218)
Mira Power Limited	356,111,190,622	285,576,911,552	-	(970,851,268)
KOSEP Material Co., Ltd.	2,788,018,899	1,185,797,409	3,357,389,628	21,990,973
VI Carbon Professional Private Special Asset Investment Trust 1	3,001,630,845	1,550	-	11,887,489
KOEN Bylong Pty., Ltd.	1,621	38,981,001	-	(14,294,434)
PT. Korea Energy Indonesia	1,591,695,065	121,392,957	2,462,023,109	322,682,177
KOLAT	31,177,697,771	167,356,192	655,855,723	(295,732,337)
KOEN Service Co., Ltd.	5,347,304,829	4,252,154,103	25,889,635,886	542,667,278
Tamra Offshore Wind Power Co., Ltd.	156,708,160,891	121,724,253,469	19,670,443,737	1,154,416,336
SE Green Energy Co., Ltd.	132,727,259,698	105,619,015,218	-	816,023,194
KOAK Power Limited	15,929,595,000	-	-	-

	December 31, 2018			
Subsidiaries	Total assets	Total liabilities	Sales	Profit (loss) for the period
KOSEP Australia Pty., Ltd.	₩ 37,057,432,190	₩ 2,831,755,747	₩ 20,293,896,904	₩ 7,314,680,316
KOSEP USA, INC.	1,141,021	4,857,158,794	-	4,341,483,242
Mira Power Limited	277,524,759,156	213,104,069,329	-	(2,624,694,728)
KOSEP Material Co., Ltd.	2,861,561,355	1,249,046,143	3,240,282,625	376,820,531
VI Carbon Professional Private Special Asset Investment Trust 1	3,001,531,997	1,550	-	11,788,570
KOEN Bylong Pty., Ltd.	5,544,462,611	26,367,213	-	(25,041,106)
PT. Korea Energy Indonesia	1,183,054,298	59,882,931	1,458,870,637	223,068,457
KOLAT	38,362,135,746	473,550,201	584,997,997	(186,470,922)
KOEN Service Co., Ltd	583,394,597	30,911,149	-	(47,516,552)

14. INVESTMENTS IN SUBSIDIARIES (CONT'D):

(3) Details of non-controlling interest as of December 31, 2019 and 2018, are as follows (Korean won):

	December 31, 2019							
Description	Mira Power Limited	KOSEP Material Co., Ltd.	VI Carbon Professional Private Special Asset Investment Trust 1	Koen Bylong Pty., Ltd.	PT. Korea Energy Indonesia	Tamra Offshore Wind Power Co., Ltd.	SE Green Energy Co., Ltd.	Total
Percentage of non-controlling interests	24.00%	13.78%	3.33%	-	5.00%	37.00%	15.20%	
Current assets	41,588,740,975	2,623,951,075	56,630,845	1,621	1,562,838,310	26,306,180,398	7,815,802,412	79,954,145,636
Non-current assets	314,522,449,647	164,067,824	2,945,000,000	-	28,856,755	130,401,980,493	124,911,457,286	572,973,812,005
Current liabilities	19,856,652,393	415,567,322	1,550	38,981,001	121,392,957	11,099,253,469	661,015,218	32,192,863,910
Non-current liabilities	265,720,259,159	770,230,087	-	-	-	110,625,000,000	104,958,000,000	482,073,489,246
Net assets	70,534,279,070	1,602,221,490	3,001,629,295	(38,979,380)	1,470,302,108	34,983,907,422	27,108,244,480	138,661,604,485
Book value of non-controlling interests	16,928,226,978	220,750,516	100,054,310	(38,981,124)	73,515,105	12,944,045,743	4,119,664,557	34,347,276,085
Sales	-	3,357,389,628	-	-	2,462,023,109	19,670,443,737	-	25,489,856,474
Profit (loss) for the period	(970,851,268)	21,990,973	11,887,489	(14,294,434)	322,682,177	1,154,416,336	816,023,194	1,341,854,467
Total comprehensive income (loss) for the period	(4,095,673,326)	(10,293,722)	11,887,489	(5,557,074,778)	416,965,304	1,154,416,336	816,023,194	(7,263,749,503)
Profit (loss) for the period attributable to non-controlling interest	(233,004,304)	3,029,867	396,250	(14,294,434)	12,642,381	427,134,044	124,011,787	319,915,591
Total comprehensive income (loss) for the period attributable to non-controlling interests	(982,961,599)	(1,418,246)	396,250	(5,557,074,778)	17,356,537	427,134,044	124,011,787	(5,972,556,005)
Cash flows from operating activities	7,100,442,899	(103,442,545)	11,789,229	-	117,013,805	10,718,524,530	(976,769,509)	16,867,558,409
Cash flows from investing activities	(101,191,422,740)	(5,000,000)	-	-	(5,250,465)	-	(99,285,254,707)	(200,486,927,912)
Cash flows from financing activities before dividends to non-controlling interests	98,683,303,056	(17,312,000)	(11,788,641)	-	-	(17,156,000,000)	106,759,136,700	188,257,339,115
Effect of exchange rate fluctuation on cash held	(1,975,056,073)	-	-	45	75,955,748	-	-	(1,899,100,280)
Other increase (decrease) in cash and cash equivalents (*)	-	-	-	-	-	31,736,132,102	657,013,036	32,393,145,138
Net increase (decrease) in cash and cash equivalents	2,617,267,142	(125,754,545)	588	45	187,719,088	25,298,656,632	7,154,125,520	35,132,014,470

(*) The amount represents the cash and cash equivalents balance at the time of obtaining control over Tamra Offshore Wind Power Co., Ltd., and SE Green Energy Co., Ltd. which were reclassified from associates to subsidiaries due to acquisition of additional shares during the year ended December 31, 2019.

14. INVESTMENTS IN SUBSIDIARIES (CONT'D):

	December 31, 2018					
Description	Mira Power Limited	KOSEP Material Co., Ltd.	VI Carbon Professional Private Special Asset Investment Trust 1	Koen Bylong Pty., Ltd.	PT. Korea Energy Indonesia	Total
Percentage of non-controlling interests	24.00%	13.78%	3.33%	-	5.00%	
Current assets	₩ 45,476,100,665	₩ 2,721,884,232	₩ 56,531,997	₩ 2,376,823	₩ 1,151,796,897	₩49,408,690,614
Non-current assets	232,048,658,491	139,677,123	2,945,000,000	5,542,085,788	31,257,401	240,706,678,803
Current liabilities	10,165,999,316	708,732,925	1,550	26,367,213	59,882,931	10,960,983,935
Non-current liabilities	202,938,070,013	540,313,218	-	-	-	203,478,383,231
Net assets	64,420,689,827	1,612,515,212	3,001,530,447	5,518,095,398	1,123,171,367	75,676,002,251
Book value of non-controlling interests	15,460,965,555	222,168,763	100,051,015	5,518,093,654	56,158,568	21,357,437,555
Sales	-	3,240,282,625	-	-	1,458,870,637	4,699,153,262
Net income (loss)	(2,624,694,728)	376,820,531	11,788,570	(25,041,106)	223,068,457	(2,038,058,276)
Total comprehensive income (loss) for the year	(13,098,770,247)	309,766,630	11,788,570	(616,603,686)	200,202,275	(13,193,616,458)
Net income (loss) attributable to non-controlling interest	(629,926,735)	51,917,495	392,952	(25,041,106)	11,153,423	(591,503,971)
Total comprehensive income (loss) for the year attributable to non-controlling interests	(3,143,704,860)	42,678,958	392,952	(616,603,686)	10,010,114	(3,707,226,522)
Cash flows from operating activities	17,207,754,583	1,353,697,086	11,788,538	-	47,827,925	18,621,068,132
Cash flows from investing activities	(93,346,083,378)	1,113,000	-	-	(35,199,604)	(93,380,169,982)
Cash flows from financing activities before dividends to non-controlling interests	78,927,262,817	-	(11,832,749)	-	908,877,684	79,824,307,752
Effect of exchange rate fluctuation on cash held	(5,297,855,468)	-	-	(94)	(7,143,456)	(5,304,999,018)
Net increase (decrease) in cash and cash equivalents	(2,508,921,446)	1,354,810,086	(44,211)	(94)	914,362,549	(239,793,116)

15. INVESTMENTS IN ASSOCIATES AND JOINT VENTURES:

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

			December 31, 2019		
Investees	Key operation activities	Location	Percentage of ownership (%)	Acquisition cost	Book value
Associates:					
Hyundai Energy Co., Ltd. (*1,2)	Energy production	Korea	30.7	₩ 71,070,000,000	₩ -
S-Power Co., Ltd.	Energy production	Korea	49.0	132,300,000,000	115,784,303,601
Ecollite Co., Ltd. (*3)	Energy production, construction and others	Korea	36.1	1,516,074,400	-
Korea Offshore Wind Power Co., Ltd. (*4)	Wind power generation	Korea	12.5	26,600,000,000	21,295,840,981
SE Green Energy Co., Ltd. (*8)	Power generation and support	Korea	-	-	-
Jinbhuvish Power Generations Pvt. Ltd. (*4,7)	Thermal power generation	India	5.2	9,000,154,032	-
Nepal Water & Energy Development Company Pty., Ltd. (*5)	Hydroelectric power generation and operation of utility plant	Nepal	57.7	35,571,378,004	31,144,649,008
Goseong Green Power Co., Ltd. (*4)	Coal thermal power generation	Korea	1.1	2,900,000,000	2,339,784,105
Gangneung Eco Power Co., Ltd. (*4)	Coal thermal power generation	Korea	1.6	2,900,000,000	2,429,778,953
Tamra Offshore Wind Power Co., Ltd. (*8)	Wind power generation	Korea	-	-	-
KEPCO Energy Solution Co., Ltd. (*4)	Energy Efficiency	Korea	8.3	25,000,000,000	25,507,964,656
Solar School Plant Co., Ltd. (*4)	Solar power generation	Korea	8.3	16,650,000,000	17,104,578,226
PND solar., Ltd.	Solar power generation	Korea	29.0	1,249,900,000	1,144,190,890
Hyundai Eco Energy Co., Ltd. (*4)	Solar power generation	Korea	19.0	3,610,000,000	3,781,253,843
				328,367,506,436	220,532,344,263
Joint ventures:					
ASM-BG Investicii AD	Solar power generation	Bulgaria	50.0	16,101,188,249	19,376,008,669
RES Technology AD	Solar power generation	Bulgaria	50.0	15,594,778,376	16,247,709,243
Global Trade of Power System Co., Ltd. (*6)	Exporting products and technology of small- or medium-sized business by proxy	Korea	29.0	290,000,000	570,767,729
Expressway Solar-light Power Generation Co., Ltd. (*6)	Solar power generation	Korea	29.0	1,856,000,000	2,882,710,413
Chile Solar JV SpA	Solar power generation	Chile	50.0	37,689,063,915	34,858,510,189
Cheongsong Myeonbong Mt Wind Power, Co, Ltd. (*6)	Wind power generation	Korea	29.0	2,900,000,000	2,763,863,806
Jaeun People Wind Power Plant Co., Ltd (*6)	Wind power generation	Korea	29.0	2,494,000,000	2,198,002,202
				76,925,030,540	78,897,572,251
				₩ 405,292,536,976	₩ 299,429,916,514

15. INVESTMENTS IN ASSOCIATES AND JOINT VENTURES (CONT'D):

Investees	Key operation activities	Location	December 31, 2018 Percentage of ownership (%)	Acquisition cost	Book value
Associates:					
Hyundai Energy Co., Ltd. (*1,2)	Energy production	Korea	30.7	₩ 71,070,000,000	₩ -
S-Power Co., Ltd.	Energy production	Korea	49.0	132,300,000,000	114,565,834,887
Ecollite Co., Ltd. (*3)	Energy production, construction and others	Korea	36.1	1,516,074,400	-
Korea Offshore Wind Power Co., Ltd. (*4)	Wind power generation	Korea	12.5	26,600,000,000	22,467,059,439
SE Green Energy Co., Ltd .(*8)	Power generation and support	Korea	47.8	3,820,800,000	3,365,999,620
Jinbhuvish Power Generations Pvt. Ltd. (*4,7)	Thermal power generation	India	5.2	9,000,154,032	-
Nepal Water & Energy Development Group Pty., Ltd. (*5)	Hydroelectric power generation and operation of utility plant	Nepal	57.7	35,571,378,004	30,960,686,313
Goseong Green Power Co., Ltd. (*4)	Coal thermal power generation	Korea	1.1	2,900,000,000	2,459,184,751
Gangneung Eco Power Co., Ltd. (*4)	Coal thermal power generation	Korea	1.6	2,900,000,000	2,494,749,943
Tamra Offshore Wind Power Co., Ltd. (*8)	Wind power generation	Korea	27.0	8,910,000,000	10,400,836,090
KEPCO Energy Solution Co., Ltd. (*4)	Solar power generation	Korea	8.3	25,000,000,000	25,271,190,072
Solar School Plant Co., Ltd. (*4)	Energy Efficiency	Korea	8.3	16,650,000,000	16,892,726,416
PND Solar Ltd.	Solar power generation	Korea	29.0	1,249,900,000	1,019,782,969
Hyundai Eco Energy Co., Ltd. (*4)	Solar power generation	Korea	19.0	3,610,000,000	3,388,008,144
				341,098,306,436	233,286,058,644
Joint ventures:					
ASM-BG Investicii AD	Solar power generation	Bulgaria	50.0	16,101,188,249	21,379,137,961
RES Technology AD	Solar power generation	Bulgaria	50.0	15,594,778,376	15,208,842,076
Global Trade of Power System Co., Ltd. (*6)	Exporting products and technology of small- or medium-sized business by proxy	Korea	29.0	290,000,000	515,148,578
Expressway Solar-light Power Generation Co., Ltd. (*6)	Solar power generation	Korea	29.0	1,856,000,000	2,676,033,278
Chile Solar JV SpA	Solar power generation	Chile	50.0	37,689,063,915	36,865,046,348
				71,531,030,540	76,644,208,241
				₩ 412,629,336,976	₩ 309,930,266,885

15. INVESTMENTS IN ASSOCIATES AND JOINT VENTURES (CONT'D):

(*1) As of December 31, 2019, and 2018, 15.6% of ownership of Hyundai Energy Co., Ltd. is held by NH Power ll Co., Ltd. and NH Bank. According to the shareholders' agreement entered in March 2011, not only does the Group has a call option to acquire the investment in Hyundai Energy Co., Ltd. from NH Power ll Co., Ltd. and NH Bank with a certain rate of return, NH Power ll Co., Ltd. and NH Bank also have put options to dispose of their investments to the Group. In connection with this agreement, the Group applied the equity method on the investment in Hyundai Energy Co., Ltd. with 46.3% of ownership.

(*2) As Hyundai Energy Co., Ltd. incurred operating loss continuously, the Group assessed the recoverable amount. As a result, the Group recognized impairment loss of the difference between carrying amount and recoverable amount before the year ended December 31, 2018 and classified it as a loss on investments in associates and joint ventures in the consolidated statement of comprehensive income.

(*3) The Group recognized impairment loss in full as Ecollite Co., Ltd. discontinued its operating activities.

(*4) The effective percentage of ownership is less than 20%. However, the Group can exercise significant influence by virtue of its contractual right to appoint directors to the board of directors of the entity, and by strict decision criteria of the Group's financial and operating policy of the board of directors. With this reason, the Group has classified the investees as its associates.

(*5) The effective percentage of ownership is more than 50% but the Group does not hold control over the entity according to the shareholders' agreement. For this reason, the Group has classified the investee as an associate.

(*6) In accordance with the shareholders' agreement, the Group makes all critical financial and operating decisions jointly with other investors. Therefore, the entities are classified as joint ventures.

(*7) Due to discontinuance of operations, the Group recognized impairment loss on investments in associates and joint ventures previous to the year ended December 31, 2018.

(*8) For the year ended December 31, 2019, the Group acquired control over the entities with an additional acquisition of shares. Therefore, the entities are classified as investments in subsidiaries.

15. INVESTMENTS IN ASSOCIATES AND JOINT VENTURES (CONT'D):

(2) Changes in investments in associates and joint ventures for the years December 31, 2019 and 2018, are as follows (Korean won):

	December 31, 2019						
Investees	Beginning balance	Acquisition	Income (loss) on valuation	Share in other comprehensive income	Dividends	Transfer	Ending balance
Associates:							
Hyundai Energy Co., Ltd.	₩ -	₩ -	₩ -	₩ -	₩ -	₩ -	₩ -
S-Power Co., Ltd.	114,565,834,887	-	1,218,468,714	-	-	-	115,784,303,601
Ecollite Co., Ltd. (*1)	-	-	-	-	-	-	-
Korea Offshore Wind Power Co., Ltd.	22,467,059,439	-	(1,171,218,458)	-	-	-	21,295,840,981
SE Green Energy Co., Ltd (*3).	3,365,999,620	-	(74,957,650)	-	-	(3,291,041,970)	-
Jinbhuvish Power Generations Pvt. Ltd. (*2)	-	-	-	-	-	-	-
Nepal Water & Energy Development Company Pty., Ltd.	30,960,686,313	-	(854,519,959)	1,038,482,654	-	-	31,144,649,008
Goseong Green Power Co., Ltd.	2,459,184,751	-	(119,400,646)	-	-	-	2,339,784,105
Gangneung Eco Power Co., Ltd.	2,494,749,943	-	(64,970,990)	-	-	-	2,429,778,953
Tamra Offshore Wind Power Co., Ltd.(*3)	10,400,836,090	-	-	-	-	(10,400,836,090)	-
KEPCO Energy Solution Co., Ltd.	25,271,190,072	-	236,774,584	-	-	-	25,507,964,656
Solar School Plant Co., Ltd.	16,892,726,416	-	211,851,810	-	-	-	17,104,578,226
PND solar., Ltd.	1,019,782,969	-	124,407,921	-	-	-	1,144,190,890
Hyundai Echo Energy Co., Ltd.	3,388,008,144	-	393,245,699	-	-	-	3,781,253,843
Joint ventures:							
ASM-BG Investicii AD	21,379,137,961	-	2,441,694,750	315,052,166	(4,759,876,208)	-	19,376,008,669
RES Technology AD	15,208,842,076	-	962,685,256	76,181,911	-	-	16,247,709,243
Global Trade of Power System Co., Ltd.	515,148,578	-	55,619,151	-	-	-	570,767,729
Expressway Solar-light Power Generation Co., Ltd.	2,676,033,278	-	206,677,135	-	-	-	2,882,710,413
Chile Solar JV SpA	36,865,046,348	-	842,794,080	(2,849,330,239)	-	-	34,858,510,189
Cheongsong Myeonbong Mt Wind Power, Co, Ltd.	-	2,900,000,000	(136,136,194)	-	-	-	2,763,863,806
Jaeun People Wind Power Plant Co., Ltd	-	2,494,000,000	(296,217,473)	219,675	-	-	2,198,002,202
	₩ 309,930,266,885	₩ 5,394,000,000	₩3,976,797,730	₩ (1,419,393,833)	₩ (4,759,876,208)	₩ (13,691,878,060)	₩299,429,916,514

(*1) The Group fully recognized an impairment loss on investment in the investee previous to the year ended December 31, 2018.
(*2) The Group fully recognized an impairment loss on investments as the investee discontinued its operation previous to the year ended December 31, 2018.
(*3) The Group has reclassified its investments in the investees as investments in subsidiaries due to obtaining control over the investees through the acquisition of additional shares for the year ended December 31, 2019.

15. INVESTMENTS IN ASSOCIATES AND JOINT VENTURES (CONT'D):

	December 31, 2018						
Investees	Beginning balance	Acquisition	Income (loss) on valuation	Share in other comprehensive income (loss)	Dividends	Gain on disposal	Ending balance
Associates:							
Hyundai Energy Co., Ltd.	₩ -	₩ -	₩ -	₩ -	₩ -	₩ -	₩ -
S-Power Co., Ltd.	116,944,583,764	-	(2,378,748,877)	-	-	-	114,565,834,887
Ecollite Co., Ltd.	-	-	-	-	-	-	-
Korea Offshore Wind Power Co., Ltd.	23,526,175,021	-	(1,059,115,582)	-	-	-	22,467,059,439
SE Green Energy Co., Ltd.	3,475,803,314	-	(109,803,694)	-	-	-	3,365,999,620
Jinbhuvish Power Generations Pvt. Ltd.	-	-	-	-	-	-	-
Nepal Water & Energy Development Group Pty., Ltd.	30,498,470,177	-	(770,458,092)	1,232,674,228	-	-	30,960,686,313
Goseong Green Power Co., Ltd.	2,597,293,481	-	(138,108,730)	-	-	-	2,459,184,751
Gangneung Eco Power Co., Ltd.	2,582,989,869	-	(88,239,926)	-	-	-	2,494,749,943
Tamra Offshore Wind Power Co., Ltd.	8,560,058,870	-	1,840,777,220	-	-	-	10,400,836,090
KEPCO Energy Solution Co., Ltd.	25,085,422,114	-	185,767,958	-	-	-	25,271,190,072
Solar School Plant Co., Ltd.	16,723,523,613	-	169,202,803	-	-	-	16,892,726,416
PND Solar Ltd.	1,249,900,000	-	(230,117,031)	-	-	-	1,019,782,969
Hyundai Eco Energy Co., Ltd.	-	3,610,000,000	(221,991,856)	-	-	-	3,388,008,144
Joint ventures:					-		
ASM-BG Investicii AD	21,201,679,789	-	2,235,648,895	(1,019,302,468)	(1,038,888,255)	-	21,379,137,961
RES Technology AD	14,375,001,232	-	811,738,541	22,102,303	-	-	15,208,842,076
Global Trade of Power System Co., Ltd.	577,027,458	-	(61,878,880)	-	-	-	515,148,578
Expressway Solar-light Power Generation Co., Ltd.	2,462,775,274	-	213,258,004	-	-	-	2,676,033,278
Chile Solar JV SpA	-	37,689,063,915	4,453,192,658	(5,277,210,225)	-	-	36,865,046,348
KODE NOVUS I LLC	-	-	-	1,373,795,020	-	(1,373,795,020)	-
KODE NOVUS II LLC	-	-	-	809,924,573	-	(809,924,573)	-
	₩269,860,703,976	₩41,299,063,915	₩ 4,851,123,411	₩(2,858,016,569)	₩(1,038,888,255)	₩ (2,183,719,593)	₩309,930,266,885

15. INVESTMENTS IN ASSOCIATES AND JOINT VENTURES (CONT'D):

(3) Summary of financial information of associates and joint ventures as of and for the years ended December 31, 2019 and 2018, is as follows (Korean won):

	December 31, 2019			
Investees	Total assets	Total liabilities	Sales	Profit (loss) for the period
Associates:				
Hyundai Energy Co., Ltd.	₩ 465,237,668,625	₩ 549,940,347,798	₩ 91,841,932,789	₩ (27,882,133,273)
S-Power Co., Ltd.	805,622,023,530	566,024,637,172	576,553,691,182	2,318,617,382
Ecollite Co., Ltd.	1,837,930,919	303,630,584	-	(97,290,952)
Korea Offshore Wind Power Co., Ltd.	285,493,480,299	115,126,752,450	-	(9,369,747,661)
Jinbhuvish Power Generations Pvt. Ltd.	64,111,149,061	13,239,994,368	-	-
Nepal Water & Energy Development Company Pty., Ltd.	78,308,956,933	26,783,481,599	-	(1,380,429,475)
Goseong Green Power Co., Ltd.	3,399,057,967,293	3,177,209,864,439	-	(10,275,972,454)
Gangneung Eco Power Co., Ltd.	1,362,691,684,884	1,204,201,823,158	-	(3,829,722,537)
KEPCO Energy Solution Co., Ltd.	308,237,255,765	2,141,679,897	2,843,429,141	2,855,027,812
Solar School Plant Co., Ltd.	208,729,610,117	3,269,211,017	1,962,309,595	2,553,300,035
P&D Solar Col., Ltd	40,940,915,359	37,525,922,820	6,908,060,220	1,664,592,107
Hyundai Echo Energy Co., Ltd.	209,394,872,963	190,622,158,979	13,342,768,851	1,306,069,236
Joint ventures:				
ASM-BG Investicii AD	78,191,184,983	39,439,167,645	13,199,712,360	4,894,372,772
RES Technology AD	66,820,878,336	34,325,459,850	8,383,974,900	1,914,254,126
Global Trade of Power System Co., Ltd.	2,993,438,632	1,025,274,048	3,322,954,014	133,941,708
Expressway Solar-light Power Generation Co., Ltd.	17,652,678,872	7,712,298,139	2,990,539,642	708,915,807
Chile Solar JV SpA	69,902,770,503	185,750,126	590,596,225	1,685,588,159
Cheongsong Myeonbong Mt Wind Power, Co, Ltd.	27,658,665,279	24,271,516,154	-	(1,365,079,152)
Jaeun People Wind Power Plant Co., Ltd	31,402,203,885	23,822,885,946	-	(843,774,973)

15. INVESTMENTS IN ASSOCIATES AND JOINT VENTURES (CONT'D):

Investees	December 31, 2018			
	Total assets	Total liabilities	Sales	Profit (loss) for the period
Associates:				
Hyundai Energy Co., Ltd.	₩ 470,818,150,584	₩ 527,590,451,331	₩ 101,997,528,830	₩ (33,946,978,824)
S-Power Co., Ltd.	825,354,194,975	588,022,056,719	551,378,365,373	(6,184,964,796)
Ecollite Co., Ltd.	1,943,795,371	312,204,084	-	(68,488,225)
Korea Offshore Wind Power Co., Ltd.	216,113,706,140	36,377,230,631	-	(8,472,924,658)
SE Green Energy Co., Ltd.	7,047,902,897	165,000	-	(229,907,231)
Jinbhuvish Power Generations Pvt. Ltd.	63,163,109,888	13,044,208,869	-	-
Nepal Water & Energy Development Group Pty., Ltd.	55,453,163,502	4,249,129,596	-	(983,822,319)
Goseong Green Power Co., Ltd.	1,891,661,805,596	1,659,414,603,718	-	(7,322,801,318)
Gangneung Eco Power Co., Ltd.	813,937,589,609	651,621,380,014	-	(4,194,147,057)
Tamra Offshore Wind Power Co., Ltd.	170,238,248,364	131,716,633,218	21,701,099,025	4,076,718,130
KEPCO Energy Solution Co., Ltd.	304,103,022,241	848,741,372	5,583,921,611	2,532,422,075
Solar School Plant Co., Ltd.	204,281,637,113	1,366,004,493	1,148,696,119	2,032,522,420
PND Solar Ltd.	42,283,357,424	39,297,357,715	1,093,815,873	(794,647,003)
Hyundai Eco Energy Co., Ltd.	165,554,937,999	148,851,938,220	-	(2,193,276,066)
Joint ventures:				
ASM-BG Investicii AD	84,923,890,964	42,165,616,528	12,745,213,293	4,405,928,998
RES Technology AD	69,609,293,607	39,191,610,515	7,879,242,853	1,567,385,215
Global Trade of Power System Co., Ltd.	2,039,179,460	262,805,053	1,368,070,346	(133,719,973)
Expressway Solar-light Power Generation Co., Ltd.	18,442,608,540	9,214,907,582	2,985,787,835	691,692,695
Chile Solar JV SpA	73,740,492,882	10,400,186	73,467,988	8,906,385,315

15. INVESTMENTS IN ASSOCIATES AND JOINT VENTURES (CONT'D):

(4) Reconciliation between carrying amounts of investments in associates and joint ventures and the Group's interests in their net assets as of December 31, 2019 and 2018, is as follows (Korean won):

	December 31, 2019						
Investees	Net assets	Percentage of ownership	Share in net assets	Investment differential	Intercompany transaction	Others	Carrying amount
Associates:							
Hyundai Energy Co., Ltd.	₩(84,702,679,173)	30.7	₩(25,969,841,434)	-	₩ (954,365,457)	₩26,924,206,891	₩ -
S-Power Co., Ltd.	239,597,386,358	49.0	117,402,719,315	-	(1,618,415,714)	-	115,784,303,601
Ecollite Co., Ltd.	1,534,300,335	36.1	553,894,091	-	-	(553,894,091)	-
Korea Offshore Wind Power Co., Ltd.	170,366,727,849	12.5	21,295,840,981	-	-	-	21,295,840,981
Jinbhuvish Power Generations Pvt. Ltd.	50,871,154,693	5.2	2,624,366,415	-	-	(2,624,366,415)	-
Nepal Water & Energy Development Company Pty., Ltd.	51,525,475,334	57.8	30,172,902,987	971,746,021	-	-	31,144,649,008
Goseong Green Power Co., Ltd.	221,848,102,854	1.1	2,474,459,609	-	(134,675,504)	-	2,339,784,105
Gangneung Eco Power Co., Ltd.	158,489,861,726	1.6	2,553,447,772	-	(123,668,819)	-	2,429,778,953
KEPCO Energy Solution Co., Ltd.	306,095,575,868	8.3	25,507,964,656	-	-	-	25,507,964,656
Solar School Plant Co., Ltd.	205,460,399,100	8.3	17,104,578,226	-	-	-	17,104,578,226
PND solar., Ltd.	3,414,992,539	29.0	990,347,836	153,843,054	-	-	1,144,190,890
Hyundai Eco Energy Co., Ltd.	18,772,713,984	19.0	3,566,815,657	214,438,186	-	-	3,781,253,843
Joint ventures:							
ASM-BG Investicii AD	38,752,017,338	50.0	19,376,008,669	-	-	-	19,376,008,669
RES Technology AD	32,495,418,486	50.0	16,247,709,243	-	-	-	16,247,709,243
Global Trade of Power System Co., Ltd.	1,968,164,584	29.0	570,767,729	-	-	-	570,767,729
Expressway Solar-light Power Generation Co., Ltd.	9,940,380,733	29.0	2,882,710,413	-	-	-	2,882,710,413
Chile Solar JV SpA	69,717,020,377	50.0	34,858,510,189	-	-		34,858,510,189
Cheongsong Myeonbong Mt Wind Power, Co, Ltd.	3,387,149,125	29.0	982,273,246	1,781,590,560	-	-	2,763,863,806
Jaeun People Wind Power Plant Co., Ltd	7,579,317,939	29.0	2,198,002,202	-	-	-	2,198,002,202

15. INVESTMENTS IN ASSOCIATES AND JOINT VENTURES (CONT'D):

	December 31, 2018						
Investees	Net assets	Percentage of ownership	Share in net assets	Investment differential	Intergroup transaction	Others	Carrying amount
Associates:							
Hyundai Energy Co., Ltd.	₩(56,772,300,747)	30.7	₩ (17,406,387,409)	₩ -	₩ (995,859,607)	₩ 18,402,247,016	₩ -
S-Power Co., Ltd.	237,332,138,256	49.0	116,292,747,744	-	(1,726,912,857)	-	114,565,834,887
Ecollite Co., Ltd.	1,631,591,287	36.1	589,016,865	-	-	(589,016,865)	-
Korea Offshore Wind Power Co., Ltd.	179,736,475,509	12.5	22,467,059,439	-	-	-	22,467,059,439
SE Green Energy Co., Ltd.	7,047,737,897	47.8	3,365,999,620	-	-	-	3,365,999,620
Jinbhuvish Power Generations Pvt. Ltd.	50,118,901,019	5.2	2,585,558,778	-	-	(2,585,558,778)	-
Nepal Water & Energy Development Group Pty., Ltd.	51,204,033,906	57.7	29,988,940,372	971,745,941	-	-	30,960,686,313
Goseong Green Power Co., Ltd.	232,247,201,878	1.1	2,590,449,559	-	(131,264,808)	-	2,459,184,751
Gangneung Eco Power Co., Ltd.	162,316,209,595	1.6	2,615,094,488	-	(120,344,545)	-	2,494,749,943
Tamra Offshore Wind Power Co., Ltd.	38,521,615,146	27.0	10,400,836,090	-	-	-	10,400,836,090
KEPCO Energy Solution Co., Ltd.	303,254,280,869	8.3	25,271,190,072	-	-	-	25,271,190,072
Solar School Plant Co., Ltd.	202,915,632,620	8.3	16,892,726,416	-	-	-	16,892,726,416
PND Solar Ltd.	2,985,999,709	29.0	865,939,915	153,843,054	-	-	1,019,782,969
Hyundai Eco Energy Co., Ltd.	16,702,999,779	19.0	3,173,569,958	214,438,186			3,388,008,144
Joint ventures:						-	
ASM-BG Investicii AD	42,758,274,436	50.0	21,379,137,961	-	-	-	21,379,137,961
RES Technology AD	30,417,683,092	50.0	15,208,842,076	-	-	-	15,208,842,076
Global Trade of Power System Co., Ltd.	1,776,374,407	29.0	515,148,578	-	-	-	515,148,578
Expressway Solar-light Power Generation Co., Ltd.	9,227,700,958	29.0	2,676,033,278	-	-	-	2,676,033,278
Chile Solar JV SpA	73,730,092,696	50.0	36,865,046,348	-	-	-	36,865,046,348

16. PROPERTY, PLANT AND EQUIPMENT:

(1) Property, plant and equipment as of December 31, 2019 and 2018, are as follows (Korean won):

	December 31, 2019				
	Acquisition cost	Government grants	Accumulated depreciation	Accumulated impairment losses	Book value
Land	₩ 1,256,180,708,494	₩ -	₩ -	₩ -	₩ 1,256,180,708,494
Buildings	1,219,928,500,294	(784,653,191)	(485,483,209,067)	-	733,660,638,036
Structures	1,440,950,298,885	(1,279,013,395)	(584,302,513,965)	-	855,368,771,525
Machinery	7,660,721,779,912	(3,324,150,453)	(3,692,277,760,100)	(2,365,738,857)	3,962,754,130,502
Vehicles	20,538,636,808	(12,166,666)	(18,085,592,198)	-	2,440,877,944
Furniture and fixtures	57,129,879,134	-	(44,006,351,268)	-	13,123,527,866
Tools and equipment	18,135,826,572	-	(15,647,026,149)	-	2,488,800,423
Right-of-use assets	1,729,829,296,414	-	(495,737,089,711)	-	1,234,092,206,703
Construction-in-progress	952,057,401,150	-	-	-	952,057,401,150
	₩ 14,355,472,327,663	₩ (5,399,983,705)	₩ (5,335,539,542,458)	₩ (2,365,738,857)	₩ 9,012,167,062,643

	December 31, 2018				
	Acquisition cost	Government grants	Accumulated depreciation	Accumulated impairment losses	Book value
Land	₩ 1,243,763,943,950	₩ -	₩ -	₩ -	₩ 1,243,763,943,950
Buildings	1,185,507,991,777	(815,181,525)	(440,284,555,106)	-	744,408,255,146
Structures	1,413,076,634,568	(1,348,273,692)	(534,797,191,250)	-	876,931,169,626
Machinery	7,184,403,174,715	(3,878,067,332)	(3,137,168,536,758)	(2,365,738,857)	4,040,990,831,768
Vehicles	20,803,261,038	(26,766,666)	(17,283,745,352)	-	3,492,749,020
Furniture and fixtures	56,648,149,351	-	(41,578,244,898)	-	15,069,904,453
Tools and equipment	45,071,368,670	-	(40,898,068,816)	-	4,173,299,854
Finance leased asset	645,269,983,482	-	(347,073,986,147)	-	298,195,997,335
Construction-in-progress	460,229,656,295	-	-	-	460,229,656,295
	₩ 12,254,774,163,846	₩ (6,068,289,215)	₩ (4,559,084,328,327)	₩ (2,365,738,857)	₩ 7,687,255,807,447

16. PROPERTY, PLANT AND EQUIPMENT (CONT'D):

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

	December 31, 2019					
	Beginning balance	Acquisition	Disposal	Depreciation	Others (*1,2)	Ending balance
Land	₩ 1,243,763,943,950	₩ -	₩ (536,306,914)	₩ -	₩ 12,953,071,458	₩ 1,256,180,708,494
Buildings	745,223,436,671	94,905,469	(1,197,710,375)	(49,552,097,423)	39,876,756,885	734,445,291,227
(Government grants)	(815,181,525)	-	-	30,528,334	-	(784,653,191)
Structures	878,279,443,318	-	(129,101,760)	(49,420,057,654)	27,917,501,016	856,647,784,920
(Government grants)	(1,348,273,692)	-	-	69,260,297	-	(1,279,013,395)
Machinery	4,044,868,899,100	39,543,966,171	(2,262,472,366)	(548,966,791,185)	432,894,679,235	3,966,078,280,955
(Government grants)	(3,878,067,332)	-	4,019,227	549,897,652	-	(3,324,150,453)
Vehicles	3,519,515,686	128,133,507	(2,311,647)	(1,945,938,842)	753,645,906	2,453,044,610
(Government grants)	(26,766,666)	-	-	14,600,000	-	(12,166,666)
Furniture and fixtures	15,069,904,453	190,771,430	(3,431,498)	(6,835,974,634)	4,702,258,115	13,123,527,866
(Government grants)	-	-	-	-	-	-
Tools and equipment	4,173,299,854	-	(1,318,751)	(2,372,660,704)	689,480,024	2,488,800,423
Finance leased assets	298,195,997,335	-	-	-	(298,195,997,335)	-
Right-of-use assets	-	39,021,336,242	-	(148,663,103,564)	1,343,733,974,025	1,234,092,206,703
Construction-in-progress	460,229,656,295	885,006,499,197	-	-	(393,178,754,342)	952,057,401,150
	₩ 7,687,255,807,447	₩ 963,985,612,016	₩ (4,128,634,084)	₩ (807,092,337,723)	₩ 1,172,146,614,987	₩ 9,012,167,062,643

(*1) Others consist of the effect of the change in accounting standards resulting from the application of KIFRS 1116, the transfer to property, plant and equipment from construction-in-progress, capitalized borrowing costs, foreign currency translation, and others.

(*2) Capitalized borrowing cost is ₩28,075 million and the weighted-average capitalization rate of interest for the year ended December 31, 2019, is 3.01~6.91%.

	Year ended December 31, 2018					
	Beginning balance	Acquisition	Disposal	Depreciation	Others (*1,2)	Ending balance
Land	₩ 1,219,339,989,653	₩ -	₩ (98,163,484)	₩ -	₩ 24,522,117,781	₩ 1,243,763,943,950
Buildings	743,789,488,325	213,438,140	(768,867,555)	(47,320,411,471)	49,309,789,232	745,223,436,671
(Government grants)	(845,709,859)	-	-	30,528,334	-	(815,181,525)
Structures	920,808,577,990	378,000,000	-	(49,568,954,745)	6,661,820,073	878,279,443,318
(Government grants)	(1,417,533,990)	-	-	69,260,298	-	(1,348,273,692)
Machinery	4,090,457,625,627	70,328,621,451	(868,162,407)	(529,774,804,039)	414,725,618,468	4,044,868,899,100
(Government grants)	(4,428,653,996)	-	-	550,586,664	-	(3,878,067,332)
Vehicles	5,311,413,422	38,745,413	(11,000)	(2,053,737,904)	223,105,755	3,519,515,686
(Government grants)	(49,214,582)	-	-	22,447,916	-	(26,766,666)
Furniture and fixtures	13,816,845,907	209,357,925	(33,245,311)	(6,338,093,309)	7,415,039,241	15,069,904,453
(Government grants)	(5,208,333)	-	-	5,208,333	-	-
Tools and equipment	8,899,692,998	-	(37,000)	(6,079,296,845)	1,352,940,701	4,173,299,854
Finance leased assets	326,163,549,373	-	-	(31,481,785,362)	3,514,233,324	298,195,997,335
Construction-in-progress	430,753,471,097	541,178,191,252	-	-	(511,702,006,054)	460,229,656,295
	₩ 7,752,594,333,632	₩ 612,346,354,181	₩ (1,768,486,757)	₩ (671,939,052,130)	₩ (3,977,341,479)	₩ 7,687,255,807,447

(*1) Others consist of transfer to property, plant and equipment from construction-in-progress, capitalized borrowing costs, foreign currency translation, and others.

(*2) Capitalized borrowing cost is ₩21,706 million and the weighted-average capitalization rate of interest for the year ended December 31, 2018, is 3.11~7.87%.

17. INTANGIBLE ASSETS:

(1) Intangible assets other than goodwill as of December 31, 2019 and 2018, are as follows (Korean won):

	December 31, 2019		
	Acquisition cost	Accumulated amortization	Book value
Software	₩ 60,912,076,787	₩ (48,015,188,387)	₩ 12,896,888,400
Copyright, patent right and other industrial property rights	41,436,178	(5,038,727)	36,397,451
Mining right	17,973,093,771	(5,463,619,297)	12,509,474,474
Others	24,748,423,092	(963,899,649)	23,784,523,443
	₩ 103,675,029,828	₩ (54,447,746,060)	₩ 49,227,283,768

	December 31, 2018		
	Acquisition cost	Accumulated amortization	Book value
Software	₩ 55,426,452,098	₩ (42,211,262,820)	₩ 13,215,189,278
Copyright, patent right and other industrial property rights	18,643,407	(2,251,089)	16,392,318
Mining right	15,386,131,894	(4,040,757,027)	11,345,374,867
Others	12,077,142,109	(783,906,000)	11,293,236,109
	₩ 82,908,369,508	₩ (47,038,176,936)	₩ 35,870,192,572

(2) Changes in intangible assets other than goodwill for the years ended December 31, 2019 and 2018, are as follows (Korean won):

	December 31, 2019						
	Beginning balance	Acquisition	Disposal	Amortization	Transfer (*1)	Others (*2,3)	Ending balance
Software	₩ 13,215,189,278	₩ 55,530,602	₩ (377,690)	₩(5,964,559,120)	₩ 5,591,019,109	₩ 86,221	₩12,896,888,400
Copyright, patent right and other industrial property rights	16,392,318	10,147,488	-	(5,435,126)	15,292,771	-	36,397,451
Mining right	11,345,374,867	2,145,673,454	-	(809,790,752)	-	(171,783,095)	12,509,474,474
Others	11,293,236,109	5,284,033	(140,673,950)	(179,439,400)	(5,910,674,350)	18,716,791,001	23,784,523,443
	₩ 35,870,192,572	₩ 2,216,635,577	₩(141,051,640)	₩ (6,959,224,398)	₩ (304,362,470)	₩ 18,545,094,127	₩49,227,283,768

(*1)It includes the amounts transferred from construction-in-progress and the amounts transferred to current greenhouse gas emission rights.
(*2)It includes the investment differential in acquiring shares of Tamra Offshore Wind Power Co., Ltd., which was reclassified from associates to subsidiaries by acquiring additional shares during the current term.
(*3)It includes the changes in exchange rate.

17. INTANGIBLE ASSETS (CONT'D):

	Year ended December 31, 2018						
	Beginning balance	Acquisition	Disposal	Amortization	Transfer (*1)	Others (*2)	Ending balance
Software	₩ 10,976,467,128	₩ 19,710,273	₩ (9,000)	₩ (5,279,262,055)	₩ 7,500,741,217	₩ (2,458,285)	₩ 13,215,189,278
Copyright, patent right and other industrial property rights	5,646,900	-	-	(1,444,989)	12,190,407	-	16,392,318
Mining right	9,463,673,951	457,084,056	-	(84,099,972)	1,786,601,925	(277,885,093)	11,345,374,867
Development cost	193,340,909	-	-	-	(193,340,909)	-	-
Others	4,356,949,224	10,905,223	-	(179,078,431)	7,121,973,783	(17,513,690)	11,293,236,109
	₩ 24,996,078,112	₩ 487,699,552	₩ (9,000)	₩ (5,543,885,447)	₩ 16,228,166,423	₩ (297,857,068)	₩ 35,870,192,572

(*1) It represents transfer from construction-in-progress and current greenhouse gas emission rights.
(*2) It includes the changes in exchange rate.

(3) Major intangible assets as of December 31, 2019, are as follows (Korean won):

Accounts	Contents	Book value	Residual amortization period
Software	ERP system	₩ 252,686,100	14 months
Software	SAP professional license	179,466,667	16 months
Mining right	Mining right on Mullaben coal mine	12,509,474,474	(*)

(*) Mining right is amortized by using the units of production method.

