IMPORTANT NOTICE

THIS DOCUMENT IS AVAILABLE ONLY TO INVESTORS WHO ARE EITHER (1) QIBs (AS DEFINED BELOW) UNDER RULE 144A OR (2) NON-U.S. PERSONS OUTSIDE OF THE UNITED STATES

IMPORTANT: *You must read the following before continuing. If you are not the intended recipient of this message, please do not distribute or copy the information contained in this e-mail, but instead, delete and destroy all copies of this e-mail including all attachments*. The following applies to the offering circular following this page, and you are therefore advised to read this carefully before reading, accessing or making any other use of the offering circular. In accessing the offering circular, you agree to be bound by the following terms and conditions, including any modifications to them any time you receive any information from us as a result of such access.

NOTHING IN THIS ELECTRONIC TRANSMISSION CONSTITUTES AN OFFER OF SECURITIES FOR SALE IN ANY JURISDICTION WHERE IT IS UNLAWFUL TO DO SO. THE SECURITIES 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 STATE OF THE U.S. OR OTHER JURISDICTION AND THE SECURITIES MAY NOT BE OFFERED OR SOLD WITHIN THE U.S. OR TO, OR FOR THE ACCOUNT OR BENEFIT OF, U.S. PERSONS (AS DEFINED IN REGULATION S UNDER THE SECURITIES ACT), EXCEPT PURSUANT TO AN EXEMPTION FROM, OR IN A TRANSACTION NOT SUBJECT TO, THE REGISTRATION REQUIREMENTS OF THE SECURITIES ACT AND APPLICABLE STATE OR LOCAL SECURITIES LAWS.

THE FOLLOWING OFFERING CIRCULAR MAY NOT BE FORWARDED OR DISTRIBUTED TO ANY OTHER PERSON AND MAY NOT BE REPRODUCED IN ANY MANNER WHATSOEVER. ANY FORWARDING, DISTRIBUTION OR REPRODUCTION OF THIS DOCUMENT IN WHOLE OR IN PART IS UNAUTHORIZED. FAILURE TO COMPLY WITH THIS DIRECTIVE MAY RESULT IN A VIOLATION OF THE SECURITIES ACT OR THE APPLICABLE LAWS OF OTHER JURISDICTIONS. IF YOU HAVE GAINED ACCESS TO THIS TRANSMISSION CONTRARY TO ANY OF THE FOREGOING RESTRICTIONS, YOU ARE NOT AUTHORIZED AND WILL NOT BE ABLE TO PURCHASE ANY OF THE SECURITIES DESCRIBED THEREIN.

THE SECURITIES HAVE NOT BEEN AND WILL NOT BE REGISTERED WITH THE FINANCIAL SERVICES COMMISSION OF THE REPUBLIC OF KOREA ("KOREA") UNDER THE FINANCIAL INVESTMENT SERVICES AND CAPITAL MARKETS ACT OF KOREA, AS AMENDED. ACCORDINGLY, THE SECURITIES MAY NOT BE OFFERED, SOLD, DELIVERED OR TRANSFERRED, DIRECTLY OR INDIRECTLY, IN KOREA OR TO, OR FOR THE ACCOUNT OR BENEFIT OF, ANY KOREAN RESIDENT (AS SUCH TERM IS DEFINED IN THE FOREIGN EXCHANGE TRANSACTION ACT OF KOREA AND THE ENFORCEMENT DECREE THEREOF) FOR A PERIOD OF ONE YEAR FROM THE DATE OF ISSUANCE OF THE SECURITIES, EXCEPT (I) THE SECURITIES MAY BE OFFERED, SOLD, DELIVERED OR TRANSFERRED ONLY TO, BETWEEN OR AMONG KOREAN QUALIFIED INSTITUTIONAL INVESTORS AS SPECIFIED IN ARTICLE 2-2, PARAGRAPH 2, ITEM 4 OF THE REGULATION ON THE ISSUANCE OF SECURITIES AND PUBLIC DISCLOSURE, ETC. OF KOREA, PROVIDED THAT AT LEAST 80% OF THE AGGREGATE ISSUANCE AMOUNT OF THE SECURITIES SHALL BE ALLOCATED TO NON-RESIDENTS OF KOREA (AS SUCH TERM IS DEFINED IN THE FOREIGN EXCHANGE TRANSACTION ACT OF KOREA AND THE ENFORCEMENT DECREE THEREOF) (WHICH APPLIES ONLY TO THE SECURITIES ACQUIRED FROM THE COMPANY OR ANY INITIAL PURCHASER AT THE TIME OF ISSUANCE OF THE SECURITIES), AND THE OTHER REQUIREMENTS AS SET FORTH IN ARTICLE 2-2-2, PARAGRAPH 2, ITEM 3 ABOVE ARE SATISFIED, OR (II) AS OTHERWISE PERMITTED BY APPLICABLE KOREAN LAWS AND REGULATIONS.

Confirmation of your Representation: In order to be eligible to view the following offering circular or make an investment decision with respect to the securities, investors must be either (I) a Qualified Institutional Buyer ("QIB") (within the meaning of Rule 144A under the Securities Act) or (II) a non-U.S. person (within the meaning of Regulation S under the Securities Act). By accepting the e-mail and accessing the following offering circular, you shall be deemed to have represented to us that (1) you and any customers you represent are either (a) a QIB or (b) a non-U.S. person and that the electronic mail address that you gave us and to which this e-mail has been delivered is not located in the United States, its territories or possessions and (2) you consent to the delivery of such offering circular 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 Korea East-West Power Co., Ltd. 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 BNP Paribas, Citigroup Global Markets Inc., Crédit Agricole Corporate and Investment Bank, The Hongkong and Shanghai Banking Corporation Limited and Merrill Lynch International (collectively, the "Joint Bookrunners") 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 Joint Bookrunners.

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

The Joint Bookrunners are acting exclusively for Korea East-West Power Co., Ltd. and no one else in connection with the offer. They will not regard any other person (whether or not a recipient of this document) as its client in relation to the offer and will not be responsible to anyone other than Korea East-West Power Co., Ltd. for providing the protections afforded to its clients nor for giving advice in relation to the offer or any transaction or arrangement referred to herein.

You should not reply by e-mail to this transmission, 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. 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 East-West Power Co., Ltd.