18. TRADE AND OTHER PAYABLES:

Trade and other payables as of December 31, 2019 and 2018, are as follows (Korean won):

	December 31, 2019		December 31, 2018	
	Current	Non-current	Current	Non-current
Trade payables	₩ 275,000,623,805	₩ -	₩ 334,680,364,211	₩ -
Other payables				
Non-trade payables	174,436,379,797	44,999,572,722	163,659,280,934	41,805,629,884
Accrued expenses	62,185,333,167	-	48,057,693,576	-
Leasehold deposits received	9,979,413	-	9,979,413	-
Other deposits received	195,367,233	-	5,944,940,932	-
Lease liabilities	126,762,610,653	884,362,586,982	-	-
Dividends payable	1,209,452,055	-	1,209,452,055	-
	₩ 639,799,746,123	₩ 929,362,159,704	₩ 553,561,711,121	₩ 41,805,629,884

19. BORROWINGS AND DEBT SECURITIES:

(1) Borrowings and debt securities as of December 31, 2019 and 2018, are as follows (Korean won):

	December 31, 2019	December 31, 2018
Current liabilities:		
Short-term borrowings	₩ -	₩ 100,000,000,000
Current portion of long-term borrowings	20,840,277,593	1,904,040,000
Current portion of debt securities	690,700,500,000	330,000,000,000
Less: Current portion of discount on debt securities	(688,704,389)	(94,156,444)
	710,852,073,204	431,809,883,556
Non-current liabilities:		
Long-term borrowings	491,652,048,807	215,701,765,800
Less: Discount on long-term borrowings	(3,495,419,648)	(4,006,285,787)
Debt securities	2,370,000,000,000	2,911,468,250,000
Less: Discount on debt securities	(3,761,828,158)	(6,055,859,066)
	2,854,394,801,001	3,117,107,870,947
	₩ 3,565,246,874,205	₩ 3,548,917,754,503

(2) The repayment schedule of the Group's borrowings and debt securities as of December 31, 2019 and 2018 are as follows (Korean won):

	December 31, 2019		
	Borrowings	Debt securities	Total
Within 1 year	₩ 20,840,277,593	₩ 690,700,500,000	₩ 711,540,777,593
1 year–5 years	74,366,570,000	1,490,000,000,000	1,564,366,570,000
5 years thereafter	417,285,478,807	880,000,000,000	1,297,285,478,807
	₩ 512,492,326,400	₩ 3,060,700,500,000	₩ 3,573,192,826,400

	December 31, 2018		
	Borrowings	Debt securities	Total
Within 1 year	₩ 101,904,040,000	₩ 330,000,000,000	₩ 431,904,040,000
1 year–5 years	55,313,230,188	1,881,468,250,000	1,936,781,480,188
5 years thereafter	160,388,535,612	1,030,000,000,000	1,190,388,535,612
	₩ 317,605,805,800	₩ 3,241,468,250,000	₩ 3,559,074,055,800

(3) The Group does not hold any short-term borrowings as of December 31, 2019 and short-term borrowings as of December 31, 2018 are as follows (Korean won):

				December 31, 2018	
Creditor	Type of interest rate	Interest rate (%)	Maturity	Foreign currency	Local currency
Domestic borrowings:					
BNK Securities Co., Ltd.	Fixed rate	2.40	2019.02.20	-	₩ 40,000,000,000
DB Financial Investment Co., Ltd.	Fixed rate	2.40	2019.02.20	-	30,000,000,000
Shinhan Investment Co., Ltd.	Fixed rate	2.40	2019.02.20	-	20,000,000,000
KB Securities Co., Ltd.	Fixed rate	2.40	2019.02.20	-	10,000,000,000
					₩ 100,000,000,000

19. BORROWINGS AND DEBT SECURITIES (CONT'D):

(4) Long-term borrowings as of December 31, 2019 and 2018, are as follows (Korean won and USD):

					December 31, 2019	
Creditor	Type of borrowings	Type of interest rate	Interest rate (%)	Maturity	Foreign currency	Local currency
Domestic borrowings:						
KEB Hana Bank	Facility	Floating rate	3-year KTB rate– 1.25	2019~2021	-	₩ 885,250,000
	Facility	Floating rate	3-year KTB rate– 1.25	2019~2028	-	5,814,200,000
Korea Resources Corporation	Facility	Floating rate	3-year KTB rate– 2.25	2019~2023	-	973,050,000
	Facility	Floating rate	3-year KTB rate– 2.25	2019~2023	-	39,200,000
	Facility	Floating rate	3-year KTB rate– 2.25	2019~2024	-	52,200,000
	Facility	Floating rate	3-year KTB rate– 2.25	2019~2024	-	993,510,000
KYOBO LIFE INSURANCE CO., LTD.	Facility	Fixed rate	4.10	2019~2028	-	31,937,500,000
NongHyup Life Insurance Co.,Ltd.	Facility	Fixed rate	4.10	2019~2028	-	31,937,500,000
Hanwha-KOEN	Facility	Fixed rate	4.10	2019~2028	-	19,250,000,000
Renewable Energy Specialized Private Equity Investment Trust 1	Facility	Fixed rate	6.80	2019~2033	-	37,000,000,000
Hyundai Marine&Fire Insurance Co.,Ltd.	Facility	Fixed rate	4.40	2019~2035	-	23,739,128,000
Energy Infra energy	Facility	Fixed rate	4.40	2019~2035	-	11,827,563,000
National Credit Union Federation of Korea	Facility	Fixed rate	4.40	2019~2035	-	21,913,050,000
DB Damage insurance Co.,Ltd	Facility	Fixed rate	4.40	2019~2035	-	23,739,128,000
Hana Bank	Facility	Fixed rate	4.00	2019~2035	-	23,739,131,000
Foreign borrowings:						
International Finance Corporation	Facility	Floating rate	6-month LIBOR + 5%	2020-2031	USD 91,000,000	105,743,638,000
Korea Export-Import Bank	Facility	Floating rate	6-month LIBOR + 5%	2020-2031	USD 77,400,000	89,940,193,200
Asian Development Bank	Facility	Floating rate	6-month LIBOR + 5%	2020-2031	USD 56,599,999	65,770,218,800
CDC Group Plc	Facility	Floating rate	6-month LIBOR + 5%	2020-2031	USD 14,800,001	17,197,866,400
						512,492,326,400
Less: Discount on debt securities						(3,495,419,648)
Less: Current portion of long-term borrowings						(20,840,277,593)
						₩ 488,156,629,159

19. BORROWINGS AND DEBT SECURITIES (CONT'D):

					December 31, 2018	
Creditor	Type of borrowings	Type of interest rate	Interest rate (%)	Maturity	Foreign currency	Local currency
Domestic borrowings:						
KEB Hana Bank	Facility	Floating rate	3-year Korea Treasury Bond ("KTB") rate – 1.25	2018–2021	-	₩ 1,593,450,000
	Facility	Floating rate	3-year KTB rate – 1.25	2018–2028	-	6,478,680,000
Korea Resources Corporation	Facility	Floating rate	3-year KTB rate – 2.25	2018–2023	-	1,272,450,000
	Facility	Floating rate	3-year KTB rate – 2.25	2018–2023	-	50,400,000
	Facility	Floating rate	3-year KTB rate – 2.25	2018–2024	-	63,800,000
	Facility	Floating rate	3-year KTB rate – 2.25	2018–2024	-	1,202,670,000
Foreign borrowings:						
International Finance Corporation	Facility	Floating rate	6-month LIBOR + 5%	2020–2031	USD 70,600,000	78,465,475,400
Korea Export-Import Bank	Facility	Floating rate	6-month LIBOR + 5%	2020–2031	USD 60,100,000	66,795,680,900
Asian Development Bank	Facility	Floating rate	6-month LIBOR + 5%	2020–2031	USD 44,000,000	48,901,996,000
CDC Group Plc	Facility	Floating rate	6-month LIBOR + 5%	2020–2031	USD 11,500,000	12,781,203,500
						217,605,805,800
Less: Discount on debt securities						(4,006,285,787)
Less: Current portion of long-term borrowings						(1,904,040,000)
						₩ 211,695,480,013

19. BORROWINGS AND DEBT SECURITIES (CONT'D):

(5) Debt securities as of December 31, 2019 and 2018, are as follows (Korean won, AUD, and USD):

Type of bond	Issue date	Maturity	Type of interest rate	Interest rate (%)	December 31, 2019 Foreign currency	Local currency
26th Public bonds	2011.10.26	2021.10.26	Fixed rate	4.32	-	₩ 100,000,000,000
27-3rd Public bonds	2012.02.23	2022.02.23	Fixed rate	4.09	-	170,000,000,000
28-1st Public bonds	2012.07.30	2019.07.30	Fixed rate	3.40	-	-
28-2nd Public bonds	2012.07.30	2022.07.30	Fixed rate	3.40	-	110,000,000,000
29-1st Public bonds	2012.11.29	2027.11.29	Fixed rate	3.27	-	100,000,000,000
29-2nd Public bonds	2012.11.29	2032.11.29	Fixed rate	3.35	-	100,000,000,000
32nd Public bonds	2013.04.25	2023.04.25	Fixed rate	2.97	-	120,000,000,000
33rd Public bonds	2013.05.21	2023.05.21	Fixed rate	3.05	-	100,000,000,000
35-2nd Public bonds	2013.06.25	2020.06.25	Fixed rate	3.70	-	80,000,000,000
37-2nd Public bonds	2013.11.12	2023.11.12	Fixed rate	3.81	-	90,000,000,000
38-1st Public bonds	2014.03.26	2019.03.26	Fixed rate	3.28	-	-
38-2nd Public bonds	2014.03.26	2021.03.26	Fixed rate	3.50	-	100,000,000,000
38-3rd Public bonds	2014.03.26	2024.03.26	Fixed rate	3.67	-	70,000,000,000
39th Public bonds	2014.05.28	2024.05.28	Fixed rate	3.48	-	100,000,000,000
40th Public bonds	2014.06.26	2024.06.26	Fixed rate	3.31	-	110,000,000,000
41-2nd Public bonds	2014.10.30	2019.10.30	Fixed rate	2.41	-	-
42nd Public bonds	2014.12.15	2034.12.15	Fixed rate	3.10	-	100,000,000,000
43-1st Public bonds	2018.04.12	2021.04.12	Fixed rate	2.46	-	120,000,000,000
43-2nd Public bonds	2018.04.12	2028.04.12	Fixed rate	2.77	-	50,000,000,000
43-3rd Public bonds	2018.04.12	2038.04.12	Fixed rate	2.79	-	100,000,000,000
43-4th Public bonds	2018.04.12	2048.04.12	Fixed rate	2.77	-	30,000,000,000
44-1st Public bonds	2018.07.26	2021.07.26	Fixed rate	2.20	-	100,000,000,000
44-2nd Public bonds	2018.07.26	2038.07.26	Fixed rate	2.64	-	70,000,000,000
44-3rd Public bonds	2018.07.26	2048.07.26	Fixed rate	2.60	-	120,000,000,000
45-1st Public bonds	2018.11.09	2021.11.09	Fixed rate	2.16	-	200,000,000,000
45-2nd Public bonds	2018.11.09	2038.11.09	Fixed rate	2.32	-	50,000,000,000
45-3rd Public bonds	2018.11.09	2048.11.09	Fixed rate	2.19	-	30,000,000,000
46-1st Public bonds	2019.06.26	2029.06.26	Fixed rate	1.66	-	30,000,000,000
46-2nd Public bonds	2019.06.26	2039.06.26	Fixed rate	1.68	-	20,000,000,000
46-3rd Public bonds	2019.06.26	2049.06.26	Fixed rate	1.69	-	80,000,000,000
4th Foreign bonds	2013.09.25	2020.09.25	Fixed rate	5.75	AUD 325,000,000	263,360,500,000
5th Foreign bonds	2017.04.12	2020.04.12	Fixed rate	2.38	USD 300,000,000	347,340,000,000
						3,060,700,500,000
Less: Discount on debt securities						(4,450,532,547)
Less: Current portion of debt securities						(690,700,500,000)
Add: Current portion of discount on debt securities						688,704,389
						₩ 2,366,238,171,842

19. BORROWINGS AND DEBT SECURITIES (CONT'D):

Type of bond	Issue date	Maturity	Type of interest rate	Interest rate (%)	December 31, 2018 Foreign currency	Local currency
26th Public bonds	2011.10.26	2021.10.26	Fixed rate	4.32	-	₩ 100,000,000,000
27-3rd Public bonds	2012.02.23	2022.02.23	Fixed rate	4.09	-	170,000,000,000
28-1st Public bonds	2012.07.30	2019.07.30	Fixed rate	3.40	-	90,000,000,000
28-2nd Public bonds	2012.07.30	2022.07.30	Fixed rate	3.40	-	110,000,000,000
29-1st Public bonds	2012.11.29	2027.11.29	Fixed rate	3.27	-	100,000,000,000
29-2nd Public bonds	2012.11.29	2032.11.29	Fixed rate	3.35	-	100,000,000,000
32nd Public bonds	2013.04.25	2023.04.25	Fixed rate	2.97	-	120,000,000,000
33rd Public bonds	2013.05.21	2023.05.21	Fixed rate	3.05	-	100,000,000,000
35-2nd Public bonds	2013.06.25	2020.06.25	Fixed rate	3.70	-	80,000,000,000
37-2nd Public bonds	2013.11.12	2023.11.12	Fixed rate	3.81	-	90,000,000,000
38-1st Public bonds	2014.03.26	2019.03.26	Fixed rate	3.28	-	130,000,000,000
38-2nd Public bonds	2014.03.26	2021.03.26	Fixed rate	3.50	-	100,000,000,000
38-3rd Public bonds	2014.03.26	2024.03.26	Fixed rate	3.67	-	70,000,000,000
39th Public bonds	2014.05.28	2024.05.28	Fixed rate	3.48	-	100,000,000,000
40th Public bonds	2014.06.26	2024.06.26	Fixed rate	3.31	-	110,000,000,000
41-2nd Public bonds	2014.10.30	2019.10.30	Fixed rate	2.41	-	110,000,000,000
42nd Public bonds	2014.12.15	2034.12.15	Fixed rate	3.10	-	100,000,000,000
43-1st Public bonds	2018.04.12	2021.04.12	Fixed rate	2.46	-	120,000,000,000
43-2nd Public bonds	2018.04.12	2028.04.12	Fixed rate	2.77	-	50,000,000,000
43-3rd Public bonds	2018.04.12	2038.04.12	Fixed rate	2.79	-	100,000,000,000
43-4th Public bonds	2018.04.12	2048.04.12	Fixed rate	2.77	-	30,000,000,000
44-1st Public bonds	2018.07.26	2021.07.26	Fixed rate	2.12	-	100,000,000,000
44-2nd Public bonds	2018.07.26	2038.07.26	Fixed rate	2.64	-	70,000,000,000
44-3rd Public bonds	2018.07.26	2048.07.26	Fixed rate	2.60	-	120,000,000,000
45-1st Public bonds	2018.11.09	2021.11.09	Fixed rate	2.16	-	200,000,000,000
45-2nd Public bonds	2018.11.09	2038.11.09	Fixed rate	2.32	-	50,000,000,000
45-3rd Public bonds	2018.11.09	2048.11.09	Fixed rate	2.19	-	30,000,000,000
4th Foreign bonds	2013.09.25	2020.09.25	Fixed rate	5.75	AUD 325,000,000	256,038,250,000
5th Foreign bonds	2017.04.12	2020.04.12	Fixed rate	2.38	USD 300,000,000	335,430,000,000
						3,241,468,250,000
Less: Discount on debt securities						(6,150,015,510)
Less: Current portion of debt securities						(330,000,000,000)
Add: Current portion of discount on debt securities						94,156,444
						₩ 2,905,412,390,934

20. LEASE:

(1) Right-of-use assets as of December 31, 2019, are as follows (Korean won):

	December 31, 2019		
	Acquisition cost	Accumulated depreciation	Book value
Land	₩ 2,580,845,226	₩ (212,373,456)	₩ 2,368,471,770
Buildings	382,675,054	(147,438,932)	235,236,122
Structures	646,685,574,414	(378,653,947,241)	268,031,627,173
Vessels	1,066,705,174,840	(115,548,381,166)	951,156,793,674
Vehicles	296,339,591	(127,331,168)	169,008,423
Others	13,178,687,289	(1,047,617,748)	12,131,069,541
	₩ 1,729,829,296,414	₩ (495,737,089,711)	₩ 1,234,092,206,703

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

	December 31, 2019				
	Beginning balance	Change in accounting policies (*)	Addition	Depreciation	Ending balance
Land	₩ -	₩ 2,580,845,226	₩ -	₩ (212,373,456)	₩ 2,368,471,770
Buildings	-	382,675,054	-	(147,438,932)	235,236,122
Structures	-	298,195,997,335	1,415,590,932	(31,579,961,094)	268,031,627,173
Vessels	-	1,029,175,406,637	37,529,768,203	(115,548,381,166)	951,156,793,674
Vehicles	-	220,362,484	75,977,107	(127,331,168)	169,008,423
Others	-	13,178,687,289	-	(1,047,617,748)	12,131,069,541
	₩ -	₩ 1,343,733,974,025	₩ 39,021,336,242	₩ (148,663,103,564)	₩ 1,234,092,206,703

(*) It includes ₩ 298,196 million of the right-of-use assets of structures, which were classified as finance lease assets as of December 31, 2018.

(3) Lease liabilities as of December 31, 2019 are as follows (Korean won):

	December 31, 2019	
	Minimum lease payment	Present value of minimum lease payment
Within 1 year	₩ 128,194,851,753	₩ 126,762,610,653
1 year–5 years	484,785,529,382	435,978,305,461
5 years thereafter	512,584,129,064	448,384,281,521
	₩ 1,125,564,510,199	₩ 1,011,125,197,635

(4) Current and non-current lease liabilities as of December 31, 2019 are as follows (Korean won):

	December 31, 2019
Current liabilities	₩ 126,762,610,653
Non-current liabilities	884,362,586,982
	₩ 1,011,125,197,635

20. LEASE (CONT'D):

(5) Changes in lease liabilities for the year ended December 31, 2019 are as follows (Korean won):

		December 31, 2019
Beginning balance	₩	-
Change in accounting policies		1,045,537,976,690
Increase		37,605,745,311
Decrease		(131,564,227,300)
Interest expenses		22,162,772,437
Effects of changes in foreign exchange rates		37,382,930,497
Ending balance	₩	1,011,125,197,635

(6) A profit or loss related to lease account for the year ended December 31, 2019 is as follows (Korean won):

		December 31, 2019
Depreciation of right-of-use assets	₩	148,663,103,565
Interest expenses on lease liabilities		22,162,772,437
	₩	170,825,876,001

21. EMPLOYMENT BENEFITS:

(1) Defined contribution plans

The Group operates a defined contribution plan that is subject to the employees' option. A defined contribution fund is separately managed by the plan's administrator. When employees terminate their employment before the benefits have been vested, the Group's obligation to make contributions to the plan decreases on a pro rata basis.

The Group contributed the following amounts for the years ended December 31, 2019 and 2018 (Korean won):

		2019		2018
Cost of sales	₩	4,984,509,483	₩	3,541,461,984
Selling and administrative expenses		873,588,233		711,249,989
	₩	5,858,097,716	₩	4,252,711,973

(2) Defined benefit plans

① Principal assumptions on actuarial valuation as of December 31, 2019 and 2018, are as follows:

	December 31, 2019	December 31, 2018
Discount rate	2.03% ~ 2.71%	2.37%
Future salary increase rate	3.19% ~ 5.65%	3.39% ~ 6.76%

21. EMPLOYMENT BENEFITS (CONT'D):

② Details of expenses relating to defined benefit plans for the years ended December 31, 2019 and 2018, are as follows (Korean won):

	2019	2018
Current service cost	₩ 18,955,264,993	₩ 14,894,668,005
Interest cost	3,425,811,268	3,542,831,913
Expected return on plan assets	(238,850,566)	(262,463,535)
Losses (gains) on settlements	12,338,938,993	(5,353,627)
	₩ 34,481,164,688	₩ 18,169,682,756

Gains or losses recognized in cost of sales and selling and administrative expenses for years ended December 31, 2019 and 2018 are as follows (Korean won):

	2019	2018
Cost of Sales	₩ 30,545,959,190	₩ 16,737,818,778
Selling and administrative expense	3,935,205,498	1,431,863,978
	₩ 34,481,164,688	₩ 18,169,682,756

③ Net defined benefit liabilities as of December 31, 2019 and 2018, are as follows (Korean won):

	December 31, 2019	December 31, 2018
Present value of defined benefit obligations from funded plans	₩ 164,610,352,275	₩ 140,873,471,315
Fair value of plan assets	(12,155,516,907)	(9,482,477,007)
Net employee benefit liabilities from defined benefit plans	₩ 152,454,835,368	₩ 131,390,994,308

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

	December 31, 2019	December 31, 2018
Beginning balance	₩ 140,873,471,315	₩ 117,772,891,962
Current service cost	18,955,264,993	14,894,668,005
Interest cost	3,425,811,268	3,542,831,913
Remeasurement	(7,285,044,535)	11,523,855,961
Actual payments	(3,698,089,759)	(6,855,422,899)
Profit or loss from settlement	12,338,938,993	(5,353,627)
Ending balance	₩ 164,610,352,275	₩ 140,873,471,315

21. EMPLOYMENT BENEFITS (CONT'D):

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

	December 31, 2019	December 31, 2018
Beginning balance	₩ 9,482,477,007	₩ 8,644,893,572
Expected return on plan assets	238,850,566	262,463,535
Remeasurement losses	(65,810,666)	(124,880,100)
Contributions by the employers	2,500,000,000	700,000,000
Ending balance	₩ 12,155,516,907	₩ 9,482,477,007

⑥ Fair values of major categories of plan assets as of December 31, 2019 and December 31, 2018, are as follows (Korean won):

	December 31, 2019	December 31, 2018
Equity instrument	₩ 1,336,931,735	₩ 1,184,519,733
Debt instrument	1,474,690,953	1,389,555,548
Immovables	-	530,535
Deposits	2,590,615,330	1,146,146,962
Others	6,753,278,889	5,761,724,229
	₩ 12,155,516,907	₩ 9,482,477,007

Actual returns from plan assets for the years ended December 31, 2019 and 2018, amounted to ₩173 million and ₩138 million, respectively.

⑦ Remeasurement Gain(loss) in OCI for the years ended December 31, 2019 and 2018, are as follows (Korean won):

	December 31, 2019	December 31, 2018
Actuarial Gain(loss) arising from changes in financial assumptions	₩ (272,121,211)	₩ 1,171,376,600
Experience adjustments	(7,012,923,324)	10,352,479,361
Return on plan assets	65,810,666	124,880,100
	₩ (7,219,233,869)	₩ 11,648,736,061

Remeasurement component recognized as OCI is recorded in retained earnings.

(3) Other long-term employee benefit obligations as of December 31, 2019 and 2018, are as follows (Korean won):

	December 31, 2019	December 31, 2018
Long-service leave	₩ 267,102,149	₩ 477,272,429

22. PROVISIONS:

(1) Provisions as of December 31, 2019 and 2018, are as follows (Korean won):

	December 31, 2019		December 31, 2018
	Current	Non-current	Current
Provisions for employee salaries (*1)	₩ 40,621,525,926	₩ -	₩ 40,477,358,578
Provisions for financial guarantee(*6)	-	5,965,934,000	82,741,133
Provisions for litigations (*2)	3,100,052,806	-	251,339,495
Provisions for greenhouse gas emission obligation (*3)	337,568,627,602	-	123,660,216,775
Other current provisions:			
Provisions for RPS (*4)	-	-	-
Others(*5)	28,716,778,689	-	40,898,000,000
	₩ 410,006,985,023	₩ 5,965,934,000	₩ 205,369,655,981

(*1) The Group estimates provisions for employee salaries based on the results of the individual performance evaluation and management assessment. Such estimate may subject to change.

(*2) As of December 31, 2019, the Group recognized the litigation provisions for such amount expected to be paid to employees in relation to the ongoing litigation over the ordinary wage. As a defendant of a pending litigation on ordinary wages, the Group has recognized the estimated amount to be paid to employees, including incentives and others that were previously excluded from the ordinary wages as a provision for litigation as of December 31, 2019.

(*3) Provisions for greenhouse gas emission obligation are recognized for the governmental regulations to submit emission right as emit greenhouse gas. Government will reimburse the expenses paid by the Group in order to comply with the obligation at standard price, and the Group recorded such amount as other receivables. As of December 31, 2019 and 2018, the provisions and other receivables, which will be reimbursed from government were ₩337,569 million and ₩321,117 million, and ₩123,660 million and ₩313,090 million, respectively.

(*4) RPS program is required to generate a specified percentage of total electricity to be generated in the form of renewable energy, and provisions are recognized for the governmental regulations to require the production of energies from renewable energy sources, such as solar, wind and biomass. Government will reimburse the expenses paid by the Group in order to comply with the obligation at standard price, and the Group recorded such amount as accrued income and other receivables. As of December 31, 2019, the provisions, the accrued income and the other receivables that will be reimbursed from government were 0 million(0 million as of Dec 31, 2018), ₩275,130 million (₩257,962 million as of Dec 31, 2018)and 0 million (₩15,960 million as of December 31, 2018), respectively.

(*5) The Group has provided fund supplement arrangements for Hyundai Energy Co., Ltd. The Group believes that it is highly probable that cash outflow will be made in accordance with the fund supplement agreement as of December 31, 2019. The Group has recognized the estimated amount as a provision.

(*6) Total amount of guarantees to KEPCO Bylong pty., Ltd. that will be covered by the Group in the event of a financial guarantee as of the December 31, 2019.

22. PROVISIONS (CONT'D):

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

	December 31, 2019				
	Beginning balance	Provision made(*1)	Provision reversed	Provision used	Ending balance
Current:					
Provisions for employees' salaries	₩ 40,477,358,578	₩ 144,167,348	₩ -	₩ -	₩ 44,255,116,881
Provisions for short-term financial guarantee	82,741,133	-	(82,741,133)	-	-
Provisions for litigations	251,339,495	3,100,052,806	-	(251,339,495)	3,100,052,806
Provisions for greenhouse gas emission obligation	123,660,216,775	373,763,795,707	(19,919,301,690)	(139,936,083,190)	337,568,627,602
Provisions for others	40,898,000,000	-	(12,181,221,311)	-	28,716,778,689
Non-current:					
Provisions for financial guarantee	-	5,965,934,000	-	-	5,965,934,000
	₩ 205,369,655,981	₩ 382,973,949,861	₩ (32,183,264,134)	₩ (140,187,422,685)	₩ 415,972,919,023

(*1) ₩ 257,120 million is reflected in other receivables and accrued income

	December 31, 2018				
	Beginning balance	Provision made	Provision reversed	Provision used	Ending balance
Provisions for employees' salaries	₩ 39,369,974,781	₩ 1,107,383,797	₩ -	₩ -	₩ 40,477,358,578
Provisions for short-term financial guarantee	39,664,813	43,076,320	-	-	82,741,133
Provisions for litigations	778,315,124	-	-	(526,975,629)	251,339,495
Provisions for greenhouse gas emission obligation	292,234,387,542	119,332,751,485	-	(287,906,922,252)	123,660,216,775
Provisions for RPS	51,418,711,548	-	(51,418,711,548)	-	-
Provisions for others	-	40,898,000,000	-	-	40,898,000,000
	₩ 383,841,053,808	₩ 161,381,211,602	₩ (51,418,711,548)	₩ (288,433,897,881)	₩ 205,369,655,981

23. GOVERNMENT GRANTS:

(1) Government grants whose primary condition is that the Group purchases, constructs or, otherwise, acquires long-term assets are deducted from the carrying amount of the asset.

(2) Government grants as of December 31, 2019 and 2018, are as follows (Korean won):

	December 31, 2019	December 31, 2018
Buildings	₩ (784,653,191)	₩ (815,181,525)
Structures	(1,279,013,395)	(1,348,273,692)
Machinery	(3,324,150,453)	(3,878,067,332)
Vehicles	(12,166,666)	(26,766,666)
	₩ (5,399,983,705)	₩ (6,068,289,215)

23. GOVERNMENT GRANTS (CONT'D):

(3) Changes in government grants for the years ended December 31, 2019 and 2018, are as follows (Korean won):

	December 31, 2019			
	Beginning balance	Disposal	Offset the items of depreciation expense	Ending balance
Buildings	₩ (815,181,525)	₩ -	₩ 30,528,334	₩ (784,653,191)
Structures	(1,348,273,692)	-	69,260,297	(1,279,013,395)
Machinery	(3,878,067,332)	4,019,227	549,897,652	(3,324,150,453)
Vehicles	(26,766,666)	-	14,600,000	(12,166,666)
	₩ (6,068,289,215)	₩ 4,019,227	₩ 664,286,283	₩ (5,399,983,705)

	December 31, 2018			
	Beginning balance	Acquisition	Offset the items of depreciation expense	Ending balance
Buildings	₩ (845,709,859)	₩ -	₩ 30,528,334	₩ (815,181,525)
Structures	(1,417,533,990)	-	69,260,298	(1,348,273,692)
Machinery	(4,428,653,996)	-	550,586,664	(3,878,067,332)
Vehicles	(49,214,582)	-	22,447,916	(26,766,666)
Furniture and fixtures	(5,208,333)	-	5,208,333	-
	₩ (6,746,320,760)	₩ -	₩ 678,031,545	₩ (6,068,289,215)

24. NON-FINANCIAL LIABILITIES:

(1) Non-financial liabilities as of December 31, 2019 and 2018, are as follows (Korean won):

	December 31, 2019		December 31, 2018	
	Current	Non-current	Current	Non-current
Advance received	₩ 4,944,286,805	₩ 62,481,570,575	₩ 2,374,025,073	₩ -
Unearned revenue	7,978,629,182	-	51,038,117,841	-
Withholdings	4,109,106,852	1,024,421,690	3,969,634,932	1,024,421,690
Value-added tax withholdings	4,138,784,330	-	2,514,981,360	-
Others	104,467,908	816,681,094	127,729,148	682,916,236
	₩ 21,275,275,077	₩ 64,322,673,359	₩ 60,024,488,354	₩ 1,707,337,926

25. CONTRIBUTED CAPITAL:

(1) Details of contributed capital as of December 31, 2019 and 2018, are as follows (Korean won):

	December 31, 2019	December 31, 2018
Share capital	₩ 297,615,630,000	₩ 297,615,630,000
Paid-in capital in excess of par value	856,488,569,175	856,488,569,175
	₩ 1,154,104,199,175	₩ 1,154,104,199,175

(2) Details of shares issued as of December 31, 2019, and 2018, are as follows (Korean won, except for number of shares):

	December 31, 2019	December 31, 2018
Shares authorized	100,000,000	100,000,000
Number of shares issued	59,523,126	59,523,126
Par value	5,000	5,000
	₩ 297,615,630,000	₩ 297,615,630,000

There are no changes in number of outstanding capital during the years ended December 31, 2019 and 2018.

26. RETAINED EARNINGS:

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

	December 31, 2019	December 31, 2018
Legal reserve (*)	₩ 131,345,651,397	₩ 130,631,373,885
Voluntary reserves	2,412,294,512,616	2,408,509,786,466
Retained earnings before appropriations	1,069,455,971,594	1,056,721,569,269
	₩ 3,613,096,135,607	₩ 3,595,862,729,620

(*) The Commercial Code of the Republic of Korea requires the Group to appropriate as a legal reserve an amount equal to a minimum of 10% of annual cash dividends paid until the reserve equals 50% of its share capital stock. The reserve is not available for the payment of cash dividends, but may be transferred to capital stock through a resolution of the board of directors or used to reduce accumulated deficit, if any, with the ratification of the shareholder.

(2) Details of voluntary reserves as of December 31, 2019 and 2018, are as follows (Korean won):

	December 31, 2019	December 31, 2018
Reserve for research and human development (*)	₩ -	₩ 7,200,000,000
Sinking fund reserve	722,683,177,773	717,190,814,698
Reserve for business expansion	1,689,611,334,843	1,684,118,971,768
	₩ 2,412,294,512,616	₩ 2,408,509,786,466

(*) The reserve for research and human development is appropriated by the Group to use as qualified tax credits to reduce corporate tax liabilities. The reserve is available for cash dividends for a certain period as defined by the Tax Incentive Control Law of Korea.

26. RETAINED EARNINGS (CONT'D):

(3) Changes in retained earnings for the years ended December 31, 2019 and 2018, are as follows (Korean won):

	December 31, 2019	December 31, 2018
Beginning balance	₩ 3,595,862,729,620	₩ 3,613,679,785,519
Profit for the period attributable to owner of the Group	32,288,765,834	30,263,145,821
Dividends paid	(7,142,775,120)	(33,928,181,820)
Dividends paid (hybrid securities)	(13,384,764,000)	(13,384,764,000)
Remeasurement of defined benefit liability	5,472,179,273	(8,836,730,441)
Change in accounting policy	-	8,069,474,541
Ending balance	₩ 3,613,096,135,607	₩ 3,595,862,729,620

(4) Dividends paid for the years ended December 31, 2019 and 2018, are as follows (Korean won):

	December 31, 2019		
	Number of shares eligible for dividends	Dividends paid per share	Dividends paid
Common shares	59,523,126	₩ 120	₩ 7,142,775,120

	Year ended December 31, 2018		
	Number of shares eligible for dividends	Dividends paid per share	Dividends paid
Common shares	59,523,126	₩ 570	₩ 33,928,181,820

(5) Changes in remeasurement components related to defined benefit liability for the years ended December 31, 2019 and 2018, are as follows (Korean won):

	December 31, 2019	December 31, 2018
Beginning balance	₩ (35,202,902,005)	₩ (26,366,171,564)
Changes	7,219,233,869	(11,639,497,524)
Income tax effect	(1,747,054,596)	2,802,767,083
Ending balance	₩ (29,730,722,732)	₩ (35,202,902,005)

27. SURPLUS APPROPRIATION STATEMENT:

Details of surplus appropriation statements as of December 31, 2019 and 2018 are as follows (Korean won):

	December 31, 2019 Disposition date: March 30, 2020		December 31, 2018 Disposition date: March 27, 2019	
1. Unappropriated earned surplus	₩	1,093,446,510,442	₩	1,071,966,776,911
Beginning balance		1,060,324,997,829		1,060,324,997,829
Profit for the period		41,006,260,759		25,735,983,318
Remeasurement of defined benefit liability		5,500,015,854		(8,778,915,077)
Dividends paid (hybrid securities)		(13,384,764,000)		(13,384,764,000)
Effect of change in accounting policy		-		8,069,474,541
2. Transferred amounts (Voluntary reserve)		-		7,200,000,000
Reserve fund for Research and Human Resource development		-		7,200,000,000
3. Total(1+2)		1,093,446,510,442		1,079,166,776,611
4. Appropriated retained earnings		33,121,512,614		18,841,778,782
Earned surplus reserve		1,190,462,520		714,277,512
Common stock Dividend		11,904,625,200		7,142,775,120
Sinking-fund reserve		10,013,212,447		5,492,363,075
Reserve for business extension		10,013,212,447		5,492,363,075
5. Ending balance	₩	1,060,324,997,829	₩	1,060,324,997,829

28. HYBRID SECURITIES:

Details of hybrid securities classified as equity as of December 31, 2019 and 2018, are as follows (Korean won):

	Issue date	Maturity	Interest rate (%)	December 31, 2019		December 31, 2018	
1st hybrid securities	2012.12.07	2042.12.06	4.38	₩	170,000,000,000	₩	170,000,000,000
2nd hybrid securities	2012.12.07	2042.12.06	4.44		230,000,000,000		230,000,000,000
Less issuance cost					(1,090,000,000)		(1,090,000,000)
				₩	398,910,000,000	₩	398,910,000,000

The Group holds the right to extend the maturity dates on hybrid securities under existing conditions. Furthermore, the Group is exempt from interest payments on the face value of bonds when the Group decides not to declare dividends attributable to ordinary shares.

29. OTHER COMPONENTS OF EQUITY:

(1) Other components of equity as of December 31, 2019 and 2018, are as follows (Korean won):

	December 31, 2019	December 31, 2018
Other capital surpluses	₩ (239,336,565)	₩ (239,336,565)
Accumulated other comprehensive income	37,714,896,127	43,668,311,033
Other equity	(184,715,608,232)	(184,715,608,232)
	₩ (147,240,048,670)	₩ (141,286,633,764)

(2) Changes in accumulated OCI (loss) for the years ended December 31, 2019 and 2018, are as follows (Korean won):

	December 31, 2019			
	Financial assets at FVOCI valuation reserve	Reserve for gain (loss) on valuation of derivatives	Reserve for gain (loss) on overseas operations translation credit	Share in OCI (loss) of investments in associates and joint ventures
Beginning balance	₩ 82,585,299,459	₩ (12,787,550,072)	₩ (14,963,990,293)	₩ (11,165,448,061)
Net change in the financial assets at FVOCI	(9,611,258,367)	-	-	-
Net change in the unrealized fair value of derivatives using cash flow hedge accounting	-	5,037,306,591	-	-
Share in other comprehensive loss of associates and joint ventures	-	-	-	(1,419,393,833)
Foreign currency translation of foreign operations	-	-	(1,066,965,627)	-
Income tax effect	2,325,924,525	(1,219,028,195)	-	-
Ending balance	₩ 75,299,965,617	₩ (8,969,271,676)	₩ (16,030,955,920)	₩ (12,584,841,894)

29. OTHER COMPONENTS OF EQUITY (CONT'D):

	December 31, 2018			
	Financial assets at FVOCI valuation reserve	Reserve for gain (loss) on valuation of derivatives	Reserve for gain (loss) on overseas operations translation credit	Share in other comprehensive income (loss) of investments in associates and joint ventures
Beginning balance	₩ 40,523,318,173	₩ (6,823,120,824)	₩ (7,401,564,678)	₩ (8,307,431,492)
Net change in the unrealized fair value of financial assets at FVOCI	66,136,485,260	-	-	-
Net change in the unrealized fair value of derivatives using cash flow hedge accounting	-	(7,868,640,169)	-	-
Shares in OCI of associates and joint ventures, net of tax	-	-	-	(5,041,736,162)
Disposal of shares in OCI of associates and joint ventures	-	-	-	2,183,719,593
Foreign currency translation of foreign operations	-	-	(7,562,425,615)	-
Income tax effect	(16,005,029,433)	1,904,210,921	-	-
Effect of change in accounting policy	(8,069,474,541)	-	-	-
Ending balance	₩ 82,585,299,459	₩ (12,787,550,072)	₩ (14,963,990,293)	₩ (11,165,448,061)

(3) Details of other equity as of December 31, 2019 and 2018, are as follows (Korean won):

	December 31, 2019	December 31, 2018
Loss on capital reduction	₩ (184,715,608,232)	₩ (184,715,608,232)

There are no changes in other equity as of December 31,2019 and 2018.

30. SALES:

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

	2019	
	Domestic	Overseas
Sales of goods	₩ 5,374,612,623,789	₩ -
Sales of service	26,063,581,167	19,811,715,615
	₩ 5,400,676,204,956	₩ 19,811,715,615

	2018	
	Domestic	Overseas
Sales of goods	₩ 5,495,699,124,011	₩ -
Sales of service	22,527,830,702	24,366,892,543
	₩ 5,518,226,954,713	₩ 24,366,892,543

31. SELLING AND ADMINISTRATIVE EXPENSES:

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

	2019	2018
Salaries	₩ 28,934,827,832	₩ 25,571,593,648
Retirement benefit expense	4,808,793,731	2,143,113,967
Welfare and benefit expense	2,938,861,207	2,554,508,973
Insurance expense	1,191,914,681	329,860,611
Depreciation	10,623,808,114	8,754,441,885
Amortization	5,576,722,827	4,954,743,465
Commission	15,058,259,894	14,255,012,854
Advertising expense	2,257,751,639	2,197,808,892
Training expense	74,193,032	65,562,682
Vehicle maintenance expense	244,299,093	174,848,289
Publishing expense	262,436,265	145,470,347
Business promotion expense	342,712,770	287,393,758
Rent expense	1,177,543,605	1,055,986,326
Telecommunication expense	1,026,201,196	1,186,779,925
Taxes and dues	1,263,701,871	163,485,365
Expendable supplies expense	219,292,258	113,352,939
Water, light and heating expense	692,253,484	607,539,215
Repairs and maintenance expense	12,523,765,786	10,992,859,763
Ordinary development expense	18,242,917,230	17,141,469,897
Travel expense	997,184,031	756,780,717
Clothing expense	6,833,471	38,816,381
Survey and analysis expense	13,517,407	32,071,532
Membership fee	81,260,000	67,504,000
Reversal of bad debt expense	(41,876,648,890)	-
Others	2,978,855,895	3,220,869,305
Total	₩ 69,661,258,429	₩ 96,811,874,736

32. OTHER INCOME AND EXPENSE:

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

		2019		2018
Reversal of other bad debt expenses	₩	12,181,221,311	₩	18,139,121
Government grants income		280,836,660		481,570,630
Gains on assets contributed		-		378,000,000
Gain from liabilities forgiven		-		4,929,968,152
Compensation and reparations revenue		5,252,366,211		6,998,288,577
Rental income		7,187,948,336		4,766,233,286
Others(*)		723,671,213		7,592,944,787
	₩	25,626,043,731	₩	25,165,144,553

(*) It includes gain on insurance of generator and transformer damages incurred at Yeongheung Office of ₩ 4,676 million for the years ended December 31, 2018.

(2) Other expense for the years ended December 31, 2019 and 2018, is as follows (Korean won):

		2019		2018
Other province expense	₩	3,100,052,806	₩	40,898,000,000
Other bad debt expense		-		17,747,886,760
Donations		5,030,604,138		3,204,243,749
Other province expense		-		30,406,864
	₩	8,130,656,944	₩	61,880,537,373

33. OTHER PROFIT AND LOSS:

Details of other profit and loss for the years ended December 31, 2019 and 2018, are as follows (Korean won):

		2019		2018
Other profit:				
Gain on disposal of property, plant and equipment	₩	456,618,553	₩	269,317,795
Gain on disposal of intangible assets		109,080,550		-
Gain on foreign currency translations		2,408,710,303		922,423
Gain on foreign currency transactions		10,610,061,793		9,718,620,499
Others		20,907,321,999		13,185,527,598
Other loss:				
Loss on disposal of property, plant and equipment		(1,179,375,904)		(1,269,506,686)
Loss on foreign currency translations		(41,658,379)		(1,577,862)
Loss on foreign currency transactions		(14,423,606,766)		(18,203,228,565)
Others		(1,106,881,607)		(2,648,502,874)
	₩	17,740,270,542	₩	1,051,572,328

34. FINANCE INCOME:

(1) Finance income for the years ended December 31, 2019 and 2018, is as follows (Korean won):

		2019		2018
Interest income	₩	5,749,372,637	₩	3,318,250,962
Dividends income		20,430,847,503		10,951,776,053
Gain on disposal of financial assets at FVTPL		874,505		8,123,792
Gain on valuation of derivatives		19,232,250,000		14,020,814,399
Gain on derivative transactions		14,369,615,352		19,108,330,938
Gain on foreign currency translations		250,302,000		15,325,951,731
Gain on foreign currency transactions		523,758,127		1,448,185,449
Others		21,183,840		27,278,461
	₩	60,578,203,964	₩	64,208,711,785

34. FINANCE INCOME (CONT'D):

(2) Interest income included in finance income for the years ended December 31, 2019 and 2018, is as follows (Korean won):

		2019		2018
Cash and cash equivalents	₩	276,885,625	₩	2,280,416,760
Trade and other receivables		827,037,054		440,032,972
Loans		419,540,781		597,801,230
Financial assets at FVTPL		4,225,909,177		-
	₩	5,749,372,637	₩	3,318,250,962

35. FINANCE COSTS:

(1) Finance costs for the years ended December 31, 2019 and 2018, are as follows (Korean won):

		2019		2018
Interest expense	₩	120,886,040,358	₩	92,439,622,347
Loss on valuation of derivatives		3,442,027,766		16,405,321,112
Loss on derivative transactions		7,116,057,054		5,483,844,467
Loss on foreign currency translations		56,629,850,372		13,973,024,668
Loss on foreign currency transactions		1,966,824,696		7,715,803,594
Others		6,216,236,000		-
	₩	196,257,036,246	₩	136,017,616,188

(2) Interest expense included in finance costs for the years ended December 31, 2019 and 2018, is as follows (Korean won):

		2019		2018
Short-term borrowings	₩	471,873,175	₩	3,424,495,117
Long-term borrowings		18,724,893,361		13,765,288,482
Debt securities		98,007,946,726		96,952,579,853
Other financial liabilities		31,756,308,311		3,391,875
		148,961,021,573		114,145,755,327
Less: Capitalized borrowing costs		(28,074,981,215)		(21,706,132,980)
	₩	120,886,040,358	₩	92,439,622,347

36. INCOME TAX EXPENSE:

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

		2019		2018
Current income tax expense:				
Current income tax	₩	12,488,464,492	₩	3,126,742,814
Adjustment due to changes in estimates related to prior years		(11,193,054,742)		(1,761,621,786)
Current income tax directly added to equity		3,624,190,593		(7,024,815,429)
Deferred income tax expense:				
Generation and realization of temporary differences		(6,053,291,899)		33,536,679,159
Adjustments recognized in the current year for deferred income tax in the prior year		-		(7,185,375,451)
Effect of tax credit carryforward		3,682,286,587		1,537,113,584
Income tax expense	₩	2,548,595,031	₩	22,228,722,891

(2) Reconciliation between income tax expense and accounting income for the years ended December 31, 2019 and 2018, is as follows (Korean won):

		2019		2018
Income before income tax	₩	35,157,276,456	₩	51,900,364,741
Income tax expense computed at applicable tax rate		8,044,060,902		12,095,888,267
Adjustments:				
Effect of non-taxable income		(1,237,012)		(41,971,662)
Effect of non-deductible expenses		1,242,994,062		2,110,891,567
Net change in unrecognized deferred tax assets		5,986,405,091		7,856,402,726
Effect of tax credit and deduction		(6,850,685,577)		-
Adjustment due to changes in estimates related to prior years		3,682,286,587		1,537,113,584
Others		1,637,825,720		432,020,195
		5,697,588,871		11,894,456,410
Adjustment in respect of prior years		(11,193,054,742)		(1,761,621,786)
Income tax expense	₩	2,548,595,031	₩	22,228,722,891
Average effective tax rate		7.25%		42.8%

(3) Items directly recognized in equity in income taxes, except for other comprehensive income (loss) for the years ended December 31, 2019 and 2018, are as follows (Korean won):

		2019		2018
Interest payments on hybrid securities	₩	4,273,236,000	₩	4,273,236,000

36. INCOME TAX EXPENSE (CONT'D):

(4) Income tax recognized in OCI for the years ended December 31, 2019 and 2018, is as follows (Korean won):

	2019	2018
Gain (loss) on valuation of financial assets at FVOCI	₩ 2,325,924,525	₩ (16,005,029,433)
Loss (gain) on valuation of derivatives using cash flow hedge accounting, net	(1,219,028,195)	1,904,210,921
Remeasurement of defined benefit obligations	(1,755,941,737)	2,802,767,083
	₩ (649,045,407)	₩ (11,298,051,429)

(5) Changes in deferred tax assets (liabilities) recognized in the consolidated statements of financial position for the years ended December 31, 2019 and 2018, are as follows (Korean won):

	2019					
Type	Beginning balance	Amounts recognized in profit or loss	Amounts recognized in OCI	Amounts recognized directly in equity	Others(*1)	Ending balance
Deferred tax on temporary differences:						
Long-term employee benefits	₩ 32,009,014,741	₩ 6,694,771,211	₩ (1,755,941,737)	₩ -	₩ -	₩ 36,947,844,215
Cash flow hedges	19,550,181,881	(4,086,212,474)	(1,219,028,195)	-	-	14,244,941,212
Investments in associates and subsidiaries	25,605,598,067	(2,803,793,703)	-	-	(3,799,406,234)	19,002,398,130
Property, plant and equipment	(613,400,782,663)	(18,410,781,453)	-	-	-	(631,811,564,116)
Intangible assets	3,143,626,048	(497,868,012)	-	-	-	2,645,758,036
AFS financial assets	(27,398,816,325)	-	2,325,924,525	-	-	(25,072,891,800)
Provisions	48,550,819,350	46,984,445,098	-	-	-	95,535,264,448
Doubtful receivables	59,427,826	-	-	-	-	59,427,826
Other financial liabilities	3,590,409,507	(3,175,905,948)	-	4,273,236,000	-	4,687,739,559
Foreign currency translation	(19,950,595,199)	5,110,756,877	-	-	-	(14,839,838,322)
Allowance for doubtful accounts	32,496,535,074	(6,501,038,236)	-	-	-	25,995,496,838
Accrued income	(11,717,863)	11,368,871	-	-	-	(348,992)
Advance depreciation provision	(15,101,682,351)	-	-	-	-	(15,101,682,351)
Reserve for research and human development	-	-	-	-	-	-
Right-of-use assets	-	(233,779,859,685)	-	-	-	(233,779,859,685)
Right-of-use liabilities	-	244,685,460,808	-	-	-	244,685,460,808
Others	(64,324,344,517)	(3,038,273,579)	-	-	-	(67,362,618,096)
Sub-total	(575,182,326,424)	31,193,069,775	(649,045,407)	4,273,236,000	(3,799,406,234)	(544,164,472,290)
Deferred income tax on unused tax losses and tax credit	29,603,316,945	(28,499,751,492)	-	-	-	1,103,565,453
Total	₩ (545,579,009,479)	₩ 2,693,318,283	₩ (649,045,407)	₩ 4,273,236,000	₩(3,799,406,234)	₩ (543,060,906,837)

(*1) This is the amount of deferred income tax liabilities recognized for intangible assets identified during the consolidation of Tamra Offshore Wind Power Co., Ltd. and S. Green Energy Co., Ltd for the year ended December 31, 2019.

36. INCOME TAX EXPENSE (CONT'D):

Type	2018 Beginning balance	Amounts recognized in profit or loss	Amounts recognized in OCI	Amounts recognized directly in equity	Ending balance
Deferred tax on temporary differences:					
Long-term employee benefits	₩ 26,671,514,389	₩ 2,534,733,269	₩ 2,802,767,083	₩ -	₩ 32,009,014,741
Cash flow hedges	19,017,536,514	(1,371,565,554)	1,904,210,921	-	19,550,181,881
Investments in associates and subsidiaries	34,113,557,044	(8,507,958,977)	-	-	25,605,598,067
Property, plant and equipment	(576,710,970,185)	(36,689,812,478)	-	-	(613,400,782,663)
Intangible assets	3,641,494,060	(497,868,012)	-	-	3,143,626,048
AFS financial assets	(11,393,786,892)	-	(16,005,029,433)	-	(27,398,816,325)
Provisions	101,735,727,007	(53,184,907,657)	-	-	48,550,819,350
Doubtful receivables	59,427,826	-	-	-	59,427,826
Other financial liabilities	3,573,976,014	(4,256,802,507)	-	4,273,236,000	3,590,409,507
Foreign currency translation	(20,415,508,658)	464,913,459	-	-	(19,950,595,199)
Allowance for doubtful accounts	22,500,878,589	9,995,656,485	-	-	32,496,535,074
Accrued income	(1,401,640)	(10,316,223)	-	-	(11,717,863)
Advance depreciation provision	(15,101,923,258)	240,907	-	-	(15,101,682,351)
Reserve for research and human development	(1,574,799,219)	1,574,799,219	-	-	-
Others	(98,356,221,688)	34,031,877,171	-	-	(64,324,344,517)
	(512,240,500,097)	(55,917,010,898)	(11,298,051,429)	4,273,236,000	(575,182,326,424)
Deferred income tax on unused tax losses and tax credit	-	29,603,316,945	-	-	29,603,316,945
	₩ (512,240,500,097)	₩ (26,313,693,953)	₩ (11,298,051,429)	₩ 4,273,236,000	₩ (545,579,009,479)

(6) Deferred income tax assets (liabilities) recognized in the consolidated statements of financial position as of December 31, 2019 and 2018, are as follows (Korean won):

	December 31, 2019	December 31, 2018
Deferred tax assets	₩ 767,587,707	₩ 429,539,998
Deferred tax liabilities	(543,828,494,544)	(546,008,549,477)

(7) Details of deductible temporary differences and tax losses for which no deferred tax assets were recognized as of December 31, 2019 and 2018, are as follows (Korean won):

	December 31, 2019	December 31, 2018
Deductible temporary differences (will not expire)	₩ 69,585,754,568	₩ 60,169,258,653
Tax losses (expire in 2024)	1,890,485,350	2,110,978,034
Tax losses (expire in 2025)	17,595,218,445	17,595,218,445
Tax losses (expire in 2026)	728,663,300	728,663,300
Total	₩ 89,800,121,663	₩ 80,604,118,432

(8) As of December 31, 2019 and 2018, the amounts of total taxable temporary differences that are not recognized as deferred taxes related to investments in subsidiaries are ₩14,472 million and ₩30,504 million, respectively.