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

US$500,000,000 1.750% Notes due 2025

The US$500,000,000 1.750% Notes due 2025 (the "Notes") of Korea East-West Power Co., Ltd. ("we" or "us") will mature on May 6, 2025 (the "Maturity Date"). The Notes will bear interest at the rate of 1.750% per annum from, and including, May 6, 2020 (the "Issue Date") to, but excluding, the Maturity Date. Interest will be payable in arrears on May 6 and November 6 in each year, commencing November 6, 2020. We may, at our 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 — Optional Redemption Due to Changes in Tax Treatment."

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 and unsecured obligations, except as may be required by mandatory provisions of law.

Approval in-principle has been received from the Singapore Exchange Securities Trading Limited (the "Singapore Stock Exchange") for the listing and quotation of the Notes on the Singapore Stock Exchange. The Singapore Stock Exchange 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 Singapore Stock Exchange are not to be taken as an indication of our merits or the merits of 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 within the United States or to U.S. persons 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 initially offered and sold in the United States only to qualified institutional buyers (as defined in Rule 144A under the Securities Act) and outside the United States to non-U.S. persons in reliance on Regulation S under the Securities Act, in each case, in compliance with applicable laws, regulations and directives. For further details about eligible offerees and resale restrictions, see "Plan of Distribution" and "Transfer Restrictions."

Investing in the Notes involves risks. See "Risk Factors" beginning on page 8 to read about certain risk factors you should consider before buying the Notes.

Price: 99.269% per Note plus accrued interest, if any, from May 6, 2020.

Delivery of the Notes in book-entry form will be made on or about May 6, 2020.

Joint Bookrunners

BNP PARIBAS **BofA Merrill Lynch** **Citigroup**

Crédit Agricole CIB **HSBC**

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

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You should rely only on the information contained in this Offering Circular or to which we have referred you. We have 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, EACH OF BNP PARIBAS, CITIGROUP GLOBAL MARKETS INC., CRÉDIT AGRICOLE CORPORATE AND INVESTMENT BANK, THE HONGKONG AND SHANGHAI BANKING CORPORATION LIMITED AND MERRILL LYNCH INTERNATIONAL (THE "STABILIZING MANAGERS") (OR PERSONS ACTING ON BEHALF OF THE STABILIZING MANAGERS) 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 PERSONS ACTING ON BEHALF OF THE STABILIZING MANAGERS) WILL UNDERTAKE STABILIZATION ACTION. ANY STABILIZATION ACTION 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 HAVE NOT BEEN REGISTERED UNDER THE FINANCIAL INVESTMENT SERVICES AND CAPITAL MARKETS ACT OF KOREA (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 TRANSACTION LAW OF KOREA AND ITS ENFORCEMENT DECREE) OR TO OTHERS FOR RE-OFFERING OR RESALE, 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 INVESTOR" (A "KOREAN QIB," AS DEFINED IN THE REGULATION ON THE ISSUANCE OF SECURITIES AND PUBLIC DISCLOSURE, ETC. OF KOREA) WHO IS 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.

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 us 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 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 or on its behalf in connection with us or the offering of the Notes. 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. 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 us in connection with the offering of the Notes or any other such statement. 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 our affairs since the date of this Offering Circular.

We, having made all reasonable inquiries, confirm that this Offering Circular contains all information with respect to us and the Notes which is material in the context of the issue and offering of the Notes, that the information contained in this Offering Circular is true and accurate in all material respects and is not misleading in any material respect, that the opinions and intentions expressed in this Offering Circular are honestly held and have been reached after considering all relevant circumstances and are based on reasonable assumptions, and that there are no other facts, the omission of which would, in the context of the issue and offering of the Notes, make this Offering Circular as a whole or any information or the expression of any opinions or intentions expressed in this Offering Circular misleading in any material respect. We accept responsibility accordingly. 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 we accept 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 us 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 us and the terms of the offering of the Notes, including the merits and risks involved. We are not 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.

For so long as the Notes are listed on the Singapore Stock Exchange and the rules of the Singapore Stock Exchange so require, in the event that a Global Note is exchanged for the Notes in certificated form, we 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 a Global Note is exchanged for the Notes in certificated form, an announcement of such exchange will be made by or on behalf of us through the Singapore Stock Exchange and such announcement will include all material information with respect to the delivery of the Notes in certificated form, including details of the paying agent in Singapore. Definitive Notes will be issued in registered form through, and will clear and settle in, the book-entry system maintained by Korea East-West Power Co., Ltd. or its agent.

Notification under Section 309B(1)(c) of the Securities and Futures Act, Chapter 289 of Singapore (the "SFA") — we have determined, and hereby notify 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 "we," "us" or "the Company" herein are references to Korea East-West Power Co., Ltd. and its subsidiaries, as the context requires. 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.

In this Offering Circular, references to "Won" or "₩" are to the currency of Korea, 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, and all references to "AUD" are to the currency of the Commonwealth of Australia. We maintain our accounts in Won. This Offering Circular contains translations 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 year ended December 31, 2019 have been made at the Market Average Exchange Rate in effect on December 31, 2019, which was Won 1,157.8 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

We are a corporation with limited liability organized under the laws of Korea. All of our 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 our 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 us 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

Our consolidated financial statements as of and for the years ended December 31, 2017, 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 of the Republic of Korea (the "Government Accounting Standards"), and where accounting provisions have not been specified under the Government Accounting Standards, we have applied the International Financial Reporting Standards as adopted by the Republic of Korea ("K-IFRS") as allowed under the Government Accounting Standards. Such accounting standards differ in certain significant respects from generally accepted accounting principles in other countries, including the United States. In making an investment decision, investors must rely upon their own independent examination of us, 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 generally accepted accounting principles in their own jurisdictions, and how these differences affect the financial information contained in this Offering Circular. This Offering Circular should not be considered as a recommendation by any of the Initial Purchasers that any recipient of this Offering Circular should purchase the Notes.

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 Generation Subsidiaries of KEPCO. The Generation Subsidiaries generate over 70% of the electricity in Korea. As of December 31, 2019, we had a domestic generation capacity of 11,193 megawatts, or approximately 8.9% of the total electricity generation capacity in Korea (excluding plants generating electricity primarily for private or emergency use). In 2017, 2018 and 2019, we sold 48,307 GWh, 50,697 GWh and 48,149 GWh, 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, particularly with respect to the generation of renewable energy.

Based on our "Enrich the World with Clean Energy" vision, we aspire to strengthen our competitiveness by becoming a solution provider to the various challenges facing the electricity generation industry. By 2030, we aim to increase production capacity of renewable energy in our production mix to 25%. We will operate with sustainability management as a key goal and will continue to strengthen our core businesses while broadening the scope of our business into new growth areas.

As of December 31, 2019, we had an aggregate domestic installed generation capacity of 11,193 megawatts, of which 6,940 megawatts, 1,200 megawatts, 2,972 megawatts and 81 megawatts were attributable to our coal-fired units, oil-fired units, LNG-combined cycle units and renewable energy units, respectively. We generated revenue of Won 4,670 billion, Won 4,973 billion and Won 4,896 billion in 2017, 2018 and 2019, respectively, and we recorded a profit of Won 217 billion in 2017, a loss of Won 8 billion in 2018 and a profit of Won 141 billion in 2017, 2018 and 2019, respectively.

We are a corporation incorporated with limited liability under the laws of Korea. Our registered office is located at 395, Jongga-ro, Jung-gu, Ulsan 44543, Korea. Our website address is *www.ewp.co.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 East-West Power Co., Ltd.
Offering	US$500,000,000 1.750% Notes due 2025
Issue Price	99.269% of principal amount of the Notes.
Issue Date	May 6, 2020
Maturity Date	May 6, 2025
Ranking	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 and unsecured obligations, except as may be required by mandatory provisions of law.
Interest	1.750% per annum, from, and including, the Issue Date to, but excluding, the Maturity Date, payable semi-annually in arrears.
Interest Payment Dates	May 6 and November 6 of each year, commencing on November 6, 2020. For a further description of payments of interest on the Notes, see "Terms and Conditions of the Notes — Payments."
Tax Redemption	We may redeem the Notes at our option, in whole but not in part, at their principal amount plus accrued interest to, but excluding, the date fixed for redemption, if we have or would become obligated to pay Additional Amounts in respect of certain Korean taxes imposed in respect of payments of principal of or interest on the Notes. See "Terms and Conditions of the Notes — Optional Redemption Due to Changes in Tax Treatment."
Korean Taxes	Payments in respect of the Notes will 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 or levied by or on behalf of Korea or by or within any political subdivision of Korea or any authority or agency of Korea having power to tax, unless the withholding or deduction of such taxes, duties, assessments or governmental charges is required by law. In that event, we will (subject to certain exceptions) pay such Additional Amounts as will result in the holders of the Notes (the "Holders") receiving such amounts as they would have received in

	respect of such Notes had no such withholding or deduction been required, except in certain circumstances. See "Terms and Conditions of the Notes — Additional Amounts" and "Taxation — Korean Taxation."
Denominations and Form	The Notes will be deliverable only in registered form and only in denominations in principal amounts of US$200,000 and integral multiples of US$1,000 in excess thereof. The Notes initially offered and sold within the United States to qualified institutional buyers ("QIBs") pursuant to Rule 144A under the Securities Act ("Rule 144A") and outside the United States to non-U.S. persons pursuant to Regulation S under the Securities Act ("Regulation S") will be evidenced by separate Global Notes, in registered form without coupons, and deposited with a custodian for and registered in the name of a nominee of The Depository Trust Company in New York, New York ("DTC"), as depositary. The Notes may not be sold or otherwise transferred except in accordance with the restrictions described under "Transfer Restrictions."
Certain Covenants	The Notes contain certain limitations on the creation, incurrence, issuance or assumption or the guarantee by us of certain debt secured by mortgage, charge, pledge or other security interest on any of our property or asset and on the consolidation, merger and sale of our assets. The Notes also contain certain limitations on sale and leaseback transactions by us. See "Terms and Conditions of the Notes — Covenants of the Company."
Listing and Trading...........................	Approval in-principle has been received from the Singapore Stock Exchange for the listing and quotation of the Notes on the Singapore Stock Exchange. For so long as the Notes are listed on the Singapore Stock Exchange and the rules of the Singapore Stock Exchange so require, the Notes, if traded on the Singapore Stock Exchange, 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 Singapore Stock Exchange, will be traded in a minimum board lot size of US$200,000.
Governing Law	The Notes and the Fiscal Agency Agreement will be governed by, and construed in accordance with, the laws of the State of New York.
Fiscal Agent, Principal Paying Agent and Transfer Agent	The Bank of New York Mellon will act as the fiscal agent (the "Fiscal Agent"), the principal paying agent and transfer agent under the Fiscal Agency Agreement for the Notes to be dated May 6, 2020. For so long as the Notes are listed on the Singapore Stock Exchange

	and the rules of the Singapore Stock Exchange so require, in the event that a Global Note is exchanged for the Notes in certificated form, we will appoint and maintain a paying agent in Singapore, where the Notes may be presented or surrendered for payment or redemption.
Use of Proceeds	The net proceeds from the sale of the Notes, which will be US$494,845,000, after deducting a combined management and underwriting commission but not estimated expenses of the offering, will be used for repayment of certain existing debt and other general corporate purposes.
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 the rating organizations. Each such rating should be evaluated independently of any other rating of the Notes or of our other securities.
Security Codes	Rule 144A ISIN: US5006EPAK79 Regulation S ISIN: USY4836TBT70 Rule 144A CUSIP: 5006EP AK7 Regulation S CUSIP: Y4836T BT7 Regulation 144A Common Code: 216638573 Regulation S Common Code: 216638654

SUMMARY FINANCIAL AND OTHER INFORMATION

The following tables present summary financial information and other data as of and for the years ended December 31, 2017, 2018 and 2019. The summary financial information and other data set forth below have been derived from and should be read in conjunction with our audited consolidated financial statements and notes thereto as of and for the years ended December 31, 2017, 2018 and 2019 included elsewhere in this Offering Circular.

Our audited consolidated financial statements as of and for the years ended December 31, 2017 and 2018 have been audited by Ernst & Young Han Young, independent auditors, and our audited consolidated financial statements as of and for the year ended December 31, 2019 have been audited by Hanul LLC, independent auditors, as stated in their respective reports included elsewhere in this Offering Circular.