37. EXPENSES CLASSIFIED BY NATURE:

Expenses classified by nature for the years ended December 31, 2019 and 2018, are as follows (Korean won):

	2019		
	Selling and administrative expenses	Cost of sales	Total
Raw materials used	₩ -	₩ 3,721,171,833,196	₩ 3,721,171,833,196
Power purchase	-	22,624,465,020	22,624,465,020
Salaries	28,934,827,832	184,480,821,910	213,415,649,742
Retirement benefit expense	4,808,793,731	35,530,468,673	40,339,262,404
Welfare and benefit expense	2,938,861,207	18,852,701,556	21,791,562,763
Contribution to intragroup labor welfare	-	726,870,000	726,870,000
Insurance expense	1,191,914,681	3,883,612,056	5,075,526,737
Depreciation	10,623,808,114	796,468,529,609	807,092,337,723
Amortization	5,576,722,827	1,382,501,571	6,959,224,398
Accretion expense to provisions	-	96,724,491,408	96,724,491,408
Commission	15,058,259,894	49,882,595,273	64,940,855,167
Advertising expense	2,257,751,639	1,539,484,004	3,797,235,643
Training expense	74,193,032	205,432,494	279,625,526
Vehicle maintenance expense	244,299,093	161,393,595	405,692,688
Publishing expense	262,436,265	101,292,389	363,728,654
Business promotion expense	342,712,770	214,449,970	557,162,740
Rent expense	1,177,543,605	17,281,210,835	18,458,754,440
Telecommunication expense	1,026,201,196	157,718,400	1,183,919,596
Transportation expense	-	35,833,832	35,833,832
Taxes and dues	1,263,701,871	38,860,163,338	40,123,865,209
Expendable supplies expense	219,292,258	804,454,533	1,023,746,791
Water, light and heating expense	692,253,484	152,650,604	844,904,088
Repairs and maintenance expense	12,523,765,786	205,538,233,159	218,061,998,945
Ordinary development expense	18,242,917,230	27,429,454,842	45,672,372,072
Travel expense	997,184,031	431,806,057	1,428,990,088
Reversal of allowance for bad debts	(41,876,648,890)	-	(41,876,648,890)
Others	3,080,466,773	1,224,712,079	4,305,178,852
	₩ 69,661,258,429	₩ 5,225,867,180,403	₩ 5,295,528,438,832

37. EXPENSES CLASSIFIED BY NATURE(CONT'D):

	2018		
	Selling and administrative expenses	Cost of sales	Total
Raw materials used	₩ -	₩ 4,137,718,333,749	₩ 4,137,718,333,749
Power purchase	-	23,890,218,489	23,890,218,489
Salaries	25,571,593,648	172,546,909,154	198,118,502,802
Retirement benefit expense	2,143,113,967	20,279,280,762	22,422,394,729
Welfare and benefit expense	2,554,508,973	17,672,274,075	20,226,783,048
Contribution to intragroup labor welfare	-	4,180,116,000	4,180,116,000
Insurance expense	329,860,611	5,174,150,162	5,504,010,773
Depreciation	8,754,441,885	663,184,610,245	671,939,052,130
Amortization	4,954,743,465	589,141,982	5,543,885,447
Accretion expense to provisions	-	(96,854,713,243)	(96,854,713,243)
Commission	14,255,012,854	41,513,274,445	55,768,287,299
Advertising expense	2,197,808,892	1,362,975,702	3,560,784,594
Training expense	65,562,682	170,644,807	236,207,489
Vehicle maintenance expense	174,848,289	153,039,613	327,887,902
Publishing expense	145,470,347	101,165,546	246,635,893
Business promotion expense	287,393,758	388,699,748	676,093,506
Rent expense	1,055,986,326	17,329,894,784	18,385,881,110
Telecommunication expense	1,186,779,925	137,339,670	1,324,119,595
Transportation expense	-	20,051,500	20,051,500
Taxes and dues	163,485,365	35,458,703,154	35,622,188,519
Expendable supplies expense	113,352,939	737,479,866	850,832,805
Water, light and heating expense	607,539,215	103,755,472	711,294,687
Repairs and maintenance expense	10,992,859,763	200,586,258,855	211,579,118,618
Ordinary development expense	17,141,469,897	30,077,946,150	47,219,416,047
Travel expense	756,780,717	460,593,266	1,217,373,983
Others	3,359,261,218	12,094,142,749	15,453,403,967
	₩ 96,811,874,736	₩ 5,289,076,286,702	₩ 5,385,888,161,438

38. EARNINGS (LOSS) PER SHARE:

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

	2019	2018
Basic earnings per share	₩ 318	₩ 284

There are no potential dilutive instruments, and diluted earnings per share are the same as basic earnings per share for the years ended December 31, 2019 and 2018.

(2) Basic earnings per share

Net income for the period and weighted-average number of common shares used in the calculation of basic earnings per share for the years ended December 31, 2019 and 2018, are as follows (Korean won, except for number of shares):

	2019	2018
Net income	₩ 32,288,765,834	₩ 30,263,145,821
Dividends of hybrid securities	(13,384,764,000)	(13,384,764,000)
Earnings used in the calculation of total basic earnings per share	18,904,001,834	16,878,381,821
Weighted-average number of common shares	59,523,126	59,523,126

39. RISK MANAGEMENT:

(1) Capital risk management

The primary objective of the Group's capital management is to ensure that it maintains a strong credit rating and healthy capital ratios in order to support its business and maximize shareholder's value. The Group manages its capital structure and makes adjustments to it in light of changes in economic conditions. To maintain or adjust the capital structure, the Group may adjust the dividend payment to shareholders, return capital to shareholder or issue new shares. The Group manages capital based on a gearing ratio, which is net debt divided by total equity. The Group defines net debt as interest-bearing loans and borrowings, bonds payable, less cash and cash equivalents and total equity as equity plus net debt.

Details of the Group's capital management accounts as of December 31, 2019 and 2018, are as follows (Korean won):

	December 31, 2019	December 31, 2018
Total borrowings and debt securities (A)	₩ 3,565,246,874,205	₩ 3,548,917,754,503
Cash and cash equivalents (B)	100,191,307,880	149,803,189,823
Net borrowings and debt securities (C=A-B)	3,465,055,566,325	3,399,114,564,680
Total shareholder's equity (D)	5,053,217,562,197	5,028,947,732,586
Total equity (E=C+D)	₩ 8,518,273,128,522	₩ 8,428,062,297,266
Debt to equity ratio (C/E)	40.68%	40.33%

(2) Financial risk management

The board of directors is responsible for establishing and overseeing our risk management system. Our risk management policy is designed to identify and analyze the risks we face, to establish appropriate risk limits and controls, and to ensure that risks do not exceed these limits. Risk management policies and systems are regularly reviewed to reflect changes in market conditions and our activities. We aim to establish a rigorous and structured control environment where all employees understand their roles and obligations through training, management standards and procedures.

Our audits oversee how management manages compliance with our risk management policies and procedures, and reviews the appropriateness of our risk management system. Internal audits carry out regular and special reviews of risk management controls and procedures.

1) Credit risk

Credit risk is the risk of finance loss to the Group if a customer or counterparty to a financial instrument fails to meet its contractual obligations, and arises primarily from the sales activities, securities and derivatives. In addition, credit risk exposure may exist within financial guarantees and unused line of credits. As the Group makes transactions with the reputable financial institutions, the credit risk from them are considered limited. The Group decides credit transaction limits based on evaluation of client's credit, through information obtained from the credit bureau and disclosed financial position at committing contracts.

39. RISK MANAGEMENT (CONT'D):

Book values of the financial assets represent the maximum exposed amounts of the credit risk. Details of the Group's level of maximum exposure to credit risk as of December 31, 2019 and 2018, are as follows (Korean won):

	December 31, 2019	December 31, 2018
Cash and cash equivalents	₩ 100,191,307,880	₩ 149,803,189,823
Current financial assets at FVTPL	37,700,000,000	-
Long-/short-term financial instruments	25,000,000,000	20,000,000,000
Non-current financial assets at FVTPL	3,747,787,048	3,852,780,540
Long-/short-term loans	30,486,842,456	28,411,261,142
Trade and other receivables	1,074,167,662,355	1,106,606,285,339
Derivative assets (trading)	-	10,814,399
Derivative assets (using hedge accounting)	3,816,710,830	-

As of December 31, 2019, the total amount of guarantee to be borne by the Company is ₩6,715 million under the financial guarantee contract. As of the end of the reporting period, the Company recognized ₩5,966 million as a provision for financial guarantees.

2) Market risk

Market risk is the risk that the Group's fair values of the financial instruments or future cash flows are affected by the changes in the market. Market risk consists of interest rate risk, currency risk and other price risk.

3) Sensitivity analysis

a) Significant assets and liabilities with uncertainties in underlying assumptions

① Defined benefit obligation

A sensitivity analysis of defined benefit obligation assuming 1% increase and decrease movements in the actuarial valuation assumptions as of December 31, 2019 and 2018, is as follows (Korean won):

		December 31, 2019		December 31, 2018	
Type	Account	1% Increase	1% Decrease	1% Increase	1% Decrease
Future salary increase rate	Defined benefit obligation	₩ 19,430,189,279	₩ (16,610,336,017)	₩ 21,496,109,675	₩ (18,183,582,666)
Discount rate	Defined benefit obligation	(17,290,096,728)	20,719,313,391	(18,794,572,683)	22,826,765,755

Changes in employee benefits assuming 1% increase and decrease movements in discount rate on plan assets as of December 31, 2019 and December 31, 2018, are ₩27 million and ₩24 million, respectively.

39. RISK MANAGEMENT (CONT'D):

b) Management judgment effected by uncertainties in underlying assumptions

① Foreign currency risk

The Group undertakes transactions denominated in foreign currencies; consequently, exposures to currency exchange rate fluctuations arise. The carrying amount of the Group's foreign currency-denominated monetary assets and monetary liabilities as of December 31, 2019 and 2018, is as follows:

	December 31, 2019		December 31, 2018	
	USD	IDR /AUD	USD	IDR /AUD
Assets:				
Cash and cash equivalents	₩ 44,006,572,384	₩ 104,881,637(IDR)	₩ 39,451,845,730	₩ 914,362,549(IDR)
Liabilities:				
Trade and other payables	863,503,208,969	-	165,228,595,021	-
Borrowings	278,651,916,400	-	206,944,355,800	-
Debt securities	347,135,456,105	262,892,164,807(AUD)	334,544,729,880	254,993,411,473(AUD)
Total liabilities	1,489,290,581,474	262,892,164,807(AUD)	706,717,680,701	254,993,411,473(AUD)
Net exposure	₩ (1,445,284,009,090)	₩ (262,787,283,170)	₩ (667,265,834,971)	₩ (254,079,048,924)

The average exchange rate for years ended December 31, 2019 and 2018, and the exchange rate of end of period as of December 31, 2019 and 2018, are as follows (Korean won):

	Average exchange rate		Exchange rate of end of period	
	December 31, 2019	December 31, 2018	December 31, 2019	December 31, 2018
USD	1,165.65	1,100.30	1,157.80	1,118.10
AUD	809.87	822.26	810.34	787.81
IDR	0.082	0.077	0.083	0.077

A sensitivity analysis on the Group's income for the period assuming a 10% increase and decrease in currency exchange rates with all other variables held constant as of December 31, 2019 and 2018, is as follows (Korean won):

	December 31, 2019		December 31, 2018	
	10% Increase	10% Decrease	10% Increase	10% Decrease
Increase (decrease) in income before income tax	₩ (170,807,129,226)	₩ 170,807,129,226	₩ (92,134,488,389)	₩ 92,134,488,389
Increase (decrease) in shareholder's equity (*)	(170,807,129,226)	170,807,129,226	(92,134,488,389)	₩ 92,134,488,389

(*) The impact on the shareholder's equity before the effect of income tax.

39. RISK MANAGEMENT (CONT'D):

The sensitivity analysis above is conducted for monetary assets and liabilities denominated in foreign currencies other than functional currency, without consideration of hedge effect of related derivatives as of December 31, 2019 and 2018.

To manage its foreign currency risk related to foreign currency denominated in long-term borrowings and debt securities, the Group has a policy to enter into cross-currency swap agreements. In addition, to manage its foreign currency risk related to foreign currency-denominated purchase transactions, the Group enters into currency forward contracts.

② Interest rate risk

The Group is exposed to interest rate risk due to its borrowing with floating interest rates. A 1% increase or decrease is used when reporting interest rate risk internally to key management personnel, which represents management's assessment of the reasonably possible change in interest rates.

The Group's borrowings and debt securities with floating interest rates as of December 31, 2019 and 2018, are as follows (Korean won):

	December 31, 2019	December 31, 2018
Long-term borrowings	₩ 287,409,326,400	₩ 217,605,805,800

Sensitivity analysis on the Group's long-term borrowings and debt securities assuming a 1% increase and decrease in interest rates with all other variables held constant as of December 31, 2019, and December 31, 2018, is as follows (Korean won):

	December 31, 2019		December 31, 2018	
	1% Increase	1% Decrease	1% Increase	1% Decrease
Increase (decrease) in income before income tax	₩ (2,874,093,264)	₩ 2,874,093,264	₩ (2,176,058,058)	₩ 2,176,058,058
Increase (decrease) in shareholder's equity (*)	(2,874,093,264)	2,874,093,264	(2,176,058,058)	2,176,058,058

(*) The impact on the shareholder's equity before the effect of income tax.

4) Liquidity risk

The Group has established an appropriate liquidity risk management framework for the management of the Group's short-, medium- and long-term funding and liquidity management requirements. The Group manages liquidity risk by maintaining adequate reserves, banking facilities and reserve borrowing facilities by continuously monitoring forecast and actual cash flows and by matching the maturity profiles of financial assets and liabilities. In addition, the Group has established credit lines on its trade financing and bank overdrafts; and through payment guarantees it has received, it maintains an adequate credit (borrowing) line. In addition, in case of major construction investment, the Group has the ability to use reserve cash or utilize long-term borrowings.

39. RISK MANAGEMENT (CONT'D):

a) The expected maturities of non-derivative financial liabilities

Details of remaining maturities of the non-derivative financial liabilities based on agreement terms are as follows (Korean won).

Type	December 31, 2019				
	Less than 1 year	1–2 years	2–5 years	More than 5 years	Total
Borrowings and debt securities	₩ 711,540,777,593	₩ 630,872,890,000	₩ 933,493,680,000	₩1,297,285,478,807	₩3,573,192,826,400
Interest expenses related to borrowings and debt securities	127,606,622,059	100,087,836,552	201,246,639,138	486,283,553,251	915,224,651,000
Trade and other payables	641,231,987,223	125,557,173,676	359,228,355,706	557,583,701,786	1,683,601,218,391
Financial guarantee contracts(*)	-	6,715,240,000	-	-	6,715,240,000
	₩1,480,379,386,875	₩ 863,233,140,228	₩1,493,968,674,844	₩2,341,152,733,844	₩6,178,733,935,791

(*)The amount is the total amount of guarantee to be borne by the Company under the financial guarantee contract. As of the end of the reporting period, the Company recognized ₩5,966 million as a provision for financial guarantees.

Type	December 31, 2018				
	Less than 1 year	1–2 years	2–5 years	More than 5 years	Total
Borrowings and debt securities	₩ 431,904,040,000	₩ 684,495,402,565	₩ 1,252,286,077,623	₩ 1,190,388,535,612	₩ 3,559,074,055,800
Interest expenses related to borrowings and debt securities	119,549,766,646	100,708,997,911	190,375,755,709	344,216,295,400	754,850,815,666
Trade and other payables	553,561,711,121	-	-	41,805,629,884	595,367,341,005
	₩ 1,105,015,517,767	₩ 785,204,400,476	₩ 1,442,661,833,332	₩ 1,576,410,460,896	₩ 4,909,292,212,471

b) The expected maturities of non-derivative financial assets

Since the Group manages liquidity on a net asset and net liability basis, it is necessary to include information on non-derivative financial assets in order to understand liquidity risk management.
The expected maturities for non-derivative financial assets as of December 31, 2019 and 2018 in detail are as follows (Korean won):

Type	December 31, 2019				
	Less than 1 year	1–5 years	More than 5 years	Others	Total
Cash and cash equivalents	₩ 100,191,307,880	₩ -	₩ -	₩ -	₩ 100,191,307,880
Current financial assets at FVTPL	37,700,000,000	-	-	-	37,700,000,000
Long-/short-term financial instrument	25,000,000,000	-	-	-	25,000,000,000
Non-current financial assets at FVTPL	-	-	-	3,747,787,048	3,747,787,048
Non-current financial assets at FVOCI	-	-	-	254,968,965,113	254,968,965,113
Long-/short-term loans	2,259,236,977	11,936,788,680	19,366,312,523	-	33,562,338,180
Trade and other receivables	1,134,198,836,565	46,043,573,820	637,000,000	-	1,180,879,410,385
	₩1,299,349,381,422	₩ 57,980,362,500	₩ 20,003,312,523	₩ 258,716,752,161	₩1,636,049,808,606

39. RISK MANAGEMENT (CONT'D):

Type	December 31, 2018				
	Less than 1 year	1 year–5 years	More than 5 years	Others	Total
Cash and cash equivalents	₩ 149,803,189,823	₩ -	₩ -	₩ -	₩ 149,803,189,823
Long-/short-term financial instruments	20,000,000,000	-	-	-	20,000,000,000
Non-current financial assets at FVTPL	-	-	-	3,852,780,540	3,852,780,540
Non-current financial assets at FVOCI	-	-	-	270,122,309,268	270,122,309,268
Long-/short-term loans	1,404,215,400	13,011,072,409	16,971,180,005	-	31,386,467,814
Trade and other receivables	1,200,215,777,671	40,275,901,128	637,000,000	-	1,241,128,678,799
	₩1,371,423,182,894	₩ 53,286,973,537	₩ 17,608,180,005	₩ 273,975,089,808	₩1,716,293,426,244

c) The expected maturities of derivative financial liabilities

Derivative liabilities classified by maturity periods from the reporting date to maturity date of contract as of December 31, 2019 and 2018, are as follows (Korean won):

Type	December 31, 2019				
	Less than 1 year	1–2 years	2–5 years	More than 5 years	Total
Gross settlement					
Hedging	₩ (59,327,273,067)	₩ -	₩ -	₩ -	₩ (59,327,273,067)
Trading	(3,442,027,766)	-	-	-	(3,442,027,766)

Type	December 31, 2018				
	Less than 1 year	1 year–2 years	2–5 years	More than 5 years	Total
Gross settlement:					
Hedging	₩ -	₩(79,780,118,827)	₩ -	₩ -	₩(79,780,118,827)
Trading	(1,016,571,112)	-	-	-	(1,016,571,112)

(3) Fair value risk

The fair value of the Group's actively traded financial instruments (financial assets at FVOCI etc.) is based on the traded market price as of the reporting year-end. The fair value of the Group's financial assets is the amount an asset could be exchanged for or the amount a liability could be settled for.

The fair values of financial instruments (financial assets at FVTPL, OTC derivatives etc.) where no active market exists or where quoted prices are not otherwise available are determined by using valuation techniques.
The Group uses various valuation techniques and makes assumptions based on market conditions as of the reporting date.

For trade receivables and payables, the Group considers the carrying value, net of impairment, as fair value. While for disclosure purposes, the fair value of financial liabilities is estimated by discounting a financial instrument with similar contractual cash flows using the effective interest method.

39. RISK MANAGEMENT (CONT'D):

1) Fair value and book value

Fair value and book value of financial assets and liabilities as of December 31, 2019 and 2018, are as follows (Korean won):

	December 31, 2019		December 31, 2018	
Type	Book value	Fair value	Book value	Fair value
Assets recognized at fair value				
Current financial assets at FVTPL	₩ 37,700,000,000	₩ 37,700,000,000	₩ -	₩ -
Non-current financial assets at FVTPL	3,747,787,048	3,747,787,048	3,852,780,540	3,852,780,540
Non-current financial assets at FVOCI	254,968,965,113	254,968,965,113	270,122,309,268	270,122,309,268
Derivative assets (trading)	3,816,710,830	3,816,710,830	10,814,399	10,814,399
	₩ 300,233,462,991	₩ 300,233,462,991	₩ 273,985,904,207	₩ 273,985,904,207
Assets carried at amortized cost				
Long/short-term financial instruments	₩ 25,000,000,000	₩ 25,000,000,000	₩ 20,000,000,000	₩ 20,000,000,000
Long/short-term loans	30,486,842,456	30,486,842,456	28,411,261,142	28,411,261,142
Trade and other receivables	1,074,167,662,355	1,074,167,662,355	1,106,606,285,339	1,106,606,285,339
Cash and cash equivalents	100,191,307,880	100,191,307,880	149,803,189,823	149,803,189,823
	₩1,229,845,812,691	₩1,229,845,812,691	₩1,304,820,736,304	₩1,304,820,736,304
Liabilities recognized at fair value				
Derivative liabilities (trading)	₩ 3,442,027,766	₩ 3,442,027,766	₩ 1,016,571,112	₩ 1,016,571,112
Derivative liabilities (using hedge accounting)	59,327,273,067	59,327,273,067	79,780,118,827	79,780,118,827
	₩ 62,769,300,833	₩ 62,769,300,833	₩ 80,796,689,939	₩ 80,796,689,939
Liabilities carried at amortized cost				
Debt securities	₩3,056,249,967,453	₩3,243,377,814,630	₩3,235,318,234,490	₩3,394,018,794,280
Borrowings	508,996,906,752	508,996,906,752	313,599,520,013	313,599,520,013
Trade and other payables	1,569,161,905,827	1,569,161,905,827	595,367,341,005	595,367,341,005
Financial guarantee contracts	5,965,934,000	5,965,934,000	82,741,133	82,741,133
	₩5,140,374,714,032	₩5,327,502,561,209	₩4,144,367,836,641	₩4,303,068,396,431

39. RISK MANAGEMENT (CONT'D):

2) Interest rates used for determining fair value

The interest rates used to discount estimated cash flows, when applicable, are based on the government yield curve at the reporting date plus an adequate credit spread. The discount rate used for calculating fair value as of December 31, 2019 and 2018, is as follows (Korean won):

	December 31, 2019 (%)	December 31, 2018 (%)
Derivatives	0.75 ~ 1.92	1.02 ~ 2.84
Debt securities	1.55 ~ 2.15	1.93 ~ 3.29

3) Fair value hierarchy

The following table provides an analysis of financial instruments that are measured subsequent to initial recognition at fair value, classified as Levels 1, 2 or 3, based on the degree to which the fair value is observable.

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; and
Level 3: Inputs that are not based on observable market data.

Fair values of financial instruments by hierarchy level as of December 31, 2019 and 2018, are as follows (Korean won):

	December 31, 2019			
Type	Level 1	Level 2	Level 3	Total
Financial assets at FVOCI	₩ 238,197,848,809	₩ -	₩ 16,771,116,304	₩ 254,968,965,113
Current financial assets at FVTPL	37,700,000,000	-	-	37,700,000,000
Non-current financial assets at FVTPL	-	3,747,787,048	-	3,747,787,048
Derivative assets	-	3,816,710,830	-	3,816,710,830
Derivative liabilities	-	(62,769,300,833)	-	(62,769,300,833)

	December 31, 2018			
Type	Level 1	Level 2	Level 3	Total
Financial assets at FVOCI	₩ 248,309,770,176	₩ -	₩ 21,812,539,092	₩ 270,122,309,268
Non-current financial assets at FVTPL	-	3,852,780,540	-	3,852,780,540
Derivative assets	-	10,814,399	-	10,814,399
Derivative liabilities	-	(80,796,689,939)	-	(80,796,689,939)

There are no changes in hierarchy level for the years ended December 31, 2019 and December 31, 2018.

The fair values of financial instruments that are not actively traded in the market are determined by using valuation techniques. Fair values of financial assets at FVOCI and financial assets at FVTPL are measured by discount cash flow technique.

39. RISK MANAGEMENT (CONT'D):

d) Derivative
In principle, the fair value of derivative instruments is measured based on the forward exchange rates quoted in the market as of the reporting date, consistent with the remainder of the measurement derivatives.

If the forward exchange rate of the period, consistent with the remaining term of the derivatives is not disclosed in the market, the fair value is estimated by assuming the forward exchange rate for the period similar to the remaining period of the currency forward, using the interpolation method. .

The inputs used in the fair value measurement of derivatives are derived from the forward exchange rates which is observable in the market as of the end of the reporting period. Therefore, the fair value measurement of derivatives is classified as Level 2 in the fair value hierarchy.

e) Unlisted stock
The fair value of unlisted stocks is measured using the discounted cash flow model and is used to estimate future cash flows. The Group uses observable market price with assumptions or estimates of sales growth, pretax profit margins, and weighted average cost of capital, based on business plans and business conditions. Some assumptions are used that are not based on observable market prices or ratios.

The weighted average cost of capital used to discount future cash flows is calculated by applying the Capital Asset Pricing Model (CAPM), using data from similar listed companies.

The Group classifies the fair value measurement of unlisted stocks as Level 3 of the fair value hierarchy because the major assumption or estimate mentioned above have a significant impact on the fair value of unlisted stocks.

Changes in financial instruments in Level 3 for the years ended December 31, 2019, are as follows (Korean won):

	December 31, 2019						
	Beginning balance	Acquisition	Disposal	Reclassified category	Valuation	Others(*)	Ending balance
Financial assets at FVOCI	₩ 21,812,539,092	₩ -	₩ -	₩ -	₩ (5,215,112,000)	₩173,689,212	₩ 16,771,116,304

(*) It reflects the changes in exchange rate.

40. RELATED PARTIES:

(1) Related parties of the Group as of December 31, 2019, are as follows (Korean won):

Type	Related party
Parent	KEPCO
Associates	Hyundai Energy Co., Ltd.
	S-power Co., Ltd.
	Ecollite Co., Ltd.
	Korea Offshore Wind Power Co., Ltd.
	Jinbhuvish Power Generations Pvt. Ltd.
	Nepal Water & Energy Development Company Pty., Ltd.
	Goseong Green Power Co., Ltd.
	Gangneung Eco Power Co., Ltd.
	KEPCO Energy Solution Co., Ltd.
	Solar School Plant Co., Ltd.
	PND solar., Ltd
	Hyundai Echo Energy Co., Ltd.
Joint ventures	ASM-BG Investicii AD
	RES Technology AD
	Global Trade of Power System Co., Ltd.
	Expressway Solar-light Power Generation Co., Ltd.
	Cheongsong Myeonbong Mt Wind Power, Co, Ltd.
	CHILE SOLAR JV SpA
	Jaeun People Wind Power Plant Co., Ltd
Others	Korea Hydro & Nuclear Power Co., Ltd.
	Korea Midland Power Co., Ltd.
	Korea Western Power Co., Ltd.
	Korea Southern Power Co., Ltd.
	Korea East-West Power Co., Ltd.
	KEPCO Engineering & Construction Company, Inc.
	KEPCO Plant Service & Engineering Co., Ltd.
	KEPCO Nuclear Fuel Co., Ltd.
	Korea Electric Power Data Network Co., Ltd.
	Korea Gas Corporation
	Korea Electric Power Industrial Development Co., Ltd.
	KPX and others

40. RELATED PARTIES (CONT'D):

(2) Related party transactions for the three months and nine months ended December 31, 2019 and 2018, are as follows (Korean won):

		2019	
Company name	Transaction type	Sales and others	Purchase and others
KEPCO	Electricity trading and others	₩ 5,765,184,937,665	₩ 41,868,449,258
Hyundai Energy Co., Ltd.	Service fee related to power generation	2,401,786,589	1,035,648,626
S-Power Co., Ltd.	Service fee related to power generation	4,320,108,850	288,482,000
Nepal Water & Energy Development Company Pty., Ltd.	Service fee related to power generation	203,712,432	-
Hyundai Echo Energy Co., Ltd.	REC Purchase	25,508,182	6,809,568,412
Goseong Green Energy Co., Ltd.	Service fee related to power generation	18,832,988,037	-
Gangneung Eco Power Co., Ltd.	Service fee related to power generation	6,275,029,700	-
Korea Offshore Wind Power Co., Ltd.	Service fee	291,888,990	-
PND solar., Ltd	REC Purchase	377,191,750	38,727,500
Solar School Plant Co., Ltd.	Service fee related to power generation	-	4,514,341,644
ASM-BG Investicii AD	Service fee related to power generation	227,224,789	-
ASM-BG Investicii AD	Dividend	4,561,430,000	-
Global Trade of Power System Co., Ltd.	Others	-	502,080,135
Express Solar-light Power Generation Co., Ltd.	REC Purchase	-	2,186,232,000
Jaeun People Wind Power Plant Co., Ltd	Service fee related to power generation	105,000,000	-
Korea Hydro & Nuclear Power Co., Ltd.	Service fee	-	16,563,000
Korea West Power Co., Ltd	Others	-	1,048,200
Korea South Power Co., Ltd	Interest income and others	-	31,843,622
Korea East-West Power Co., Ltd.	Commissions and others	16,510,000	19,660,081
KEPCO Engineering & Construction Company, Inc.	Repairs and maintenance expense and others	66,704,056	3,462,808,773
KEPCO Plant Service & Engineering Co., Ltd.	Repairs and maintenance expense and others	807,701,845	101,410,475,361
Korea Electric Power Data Network Co., Ltd.	Repairs and maintenance expense and others	9,000,000	12,672,300,271
Korea Gas Corporation	LNG Purchase	160,047,557	341,125,925,306
Korea Electric Power Industrial Development Co., Ltd.	Repairs and maintenance expense and others	133,208,607	22,909,727,550
KPX	Electricity trading commissions	-	6,175,592,850
		₩ 5,803,999,979,049	₩ 545,069,474,589

40. RELATED PARTIES (CONT'D):

Group name	Transaction type	2018 Sales and others	2018 Purchases and others
KEPCO	Electricity trading and others	₩ 5,498,206,920,992	₩ 38,877,575,649
Hyundai Energy Co., Ltd. (*)	Service fee related to power generation	843,510,530	1,359,318,560
S-Power Co., Ltd.	Service fee related to power generation	4,320,108,850	213,677,000
Korea Offshore Wind Power Co., Ltd.	Service fee	286,329,940	36,283,450
Nepal Water & Energy Development Group Pty., Ltd.	Service fee related to power generation	535,951,618	31,198,746
Goseong Green Energy Co., Ltd.	Service fee related to power generation	10,010,217,230	-
Gangneung Eco Power Co., Ltd.	Service fee related to power generation	4,568,640,574	18,886,124
KEPCO Energy Solution Co., Ltd.	Service fee	65,902,630	-
Korea Offshore Wind Power Co., Ltd.	Service fee	286,329,940	36,283,450
Solar School Plant Co., Ltd.	Service fee	97,508,490	-
ASM-BG Investicii AD	Service fee related to power generation	1,153,489,237	572,344
Global Trade of Power System Co., Ltd.	Others	-	565,134,473
Expressway Solar-light Power Generation Co., Ltd.	Renewable energy certificate ("REC") purchase	-	2,616,066,404
Korea Hydro & Nuclear Power Co., Ltd.	Service fee	-	77,870,000
Korea Midland Power Co., Ltd.	Interest income and others	7,272,727	704,428,127
Korea Western Power Co., Ltd.	Others	86,509,650	989,140
Korea South Power Co., Ltd.	Interest income and others	5,931,393,789	521,623,078
Korea East-West Power Co., Ltd.	Commissions and others	-	57,821,807
KEPCO Engineering & Construction Group, Inc.	Repairs and maintenance expense and others	-	2,495,487,031
KEPCO Plant Service & Engineering Co., Ltd.	Repairs and maintenance expense and others	904,275,933	99,438,031,817
Korea Electric Power Data Network Co., Ltd.	Repairs and maintenance expense and others	-	14,635,556,270
Korea Gas Corporation	LNG purchase	232,340,156	307,564,459,220
Korea Electric Power Industrial Development Co., Ltd.	Repairs and maintenance expense and others	115,247,687	24,485,183,239
KPX	Electricity trading commissions	-	6,458,554,833
		₩ 5,527,365,620,033	₩ 500,158,717,312

40. RELATED PARTIES (CONT'D):

(3) Receivables and payables arising from related-party transactions as of December 31, 2019 and 2018, are as follows (Korean won):

		Receivables		Payables	
Company name	Type	December 31, 2019	December 31, 2018	December 31, 2019	December 31, 2018
KEPCO	Trade receivables	₩ 395,641,856,571	₩ 455,626,822,336	₩ -	₩ -
	Other receivables	596,382,321,783	587,142,652,787	-	-
	Trade payables	-	-	755,866,188	1,272,096,306
	Other payables	-	-	1,188,330,409	1,910,416,854
Hyundai Energy Co., Ltd.	Other receivables (*)	12,532,364,567	9,663,576,011	-	-
	Other payables	-	-	9,177,832,622	8,021,271,766
Korea Offshore Wind Power Co., Ltd.	Other receivables	158,612,200	157,588,430	-	-
Ecollite Co., Ltd.	Other receivables	210,400,561	210,400,561	-	-
Nepal Water & Energy Development Company Pty., Ltd.	Other receivables	368,662,887	310,987,595	-	-
Goseong Green Energy Co., Ltd.	Other receivables	5,285,135,900	-	-	-
	Other payables	-	-	65,626,356,881	43,020,000,000
Solar School Plant Co., Ltd.	Other receivables	-	6,526,260	-	-
ASM-BG Investicii AD	Other receivables	46,329,657	38,403,211	-	-
Korea Midland Power Co., Ltd.	Other payables	-	-	-	22,000,000
Korea South Power Co., Ltd	Other payables	-	-	-	484,920,007
Korea East-West Power Co., Ltd.	Other payables	-	-	-	10,485,502
KEPCO Engineering & Construction Company, Inc.	Other payables	-	-	7,007,393,499	4,938,889,699
KEPCO Plant Service & Engineering Co., Ltd..	Other receivables	-	1,823,778	-	-
	Other payables	-	-	5,678,745,600	8,398,996,603
Korea Electric Power Data Network Co.	Other payables	-	-	624,238,433	5,019,511,505
Korea Gas Corporation	Other receivables	11,717,380	72,432,970	-	-
	Trade payables	-	-	48,750,291,825	71,566,429,750
Korea Electric Power Industrial Development Co., Ltd.	Other receivables	2,046,788	-	-	-
	Other payables	-	-	-	9,426,270
KPX	Other receivables	92,816,240	92,816,240	-	-
	Other payables	-	-	2,591,325	4,618,185
Total	Trade receivables	₩ 395,641,856,571	₩ 455,626,822,336	₩ -	₩ -
	Other receivables	615,090,407,963	597,697,207,843	-	-
	Trade payables	-	-	49,506,158,013	72,838,526,056
	Other payables	-	-	89,305,488,769	71,840,536,391

(*) As of December 31, 2019 and 2018 receivables to Hyundai Energy Co., Ltd. are the book value excluding allowance for bad debts of ₩80,930 million and 108,480 million.

40. RELATED PARTIES (CONT'D):

(4) There are no changes in long/short-term loans to related parties for the years ended December 31, 2019 and 2018. Long/short-term loans to related parties as of December 31, 2019 are as follows (Korean won):

		December 31, 2019		
Type	Company name	Beginning balance	Others	Ending balance
Associate(*1)	Hyundai Energy Co., Ltd.	₩ 2,465,000,000	₩ -	₩ 2,465,000,000

(*1) The Group recognized ₩2,465 million as loss on impairment before December 31, 2018.

(5) Salaries and other compensations to the key members of management of the Group for the three months and nine months ended December 31, 2019 and 2018, are as follows (Korean won):

	December 31, 2019	December 31, 2018
Salaries	₩ 619,286,259	₩ 675,763,083
Employee benefits	29,003,960	38,003,110
	₩ 648,290,219	₩ 713,766,193

40. RELATED PARTIES (CONT'D):

(6) Guarantees and collateral provided to related parties

Primary guarantor	Secondary guarantor	Type of guarantee	Amount		Guarantee
Korea South-East Power Co., Ltd	KEPCO Bylong Australia Pty., Ltd.	Debt guarantees(*5)	USD	5,800,000	Export-Import Bank of Korea and others
Korea South-East Power Co., Ltd.	Hyundai Energy Co., Ltd.	Collateralized money invested(*1)	KRW	-	Industrial Bank of Korea
Korea South-East Power Co., Ltd.	Hyundai Energy Co., Ltd.	Performance guarantees and guarantees for supplemental funding (*2, *3)	KRW	76,800,000,000	NH Investment& Securities Co.,Ltd
Korea South-East Power Co., Ltd.	S-Power Co., Ltd.	Collateralized money invested	KRW	115,784,303,601	Korea Development Bank and others
Korea South-East Power Co., Ltd.	RES Technology AD	Collateralized money invested	KRW	16,247,709,243	UniCredit Bulbank and others
Korea South-East Power Co., Ltd.	ASM-BG Investicii AD	Collateralized money invested	KRW	19,376,008,669	UniCredit Bulbank and others
Korea South-East Power Co., Ltd.	Express Solar-light Power Generation Co., Ltd.	Performance guarantees and guarantees for supplemental funding (*2, *4)	KRW	2,500,000,000	Woori Bank
Korea South-East Power Co., Ltd	Goseong Green Energy Co., Ltd.	Collateralized money invested	KRW	2,339,784,105	Kyobo life insurance co., ltd and others
Korea South-East Power Co., Ltd	Gangneung Eco Power Co., Ltd.	Collateralized money invested	KRW	2,429,778,953	Kyobo life insurance co., ltd and others
Korea South-East Power Co., Ltd	PND solar., Ltd	Collateralized money invested	KRW	1,144,190,890	Industrial Bank of Korea
Korea South-East Power Co., Ltd.	Hyundai Echo Energy Co., Ltd.	Collateralized money invested	KRW	3,781,253,843	Samsung Life Insurance Co., Ltd. and others
Korea South-East Power Co., Ltd.	Korea Offshore Wind Power Co., Ltd.	Collateralized money invested	KRW	21,295,840,981	Woori Bank and others
Korea South-East Power Co., Ltd.	Jaeun Resident Wind Power Co., Ltd	Collateralized money invested	KRW	2,198,002,202	Industrial Bank of Korea
Korea South-East Power Co., Ltd.	Chungsongmyeon Bongsan Wind Power Co., Ltd	Collateralized money invested	KRW	2,763,863,806	Kyobo Life Insurance Co., Ltd and others

(*1) The Group recognized impairment loss on all of the equity securities of Hyundai Energy Co., Ltd. before December 31, 2018, and the acquisition cost of the securities provided as collateral is ₩47,067 million.

(*2) The Group guarantees to provide supplemental funding for business with respect to excessive business expenses or insufficient repayment of borrowings.

(*3) Pursuant to the guarantee agreement, the Group recognized other provisions of ₩28,717 million as the possibility of economic outflow to fulfill the obligation was probable and the amount could be reasonably estimated.

(*4) The Group has granted the right to Hana Financial Investment Co., Ltd., as an agent for the creditors to Express Solar-light Power Generation Co., Ltd. ("ESPG"), to the effect that in the event of acceleration of ESPG's payment obligations under certain borrowings to such creditors, Hana Financial may demand the Group to dispose of shares in ESPG held by the Group and apply the resulting proceeds to repayment of ESPG's obligations.

(*5) As of December 31, 2019, the Group has recorded a provision of financial guarantee contracts of ₩ 5,966 million.

41. CASH FLOW:

(1) Significant non-cash investment and finance transactions excluded from the consolidated statements of cash flows for the years ended December 31, 2019 and 2018, are as follows (Korean won):

Transactions	December 31, 2019	December 31, 2018
Transfer of long-term borrowings and debt securities from non-current to current	₩ 671,860,745,311	₩ 331,843,264,348
Transfer from construction in progress to depreciable assets	384,147,637,942	515,572,464,851
Changes in other payables related to acquisition of property, plant and equipment	17,966,855,926	11,571,598,037
Transfer from investments in associates to investments in subsidiaries	13,691,878,060	-
Increase of right-of-use assets due to lease contracts	39,021,336,242	-
Transfer of investments in subsidiaries from advance payment	4,400,000,000	-
Transfer of investments in associates and joint ventures from advance payment	2,900,000,000	-

(2) The adjustments of liabilities arising from financing activities for the year ended December 31, 2019, are as follows:

	Beginning balance	Cash flow	Non-cash flow: Change of exchange rate	Non-cash flow: Change of Fair Value	Non-cash flow: Transfer and others	Ending balance
Dividend payable	₩ 1,209,452,055	₩ (23,360,652,075)	₩ -	₩ -	₩ 23,360,652,075	₩ 1,209,452,055
Short-term borrowings	100,000,000,000	(100,000,000,000)	-	-	-	-
Long-term borrowings	213,599,520,013	182,028,000,485	(16,255,613,746)	-	129,625,000,000	508,996,906,752
Debt securities	3,235,318,234,490	(200,449,460,000)	19,212,215,169	-	2,168,977,794	3,056,249,967,453
Derivatives	80,785,875,540	6,247,801,586	-	(28,081,087,123)	-	58,952,590,003
Lease liabilities	-	(131,564,004,745)	37,382,707,943	-	1,105,306,494,437	1,011,125,197,635
	₩ 3,630,913,082,098	₩ (267,098,314,749)	₩ 40,339,309,366	₩ (28,081,087,123)	₩ 1,260,461,124,306	₩ 4,636,534,113,898

42. COMMITMENTS FOR EXPENDITURE:

The agreements for acquisition of property, plant and equipment as of December 31, 2019 and 2018, are as follows (Korean won):

Contracts	December 31, 2019: Amount	December 31, 2019: Balance
Other construction Contracts (27 contracts)	₩ 352,710,000,000	₩ 122,890,000,000

43. CONTINGENCIES AND COMMITMENTS:

(1) Credit lines provided by financial institutions as of December 31, 2019, are as follows (Korean won):

Court	Plaintiff	Defendant	Contents of case		Litigation value
Litigations as a plaintiff:					
Supreme Court	Korea South-East Power Co., Ltd.	Inchon Port authority	Request change of port facility fee and others	₩	4,087,230
Supreme Court	Korea South-East Power Co., Ltd.	Samsung Display Co., Ltd. and 1	Claim for damages		3,506,768,045
Seoul High Court	Korea South-East Power Co., Ltd.	Special construction credit Union	Claim for damages		720,575,295
Seoul administrative Court	Korea South-East Power Co., Ltd.	Jinju Tax chief and 6	Revocation of refusal disposition of Income Tax(*1)		1,700,647,919
Seoul Central District Court	Korea South-East Power Co., Ltd.	Dongil Rubber Belt Co., Ltd. and 6	Claim for damages(*2)		40,000,100
Seoul Administrative Court	Korea South-East Power Co., Ltd.	Incheon Tax chief and 6	Cancellation of imposed tax		3,132,221,357
Changwon District Court	Korea South-East Power Co., Ltd.	Tongyoung Tax chief	Revocation of refusal disposition of value-added Tax		507,965,333
Incheon District Court	Korea South-East Power Co., Ltd.	Incheon Tax chief	Revocation of refusal disposition of value-added Tax		2,000,000,000
Busan District Court	Korea South-East Power Co., Ltd.	Korea Asset Management Corp.	Loan payments		24,440,900
Litigations as a defendant:					
Seoul High Court	Han min tae and 14	Korea South-East Power Co., Ltd.	Salaries		78,428,721
Changwon District Court	Piti Lima Tungal	Korea South-East Power Co., Ltd.	Excessive profits		3,236,302,702
Seoul Central District Court	Lee seong yong and 5	Korea South-East Power Co., Ltd.	Salaries		15,837,877
Seoul Eastern District Court	Kim dong ill and 42	Korea South-East Power Co., Ltd.	Salaries		280,907,577
Seoul Central District Court	Kim su seok and 312	Korea South-East Power Co., Ltd.	Claim for interim payment of retirement		1,229,627,192
PESHAWAR HIGH COURT	M/S Y B Pakistan Limited	Korea South-East Power Co., Ltd. and 6	Call for the affirmation of the nullity of a resolution		-
Changwon District Court	Kim chi hwan and 1	Korea South-East Power Co., Ltd. and 3	Claim for damages		320,000,000
Changwon District Court	Kolob Global Co., Ltd.	Korea South-East Power Co., Ltd.	Excessive profits		1,704,591,676
Changwon District Court	RK Global Co., Ltd.	Korea South-East Power Co., Ltd.	Verification of debt existence		754,685,120
Changwon District Court	Kim hark hyun	Korea South-East Power Co., Ltd.	Confirmation of invalidity of shareholder meeting resolution and others		100,000,000
Seoul Eastern District Court	Choe seok hwan	Korea South-East Power Co., Ltd.	Confirmation of dismissal nullity		182,518,917

Seoul South District Court	Lim Hyo Hyuk and 279	Korea South-East Power Co., Ltd. and 3	Salaries	1,815,716,246
Seoul Central District Court	Korea Technology	Korea South-East Power Co., Ltd.	Bill of goods	2,077,065,925
Changwon District Court	Kim jung ki	Korea South-East Power Co., Ltd.	Request for performance of contract	94,858,450
Seoul Central District Court	Kang seok deok and 575	Korea South-East Power Co., Ltd.	Claim for retirement pension	576,000,000
Seoul Central District Court	Kang doe hwan and 82	Korea South-East Power Co., Ltd.	Claim for interim payment of retirement	83,000,000
Changwon District Court	Juwonfe Co., Ltd.	Korea South-East Power Co., Ltd.	Cancellation of bid qualification restricted disposal	50,000,000
Seoul Central District Court	Nong Hyup Bank	Korea South-East Power Co., Ltd.	Commitment	1,031,969,362

(*1) Five power generation companies, including the Group, are co-plaintiffs and the total litigation value is ₩4,719,019,577.
(*2) Five power generation companies, including the Group, are co-plaintiffs and the total litigation value is ₩200,000,500.

(2) Credit lines provided by financial institutions as of December 31, 2019 are as follows (Korean won, USD):

Commitments	Financial institutions	Currencies	Limited amount	Execution amount
Commitments on bank overdraft	Nonghyup Bank	KRW	200,000,000,000	-
Certification of payment on Letter of credit (L/C)	Woori Bank	USD	60,000,000	-
	Nonghyup Bank	USD	20,000,000	-
	Shinhan Bank	USD	50,000,000	13,490,377
	Kookmin Bank	USD	60,000,000	14,353,600
	KEB Hana Bank	USD	44,000,000	1,315,346
	KEB Hana Bank	USD	56,000,000	24,616,402
Loan limit	DBS	USD	100,000,000	-
	SMBC	USD	50,000,000	-
	Mizuho Bank	USD	50,000,000	-
	Standard Chartered Bank Korea	USD	150,000,000	-
	Shinhan Banck	USD	100,000,000	-
	The Export-Import bank of Korea	USD	100,000,000	-
Bidding guarantees	KEB Hana Bank	USD	10,000,000	197,000
Loan secured by trade receivables (*)	Nonghyup Bank	KRW	30,000,000,000	-
	KEB Hana Bank	KRW	7,000,000,000	-
	Woori Bank	KRW	8,000,000,000	-
	Shinhan Bank	KRW	10,000,000,000	-
	Kookmin Bank	KRW	10,000,000,000	-
	Industrial bank of Korea	KRW	5,000,000,000	-

(*) The amount represents total credit limits of the Group's vendors from Nonghyup Bank by providing their trade receivables from the Group as collaterals.

43. CONTINGENCIES AND COMMITMENTS (CONT'D):

(3) Contracts for raw materials purchase

Details of contracts for raw materials purchase as of December 31, 2019, are as follows (in thousands of tons, kiloliters):

	Supplier	Periods	Contracted amounts
Bituminous coal	Australia	2009.07–2021.12	6,005
	Indonesia	2009.06–2022.05	14,960
	Canada, USA and others	2009.08–2021.12	10,765
Oil	GS Caltex Corporation and others	2019.01–2019.12	31,483
LNG	Korea Gas Corporation and others	2007.01–2035.01	Annually determined
Wood pellet	Mokpo Gas Corporation and others	2018.10–2021.10	785

(4) Long-term marine transportation commitments for bituminous coal

The long-term marine transportation commitments for bituminous coal as of December 31, 2019, and the details are as follows (Korean won):

Company name	Vessel	Contract periods
Polaris Shipping Co., Ltd.	Oriental Enterprise	2009.09–2024.08
Korea Line Corporation	Rosemary	2010.04–2025.03
Pan Ocean Co., Ltd.	Pan Flower	2010.08–2020.07
H-LINE Shipping Co., Ltd.	HL Samarinda	2011.10~2031.09
Korea Shipping Corporation	Youngheung	2012.08~2032.07
Pan Ocean Co., Ltd.	Pan Iris	2013.03–2028.02
Five Ocean Corporation	F.Star	2013.06–2023.05
Daebo International Shipping Co., Ltd.	Daebo Gladstone	2013.11–2023.10
Hanaro Shipping Co., Ltd.	Sea Empire	2014.10–2024.09
Woo Yang Shipping Co., Ltd.	Wooyang Friend	2014.11–2029.10
Daebo International Shipping Co., Ltd.	Glovis Desire	2015.07–2030.06
SK Shipping Co., Ltd.	K. Younghung	2015.08–2033.07
Hyundai Glovis Co., Ltd.	Glovis Diamond	2016.03–2031.02
Five Ocean Corporation	F. Sun	2016.12–2026.11
Five Ocean Corporation	F.Fortune	2016.12-2026.11
H-LINE Shipping Co., Ltd.	Okra	2017.04-2027.03
H-LINE Shipping Co., Ltd.	HD Samcheonpo	2017.11-2035.10
GNS Shipping Co., Ltd	GNS Harmony	2018.01-2032.12
Korea Shipping Corporation	SM Samcheonpo	2019.04-2029.03

43. CONTINGENCIES AND COMMITMENTS (CONT'D):

(5) As of December 31, 2019, the Group carries long-term borrowing up to the limit of USD 275,600 thousand from International Finance Corporation and others. The Group has a guarantee investment of USD 69,808 thousand and additional investment of USD 19,000 thousand for contingencies, and the Group has provided guarantee for Central Power Purchasing Agency Guarantee Ltd., an electricity buyer, up to a limit of USD 2,777 thousand for completion delay or shortfall capacity. Meanwhile, the Group has provided its investment securities in Mira Power Limited as a collateral to International Finance Corporation and others.

(6) As of December 31, 2019, the Group has entered into loan agreements of ₩132,000 million with lenders such as Kyobo Life Insurance. The Group provides all the shares of Tamra Offshore Wind Power Co., Ltd. and property, plant and equipment related to the business as collateral up to the limit of ₩171,600 million to the lenders in connection with this loan agreement.

(7) As of December 31, 2019, the Group carries borrowing of USD 115,000 million from DB Damage insurance Co.,Ltd and others. The Group provides all the shares of SE Green Energy Co., Ltd. and property, plant and equipment related to the business as collateral up to the limit of ₩149,500 million to the lenders in connection with this loan agreement.

44. EVENTS AFTER THE REPORTING PERIOD:

(1) On February 3, 2020, the Group issued foreign bond for the purpose of using it for operating and refinancing, and the details of issuance are as follows:

Type of bond	Issue date	Maturity	Interest rate (%)	Foreign currency	
Foreign bonds	2020.02.03	2025.02.03	2.125	USD	300,000,000

(2) Market uncertainty is increasing due to the influx and spread of new corona virus disease(COVID-19) occurred in Wuhan, Hubei Province, China, in January 2020. Considering the rapidly changing market conditions, as of the end of the reporting period, the Company cannot reasonably estimate the financial impact of this event.

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Independent Auditors' Report

English Translation of Independent Auditors' Report Originally Issued in Korean

To the Shareholder and the Board of Directors of
Korea South-East Power Co., Ltd.:

Report on the Audited Consolidated Financial Statements

Our Opinion

We have audited the accompanying consolidated financial statements of Korea South-East Power Co., Ltd. (the "Group"), which comprise the consolidated statements of financial position as of December 31, 2018 and 2017, respectively, and the consolidated statements of comprehensive income, consolidated statements of changes in equity and consolidated statements of cash flows, for the years then ended, and a summary of significant accounting policies and other explanatory information.

In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Group as of December 31, 2018 and 2017, respectively, and its financial performance and its cash flows for the years then ended in accordance with the Korean Government-Owned and Quasi-Government Accounting Regulations and Standards.

Basis for Audit Opinion

We conducted our audits in accordance with the Korean Standards on Auditing ("KSAs"). Our responsibilities under those standards are further described in the Auditor's Responsibilities for the Audit of the Consolidated Financial Statements section of our report. We are independent of the Group in accordance with the ethical requirements, including those related to independence, that are relevant to our audit of the consolidated financial statements in the Republic of Korea as required by prevailing audit regulations. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

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

Management is responsible for the preparation of the accompanying consolidated financial statements in accordance with the Korean Government-Owned and Quasi-Government Accounting Regulations and Standards, and for such internal control as they determine is necessary to enable the preparation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the consolidated financial statements, management of the Group is responsible for assessing the Group's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going-concern basis of accounting, unless management either intends to liquidate the Group or to cease operations, or has no realistic alternative, but to do so.

Those charged with governance's responsibilities include overseeing the Group's financial reporting process.

Deloitte.

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

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

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

- Identify and assess the risks of material misstatement of the consolidated financial statements, design and perform audit procedures responsive to those risks and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations or the override of internal control.

- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Group's internal control.

- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.

- Conclude on the appropriateness of the management's use of the going-concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Group′s ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditors' report to the related disclosures in the consolidated financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditors' report. However, future events or conditions may cause the Group to cease to continue as a going concern.

- Evaluate the overall presentation, structure and content of the consolidated financial statements, including the disclosures, and whether the consolidated financial statements represent the underlying transactions and events in a manner that achieves fair presentation.

- Obtain sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the Group to express an opinion on the consolidated financial statements. We are responsible for the direction, supervision and performance of the Group audit. We are solely responsible for our audit opinion.

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

Deloitte.

Emphasis of Matter

As discussed in Note 2, the consolidated financial statements have been prepared in accordance with the Korean Government-Owned and Quasi-Government Accounting Regulations and Standards, and as prescribed by these regulations, except as otherwise provided in these regulations and standards, Korean International Financial Reporting Standards have been applied for the preparation of the consolidated financial statements.

/s/ Deloitte Anjin LLC

March 26, 2019

Notice to Readers

This report is effective as of March 26, 2019, the auditors' report date. Certain subsequent events or circumstances may have occurred between the auditors' report date and the time the auditors' report is read. Such events or circumstances could significantly affect the consolidated financial statements and may result in modifications to the auditors' report.

KOREA SOUTH-EAST POWER CO., LTD. AND ITS SUBSIDIARIES

CONSOLIDATED STATEMENTS OF FINANCIAL POSITION

AS OF DECEMBER 31, 2018 AND 2017

		Korean won	
	Notes	December 31, 2018	December 31, 2017
ASSETS			
CURRENT ASSETS:			
Cash and cash equivalents	5,6,39	₩ 149,803,189,823	₩ 84,401,482,330
Current financial assets	5,8,12,39	21,375,743,886	22,245,655,870
Trade and other receivables	5,9,39,40	1,088,601,066,333	1,164,660,243,339
Inventories	13	433,717,575,948	248,480,524,322
Current non-financial assets	14	150,844,472,456	123,815,115,410
Prepaid income taxes	36	770,809,041	48,581,809,005
		1,845,112,857,487	1,692,184,830,276
NON-CURRENT ASSETS:			
Non-current financial assets	5,7,10,11,12,39,40	301,021,421,463	231,926,561,928
Non-current trade and other receivables	5,9,39	18,005,219,006	20,459,340,748
Property, plant and equipment	17,23	7,687,255,807,447	7,752,594,333,632
Intangible assets	18	35,870,192,572	24,996,078,112
Investments in associates and joint ventures	16	309,930,266,885	269,860,703,976
Deferred tax assets	36	429,539,998	231,370,221
Non-current non-financial assets	14	4,192,224,962	39,126,526,596
		8,356,704,672,333	8,339,194,915,213
Total assets		₩ 10,201,817,529,820	₩ 10,031,379,745,489

(Continued)

KOREA SOUTH-EAST POWER CO., LTD. AND ITS SUBSIDIARIES
CONSOLIDATED STATEMENTS OF FINANCIAL POSITION (CONTINUED)
AS OF DECEMBER 31, 2018 AND 2017

		Korean won	
	Notes	December 31, 2018	December 31, 2017
LIABILITIES			
CURRENT LIABILITIES:			
Trade and other payables	5,19,39,40	₩ 553,561,711,121	₩ 459,655,281,370
Current financial liabilities	5,8,20,39	432,826,454,668	854,177,585,679
Current tax liabilities	36	2,809,713,312	107,129,506
Current non-financial liabilities	24,40	60,024,488,354	47,669,578,929
Current provisions	22	205,369,655,981	383,841,053,808
		1,254,592,023,436	1,745,450,629,292
NON-CURRENT LIABILITIES:			
Non-current trade and other payables	5,19,39,40	41,805,629,884	38,838,660,226
Non-current financial liabilities	5,8,20,39	3,196,887,989,774	2,603,345,580,183
Non-current non-financial liabilities	24	1,707,337,926	4,716,587,620
Employee benefit obligations, net	21,39	131,868,266,737	109,623,413,907
Deferred tax liabilities	36	546,008,549,477	512,471,870,318
		3,918,277,773,798	3,268,996,112,254
Total liabilities		5,172,869,797,234	5,014,446,741,546
EQUITY			
Equity attributable to the owner of the Group:			
Contributed capital	1,25	1,154,104,199,175	1,154,104,199,175
Retained earnings	26,27	3,595,862,729,620	3,613,679,785,519
Hybrid securities	28	398,910,000,000	398,910,000,000
Other components of equity	8,10,29	(141,286,633,764)	(166,963,743,618)
Equity attributable to the owner of the Group:		5,007,590,295,031	4,999,730,241,076
Non-controlling interests	15	21,357,437,555	17,202,762,867
Total equity		5,028,947,732,586	5,016,933,003,943
Total liabilities and equity		₩ 10,201,817,529,820	₩ 10,031,379,745,489

(Concluded)

See accompanying notes to consolidated financial statements.

KOREA SOUTH-EAST POWER CO., LTD. AND ITS SUBSIDIARIES

CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME

FOR THE YEARS ENDED DECEMBER 31, 2018 AND 2017

		Korean won	
	Notes	2018	2017
Sales	4,30,40	₩5,542,593,847,256	₩5,399,328,370,684
Cost of sales	13,37,40	5,289,076,286,702	4,954,766,665,744
Gross profit		253,517,560,554	444,561,704,940
Selling and administrative expenses	31,37	96,811,874,736	173,911,505,032
Operating income		156,705,685,818	270,650,199,908
Other income	32,40	25,165,144,553	38,408,080,002
Other expenses	5,12,32	(61,880,537,373)	(10,490,119,264)
Other gain	5,33	1,051,572,328	18,716,240,790
Finance income	5,8,34,40	64,208,711,785	87,252,049,274
Finance costs	5,8,35	(136,017,616,188)	(184,320,826,488)
Loss from investments in associates and joint ventures, net	16	2,667,403,818	(6,879,891,682)
Share in income of associates and joint ventures		9,909,586,079	3,000,109,259
Share in loss of associates and joint ventures		(5,058,462,668)	(9,880,000,941)
Loss on disposal of investments in associates and joint ventures		(2,183,719,593)	-
Income before income tax expense		51,900,364,741	213,335,732,540
Income tax expense	36	22,228,722,891	37,639,921,525
Net income		₩ 29,671,641,850	₩ 175,695,811,015

(Continued)

KOREA SOUTH-EAST POWER CO., LTD. AND ITS SUBSIDIARIES

CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME (CONTINUED)

FOR THE YEARS ENDED DECEMBER 31, 2018 AND 2017

	Notes	Korean won 2018	Korean won 2017
Other comprehensive income, net of income tax:	5,8,10,11, 12,21,26, 29		
Items that will not be reclassified to profit or loss:			
Defined benefit plan actuarial gain (loss), net of tax		₩ (8,845,968,978)	₩ 14,579,314,479
Net change in fair value of equity investments at fair value through other comprehensive income		50,131,455,827	-
Items subsequently reclassified to profit or loss:			
Net change in unrealized fair value of AFS financial assets, net of tax		-	27,803,617,618
Net change in unrealized fair value of derivatives using cash flow hedge accounting, net of tax		(5,964,429,248)	3,202,796,059
Foreign currency translation of foreign operation, net of tax		(10,668,909,629)	(6,448,471,231)
Share in other comprehensive loss of associates and joint ventures, net of tax		(2,858,016,569)	(2,172,937,223)
Other comprehensive income for the year, net of tax		21,794,131,403	36,964,319,702
Total comprehensive income		₩ 51,465,773,253	₩ 212,660,130,717
Net income (loss) attributable to:			
Owner of the Group		₩ 30,263,145,821	₩ 175,474,306,847
Non-controlling interests	15	(591,503,971)	221,504,168
Total comprehensive income (loss) attributable to:			
Owner of the Group		₩ 55,172,999,775	₩ 214,364,645,092
Non-controlling interests	15	(3,707,226,522)	(1,704,514,375)
Net earnings per share:			
Basic and diluted earnings per share	38	₩ 284	₩ 2,723

(Concluded)

See accompanying notes to consolidated financial statements.

KOREA SOUTH-EAST POWER CO., LTD. AND ITS SUBSIDIARIES

CONSOLIDATED STATEMENTS OF CHANGES IN EQUITY

FOR THE YEARS ENDED DECEMBER 31, 2018 AND 2017

2017

	Korean won						
	Equity attributable to owner of the Group						
	Contributed capital	Retained earnings	Hybrid securities	Other equity components	Subtotal	Non-controlling interests	Total
Balance at January 1, 2017	₩ 1,154,104,199,175	₩ 3,543,568,492,680	₩ 398,910,000,000	₩ (191,285,936,331)	₩ 4,905,296,755,524	₩ 17,017,344,081	₩ 4,922,314,099,605
Total comprehensive income :							
Net income	-	175,474,306,847	-	-	175,474,306,847	221,504,168	175,695,811,015
Comprehensive income (loss):							
Defined benefit plan actuarial income (loss), net of tax	-	14,568,145,532	-	-	14,568,145,532	11,168,947	14,579,314,479
Net change in unrealized fair value of AFS financial assets, net of tax	-	-	-	27,803,617,618	27,803,617,618	-	27,803,617,618
Net change in unrealized fair value of derivatives using cash flow hedge accounting, net of tax	-	-	-	3,202,796,059	3,202,796,059	-	3,202,796,059
Foreign currency translation of foreign operation, net of tax	-	-	-	(4,511,283,741)	(4,511,283,741)	(1,937,187,490)	(6,448,471,231)
Share in other comprehensive income (loss) of associates and joint ventures, net of tax	-	-	-	(2,172,937,223)	(2,172,937,223)	-	(2,172,937,223)
Total comprehensive income (loss)	-	190,042,452,379	-	24,322,192,713	214,364,645,092	(1,704,514,375)	212,660,130,717
Transactions with owners recognized directly in equity:				-			
Dividends paid (hybrid securities)	-	(13,384,764,000)	-	-	(13,384,764,000)	-	(13,384,764,000)
Dividends paid	-	(106,546,395,540)	-	-	(106,546,395,540)	-	(106,546,395,540)
Increased paid-in capital by subsidiary	-	-	-	-	-	(392,865)	(392,865)
Issuance of share capital by subsidiary	-	-	-	-	-	1,890,326,026	1,890,326,026
Balance at December 31, 2017	₩ 1,154,104,199,175	₩ 3,613,679,785,519	₩ 398,910,000,000	₩(166,963,743,618)	₩ 4,999,730,241,076	₩ 17,202,762,867	₩ 5,016,933,003,943

(Continued)

KOREA SOUTH-EAST POWER CO., LTD. AND ITS SUBSIDIARIES

CONSOLIDATED STATEMENTS OF CHANGES IN EQUITY (CONTINUED)

FOR THE YEARS ENDED DECEMBER 31, 2018 AND 2017

2018	Korean won						
	Equity attributable to owner of the Group						
	Contributed capital	Retained earnings	Hybrid securities	Other equity components	Subtotal	Non-controlling interests	Total
Balance at January 1, 2018	₩ 1,154,104,199,175	₩ 3,613,679,785,519	₩ 398,910,000,000	₩(166,963,743,618)	₩ 4,999,730,241,076	₩ 17,202,762,867	₩ 5,016,933,003,943
Total comprehensive income (loss):							
Net income	-	30,263,145,821	-	-	30,263,145,821	(591,503,971)	29,671,641,850
Comprehensive income (loss):							
Defined benefit plan actuarial income (loss), net of tax	-	(8,836,730,441)	-	-	(8,836,730,441)	(9,238,537)	(8,845,968,978)
Net change in unrealized fair value of AFS financial assets, net of tax	-	-	-	50,131,455,827	50,131,455,827	-	50,131,455,827
Net change in unrealized fair value of derivatives using cash flow hedge accounting, net of tax	-	-	-	(5,964,429,248)	(5,964,429,248)	-	(5,964,429,248)
Foreign currency translation of foreign operation, net of tax	-	-	-	(7,562,425,615)	(7,562,425,615)	(3,106,484,014)	(10,668,909,629)
Share in other comprehensive income (loss) of associates and joint ventures, net of tax	-	-	-	(2,858,016,569)	(2,858,016,569)	-	(2,858,016,569)
Total comprehensive income (loss)	-	21,426,415,380	-	33,746,584,395	55,172,999,775	(3,707,226,522)	51,465,773,253
Transactions with owners recognized directly in equity:							
Dividends paid (hybrid securities)	-	(13,384,764,000)	-	-	(13,384,764,000)	-	(13,384,764,000)
Dividends paid	-	(33,928,181,820)	-	-	(33,928,181,820)	-	(33,928,181,820)
Dividends paid (subsidiary)	-	-	-	-	-	(394,425)	(394,425)
Issuance of share capital by subsidiary	-	-	-	-	-	7,816,147,180	7,816,147,180
Changes in consolidation scope	-	-	-	-	-	46,148,455	46,148,455
Effect of change in accounting policy	-	8,069,474,541	-	(8,069,474,541)	-	-	-
Balance at December 31, 2018	₩ 1,154,104,199,175	₩ 3,595,862,729,620	₩ 398,910,000,000	₩(141,286,633,764)	₩ 5,007,590,295,031	₩ 21,357,437,555	₩ 5,028,947,732,586

(Concluded)

See accompanying notes to consolidated financial statements.

KOREA SOUTH-EAST POWER CO., LTD. AND ITS SUBSIDIARIES

CONSOLIDATED STATEMENTS OF CASH FLOWS

FOR THE YEARS ENDED DECEMBER 31, 2018 AND 2017

	Korean won	
	2018	2017
CASH FLOWS FROM OPERATING ACTIVITIES:		
Net income	₩ 29,671,641,850	₩ 175,695,811,015
Adjustments for:		
Income tax expense	22,228,722,891	37,639,921,525
Depreciation and amortization	677,482,937,577	645,288,940,322
Employee benefit expense	18,169,682,756	19,684,720,116
Dividend income	(10,951,776,053)	(1,957,215,981)
Interest income	(3,318,250,962)	(2,254,175,283)
Interest expense	92,439,622,347	91,797,388,983
Loss on foreign currency translation, net	(1,352,271,624)	(63,850,655,190)
Loss (gain) on valuation and transaction of derivatives, net	(11,239,979,758)	86,067,089,068
Gain on financial guarantee	(27,278,461)	-
Gain on disposal of financial assets at FVTPL	(8,123,792)	-
Gain on disposal of AFS financial assets, net	-	(1,053,660)
Loss on disposal of AFS financial assets, net	-	8,996
Share in income of associates and joint ventures	(9,909,586,079)	(3,000,109,259)
Share in loss of associates and joint ventures	5,058,462,668	9,880,000,941
Loss on disposal of investments in associates and joint ventures	2,183,719,593	-
Gain on disposal of property, plant and equipment, net	(269,317,795)	(1,120,147,843)
Loss on disposal of property, plant and equipment, net	1,269,506,686	14,896,343,568
Bad debt expense	-	78,073,496,309
Other bad debt expense	17,747,886,760	2,470,640,849
Accretion expense to provisions	119,948,942,521	54,141,208,789
Reversal of accretion expense to provisions	(216,803,655,764)	(27,911,904,426)
Gain from liabilities forgiven	(4,837,565,193)	(2,107,678,240)
	697,811,678,318	937,736,819,584

(Continued)

KOREA SOUTH-EAST POWER CO., LTD. AND ITS SUBSIDIARIES

CONSOLIDATED STATEMENTS OF CASH FLOWS (CONTINUED)

FOR THE YEARS ENDED DECEMBER 31, 2018 AND 2017

	Korean won	
	2018	2017
CASH FLOWS FROM OPERATING ACTIVITIES:		
Trade receivables	₩ 36,631,600,931	₩ 33,697,453,721
Other receivables	196,365,809,290	(334,989,200,470)
Current non-financial assets	(289,571,940,474)	59,495,744,716
Non-current non-financial assets	31,539,317,506	10,703,730,856
Inventories	(185,256,247,614)	(5,819,481,302)
Trade payables	83,783,864,667	(47,964,719,294)
Other payables	75,640,928,957	(77,166,713,978)
Current non-financial liabilities	(13,742,865,488)	(6,366,395,238)
Non-current non-financial liabilities	(18,143,088)	2,272,709,651
Provisions	5,829,521,734	189,155,588
Payments of employee benefit obligations	(7,555,422,899)	(5,710,330,147)
	(66,353,576,478)	(371,658,045,897)
Interest received	2,461,478,731	2,049,937,402
Interest paid	(123,379,783,366)	(104,946,835,521)
Dividends received	11,926,311,053	2,902,824,981
Income taxes paid (refunded)	56,805,769,172	(114,265,964,348)
Net cash provided by operating activities	608,943,519,280	527,514,547,216

(Continued)

KOREA SOUTH-EAST POWER CO., LTD. AND ITS SUBSIDIARIES

CONSOLIDATED STATEMENTS OF CASH FLOWS (CONTINUED)

FOR THE YEARS ENDED DECEMBER 31, 2018 AND 2017

	Korean won	
	2018	2017
CASH FLOWS FROM INVESTING ACTIVITIES:		
Disposal of financial assets at FVTPL	₩ 527,841,464	₩ -
Decrease in short-term financial instruments	-	173,402,960
Acquisition of AFS financial assets	-	(44,758,570)
Disposal of AFS financial assets	-	62,714,301
Acquisition of associates and joint ventures	(40,580,024,985)	(36,409,541,594)
Acquisition of property, plant and equipment	(623,917,952,218)	(615,730,467,655)
Disposal of property, plant and equipment	768,306,867	1,480,203,496
Acquisition of intangible assets	(487,699,552)	(1,693,461,826)
Increase in loans	(5,762,233,750)	(9,082,218,079)
Decrease in loans	1,328,277,933	7,096,272,487
Increase in other receivables	(10,308,905,008)	(10,703,430,405)
Decrease in other receivables	5,776,704,000	12,677,829,163
Increase in other payables	5,543,160,223	403,403,567
Decrease in other payables	(312,533,146)	-
Receipt of government grants	-	300,000,000
Net cash used in investing activities	(667,425,058,172)	(651,470,052,155)
CASH FLOWS FROM FINANCING ACTIVITIES:		
Borrowings and debt securities	1,863,143,058,730	1,225,442,347,579
Repayment of borrowings and debt securities	(1,695,685,880,000)	(1,042,915,225,603)
Settlement of derivatives, net	5,572,353,501	25,082,265,381
Dividends paid	(51,586,576,245)	(124,204,395,540)
Increase in non-controlling interests	9,885,576,797	1,890,326,026
Net cash provided by financing activities	131,328,532,783	85,295,317,843
Net increase (decrease) in cash and cash equivalents	72,846,993,891	(38,660,187,096)
Effects of exchange rate changes on the balance of cash held in foreign currencies	(7,445,286,398)	(7,392,747,405)
Cash and cash equivalents, beginning of year	84,401,482,330	130,454,416,831
Cash and cash equivalents, end of year	₩ 149,803,189,823	₩ 84,401,482,330

(Concluded)

See accompanying notes to consolidated financial statements.

1. GENERAL:

Korea South-East Power Co., Ltd.

Korea South-East Power Co., Ltd. (the “Group”) was incorporated on April 2, 2001, through the spin-off of the power generation division of Korea Electric Power Corporation (“KEPCO”) in accordance with a restructuring plan dated January 21, 1999, for the energy industry in the Republic of Korea announced by the Ministry of Commerce, Industry and Energy and the Law on Promotion of Restructuring of the Electricity Industry promulgated on December 23, 2000. The Group engages in the generation of electricity and development of electric power resources and sells all generated electricity to KEPCO through the Korea Power Exchange (“KPX”).

As of December 31, 2018, the Group operates five power plants with a total capacity of 10,377 MW. The Group’s headquarters is located at Jinju-si, Gyeongsangnam-do. As of December 31, 2018, the Group’s issued and outstanding shares are wholly owned by KEPCO.

The consolidated financial statements comprise the Group and its subsidiaries (together referred to as the “Group” and individually as “Group entities”) and the Group’s interests in associates and joint ventures.

2. BASIS OF PREPARATIONS AND SIGNIFICANT ACCOUNTING POLICIES:

(1) Basis of consolidated financial statement presentation

The Group maintains its official accounting records in Korean won and prepares its consolidated financial statements in conformity with Korean Government-owned and Quasi-government Accounting Regulation and Standards and Korean International Financial Reporting Standards (“K-IFRSs”), as prescribed in the Act on External Audits of Corporations in the Republic of Korea. Accordingly, these consolidated financial statements are intended for use by those who are informed about K-IFRSs and Korean practices. The accompanying consolidated financial statements have been restructured and translated into English with certain expanded descriptions from the Korean language consolidated financial statements.

Certain information included in the Korean language consolidated financial statements, but not required for a fair presentation of the consolidated financial position, comprehensive income, changes in equity or cash flows of the Group, is not presented in the accompanying consolidated financial statements.

The significant accounting policies used for the preparation of the consolidated financial statements are consistent with those applied to the consolidated financial statements as of and for the year ended December 31, 2017, except for the adoption effect of the new and revised accounting standards and interpretations described below.

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

The Group’s consolidated financial statements were approved at the board of directors’ meeting on March 25, 2019, and are to be approved finally at the general meeting of shareholders on March 27, 2019.

① New and revised standards that have been applied from the period beginning on January 1, 2018, are as follows:

The Group first applied the amendments to K-IFRS 1109 and other standards related to those standards from January 1, 2018. K-IFRS 1109 introduces new regulations: 1) classification and measurement of financial assets and financial liabilities, 2) impairment of financial assets and contract assets and 3) hedge accounting.

The Group did not reclassify the comparative financial statements when it first applied the standard.

Impacts on the consolidated financial statements are generally categorized as follows:

① Classification and measurement of financial assets

K-IFRS 1109 includes a new classification and measurement of financial assets that reflects the business model in which the assets are managed and their cash flow characteristics.

Under K-IFRS 1109, financial assets are classified into three principal categories: measured at amortized cost, fair value through other comprehensive income ("FVOCI") and fair value through profit or loss ("FVTPL") based on the business model in which the assets are managed and their cash flow characteristics. Under K-IFRS 1109, derivatives embedded in hybrid contracts where the host is a financial asset are not bifurcated. Instead, the hybrid financial instrument as a whole is assessed for classification.

The criteria for classification and measurement of financial assets under K-IFRS 1109 are as follows:

- A financial asset is measured at amortized cost if it meets both of the following conditions and is not designated as at FVTPL: 1) the asset is held within a business model whose objective is to hold assets to collect contractual cash flows and 2) the contractual terms of the financial asset give rise on specified dates to cash flows that are solely payments of principal and interest on the principal amount outstanding.

- A financial asset is measured at FVOCI if it meets both of the following conditions and is not designated as at FVTPL: 1) the asset is held within a business model whose objective is achieved by both collecting contractual cash flows and selling financial assets and 2) the contractual terms of the financial asset give rise on specified dates to cash flows that are solely payments of principal and interest on the principal amount outstanding. On initial recognition of equity investment that is not held for trading, the Group may irrevocably elect to present subsequent changes in fair value in other comprehensive income ("OCI") and will not reclassify (recycle) those items in OCI to profit or loss subsequently.

- A financial asset is measured at FVTPL if the contractual terms of the financial asset give rise on specified dates to cash flows that are not solely payments of principal and interest on the principal amount outstanding, if the debt instrument is held within a business model whose objective is to sell the asset or if the equity instruments that are not elected to be designated as measured at FVOCI.

② Impairment: Financial assets and contract assets

K-IFRS 1109 replaces the 'incurred loss' model in the existing standard with a forward-looking 'expected credit loss' ("ECL") model for debt instruments, lease receivables, contractual assets, loan commitments and financial guarantee contracts.

Under K-IFRS 1109, impairment losses are likely to be recognized earlier than using the incurred loss model under the existing guidance in International Accounting Standard ("IAS") 39 as loss allowances will be measured on either of the 12-month or lifetime ECL based on the extent of increase in credit risk since inception as shown in the below table.

Classification		Loss allowances
Stage 1	Credit risk has not increased significantly since the initial recognition	Twelve-month ECL: ECL that resulted from possible default events within the 12 months after the reporting date
Stage 2	Credit risk has increased significantly since the initial recognition	Lifetime ECL: ECL that resulted from all possible default events over the expected life of a financial instrument
Stage 3	Credit impaired	

Under K-IFRS 1109, an entity shall always measure the loss allowance at an amount equal to lifetime ECL for trade receivables or contract assets that result from transactions that are within the scope of K-IFRS 1115 and that do not contain a significant financing component in accordance with K-IFRS 1115 and if the trade receivables or contract assets include a significant financing component, an entity may choose as its accounting policy to measure the loss allowance at an amount equal to lifetime ECLs.

③ Classification and measurement of financial liabilities

Under K-IFRS 1109, the amount of change in the fair value attributable to the changes in the credit risk of the financial liabilities is presented in OCI, not recognized in profit or loss, and the OCI amount will not be reclassified (recycled) to profit or loss. However, if doing so creates or increases an accounting mismatch, the amount of change in the fair value is recognized in profit or loss.

The Group did not elect financial liabilities to be designated as at FVTPL and believes that there is no significant impact on the Group's consolidated financial statements upon adoption of K-IFRS 1109.

④ Hedge accounting

The general hedge accounting requirements of K-IFRS 1109 retain the three types of hedge accounting mechanisms in K-IFRS 1039: Fair value hedge, cash flow hedge and hedge of net investment in a foreign operation. However, greater flexibility has been introduced to the types of transactions eligible for hedge accounting, specifically broadening the types of instruments that qualify as hedging instruments and the types of risk components of non-financial items that are eligible for hedge accounting. In addition, the effectiveness test has been overhauled and replaced with the principle of an 'economic relationship.' Retrospective assessment of hedge effectiveness is no longer required. Far more disclosure requirements about an entity's risk management activities have been introduced.

In addition, K-IFRS 1109 contains specific transitional provisions for classification and measurement of financial assets, impairment of financial assets and hedge accounting.

⑤ Based on the result of the detailed assessment to date, the impacts on the Group's financial assets on the date of initial application (January 1, 2018) are as follows:

Classification based on IAS 39	Classification based on K-IFRS 1109	In millions of Korean won Amount based on IAS 39	In millions of Korean won Amount based on K-IFRS 1109
Loans and receivables	Amortized cost	₩ 1,314,969	₩ 1,270,369
Loans and receivables	FVTPL	-	44,600
Available-for-sale ("AFS") financial assets	FVOCI	208,691	204,363

AFS financial assets	FVTPL	-	4,328
Total financial assets (excluding derivative instruments)		₩ 1,523,660	₩ 1,523,660

Upon adoption of K-IFRS 1109, ₩44,600 million of financial assets will be measured at FVTPL. The Group has elected to measure ₩204,363 million of the equity securities classified as AFS financial assets as FVOCI under K-IFRS 1109. Accordingly, from January 1, 2018, gains and losses from changes in fair value of the equity securities are recognized in OCI, impairment losses are not recognized in profit or loss and gains and losses are not reclassified at disposal.

Enactment of K-IFRS 1115–*Revenue from Contracts with Customers*

The Group applied K-IFRS 1115 for the first time from the current period, and in accordance with the transition rule in K-IFRS 1115, the Group chose to apply the cumulative effect of initial application of the K-IFRS retrospectively to be recognized on the date of initial application, January 1, 2018. In addition, the Group applied the K-IFRS retrospectively only to contracts that were not completed at the date of initial application and used a practical expedient that does not retrospectively rewrite the contract for all contract changes made before the date of initial application.

Impacts on the consolidated financial statements are categorized below in '(5) Recognition of Revenue.'

Amendments to K-IFRS 1102 — *Share-Based Payment*

The amendments include: 1) when measuring the fair value of share-based payment, the effects of vesting and non-vesting conditions on the measurement of cash-settled share-based payment should be consistent with the measurement of equity-settled share-based payment; 2) share-based payment transaction in which the Group settles the share-based payment arrangement net by withholding a specified portion of the equity instruments per statutory tax withholding requirements would be classified as equity settled in its entirety (it otherwise would be classified as equity settled without the net settlement feature); and 3) when a cash-settled share-based payment changes to an equity-settled share-based payment because of modifications of the terms and conditions, the original liability recognized is derecognized and the equity-settled share-based payment is recognized at the modification-date fair value. Any difference between the carrying amount of the liability at the modification date and the amount recognized in equity at the same date would be recognized in profit and loss immediately.

Amendments to K-IFRS 1040 — *Transfers of Investment Property*

The amendments clarify that a transfer to, or from, investment property necessitates an assessment of whether a property meets, or has ceased to meet, the definition of investment property, supported by observable evidence that a change in use has occurred. The amendments further clarify that situations other than the ones listed in K-IFRS 1040 may evidence a change in use, and that a change in use is possible for properties under construction (i.e., a change in use is not limited to completed properties).

Annual Improvements to K-IFRS 2014-2016 Cycle

The annual improvements include amendments to K-IFRS 1101 *First-Time Adoption* and K-IFRS 1028 *Investment in Associates and Joint Ventures.* The amendments to K-IFRS 1028 clarify that the option for a venture capital organization and other similar entities to measure investments in associates and joint ventures at FVTPL is available separately for each associate or joint venture, and that election should be made at initial recognition of the associate or joint venture. In respect of the option for an entity that is not an investment entity (IE) to retain the fair value measurement applied by its associates and joint ventures that are IEs when applying the equity method, the amendments make a similar clarification that this choice is available for each IE associate or IE joint venture. The amendments apply retrospectively with earlier application permitted.

The Group does not anticipate that the application of the amendments in the future will have any impact on the Group's consolidated financial statements as the Group is neither a first-time adopter of K-IFRS nor a venture capital organization. Furthermore, the Group does not have any associate or joint venture that is an IE.

K-IFRS 2122—*Foreign Currency Transactions and Advance Consideration*

The interpretation addresses how to determine the 'date of transaction' for the purpose of determining the exchange rate to use on initial recognition of an asset, expense or income, when consideration for that item has been paid or received in advance in a foreign currency, which resulted in the recognition of a non-monetary asset or non-monetary liability (e.g., a non-refundable deposit or deferred revenue).

The interpretation specifies that the date of transaction is the date on which the entity initially recognizes the non-monetary asset or non-monetary liability arising from the payment or receipt of advance consideration. If there are multiple payments or receipts in advance, the interpretation requires an entity to determine the date of transaction for each payment or receipt of advance consideration.

The interpretation is effective for annual periods beginning on or after January 1, 2018, with earlier application permitted. Entities can apply the interpretation either retrospectively or prospectively. Specific transition provisions apply to prospective application.

The Group does not anticipate that the application of the enactment in the future will have an impact on the Group's consolidated financial statements because the Group already accounts for transactions involving the payment or receipt of advance consideration in a foreign currency in a way that is consistent with the enactment.

2) New and revised standards that have been issued, but are not yet effective, as of December 31, 2018, and that have not been applied earlier by the Group are as follows:

K-IFRS 1116 — *Leases*

① General information

K-IFRS 1116 introduces a comprehensive model for the identification of lease arrangements and accounting treatments for both lessors and lessees. K-IFRS 1116 will supersede existing leases guidance, including K-IFRS 1017 'Lease', K-IFRS 2104 'Determining whether an Arrangement contains a Lease', K-IFRS 2015 'Operating Leases – Incentives' and K-IFRS 2027 'Evaluating the Substance of Transactions Involving the Legal Form of a Lease' when it becomes effective.

The Group plans to apply K-IFRS 1116 retrospectively with the cumulative effect of initially applying the standard recognized at the date of initial application on January 1, 2019. Therefore, the cumulative effect of adopting K-IFRS 1116 will be recognized as an adjustment to the opening balance of retained earnings (or other component of equity, as appropriate) at January 1, 2019, with no restatement of comparative information.

For a contract that is, or contains, a lease, the Group shall account for each lease component within the contract as a lease separately from non-lease components of the contract. A lessee recognizes a right-of-use asset representing its right to use the underlying asset and a lease liability representing its obligation to make lease payments. There are recognition exemptions for short-term leases and leases of low-value items. In addition, as a practical expedient, a lessee may elect, by class of underlying asset, not to separate non-lease components from lease components, and instead account for each lease component and any associated non-lease components as a single lease component.

Lessor accounting remains similar to the existing guidance of K-IFRS 1017 'Leases' – i.e., lessors continue to classify leases as finance or operating leases.

② Identifying a lease

The Group assesses whether the contract is, or contains, a lease at inception of a contract and also shall identify whether the contract is, or contains, a lease at the date of initial application.

The definition of this new standard is mainly related to the control model. This standard classifies a lease contract and a service contract based on whether the identified asset is controlled by the customer. If the customer has all of the following rights, right of use is transferred to the customer.

- Right to obtain substantially all of the economic benefits from use of the identified asset
- Right to direct the use of the identified asset

The Group believes that the amendment of the definition of a lease will not have a significant impact on the scope of a contract that meets the definition of a lease.

③ Lessee accounting

The adoption of K-IFRS 1116 will change the accounting of operating leases, which was previously not included in the consolidated statements of financial position under K-IFRS 1017, and at the date of initial application of K-IFRS 1116, the Group shall account for all leases, except for short-term leases and leases of low-value items, as follows:

- Recognizes the present value of the lease payments that are not paid at the date of initial recognition in the consolidated statements of financial position as right-of-use asset and lease liabilities
- Recognizes the depreciation charge for right-of-use asset and interest expense on the lease liability in the consolidated statements of comprehensive income
- Classifies cash payments for the principal portion (financial activities) and for the interest portion (operating activities) in the consolidated statements of cash flows

④ Lessor accounting

Under K-IFRS 1116, a lessor continues to classify each of its leases as either a finance lease or an operating lease. However, under K-IFRS 1116, a lessor shall disclose additional information, such as the nature of the lessor's leasing activities and how the lessor manages the risk associated with any rights it retains in underlying assets.

K-IFRS 1109 — *Financial Instruments (Amendment)*

The amendments to K-IFRS 1109 clarify that for the purpose of assessing whether a prepayment feature meets the solely payments of principal and interest ("SPPI") condition, the party exercising the option may pay or receive reasonable compensation for the prepayment irrespective of the reason for prepayment. In other words, prepayment features with negative compensation do not automatically fail SPPI. The amendment applies to annual periods beginning on or after January 1, 2019, with earlier application permitted.

K-IFRS 1028 — *Long-Term Interests in Associates and Joint Ventures (Amendment)*

The amendment clarifies that K-IFRS 1109, including its impairment requirements, applies to long-term interests. Furthermore, in applying K-IFRS 1109 to long-term interests, an entity does not take into account adjustments to their carrying amount required by K-IFRS 1028 (i.e., adjustments to the carrying amount of long-term interests arising from the allocation of losses of the investee or assessment of impairment in accordance with K-IFRS 1028). The amendments apply retrospectively to annual reporting periods beginning on or after January 1, 2019. Earlier application is permitted.

Annual Improvements to K-IFRSs 2015–2017 Cycle

The annual improvements include amendments to four standards, such as K-IFRS 1012 Income Taxes, K-IFRS 1023 Borrowing Costs, K-IFRS 1103 Business Combinations and K-IFRS 1111 Joint Arrangements.

① *K-IFRS 1012 Income Taxes*

The amendments clarify that an entity should recognize the income tax consequences of dividends in profit or loss, OCI or equity according to where the entity originally recognized the transactions that generated the distributable profits.

② *K-IFRS 1023 Borrowing Costs*

The amendments clarify that if any specific borrowing remains outstanding after the related asset is ready for its intended use or sale, that borrowing becomes part of the funds that an entity borrows generally when calculating the capitalization rate on general borrowings.

③ *K-IFRS 1103 Business Combinations*

The amendments to K-IFRS 1103 clarify that when an entity obtains control of a business that is a joint operation, the entity applies the requirements for a business combination achieved in stages, including remeasuring its previously held interest (PHI) in the joint operation at fair value. The PHI to be remeasured includes any unrecognized assets, liabilities and goodwill relating to the joint operation.

④ *K-IFRS 1111 Joint Arrangements*

The amendments to K-IFRS 1111 clarify that when a party that participates in, but does not have joint control of, a joint operation that is a business obtains joint control of such a joint operation, the entity does not remeasure its PHI in the joint operation.

All the amendments are effective for annual periods beginning on or after January 1, 2019, and generally require prospective application. Earlier application is permitted.

K-IFRS 1019 – *Employee Benefits Plan Amendment, Curtailment or Settlement (Amendment)*

The amendments clarify that the past service cost (or the gain or loss on settlement) is calculated by measuring the defined benefit liability (asset) using updated assumptions and comparing benefits offered and plan assets before and after the plan amendment (or curtailment or settlement), but ignoring the effect of the asset ceiling (that may arise when the defined benefit plan is in a surplus position). K-IFRS 1019 is now clear that the change in the effect of the asset ceiling that may result from the plan amendment (or curtailment or settlement) is determined in a second step and is recognized in the normal manner in OCI.

The paragraphs that relate to measuring the current service cost and the net interest on the net defined benefit liability (asset) have also been amended. An entity will now be required to use the updated assumptions from this remeasurement to determine current service cost and net interest for the remainder of the reporting period after the change to the plan. In case of the net interest, the amendments make it clear that for the period post plan amendment, the net interest is calculated by multiplying the net defined benefit liability (asset) as remeasured under paragraph 99 with the discount rate used in the remeasurement (also taking into account the effect of contributions and benefit payments on the net defined benefit liability (asset)).

The amendments are applied prospectively. They apply only to plan amendments, curtailments or settlements that occur on or after the beginning of the annual period in which the amendments to K-IFRS 1019 are first applied. The amendments to K-IFRS 1019 must be applied to annual periods beginning on or after January 1, 2019. Earlier application is permitted.

K-IFRS 1115 – *Revenue from Contracts with Customers (Amendment)*

This amendment relates to prevent the revision of meaning 'contract' referred in K-IFRS 1115 paragraph 129.1 to 'individual contract' in relation to 'additional disclosure of contracts based on contract costs incurred to date' so that, even if application of K-IFRS 1115 is adopted, the range of disclosure has not been reduced. In addition, K-IFRS 1115 does not distinguish the types of contracts that the service contracts that did not qualify for the application of K-IFRS 1011 in paragraph 45.1 can be qualified in K-IFRS 1115 paragraph 129.1 and it is to clarify that the range of the contracts subject to make disclosure in accordance with paragraph 129.1 can be expanded compared to the previous standard. This amendment is effective for annual periods beginning on or after January 1, 2019, and earlier application is permitted.

K-IFRS 2123 – *Interpretation Uncertainty over Income Tax Treatments (Amendment)*

K-IFRS 2123 Interpretation sets out how to determine the accounting tax position when there is uncertainty over income tax treatments. The Interpretation requires an entity to:

① determine whether uncertain tax positions are assessed separately or as a group; and

② assess whether it is probable that a tax authority will accept an uncertain tax treatment used, or proposed to be used, by an entity in its income tax filings:
- If yes, the entity should determine its accounting tax position consistently with the tax treatment used or planned to be used in its income tax filings.
- If no, the entity should reflect the effect of uncertainty in determining its accounting tax position.

The Interpretation is effective for annual periods beginning on or after January 1, 2019. Entities can apply the Interpretation with either full retrospective application or modified retrospective application without restatement of comparatives retrospectively or prospectively.

The Group does not anticipate that the application of the amendments in the future will have any impact on its consolidated financial statements.

(2) Basis of consolidation

The consolidated financial statements incorporate the financial statements of the Group and entities (including structured entities) controlled by the Group (and its subsidiaries). Control is achieved where the Group 1) has the power over the investee; 2) is exposed, or has rights, to variable returns from its involvement with the investee; and 3) has the ability to use its power to affect its returns. The Group reassesses whether or not it controls an investee if facts and circumstances indicate that there are changes to one or more of the three elements of control listed above.

When the Group has less than a majority of the voting rights of an investee, it has power over the investee when the voting rights are sufficient to give it the practical ability to direct the activities of the investee unilaterally. The Group considers all relevant facts and circumstances in assessing whether or not its voting rights in an investee are sufficient to give it power, including:

- the size of the Group's holding of voting rights relative to the size and dispersion of holdings of other voteholders;
- potential voting rights held by the Group, other voteholders or other parties;
- rights arising from other contractual arrangements; and
- any additional facts and circumstances that indicate that the Group has, or does not have, the current ability to direct the relevant activities at the time that decisions need to be made, including voting patterns at previous shareholders' meetings.

Income and expenses of subsidiaries acquired or disposed of during the year are included in the consolidated statements of comprehensive income from the date the Group gains control to the date when the Group ceases to control the subsidiary. Profit or loss and each component of OCI are attributed to the owners of the Group and to the non-controlling interests. Total comprehensive income of subsidiaries is attributed to the owners of the Group and to the non-controlling interests even if this results in the non-controlling interests having a deficit balance.

When necessary, adjustments are made to the financial statements of subsidiaries to bring their accounting policies in line with the Group's accounting policies.

All intragroup transactions and related assets and liabilities, income and expenses are eliminated in full on consolidation.

Changes in the Group's ownership interests in subsidiaries that do not result in the Group losing control over the subsidiaries are accounted for as equity transactions. The carrying amounts of the Group's interests and the non-controlling interests are adjusted to reflect the changes in their relative interests in the subsidiaries. Any difference between the amount by which the non-controlling interests are adjusted and the fair value of the consideration paid or received is recognized directly in equity and attributed to owners of the Group.

When the Group loses control of a subsidiary, a gain or loss on disposal is calculated as the difference between (i) the aggregate of the fair value of the consideration received and the fair value of any retained interest and (ii) the previous carrying amounts of the assets (including goodwill) and liabilities of the subsidiary and any non-controlling interests. When assets of the subsidiary are carried at revalued amounts or fair values and the related cumulative gain or loss has been recognized in OCI and accumulated in equity, the amounts previously recognized in OCI and accumulated in equity are accounted for as if the Group had directly disposed of the relevant assets (i.e., reclassified to profit or loss or transferred directly to retained earnings). The fair value of any investment retained in the former subsidiary at the date when control is lost is recognized as the fair value on initial recognition for subsequent accounting under K-IFRS 1039 Financial Instruments: Recognition and Measurement or, when applicable, the cost on initial recognition of an investment in an associate or a joint venture.

(3) Business combination

Acquisitions of businesses are accounted for using the acquisition method. The consideration transferred in a business combination is measured at fair value, which is calculated as the sum of the fair values of the assets transferred by the Group, liabilities incurred by the Group to the former owners of the acquiree and the equity interests issued by the Group in exchange for control of the acquiree. Acquisition-related costs are generally recognized in profit or loss as incurred.

At the acquisition date, the identifiable assets acquired and the liabilities assumed are recognized at their fair value at the acquisition date, except that:

- deferred tax assets or liabilities and liabilities or assets related to employee benefit arrangements are recognized and measured in accordance with K-IFRS 1012 Income Taxes and K-IFRS 1019 Employee Benefits, respectively;
- liabilities or equity instruments related to share-based payment arrangements of the acquiree or share-based payment arrangements of the Group entered into to replace share-based payment arrangements of the acquiree are measured in accordance with K-IFRS 1102 Share-Based Payment at the acquisition date; and
- assets (or disposal groups) that are classified as held for sale in accordance with K-IFRS 1105 Non-Current Assets Held for Sale and Discontinued Operations are measured in accordance with that standard.

Goodwill is measured as the excess of the sum of a) the consideration transferred, b) the amount of any non-controlling interests in the acquiree and c) the fair value of the acquirer's previously held equity interest in the acquiree (if any) over the net of the acquisition-date amounts of the identifiable assets acquired and the liabilities assumed. If, after reassessment, the net of the acquisition-date amounts of the identifiable assets acquired and liabilities assumed exceeds the sum of a) the consideration transferred, b) the amount of any non-controlling interests in the acquiree and c) the fair value of the acquirer's PHI in the acquiree (if any), the excess is recognized immediately in profit or loss as a bargain purchase gain.

Non-controlling interests that are present ownership interests and entitle their holders to a proportionate share of the entity's net assets in the event of liquidation may be initially measured either at fair value or at the non-controlling interests' proportionate share of the recognized amounts of the acquiree's identifiable net assets. The choice of measurement basis is made on a transaction-by-transaction basis. Other types of non-controlling interests are measured at fair value or, when applicable, on the basis specified in another K-IFRS.

When the consideration transferred by the Group in a business combination includes assets or liabilities resulting from a contingent consideration arrangement, the contingent consideration is measured at its acquisition-date fair value and included as part of the consideration transferred in a business combination. Changes in the fair value of the contingent consideration that qualify as measurement-period adjustments are adjusted retrospectively, with corresponding adjustments against goodwill. Measurement-period adjustments are adjustments that arise from additional information obtained during the ‘measurement period’ (which cannot exceed one year from the acquisition date) about facts and circumstances that existed at the acquisition date.

The subsequent accounting for changes in the fair value of the contingent consideration that do not qualify as measurement-period adjustments depends on how the contingent consideration is classified. Contingent consideration that is classified as equity is not remeasured at subsequent reporting dates and its subsequent settlement is accounted for within equity.

When a business combination is achieved in stages, the Group's previously held equity interest in the acquiree is remeasured to fair value at the acquisition date and the resulting gain or loss, if any, is recognized in profit or loss. Amounts arising from interests in the acquiree prior to the acquisition date that have previously been recognized in OCI are reclassified to profit or loss where such treatment would be appropriate if those interests were disposed of.

If the initial accounting for a business combination is incomplete by the end of the reporting period in which the combination occurs, the Group reports provisional amounts for the items for which the accounting is incomplete. Those provisional amounts are adjusted during the measurement period (see above), or additional assets or liabilities are recognized, to reflect new information obtained about facts and circumstances that existed at the acquisition date that, if known, would have affected the amounts recognized at that date.