From January 1, 2018, we have adopted K-IFRS No. 1109 "Financial Instruments" and K-IFRS No. 1115 "Revenue from Contracts with Customers," each using the modified retrospective approach, under which the cumulative effect of initial application is recognized in our retained earnings at January 1, 2018. Accordingly, the comparative information presented for 2017 has not been restated and is presented, as previously reported, under K-IFRS 1011, K-IFRS 1018, K-IFRS 1039 and related interpretation. Furthermore, we have 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 our retained earnings at January 1, 2019. Accordingly, the comparative information presented for 2017 and 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,			
	2017	**2018**	**2019**	**2019(1)**
	(in billions of Won and millions of U.S. dollars, except per share data)			
Statement of Comprehensive Income Data:				
Revenue	₩4,670	₩4,973	₩4,896	US$4,229
Cost of sales	4,121	4,788	4,619	3,990
Gross profit	549	185	277	239
Selling and administrative expenses	126	126	154	133
Operating profit	423	59	123	106
Other income	22	16	18	16
Other expense	(15)	(7)	(4)	(4)
Other profit (loss)	2	1	8	7
Finance income	213	107	98	85
Finance costs	(327)	(187)	(205)	(177)
Gain (loss) relating to investments in associates and joint ventures	13	(4)	88	76
Profit (loss) for the period before tax	330	(15)	126	109
Income tax benefit (expense)	(113)	7	15	13
Profit (loss) for the period	217	(8)	141	122
Other comprehensive income (loss) for the period, net of tax	13	70	(3)	(3)
Total comprehensive income for the period, net of tax	₩ 231	₩ 62	₩ 138	US$ 119

Note:

(1) We maintain our financial statements in Won. The Won financial information as of and for the year ended December 31, 2019 has been translated into U.S. dollars at the exchange rate of Won 1,157.8 to US$1.00, which was the Market Average Exchange Rate in effect as of December 31, 2019.

	As of December 31,			
	2017	2018	2019	2019[1]
	(in billions of Won and millions of U.S. dollars)			
Statement of Financial Position Data:				
Assets:				
Cash and cash equivalents	₩ 33	₩ 37	₩ 89	US$ 77
Trade and other receivables	726	616	707	611
Inventories	302	316	340	294
Other current assets	42	102	214	184
Non-current financial assets	159	253	246	212
Property, plant and equipment	6,836	6,635	7,084	6,119
Investments in associates and joint ventures	662	701	774	669
Other non-current assets	166	153	429	370
Total assets	₩8,927	₩8,812	₩9,883	US$8,536
Liabilities and shareholder's equity:				
Trade and other payables	₩ 459	₩ 419	₩ 521	US$ 450
Current financial liabilities	862	243	807	697
Current income tax liabilities	29	1	30	26
Other current liabilities	72	47	165	142
Non-current financial liabilities	2,502	3,061	2,638	2,278
Long-term trade and other payables	—	0	475	411
Deferred tax liabilities	317	343	388	335
Other non-current liabilities	56	67	87	75
Total liabilities	₩4,297	₩4,182	₩5,111	US$4,414
Total equity	₩4,630	₩4,630	₩4,772	US$4,122
Total liabilities and equity	₩8,927	₩8,812	₩9,883	US$8,536
Net working capital (deficit)[2]	₩(320)	₩ 361	₩(173)	US$(149)

Notes:

(1) We maintain our financial statements in Won. The Won financial information as of and for the year ended December 31, 2019 has been translated into U.S. dollars at the exchange rate of Won 1,157.8 to US$1.00, which was the Market Average Exchange Rate in effect as of December 31, 2019.

(2) Net working capital (deficit) means total current assets minus total current liabilities.

	For the year ended December 31,			
	2017	2018	2019	2019[1]
	(in billions of Won and millions of U.S. dollars)			
Other Financial Data:				
Capital expenditures[2]	₩504	₩482	₩1,001	US$865
Depreciation and amortization	614	647	719	621
Net cash flow from operating activities	559	594	851	735
Net cash flow provided by (used in) investing activities	(504)	(470)	(863)	(745)
Net cash flow provided by (used in) financing activities	(67)	(121)	63	54
Operating data:				
Total power sold (gigawatt hours)	48,307	50,697	48,149	N/A[3]

Notes:

(1) The Won financial information as of and for the year ended December 31, 2019 has been translated into U.S. dollars at the exchange rate of Won 1,157.8 to US$1.00, which was the Market Average Exchange Rate in effect as of December 31, 2019.

(2) Capital expenditures represent the sum of (i) purchases of land, buildings, structures, machinery, vehicles, other intangible assets and other property, plant and equipment, (ii) increases in construction-in-progress and investments in joint ventures and associates and (iii) consideration paid in business combination in our statements of cash flows, plus purchases of certain intangible assets such as greenhouse gas emission allowance units.

(3) N/A means not applicable.

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 (excluding our Honam units 1 and 2) 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.

While our Honam units 1 and 2, which are our only units that have been in service for more than 30 years, have been excluded from the group of old coal-fired generation units slated for suspension, they are currently scheduled to be decommissioned in January 2021. Furthermore, as of December 31, 2019, approximately 62% in aggregate of our total installed capacity was attributable to our coal-fired generation units. As such, the continued implementation of these measures, which may reduce our sales and/or increase our costs, including capital expenditures, may have a material adverse effect on our business, results of operations and financial condition.

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 4.0% for 2017, 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 38.5 million tons of carbon equivalents, of which 7.2 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, as well as the decommissioning of old coal-fired generation units, including our Honam units 1 and 2 by January 2021.

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 Dangjin, Honam and Ulsan (in addition to our generation facilities in Ilsan, which had already been subject to similar regulations) 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.

In 2011, we acquired a minority equity interest in the former Dangjin Eco Power Co., Ltd., which was originally established to construct a coal-fired power plant complex in Dangjin. Pursuant to the Eighth Basic Plan, the Dangjin Eco Power project was converted to the construction of a 1,122 megawatt LNG-fired generation unit in Eumseong and a 1,122 megawatt LNG- and liquefied petroleum gas ("LPG")-combined generation unit in Ulsan. As a result, in August 2019, the former Dangjin Eco Power Co., Ltd. was split up into three separate companies: (i) Dangjin Eco Power Co., Ltd., which was newly established but has the same name as its predecessor and is constructing a photovoltaic generation and storage complex in Dangjin with initial target completion by June 2020, (ii) Eumseong Natural Gas Power Co., Ltd., which plans to construct the above-mentioned 1,122 megawatt LNG-fired generation unit in Eumseong with target completion by the end of 2024, and (iii) Ulsan GPS Co., Ltd., which plans to construct the above-mentioned 1,122 megawatt LNG- and LPG-fired generation unit in Ulsan. In the fourth quarter of 2019, we acquired all of the equity interests held by our joint venture partners in Eumseong Natural Gas Power Co., Ltd. and merged it into us, and divested ourselves of all of the equity interests we held in Ulsan GPS Co., Ltd. We also currently maintain a 34% equity interest in the new Dangjin Eco Power Co., Ltd. following such split-up. See "Business — Independent Power Producer and Community Energy System Projects."