(4) Investments in associates and joint ventures

An associate is an entity over which the Group has significant influence. Significant influence is the power to participate in the financial and operating policy decisions of the investee, but not control or joint control over those policies.

A joint venture is a joint arrangement whereby the parties that have joint control of the arrangement have rights to the net assets of the joint arrangement. Joint control is the contractually agreed sharing of control of an arrangement, which exists only when decisions about the relevant activities require unanimous consent of the parties sharing control.

The results of operations and assets and liabilities of associates or joint ventures are incorporated in these consolidated financial statements using the equity method of accounting, except when the investment is classified as held for sale, in which case it is accounted for in accordance with K-IFRS 1105 *Non-Current Assets Held for Sale and Discontinued Operations*. Under the equity method, an investment in an associate or a joint venture is initially recognized in the consolidated statements of financial position at cost and adjusted thereafter to recognize the Group's share of the profit or loss and OCI of the associate or joint venture. When the Group's share of losses of an associate or a joint venture exceeds its interest in that associate or joint venture (which includes any long-term interests that, in substance, form part of the Group's net investment in the associate or joint venture), the Group discontinues recognizing its share of further losses. Additional losses are recognized only to the extent that the Group has incurred legal or constructive obligations or made payments on behalf of the associate or joint venture.

Any excess of the cost of acquisition over the Group's share of the net fair value of the identifiable assets, liabilities and contingent liabilities of an associate or a joint venture recognized at the date of acquisition is recognized as goodwill, which is included within the carrying amount of the investment. Any excess of the Group's share of the net fair value of the identifiable assets, liabilities and contingent liabilities over the cost of acquisition, after reassessment, is recognized immediately in profit or loss.

Upon disposal of an associate or a joint venture that results in the Group losing significant influence over that associate or joint venture, any retained investment is measured at fair value at that date and the fair value is regarded as its fair value on initial recognition as a financial asset in accordance with K-IFRS 1039 *Financial Instruments: Recognition and Measurement*. The difference between the previous carrying amount of the associate or joint venture attributable to the retained interest and its fair value is included in the determination of the gain or loss on disposal of the associate or joint venture. In addition, the Group accounts for all amounts previously recognized in OCI in relation to that associate or joint venture on the same basis it would be required if that associate or joint venture had directly disposed of the related assets or liabilities. Therefore, if a gain or loss previously recognized in OCI by that associate or joint venture would be reclassified to profit or loss on the disposal of the related assets or liabilities, the Group reclassifies the gain or loss from equity to profit or loss (as reclassification adjustment) when it loses significant influence over that associate or joint venture.

When the Group reduces its ownership interest in an associate or a joint venture, but continues to use the equity method, it reclassifies to profit or loss the proportion of the gain or loss that had previously been recognized in OCI relating to that reduction in ownership interest if that gain or loss would be reclassified to profit or loss on the disposal of the related assets or liabilities. In addition, the Group applies K-IFRS 1105 *Non-Current Assets Held for Sale and Discontinued Operations* to a portion of investment in an associate or a joint venture that meets the criteria to be classified as held for sale.

The requirements of K-IFRS 1039 *Financial Instruments: Recognition and Measurement* are applied to determine whether it is necessary to recognize any impairment loss with respect to the Group's investment in an associate or a joint venture. When necessary, the entire carrying amount of the investment (including goodwill) is tested for impairment in accordance with K-IFRS 1036 *Impairment of Assets* by comparing its recoverable amount (higher of value in use or fair value, less costs to sell) with its carrying amount, and any impairment loss recognized forms part of the carrying amount of the investment. Any reversal of that impairment loss is recognized in accordance with K-IFRS 1036 *Impairment of Assets* to the extent that the recoverable amount of the investment subsequently increases.

The Group continues to use the equity method when an investment in an associate becomes an investment in a joint venture or an investment in a joint venture becomes an investment in an associate. There is no remeasurement of fair value upon such changes in ownership interests.

When a Group entity transacts with an associate or a joint venture of the Group, profits and losses resulting from the transactions with the associate or joint venture are recognized in the Group's consolidated financial statements only to the extent of interests in the associate or joint venture that are not related to the Group.

(5) Revenue recognition

Revenue is measured at the fair value of the consideration received or receivable. Revenue is reduced for estimated customer returns, rebates and other similar allowances. The Group recognizes revenue when the amount of revenue can be reliably measured; when it is probable that future economic benefits will flow to the entity; and when specific criteria have been met for each of the Group's activities, as described below.

1) Sale of goods

Revenue from the sale of goods is recognized when the Group has transferred to the buyer the significant risks and rewards of ownership of the goods. The Group's revenue primarily composed of sales of electricity through operation of the thermal power plants.

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 Group 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 and interest income

Dividend income from investments is recognized when a shareholder’s right to receive payment has been established (if it is probable that the economic benefits will flow to the Group and the amount of income can be measured reliably).

Interest income from a financial asset is recognized when it is probable that the economic benefits will flow to the Group and the amount of income can be measured reliably. 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 carrying amount on initial recognition.

The financial impact of K-IFRS 1115 on the consolidated financial statements is as follows:

① Identify the performance obligations in the contract
The Group is engaged in the generation, transmission and distribution of electricity and development of electric power resources, and electricity sales revenue accounts for 95% of separate revenue for the year ended December 31, 2018.

Under K-IFRS 1115, supplying electricity is a series of distinct goods or services identified as a single performance obligation. The Group is also engaged in contracts with customers for transmission and distribution of heat and rendering of services that are identified as different performance obligations for each contract.

Based on the result of the detailed assessment to date, the Group believes that the impact of identifying separate performance obligations in the contract on its revenue is not significant.

② Variable consideration
The Group's settlement price includes the variable price due to fluctuation of the marginal price of the system due to the fluctuation of the system’s marginal price. However, it does not need to allocate the transaction price because it is a contract with one obligation to perform, and revenue is recognized based on the final invoice price after the supply.

Based on the result of the detailed assessment to date, the Group believes that the impact of variable consideration on its revenue is not significant.

③ Performance obligations satisfied over time
The Group provides its customers with services, such as Operation and Maintenance over time.

Under K-IFRS 1115, an entity recognizes revenue over time if one of the following criteria is met:
(a) The customer simultaneously receives and consumes the benefits provided by the entity's performance as the entity performs.
(b) The entity's performance creates or enhances an asset that the customer controls as the asset is created or enhanced.
(c) The entity's performance does not create an asset with an alternative use to the entity, and the entity has an enforceable right to payment for performance completed to date.

Based on the result of the detailed assessment to date, the impact of the revenue recognition over time based on the percentage-of-completion method on the Group's revenue is not significant.

(6) 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 Group as lessor

Amounts due from lessees under finance leases are recognized as receivables at the amount of the Group'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 Group'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 carrying amount of the leased asset and recognized on a straight-line basis over the lease term.

2) The Group as lessee

Assets held under finance leases are initially recognized as assets of the Group 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 consolidated statements 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 Group's general policy on borrowing costs. 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.

In the event that lease incentives are received to enter into operating leases, such incentives are recognized as a liability. The aggregate benefit of incentives is recognized as a reduction of rental expense on a straight-line basis, except where another systematic basis is more representative of the time pattern in which economic benefits from the leased asset are consumed.

(7) Foreign currencies

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

In preparing the consolidated financial statements of the individual entities, transactions in currencies other than the entity's functional currency (foreign currencies) are recognized at the rates of exchange prevailing at the date 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; and
- exchange differences on transactions entered into in order to hedge certain foreign currency risks.

(8) Borrowing costs

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

(9) Government grants

Government grants are not recognized until there is a reasonable assurance that the Group will comply with the conditions attached 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 whose primary condition is that the Group purchase, construct or otherwise acquire long-term assets are deducted in calculating the carrying amount of the asset. The grant is recognized in profit or loss over the life of a depreciable asset as a reduced depreciation expense.

Government grants related to income are recognized in profit or loss on a systematic basis over the periods in which the Group 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 Group with no future related costs are recognized in profit or loss in the period in which they become receivable.

(10) Retirement benefit costs and termination benefits

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

For defined retirement benefit plans, 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 consolidated statements of financial position with a charge or credit recognized in OCI in the period in which it occurs. Remeasurement recognized in OCI 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 and past service cost, as well as gains and losses on curtailments and settlements), net interest expense (income) and remeasurement.

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

The retirement benefit obligation recognized in the consolidated statements of financial position represents the actual deficit or surplus in the Group'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.

(11) Taxation

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 consolidated statements of 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 Group'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 carrying amounts of assets and liabilities in the consolidated 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 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.

Deferred tax liabilities are recognized for taxable temporary differences associated with investments in subsidiaries and associates, and interests in joint ventures, except where the Group is able to control the reversal of the temporary difference and it is probable that the temporary difference will not reverse in the foreseeable future. Deferred tax assets arising from deductible temporary differences associated with such investments and interests are only recognized to the extent it is probable that there will be sufficient taxable profits against which the benefits of the temporary differences can be utilized and the temporary differences are expected to reverse in the foreseeable future.

The carrying amount of deferred tax assets is reviewed at the end of each reporting period and reduced to the extent it is no longer probable that sufficient taxable profits will be available to allow all or part of the assets 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 is 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 Group expects, at the end of the reporting period, to recover or settle the carrying amount of its assets and liabilities.

Deferred tax assets and liabilities are offset if, and only if, the Group has a legally enforceable right to set off current tax assets against current tax liabilities, and the deferred tax assets and liabilities relate to income taxes levied by the same taxation authority on either the same taxable entity or different taxable entities, which intend either to settle current tax liabilities and assets on a net basis or to realize the assets and settle the liabilities simultaneously, in each future period in which significant amounts of deferred tax liabilities or assets are expected to be settled or recovered.

3) Current and deferred taxes for the year

Current and deferred taxes are recognized in profit or loss, except when they relate to items that are recognized in OCI or directly in equity, in which case the current and deferred taxes are also recognized in OCI or directly in equity. 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.

(12) Property, plant and equipment

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

Subsequent costs are recognized in the carrying 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 Group and the cost of an asset can be measured reliably. Routine maintenance and repairs are expensed as incurred.

The Group 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 (years)
Buildings	8–30
Structures	8–30
Machineries	4–24
Vehicles	4
Others	4
Finance lease assets	24

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, it is depreciated separately.

The Group reviews the depreciation method and 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 carrying amount of the asset) is included in profit or loss in the period in which the property is derecognized.

(13) 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.

The estimated useful lives and amortization methods of the Group's intangible assets with finite useful lives are as follows:

	Estimated useful lives (years)	Amortization
Software	4, 5	Straight-line method
Development cost	5	Straight-line method
Copyright, patent right and other industrial property	5, 10	Straight-line method
Others	4-20	Straight-line method

2) Internally generated intangible assets - research and development expenditure

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, only if, the development project is designed to produce new or substantially improved products, and the Group can demonstrate the technical and economic feasibility and measure reliably the resources attributable to the intangible asset during its development.

The amount initially recognized for internally generated intangible assets is the sum of the expenditure incurred from the date when the intangible asset first meets the recognition criteria. Where no internally generated intangible asset can be recognized, development expenditure is recognized in profit or loss in the period in which it is incurred.

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 are recognized separately from goodwill and are initially recognized at their fair value at the acquisition date (which is regarded as their cost). 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 carrying amount of the asset, are recognized in profit or loss when the asset is derecognized.

5) Patent rights and trademarks

Patents and trademarks are initially measured at acquisition cost and are amortized at a straight-line method over the estimated useful life.

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(14) Impairment of tangible and intangible assets other than goodwill

At the end of each reporting period, the Group reviews the carrying 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 Group estimates the recoverable amount of the cash-generating unit to which the asset belongs. Where a reasonable and consistent basis of allocation can be identified, corporate assets are also allocated to individual cash-generating units; otherwise, they are allocated to the smallest group of cash-generating units for which a reasonable and consistent allocation basis can be identified.

Intangible assets with indefinite useful lives and intangible assets 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, or value in use. If the recoverable amount of an asset (or a cash-generating unit) is estimated to be less than its carrying amount, the carrying amount of the asset (or the cash-generating unit) is reduced to its recoverable amount and the reduced amount is recognized in profit or loss.

Where an impairment loss subsequently reverses, the carrying amount of the asset (or the cash-generating unit) is increased to the revised estimate of its recoverable amount, but the increased carrying amount does not exceed the carrying amount that would have been determined had no impairment loss been recognized for the asset (or the cash-generating unit) in prior years. A reversal of an impairment loss is recognized immediately in profit or loss.

(15) Inventories

Inventories are stated at the lower of cost or net realizable value. Cost of inventories, except for those in transit, is measured under the weighted-average 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 carrying 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.

(16) Provisions

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

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 carrying 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 finance costs.

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.

1) Provision for employment benefits

The Group determines the provision for employment benefits as the incentive payments based on the results of the individual performance evaluation or management assessment.

2) Litigation provisions

The Group recognizes litigation provisions when it is probable that an outflow of resources embodying economic benefits will be required to settle the obligation and a reliable estimate can be made of the amount of the obligation.

3) Provision for renewable portfolio standard ("RPS")

For governmental regulation to require the production of energies from renewable energy sources, such as solar, wind and biomass, the Group recognized the provision of obligation to supply new renewable energy more than certain amount of total annual power generation annually.

(17) Financial instruments

The Group recognizes financial assets and financial liabilities in the consolidated statements of financial position when the Group becomes a party to the contractual provisions of the instrument. Upon initial recognition, financial assets and financial liabilities are measured at their fair value plus, in the case of a financial asset or financial liabilities not at FVTPL, transaction costs that are directly attributable to the asset's acquisition or issuance.

(18) Financial assets

All regular-way purchases or sales of financial assets are recognized and derecognized on a trade-date basis. Regular-way purchases or sales are purchases or sales of financial assets that require delivery of assets within the time frame established by regulation or convention in the marketplace.

All recognized financial assets are subsequently measured at amortized cost or fair value, depending on the classification of the financial asset.

1) Classification of financial assets

A financial asset is measured at amortized cost if it meets both of the following conditions and is not designated as at FVTPL:
- The financial asset is held within a business model whose objective is to hold assets to collect contractual cash flows.
- The contractual terms of the financial asset give rise on specified dates to cash flows that are solely payments of principal and interest on the principal amount outstanding.

A financial asset is measured at FVOCI if it meets both of the following conditions and is not designated as at FVTPL:
- The financial asset is held within a business model whose objective is achieved by both collecting contractual cash flows and selling financial assets.
- The contractual terms of the financial asset give rise on specified dates to cash flow that are solely payments of principal and interest on the principal amount outstanding.

All financial assets not classified as measured at amortized cost or FVOCI, as described above, are measured at FVTPL.

Notwithstanding the foregoing, at initial recognition of a financial asset, the Group may make the following irrevocable choices or designations:

- If a particular requirement is met (see 1-3) below), the Group may choose to present in OCI subsequent changes in the fair value of the equity instrument.

- If an item is designated as at FVTPL, a debt instrument that meets the requirements of an amortized cost measurement financial asset or a FVOCI may be designated as at FVTPL if the accounting mismatch is removed or significantly reduced (see 1-4) below).

There are no debt instruments designated as at FVTPL that meet the requirements of amortized cost financial assets or FVOCI during the current period.

1-1) Amortized cost and effective interest method

The effective interest method is a method of calculating the amortized cost of a debt instrument and allocating interest income over the relevant period. Except for financial assets that are credit impaired at the time of acquisition, effective interest rate is the rate at which the present value of the expected future cash receipts, including the fees and points paid or received (if appropriate) and the principal component of the effective interest rate, transaction costs and other premiums or discounts, is exactly the same as the gross carrying amount at initial recognition, without taking into account ECLs. For financial assets that are credit impaired at the time of acquisition, the credit-adjusted effective interest rate is calculated by discounting the present value of expected cash flows taking into account ECLs to amortized cost at initial recognition.

The amortized cost of a financial asset is the amount of the loss allowance adjusted for the amount of principal repayable at initial recognition, plus the accumulated amortization calculated by applying the effective interest method to the difference between the initial recognized amount and the maturity amount. The total carrying amount of a financial asset is the amortized cost of the financial asset before adjusting the loss allowance.

Interest income is recognized using the effective interest method for debt instruments that are subsequently measured at amortized cost and at FVOCI. Except for financial assets that are credit impaired at the time of acquisition, interest revenue is calculated by applying the effective interest rate to the total carrying amount of the financial asset (except for financial assets that are subsequently credit impaired). Subsequently, for credit-impaired financial assets, interest revenue is recognized using the effective interest rate at the amortized cost of the financial asset. If the credit risk of the credit-impaired financial instrument improves in subsequent reporting periods and the financial asset is no longer impaired, interest revenue is recognized by applying the effective interest rate to the total carrying amount of the financial asset. Subsequently, an entity does not change the calculation of interest revenue to the gross carrying amount even if the credit risk of the financial asset improves and the financial asset is no longer impaired.

For financial assets that are credit impaired at the time of acquisition, interest income is recognized using the credit-adjusted effective interest rate at amortized cost of the financial asset from initial recognition.

Interest income is recognized in profit or loss and is accounted for as 'Finance income.'

1-2) Debt instruments classified as FVOCI

Fair value is determined by the method described in Note 36. At initial recognition, the debt instrument is measured by adding transaction costs to its fair value. Subsequently, changes in the carrying amount of the debt instrument resulting from foreign currency translation gains and losses (returns) and interest income under the effective interest method are recognized in profit or loss. The amount recognized in profit or loss is the same amount that would have been recognized in profit or loss if the debt instrument had been measured at amortized cost. Except this, all changes in the carrying amount of the debt instrument are recognized in OCI and are accumulated in valuation gains and losses. When a debt instrument is derecognized, the cumulative gain or loss recognized in OCI is reclassified to profit or loss.

1-3) Equity instruments designated as at FVOCI measurement items

At initial recognition, the Group may make an irrevocable choice (by instrument) to designate its investment in equity instruments as at FVOCI. If the equity instrument is held for trading or is a contingent consideration recognized by the acquirer in a business combination, the designation as at FVOCI is not permitted.

Financial assets are held for trading if:

- they are acquired or incurred principally for the purpose of selling or repurchasing in the near term;
- on initial recognition, they are part of a portfolio of identified financial instruments that are managed together and for which there is evidence of a recent actual pattern of short-term profit taking; or
- they are a derivative (except for a derivative that is a financial guarantee contract or a designated and effective

hedging instrument).

Investments in equity instruments at FVOCI are initially recognized by adding transaction costs. They are subsequently measured at fair value with gains or losses arising from changes in fair value recognized in OCI and accumulated in valuation gains and losses. Accumulated profit or loss is not reclassified to profit or loss at the time the equity instruments are disposed of, but is replaced by profit or loss.

If a dividend on an investment in an equity instrument does not clearly represent a recovery of the investment cost, that dividend is recognized in profit or loss in accordance with K-IFRS 1109. Dividends are counted as 'finance gain.'

1-4) Financial assets measured at FVTPL

Financial assets that do not meet the measurement requirements at amortized cost or FVOCI are measured at FVTPL.
- If equity instruments that are not held for trading are not designated as at FVOCI at initial recognition, those equity instruments are classified as at FVTPL (see 1-3) above).
- Debt instruments that do not meet the requirements of amortized cost measurement items or FVOCI are classified as at FVTPL. In addition, if the designation as at FVTPL results in the measurement or recognition of an asset or liability on a different basis (i.e., an accounting mismatch) being eliminated or significantly reduced, a liability instrument that meets the requirements of an amortized cost measurement item or FVOCI may be designated as at FVTPL on initial recognition.

Financial assets measured at FVTPL are measured at fair value at the end of each reporting period and gains or losses on changes in fair value less costs to sell are recognized in profit or loss, excluding those designated as hedging relationships.

Net profit or loss recognized in profit or loss includes dividends obtained from financial assets and is counted as 'finance income.' On the other hand, interest income from financial assets measured at FVTPL is counted as 'finance income-interest income.' Fair value is determined by the method described in Note 36.

2) Foreign currency translation gains and losses

The carrying amount of a financial asset denominated in a foreign currency is determined in a foreign currency and translated into spot exchange at the end of the reporting period.
- For financial assets measured at amortized cost (excluding those designated as hedging relationships), the exchange rate difference is recognized in profit or loss in the 'financial gains and losses' line item.
- For debt instruments measured at FVOCI (excluding those designated as hedging relationships), the exchange rate difference of amortized cost of debt instruments is recognized in profit or loss in the 'financial gains and losses' line item. Excluding these, the difference in exchange rates is recognized in OCI in the accumulated valuation gains and losses.
- For financial assets measured at FVTPL (other than those designated as hedging relationships), the exchange rate difference is recognized in profit or loss in the 'financial gains and losses' line item.
- For equity instruments measured at FVOCI, accumulated gains and losses are recognized in OCI.

3) Impairment of financial assets

The Group applies a forward-looking ECL model for debt instruments, lease receivables, contractual assets, loan commitments and financial guarantee contracts.

The Group recognizes loss allowances measured on either of the 12-month or lifetime ECL based on the extent of increase in credit risk since inception as shown in the below table.

Classification		Loss allowances
Stage 1	Credit risk has not increased significantly since the initial recognition	12-month ECL: ECLs that resulted from possible default events within the 12 months after the reporting date
Stage 2	Credit risk has increased significantly since the initial recognition	Lifetime ECL: ECL that resulted from all possible default events over the expected life of a financial instrument
Stage 3	Credit impaired	

Under K-IFRS 1109, the Group always measures the loss allowance at an amount equal to lifetime ECLs for trade receivables or contract assets that result from transactions that are within the scope of K-IFRS 1115 and that do not contain a significant financing component in accordance with K-IFRS 1115. If the trade receivables or contract assets include a significant financing component, the Group may choose as its accounting policy to measure the loss allowance at an amount equal to lifetime ECLs.

The Group has chosen to measure the loss allowance at an amount equal to lifetime ECLs for the trade receivables, contract assets and lease receivables that contain a significant financing component.

4) Derecognition of financial assets

The Group derecognizes a financial asset when the contractual rights to the cash flows from the financial asset expire, when it transfers the rights to receive the contractual cash flows in a transaction in which substantially all of the risks and rewards of ownership of the financial asset are transferred or in which the Group neither transfers nor retains substantially all of the risks and rewards of ownership and it does not retain control of the financial asset. The Group enters into transactions whereby it transfers assets recognized in its consolidated statements of financial position, but retains either all or substantially all of the risks and rewards of the transferred assets. In these cases, the transferred assets are not derecognized.

When an entity derecognizes a financial asset measured at amortized cost, the difference between the carrying amount of the asset and the sum of the consideration received or receivable is recognized in profit or loss. If an investment in a debt instrument measured at FVOCI is eliminated, the cumulative amount of profit or loss previously recognized is reclassified to profit or loss. On the other hand, investments in equity instruments designated at FVOCI at initial recognition are not reclassified to profit or loss, but are replaced by retained earnings.

(19) Financial liabilities and equity instruments

1) Classification as debt or equity

Debt or 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) 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 Group are recognized as the proceeds are received, net of direct issue costs.

Repurchase of the Group'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, issuance or cancellation of the Group's own equity instruments.

3) Financial liabilities

All financial liabilities are subsequently measured at amortized cost using the effective interest method or at FVTPL. However, financial liabilities and financial guarantee contracts issued in the event that the transfer of financial assets does not meet the derecognition requirements or that the continuing involvement approach is applied are measured in accordance with the particular accounting policies described below.

4) Financial liabilities at FVTPL

Financial liabilities are classified as at financial liabilities measured at FVTPL when they are designated as consideration, held for trading or at FVTPL on initial recognition by the acquirer in a business combination.

A financial liability is classified as held for trading if:

- it has been acquired principally for the purpose of repurchasing in the near term;
- on initial recognition, it is part of a portfolio of identified financial instruments that are managed together and for which there is evidence of a recent actual pattern of short-term profit taking; or
- it is a derivative that is not designated and effective as a hedging instrument.

A financial liability other than a financial liability held for trading or contingent consideration that may be paid by an acquirer as part of a business combination may be designated as at FVTPL upon initial recognition if:

- such designation eliminates or significantly reduces a measurement or recognition inconsistency that would otherwise arise;
- the financial liability forms part of a group of financial assets or financial liabilities, or both, which is managed, and its performance is evaluated on a fair value basis, in accordance with the Group's documented risk management or investment strategy, and information about the grouping is provided internally on that basis; or
- it forms part of a contract containing one or more embedded derivatives, and K-IFRS 1109 *Financial Instruments: Recognition and Measurement* permits the entire combined contract (asset or liability) to be designated as at FVTPL.

The financial liability measured at FVTPL is measured at fair value and any gain or loss arising from changes in fair value other than those designated as hedging relationships is recognized in profit or loss. Interest expenses paid for financial liabilities measured at FVTPL are recognized in 'Other non-operating expenses' as an item of 'profit or loss on financial liabilities measured at FVTPL.'

However, when a financial liability is designated as at FVTPL, the amount of change in the fair value of the financial liability attributable to changes in the liability's credit risk is recognized in OCI, unless recognizing the effects of changes in the liability's credit risk in OCI creates or expands an accounting mismatch in profit or loss. The remaining fair value changes of the liability are recognized in profit or loss. Fair value due to credit risk of financial liabilities is recognized in OCI.

The change in value is not subsequently reclassified to profit or loss, but is instead replaced by retained earnings when the financial liability is derecognized.

Fair value is determined by the method described in Note 36.

5) Amortized cost measurement financial liability

Financial liabilities are subsequently measured at amortized cost using the effective interest method, unless they are contingent consideration of the acquirer in a business combination, held for trading or designated at FVTPL on initial recognition.

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

6) Financial guarantee contracts

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

- loss allowance determined in accordance with K-IFRS 1109 (see 'Financial Assets' above); or
- the amount initially recognized, less cumulative profit recognized in accordance with K-IFRS 1115.

7) Foreign currency translation gains and losses

Financial liabilities denominated in a foreign currency are measured at amortized cost at the end of the reporting period and foreign currency translation gains and losses are determined on the basis of amortized cost of the financial instrument. Foreign currency translation gains and losses on financial liabilities other than those designated as hedging relationships are recognized in profit or loss in the 'financial gains and losses' line item. When designated as a hedging instrument to hedge foreign currency risk, foreign currency translation gains and losses are recognized in OCI and are accumulated in equity as separate items.

The fair value of a financial liability denominated in a foreign currency is determined in foreign currency and translated into spot exchange at the end of the reporting period. For financial liabilities measured at FVTPL, the foreign currency translation component forms part of the fair value gain or loss and is recognized in profit or loss (excluding those designated as hedging relationships).

8) Derecognition of financial liabilities

The Group derecognizes financial liabilities when its obligations are discharged, canceled or expired. The difference between the carrying amount of the financial liability derecognized and the consideration paid and payable is recognized in profit or loss.

(20) Derivative financial instruments

The Group enters into a variety of derivative financial instruments to manage its exposure to interest rate and foreign exchange rate risks, 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, and 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

An embedded derivative is a component of a hybrid instrument that contains a host contract rather than a derivative, which has the effect of causing some of the cash flows of a compound instrument to fluctuate similarly to an independent derivative.

Derivatives embedded in a hybrid contract that includes financial assets within the scope of K-IFRS 1109 as host contracts are not separated. They are classified based on the composite contract as a whole and subsequently measured at amortized cost or fair value.

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.

An embedded derivative is presented as a non-current asset or a non-current liability if the remaining maturity of the hybrid instrument to which the embedded derivative relates is more than 12 months and it is not expected to be realized or settled within 12 months. Other embedded derivatives are presented as current assets or current liabilities.

2) Hedge accounting

The Group designates certain hedging instruments, which include derivatives, embedded derivatives and non-derivatives in respect of foreign currency risk, as either fair value hedges, cash flow hedges or hedges of net investments in foreign operations. Hedges of foreign exchange risk on firm commitments are accounted for as cash flow hedges.

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 Group documents whether the hedging instrument is highly effective in offsetting changes in fair values or cash flows of the hedged item.

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

If the hedging relationship no longer meets the hedge effectiveness requirements associated with the hedge ratio, but the risk management objective for the designated hedging relationship remains the same, the hedge ratio of the hedging relationship is adjusted (hedge rebalancing) to ensure that the hedging relationship meets the qualifying criteria again.

The Group designates the entire fair value of forward contracts (i.e., including forward elements) as hedging instruments for the entire hedging relationship that includes forward contracts.

The Group designated only the intrinsic value of the option as the hedging instrument when using an option contract to hedge the forecast transaction. In K-IFRS 1039, changes in the fair value of an option (i.e., an unspecified element) were immediately recognized in profit or loss. K-IFRS 1109 requires changes in the time value of options related to the hedged item ('aligned time value') to be recognized in OCI and the amount accumulated in equity is recognized in OCI.

The hedged item is reclassified to profit or loss in the period it affects profit or loss or is derecognized from equity and included directly in the carrying amount of the non-financial item.

The Group designated only the intrinsic value of the option contract as the hedging instrument (i.e., except for the time value). The time value of the aligned option is recognized in OCI and is accumulated in the hedge cost reserve. If the hedged item is related to a transaction, the time value is reclassified to profit or loss when the hedged item affects profit or loss. If the hedged item is related to the period, the accumulated amount in the hedge cost reserve is reclassified to profit or loss on a reasonable basis, and the Group applies a straight-line amortization basis. The reclassified amount is recognized in profit or loss as the same item as the hedged item. If the hedged item is a non-financial item, the accumulated amount in the hedge cost reserve is derecognized directly from equity and included in the initial carrying amount of the recognized non-financial item. In addition, if the hedge cost reserve is a loss and it is expected that all or part of the loss will not be recovered in a future period, that amount will be reclassified to profit or loss immediately.

Notes 8 and 39 provide details of the fair value of derivatives used for hedge purposes.

3) Fair value hedges

The gain or loss on the eligible hedging instrument is recognized in profit or loss. However, if the hedging instrument hedges equity instruments designated as at FVOCI, the gain or loss on the hedging instrument is recognized in OCI.

The carrying amount of the hedged item that is not measured at fair value is adjusted for changes in fair value attributable to the hedged risk and recognized in profit or loss. For FVOCI measurement debt instruments, gains and losses on the hedged risk are recognized in profit or loss rather than in OCI without adjusting the carrying amount because their carrying amount is already at fair value. Hedge when the hedged item is an equity instrument designated as at FVOCI
The gain or loss from the target risk is left in OCI to be aligned with the hedging instrument.

If the gain or loss attributable to the hedged risk is recognized in profit or loss, it is recognized as an item related to the hedged item.

An entity discontinues hedge accounting only if the hedging relationship (or part of the hedging relationship) does not qualify (if applicable, even after considering rebalancing of the hedging relationship). This includes the extinguishment, sale, termination and exercise of the hedging instrument and the discontinuation is accounted for prospectively. The fair value adjustment for the carrying amount of the hedged item attributable to the hedged risk is amortized to profit or loss from the date of discontinuation.

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 OCI. The gain or loss relating to the ineffective portion is recognized immediately in profit or loss and is included in the 'finance income and costs' line item.

Amounts previously recognized in OCI 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 consolidated statements of comprehensive income as the recognized hedged item. However, when the forecast transaction that is hedged results in the recognition of a non-financial asset or a non-financial liability, the gains and losses previously accumulated in equity are transferred from equity and included in the initial measurement of the cost of the non-financial asset or non-financial liability. This transfer does not affect OCI. If that amount is a loss and an entity expects that all or a portion of that loss will not be recovered in one or more future periods, it shall immediately reclassify the amount that is not expected to be recovered into profit or loss as a reclassification adjustment.

Hedge accounting is discontinued when the Group revokes the hedging relationship; when the hedging instrument expires or is sold, terminated or exercised; or when 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.

(21) Greenhouse gas emissions rights (allowances) and obligations

In connection with Enforcement of Allocation and Trading of Greenhouse Gas Emissions Allowances, the Group applies the following accounting policies for greenhouse gas emissions rights and obligations.

1) Greenhouse gas emissions rights

Greenhouse gas emissions rights consist of the allowances received free of charge from the government and the ones purchased. The cost of the greenhouse gas emissions rights includes expenditures arising directly from the acquisition and any other costs incurred during normal course of the acquisition.

Greenhouse gas emissions rights are held by the Group to fulfill the legal obligation and recorded as intangible assets. To the extent that the portion must be submitted to the government within one year from the end of reporting period, the greenhouse gas emissions rights are classified as current assets. Greenhouse gas emissions rights recorded as intangible assets are initially measured at cost and substantially remeasured at cost, less accumulated impairment losses.

Greenhouse gas emissions rights are derecognized on submission to the government or when no future economic benefits are expected from its use or disposal.

2) Greenhouse gas emissions obligations

Greenhouse gas emissions obligations are the Group's present legal obligations to submit the greenhouse gas emissions allowances to the government and recognized when an outflow of resources is probable and a reliable estimate can be made of the amount of the obligations. Greenhouse gas emissions obligations are measured as the sum of the carrying amount of the allocated rights that will be submitted to the government and the best estimate of expenditure required to settle the obligations at the end of the reporting period for any excess emission.

3. CRITICAL ACCOUNTING JUDGMENTS AND KEY SOURCES OF ESTIMATION UNCERTAINTY:

In the application of the Group's accounting policies, which are described in Note 2, management is required to make judgments, estimates and assumptions about the carrying amounts of assets and liabilities that are not readily apparent from other sources. The estimates and associated assumptions are based on historical experience and other factors that are considered to be relevant. 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.

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

(1) Useful lives of property, plant and equipment and intangible assets

The Group reviews the estimated useful lives of property, plant and equipment and intangible assets at the end of each annual reporting period. For estimating the useful lives of tangible and intangible assets, significant management judgment is required.

(2) Taxation

The Group recognized the current taxation and deferred income tax through the best estimation of expected tax effect, which is bore in future as the results of business activities, as of December 31, 2018. However, the final taxation may differ with the estimation; this difference may influence taxation and deferred tax assets and liabilities where the final tax effect is decided.

(3) Fair value of financial instruments

The Group's accounting policies and disclosures require measurement of fair values for both financial and non-financial assets and liabilities. The Group has an established control framework with respect to the measurement of fair values. This includes a valuation team that has overall responsibility for overseeing all significant fair value measurements, including Level 3 fair values, and reports directly to the financial officer. The Group regularly reviews significant unobservable inputs and valuation adjustments. If third-party information, such as broker quotes or pricing services, is used to measure fair values, then the Group assesses the evidence obtained from the third parties to support the conclusion that such valuations meet the requirements of K-IFRS, including the level in the fair value hierarchy in which such valuation techniques should be classified.

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

If the inputs used to measure the fair value of an asset or a liability are categorized into different levels of the fair value hierarchy, then the fair value measurement is categorized in its entirety in the same level of the fair value hierarchy as the lowest-level input that is significant to the entire measurement. The Group recognizes transfers between levels of the fair value hierarchy at the end of the reporting period during which the change has occurred.

(4) Employee benefits

The Group'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 Group's best estimates of the variables in determining the cost of providing postretirement benefits, such as discount rates, rates of expected future salary increases and mortality rates. Significant estimation uncertainty is likely to persist in making such assumptions due to the long-term nature of postretirement benefit plan.

4. OPERATING SEGMENT:

Substantially, all of the Group's revenue and non-current assets are in Korea; therefore, it does not report segment operating information. The Group's chief operating decision maker does not receive and, therefore, does not review discrete financial information for any component of the Group. Sales attributable to KEPCO, the main customer, constitute ₩5,398,519 million and ₩5,241,537 million of consolidated sales for the years ended December 31, 2018 and 2017, respectively.

5. CLASSIFICATION OF FINANCIAL INSTRUMENTS:

(1) Classification of financial assets as of December 31, 2018 and 2017, is as follows (Korean won):

	December 31, 2018				
	Financial assets at FVTPL	Financial assets at amortized cost	Financial assets at FVOCI	Derivative assets (using hedge accounting)	Total
Current assets:					
Cash and cash equivalents	₩ -	₩ 149,803,189,823	₩ -	₩ -	₩ 149,803,189,823
Current financial assets:					
Loans	-	1,364,929,487	-	-	1,364,929,487
Short-term financial instruments	-	20,000,000,000	-	-	20,000,000,000
Derivative assets	10,814,399	-	-	-	10,814,399
Trade and other receivables	-	1,088,601,066,333	-	-	1,088,601,066,333
	10,814,399	1,259,769,185,643	-	-	1,259,780,000,042
Non-current assets:					
Non-current financial assets:					
Non-current financial assets at FVTPL	3,852,780,540	-	-	-	3,852,780,540
Financial assets at FVOCI	-	-	270,122,309,268	-	270,122,309,268
Loans	-	27,046,331,655	-	-	27,046,331,655
Trade and other receivables	-	18,005,219,006	-	-	18,005,219,006
	3,852,780,540	45,051,550,661	270,122,309,268	-	319,026,640,469
	₩ 3,863,594,939	₩ 1,304,820,736,304	₩270,122,309,268	₩ -	₩1,578,806,640,511

	December 31, 2017				
	Financial assets at FVTPL	Loans and receivables	AFS financial assets	Derivative assets (using hedge accounting)	Total
Current assets:					
Cash and cash equivalents	₩ -	₩ 84,401,482,330	₩ -	₩ -	₩ 84,401,482,330
Current financial assets:					
Loans	-	2,213,280,715	-	-	2,213,280,715
Short-term financial instruments	-	20,000,000,000	-	-	20,000,000,000
Derivative assets	32,375,155	-	-	-	32,375,155
Trade and other receivables	-	1,164,660,243,339	-	-	1,164,660,243,339
	32,375,155	1,271,275,006,384	-	-	1,271,307,381,539
Non-current assets:					
Non-current financial assets:					
AFS financial assets	-	-	208,691,420,000	-	208,691,420,000
Loans	-	23,235,141,928	-	-	23,235,141,928
Trade and other receivables	-	20,459,340,748	-	-	20,459,340,748
	-	43,694,482,676	208,691,420,000	-	252,385,902,676
	₩ 32,375,155	₩1,314,969,489,060	₩ 208,691,420,000	₩ -	₩1,523,693,284,215

(2) Classification of financial liabilities as of December 31, 2018 and 2017, is as follows (Korean won):

	December 31, 2018			
	Financial liabilities at FVTPL	Financial liabilities recognized at amortized cost	Derivative liabilities (using hedge accounting)	Total
Current liabilities:				
Current financial liabilities:				
Borrowings	₩ -	₩ 101,904,040,000	₩ -	₩ 101,904,040,000
Debt securities	-	329,905,843,556	-	329,905,843,556
Derivative liabilities	1,016,571,112	-	-	1,016,571,112
Trade and other payables	-	553,561,711,121	-	553,561,711,121
	1,016,571,112	985,371,594,677	-	986,388,165,789
Non-current liabilities:				
Non-current financial liabilities:				
Borrowings	-	211,695,480,013	-	211,695,480,013
Debt securities	-	2,905,412,390,934	-	2,905,412,390,934
Derivative liabilities	-	-	79,780,118,827	79,780,118,827
Trade and other payables	-	41,805,629,884	-	41,805,629,884
	-	3,158,913,500,831	79,780,118,827	3,238,693,619,658
	₩ 1,016,571,112	₩ 4,144,285,095,508	₩ 79,780,118,827	₩4,225,081,785,447

	December 31, 2017			
	Financial liabilities at FVTPL	Financial liabilities recognized at amortized cost	Derivative liabilities (using hedge accounting)	Total
Current liabilities:				
Current financial liabilities:				
Borrowings	₩ -	₩ 301,405,880,000	₩ -	₩ 301,405,880,000
Debt securities	-	543,997,335,691	-	543,997,335,691
Derivative liabilities	1,814,508,125	-	6,959,861,863	8,774,369,988
Trade and other payables	-	459,655,281,370	-	459,655,281,370
	1,814,508,125	1,305,058,497,061	6,959,861,863	1,313,832,867,049
Non-current liabilities:				
Non-current financial liabilities:				
Borrowings	-	166,611,300,453	-	166,611,300,453
Debt securities	-	2,366,891,412,935	-	2,366,891,412,935
Derivative liabilities	-	-	69,842,866,795	69,842,866,795
Trade and other payables	-	38,838,660,226	-	38,838,660,226
	-	2,572,341,373,614	69,842,866,795	2,642,184,240,409
	₩ 1,814,508,125	₩3,877,399,870,675	₩ 76,802,728,658	₩3,956,017,107,458

(3) Income and cost from financial instruments for the years ended December 31, 2018 and 2017, are as follows (Korean won):

Financial assets:		2018	2017
Cash and cash equivalents	Interest income	₩ 34,658,257	₩ 1,256,320,127
	Gain (loss) on exchange	(7,089,067,735)	(6,250,642,874)
Financial assets at FVOCI	Dividends income	10,740,058,176	-
	Gain on valuation of financial assets at FVOCI (equity before tax)	66,136,485,260	-
AFS financial assets	Dividends income	-	1,957,215,981
	Gain on disposal of AFS financial assets, net	-	1,044,664
	Gain on valuation of AFS financial assets (equity before tax)	-	36,680,234,325
Financial assets at amortized cost	Interest income from receivables	440,032,972	-
	Interest income from loans	597,801,230	-
	Other bad debt expense	(17,747,886,760)	-
	Reversal of other bad debt expense	18,139,121	-
Loans and receivables	Interest income from receivables	-	323,083,111
	Interest income from loans	-	674,772,045

	Other bad debt expense	-	(2,470,640,849)
	Reversal of other bad debt expense	-	26,450,533,510
Financial assets at FVTPL	Interest income	2,245,758,503	-
	Dividends income	211,717,877	-
	Gain on disposal of financial assets	8,123,792	-
	Gain on valuation of derivatives	10,814,399	32,375,155
	Gain (loss) on transaction of derivatives	12,348,330,938	4,527,924,803
Derivatives (using hedge accounting)	Gain on valuation of derivatives (profit or loss)	14,010,000,000	-
	Loss on valuation of derivatives (equity before tax)	-	(12,690,000,000)
Financial Liabilities:			
Financial liabilities carried at amortized cost	Gain (loss) on foreign currency transactions and translations	(12,171,615,613)	103,553,680,994
	Interest expenses from borrowing and debt securities	(92,436,230,472)	(91,032,819,804)
	Interest expenses from other liabilities	(3,391,875)	(764,569,179)
Financial liabilities at FVTPL	Loss on valuation of derivatives	(1,016,571,112)	(1,814,508,125)
	Gain (loss) on transaction of derivatives	(5,483,844,467)	(14,393,630,901)
Derivatives (using hedge accounting)	Gain (loss) on valuation of derivatives (profit or loss)	(15,388,750,000)	(61,729,250,000)
	Gain (loss) on transaction of derivatives	6,760,000,000	-
	Gain (loss) on valuation of derivatives (equity before tax)	(7,868,640,169)	4,225,324,616

6. CASH AND CASH EQUIVALENTS:

(1) Cash and cash equivalents as of December 31, 2018 and 2017, are as follows (Korean won):

	December 31, 2018	December 31, 2017
Petty cash	₩ 183,470	₩ 108,470
Other demand deposits	43,171,559,411	39,533,523,860
Short-term deposits classified as cash equivalents	31,446,942	267,850,000
Short-term investments classified as cash equivalents	106,600,000,000	44,600,000,000
	₩ 149,803,189,823	₩ 84,401,482,330

(2) There are no cash and cash equivalents restricted in use as of December 31, 2018.

7. FINANCIAL ASSETS AT FVTPL:

(1) Financial assets at FVTPL as of December 31, 2018, are as follows (Korean won):

	Current	Non-current
Beneficiary Certificates	₩ -	₩ 3,852,780,540

8. DERIVATIVES:

(1) Derivatives as of December 31, 2018 and 2017, are as follows (Korean won):

	December 31, 2018		December 31, 2017	
	Current	Non-current	Current	Non-current
Derivative assets:				
Currency forward	₩ 10,814,399	₩ -	₩ 32,375,155	₩ -
	₩ 10,814,399	₩ -	₩ 32,375,155	₩ -
Derivative liabilities:				
Currency forward	₩ 1,016,571,112	₩ -	₩ 1,814,508,125	₩ -
Currency swap	-	79,780,118,827	6,959,861,863	69,842,866,795
	₩ 1,016,571,112	₩ 79,780,118,827	₩ 8,774,369,988	₩ 69,842,866,795

Currency forward contracts that are not designated as hedging instruments as of December 31, 2018, are as follows (Korean won):

			Contract amount		
Counterparty	Contract date	Maturity date	Pay	Receive	Contract exchange rate
For trading:					
Mizuho Bank	2018.11.28	2019.01.02	₩ 6,767,700,000	USD 6,000,000	1,127.95
Mizuho Bank	2018.12.07	2019.01.11	₩ 11,169,000,000	USD 10,000,000	1,116.90
China Construction Bank Corporation	2018.12.11	2019.01.14	₩ 11,279,600,000	USD 10,000,000	1,127.96
Nonghyup Bank	2018.12.17	2019.01.22	₩ 11,294,500,000	USD 10,000,000	1,129.45
Korea Development Bank	2018.12.18	2019.01.22	₩ 11,278,500,000	USD 10,000,000	1,127.85
Morgan Stanley	2018.12.19	2019.01.23	₩ 11,233,000,000	USD 10,000,000	1,123.30
Standard Chartered	2018.12.19	2019.01.24	₩ 11,235,000,000	USD 10,000,000	1,123.50
KB Kookmin	2018.12.20	2019.01.28	₩ 11,272,500,000	USD 10,000,000	1,127.25
Woori Bank	2018.12.20	2019.01.28	₩ 11,271,500,000	USD 10,000,000	1,127.15
KEB Hana	2018.12.21	2019.01.29	₩ 13,459,200,000	USD 12,000,000	1,121.60
Morgan Stanley	2018.12.24	2019.01.30	₩ 11,288,700,000	USD 10,000,000	1,128.87
China Construction Bank Corporation	2018.12.26	2019.01.31	₩ 11,246,000,000	USD 10,000,000	1,124.60
Standard Chartered	2018.12.26	2019.01.31	₩ 5,623,750,000	USD 5,000,000	1,124.75
Nonghyup Bank	2018.12.27	2019.02.01	₩ 5,609,500,000	USD 5,000,000	1,121.90
KEB Hana	2018.12.27	2019.02.01	₩ 5,605,750,000	USD 5,000,000	1,121.15
Standard Chartered	2018.12.28	2019.02.07	₩ 5,589,000,000	USD 5,000,000	1,117.80
KEB Hana	2018.12.28	2019.02.07	₩ 5,583,500,000	USD 5,000,000	1,116.70
Mizuho Bank	2018.12.28	2019.02.07	₩ 11,171,500,000	USD 10,000,000	1,117.15

(2) Currency swap contracts as of December 31, 2018, are as follows (Korean won):

Counterparty	Terms of the contract	Contract amount Pay	Contract amount Receive	Contract interest rate (%) Pay	Contract interest rate (%) Receive	Contract exchange rate
For hedging:						
HSBC	2014–2020	₩ 99,901,206,000	AUD 100,000,000	3.52	5.75	999.01
HSBC	2014–2020	₩ 100,481,652,000	AUD 100,000,000	3.48	5.75	1004.82
Standard Chartered	2013–2020	USD 117,250,000	AUD 125,000,000	LIBOR(3M)+1.25	5.75	0.94
Standard Chartered	2014–2020	₩ 126,032,025,000	USD 117,250,000	3.55	LIBOR(3M)+1.25	1074.90
Korea Development Bank	2017–2020	₩ 114,580,000,000	USD 100,000,000	1.75	2.375	1145.80
KEB Hana	2017–2020	₩ 114,580,000,000	USD 100,000,000	1.75	2.375	1145.80
Export-Import Bank of Korea	2017–2020	₩ 114,580,000,000	USD 100,000,000	1.75	2.375	1145.80

(3) Gain and loss on valuation and transaction of derivatives for the years ended December 31, 2018 and 2017, are as follows (Korean won):

	2018		
	Net income effects of valuation gain (loss)	Net income effects of transaction gain (loss)	Accumulated other comprehensive income (loss)(*)
Currency forward	₩ (1,005,756,713)	₩ 6,864,486,471	₩ -
Currency swap	(1,378,750,000)	6,760,000,000	(7,868,640,169)
	₩ (2,384,506,713)	₩ 13,624,486,471	₩ (7,868,640,169)

	2017		
	Net income effects of valuation gain (loss)	Net income effects of transaction gain (loss)	Accumulated other comprehensive income (loss)(*)
Currency forward	₩ (1,782,132,970)	₩ (9,865,706,098)	₩ -
Currency swap	(61,729,250,000)	(12,690,000,000)	4,225,324,616
	₩ (63,511,382,970)	₩ (22,555,706,098)	₩ 4,225,324,616

(*) OCI is presented before tax effect and directly charged to equity.

9. TRADE AND OTHER RECEIVABLES:

(1) Trade and other receivables as of December 31, 2018 and 2017, are as follows (Korean won):

	December 31, 2018			
	Gross amount	Allowance for doubtful accounts	Present value discount	Book value
Current assets				
Trade receivables	₩ 482,275,286,881	₩ (2,559,253,012)	₩ -	₩ 479,716,033,869
Other receivables	717,940,490,790	(109,046,311,374)	(9,146,952)	608,885,032,464
	1,200,215,777,671	(111,605,564,386)	(9,146,952)	1,088,601,066,333
Non-current assets				
Other receivables	40,912,901,128	(22,158,076,244)	(749,605,878)	18,005,219,006
	₩1,241,128,678,799	₩ (133,763,640,630)	₩ (758,752,830)	₩1,106,606,285,339

	December 31, 2017			
	Gross amount	Allowance for doubtful accounts	Present value discount	Book value
Current assets:				
Trade receivables	₩ 524,803,264,479	₩ (8,349,964,121)	₩ -	₩ 516,453,300,358
Other receivables	734,472,346,109	(86,213,572,773)	(51,830,355)	648,206,942,981
	1,259,275,610,588	(94,563,536,894)	(51,830,355)	1,164,660,243,339
Non-current assets:				
Other receivables	25,266,463,470	(4,410,189,484)	(396,933,238)	20,459,340,748
	₩1,284,542,074,058	₩ (98,973,726,378)	₩ (448,763,593)	₩1,185,119,584,087

(2) Other receivables as of December 31, 2018 and 2017, are as follows (Korean won):

	December 31, 2018			
	Gross amount	Allowance for doubtful accounts	Present value discount	Book value
Current assets:				
Other receivables	₩ 455,442,706,065	₩ (109,046,311,374)	₩ -	₩ 346,396,394,691
Accrued income	258,094,943,231	-	-	258,094,943,231
Deposits	4,402,841,494	-	(9,146,952)	4,393,694,542
	717,940,490,790	(109,046,311,374)	(9,146,952)	608,885,032,464
Non-current assets:				
Other receivables	23,693,784,768	(22,158,076,244)	-	1,535,708,524
Deposits	16,582,116,360	-	(749,605,878)	15,832,510,482
Others	637,000,000	-	-	637,000,000
	40,912,901,128	(22,158,076,244)	(749,605,878)	18,005,219,006
	₩ 758,853,391,918	₩ (131,204,387,618)	₩ (758,752,830)	₩ 626,890,251,470

	December 31, 2017			
	Gross amount	Allowance for doubtful accounts	Present value discount	Book value
Current assets:				
Other receivables	₩ 554,215,741,574	₩ (86,213,572,773)	₩ -	₩ 468,002,168,801
Accrued income	167,700,509,308	-	-	167,700,509,308
Deposits	12,556,095,227	-	(51,830,355)	12,504,264,872
	734,472,346,109	(86,213,572,773)	(51,830,355)	648,206,942,981
Non-current assets:				
Other receivables	20,726,815,110	(4,410,189,484)	-	16,316,625,626
Deposits	3,902,648,360	-	(396,933,238)	3,505,715,122
Others	637,000,000	-	-	637,000,000
	25,266,463,470	(4,410,189,484)	(396,933,238)	20,459,340,748
	₩ 759,738,809,579	₩ (90,623,762,257)	₩ (448,763,593)	₩ 668,666,283,729

(3) Aging analysis of trade receivables as of December 31, 2018 and 2017, is as follows (Korean won):

	December 31, 2018	December 31, 2017
Trade receivables (not overdue and not impaired)	₩ 478,043,527,918	₩ 516,111,476,467
Trade receivables (overdue, but not impaired):	1,672,505,951	341,823,892
- 60–90 days	1,332,495,702	-
- 90–120 days	-	-
- 120 days–1 year	-	-
- More than 1 year	340,010,249	341,823,892
Trade receivables (impairment loss recognized):	2,559,253,012	8,349,964,120
- Less than 90 days	-	-
- 90 days–1 year	-	30,006,978
- More than 1 year	2,559,253,012	8,319,957,142
	482,275,286,881	524,803,264,479
Less: Allowance for doubtful accounts	(2,559,253,012)	(8,349,964,121)
	₩ 479,716,033,869	₩ 516,453,300,358

(4) Aging analysis of other receivables as of December 31, 2018 and 2017, is as follows (Korean won):

	December 31, 2018	December 31, 2017
Other receivables (not overdue and not impaired)	₩ 621,410,723,283	₩ 633,842,931,320
Other receivables (overdue, but not impaired):	6,238,281,017	35,272,116,002
- 60–90 days	505,743,914	1,780,680
- 90–120 days	28,597,650	588,545,000
- 120–1 year	4,091,752	8,121,759,000
- More than 1 year	5,699,847,701	26,560,031,322
Other receivables (impairment loss recognized):	131,204,387,618	90,623,762,257
- Less than 120 days	10,632,926,700	11,726,401,423
- 120 days–1 year	20,057,653,044	12,904,602,898
- More than 1 year	100,513,807,874	65,992,757,936
	758,853,391,918	759,738,809,579
Less: Allowance for doubtful accounts	(131,204,387,618)	(90,623,762,257)
Less: Present value discount	(758,752,830)	(448,763,593)
	₩ 626,890,251,470	₩ 668,666,283,729

(5) Changes in allowance for doubtful accounts for the years ended December 31, 2018 and 2017, are as follows (Korean won):

	2018		2017	
	Trade receivables	Other receivables	Trade receivables	Other receivables
Beginning balance	₩ 8,349,964,121	₩ 90,623,762,257	₩ 7,731,404,284	₩ 5,200,261,725
Bad debt expenses	-	17,747,886,760	1,359,558,991	76,717,748,818
Write-off	(5,790,711,109)	-	-	-
Others	-	22,832,738,601	(740,999,154)	8,705,751,714
Ending balance	₩ 2,559,253,012	₩ 131,204,387,618	₩ 8,349,964,121	₩ 90,623,762,257

10. FINANCIAL ASSETS AT FVOCI:

(1) Changes in financial assets at FVOCI for the year ended December 31, 2018, are as follows (Korean won):

	December 31, 2018				
	Beginning balance	Effect of change in accounting policy	Valuation	Others(*)	Ending balance
Listed	₩ 182,184,538,916	₩ -	₩ 66,125,231,260	₩ -	₩ 248,309,770,176
Unlisted	26,506,881,084	(4,327,739,642)	11,254,000	(377,856,350)	21,812,539,092
Total	₩ 208,691,420,000	₩ (4,327,739,642)	₩ 66,136,485,260	₩ (377,856,350)	₩ 270,122,309,268

(*) Others are due to change of exchange rate.

(2) Financial assets at FVOCI as of December 31, 2018, are as follows (Korean won):

	Shares	Ownership	Acquisition cost	Book value	Fair value
Listed					
PT Adaro Energy TBK	480,000,000	1.5 %	₩ 65,027,820,453	₩ 44,789,760,000	₩ 44,789,760,000
PT Bayan Resources TBK	133,333,340	4.0 %	80,560,295,915	203,520,010,176	203,520,010,176
Unlisted					
KPX (*1)	-	7.1 %	9,131,374,714	15,863,255,000	15,863,255,000
KEPCO-Uhde Inc.(*2)	103,230	2.4 %	516,150,000	14,198,304	14,198,304
HeeMang Sunlight Power Co., Ltd. (*2)	78,600	8.3 %	393,000,000	393,000,000	393,000,000
KEPCO Bylong Australia Pty., Ltd.(*2)	3,537,000	2.0 %	6,331,601,392	5,542,085,788	5,542,085,788
KODE NOVUS I LLC	-	10.0 %	-	-	-
Total			₩161,960,242,474	₩270,122,309,268	₩270,122,309,268

(*1) The Group has estimated the fair value of KPX by using the discounted cash flow method (income approach) and recognized changes in fair value as accumulated OCI.
(*2) Equity securities whose prices are not quoted in an active market and whose fair values cannot be reliably measured due to the lack of reliable information are stated at acquisition cost.

11. AFS FINANCIAL ASSETS:

(1) Changes in AFS financial assets for the year ended December 31, 2017, are as follows (Korean won):

	2017					
	Beginning balance	Acquisition	Disposal	Valuation	Others (*)	Ending balance
Listed	₩ 144,901,283,592	₩ -	₩ -	₩ 37,283,255,324	₩ -	₩182,184,538,916
Unlisted	27,386,326,923	44,758,570	(61,669,637)	(603,020,999)	(259,513,773)	26,506,881,084
Total	₩ 172,287,610,515	₩44,758,570	₩ (61,669,637)	₩ 36,680,234,325	₩ (259,513,773)	₩208,691,420,000

(*) Others are due to change of exchange rate.

(2) AFS financial assets as of December 31, 2017, are as follows (Korean won):

	Shares	Ownership	Acquisition cost	Book value	Fair value
Listed					
PT Adaro Energy TBK	480,000,000	1.5 %	₩65,027,820,453	₩ 70,531,200,000	₩ 70,531,200,000
PT Bayan Resources TBK	133,333,340	4.0 %	80,560,295,915	111,653,338,916	111,653,338,916
Unlisted					
KPX (*1)	-	7.1 %	9,131,374,714	15,852,001,000	15,852,001,000
KEPCO-Uhde Inc.(*2)	103,230	2.4 %	516,150,000	14,198,304	
HeeMang Sunlight Power Co., Ltd. (*2)	78,600	8.3 %	393,000,000	393,000,000	
Hanwha-KOSEP New Renewable Energy Private Special Assets Investment Trust 1 (*2)	4,176,751,013	5.0	4,327,739,642	4,327,739,642	
KEPCO Bylong Australia Pty., Ltd.(*2)	3,537,000	2.0 %	6,331,601,392	5,875,183,568	
Machinery Construction Mutual Funds Investment Trust	47	0.01 %	44,758,570	44,758,570	
Total	-		₩166,332,740,686	₩208,691,420,000	

(*1) The Group has estimated the fair value of KPX by using the discounted cash flow method (income approach) and recognized changes in fair value as accumulated OCI.

(*2) Equity securities whose prices are not quoted in an active market and whose fair values cannot be reliably measured due to the lack of reliable information are stated at acquisition cost.

12. LOANS AND FINANCIAL INSTRUMENTS:

(1) Loans included in current and non-current financial assets as of December 31, 2018 and 2017, are as follows (Korean won):

	December 31, 2018			
	Gross amount	Allowance for doubtful accounts	Present value discount	Book value
Current assets:				
Loans for tuition	₩ 748,388,720	₩ -	₩ (39,285,913)	₩ 709,102,807
Loans for housing	655,826,680	-	-	655,826,680
	1,404,215,400	-	(39,285,913)	1,364,929,487
Non-current assets:				
Loans for tuition	13,571,699,004	-	(470,920,759)	13,100,778,245
Loans for housing	10,900,553,410	-	-	10,900,553,410
Others	5,510,000,000	(2,465,000,000)	-	3,045,000,000
	29,982,252,414	(2,465,000,000)	(470,920,759)	27,046,331,655
	₩ 31,386,467,814	₩ (2,465,000,000)	₩ (510,206,672)	₩ 28,411,261,142

	December 31, 2017			
	Gross amount	Allowance for doubtful accounts	Present value discount	Book value
Current assets:				
Loans for tuition	₩ 1,603,827,759	₩ -	₩ (57,995,594)	₩ 1,545,832,165
Loans for housing	667,448,550	-	-	667,448,550
	2,271,276,309	-	(57,995,594)	2,213,280,715
Non-current assets:				
Loans for tuition	12,482,492,838	-	(540,527,150)	11,941,965,688
Loans for housing	8,248,176,240	-	-	8,248,176,240
Others	9,527,750,000	(6,482,750,000)	-	3,045,000,000
	30,258,419,078	(6,482,750,000)	(540,527,150)	23,235,141,928
	₩32,529,695,387	₩ (6,482,750,000)	₩ (598,522,744)	₩25,448,422,643

(2) Changes in allowance for doubtful accounts for the years ended December 31, 2018 and 2017, are as follows (Korean won):

	2018	2017
Beginning balance	₩ 6,482,750,000	₩ 4,531,875,000
Bad debt expenses	-	2,465,000,000
Write-off	(4,017,750,000)	
Others	-	(514,125,000)
Ending balance	₩ 2,465,000,000	₩ 6,482,750,000

(3) Long-term and short-term financial instruments included in current and non-current financial assets as of December 31, 2018 and 2017, are as follows (Korean won):

	December 31, 2018		December 31, 2017	
	Current	Non-current	Current	Non-current
Time deposit	₩ 20,000,000,000	₩ -	₩ 20,000,000,000	₩ -

(4) Financial instruments that are restricted in use as of December 31, 2018 and 2017, are as follows (Korean won):

	Description	December 31, 2018	December 31, 2017
Time deposit	Small and medium industry support deposits	₩ 20,000,000,000	₩ 20,000,000,000

13. INVENTORIES:

Inventories as of December 31, 2018 and 2017, are as follows (Korean won):

	December 31, 2018		December 31, 2017	
	Gross amount	Carrying value	Gross amount	Carrying value
Raw materials	₩ 143,068,768,849	₩ 143,068,768,849	₩ 91,987,739,132	₩ 91,987,739,132
Supplies	62,199,423,673	62,199,423,673	61,235,338,669	61,235,338,669
Inventories in transit	228,449,383,426	228,449,383,426	95,257,446,521	95,257,446,521
	₩ 433,717,575,948	₩ 433,717,575,948	₩ 248,480,524,322	₩ 248,480,524,322

The cost of inventories, which was included in the cost of sales, amounted to ₩4,137,718 million and ₩3,662,282 million for the years ended December 31, 2018 and 2017, respectively.

14. NON-FINANCIAL ASSETS:

Non-financial assets as of December 31, 2018 and 2017, are as follows (Korean won):

	December 31, 2018		December 31, 2017	
	Current	Non-current	Current	Non-current
Advance payments	₩ 44,737,220,504	₩ -	₩ 7,899,821,836	₩ -
Prepaid expenses	5,955,097,176	3,496,273,608	8,586,298,581	37,792,178,936
Greenhouse gas emission right	56,963,845,940	-	77,082,256,006	-
Prepaid value-added tax (“VAT”)	41,675,836,115	-	28,499,056,324	-
Others	1,512,472,721	695,951,354	1,747,682,663	1,334,347,660
	₩ 150,844,472,456	₩ 4,192,224,962	₩ 123,815,115,410	₩ 39,126,526,596

15. INFORMATION RELATED TO THE GROUP'S SUBSIDIARIES:

(1) Information related to the Group's subsidiaries as of December 31, 2018 and 2017, is as follows (Korean won):

Subsidiaries	Location	Key operation activities	December 31, 2018 Percentage of ownership (%)	December 31, 2018 Percentage of non-controlling interest (%)	December 31, 2017 Percentage of ownership (%)	December 31, 2017 Percentage of non-controlling interest (%)
KOSEP Australia Pty., Ltd.	Australia	Resources development	100.0%	-	100.0%	-
KOSEP USA, INC.	USA	Wind power generation	100.0%	-	100.0%	-
Mira Power Limited	Pakistan	Hydroelectric power generation	76.0%	24.0%	76.0%	24.0%
KOSEP Material Co., Ltd.	Korea	Manufacturing industrial material with fly ash	86.2%	13.8%	86.2%	13.8%
Hycarbon Specialized Private Equity Investment Trust 1	Korea	Investment management	96.7%	3.3%	96.7%	3.3%
KOEN Bylong Pty., Ltd.	Australia	Resources development	100.0%	-	100.0%	-
PT. Korea Energy Indonesia	Indonesia	Thermal power generation and operation of utility plant	95.0%	5.0%	-	-
KOLAT	Chile	Solar energy generation	100.0%	-	-	-
KOEN Service Co., Ltd	Korea	Facility maintenance and service	100.0%	-	-	-

(2) Summary of financial information of subsidiaries as of and for the years ended December 31, 2018 and 2017, is as follows (Korean won):

Subsidiaries	December 31, 2018 Total assets	Total liabilities	Sales	Net income (loss)
KOSEP Australia Pty., Ltd.	₩ 37,057,432,190	₩ 2,831,755,747	₩ 20,293,896,904	₩ 7,314,680,316
KOSEP USA, INC.	1,141,021	4,857,158,794	-	4,341,483,242
Mira Power Limited	277,524,759,156	213,104,069,329	-	(2,624,694,728)
KOSEP Material Co., Ltd.	2,861,561,355	1,249,046,143	3,240,282,625	376,820,531
Hycarbon Specialized Private Equity Investment Trust 1	3,001,531,997	1,550	-	11,788,570
KOEN Bylong Pty., Ltd.	5,544,462,611	26,367,213	-	(25,041,106)
PT. Korea Energy Indonesia	1,183,054,298	59,882,931	1,458,870,637	223,068,457
KOLAT	38,362,135,746	473,550,201	584,997,997	(186,470,922)
KOEN Service Co., Ltd.	583,394,597	30,911,149	-	(47,516,552)

Subsidiaries	December 31, 2017 Total assets	Total liabilities	Sales	Net income (loss)
KOSEP Australia Pty., Ltd.	₩ 27,075,637,120	₩ 332,810,934	₩ 12,095,910,904	₩ 1,601,258,827
KOSEP USA, INC.	184,061,345	9,064,708,182	-	26,997,417,674
Mira Power Limited	208,150,386,769	163,198,206,613	-	737,371,508
KOSEP Material Co., Ltd.	2,750,657,580	1,447,908,998	3,127,858,473	320,375,174
Hycarbon Specialized Private Equity Investment Trust 1	3,001,576,176	1,550	-	11,832,787
KOEN Bylong Pty., Ltd.	5,875,185,238	-	-	-

(3) Details of non-controlling interest prior to intragroup eliminations as of December 31, 2018 and 2017, are as follows (Korean won):

	December 31, 2018					
Description	Mira Power Limited	KOSEP Material Co., Ltd.	Hycarbon Specialized Private Equity Investment Trust 1	Koen Bylong Pty., Ltd.	PT. Korea Energy Indonesia	Total
Percentage of non-controlling interests	24.00%	13.78%	3.33%	-%	5.00%	
Current assets	₩ 45,476,100,665	₩ 2,721,884,232	₩ 56,531,997	₩ 2,376,823	₩ 1,151,796,897	₩49,408,690,614
Non-current assets	232,048,658,491	139,677,123	2,945,000,000	5,542,085,788	31,257,401	240,706,678,803
Current liabilities	10,165,999,316	708,732,925	1,550	26,367,213	59,882,931	10,960,983,935
Non-current liabilities	202,938,070,013	540,313,218	-	-	-	203,478,383,231
Net assets	64,420,689,827	1,612,515,212	3,001,530,447	5,518,095,398	1,123,171,367	75,676,002,251
Book value of non-controlling interests	15,460,965,555	222,168,763	100,051,015	5,518,093,654	56,158,568	21,357,437,555
Sales	-	3,240,282,625	-	-	1,458,870,637	4,699,153,262
Net income (loss)	(2,624,694,728)	376,820,531	11,788,570	(25,041,106)	223,068,457	(2,038,058,276)
Total comprehensive income (loss) for the year	(13,098,770,247)	309,766,630	11,788,570	(616,603,686)	200,202,275	(13,193,616,458)
Net income (loss) attributable to non-controlling interest	(629,926,735)	51,917,495	392,952	(25,041,106)	11,153,423	(591,503,971)
Total comprehensive income (loss) for the year attributable to non-controlling interests	(3,143,704,860)	42,678,958	392,952	(616,603,686)	10,010,114	(3,707,226,522)
Cash flows from operating activities	17,207,754,583	1,353,697,086	11,788,538	-	47,827,925	18,621,068,132
Cash flows from investing activities	(93,346,083,378)	1,113,000	-	-	(35,199,604)	(93,380,169,982)
Cash flows from financing activities before dividends to non-controlling interests	78,927,262,817	-	(11,832,749)	-	908,877,684	79,824,307,752
Effect of exchange rate fluctuation on cash held	(5,297,855,468)	-	-	(94)	(7,143,456)	(5,304,999,018)
Net increase (decrease) in cash and cash equivalents	(2,508,921,446)	1,354,810,086	(44,211)	(94)	914,362,549	(239,793,116)

	December 31, 2017				
Description	Mira Power Limited	KOSEP Material Co., Ltd.	Hycarbon Specialized Private Equity Investment Trust 1	Koen Bylong Pty., Ltd.	Total
Percentage of non-controlling interests	24.00%	13.78%	3.33%	-%	
Current assets	₩ 34,416,195,063	₩ 2,645,579,654	₩ 56,576,176	₩ 1,670	₩ 37,118,352,563
Non-current assets	173,734,191,706	105,077,926	2,945,000,000	5,875,183,568	182,659,453,200
Current liabilities	7,248,356,160	1,096,662,033	1,550	-	8,345,019,743
Non-current liabilities	155,949,850,453	351,246,965	-	-	156,301,097,418
Net assets	44,952,180,156	1,302,748,582	3,001,574,626	5,875,185,238	55,131,688,602
Book value of non-controlling interests	10,788,523,234	179,489,805	100,052,488	6,134,697,340	17,202,762,867
Sales	-	3,127,858,473	-	-	3,127,858,473
Net income (loss)	737,371,508	320,375,174	11,832,787	-	1,069,579,469
Total comprehensive income (loss) for the year	(7,334,243,035)	401,440,114	11,832,787	(259,513,846)	(7,180,483,980)
Net income (loss) attributable to non-controlling interest	176,969,162	44,140,580	394,426	-	221,504,168
Total comprehensive income (loss) for the year attributable to non-controlling interests	(1,760,218,328)	55,309,527	394,426	-	(1,704,514,375)
Cash flows from operating activities	(8,797,150,485)	166,810,277	11,832,662	-	(8,618,507,546)
Cash flows from investing activities	(59,580,036,714)	394,598,880	-	-	(59,185,437,834)
Cash flows from financing activities before dividends to non-controlling interests	62,796,568,487	-	(11,785,936)	-	62,784,782,551
Effect of exchange rate fluctuation on cash held	(5,846,390,474)	-	-	(74)	(5,846,390,548)
Net increase (decrease) in cash and cash equivalents	(11,427,009,186)	561,409,157	46,726	(74)	(10,865,553,377)

16. INVESTMENTS IN ASSOCIATES AND JOINT VENTURES:

(1) Investments in associates and joint ventures as of December 31, 2018 and 2017, are as follows (Korean won):

			December 31, 2018		
Investees	Key operation activities	Location	Percentage of ownership (%)	Acquisition cost	Book value
Associates:					
Hyundai Energy Co., Ltd. (*1,2,11)	Energy production	Korea	30.7	₩ 71,070,000,000	₩ -
S-Power Co., Ltd.	Energy production	Korea	49.0	132,300,000,000	114,565,834,887
Ecollite Co., Ltd. (*3)	Energy production, construction and others	Korea	36.1	1,516,074,400	-
Korea Offshore Wind Power Co., Ltd. (*4)	Wind power generation	Korea	12.5	26,600,000,000	22,467,059,439
SE Green Energy Co., Ltd.	Power generation and support	Korea	47.8	3,820,800,000	3,365,999,620
Jinbhuvish Power Generations Pvt. Ltd. (*4,7)	Thermal power generation	India	5.2	9,000,154,032	-
Nepal Water & Energy Development Group Pty., Ltd. (*5,10)	Hydroelectric power generation and operation of utility plant	Nepal	57.7	35,571,378,004	30,960,686,313
Goseong Green Power Co., Ltd. (*4)	Coal thermal power generation	Korea	1.1	2,900,000,000	2,459,184,751
Gangneung Eco Power Co., Ltd. (*4)	Coal thermal power generation	Korea	1.6	2,900,000,000	2,494,749,943
Tamra Offshore Wind Power Co., Ltd.	Wind power generation	Korea	27.0	8,910,000,000	10,400,836,090
KEPCO Energy Solution Co., Ltd. (*4)	Solar power generation	Korea	8.3	25,000,000,000	25,271,190,072
Solar School Plant Co., Ltd. (*4)	Solar power generation	Korea	8.3	16,650,000,000	16,892,726,416
PND Solar Ltd.	Solar power generation	Korea	29.0	1,249,900,000	1,019,782,969
Hyundai Eco Energy Co., Ltd. (*4)	Solar power generation	Korea	19.0	3,610,000,000	3,388,008,144
				341,098,306,436	233,286,058,644
Joint ventures:					
ASM-BG Investicii AD	Solar power generation	Bulgaria	50.0	16,101,188,249	21,379,137,961
RES Technology AD	Solar power generation	Bulgaria	50.0	15,594,778,376	15,208,842,076
Global Trade of Power System Co., Ltd. (*6)	Exporting products and technology of small- or medium-sized business by proxy	Korea	29.0	290,000,000	515,148,578
Expressway Solar-light Power Generation Co., Ltd. (*6)	Solar power generation	Korea	29.0	1,856,000,000	2,676,033,278
KODE NOVUS I LLC (*8)	Wind power generation	USA	-	-	-
KODE NOVUS II LLC (*9)	Wind power generation	USA	-	-	-
Chile Solar JV SpA	Solar power generation	Chile	50.0	37,689,063,915	36,865,046,348
				71,531,030,540	76,644,208,241
				₩ 412,629,336,976	₩ 309,930,266,885

Investees	Key operation activities	Location	December 31, 2017 Percentage of ownership (%)	Acquisition cost	Book value
Associates:					
Hyundai Energy Co., Ltd. (*1,2,11)	Energy production	Korea	30.7	₩ 71,070,000,000	₩ -
S-Power Co., Ltd.	Energy production	Korea	49.0	132,300,000,000	116,944,583,764
Ecollite Co., Ltd. (*3)	Energy production, construction and others	Korea	36.1	1,516,074,400	-
Korea Offshore Wind Power Co., Ltd. (*4)	Wind power generation	Korea	12.5	26,600,000,000	23,526,175,021
SE Green Energy Co., Ltd.	Power generation and support	Korea	47.8	3,820,800,000	3,475,803,314
Jinbhuvish Power Generations Pvt. Ltd. (*4,7)	Thermal power generation	India	5.2	9,000,154,032	-
Nepal Water & Energy Development Group Pty., Ltd. (*5,10)	Hydroelectric power generation and operation of utility plant	Nepal	52.8	35,571,378,004	30,498,470,177
Goseong Green Power Co., Ltd. (*4)	Coal thermal power generation	Korea	1.1	2,900,000,000	2,597,293,481
Gangneung Eco Power Co., Ltd. (*4)	Coal thermal power generation	Korea	1.6	2,900,000,000	2,582,989,869
Tamra Offshore Wind Power Co., Ltd.	Wind power generation	Korea	27.0	8,910,000,000	8,560,058,870
KEPCO Energy Solution Co., Ltd. (*4)	Solar power generation	Korea	8.3	25,000,000,000	25,085,422,114
Solar School Plant Co., Ltd. (*4)	Solar power generation	Korea	8.3	16,650,000,000	16,723,523,613
PND Solar Ltd.	Solar power generation	Korea	29.0	1,249,900,000	1,249,900,000
				337,488,306,436	231,244,220,223
Joint ventures:					
ASM-BG Investicii AD	Solar power generation	Bulgaria	50.0	16,101,188,249	21,201,679,789
RES Technology AD	Solar power generation	Bulgaria	50.0	15,594,778,376	14,375,001,232
Global Trade of Power System Co., Ltd. (*5)	Exporting products and technology of small- or medium-sized business by proxy	Korea	29.0	290,000,000	577,027,458
Expressway Solar-light Power Generation Co., Ltd. (*6)	Solar power generation	Korea	29.0	1,856,000,000	2,462,775,274
KODE NOVUS I LLC (*8)	Wind power generation	USA	50.0	19,482,489,900	-
KODE NOVUS II LLC (*9)	Wind power generation	USA	50.0	12,635,840,700	-
				65,960,297,225	38,616,483,753
				₩ 403,448,603,661	₩ 269,860,703,976

(*1) As of December 31, 2018, 15.6% ownership of Hyundai Energy Co., Ltd. was held by NH Power ll Co., Ltd. and NH Bank. According to the shareholder's agreement in March 2011, not only did the Group have a call option to acquire the investment in Hyundai Energy Co., Ltd. from NH Power ll Co., Ltd. and NH Bank with a certain rate of return, but also NH Power ll Co., Ltd. and NH Bank have put options to dispose their investments to the Group. Accordingly, effective percentage of ownership of the Group as of December 31, 2018 and 2017, was 46.3%.

(*2) As Hyundai Energy Co., Ltd. has incurred operating loss continuously, the Group assessed the recoverable amount and recognized impairment loss in full during 2017.

(*3) The Group recognized impairment loss in full as Ecollite Co., Ltd. discontinued its operating activities.

(*4) Although the Group owns less than 20% of shares of the above investees, it exercises significant influence by participating in the directors' meetings. As such, they are classified as investments in associates.

(*5) Although the Group owns more than 50% of shares of the above investee, it does not have control over the investee in accordance with the shareholder's agreement. Therefore, they are classified as investments in associates.

(*6) In accordance with the shareholder's agreement, the Group makes all critical financial and operating decisions jointly with other investors. Therefore, the entities are classified as joint ventures.

(*7) Due to discontinuance of operation, the Group recognized impairment loss on investments in associates and joint ventures before 2017.

(*8) For the year ended December 31, 2018, the Group classified the shares as financial assets at FVOCI, because the Group has not had significant influence on KODE NOVUS I LLC anymore. The Group did not put fund on newly issuing shares of KODE NOVUS I LLC, which occurred for the period.

(*9) For the year ended December 31, 2018, the Group disposed KODE NOVUS Ⅱ LLC.

(*10) For the year ended December 31, 2018, the Group's equity ratio was reduced due to the non-equal increase in preference shares.

(*11) The Group discontinued the application of the equity method for investment in Hyundai Energy Co., Ltd. due to the carrying amounts of two companies' shares being reduced to zero during the year ended December 31, 2017. The accumulated unrecognized equity interest of the investment in Hyundai Energy Co., Ltd. amounted to ₩25,841 million and ₩16,518 million for the years ended December 31, 2018 and 2017, respectively.

(2) Changes in investments in associates and joint ventures for the years ended December 31, 2018 and 2017, are as follows (Korean won):

	2018						
Investees	Beginning balance	Acquisition	Income (loss) on valuation	Share in other comprehensive income (loss)	Dividends	Others	Ending balance
Associates:							
Hyundai Energy Co., Ltd.	₩ -	₩ -	₩ -	₩ -	₩ -	₩ -	₩ -
S-Power Co., Ltd.	116,944,583,764	-	(2,378,748,877)	-	-	-	114,565,834,887
Ecollite Co., Ltd. (*1)	-	-	-	-	-	-	-
Korea Offshore Wind Power Co., Ltd.	23,526,175,021	-	(1,059,115,582)	-	-	-	22,467,059,439
SE Green Energy Co., Ltd.	3,475,803,314	-	(109,803,694)	-	-	-	3,365,999,620
Jinbhuvish Power Generations Pvt. Ltd. (*2)	-	-	-	-	-	-	-
Nepal Water & Energy Development Group Pty., Ltd.	30,498,470,177	-	(770,458,092)	1,232,674,228	-	-	30,960,686,313
Goseong Green Power Co., Ltd.	2,597,293,481	-	(138,108,730)	-	-	-	2,459,184,751
Gangneung Eco Power Co., Ltd.	2,582,989,869	-	(88,239,926)	-	-	-	2,494,749,943
Tamra Offshore Wind Power Co., Ltd.	8,560,058,870	-	1,840,777,220	-	-	-	10,400,836,090
KEPCO Energy Solution Co., Ltd.	25,085,422,114	-	185,767,958	-	-	-	25,271,190,072
Solar School Plant Co., Ltd.	16,723,523,613	-	169,202,803	-	-	-	16,892,726,416
PND Solar Ltd.	1,249,900,000	-	(230,117,031)	-	-	-	1,019,782,969
Hyundai Eco Energy Co., Ltd.	-	3,610,000,000	(221,991,856)	-	-	-	3,388,008,144
Joint ventures:					-		
ASM-BG Investicii AD	21,201,679,789	-	2,235,648,895	(1,019,302,468)	(1,038,888,255)	-	21,379,137,961
RES Technology AD	14,375,001,232	-	811,738,541	22,102,303	-	-	15,208,842,076
Global Trade of Power System Co., Ltd.	577,027,458	-	(61,878,880)	-	-	-	515,148,578
Expressway Solar-light Power Generation Co., Ltd.	2,462,775,274	-	213,258,004	-	-	-	2,676,033,278
		37,689,063,915	4,453,192,658				
Chile Solar JV SpA	-			(5,277,210,225)	-	-	36,865,046,348
KODE NOVUS I LLC	-	--	-	1,373,795,020	-	(1,373,795,020)	-
KODE NOVUS II LLC	-	--	-	809,924,573	-	(809,924,573)	-
	₩269,860,703,976	₩41,299,063,915	₩ 4,851,123,411	₩(2,858,016,569)	₩(1,038,888,255)	₩ (2,183,719,593)	₩309,930,266,885

Investees	2017 Beginning balance	Acquisition	Income (loss) on valuation	Share in other comprehensive loss	Others	Ending balance
Associates:						
Hyundai Energy Co., Ltd.	₩ 1,032,671,337	₩ -	₩ (1,032,671,337)	₩ -	₩ -	₩ -
S-Power Co., Ltd.	123,911,853,098	-	(6,967,269,334)	-	-	116,944,583,764
Ecollite Co., Ltd. (*1)	-	-	-	-	-	-
Korea Offshore Wind Power Co., Ltd.	4,472,286,216	20,150,000,000	(874,591,195)	(221,520,000)	-	23,526,175,021
SE Green Energy Co., Ltd.	3,525,204,170	-	(49,400,856)	-	-	3,475,803,314
Jinbhuvish Power Generations Pvt. Ltd. (*2)	-	-	-	-	-	-
Nepal Water & Energy Development Group Pty., Ltd.	18,667,235,878	15,009,641,594	(677,032,146)	(2,501,375,149)	-	30,498,470,177
Goseong Green Power Co., Ltd.	2,662,929,490	-	(65,636,009)	-	-	2,597,293,481
Gangneung Eco Power Co., Ltd.	2,645,535,832	-	(62,545,963)	-	-	2,582,989,869
Tamra Offshore Wind Power Co., Ltd.	7,014,568,667	-	1,545,490,203	-	-	8,560,058,870
KEPCO Energy Solution Co., Ltd.	24,975,024,169	-	110,397,945	-	-	25,085,422,114
Solar School Plant Co., Ltd.	16,652,341,048	-	71,182,565	-	-	16,723,523,613
PND Solar Ltd.	-	1,249,900,000	-	-	-	1,249,900,000
Joint ventures:						
ASM-BG Investicii AD	21,488,347,621	-	(150,854,101)	809,795,269	(945,609,000)	21,201,679,789
RES Technology AD	13,581,776,839	-	1,053,061,736	(259,837,343)	-	14,375,001,232
Global Trade of Power System Co., Ltd.	476,622,482	-	100,404,976	-	-	577,027,458
Expressway Solar-light Power Generation Co., Ltd.	2,343,203,440	-	119,571,834	-	-	2,462,775,274
KODE NOVUS I LLC	-	-	-	-	-	-
KODE NOVUS II LLC	-	-	-	-	-	-
	₩ 243,449,600,287	₩ 36,409,541,594	₩ (6,879,891,682)	₩ (2,172,937,223)	₩ (945,609,000)	₩ 269,860,703,976

(*1) The Group recognized impairment loss in full in the year before prior year.

(*2) The Group recognized impairment loss in full as it discontinued its operating activities in the year before prior year.

(3) Summary of financial information of associates and joint ventures as of and for the years ended December 31, 2018 and 2017, is as follows (Korean won):

	December 31, 2018			
Investees	Total assets	Total liabilities	Sales	Net income (loss)
Associates:				
Hyundai Energy Co., Ltd.	₩ 470,818,150,584	₩ 527,590,451,331	₩ 101,997,528,830	₩ (33,946,978,824)
S-Power Co., Ltd.	825,354,194,975	588,022,056,719	551,378,365,373	(6,184,964,796)
Ecollite Co., Ltd.	1,943,795,371	312,204,084	-	(68,488,225)
Korea Offshore Wind Power Co., Ltd.	216,113,706,140	36,377,230,631	-	(8,472,924,658)
SE Green Energy Co., Ltd.	7,047,902,897	165,000	-	(229,907,231)
Jinbhuvish Power Generations Pvt. Ltd.	63,163,109,888	13,044,208,869	-	-
Nepal Water & Energy Development Group Pty., Ltd.	55,453,163,502	4,249,129,596	-	(983,822,319)
Goseong Green Power Co., Ltd.	1,891,661,805,596	1,659,414,603,718	-	(7,322,801,318)
Gangneung Eco Power Co., Ltd.	813,937,589,609	651,621,380,014	-	(4,194,147,057)
Tamra Offshore Wind Power Co., Ltd.	170,238,248,364	131,716,633,218	21,701,099,025	4,076,718,130
KEPCO Energy Solution Co., Ltd.	304,103,022,241	848,741,372	5,583,921,611	2,532,422,075
Solar School Plant Co., Ltd.	204,281,637,113	1,366,004,493	1,148,696,119	2,032,522,420
PND Solar Ltd.	42,283,357,424	39,297,357,715	1,093,815,873	(794,647,003)
Hyundai Eco Energy Co., Ltd.	165,554,937,999	148,851,938,220	-	(2,193,276,066)
Joint ventures:				
ASM-BG Investicii AD	84,923,890,964	42,165,616,528	12,745,213,293	4,405,928,998
RES Technology AD	69,609,293,607	39,191,610,515	7,879,242,853	1,567,385,215
Global Trade of Power System Co., Ltd.	2,039,179,460	262,805,053	1,368,070,346	(133,719,973)
Expressway Solar-light Power Generation Co., Ltd.	18,442,608,540	9,214,907,582	2,985,787,835	691,692,695
Chile Solar JV SpA	73,740,492,882	10,400,186	73,467,988	8,906,385,315

Investees	December 31, 2017 Total assets	Total liabilities	Sales	Net income (loss)
Associates:				
Hyundai Energy Co., Ltd.	₩ 474,938,979,337	₩ 511,486,311,161	₩ 92,991,928,637	₩ (43,317,070,972)
S-Power Co., Ltd.	859,632,582,143	617,224,431,602	489,042,480,815	(14,470,073,919)
Ecollite Co., Ltd.	2,052,264,836	352,185,324	-	(120,927,933)
Korea Offshore Wind Power Co., Ltd.	190,194,646,210	1,985,246,043	-	(6,996,729,573)
SE Green Energy Co., Ltd.	7,277,810,128	165,000	-	(103,435,628)
Jinbhuvish Power Generations Pvt. Ltd.	66,046,729,038	13,639,723,095	-	-
Nepal Water & Energy Development Group Pty., Ltd.	58,120,897,218	11,669,969,346	-	(967,734,876)
Goseong Green Power Co., Ltd.	1,081,237,941,927	841,330,005,131	-	(5,810,897,011)
Gangneung Eco Power Co., Ltd.	186,765,018,437	20,344,212,106	-	(3,407,379,820)
Tamra Offshore Wind Power Co., Ltd.	163,740,028,484	132,036,106,745	4,391,930,328	(190,530,203)
KEPCO Energy Solution Co., Ltd.	313,400,619,518	12,375,554,142	5,544,306,435	1,324,540,337
Solar School Plant Co., Ltd.	201,482,493,081	599,326,558	66,861,962	873,999,536
PND Solar Ltd.	10,508,380,773	6,728,874,061	-	(406,443,385)
Joint ventures:				
ASM-BG Investicii AD	87,109,589,122	44,706,229,544	12,611,387,320	(261,643,375)
RES Technology AD	71,595,103,534	42,845,101,068	7,792,835,374	2,164,128,496
Global Trade of Power System Co., Ltd.	3,575,577,368	1,585,827,520	4,079,253,184	365,398,936
Expressway Solar-light Power Generation Co., Ltd.	19,143,247,612	10,650,919,081	3,017,645,341	643,330,034
KODE NOVUS I LLC	754,884,526	108,132,002,639	14,258,241	(8,117,012,254)
KODE NOVUS II LLC	292,064,026	47,683,321,782	-	(6,018,462,065)

(4) Reconciliation between carrying amounts of investments in associates and joint ventures and the Group's interests in their net assets as of December 31, 2018 and 2017, is as follows (Korean won):

	2018						
Investees	Net assets	Percentage of ownership	Share in net assets	Investment differential	Intergroup transaction	Others	Carrying amount
Associates:							
Hyundai Energy Co., Ltd.	₩(56,772,300,747)	30.7	₩ (17,406,387,409)	₩ -	₩ (995,859,607)	₩ 18,402,247,016	₩ -
S-Power Co., Ltd.	237,332,138,256	49.0	116,292,747,744	-	(1,726,912,857)	-	114,565,834,887
Ecollite Co., Ltd.	1,631,591,287	36.1	589,016,865	-	-	(589,016,865)	-
Korea Offshore Wind Power Co., Ltd.	179,736,475,509	12.5	22,467,059,439	-	-	-	22,467,059,439
SE Green Energy Co., Ltd.	7,047,737,897	47.8	3,365,999,620	-	-	-	3,365,999,620
Jinbhuvish Power Generations Pvt. Ltd.	50,118,901,019	5.2	2,585,558,778	-	-	(2,585,558,778)	-
Nepal Water & Energy Development Group Pty., Ltd.	51,204,033,906	57.7	29,988,940,372	971,745,941	-	-	30,960,686,313
Goseong Green Power Co., Ltd.	232,247,201,878	1.1	2,590,449,559	-	(131,264,808)	-	2,459,184,751
Gangneung Eco Power Co., Ltd.	162,316,209,595	1.6	2,615,094,488	-	(120,344,545)	-	2,494,749,943
Tamra Offshore Wind Power Co., Ltd.	38,521,615,146	27.0	10,400,836,090	-	-	-	10,400,836,090
KEPCO Energy Solution Co., Ltd.	303,254,280,869	8.3	25,271,190,072	-	-	-	25,271,190,072
Solar School Plant Co., Ltd.	202,915,632,620	8.3	16,892,726,416	-	-	-	16,892,726,416
PND Solar Ltd.	2,985,999,709	29.0	865,939,915	153,843,054	-	-	1,019,782,969
Hyundai Eco Energy Co., Ltd.	16,702,999,779	19.0	3,173,569,958	214,438,186			3,388,008,144
Joint ventures:						-	
ASM-BG Investicii AD	42,758,274,436	50.0	21,379,137,961	-	-	-	21,379,137,961
RES Technology AD	30,417,683,092	50.0	15,208,842,076	-	-	-	15,208,842,076
Global Trade of Power System Co., Ltd.	1,776,374,407	29.0	515,148,578	-	-	-	515,148,578
Expressway Solar-light Power Generation Co., Ltd.	9,227,700,958	29.0	2,676,033,278	-	-	-	2,676,033,278
Chile Solar JV SpA	73,730,092,696	50.0	36,865,046,348	-	-	-	36,865,046,348

	2017						
Investees	Net assets	Percentage of ownership	Share in net assets	Investment differential	Intergroup transaction	Others	Carrying amount
Associates:							
Hyundai Energy Co., Ltd.	₩(36,547,331,824)	30.7	₩ (11,205,411,937)	₩ -	₩ (1,037,353,757)	₩ 12,242,765,694	₩ -
S-Power Co., Ltd.	242,408,150,541	49.0	118,779,993,765	-	(1,835,410,001)	-	116,944,583,764
Ecollite Co., Ltd.	1,700,079,512	36.1	613,741,635	-	-	(613,741,635)	-
Korea Offshore Wind Power Co., Ltd.	188,209,400,167	12.5	23,526,175,021	-	-	-	23,526,175,021
SE Green Energy Co., Ltd.	7,277,645,128	47.8	3,475,803,314	-	-	-	3,475,803,314
Jinbhuvish Power Generations Pvt. Ltd.	52,407,005,943	5.2	2,703,598,673	-	-	(2,703,598,673)	-
Nepal Water & Energy Development Group Pty., Ltd.	46,450,927,872	62.1	29,526,724,236	971,745,941	-	-	30,498,470,177
Goseong Green Power Co., Ltd.	239,907,936,796	1.1	2,675,896,218	-	(78,602,737)	-	2,597,293,481
Gangneung Eco Power Co., Ltd.	166,420,806,331	1.6	2,681,224,102	-	(98,234,233)	-	2,582,989,869
Tamra Offshore Wind Power Co., Ltd.	31,703,921,739	27.0	8,560,058,870	-	-	-	8,560,058,870
KEPCO Energy Solution Co., Ltd.	301,025,065,376	8.3	25,085,422,114	-	-	-	25,085,422,114
Solar School Plant Co., Ltd.	200,883,166,523	8.3	16,723,523,613	-	-	-	16,723,523,613
PND Solar Ltd.	3,779,506,712	29.0	1,096,056,946	153,843,054	-	-	1,249,900,000
Joint ventures:						-	
ASM-BG Investicii AD	42,403,359,578	50.0	21,201,679,789	-	-	-	21,201,679,789
RES Technology AD	28,750,002,466	50.0	14,375,001,232	-	-	-	14,375,001,232
Global Trade of Power System Co., Ltd.	1,989,749,848	29.0	577,027,458	-	-	-	577,027,458
Expressway Solar-light Power Generation Co., Ltd.	8,492,328,531	29.0	2,462,775,274	-	-	-	2,462,775,274
KODE NOVUS I LLC	(107,377,118,112)	50.0	(53,688,559,056)	-	-	53,688,559,056	-
KODE NOVUS II LLC	(47,391,257,757)	50.0	(23,695,628,878)	-	-	23,695,628,878	-

17. **PROPERTY, PLANT AND EQUIPMENT:**

(1) Property, plant and equipment as of December 31, 2018 and 2017, are as follows (Korean won):

	December 31, 2018				
	Acquisition cost	Government grants	Accumulated depreciation	Accumulated impairment losses	Book value
Land	₩ 1,243,763,943,950	₩ -	₩ -	₩ -	₩ 1,243,763,943,950
Buildings	1,185,507,991,777	(815,181,525)	(440,284,555,106)	-	744,408,255,146
Structures	1,413,076,634,568	(1,348,273,692)	(534,797,191,250)	-	876,931,169,626
Machinery	7,184,403,174,715	(3,878,067,332)	(3,137,168,536,758)	(2,365,738,857)	4,040,990,831,768
Vehicles	20,803,261,038	(26,766,666)	(17,283,745,352)	-	3,492,749,020
Furniture and fixtures	56,648,149,351	-	(41,578,244,898)	-	15,069,904,453
Tools and equipment	45,071,368,670	-	(40,898,068,816)	-	4,173,299,854
Finance leased asset	645,269,983,482	-	(347,073,986,147)	-	298,195,997,335
Construction in progress	460,229,656,295	-	-	-	460,229,656,295
	₩ 12,254,774,163,846	₩ (6,068,289,215)	₩ (4,559,084,328,327)	₩ (2,365,738,857)	₩ 7,687,255,807,447

	December 31, 2017				
	Acquisition cost	Government grants	Accumulated depreciation	Accumulated impairment losses	Book value
Land	₩ 1,219,339,989,653	₩ -	₩ -	₩ -	₩ 1,219,339,989,653
Buildings	1,137,366,822,907	(845,709,859)	(393,577,334,582)	-	742,943,778,466
Structures	1,406,036,814,495	(1,417,533,990)	(485,228,236,505)	-	919,391,044,000
Machinery	6,704,243,030,108	(4,428,653,996)	(2,611,419,665,624)	(2,365,738,857)	4,086,028,971,631
Vehicles	21,388,844,217	(49,214,582)	(16,077,430,795)	-	5,262,198,840
Furniture and fixtures	51,607,168,851	(5,208,333)	(37,790,322,944)	-	13,811,637,574
Tools and equipment	44,149,797,424	-	(35,250,104,426)	-	8,899,692,998
Finance leased asset	641,755,750,158	-	(315,592,200,785)	-	326,163,549,373
Construction in progress	430,753,471,097	-	-	-	430,753,471,097
	₩ 11,656,641,688,910	₩ (6,746,320,760)	₩ (3,894,935,295,661)	₩ (2,365,738,857)	₩ 7,752,594,333,632

(2) Changes in property, plant and equipment for the years ended December 31, 2018 and 2017, are as follows (Korean won):

	2018					
	Beginning balance	Acquisition	Disposal	Depreciation	Others (*)	Ending balance
Land	₩ 1,219,339,989,653	₩ -	₩ (98,163,484)	₩ -	₩ 24,522,117,781	₩ 1,243,763,943,950
Buildings	743,789,488,325	213,438,140	(768,867,555)	(47,320,411,471)	49,309,789,232	745,223,436,671
(Government grants)	(845,709,859)	-	-	30,528,334	-	(815,181,525)
Structures	920,808,577,990	378,000,000	-	(49,568,954,745)	6,661,820,073	878,279,443,318
(Government grants)	(1,417,533,990)	-	-	69,260,298	-	(1,348,273,692)
Machinery	4,090,457,625,627	70,328,621,451	(868,162,407)	(529,774,804,039)	414,725,618,468	4,044,868,899,100
(Government grants)	(4,428,653,996)	-	-	550,586,664	-	(3,878,067,332)
Vehicles	5,311,413,422	38,745,413	(11,000)	(2,053,737,904)	223,105,755	3,519,515,686
(Government grants)	(49,214,582)	-	-	22,447,916	-	(26,766,666)
Furniture and fixtures	13,816,845,907	209,357,925	(33,245,311)	(6,338,093,309)	7,415,039,241	15,069,904,453
(Government grants)	(5,208,333)	-	-	5,208,333	-	-
Tools and equipment	8,899,692,998	-	(37,000)	(6,079,296,845)	1,352,940,701	4,173,299,854
Finance leased assets	326,163,549,373	-	-	(31,481,785,362)	3,514,233,324	298,195,997,335
Construction in progress	430,753,471,097	541,178,191,252	-	-	(511,702,006,054)	460,229,656,295
	₩ 7,752,594,333,632	₩ 612,346,354,181	₩ (1,768,486,757)	₩ (671,939,052,130)	₩ (3,977,341,479)	₩ 7,687,255,807,447

(*) Others consist of transfer to property, plant and equipment from construction in progress and to construction in progress from borrowing cost, retirement benefits expense and others. Capitalized borrowing cost is ₩21,706 million, and the weighted-average capitalization rates of interest for the year ended December 31, 2018, are 3.11%–7.87%.