The Government commenced preparations for the Ninth Basic Plan in March 2019 and aims to issue the finalized plan within 2020. Subject to the contents of the Ninth Basic Plan, we may pursue the construction of additional generation facilities to further expand our generation capacities or replace our older facilities, including our coal-fired Honam units 1 and 2 (which are scheduled to be decommissioned in January 2021) and our oil-fired Ulsan units 4, 5, 6 (which are scheduled to be decommissioned in January 2022), in each case in accordance with the objectives of such plan.

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, 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 in use and power costs purchased of our cost of sales, constituted 66.7%, 74.7% and 68.5% of our revenue, and 75.5%, 77.5% and 72.6% of our cost of sales, in 2017, 2018 and 2019, 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 various suppliers located in Australia, Indonesia, Russia, South Africa, Colombia, Canada and the United States under long-term or spot contracts. Approximately 92.6%, 88.4% and 82.9% of our bituminous coal requirements were purchased under long-term contracts in 2017, 2018 and 2019, respectively, with the remaining requirements being purchased on the spot market. We purchase oil through a competitive open bidding process with other bidders, including Korean refiners, on the spot market. We currently purchase all of our LNG for our domestic units from Korea Gas Corporation (“KOGAS”) under a long-term supply contract. However, we may consider direct imports of LNG in the future, including in connection with the operation of the LNG-fired generation unit to be constructed in Eumseong.

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 26.6% in aggregate of our installed capacity as of December 31, 2019. 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 2017, 2018 and 2019, we spent Won 504 billion, Won 482 billion and Won 1,001 billion, respectively, on capital expenditures, which represent the sum of (i) purchases of land, buildings, structures, machinery, vehicles, other intangible assets and other property, plant and equipment, (ii) increases in construction-in-progress and investments in joint ventures and associates and (iii) consideration paid in business combination in our statements of cash flows, plus purchases of certain intangible assets such as greenhouse gas emission allowance units. We have budgeted Won 1,010 billion, Won 1,295 billion and Won 1,401 billion for capital expenditures for 2020, 2021 and 2022, 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 21 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 material decrease in our revenues in the first three months of 2020 compared to the first three months of 2019, which in turn will very likely have a material 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; 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 December 31, 2019, approximately 52% of our long-term debt before accounting for swap transactions, was denominated in foreign currencies, all of which were in U.S. 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 revenues 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 all 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 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 maintain general commercial insurance policies with an aggregate comprehensive risk coverage of Won 15,022 billion with respect to our facilities and an aggregate machinery damage coverage of

Won 4,064 billion with respect to our machinery. We also maintain marine cargo insurance in respect of imported fuel and procurement with insurance coverage of Won 1,917 billion, as well as general vehicle insurance, directors' and officers' liability insurance and environmental 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 8.4 per kilogram, while the currently applicable tax rate for LNG for uses other than power generation is Won 42 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 75.6%, 73.0% and 76.4% of our total electricity sales in 2017, 2018 and 2019, respectively. We paid Won 457 billion, Won 543 billion and Won 712 billion in consumption taxes with respect to the use of bituminous coal in 2017, 2018 and 2019, 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 December 31, 2019, approximately 82.1% of our employees were members of the Korea East-West Power Labor Union, which membership comprises entirely of our employees, and approximately 14.5% 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, 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 April 2017, Hanjin Heavy Industries filed an arbitration claim of Won 10 billion against us seeking compensation for increased costs due to delays allegedly caused by us in connection with Hanjin Heavy Industries' construction of a new coal storage and handling facility at our Dangjin units 9 and 10. The case is currently pending before Korea Commercial Arbitration Board.

In July 2017, the bankruptcy administrator for Keangnam Enterprises filed a Won 11 billion claim against us seeking compensation for increased costs due to damages allegedly caused by us in connection with the installation of certain new boilers by Keangnam Enterprises in our Dangjin power generation complex. The case is currently pending before the Seoul Northern District Court.

In August 2018, two insurance companies, which had previously reimbursed certain insurance claims made by the Guam Power Authority in connection with an explosion at the Cabras 4 generation facility (which was operated by us at the time of the accident) in Guam in 2015, filed a US$125 million damages claim under their right of subrogation on against us and other defendants named therein, alleging gross negligence and breach of contract. The case is currently pending before the Guam Superior court.

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 33.2 billion between 2015 and 2018 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. As of December 31, 2019 we have recognized provisions of Won 0.1 billion to cover future payments to any remaining employees who have not yet sought compensation for such claims.

Separately from such prior cases involving ordinary wages, we are currently subject to three lawsuits, two of which were filed in 2019 and one in January 2020, 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 three lawsuits are currently pending before the trial court, and the aggregate claim amount of such lawsuits (which includes amounts claimed against other Generation Subsidiaries that are our co-defendants in one of the three lawsuits) is Won 2.3 billion. As of December 31, 2019 we have recognized provisions of Won 3.2 billion to cover any potential future payments of additional retirement benefits to the plaintiffs in the pending cases as of such date as well as other current and former employees who may have similar claims.

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 22.2%, 26.0% and 26.7% of total power sold in terms of volume in 2017, 2018 and 2019, respectively. As of December 31, 2019, 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 December 31, 2019, the aggregate generation capacity of suppliers participating in the CES amounted to approximately 7.4% 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, revenues 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, including North America and Latin America. For example, in May 2019, we acquired a 49% equity interest in DE Energia SpA, which is currently constructing a photovoltaic generation complex with an aggregate capacity of 104 megawatts in Chile. The construction of such complex is expected to be completed by September 2020. In addition, in January 2020, we and KEPCO established Guam Ukudu Power LLC, in which we and KEPCO hold 40% and 60% equity interest, respectively, to construct and operate a new LNG-fired power plant in Guam. The construction for such unit is expected to commence in August 2021 and is targeted for completion by the end of 2023.

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. For the impact of the adoption of K-IFRS 1116, see Note 2.4.9 to our audited annual condensed 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;

- geopolitical 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 and unaudited consolidated financial statements included in this Offering Circular are presented in accordance with the Government Accounting Standards or K-IFRS, as the case may be, and our future financial statements will be prepared in accordance with the Government Accounting Standards or K-IFRS, as the case may be, 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 public or nonpublic 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 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 or to, or for the account or benefit of, U.S. persons, except to QIBs in reliance on the exemption provided by Rule 144A, to certain persons in offshore transactions in reliance on Regulation S, or pursuant to another available exemption from, or in another transaction not subject to, the registration requirements of the Securities Act and 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 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 its Enforcement Decree), 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 Korean QIB who is 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.