	2017					
	Beginning balance	Acquisition	Disposal	Depreciation	Others (*)	Ending balance
Land	₩ 1,213,568,109,401	₩ -	₩ (176,555,017)	₩ -	₩ 5,948,435,269	₩ 1,219,339,989,653
Buildings	767,394,228,760	132,745,190	(1,854,169,652)	(47,281,617,656)	25,398,301,683	743,789,488,325
(Government grants)	(575,404,860)	(300,000,000)	-	29,695,001	-	(845,709,859)
Structures	946,805,445,894	-	-	(48,834,653,052)	22,837,785,148	920,808,577,990
(Government grants)	(1,486,794,287)	-	-	69,260,297	-	(1,417,533,990)
Machinery	4,121,618,823,891	76,957,119,845	(13,217,209,897)	(495,901,972,667)	401,000,864,455	4,090,457,625,627
(Government grants)	(4,979,240,659)	-	-	550,586,663	-	(4,428,653,996)
Vehicles	5,447,111,059	17,839,500	(8,000)	(2,665,058,097)	2,511,528,960	5,311,413,422
(Government grants)	(73,739,582)	-	-	24,525,000	-	(49,214,582)
Furniture and fixtures	7,345,982,215	61,016,602	(8,423,655)	(6,204,741,196)	12,623,011,941	13,816,845,907
(Government grants)	(17,708,333)	-	-	12,500,000	-	(5,208,333)
Tools and equipment	14,048,302,654	32,917,500	(33,000)	(7,826,494,207)	2,645,000,051	8,899,692,998
Finance leased assets	354,387,484,905	-	-	(31,271,209,844)	3,047,274,312	326,163,549,373
Construction in progress	351,099,543,834	563,713,227,914	-	-	(484,059,300,651)	430,753,471,097
	₩ 7,774,582,144,892	₩ 640,614,866,551	₩ (15,256,399,221)	₩ (639,299,179,758)	₩ (8,047,098,832)	₩ 7,752,594,333,632

(*) Others consist of transfer to property, plant and equipment from construction in progress and to construction in progress from borrowing cost, retirement benefits expense and others. Capitalized borrowing cost is ₩26,096 million, and the weighted-average capitalization rates of interest for the year ended December 31, 2017, are 3.21%–6.84%.

(3) The Group is insured by the following insurances as of December 31, 2018 (Korean won, GBP):

	Category	Insured amount	Period
Dongbu Insurance Co., Ltd. and others	Comprehensive property insurance	17,766,022,000,000	2018.09.30 –2019.09.29
Hyundai Marine & Fire Insurance Co., Ltd. and others	Cargo insurance	2,668,837,000,000	2018.05.15 –2019.05.14
Samsung Fire & Marine Insurance Co., Ltd. and others	Cover for restitution caused by supplying services	137,237,000,000	2015.07.01 –2022.04.30
KB Insurance Co., Ltd. and others	Construction insurance	63,390,000,000	2015.09.01 –2019.06.30

18. **INTANGIBLE ASSETS:**

(1) Intangible assets other than goodwill as of December 31, 2018 and 2017, are as follows (Korean won):

	December 31, 2018		
	Acquisition cost	Accumulated depreciation	Book value
Software	₩ 55,426,452,098	₩ (42,211,262,820)	₩ 13,215,189,278
Copyright, patent right and other industrial property	18,643,407	(2,251,089)	16,392,318
Mining right	15,386,131,894	(4,040,757,027)	11,345,374,867
Others	12,077,142,109	(783,906,000)	11,293,236,109
	₩ 82,908,369,508	₩ (47,038,176,936)	₩ 35,870,192,572

	December 31, 2017		
	Acquisition cost	Accumulated depreciation	Book value
Software	₩ 49,462,006,179	₩ (38,485,539,051)	₩ 10,976,467,128
Copyright, patent right and other industrial property	6,453,000	(806,100)	5,646,900
Mining right	12,280,721,012	(2,817,047,061)	9,463,673,951
Development cost	221,863,636	(28,522,727)	193,340,909
Others	4,963,170,138	(606,220,914)	4,356,949,224
	₩ 66,934,213,965	₩ (41,938,135,853)	₩ 24,996,078,112

(2) Changes in intangible assets other than goodwill for the years ended December 31, 2018 and 2017, are as follows (Korean won):

	Year ended December 31, 2018						
	Beginning balance	Acquisition	Disposal	Amortization	Transfer (*1)	Others (*2)	Ending balance
Software	₩ 10,976,467,128	₩ 19,710,273	₩ (9,000)	₩ (5,279,262,055)	₩ 7,500,741,217	₩ (2,458,285)	₩ 13,215,189,278
Copyright, patent right and other industrial property	5,646,900	-		(1,444,989)	12,190,407	-	16,392,318
Mining right	9,463,673,951	457,084,056	-	(84,099,972)	1,786,601,925	(277,885,093)	11,345,374,867
Development cost	193,340,909	-	-	-	(193,340,909)	-	-
Others	4,356,949,224	10,905,223	-	(179,078,431)	7,121,973,783	(17,513,690)	11,293,236,109
	₩ 24,996,078,112	₩ 487,699,552	₩ (9,000)	₩ (5,543,885,447)	₩ 16,228,166,423	₩ (297,857,068)	₩ 35,870,192,572

(*1) Represents transfer from construction in progress and greenhouse gas emission right.
(*2) Others consist of exchange rate fluctuations.

	Year ended December 31, 2017						
	Beginning balance	Acquisition	Disposal	Amortization	Transfer (*1)	Others (*2)	Ending balance
Software	₩ 4,556,532,648	₩ 11,512,074	₩ -	₩ (4,894,013,138)	₩ 11,312,996,216	₩ (10,560,672)	₩ 10,976,467,128
Copyright, patent right and other industrial property	-	-		(806,100)	6,453,000	-	5,646,900
Mining right	11,372,994,201	1,456,978,737	-	(940,558,756)	-	(2,425,740,231)	9,463,673,951
Development cost	-	-	-	(28,522,727)	221,863,636	-	193,340,909
Others	3,326,515,067	224,971,015	-	(125,859,843)	959,874,061	(28,551,076)	4,356,949,224
	₩ 19,256,041,916	₩ 1,693,461,826	₩ -	₩ (5,989,760,564)	₩ 12,501,186,913	₩ (2,464,851,979)	₩ 24,996,078,112

(*1) Represents transfers from construction in progress.
(*2) Others consist of exchange rate fluctuations.

(3) Major intangible assets as of December 31, 2018, are as follows (Korean won):

Accounts	Contents	Book value	Residual amortization period
Software	Enterprise Resource Planning system	₩ 469,274,185	26 months
Software	SAP professional license	314,066,667	28 months
Mining right	Mining right on Mullaben coal mine	11,345,374,867	- (*)

(*) Mining right is amortized by using units of production method.

19. TRADE AND OTHER PAYABLES:

Trade and other payables as of December 31, 2018 and 2017, are as follows (Korean won):

	December 31, 2018		December 31, 2017	
	Current	Non-current	Current	Non-current
Trade payables	₩ 334,680,364,211	₩ -	₩ 255,405,460,823	₩ -
Other payables	163,659,280,934	41,805,629,884	159,893,983,442	38,838,660,226
Accrued expenses	48,057,693,576	-	42,422,091,782	-
Leasehold deposits received	9,979,413	-	6,623,900	-
Other deposits received	5,944,940,932	-	717,669,368	-
Dividends payable	1,209,452,055	-	1,209,452,055	-
	₩ 553,561,711,121	₩ 41,805,629,884	₩ 459,655,281,370	₩ 38,838,660,226

20. BORROWINGS AND DEBT SECURITIES:

(1) Borrowings and debt securities as of December 31, 2018 and 2017, are as follows (Korean won):

	December 31, 2018	December 31, 2017
Current liabilities:		
Short-term borrowings	₩ 10,000,000,000	₩ 300,000,000,000
Current portion of long-term borrowings	1,904,040,000	1,405,880,000
Current portion of debt securities	330,000,000,000	544,280,000,000
Less: Current portion of discount on debt securities	(94,156,444)	(282,664,309)
	341,809,883,556	845,403,215,691
Non-current liabilities:		
Long-term borrowings	215,701,765,800	171,856,198,000
Less: Discount on long-term borrowings	(4,006,285,787)	(5,244,897,547)
Debt securities	2,911,468,250,000	2,372,847,000,000
Less: Discount on debt securities	(6,055,859,066)	(5,955,587,065)
	3,117,107,870,947	2,533,502,713,388
	₩ 3,548,917,754,503	₩ 3,378,905,929,079

(2) Borrowings and debt securities are going to be repaid by the following schedule as of December 31, 2018 and 2017 (Korean won):

	December 31, 2018		
	Borrowings	Debt securities	Total
Within 1 year	₩ 101,904,040,000	₩ 330,000,000,000	₩ 431,904,040,000
1 year–5 years	55,313,230,188	1,881,468,250,000	1,936,781,480,188
5 years thereafter	160,388,535,612	1,030,000,000,000	1,190,388,535,612
	₩ 317,605,805,800	₩3,241,468,250,000	₩3,559,074,055,800

	December 31, 2017		
	Borrowings	Debt securities	Total
Within 1 year	₩ 301,405,880,000	₩ 544,280,000,000	₩ 845,685,880,000
1 year–5 years	36,165,995,448	1,482,847,000,000	1,519,012,995,448
5 years thereafter	135,690,202,552	890,000,000,000	1,025,690,202,552
	₩ 473,262,078,000	₩ 2,917,127,000,000	₩ 3,390,389,078,000

(3) Short-term borrowings as of December 31, 2018 and 2017, are as follows (Korean won):

			December 31, 2018	
Creditor	Interest rate	Interest rate (%)	Foreign currency	Local currency
Domestic borrowings:				
BNK Securities Co., Ltd.	Fixed rate	2.40	-	₩ 40,000,000,000
DB Financial Investment Co., Ltd.	Fixed rate	2.40	-	30,000,000,000
Shinhan Investment Co., Ltd.	Fixed rate	2.40	-	20,000,000,000
KB Securities Co., Ltd.	Fixed rate	2.40	-	10,000,000,000
				₩ 100,000,000,000

			December 31, 2017	
Creditor	Interest rate	Interest rate (%)	Foreign currency	Local currency
Domestic borrowings:				
Woori Investment Bank	Fixed rate	1.89	-	₩ 90,000,000,000
		1.96	-	70,000,000,000
KTB Investment & Securities Co., Ltd.	Fixed rate	1.89	-	20,000,000,000
KB Securities Co., Ltd.	Fixed rate	1.89	-	40,000,000,000
SK Securities Co., Ltd.	Fixed rate	1.89	-	50,000,000,000
		1.96	-	20,000,000,000
Samsung Securities Co., Ltd.	Fixed rate	1.96	-	10,000,000,000
				₩ 300,000,000,000

(4) Long-term borrowings as of December 31, 2018 and 2017, are as follows (Korean won):

Creditor	Type	Interest rate	Interest rate (%)	Maturity	December 31, 2018 Foreign currency	 Local currency
Domestic borrowings:						
KEB Hana Bank	Facility	Floating rate	3-year Korea Treasury Bond ("KTB") rate – 1.25	2018–2021	-	₩ 1,593,450,000
	Facility	Floating rate	3-year KTB rate – 1.25	2018–2028	-	6,478,680,000
Korea Resources Corporation	Facility	Floating rate	3-year KTB rate – 2.25	2018–2023	-	1,272,450,000
	Facility	Floating rate	3-year KTB rate – 2.25	2018–2023	-	50,400,000
	Facility	Floating rate	3-year KTB rate – 2.25	2018–2024	-	63,800,000
	Facility	Floating rate	3-year KTB rate – 2.25	2018–2024	-	1,202,670,000
Foreign borrowings:						
International Finance Corporation	Facility	Floating rate	6-month LIBOR + 5%	2020–2031	USD 70,600,000	78,465,475,400
Korea Export-Import Bank	Facility	Floating rate	6-month LIBOR + 5%	2020–2031	USD 60,100,000	66,795,680,900
Asian Development Bank	Facility	Floating rate	6-month LIBOR + 5%	2020–2031	USD 44,000,000	48,901,996,000
CDC Group Plc	Facility	Floating rate	6-month LIBOR + 5%	2020–2031	USD 11,500,000	12,781,203,500
						217,605,805,800
Less: Discount on debt securities						(4,006,285,787)
Less: Current portion of long-term borrowings						(1,904,040,000)
						₩ 211,695,480,013

Creditor	Type	Interest rate	Interest rate (%)	Maturity	December 31, 2017 Foreign currency	Local currency
Domestic borrowings:						
KEB Hana Bank	Facility	Floating rate	3-year KTB rate – 1.25	2017–2021	-	₩ 2,301,650,000
	Facility	Floating rate	3-year KTB rate – 1.25	2017–2028	-	6,645,000,000
Korea Resources Corporation	Facility	Floating rate	3-year KTB rate – 2.25	2017–2023	-	1,571,850,000
	Facility	Floating rate	3-year KTB rate – 2.25	2017–2023	-	61,600,000
	Facility	Floating rate	3-year KTB rate – 2.25	2017–2024	-	75,400,000
	Facility	Floating rate	3-year KTB rate – 2.25	2017–2024	-	1,411,830,000
Foreign borrowings:						
International Finance Corporation	Facility	Floating rate	6-month LIBOR + 5%	2020–2031	USD 57,200,000	61,183,408,000
Korea Export-Import Bank	Facility	Floating rate	6-month LIBOR + 5%	2020–2031	USD 48,600,000	51,984,504,000
Asian Development Bank	Facility	Floating rate	6-month LIBOR + 5%	2020–2031	USD 35,600,000	38,079,184,000
CDC Group Plc	Facility	Floating rate	6-month LIBOR + 5%	2020–2031	USD 9,300,000	9,947,652,000
						173,262,078,000
Less: Discount on debt securities						(5,244,897,547)
Less: Current portion of long-term borrowings						(1,405,880,000)
						₩166,611,300,453

(5) Debt securities as of December 31, 2018 and 2017, are as follows (Korean won):

Type	Issue date	Maturity	Interest rate	Interest rate (%)	December 31, 2018 Foreign currency	Local currency
26th Public bonds	2011.10.26	2021.10.26	Fixed rate	4.32	-	₩ 100,000,000,000
27-3rd Public bonds	2012.02.23	2022.02.23	Fixed rate	4.09	-	170,000,000,000
28-1st Public bonds	2012.07.30	2019.07.30	Fixed rate	3.40	-	90,000,000,000
28-2nd Public bonds	2012.07.30	2022.07.30	Fixed rate	3.40	-	110,000,000,000
29-1st Public bonds	2012.11.29	2027.11.29	Fixed rate	3.27	-	100,000,000,000
29-2nd Public bonds	2012.11.29	2032.11.29	Fixed rate	3.35	-	100,000,000,000
32nd Public bonds	2013.04.25	2023.04.25	Fixed rate	2.97	-	120,000,000,000
33rd Public bonds	2013.05.21	2023.05.21	Fixed rate	3.05	-	100,000,000,000
35-2nd Public bonds	2013.06.25	2020.06.25	Fixed rate	3.70	-	80,000,000,000
37-2nd Public bonds	2013.11.12	2023.11.12	Fixed rate	3.81	-	90,000,000,000
38-1st Public bonds	2014.03.26	2019.03.26	Fixed rate	3.28	-	130,000,000,000
38-2nd Public bonds	2014.03.26	2021.03.26	Fixed rate	3.50	-	100,000,000,000
38-3rd Public bonds	2014.03.26	2024.03.26	Fixed rate	3.67	-	70,000,000,000
39th Public bonds	2014.05.28	2024.05.28	Fixed rate	3.48	-	100,000,000,000
40th Public bonds	2014.06.26	2024.06.26	Fixed rate	3.31	-	110,000,000,000
41-2nd Public bonds	2014.10.30	2019.10.30	Fixed rate	2.41	-	110,000,000,000
42nd Public bonds	2014.12.15	2034.12.15	Fixed rate	3.10	-	100,000,000,000
43-1st Public bonds	2018.04.12	2021.04.12	Fixed rate	2.46	-	120,000,000,000
43-2nd Public bonds	2018.04.12	2028.04.12	Fixed rate	2.77	-	50,000,000,000
43-3rd Public bonds	2018.04.12	2038.04.12	Fixed rate	2.79	-	100,000,000,000
43-4th Public bonds	2018.04.12	2048.04.12	Fixed rate	2.77	-	30,000,000,000
44-1st Public bonds	2018.07.26	2021.07.26	Fixed rate	2.12	-	100,000,000,000
44-2nd Public bonds	2018.07.26	2038.07.26	Fixed rate	2.64	-	70,000,000,000
44-3rd Public bonds	2018.07.26	2048.07.26	Fixed rate	2.6	-	120,000,000,000
45-1st Public bonds	2018.11.09	2021.11.09	Fixed rate	2.16	-	200,000,000,000
45-2nd Public bonds	2018.11.09	2038.11.09	Fixed rate	2.32	-	50,000,000,000
45-3rd Public bonds	2018.11.09	2048.11.09	Fixed rate	2.19	-	30,000,000,000
4th Foreign bonds	2013.09.25	2020.09.25	Fixed rate	5.75	AUD 325,000,000	256,038,250,000
5th Foreign bonds	2018.04.12	2020.04.12	Fixed rate	2.38	USD 300,000,000	335,430,000,000
						3,241,468,250,000
Less: Discount on debt securities						(6,150,015,510)
Less: Current portion of debt securities						(330,000,000,000)
Add: Current portion of discount on debt securities						94,156,444
						₩ 2,905,412,390,934

Type	Issue date	Maturity	Interest rate	Interest rate (%)	December 31, 2017 Foreign currency	Local currency
26th Public bonds	2011.10.26	2021.10.26	Fixed rate	4.32	-	₩ 100,000,000,000
27-3rd Public bonds	2012.02.23	2022.02.23	Fixed rate	4.09	-	170,000,000,000
28-1st Public bonds	2012.07.30	2019.07.30	Fixed rate	3.40	-	90,000,000,000
28-2nd Public bonds	2012.07.30	2022.07.30	Fixed rate	3.40	-	110,000,000,000
29-1st Public bonds	2012.11.29	2027.11.29	Fixed rate	3.27	-	100,000,000,000
29-2nd Public bonds	2012.11.29	2032.11.29	Fixed rate	3.35	-	100,000,000,000
31-1st Public bonds	2013.03.26	2018.03.26	Fixed rate	2.77	-	100,000,000,000
32nd Public bonds	2013.04.25	2023.04.25	Fixed rate	2.97	-	120,000,000,000
33rd Public bonds	2013.05.21	2023.05.21	Fixed rate	3.05	-	100,000,000,000
34th Public bonds	2013.06.03	2018.06.03	Fixed rate	3.05	-	130,000,000,000
35-1st Public bonds	2013.06.25	2018.06.25	Fixed rate	3.59	-	100,000,000,000
35-2nd Public bonds	2013.06.25	2020.06.25	Fixed rate	3.70	-	80,000,000,000
37-2nd Public bonds	2013.11.12	2023.11.12	Fixed rate	3.81	-	90,000,000,000
38-1st Public bonds	2014.03.26	2019.03.26	Fixed rate	3.28	-	130,000,000,000
38-2nd Public bonds	2014.03.26	2021.03.26	Fixed rate	3.50	-	100,000,000,000
38-3rd Public bonds	2014.03.26	2024.03.26	Fixed rate	3.67	-	70,000,000,000
39th Public bonds	2014.05.28	2024.05.28	Fixed rate	3.48	-	100,000,000,000
40th Public bonds	2014.06.26	2024.06.26	Fixed rate	3.31	-	110,000,000,000
41-2nd Public bonds	2014.10.30	2019.10.30	Fixed rate	2.41	-	110,000,000,000
42nd Public bonds	2014.12.15	2034.12.15	Fixed rate	3.10	-	100,000,000,000
30th Public bonds	2013.03.05	2018.03.05	Floating rate	LIBOR(3M)+1.01	USD 100,000,000	107,140,000,000
36th Public bonds	2013.07.25	2018.07.25	Floating rate	LIBOR(3M)+1.50	USD 100,000,000	107,140,000,000
4th Foreign bonds	2013.09.25	2020.09.25	Fixed rate	5.75	AUD 325,000,000	271,427,000,000
5th Foreign bonds	2018.04.12	2020.04.12	Fixed rate	2.38	USD 300,000,000	321,420,000,000
						2,917,127,000,000
Less: Discount on debt securities						(6,238,251,374)
Less: Current portion of debt securities						(544,280,000,000)
Add: Current portion of discount on debt securities						282,664,309
						₩ 2,366,891,412,935

21. EMPLOYMENT BENEFITS:

(1) Defined contribution plans

The Group operates a defined contribution plan that is subject to the employees' option. A defined contribution fund is separately managed by the plan's administrator. When employees terminate their employment before the benefits have been vested, the Group's obligation to make contributions to the plan decreases on a pro rata basis.

The Group contributed the following amounts for the years ended December 31, 2018 and 2017 (Korean won):

	2018	2017
Cost of sales	₩ 3,541,461,984	₩ 3,688,296,880
Selling and administrative expenses	711,249,989	650,245,720
	₩ 4,252,711,973	₩ 4,338,542,600

(2) Defined benefit plan

① Principal assumptions on actuarial valuation as of December 31, 2018 and 2017, are as follows:

	December 31, 2018	December 31, 2017
Discount rate	2.37%	2.90%
Future salary increase rate	3.39%–6.76%	3.39%–6.76%
Expected return on plan assets rate	2.90%	2.64%

② Details of expenses relating to defined benefit plans for the years ended December 31, 2018 and 2017, are as follows (Korean won):

	2018	2017
Current service cost	₩ 14,894,668,005	₩ 16,596,644,648
Interest cost	3,542,831,913	3,304,241,290
Expected return on plan assets	(262,463,535)	(216,165,822)
Losses (gains) on settlements	(5,353,627)	-
	₩ 18,169,682,756	₩ 19,684,720,116

For the years ended December 31, 2018 and 2017, employee benefit obligations expenses of ₩16,738 million and ₩18,491 million, respectively, are recognized as cost of sales and ₩1,431 million and ₩1,193 million, respectively, are recognized as selling and administrative expenses.

③ Employee benefit obligations as of December 31, 2018 and 2017, are as follows (Korean won):

	December 31, 2018	December 31, 2017
Present value of defined benefit obligations from funded plans	₩ 140,873,471,315	₩ 117,772,891,962
Fair value of plan assets	(9,482,477,007)	(8,644,893,572)
Net employee benefit obligations from defined benefit plans	₩ 131,390,994,308	₩ 109,127,998,390

④ Changes in employee benefit obligations for the years ended December 31, 2018 and 2017, are as follows (Korean won):

	Year ended December 31, 2018	Year ended December 31, 2017
Beginning balance	₩ 117,772,891,962	₩ 122,206,254,923
Current service cost	14,894,668,005	16,596,644,648
Interest cost	3,542,831,913	3,304,241,290
Remeasurement losses	11,523,855,961	(19,306,690,363)
Actual payments	(6,855,422,899)	(5,027,558,536)
Loss from settlement	(5,353,627)	-
Ending balance	₩ 140,873,471,315	₩ 117,772,891,962

⑤ Changes in the present value of plan assets for the years ended December 31, 2018 and 2017, are as follows (Korean won):

	Year ended December 31, 2018	Year ended December 31, 2017
Beginning balance	₩ 8,644,893,572	₩ 7,844,603,283
Expected return on plan assets	262,463,535	216,165,822
Remeasurement losses	(124,880,100)	(98,647,144)
Contributions by the employers	700,000,000	682,771,611
Ending balance	₩ 9,482,477,007	₩ 8,644,893,572

⑥ Fair values of major categories of plan assets as of December 31, 2018 and 2017, are as follows (Korean won):

	December 31, 2018	December 31, 2017
Equity instrument	₩ 1,184,519,733	₩ 1,214,591,004
Debt instrument	1,389,555,548	1,181,168,999
Immovables	530,535	144,600,772
Deposits	1,146,146,962	927,086,300
Others	5,761,724,229	5,177,446,497
	₩ 9,482,477,007	₩ 8,644,893,572

Actual returns from plan assets for the years ended December 31, 2018 and 2017, are ₩138 million and ₩118 million, respectively.

⑦ Remeasurement losses in OCI for the years ended December 31, 2018 and 2017, are as follows (Korean won):

	2018	2017
Actuarial loss arising from changes in financial assumptions	₩ 1,171,376,600	₩ (15,204,518,058)
Experience adjustments	10,352,479,361	(4,102,172,305)
Return on plan assets	124,880,100	98,647,144
	₩ 11,648,736,061	₩ (19,208,043,219)

Remeasurement component recognized as OCI or loss is recorded in retained earnings.

(3) Other long-term employee benefit obligations as of December 31, 2018 and 2017, are as follows (Korean won):

	December 31, 2018	December 31, 2017
Long-service leave	₩ 477,272,429	₩ 495,415,517

22. PROVISIONS:

(1) Provisions as of December 31, 2018 and 2017, are as follows (Korean won):

	December 31, 2018	December 31, 2017
	Current	Current
Provisions for employees' salary (*1)	₩ 40,477,358,578	₩ 39,369,974,781
Provisions for short financial guaranty	82,741,133	39,664,813
Litigation provisions (*2)	251,339,495	778,315,124
Provisions for greenhouse gas emission obligation (*3)	123,660,216,775	292,234,387,542
Other current provisions:		
Provisions for RPS (*4)	-	51,418,711,548
Provisions for others (*5)	40,898,000,000	-
	₩ 205,369,655,981	₩ 383,841,053,808

(*1) The Group determines the provision for employment salary as the incentive payments based on the results of the individual performance evaluation or management assessment.

(*2) When resources embodying benefits are likely to be released and a reliable estimate of that amount of the obligation can be made, the Group recognizes a provision. On December 18, 2013, the Supreme Court of Korea made a ruling regarding the scope of ordinary wage, which could be the basis for overtime payment, allowance for night work and others. As of December 31, 2018, the Group recognized the litigation provisions for such amount expected to be paid to employees in relation to the ongoing litigation over the ordinary wage.

(*3) Provisions for greenhouse gas emission obligation are recognized for the governmental regulations to submit emission right as emit greenhouse gas. KEPCO reimbursed the expenses paid by the Group in order to comply with the obligation at standard price, and the Group recorded such amount as other receivables. As of December 31, 2018 and 2017, the provisions and other receivables, which will be reimbursed from KEPCO, were ₩123,660 million and ₩313,090 million, and ₩292,234 and ₩411,888 respectively.

(*4) RPS program is required to generate a specified percentage of total electricity to be generated in the form of renewable energy, and provisions are recognized for the governmental regulations to require the production of energies from renewable energy sources, such as solar, wind and biomass. KEPCO reimbursed the expenses paid by the Group in order to comply with the obligation at standard price, and the Group recorded such amount as accrued income and other receivables. As of December 31, 2018, the provisions, accrued income and other receivables that will be reimbursed from KEPCO were nil (₩51,419 million as of December 31, 2017), ₩257,962 million (₩167,610 million as of December 31, 2017) and ₩15,960 million (₩28,304 million as of December 31, 2017), respectively.

(*5) The Group provided funding arrangements for Hyundai Energy Co., a related group of the Group. The Group believes that it is highly probable that cash outflow will be made in accordance with the fund supplementation agreement as of December 31, 2018. The Group has recognized provisions for doubtful debts.

(2) Changes in provisions for the years ended December 31, 2018 and 2017, are as follows (Korean won):

	Year ended December 31, 2018				
	Beginning balance	Provision made	Provision reversed	Provision used	Ending balance
Provisions for employees' salary	₩ 39,369,974,781	₩ 1,107,383,797	₩ -	₩ -	₩ 40,477,358,578
Provisions for short financial guaranty	39,664,813	43,076,320	-	-	82,741,133
Litigation provisions	778,315,124	-	-	(526,975,629)	251,339,495
Provisions for greenhouse gas emission obligation	292,234,387,542	119,332,751,485	-	(287,906,922,252)	123,660,216,775
Provisions for RPS	51,418,711,548	-	(51,418,711,548)	-	-
Provisions for others	-	40,898,000,000	-	-	40,898,000,000
	₩ 383,841,053,808	₩ 161,381,211,602	₩ (51,418,711,548)	₩(288,433,897,881)	₩ 205,369,655,981

	Year ended December 31, 2017					
	Beginning balance	Provision made	Provision reversed	Provision used	Others (*)	Ending balance
Provisions for employees' salary	₩ 37,754,701,461	₩ 3,076,644,236	₩ (1,461,370,916)	₩ -	₩ -	₩ 39,369,974,781
Provisions for short financial guaranty	-	39,664,813	-	-	-	39,664,813
Litigation provisions	15,426,255,579	697,276,719	-	(15,345,217,174)	-	778,315,124
Provisions for greenhouse gas emission obligation	220,814,295,728	317,902,613,186	-	(246,482,521,372)	-	292,234,387,542
Provisions for RPS	36,621,280,318	14,797,431,230	-	-	-	51,418,711,548
Provisions for right to indemnity	29,783,524,362	-	(26,450,533,510)	-	(3,332,990,852)	-
	₩ 340,400,057,448	₩ 336,513,630,184	₩ (27,911,904,426)	₩(261,827,738,546)	₩ (3,332,990,852)	₩ 383,841,053,808

(*) Others are due to change in exchange rate.

23. GOVERNMENT GRANTS:

(1) Government grants, whose primary condition is that the Group purchase, construct or otherwise acquire long-term assets, are deducted from the carrying amount of the asset.

(2) Government grants as of December 31, 2018 and 2017, are as follows (Korean won):

	December 31, 2018		December 31, 2017	
	Assets	Liabilities	Assets	Liabilities
Buildings	₩ (815,181,525)	₩ -	₩ (845,709,859)	₩ -
Structures	(1,348,273,692)	-	(1,417,533,990)	-
Machinery	(3,878,067,332)	-	(4,428,653,996)	-
Vehicles	(26,766,666)	-	(49,214,582)	-
Furniture and fixtures	-	-	(5,208,333)	-
Unearned revenue	-	-	-	17,339,108
	₩ (6,068,289,215)	₩ --	₩ (6,746,320,760)	₩ 17,339,108

(3) Changes in government grants for the years ended December 31, 2018 and 2017, are as follows (Korean won):

	2018			
	Beginning balance	Acquisition	Offset the items of depreciation expense	Ending balance
Buildings	₩ (845,709,859)	₩ -	₩ 30,528,334	₩ (815,181,525)
Structures	(1,417,533,990)	-	69,260,298	(1,348,273,692)
Machinery	(4,428,653,996)	-	550,586,664	(3,878,067,332)
Vehicles	(49,214,582)	-	22,447,916	(26,766,666)
Furniture and fixtures	(5,208,333)	-	5,208,333	-
	₩ (6,746,320,760)	₩ -	₩ 678,031,545	₩ (6,068,289,215)

	2017			
	Beginning balance	Acquisition	Offset the items of depreciation expense	Ending balance
Buildings	₩ (575,404,860)	₩ (300,000,000)	₩ 29,695,001	₩ (845,709,859)
Structures	(1,486,794,287)	-	69,260,297	(1,417,533,990)
Machinery	(4,979,240,659)	-	550,586,663	(4,428,653,996)
Vehicles	(73,739,582)	-	24,525,000	(49,214,582)
Furniture and fixtures	(17,708,333)	-	12,500,000	(5,208,333)
	₩ (7,132,887,721)	₩ (300,000,000)	₩ 686,566,961	₩ (6,746,320,760)

24. NON-FINANCIAL LIABILITIES:

(1) Non-financial liabilities as of December 31, 2018 and 2017, are as follows (Korean won):

	December 31, 2018		December 31, 2017	
	Current	Non-current	Current	Non-current
Advance received	₩ 2,374,025,073	₩ -	₩ 2,362,637,031	₩ -
Unearned revenue	51,038,117,841	-	22,309,801,134	-
Withholdings	3,969,634,932	1,024,421,690	6,241,430,926	1,911,268,864
VAT withholdings	2,514,981,360	-	2,949,794,430	-
Others	127,729,148	682,916,236	13,805,915,408	2,805,318,756
	₩ 60,024,488,354	₩ 1,707,337,926	₩ 47,669,578,929	₩ 4,716,587,620

25. CONTRIBUTED CAPITAL:

(1) Details of contributed capital as of December 31, 2018 and 2017, are as follows (Korean won):

	December 31, 2018	December 31, 2017
Share capital	₩ 297,615,630,000	₩ 297,615,630,000
Paid-in capital in excess of par value	856,488,569,175	856,488,569,175

	₩ 1,154,104,199,175	₩ 1,154,104,199,175

(2) Details of shares issued as of December 31, 2018 and 2017, are as follows (Korean won, except for number of shares):

	December 31, 2018	December 31, 2017
Shares authorized	100,000,000	100,000,000
Number of shares issued	59,523,126	59,523,126
Value per share	5,000	5,000
	₩ 297,615,630,000	₩ 297,615,630,000

26. RETAINED EARNINGS AND DIVIDENDS PAID:

(1) Details of retained earnings as of December 31, 2018 and 2017, are as follows (Korean won):

	December 31, 2018	December 31, 2017
Legal reserve (*)	₩ 130,631,373,885	₩ 127,238,555,703
Voluntary reserves	2,408,509,786,466	2,314,346,229,734
Retained earnings before appropriations	1,056,721,569,269	1,172,095,000,082
	₩ 3,595,862,729,620	₩ 3,613,679,785,519

(*) The Commercial Code of the Republic of Korea requires the Group to appropriate as a legal reserve an amount equal to a minimum of 10% of annual cash dividends paid until the reserve equals 50% of its issued capital stock. The reserve is not available for the payment of cash dividends, but may be transferred to capital stock through a resolution of the board of directors or used to reduce accumulated deficit, if any, with the ratification of the shareholder.

(2) Details of voluntary reserves as of December 31, 2018 and 2017, are as follows (Korean won):

	December 31, 2018	December 31, 2017
Reserve for research and human development (*)	₩ 7,200,000,000	₩ 21,600,000,000
Sinking fund reserve	717,190,814,698	662,909,036,332
Reserve for business expansion	1,684,118,971,768	1,629,837,193,402
	₩ 2,408,509,786,466	₩ 2,314,346,229,734

(*) The reserve for research and human development is appropriated by the Group to use as qualified tax credits to reduce corporate tax liabilities. The reserve is available for cash dividends for a certain period as defined by the Tax Incentive Control Law of Korea.

(3) Changes in retained earnings for the years ended December 31, 2018 and 2017, are as follows (Korean won):

	2018	2017
Beginning balance	₩ 3,613,679,785,519	₩ 3,543,568,492,680
Net income attributed to owner of the Group	30,263,145,821	175,474,306,847
Dividends paid	(33,928,181,820)	(106,546,395,540)
Dividends paid (hybrid securities)	(13,384,764,000)	(13,384,764,000)
Remeasurement of defined benefit liability	(8,836,730,441)	14,568,145,532
Effect of change in accounting policy	8,069,474,541	-
Ending balance	₩ 3,595,862,729,620	₩ 3,613,679,785,519

(4) Dividends paid for the years ended December 31, 2018 and 2017, are as follows (Korean won, except for number of shares):

	2018		
	Number of shares eligible for dividends	Dividends paid per share	Dividends paid
Common shares	59,523,126	₩ 570	₩ 33,928,181,820

	2017		
	Number of shares eligible for dividends	Dividends paid per share	Dividends paid
Common shares	59,523,126	₩ 1,790	₩ 106,546,395,540

(5) Changes in remeasurement components related to defined benefit liability for the years ended December 31, 2018 and 2017, are as follows (Korean won):

	2018	2017
Beginning balance	₩ (26,366,171,564)	₩ (40,934,317,096)
Changes	(11,639,497,524)	19,196,874,277
Income tax effect	2,802,767,083	(4,628,728,745)
Ending balance	₩ (35,202,902,005)	₩ (26,366,171,564)

27. STATEMENTS OF APPROPRIATION OF RETAINED EARNINGS:

The Group's statements of appropriation of retained earnings for the years ended December 31, 2018 and 2017, are as follows (Korean won):

	2018	2017
I. Unappropriated retained earnings	₩ 1,071,966,776,611	₩ 1,191,809,554,563
Balance at beginning of year	1,060,324,997,829	1,060,324,997,829
Net income	25,735,983,318	130,371,071,195
Remeasurements of defined benefit plan	(8,778,915,077)	14,498,249,539
Interest payments on hybrid securities	(13,384,764,000)	(13,384,764,000)
Effect of change in accounting policy	8,069,474,541	-
	1,071,966,776,611	1,191,809,554,563
II. Transfer from voluntary reserves	7,200,000,000	14,400,000,000
III. Total (I + II)	1,079,166,776,611	1,206,209,554,563
IV. Appropriation of retained earnings		
Legal reserve	714,277,512	3,392,818,182
Dividends	7,142,775,120	33,928,181,820
Reserves for repayment of debt securities	5,492,363,075	54,281,778,366
Reserves for business expansions	5,492,363,075	54,281,778,366
	18,841,778,782	145,884,556,734
V. Unappropriated retained earnings to be carried over to subsequent year	₩ 1,060,324,997,829	₩ 1,060,324,997,829

28. HYBRID SECURITIES:

Details of hybrid securities classified as equity as of December 31, 2018 and 2017, are as follows (Korean won):

	Issue date	Maturity	Interest rate (%)	December 31, 2018	December 31, 2017
1st hybrid securities	2012.12.07	2042.12.06	4.38	₩ 170,000,000,000	₩ 170,000,000,000
2nd hybrid securities	2012.12.07	2042.12.06	4.44	230,000,000,000	230,000,000,000
Less issuance cost				(1,090,000,000)	(1,090,000,000)
				₩ 398,910,000,000	₩ 398,910,000,000

The Group holds the right to extend the maturity dates on hybrid securities under existing conditions. Furthermore, the Group is exempt from interest payments on the face value of bonds when it decides not to declare dividends attributable to ordinary shares.

29. OTHER COMPONENTS OF EQUITY:

(1) Other components of equity as of December 31, 2018 and 2017, are as follows (Korean won):

	December 31, 2018	December 31, 2017
Other capital surpluses	₩ (239,336,565)	₩ (239,336,565)
Accumulated other comprehensive loss	43,668,311,033	17,991,201,179
Other equity	(184,715,608,232)	(184,715,608,232)
	₩ (141,286,633,764	₩ (166,963,743,618)

(2) Changes in accumulated other comprehensive income (loss) for the years ended December 31, 2018 and 2017, are as follows (Korean won):

	2018			
	Financial assets at FVOCI valuation reserve	Reserve for gain (loss) on valuation of derivatives	Reserve for gain (loss) on overseas operations translation credit	Share in other comprehensive income (loss) of investments in associates and joint ventures
Beginning balance	₩ 40,523,318,173	₩ (6,823,120,824)	₩ (7,401,564,678)	₩ (8,307,431,492)
Net change in the unrealized fair value of financial assets at FVOCI	66,136,485,260	-	-	-
Net change in the unrealized fair value of derivatives using cash flow hedge accounting	-	(7,868,640,169)	-	-
Shares in OCI of associates and joint ventures, net of tax	-	-	-	(5,041,736,162)
Disposal of shares in OCI of associates and joint ventures	-	-	-	2,183,719,593
Share in other comprehensive loss of associates and joint ventures	-	-	-	-
Foreign currency translation of foreign operations	-	-	(7,562,425,615)	-
Income tax effect	(16,005,029,433)	1,904,210,921	-	-
Effect of change in accounting policy	(8,069,474,541)	-	-	
Ending balance	₩ 82,585,299,459	₩ (12,787,550,072)	₩(14,963,990,293)	₩ (11,165,448,061)

	2017			
	AFS financial asset valuation reserve	Reserve for gain (loss) on valuation of derivatives	Reserve for gain (loss) on overseas operations translation credit	Share in other comprehensive loss of investments in associates and joint ventures
Beginning balance	₩ 12,719,700,555	₩ (10,025,916,883)	₩ (2,890,280,937)	₩ (6,134,494,269)
Net change in the unrealized fair value of AFS financial assets	36,680,234,325	-	-	-
Net change in the unrealized fair value of derivatives using cash flow hedge accounting	-	4,225,324,616	-	-
Share in other comprehensive loss of associates and joint ventures	-	-	-	(2,172,937,223)
Foreign currency translation of foreign operations	-	-	(4,511,283,741)	-
Income tax effect	(8,876,616,707)	(1,022,528,557)	-	-
Ending balance	₩ 40,523,318,173	₩ (6,823,120,824)	₩ (7,401,564,678)	₩ (8,307,431,492)

(3) Components of other equity as of December 31, 2018 and 2017, are as follows (Korean won):

	December 31, 2018	December 31, 2017
Loss on capital reduction	₩ (184,715,608,232)	₩ (184,715,608,232)

There is no change in components of other equity for the years ended December 31, 2018 and 2017.

30. SALES:

Details of sales for the years ended December 31, 2018 and 2017, are as follows (Korean won):

	2018	
	Domestic	Overseas
Sales of goods	₩ 5,495,699,124,011	₩ -
Sales of service	22,527,830,702	24,366,892,543
	₩ 5,518,226,954,713	₩ 24,366,892,543

	2017	
	Domestic	Overseas
Sales of goods	₩5,354,360,747,040	₩ -
Sales of service	31,808,617,659	13,159,005,985
	₩5,386,169,364,699	₩ 13,159,005,985

31. SELLING AND ADMINISTRATIVE EXPENSES:

Selling and administrative expenses for the years ended December 31, 2018 and 2017, are as follows (Korean won):

	2018	2017
Salaries	₩ 25,571,593,648	₩ 19,281,850,745
Retirement benefit expense	2,143,113,967	1,843,648,332
Welfare and benefit expense	2,554,508,973	3,016,453,628
Insurance expense	329,860,611	136,103,105
Depreciation	8,754,441,885	8,598,964,503
Amortization	4,954,743,465	4,732,847,055
Bad debt expense	-	78,073,496,309
Commission	14,255,012,854	16,058,483,121
Advertising expense	2,197,808,892	7,815,796,110
Training expense	65,562,682	76,850,988
Vehicle maintenance expense	174,848,289	159,982,041
Publishing expense	145,470,347	184,365,582
Business promotion expense	287,393,758	305,062,348
Rent expense	1,055,986,326	960,064,933
Telecommunication expense	1,186,779,925	1,241,050,271
Taxes and dues	163,485,365	6,982,232,052
Expendable supplies expense	113,352,939	95,801,261
Water, light and heating expense	607,539,215	571,928,749
Repairs and maintenance expense	10,992,859,763	9,919,561,926
Ordinary development expense	17,141,469,897	9,934,334,980
Travel expense	756,780,717	740,282,492
Clothing expense	38,816,381	42,747,900
Survey and analysis expense	32,071,532	41,522,699
Membership fee	67,504,000	76,230,000
Others	3,220,869,305	3,021,843,902
Total	₩ 96,811,874,736	₩ 173,911,505,032

32. OTHER INCOME AND EXPENSE:

(1) Other income for the years ended December 31, 2018 and 2017, is as follows (Korean won):

	2018	2017
Reversal of other bad debt expenses	₩ 18,139,121	₩ 26,450,533,510
Government grants income	481,570,630	429,562,024
Gains on assets contributed	378,000,000	-
Gain from liabilities forgiven	4,929,968,152	2,107,678,240
Compensation and reparations revenue	6,998,288,577	3,294,903,684
Rental income	4,766,233,286	4,627,862,664
Others	7,592,944,787	1,497,539,880
	₩ 25,165,144,553	₩ 38,408,080,002

(2) Other expense for the years ended December 31, 2018 and 2017, is as follows (Korean won):

	2018	2017
Other province expense	₩ 40,898,000,000	₩ 381,607,609
Other bad debt expense	17,747,886,760	2,470,640,849
Donations	3,204,243,749	7,600,587,406
Other province expense	30,406,864	37,283,400
	₩ 61,880,537,373	₩ 10,490,119,264

33. OTHER PROFIT AND LOSS:

Details of other profit and loss for the years ended December 31, 2018 and 2017, are as follows (Korean won):

	2018	2017
Other profit:		
Gain on disposal of property, plant and equipment	₩ 269,317,795	₩ 1,120,147,843
Gain on foreign currency translations	922,423	3,541,996,412
Gain on foreign currency transactions	9,718,620,499	27,539,751,077
Others	13,185,527,598	12,555,630,867
Other loss:		
Loss on disposal of property, plant and equipment	(1,269,506,686)	(14,896,343,568)
Loss on foreign currency translations	(1,577,862)	(1,940,422,834)
Loss on foreign currency transactions	(18,203,228,565)	(8,420,180,788)
Others	(2,648,502,874)	(784,338,219)
	₩ 1,051,572,328	₩ 18,716,240,790

34. FINANCE INCOME:

(1) Finance income for the years ended December 31, 2018 and 2017, is as follows (Korean won):

	2018	2017
Interest income	₩ 3,318,250,962	₩ 2,254,175,283
Dividends income	10,951,776,053	1,957,215,981
Gain on disposal of financial assets at FVTPL	8,123,792	-
Gain on disposal of AFS financial assets	-	1,053,660
Gain on valuation of derivatives	14,020,814,399	32,375,155
Gain on derivative transactions	19,108,330,938	4,527,924,803
Gain on foreign currency translations	15,325,951,731	62,754,550,151
Gain on foreign currency transactions	1,448,185,449	15,723,383,586
Others	27,278,461	1,370,655
	₩ 64,208,711,785	₩ 87,252,049,274

(2) Interest income included in finance income for the years ended December 31, 2018 and 2017, is as follows (Korean won):

	2018	2017
Cash and cash equivalents	₩ 2,280,416,760	₩ 1,256,320,127
Trade and other receivables	440,032,972	323,083,111
Loans	597,801,230	674,772,045
	₩ 3,318,250,962	₩ 2,254,175,283

35. FINANCE COSTS:

(1) Finance costs for the years ended December 31, 2018 and 2017, are as follows (Korean won):

	2018	2017
Interest expense	₩ 92,439,622,347	₩ 91,797,388,983
Loss on disposal of AFS financial assets	-	8,996
Loss on valuation of derivatives	16,405,321,112	63,543,758,125
Loss on derivative transactions	5,483,844,467	27,083,630,901
Loss on foreign currency translations	13,973,024,668	505,468,539
Loss on foreign currency transactions	7,715,803,594	1,390,570,944
	₩ 136,017,616,188	₩ 184,320,826,488

(2) Interest expense included in finance costs for the years ended December 31, 2018 and 2017, is as follows (Korean won):

		2018		2017
Short-term borrowings	₩	3,424,495,117	₩	2,206,303,006
Long-term borrowings		13,765,288,482		15,941,570,229
Debt securities		96,952,579,853		98,980,763,399
Other financial liabilities		3,391,875		764,569,179
		114,145,755,327		117,893,205,813
Less: Capitalized borrowing costs		(21,706,132,980)		(26,095,816,830)
	₩	92,439,622,347	₩	91,797,388,983

36. INCOME TAX EXPENSE:

(1) Income tax expense for the years ended December 31, 2018 and 2017, is as follows (Korean won):

		2018		2017
Current income tax expense:				
Current income tax	₩	3,126,742,814	₩	2,234,434,139
Adjustment due to changes in estimates related to prior years		(1,761,621,786)		(18,359,402,911)
Current income tax directly added to equity		(7,024,815,429)		(10,254,638,008)
Deferred income tax expense:				
Generation and realization of temporary differences		33,536,679,159		47,107,672,917
Adjustments recognized in the current year for deferred income tax in the prior year		(7,185,375,451)		13,907,580,683
Effect of tax credit carryforward		1,537,113,584		3,004,274,705
Income tax expense	₩	22,228,722,891	₩	37,639,921,525

(2) Reconciliation between income tax expense and accounting income for the years ended December 31, 2018 and 2017, is as follows (Korean won):

		2018		2017
Income before income tax	₩	51,900,364,741	₩	213,335,732,540
Income tax expense computed at applicable tax rate		12,095,888,267		51,627,247,275
Adjustments:				
Effect of non-taxable income		(41,971,662)		(515,579)
Effect of non-deductible expenses		2,110,891,567		7,066,551,066
Net change in unrecognized deferred tax assets		7,856,402,726		(3,628,262,085)
Effect of tax credit and deduction		-		(2,069,970,946)
Adjustment due to changes in estimates related to prior years		1,537,113,584		3,004,274,705
Others		432,020,195		-
		11,894,456,410		4,372,077,161
Adjustment in respect of prior years		(1,761,621,786)		(18,359,402,911)
Income tax expense	₩	22,228,722,891	₩	37,639,921,525
Average effective tax rate		42.8%		17.6%

(3) Items directly recognized in equity in income taxes, except for other comprehensive income (loss) for the years ended December 31, 2018 and 2017, are as follows (Korean won):

	2018	2017
Interest payments on hybrid securities	₩ 4,273,236,000	₩ 4,273,236,000

(4) Income tax recognized in OCI for the years ended December 31, 2018 and 2017, is as follows (Korean won):

	2018	2017
Gain (loss) on valuation of financial assets at FVOCI	₩ (16,005,029,433)	₩ -
Gain on valuation of AFS financial assets, net	-	(8,876,616,706)
Loss (gain) on valuation of derivatives using cash flow hedge accounting, net	1,904,210,921	(1,022,528,557)
Remeasurement of defined benefit obligations	2,802,767,083	(4,628,728,745)
	₩ (11,298,051,429)	₩ (14,527,874,008)

(5) Changes in deferred tax assets (liabilities) recognized in the consolidated statements of financial position for the years ended December 31, 2018 and 2017, are as follows (Korean won):

	2018				
Type	Beginning balance	Amounts recognized in profit or loss	Amounts recognized in OCI	Amounts recognized directly in equity	Ending balance
Deferred tax on temporary differences:					
Long-term employee benefits	₩ 26,671,514,389	₩ 2,534,733,269	₩ 2,802,767,083	₩ -	₩ 32,009,014,741
Cash flow hedges	19,017,536,514	(1,371,565,554)	1,904,210,921	-	19,550,181,881
Investments in associates and subsidiaries	34,113,557,044	(8,507,958,977)	-	-	25,605,598,067
Property, plant and equipment	(576,710,970,185)	(36,689,812,478)	-	-	(613,400,782,663)
Intangible assets	3,641,494,060	(497,868,012)	-	-	3,143,626,048
AFS financial assets	(11,393,786,892)	-	(16,005,029,433)	-	(27,398,816,325)
Provisions	101,735,727,007	(53,184,907,657)	-	-	48,550,819,350
Doubtful receivables	59,427,826	-	-	-	59,427,826
Other financial liabilities	3,573,976,014	(4,256,802,507)	-	4,273,236,000	3,590,409,507
Foreign currency translation	(20,415,508,658)	464,913,459	-	-	(19,950,595,199)
Allowance for doubtful accounts	22,500,878,589	9,995,656,485	-	-	32,496,535,074
Accrued income	(1,401,640)	(10,316,223)	-	-	(11,717,863)
Advance depreciation provision	(15,101,923,258)	240,907	-	-	(15,101,682,351)
Reserve for research and human development	(1,574,799,219)	1,574,799,219	-	-	-
Others	(98,356,221,688)	34,031,877,171	-	-	(64,324,344,517)
	(512,240,500,097)	(55,917,010,898)	(11,298,051,429)	4,273,236,000	(575,182,326,424)
Deferred income tax on unused tax losses and tax credit	-	29,603,316,945	-	-	29,603,316,945
	₩ (512,240,500,097)	₩ (26,313,693,953)	₩ (11,298,051,429)	₩ 4,273,236,000	₩ (545,579,009,479)

Type	2017 Beginning balance	Amounts recognized in profit or loss	Amounts recognized in OCI	Amounts recognized directly in equity	Ending balance
Deferred tax on temporary differences:					
Long-term employee benefits	₩ 27,579,034,206	₩ 3,721,208,928	₩ (4,628,728,745)	₩ -	₩ 26,671,514,389
Cash flow hedges	(6,858,078,705)	26,898,143,776	(1,022,528,557)	-	19,017,536,514
Investments in associates and subsidiaries	34,233,073,983	(119,516,939)	-	-	34,113,557,044
Property, plant and equipment	(546,855,349,349)	(29,855,620,836)	-	-	(576,710,970,185)
Intangible assets	4,139,362,073	(497,868,013)	-	-	3,641,494,060
AFS financial assets	(1,484,636,801)	(1,032,533,385)	(8,876,616,706)	-	(11,393,786,892)
Provisions	80,188,811,328	21,546,915,679	-	-	101,735,727,007
Doubtful receivables	59,427,826	-	-	-	59,427,826
Other financial liabilities	3,185,058,722	(3,884,318,708)	-	4,273,236,000	3,573,976,014
Foreign currency translation	6,417,679,169	(26,833,187,827)	-	-	(20,415,508,658)
Allowance for doubtful accounts	571,923,278	21,928,955,311	-	-	22,500,878,589
Accrued income	(917,108)	(484,532)	-	-	(1,401,640)
Advance depreciation provision	(15,111,759,269)	9,836,011	-	-	(15,101,923,258)
Reserve for research and human development	(3,484,800,000)	1,910,000,781	-	-	(1,574,799,219)
Others	(47,711,656,533)	(50,644,565,155)	-	-	(98,356,221,688)
	₩(465,132,827,180)	₩ (36,853,034,909)	₩ (14,527,874,008)	₩4,273,236,000	₩(512,240,500,097)

(6) Deferred income tax assets (liabilities) recognized in the consolidated statements of financial position as of December 31, 2018 and 2017, are as follows (Korean won):

	December 31, 2018	December 31, 2017
Deferred tax assets	₩ 429,539,998	₩ 231,370,221
Deferred tax liabilities	(546,008,549,477)	(512,471,870,318)

(7) Details of deductible temporary differences and tax losses for which no deferred tax assets were recognized as of December 31, 2018 and 2017, are as follows (Korean won):

	December 31, 2018	December 31, 2017
Deductible temporary differences (will never expire)	₩ 60,169,258,653	₩ 49,837,623,425
Tax losses (expire in 2023)	2,110,978,034	2,185,089,606
Tax losses (expire in 2024)	17,595,218,445	17,595,218,445
Tax losses (expire in 2025)	728,663,300	728,663,300
Tax losses (expire in 2026)	₩ 80,604,118,432	₩ 70,346,594,776

(8) As of December 31, 2018 and 2017, the amounts of total taxable temporary differences that are not recognized as deferred taxes related to investments in subsidiaries are ₩30,504 million and ₩3,903 million, respectively.