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 Singapore Stock Exchange for the listing and quotation of the Notes on the Singapore

Stock Exchange. The offer and sale of the Notes is not conditioned on obtaining a listing of the Notes on the Singapore Stock Exchange 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, which will be US$494,845,000, after deducting a combined management and underwriting commission but not estimated expenses of the offering, will be used for repayment of certain existing debt and other general corporate purposes.

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
October	1,168.4	1,184.1	1,203.7	1,166.5
November	1,179.3	1,167.5	1,179.3	1,156.1
December	1,157.8	1,175.9	1,193.7	1,157.8
2020 (through April 23)	1,235.2	1,199.8	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 (through April 23)	1,235.2	1,223.8	1,237.6	1,212.3

Source: Seoul Money Brokerage Services, Ltd.

Note:

(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 our capitalization (1) as derived from our audited consolidated financial statements as of December 31, 2019 included in this Offering Circular and (2) as adjusted to give effect to the issuance of the Notes. The table below should be read in connection with our audited consolidated financial statements as of December 31, 2019 included in this Offering Circular.

	As of December 31, 2019			
	Actual		As Adjusted	
	(in billions of Won and millions of U.S. dollars)[1]			
Long-term debt:				
Borrowings (excluding current portion)	₩ 70	US$ 60	₩ 70	US$ 60
Bonds Payable (excluding current portion), net of discount	2,568	2,218	3,141	2,713
Total long-term debt	₩2,638	US$2,278	₩3,211	US$2,773
Equity:				
Issued capital of ₩5,000 par value; Authorized — 100,000,000 shares; Issued and outstanding — 57,932,221 shares	₩ 290	US$ 250	₩ 290	US$ 250
Share premium	1,929	1,666	1,929	1,666
Retained earnings:				
Legal reserves	67	58	67	58
Voluntary reserves	1,475	1,274	1,475	1,274
Unappropriated retained earnings	1,009	871	1,009	871
Other components of equity:				
Cumulative other comprehensive income	61	54	61	54
Other equity	(82)	(71)	(82)	(71)
Non-controlling interests	23	20	23	20
Total equity	₩4,772	US$4,122	₩4,772	US$4,122
Total capitalization[2][3]	₩7,410	US$6,400	₩7,983	US$6,895

Notes:

(1) The exchange rate used to convert U.S. dollars into Won in the case of the Notes now being issued is Won 1,157.8 to US$1.00, which was the Market Average Exchange Rate in effect as of December 31, 2019.

(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 our capitalization since December 31, 2019.

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 December 31, 2019, 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 South-East Power Co., Ltd. ("KOSEP"), 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 KOSEP 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 December 31, 2019 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 2019, the average capacity price of our generation units was Won 8.13/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 MW 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.

The Government commenced preparations for the Ninth Basic Plan in March 2019 and aims to issue the finalized plan within 2020.

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.

SELECTED FINANCIAL AND OTHER INFORMATION

The following tables present selected financial information and other data as of and for the years ended December 31, 2017, 2018 and 2019. The selected financial information and other data set forth below have been derived from and should be read in conjunction with our audited consolidated financial statements and notes thereto as of and for the years ended December 31, 2017, 2018 and 2019 included elsewhere in this Offering Circular.

Our audited consolidated financial statements as of and for the years ended December 31, 2017 and 2018 have been audited by Ernst & Young Han Young, independent auditors, and our audited consolidated financial statements as of and for the year ended December 31, 2019 have been audited by Hanul LLC, independent auditors, as stated in their respective reports included elsewhere in this Offering Circular.

From January 1, 2018, we have adopted K-IFRS No. 1109 "Financial Instruments" and K-IFRS No. 1115 "Revenue from Contracts with Customers," each using the modified retrospective approach, under which the cumulative effect of initial application is recognized in our retained earnings at January 1, 2018. Accordingly, the comparative information presented for 2017 has not been restated and is presented, as previously reported, under K-IFRS 1011, K-IFRS 1018, K-IFRS 1039 and related interpretation. Furthermore, we have 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 our retained earnings at January 1, 2019. Accordingly, the comparative information presented for 2017 and 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,			
	2017	**2018**	**2019**	**2019(1)**
	(in billions of Won and millions of U.S. dollars, except per share data)			
Statement of Comprehensive Income Data:				
Revenue	₩4,670	₩4,973	₩4,896	US$4,229
Cost of sales	4,121	4,788	4,619	3,990
Gross profit	549	185	277	239
Selling and administrative expenses	126	126	154	133
Operating profit	423	59	123	106
Other income	22	16	18	16
Other expense	(15)	(7)	(4)	(4)
Other profit (loss)	2	1	8	7
Finance income	213	107	98	85
Finance costs	(327)	(187)	(205)	(177)
Gain (loss) relating to investments in associates and joint ventures	13	(4)	88	76
Profit (loss) for the period before tax	330	(15)	126	109
Income tax benefit (expense)	(113)	7	15	13
Profit (loss) for the period	217	(8)	141	122
Other comprehensive income (loss) for the period, net of tax	13	70	(3)	(3)
Total comprehensive income for the period, net of tax	₩ 231	₩ 62	₩ 138	US$ 119

Note:

(1) We maintain our financial statements in Won. The Won financial information as of and for the year ended December 31, 2019 has been translated into U.S. dollars at the exchange rate of Won 1,157.8 to US$1.00, which was the Market Average Exchange Rate in effect as of December 31, 2019.

	As of December 31,			
	2017	2018	2019	2019(1)
	(in billions of Won and millions of U.S. dollars)			
Statement of Financial Position Data:				
Assets:				
Cash and cash equivalents	₩ 33	₩ 37	₩ 89	US$ 77
Trade and other receivables	726	616	707	611
Inventories	302	316	340	294
Other current assets	42	102	214	184
Non-current financial assets	159	253	246	212
Property, plant and equipment	6,836	6,635	7,084	6,119
Investments in associates and joint ventures	662	701	774	669
Other non-current assets	166	153	429	370
Total assets	₩8,927	₩8,812	₩9,883	US$8,536
Liabilities and shareholder's equity:				
Trade and other payables	₩ 459	₩ 419	₩ 521	US$ 450
Current financial liabilities	862	243	807	697
Current income tax liabilities	29	1	30	26
Other current liabilities	72	47	165	142
Non-current financial liabilities	2,502	3,061	2,638	2,278
Long-term trade and other payables	—	0	475	411
Deferred tax liabilities	317	343	388	335
Other non-current liabilities	56	67	87	75
Total liabilities	₩4,297	₩4,182	₩5,111	US$4,414
Total equity	₩4,630	₩4,630	₩4,772	US$4,122
Total liabilities and equity	₩8,927	₩8,812	₩9,883	US$8,536
Net working capital (deficit)(2)	₩(320)	₩ 361	₩(173)	US$(149)

Notes:

(1) We maintain our financial statements in Won. The Won financial information as of and for the year ended December 31, 2019 has been translated into U.S. dollars at the exchange rate of Won 1,157.8 to US$1.00, which was the Market Average Exchange Rate in effect as of December 31, 2019.

(2) Net working capital (deficit) means total current assets minus total current liabilities.

	For the year ended December 31,			
	2017	2018	2019	2019[1]
	(in billions of Won and millions of U.S. dollars)			
Other Financial Data:				
Capital expenditures[2]	₩504	₩482	₩1,001	US$865
Depreciation and amortization	614	647	719	621
Net cash flow from operating activities	559	594	851	735
Net cash flow provided by (used in) investing activities	(504)	(470)	(863)	(745)
Net cash flow provided by (used in) financing activities	(67)	(121)	63	54
Operating data:				
Total power sold (gigawatt hours)	48,307	50,697	48,149	N/A[3]

Notes:

(1) The Won financial information as of and for the year ended December 31, 2019 has been translated into U.S. dollars at the exchange rate of Won 1,157.8 to US$1.00, which was the Market Average Exchange Rate in effect as of December 31, 2019.

(2) Capital expenditures represent the sum of (i) purchases of land, buildings, structures, machinery, vehicles, other intangible assets and other property, plant and equipment, (ii) increases in construction-in-progress and investments in joint ventures and associates and (iii) consideration paid in business combination in our statements of cash flows, plus purchases of certain intangible assets such as greenhouse gas emission allowance units.

(3) N/A means not applicable.

MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

The following discussion should be read in conjunction with our audited consolidated financial statements and notes thereto as of and for the years ended December 31, 2017, 2018 and 2019, all of which are included elsewhere in this Offering Circular. Our financial statements are prepared in accordance with the Government Accounting Standards or K-IFRS, as the case may be, which differ in certain respects from accounting principles applicable to companies in certain other countries, including the United States.

This discussion contains forward-looking statements that involve risks and uncertainties. Actual results and the timing of events may differ materially from those contained in these forward-looking statements due to a number of factors, including those discussed in the section entitled "Risk Factors" and elsewhere in this Offering Circular.

Overview

We were established on April 2, 2001 as one of six Generation Subsidiaries of KEPCO. The Generation Subsidiaries generate over 70% of the electricity in Korea. As of December 31, 2019, we had a domestic generation capacity of 11,193 megawatts, or approximately 8.9% of the total electricity generation capacity in Korea (excluding plants generating electricity primarily for private or emergency use). In 2017, 2018 and 2019, we sold 48,307 GWh, 50,697 GWh and 48,149 GWh, respectively, to KEPCO through the KPX. KEPCO is currently the sole electricity transmission and distribution company in Korea.

As of December 31, 2019, of our aggregate domestic installed generation capacity of 11,193 megawatts, 6,940 megawatts, 1,200 megawatts, 2,972 megawatts and 81 megawatts were attributable to our coal-fired units, oil-fired units, LNG-combined cycle units and renewable energy units, respectively. We generated revenue of Won 4,670 billion, Won 4,973 billion and Won 4,896 billion in 2017, 2018 and 2019, respectively, and we recorded a profit of Won 217 billion in 2017, a loss of Won 8 billion in 2018 and a profit of Won 141 billion in 2017, 2018 and 2019, respectively.

The overall margin for our operations is affected by the fair investment return assigned to us (at a uniform rate for all of KEPCO's generation subsidiaries) by the Cost Evaluation Committee after fully passing through changes in fuel prices to KEPCO subject to a two-month lag. Considerations of our fair investment return are made by the Cost Evaluation Committee in determining the adjusted coefficient for the marginal price component of the price of electricity sold by us to KEPCO by way of KPX. In determining such coefficient, the Cost Evaluation Committee considers various factors, including the market prices of fuels, electricity tariff rates and their impacts on the relative fair investment returns for KEPCO and its generation subsidiaries, among others. Therefore, in the event of a sustained or rapid rise in fuel costs whose impact is not sufficiently offset by a corresponding rise in electricity tariff rates in a timely manner or in cases of other exceptional circumstances, the adjusted coefficient may be set at a level which would have the effect of lowering our fair investment return and, in turn, the overall profitability of our operations. See "The Korean Electricity Industry — Power Purchase — Cost-based Pool System — Marginal Price."

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 26.6% in aggregate of our installed capacity as of December 31, 2019. The price cap has had and may have a material adverse effect on our results of operation and financial condition.

Since our inception, we, along with KEPCO and the other Generation Subsidiaries, have made substantial expenditures for the construction of generation plants and other facilities to meet increased demand for electric power. According to the Eighth Basic Plan released in December 2017, the consumption of electric power is expected to increase by 2.1% per annum from 2017 to 2031. Pursuant to the Eighth Basic Plan, we plan to continue to make expenditures to expand and enhance our generating system in the future, particularly in renewable energy.

Demand for electricity in Korea, and in turn our electricity output, has generally increased historically as well as in recent years, but it decreased in 2019 mainly due to a slowdown in the Korean economy and relatively benign weather conditions. Demand for electricity may further decrease in 2020 as a result of, among other things, the effects of the ongoing global COVID-19 pandemic on the Korean economy. In part due to such reasons, we expect a material decrease in our revenues in the first three months of 2020 compared to the first three months of 2019, which in turn will very likely have a material adverse effect on our profits. While it is not possible to predict the duration or full magnitude of harm from COVID-19, a continued and prolonged outbreak of COVID-19 may have a material adverse effect on our business, financial condition and results of operations. See "Risk Factors — Risks Relating to Our Business — 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."