37. EXPENSES CLASSIFIED BY NATURE:

Expenses classified by nature for the years ended December 31, 2018 and 2017, are as follows (Korean won):

	2018		
	Selling and administrative expenses	Cost of sales	Total
Raw materials used	₩ -	₩ 4,137,718,333,749	₩ 4,137,718,333,749
Power purchase	-	23,890,218,489	23,890,218,489
Salaries	25,571,593,648	172,546,909,154	198,118,502,802
Retirement benefit expense	2,143,113,967	20,279,280,762	22,422,394,729
Welfare and benefit expense	2,554,508,973	17,672,274,075	20,226,783,048
Contribution to intragroup labor welfare	-	4,180,116,000	4,180,116,000
Insurance expense	329,860,611	5,174,150,162	5,504,010,773
Depreciation	8,754,441,885	663,184,610,245	671,939,052,130
Amortization	4,954,743,465	589,141,982	5,543,885,447
Accretion expense to provisions	-	(96,854,713,243)	(96,854,713,243)
Commission	14,255,012,854	41,513,274,445	55,768,287,299
Advertising expense	2,197,808,892	1,362,975,702	3,560,784,594
Training expense	65,562,682	170,644,807	236,207,489
Vehicle maintenance expense	174,848,289	153,039,613	327,887,902
Publishing expense	145,470,347	101,165,546	246,635,893
Business promotion expense	287,393,758	388,699,748	676,093,506
Rent expense	1,055,986,326	17,329,894,784	18,385,881,110
Telecommunication expense	1,186,779,925	137,339,670	1,324,119,595
Transportation expense	-	20,051,500	20,051,500
Taxes and dues	163,485,365	35,458,703,154	35,622,188,519
Expendable supplies expense	113,352,939	737,479,866	850,832,805
Water, light and heating expense	607,539,215	103,755,472	711,294,687
Repairs and maintenance expense	10,992,859,763	200,586,258,855	211,579,118,618
Ordinary development expense	17,141,469,897	30,077,946,150	47,219,416,047
Travel expense	756,780,717	460,593,266	1,217,373,983
Others	3,359,261,218	12,094,142,749	15,453,403,967
	₩ 96,811,874,736	₩ 5,289,076,286,702	₩ 5,385,888,161,438

	2017		
	Selling and administrative expenses	Cost of sales	Total
Raw materials used	₩ -	₩ 3,662,282,317,686	₩ 3,662,282,317,686
Power purchase	-	25,954,349,968	25,954,349,968
Salaries	19,281,850,745	172,586,891,364	191,868,742,109
Retirement benefit expense	1,843,648,332	22,179,614,384	24,023,262,716
Welfare and benefit expense	3,016,453,628	17,555,160,161	20,571,613,789
Contribution to intragroup labor welfare	-	13,846,957,285	13,846,957,285
Insurance expense	136,103,105	5,620,646,932	5,756,750,037
Depreciation	8,598,964,503	630,700,215,255	639,299,179,758
Amortization	4,732,847,055	1,256,913,509	5,989,760,564
Bad debt expenses	78,073,496,309	-	78,073,496,309
Accretion expense to provisions	-	51,064,564,553	51,064,564,553
Commission	16,058,483,121	44,261,319,561	60,319,802,682
Advertising expense	7,815,796,110	1,361,287,980	9,177,084,090
Training expense	76,850,988	207,952,358	284,803,346
Vehicle maintenance expense	159,982,041	147,531,799	307,513,840
Publishing expense	184,365,582	113,654,954	298,020,536
Business promotion expense	305,062,348	291,872,807	596,935,155
Rent expense	960,064,933	14,063,438,818	15,023,503,751
Telecommunication expense	1,241,050,271	187,423,039	1,428,473,310
Transportation expense	-	39,426,558	39,426,558
Taxes and dues	6,982,232,052	36,313,450,067	43,295,682,119
Expendable supplies expense	95,801,261	933,410,698	1,029,211,959
Water, light and heating expense	571,928,749	97,198,965	669,127,714
Repairs and maintenance expense	9,919,561,926	203,835,183,867	213,754,745,793
Ordinary development expense	9,934,334,980	36,224,145,330	46,158,480,310
Travel expense	740,282,492	621,519,964	1,361,802,456
Others	3,182,344,501	13,020,217,882	16,202,562,383
	₩ 173,911,505,032	₩ 4,954,766,665,744	₩ 5,128,678,170,776

38. EARNINGS PER SHARE:

(1) Basic earnings per share for the years ended December 31, 2018 and 2017, are as follows (Korean won):

	2018	2017
Basic earnings per share	₩ 284	₩ 2,723

There are no potential dilutive instruments, and diluted earnings per share are the same as basic earnings per share for the years ended December 31, 2018 and 2017.

(2) Basic earnings per share

Net income for the period and weighted-average number of common shares used in the calculation of basic earnings per share for the years ended December 31, 2018 and 2017, are as follows (Korean won, except for number of shares):

	2018	2017
Net income	₩ 30,263,145,821	₩ 175,474,306,847
Dividends of hybrid securities	(13,384,764,000)	(13,384,764,000)
Earnings used in the calculation of total basic earnings per share	16,878,381,821	162,089,542,847
Weighted-average number of common shares	59,523,126	59,523,126

39. RISK MANAGEMENT:

(1) Capital risk management

The primary objective of the Group's capital management is to ensure that it maintains a strong credit rating and healthy capital ratios in order to support its business and maximize shareholder's value. The Group manages its capital structure and makes adjustments to it in light of changes in economic conditions. To maintain or adjust the capital structure, the Group may adjust the dividend payment to shareholder, return capital to the shareholder or issue new shares. The Group manages capital based on a gearing ratio, which is net debt divided by total equity. The Group defines the net debt as interest-bearing loans and borrowings, and bonds payable less cash and cash equivalents and the total equity as equity plus net debt.

Details of the Group's capital management accounts as of December 31, 2018 and 2017, are as follows (Korean won):

	December 31, 2018	December 31, 2017
Total borrowings and debt securities (A)	₩ 3,548,917,754,503	₩ 3,378,905,929,079
Cash and cash equivalents (B)	(149,803,189,823)	(84,401,482,330)
Net borrowings and debt securities (C=A-B)	3,399,114,564,680	3,294,504,446,749
Total shareholder's equity (D)	5,028,947,732,586	5,016,933,003,943
Total equity (E=C+D)	₩ 8,428,062,297,266	₩ 8,311,437,450,692
Debt-to-equity ratio (C/E)	40.33%	39.64%

(2) Financial risk management

The Group is exposed to various risks related to its financial instruments, such as market risk (currency risk, interest rate risk and price risk) and credit risk. The Group monitors and manages the financial risks relating to the operations of the Group through internal risk reports, which analyze exposures by degree and magnitude of risks. The Group uses derivative financial instruments to certain hedge risk exposures. The Group's overall financial risk management strategy remains unchanged from that of the prior year.

1) Credit risk

Credit risk is the risk of financial loss to the Group, if a customer or counterparty to a financial instrument fails to meet its contractual obligations, and arises primarily from the sales activities, securities and derivatives. In addition, credit risk exposure may exist within financial guarantees and unused lines of credit. As the Group makes transactions with the financial institutions that are reputable financial institutions, the credit risk from them is considered limited. The Group decides credit transaction limits based on evaluation of client's credit through information obtained from the credit bureau and disclosed financial position at committing contracts.

Book values of the financial assets represent the maximum exposed amounts of the credit risk. Details of the Group's level of maximum exposure to credit risk as of December 31, 2018 and 2017, are as follows (Korean won):

	December 31, 2018	December 31, 2017
Cash and cash equivalents	₩ 149,803,189,823	₩ 84,401,482,330
Long-/short-term financial instruments	20,000,000,000	20,000,000,000
Non-current financial assets at FVTPL	3,852,780,540	-
Financial assets at FVOCI	270,122,309,268	-
AFS financial assets	-	208,691,420,000
Long-/short-term loans	28,411,261,142	25,448,422,643
Trade and other receivables	1,106,606,285,339	1,185,119,584,087
Derivative assets (trading)	10,814,399	32,375,155

2) Market risk

Market risk is the risk that the fair values of the Group's financial instruments or future cash flows are affected by the changes in the market. Market risk consists of interest rate risk, currency risk and other price risk.

3) Sensitivity analysis

a) Significant assets and liabilities with uncertainties in underlying assumptions

① Defined benefit obligation

The following is a sensitivity analysis of defined benefit obligation assuming 1% increase and decrease movements in the actuarial valuation assumptions as of December 31, 2018 and 2017 (Korean won):

		December 31, 2018		December 31, 2017	
Type	Accounts	1% Increase	1% Decrease	1% Increase	1% Decrease
Future salary increase rate	Defined benefit obligation	₩ 21,496,109,675	₩(18,183,582,666)	₩ 17,711,358,055	₩(15,014,804,959)
Discount rate	Defined benefit obligation	(18,794,572,683)	22,826,765,755	(15,465,653,541)	18,705,384,022

Changes of employee benefits assuming 1% increase and decrease movements in discount rate on plan assets for the years ended December 31, 2018 and 2017, are ₩22 million and ₩22 million, respectively.

b) Management judgment affected by uncertainties in underlying assumptions

① Foreign currency risk

The Group undertakes transactions denominated in foreign currencies; consequently, exposures to currency exchange rate fluctuations arise. The carrying amounts of the Group's foreign currency-denominated monetary assets and monetary liabilities as of December 31, 2018 and 2017, are as follows:

	December 31, 2018		December 31, 2017	
	USD	AUD/IDR	USD	AUD
Assets:				
Cash and cash equivalents	₩ 39,451,845,730	₩ 914,362,549	₩ 38,252,036,213	₩ -
Liabilities:				
Trade and other payables	165,228,595,021	-	124,635,664,028	-
Borrowings	206,944,355,800	-	161,194,748,000	-
Debt securities	334,544,729,880	254,993,411,473	535,700,000,000	290,529,981,470
Total liabilities denominated in foreign currencies	706,717,680,701	254,993,411,473	821,530,412,028	290,529,981,470
Net exposure	₩ (667,265,834,971)	₩(254,079,048,924)	₩ (783,278,375,815)	₩ (290,529,981,470)

The average exchange rate and exchange rate for the years ended December 31, 2018 and 2017, are as follows (Korean won):

	Average exchange rate		Exchange rate	
	2018	2017	December 31, 2018	December 31, 2017
USD	₩ 1,100.30	₩ 1,130.84	₩ 1,118.10	₩ 1,071.40
AUD	822.26	866.78	787.81	835.16
IDR	0.077	0.085	0.077	0.079

Sensitivity analysis on the Group's income for the period assuming a 10% increase and decrease in currency exchange rates with all other variables held constant as of December 31, 2018 and 2017, is as follows (Korean won):

	December 31, 2018		December 31, 2017	
	10% Increase	10% Decrease	10% Increase	10% Decrease
Increase (decrease) of income before income tax	₩ (92,134,488,389)	₩ 92,134,488,389	₩ (110,966,924,986)	₩ 110,966,924,986
Increase (decrease) of shareholder's equity(*)	(92,134,488,389)	92,134,488,389	(110,966,924,986)	110,966,924,986

(*) That is the impact on the shareholder's equity before the effect of income tax.

Sensitivity analysis above is conducted for monetary assets and liabilities denominated in foreign currencies other than functional currency, without consideration of hedge effect of related derivatives, as of December 31, 2018 and 2017.

To manage its foreign currency risk related to foreign currency denominated in long-term borrowings and debt securities, the Group has a policy to enter into cross-currency swap agreements. In addition, to manage its foreign currency risk related to foreign currency-denominated purchase transactions, the Group enters into currency forward contracts.

② Interest rate risk

The Group is exposed to interest rate risk due to its borrowing with floating interest rates. A 1% increase or decrease is used when reporting interest rate risk internally to key management personnel, which represents management's assessment of the reasonably possible change in interest rates.

The Group's borrowings and debt securities with floating interest rates as of December 31, 2018 and 2017, are as follows (Korean won):

	December 31, 2018	December 31, 2017
Long-term borrowings	₩ 217,605,805,800	₩ 173,262,078,000
Debt securities	-	214,280,000,000
	₩ 217,605,805,800	₩ 387,542,078,000

Sensitivity analysis on the Group's long-term borrowings and debt securities assuming a 1% increase and decrease in interest rates with all other variables held constant as of December 31, 2018 and 2017, is as follows (Korean won):

	December 31, 2018		December 31, 2017	
	1% Increase	1% Decrease	1% Increase	1% Decrease
Increase (decrease) of income before income tax	₩ (2,176,058,058)	₩ 2,176,058,058	₩ (3,875,420,780)	₩ 3,875,420,780
Increase (decrease) of shareholder's equity(*)	(2,176,058,058)	2,176,058,058	(3,875,420,780)	3,875,420,780

(*) That is the impact on the shareholder's equity before the effect of income tax.

To manage its interest rate risks, the Group enters into certain interest swap agreements or maintains an appropriate mix of fixed- and floating-rate borrowings. Sensitivity analysis above is conducted without consideration of hedge effect of related derivatives.

4) Liquidity risk

The Group has established an appropriate liquidity risk management framework for the management of its short-, medium- and long-term funding and liquidity management requirements. The Group manages liquidity risk by maintaining adequate reserves, banking facilities and reserve borrowing facilities; by continuously monitoring forecasted and actual cash flows; and by matching the maturity profiles of financial assets and liabilities. In addition, the Group has established credit lines on its trade financing and bank overdrafts, and through payment guarantees it has received, it maintains an adequate credit (borrowing) line. In addition, in case of major construction investment, the Group has the ability to use reserve cash or utilize long-term borrowings.

a) The expected maturities of non-derivative financial liabilities

Details of remaining maturities of the non-derivative financial liabilities based on agreement terms are as follows (Korean won):

	December 31, 2018				
Type	Less than 1 year	1 year–2 years	2–5 years	More than 5 years	Total
Borrowings and debt securities	₩ 431,904,040,000	₩ 684,495,402,565	₩1,252,286,077,623	₩1,190,388,535,612	₩3,559,074,055,800
Interest expenses related to borrowings and debt securities	119,549,766,646	100,708,997,911	190,375,755,709	344,216,295,400	754,850,815,666
Trade and other payables	553,561,711,121	-	-	41,805,629,884	595,367,341,005
	₩1,105,015,517,767	₩ 785,204,400,476	₩1,442,661,833,332	₩1,576,410,460,896	₩4,909,292,212,471

	December 31, 2017				
Type	Less than 1 year	1 year–2 years	2–5 years	More than 5 years	Total
Borrowings and debt securities	₩ 845,685,880,000	₩ 331,904,040,000	₩ 1,187,108,955,448	₩ 1,025,690,202,552	₩ 3,390,389,078,000
Interest expenses related to borrowings and debt securities	95,770,737,339	89,859,052,064	167,415,293,711	152,351,195,599	505,396,278,713
Trade and other payables	459,655,281,370	-	-	38,838,660,226	498,493,941,596
	₩ 1,401,111,898,709	₩ 421,763,092,064	₩ 1,354,524,249,159	₩ 1,216,880,058,377	₩ 4,394,279,298,309

b) The expected maturities of non-derivative financial assets

The expected maturities for non-derivative financial assets as of December 31, 2018 and 2017, in detail are as follows (Korean won):

	December 31, 2018				
Type	Less than 1 year	1 year–5 years	More than 5 years	Others	Total
Cash and cash equivalents	₩ 149,803,189,823	₩ -	₩ -	₩ -	₩ 149,803,189,823
Long-/short-term financial instruments	20,000,000,000	-	-	-	20,000,000,000
Non-current financial assets at FVTPL	-	-	-	3,852,780,540	3,852,780,540
Non-current financial assets at FVOCI	-	-	-	270,122,309,268	270,122,309,268
Long-/short-term loans	1,404,215,400	13,011,072,409	16,971,180,005	-	31,386,467,814
Trade and other receivables	1,200,215,777,671	40,275,901,128	637,000,000	-	1,241,128,678,799
	₩1,371,423,182,894	₩ 53,286,973,537	₩ 17,608,180,005	₩ 273,975,089,808	₩1,716,293,426,244

Type	December 31, 2017 Less than 1 year	1 year–5 years	More than 5 years	Others	Total
Cash and cash equivalents	₩ 84,401,482,330	₩ -	₩ -	₩ -	₩ 84,401,482,330
Long-/short-term financial instruments	20,000,000,000	-	-	-	20,000,000,000
AFS financial assets	-	-	-	208,691,420,000	208,691,420,000
Long-/short-term loans	2,271,276,309	10,497,604,957	19,760,814,121	-	32,529,695,387
Trade and other receivables	1,259,275,610,588	24,629,463,470	637,000,000	-	1,284,542,074,058
	₩ 1,365,948,369,227	₩ 35,127,068,427	₩ 20,397,814,121	₩ 208,691,420,000	₩ 1,630,164,671,775

c) The expected maturities of derivative financial liabilities

Derivative liabilities classified by maturity periods, which are from reporting date to maturity date of contract, as of December 31, 2018 and 2017, are as follows (Korean won):

Type	December 31, 2018 Less than 1 year	1 year–2 years	2–5 years	More than 5 years	Total
Gross settlement:					
Hedging	₩ -	₩(79,780,118,827)	₩ –	₩ –	₩(79,780,118,827)
Trading	(1,016,571,112)	-	-	–	(1,016,571,112)

Type	December 31, 2017 Less than 1 year	1 year–2 years	2–5 years	More than 5 years	Total
Gross settlement:					
Hedging	₩ 6,959,861,863	₩ –	₩ 69,842,866,795	₩ –	₩ 76,802,728,658
Trading	1,814,508,125	–	-	–	1,814,508,125

(3) Fair value risk

The fair value of the Group's actively traded financial instruments (i.e., AFS financial assets) is based on the traded market price as of the reporting period-end. The fair value of the Group's financial assets is the amount an asset could be exchanged for or the amount a liability could be settled for.

The fair values of financial instruments where no active market exists or where quoted prices are not otherwise available are determined by using valuation techniques. Valuation techniques include using recent arm's-length market transactions between knowledgeable and willing parties if available, reference to the current fair value of another instrument that is substantially the same, discounted cash flow analysis and option-pricing models. If there is a valuation technique commonly used by market participants to price the instrument and that technique has been demonstrated to provide reliable estimates of prices obtained in actual market transactions, the Group uses that technique.

For trade receivables and payables, the Group considers the carrying value, net of impairment, as fair value. While for disclosure purposes, the fair value of financial liabilities is estimated by discounting a financial instrument with similar contractual cash flows using the effective interest method.

1) Fair value and book value

Fair value and book value of financial assets and liabilities as of December 31, 2018 and 2017, are as follows (Korean won):

Type	December 31, 2018		December 31, 2017	
	Book value	Fair value	Book value	Fair value
Assets recognized at fair value:				
Non-current financial assets at FVTPL	₩ 3,852,780,540	₩ 3,852,780,540	₩ –	₩ –
Non-current financial assets at FVOCI	270,122,309,268	270,122,309,268	–	–
AFS financial assets	-	-	208,691,420,000	208,691,420,000
Derivative assets (trading)	10,814,399	10,814,399	32,375,155	32,375,155
	₩ 273,985,904,207	₩ 273,985,904,207	₩ 208,723,795,155	₩ 208,723,795,155
Assets carried at amortized cost:				
Long-/short-term financial instruments	₩ 20,000,000,000	₩ 20,000,000,000	₩ 20,000,000,000	₩ 20,000,000,000
Long-/short-term loans	28,411,261,142	28,411,261,142	25,448,422,643	25,448,422,643
Trade and other receivables	1,106,606,285,339	1,106,606,285,339	1,185,119,584,087	1,185,119,584,087
Cash and cash equivalents	149,803,189,823	149,803,189,823	84,401,482,330	84,401,482,330
	₩1,304,820,736,304	₩1,304,820,736,304	₩1,314,969,489,060	₩1,314,969,489,060
Liabilities recognized at fair value:				
Derivative liabilities (trading)	₩ 1,016,571,112	₩ 1,016,571,112	₩ 1,814,508,125	₩ 1,814,508,125
Derivative liabilities (using hedge accounting)	79,780,118,827	79,780,118,827	76,802,728,658	76,802,728,658
	₩ 80,796,689,939	₩ 80,796,689,939	₩ 78,617,236,783	₩ 78,617,236,783
Liabilities carried at amortized cost:				
Debt securities	₩3,235,318,234,490	₩3,394,018,794,280	₩2,910,888,748,626	₩3,014,965,729,150
Borrowings	313,599,520,013	313,599,520,013	468,017,180,453	468,017,180,453
Trade and other payables	595,367,341,005	595,367,341,005	498,493,941,596	498,493,941,596
	₩4,144,285,095,508	₩4,302,985,655,298	₩3,877,399,870,675	₩3,981,476,851,199

2) Interest rates used for determining fair value

The interest rates used to discount estimated cash flows, when applicable, are based on the government yield curve at the reporting date, plus an adequate credit spread. The discount rates used for calculating fair value as of December 31, 2018 and 2017, are as follows:

	December 31, 2018(%)	December 31, 2017(%)
Derivatives	1.02 – 2.84	1.20 – 2.33
Debt securities	1.93 – 3.29	1.78 – 3.32

3) Fair value hierarchy

The following table provides an analysis of financial instruments that are measured subsequent to initial recognition at fair value, classified as Levels 1, 2 and 3 based on the degree to which the fair value is observable:

- 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.

Fair values of financial instruments that are measured at fair value by hierarchy level as of December 31, 2018 and 2017, are as follows (Korean won):

	December 31, 2018			
Type	Level 1	Level 2	Level 3	Total
Financial assets at FVOCI	₩ 248,309,770,176	₩ -	₩ 21,812,539,092	₩ 270,122,309,268
Non-current financial assets at FVTPL	-	3,852,780,540	-	3,852,780,540
Derivative assets	-	10,814,399	-	10,814,399
Derivative liabilities	-	(80,796,689,939)	-	(80,796,689,939)

	December 31, 2017			
Type	Level 1	Level 2	Level 3	Total
AFS financial assets	₩ 182,184,538,916	₩ -	₩ 26,506,881,084	₩ 208,691,420,000
Derivative assets	-	32,375,155	-	32,375,155
Derivative liabilities	-	(78,617,236,783)	-	(78,617,236,783)

There are no changes in hierarchy level for the years ended December 31, 2018 and 2017.

The fair values of financial instruments that are not actively traded in the market are determined by using valuation techniques. Fair values of AFS financial assets and financial assets at FVTPL are measured by using discount cash flow technique. The financial instruments are included in Level 3 as one or more significant inputs are not based on observable market data.

Changes in financial instruments in Level 3 for the year ended December 31, 2018, are as follows (Korean won):

	Beginning balance	OCI	Effect of change in accounting policy	Others	Ending balance
Financial assets at FVOCI	₩ 26,506,881,084	₩ 11,254,000	₩ (4,372,498,212)	₩ (333,097,780)	₩ 21,812,539,092

40. RELATED PARTIES:

(1) Related parties of the Group as of December 31, 2018, are as follows (Korean won):

Type	Related party
Parent	KEPCO
Associates and joint ventures	Hyundai Energy Co., Ltd.
	S-power Co., Ltd.
	Ecollite Co., Ltd.
	Korea Offshore Wind Power Co., Ltd.
	SE Green Energy Co., Ltd.
	Jinbhuvish Power Generations Pvt. Ltd.
	Nepal Water & Energy Development Group Pty., Ltd.
	Goseong Green Power Co., Ltd.
	Gangneung Eco Power Co., Ltd.
	Tamra Offshore Wind Power Co., Ltd.
	KEPCO Energy Solution Co., Ltd.
	Solar School Plant Co., Ltd.
	PND Solar Ltd.
	Hyundai Eco Energy Co., Ltd.
	ASM-BG Investicii AD
	RES Technology AD
	Global Trade of Power System Co., Ltd.
	Expressway Solar-light Power Generation Co., Ltd.
Others	Korea Hydro & Nuclear Power Co., Ltd.
	Korea Midland Power Co., Ltd.
	Korea Western Power Co., Ltd.
	Korea Southern Power Co., Ltd.
	Korea East-West Power Co., Ltd.
	KEPCO Engineering & Construction Group, Inc.
	KEPCO Plant Service & Engineering Co., Ltd.
	KEPCO Nuclear Fuel Co., Ltd.
	Korea Electric Power Data Network Co., Ltd.
	Korea Gas Corporation
	Korea Electric Power Industrial Development Co., Ltd.
	KPX and others

(2) Related-party transactions for the years ended December 31, 2018 and 2017, are as follows (Korean won):

Group name	Transaction type	2018 Sales and others	2018 Purchases and others
KEPCO	Electricity trading and others	₩ 5,498,206,920,992	₩ 38,877,575,649
Hyundai Energy Co., Ltd. (*)	Service fee related to power generation	843,510,530	1,359,318,560
S-Power Co., Ltd.	Service fee related to power generation	4,320,108,850	213,677,000
Korea Offshore Wind Power Co., Ltd.	Service fee	286,329,940	36,283,450
Nepal Water & Energy Development Group Pty., Ltd.	Service fee related to power generation	535,951,618	31,198,746
Goseong Green Energy Co., Ltd.	Service fee related to power generation	10,010,217,230	-
Gangneung Eco Power Co., Ltd.	Service fee related to power generation	4,568,640,574	18,886,124
KEPCO Energy Solution Co., Ltd.	Service fee	65,902,630	-
Solar School Plant Co., Ltd.	Service fee	97,508,490	-
ASM-BG Investicii AD	Service fee related to power generation	1,153,489,237	572,344
Global Trade of Power System Co., Ltd.	Others	-	565,134,473
Expressway Solar-light Power Generation Co., Ltd.	Renewable energy certificate (“REC”) purchase	-	2,616,066,404
Korea Hydro & Nuclear Power Co., Ltd.	Service fee	-	77,870,000
Korea Midland Power Co., Ltd.	Interest income and others	7,272,727	704,428,127
Korea Western Power Co., Ltd.	Others	86,509,650	989,140
Korea South Power Co., Ltd.	Interest income and others	5,931,393,789	521,623,078
Korea East-West Power Co., Ltd.	Commissions and others	-	57,821,807
KEPCO Engineering & Construction Group, Inc.	Repairs and maintenance expense and others	-	2,495,487,031
KEPCO Plant Service & Engineering Co., Ltd.	Repairs and maintenance expense and others	904,275,933	99,438,031,817
Korea Electric Power Data Network Co., Ltd.	Repairs and maintenance expense and others	-	14,635,556,270
Korea Gas Corporation	LNG purchase	232,340,156	307,564,459,220
Korea Electric Power Industrial Development Co., Ltd.	Repairs and maintenance expense and others	115,247,687	24,485,183,239
KPX	Electricity trading commissions	-	6,458,554,833
		₩ 5,527,365,620,033	₩ 500,158,717,312

(*) As of December 31, 2017, the Group recognized a loss allowance of $85,446 million.

Group name	Transaction type	2017 Sales and others	2017 Purchases and others
KEPCO	Electricity trading and others	₩ 5,538,080,599,814	₩ 39,336,078,360
Hyundai Energy Co., Ltd.	Service fee related to power generation	14,867,792,430	85,540,948,818
S-Power Co., Ltd.	Service fee related to power generation	8,645,508,850	292,383,000
Korea Offshore Wind Power Co., Ltd.	Service fee	219,717,190	-
Nepal Water & Energy Development Group Pty., Ltd.	Service fee related to power generation	899,792,595	71,918,310
Goseong Green Energy Co., Ltd.	Service fee related to power generation	24,052,959,180	-
Gangneung Eco Power Co., Ltd.	Service fee related to power generation	2,322,000,000	-
KEPCO Energy Solution Co., Ltd.	Service fee	140,332,027	-
Solar School Plant Co., Ltd.	Service fee	121,879,282	-
ASM-BG Investicii AD	Service fee related to power generation	1,061,854,565	-
Global Trade of Power System Co., Ltd.	Others	-	413,717,400
Expressway Solar-light Power Generation Co., Ltd.	REC purchase	-	2,117,646,000
Korea Hydro & Nuclear Power Co., Ltd.	Service fee	-	52,651,000
Korea Midland Power Co., Ltd.	Interest income and others	3,888,000	300,000
Korea Western Power Co., Ltd.	Others	3,888,000	501,100
Korea South Power Co., Ltd.	Interest income and others	3,888,000	25,253,329
Korea East-West Power Co., Ltd.	Commissions and others	3,888,000	47,489,340
KEPCO Engineering & Construction Group, Inc.	Repairs and maintenance expense and others	-	454,167,171
KEPCO Plant Service & Engineering Co., Ltd.	Repairs and maintenance expense and others	805,028,487	110,447,576,829
Korea Electric Power Data Network Co., Ltd.	Repairs and maintenance expense and others	-	10,791,153,281
Korea Gas Corporation	LNG purchase	138,676,500	280,096,438,894
Korea Electric Power Industrial Development Co., Ltd.	Repairs and maintenance expense and others	217,193,117	23,920,502,395
KPX	Electricity trading commissions	-	6,680,999,919
		₩ 5,591,588,886,037	₩ 560,289,725,146

(3) Receivables and payables arising from related-party transactions as of December 31, 2018 and 2017, are as follows (Korean won):

Group name	Type	Receivables December 31, 2018	Receivables December 31, 2017	Payables December 31, 2018	Payables December 31, 2017
KEPCO	Trade receivables	₩ 455,626,822,336	₩ 492,909,249,817	₩ -	₩ -
	Other receivables	587,142,652,787	607,922,195,219	-	-
	Trade payables	-	-	1,272,096,306	1,065,222,670
	Other payables	-	-	1,910,416,854	2,015,971,764
Hyundai Energy Co., Ltd.	Other receivables(*)	9,663,576,011	6,598,010,465	-	-
	Other payables	-	-	8,021,271,766	13,796,058,675
S-Power Co., Ltd.	Other receivables	-	5,153,950,109	-	-
Ecollite Co., Ltd.	Other receivables	210,400,561	210,400,561	-	-
Korea Offshore Wind Power Co., Ltd.	Other receivables	157,588,430	245,040,950	-	-
Nepal Water & Energy Development Group Pty., Ltd.	Other receivables	310,987,595	227,130,622	-	-
Goseong Green Energy Co., Ltd.	Other receivables	-	18,559,180	-	-
	Other payables	-	-	43,020,000,000	14,340,000,000
Gangneung Eco Power Co., Ltd.	Other receivables	-	4,547,400,000	-	-
KEPCO Energy Solution Co., Ltd.	Other receivables	-	49,038,540	-	-
Solar School Plant Co., Ltd.	Other receivables	6,526,260	47,091,400	-	-
ASM-BG Investicii AD	Other receivables	38,403,211	37,455,218	-	-
Korea Midland Power Co., Ltd.	Other payables	-	-	22,000,000	120,180,200
Korea South Power Co., Ltd.		-	-	484,920,007	-
Korea East-West Power Co., Ltd.	Other receivables	-	23,716,000	-	-
	Other payables	-	-	10,485,502	1,383,096
KEPCO Engineering & Construction Group, Inc.	Other payables	-	-	4,938,889,699	3,990,933,899
KEPCO Plant Service & Engineering Co., Ltd.	Other receivables	1,823,778	-	-	-
	Other payables	-	-	8,398,996,603	13,790,905,714
Korea Electric Power Data Network Co.	Other payables	-	-	5,019,511,505	571,498,671
Korea Gas Corporation	Other receivables	72,432,970	45,598,660	-	-
	Trade payables	-	-	71,566,429,750	67,128,967,990
Korea Electric Power Industrial Development Co., Ltd.	Other receivables	-	11,200,000	-	-
	Other payables	-	-	9,426,270	1,653,795,000
KPX	Other receivables	92,816,240	-	-	-
	Other payables	-	-	4,618,185	-
Total	Trade receivables	₩ 455,626,822,336	₩ 492,909,249,817	₩ -	₩ -
	Other receivables	597,697,207,843	625,136,786,924	-	-
	Trade payables	-	-	72,838,526,056	68,194,190,660
	Other payables	-	-	71,840,536,391	50,280,727,019

(*) As of December 31, 2018 and 2017, receivables of Hyundai Energy Co., Ltd. are the book value, excluding allowance for bad debts of ₩108,480 million and ₩85,446 million, respectively.

(4) Long-/short-term loans to related parties for the years ended December 31, 2018 and 2017, are as follows (Korean won):

Type	Group name	2018 Beginning balance	2018 Ending balance
Associates (*1)	Hyundai Energy Co., Ltd.	2,465,000,000	2,465,000,000

Type	Group name	2017 Beginning balance	2017 Others (*3)	2017 Ending balance
Joint ventures (*2)	KODE NOVUS II LLC	₩ 4,531,875,000	₩ (514,125,000)	₩ 4,017,750,000
Associates (*1)	Hyundai Energy Co., Ltd.	2,465,000,000	-	2,465,000,000

(*1) The Group recognized ₩2,465 million as loss on impairment until 2017.
(*2) The Group recognized ₩4,532 million as loss on impairment until 2017.
(*3) Others consist of exchange rate fluctuations.

(5) Salaries and other compensations to the key members of management of the Group for the years ended December 31, 2018 and 2017, are as follows (Korean won):

	2018	2017
Salaries	₩ 818,371,929	₩ 891,534,116
Employee benefits	50,187,470	38,535,191
	₩ 868,559,399	₩ 930,069,307

(6) Guarantees and collateral provided to related parties

Primary guarantor	Secondary guarantor	Type of guarantee	Amount		Guarantee
Korea South-East Power Co., Ltd.	KEPCO Bylong Australia Pty., Ltd.	Debt guarantees	USD	5,800,000	Export-Import Bank of Korea and others
Korea South-East Power Co., Ltd.	Hyundai Energy Co., Ltd.	Collateralized money invested (*1)	KRW	-	Korea Development Bank and others
Korea South-East Power Co., Ltd.	Hyundai Energy Co., Ltd.	Guarantees for supplemental funding (*2, 3)	KRW	78,600,000,000	
Korea South-East Power Co., Ltd.	S-Power Co., Ltd.	Collateralized money invested	KRW	114,565,834,887	Korea Development Bank and others
Korea South-East Power Co., Ltd.	RES Technology AD	Collateralized money invested	KRW	15,208,842,076	UniCredit Bulbank and others
Korea South-East Power Co., Ltd.	ASM-BG Investicii AD	Guarantees for supplemental funding	KRW	21,379,137,961	UniCredit Bulbank and others
Korea South-East Power Co., Ltd.	Express Solar-light Power Generation Co., Ltd.	Guarantees for supplemental funding (*2, 4)	KRW	2,500,000,000	Woori Bank
Korea South-East Power Co., Ltd.	Goseong Green Power Co., Ltd.	Guarantees for supplemental funding	KRW	2,459,184,751	Kyobo Life Insurance Co., Ltd. and others
Korea South-East Power Co., Ltd.	Gangneung Eco Power Co., Ltd.	Guarantees for supplemental funding	KRW	2,494,749,943	Kyobo Life Insurance Co., Ltd. and others
Korea South-East Power Co., Ltd.	PND Solar Ltd.	Guarantees for supplemental funding	KRW	1,019,782,969	Industrial Bank of Korea and others
Korea South-East Power Co., Ltd.	Tamra Offshore Wind Power Co., Ltd.	Guarantees for supplemental funding	KRW	10,400,836,090	Nonghyup Life Insurance Co., Ltd. and others
Korea South-East Power Co., Ltd.	Hyundai Eco Energy Co., Ltd.	Guarantees for supplemental funding	KRW	3,388,008,144	Samsung Life Insurance Co., Ltd. and others
Korea South-East Power Co., Ltd.	Korea Offshore Wind Power Co., Ltd.	Guarantees for supplemental funding	KRW	22,467,059,439	Woori Bank and others

(*1) The Group recognized impairment loss on all of the equity securities of Hyundai Energy Co., Ltd. in prior years, and the acquisition cost of the securities provided as collateral is ₩47,067 million.

(*2) The Group guarantees to provide supplemental funding for business with respect to excessive business expenses or insufficient repayment of borrowings.

(*3) Pursuant to the guarantee agreement, the Group recognized other provisions of ₩40,898 million as the possibility of economic outflow to fulfill the obligation was probable and the amount could be reasonably estimated.

(*4) The Group has granted the right to Hana Financial Investment Co., Ltd., as an agent for the creditors to Express Solar-light Power Generation Co., Ltd. ("ESPG"), to the effect that in the event of acceleration of ESPG's payment obligations under certain borrowings to such creditors, Hana Financial may demand the Group to dispose of shares in ESPG held by the Group and apply the resulting proceeds to repayment of ESPG's obligations.

41. NON-CASH TRANSACTIONS:

(1) Significant non-cash investment and finance transactions that are excluded from the consolidated statements of cash flows for the years ended December 31, 2018 and 2017, are as follows (Korean won):

Transactions	2018	2017
Transfer of long-term borrowings and debt securities from non-current to current	₩ 331,843,264,348	₩ 572,839,187,961
Transfer from construction in progress to depreciable assets	515,572,464,851	489,336,941,120
Changes in other payables related to acquisition of property, plant and equipment	11,571,598,037	25,184,398,896

(2) The adjustments of liabilities arising from financial activities for the year ended December 31, 2018, are as follows (Korean won):

	Beginning balance	Cash flow	Non-cash flow: Change of exchange rate	Non-cash flow: Transference and others	Ending balance
Short-term borrowings	₩ 300,000,000,000	₩ (200,000,000,000)	₩ -	₩ -	₩ 100,000,000,000
Long-term borrowings	168,017,180,453	46,676,238,877	(1,093,899,317)	-	213,599,520,013
Debt securities	2,910,888,748,626	323,569,408,400	860,077,464	-	3,235,318,234,490
Derivative liabilities	78,584,861,628	5,572,353,501	(11,239,979,758)	7,868,640,169	80,785,875,540
	₩ 3,457,490,790,707	₩ 175,818,000,778	₩ (11,473,801,611)	₩ 7,868,640,169	₩ 3,629,703,630,043

42. COMMITMENTS FOR EXPENDITURE:

The agreements for acquisition of property, plant and equipment as of December 31, 2018, are as follows (Korean won):

	December 31, 2018	
Contracts	Amounts	Balance
Other construction (26 contracts)	269,681,000,000	161,243,400,000

43. CONTINGENCIES AND COMMITMENTS:

(1) Ongoing litigations related to contingent liabilities and assets as of December 31, 2018 and 2017, are as follows (Korean won):

	December 31, 2018		December 31, 2017	
	Number of cases	Claim amount	Number of cases	Claim amount
Litigations	22	₩ 52,975,095,810	23	₩ 69,886,092,524

(2) Credit lines provided by financial institutions as of December 31, 2018, are as follows (Korean won):

Commitments	Financial institutions	Currencies	Amounts
Commitments on bank overdraft	Nonghyup Bank	KRW	200,000,000,000
Certification of payment on letter of credit	Woori Bank	USD	20,000,000
	Nonghyup Bank	USD	20,000,000
	Shinhan Bank	USD	50,000,000
	Kookmin Bank	USD	60,000,000
	KEB Hana Bank	USD	44,000,000
	KEB Hana Bank	USD	56,000,000
Loan limit	Development Bank of Singapore	USD	100,000,000
	Sumitomo Mitsui Banking Corporation	USD	50,000,000
	Mizuho Bank	USD	50,000,000
Bidding guarantees	KEB Hana Bank	USD	10,000,000
Loan secured by trade receivables (*)	Nonghyup Bank	KRW	30,000,000,000
	KEB Hana Bank	KRW	7,000,000,000,000
	Woori Bank	KRW	10,000,000,000,000
	Shinhan Bank	KRW	10,000,000,000,000
	Kookmin Bank	KRW	10,000,000,000,000
	Industrial Bank of Korea	KRW	5,000,000,000,000

(*) The amount represents total credit limits of the Group's vendors from Nonghyup Bank by providing their trade receivables from the Group as collaterals.

(3) Contracts for raw materials purchase

Details of contracts for raw materials purchase as of December 31, 2018, are as follows (in thousands of tons, kiloliters):

	Supplier	Periods	Contracted amounts
Bituminous coal	Australia	2009.07–2021.03	5,830
	Indonesia	2009.06–2022.05	12,980
	Canada, USA and others	2014.01–2025.08	7,515
Oil	GS Caltex Corporation and others	2019.01–2019.12	29.721
LNG	Korea Gas Corporation and others	2007.01–2035.01	Annually determined
Wood pellet	Mokpo City Gas Co., Ltd. and others	2018.11–2020.10	785

(4) Long-term marine transportation commitments for bituminous coal

Long-term marine transportation commitments for bituminous coal as of December 31, 2018, are as follows (Korean won):

Group name	Vessel	Contract periods
Polaris Shipping Co., Ltd.	Oriental Enterprise	2009.09-2024.08
Korea Line Corporation	Rosemary	2010.04-2025.03
Pan Ocean Co., Ltd.	Pan Flower	2010.08-2020.07
H-LINE Shipping Co., Ltd.	HL Samarinda	2011.10-2031.09
Korea Shipping Corporation	Youngheung	2012.08-2032.07
Pan Ocean Co., Ltd.	Pan Iris	2013.03-2028.02
Five Ocean Corporation	F.Star	2013.06-2023.05
Daebo International Shipping Co., Ltd.	Daebo Gladstone	2013.11-2023.10
Hanaro Shipping Co., Ltd.	Sea Empire	2014.10-2024.09
Woo Yang Shipping Co., Ltd.	Wooyang Friend	2014.11-2029.10
Daebo International Shipping Co., Ltd.	Glovis Desire	2015.07-2030.06
SK Shipping Co., Ltd.	K. Younghung	2015.08-2033.07
Hyundai Glovis Co., Ltd.	Glovis Diamond	2016.03-2031.02
Five Ocean Corporation	Big Fish	2016.12-2026.11
Five Ocean Corporation	F.Sun	2016.12-2026.11
H-LINE Shipping Co., Ltd.	Okra	2017.04-2027.03
H-LINE Shipping Co., Ltd.	Hyundai Samcheonpo	2017.07-2035.06
GNS Shipping Co., Ltd.	GNS Harmony	2018.01-2032.12

(5) As of December 31, 2018, the Group carries long-term borrowings up to the limit of USD 275,600 thousand from International Finance Corporation and others. The Group has a guarantee investment of USD 69,808 thousand and additional investment of USD 19,000 thousand for contingency, and the Group has provided guarantee for Central Power Purchasing Agency Guarantee Ltd., electricity buyer, up to a limit of USD 2,777 thousand for completion delay or shortfall capacity. Meanwhile, the Group has provided its investment securities in Mira Power Limited as a collateral to International Finance Corporation and others.

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