Recent Accounting Changes

Starting from January 1, 2019, we have adopted K-IFRS 1116 'Leases.' See Notes 2.3.1 and 2.4.9 to our audited consolidated financial statements as of and for the years ended December 31, 2018 and 2019 included elsewhere in this Offering Circular. Starting from January 1, 2018, we have adopted K-IFRS No. 1109 'Financial Instruments' and K-IFRS No. 1115 'Revenue from Contracts with Customers.' See Note 2.3 to our audited consolidated financial statements as of and for the years ended December 31, 2017 and 2018 included elsewhere in this Offering Circular.

K-IFRS No. 1116 'Lease'

K-IFRS 1116 introduces a single, on-balance sheet accounting model for lessees. Pursuant to K-IFRS 1116 we recognize right-of-use assets representing our rights to use the underlying assets and lease liabilities representing our obligation to make lease payments in relation to substantially all of our operating lease arrangements, except for certain short-term leases and leases of low-value assets.

We have adopted K-IFRS 1116 with a date of initial application of January 1, 2019. As a result, we recognized right-of-use assets (as part of our property and equipment) of Won 472.1 billion and Won 671.1 billion and lease liabilities (as part of our financial liabilities) of Won 472.1 billion and Won 534.2 billion, in each case as of January 1, 2019 and December 31, 2019, respectively, and lease-related expenses of Won 100.9 billion in 2019. For further information, see Notes 2.3.1, 2.4.9 and 19 to our audited consolidated financial statements as of and for the years ended December 31, 2018 and 2019 included elsewhere in this Offering Circular.

K-IFRS No. 1109 'Financial Instruments'

K-IFRS No. 1109 includes revised guidance on the classification and measurement of financial instruments, and the incurred loss model is replaced with an expected credit loss model for calculating impairment on financial assets. It also revises guidance on the general hedge accounting model, which aligns hedge accounting more closely with risk management. Under the new model, more hedging strategies that are used for risk management may qualify for hedge accounting.

We have adopted K-IFRS No. 1109 with a date of initial application of January 1, 2018. With the adoption of K-IFRS No. 1109, we recognized adjustments to retained earnings of Won 9.1 billion (increase) and an accumulated other comprehensive income of Won 9.1 billion (decrease) on January 1, 2018. For further information, see Note 2.3.2 to our audited consolidated financial statements as of and for the years ended December 31, 2017 and 2018 included elsewhere in this Offering Circular.

K-IFRS No. 1115 'Revenue from Contracts with Customers'

K-IFRS No. 1115, applicable to all contracts with customers, provides a five-step model to determine when to recognize revenue and replaces the previous model based on risk and reward with a new model that is based on transfer of control.

We have adopted K-IFRS No. 1115 with a date of initial application of January 1, 2018. The adoption of K-IFRS No. 1115 did not have any significant impact on our consolidated financial statements. For further information, see Note 2.3.1 to our audited consolidated financial statements as of and for the years ended December 31, 2017 and 2018 included elsewhere in this Offering Circular.

Critical Accounting Policies

Accounting estimates are an integral part of the financial statements prepared by our management and are based upon our management's current judgments. See Note 2.4 to our audited consolidated financial statements as of and for the years ended December 31, 2018 and 2019 included elsewhere in this Offering Circular for summaries of our significant accounting policies that are critical to the portrayal of our financial condition since they require our management to make difficult, complex or subjective judgments, some of which may relate to matters that are inherently uncertain, and because of the possibility that future events affecting these estimates may differ significantly from management's current judgment. Certain accounting estimates are particularly sensitive because of their significance to the financial statements and because of the possibility that future events affecting the estimate may differ significantly from management's current judgments. We believe the following represents our critical accounting policies.

Useful Lives of Property, Plant and Equipment

Property, plant and equipment are stated at cost. We do not depreciate land. Depreciation is computed by the straight-line method, using rates based on the estimated useful lives. Net property, plant and equipment as of December 31, 2019 totaled Won 7,084 billion representing 71.7% of total assets. Given the significance of property, plant and equipment and the associated depreciation expense to our financial statements, the determination of an asset's economic useful life is considered to be a critical accounting estimate.

Economic useful life is the duration of time the asset is expected to be productively employed by us, which may be less than its physical life. Management's assumptions on the following factors, among others, affect the determination of estimated economic useful life: wear and tear, obsolescence, technical standards, changes in market demand and technological changes. We apply the following useful lives for our property, plant and equipment:

	Method	Estimated Useful Life
Buildings	Straight-line	12-34
Structures	Straight-line	22-30
Machinery	Straight-line	6-24
Vehicles	Straight-line	3-8
Right-of-Use Assets	Straight-line	1-30
Others	Straight-line	4-5

Generally, useful life is estimated at the time the asset is acquired and is based on historical experience with similar assets and takes into account anticipated technological or other changes. If technological changes were to occur more rapidly than anticipated or in a different form than anticipated or the assets experienced unexpected levels of wear and tear, the useful lives assigned to these assets may need to be shortened, resulting in the recognition of increased depreciation expenses in future periods.

We capitalize interest costs and other financial charges on borrowings associated with the manufacture, purchase, or construction of utility plant, incurred prior to the completion of acquisition, as part of the cost of qualifying assets. The calculation of capitalized interest includes transaction differences arising from foreign currency borrowings to the extent that they are regarded as an adjustment to interest costs, which is limited to the extent of interest cost calculated by the weighted average interest rate of local currency borrowings.

We review utility plant assets for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. An impairment loss is recognized when the expected estimated undiscounted future net cash flows from the use of the asset and its eventual disposition are less than its carrying amount.

Impairment of Long-lived Assets

At the end of each reporting period, we review the carrying amounts of our 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). Where it is not possible to estimate the recoverable amount of an individual asset, we estimate 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 and value in use. In assessing value in use, the estimated future cash flows are discounted to their present value using a pre-tax discount rate that reflects current market assessments of the time value of money and the risks specific to the asset for which the estimates of future cash flows have not been adjusted.

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. An impairment loss is recognized immediately in income or loss, unless the relevant asset is carried at a revalued amount, in which case the impairment loss is treated as a revaluation decrease.

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 so that 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 income or loss, unless the relevant asset is carried at a revalued amount, in which case the reversal of the impairment loss is treated as a revaluation increase.

The assessment of impairment is a critical accounting estimate because significant management judgment is required to determine: (i) if an indicator of impairment has occurred, (ii) how assets should be grouped, and (iii) if an impairment exists, the recoverable amount of the asset or asset group. If management's assumptions about these assets change as a result of events or circumstances, and management believes the assets may have declined in value, we may record impairment charges, resulting in lower profits. Management uses its best estimate in making these evaluations and considers various factors, including the future prices of energy, fuel costs and other operating costs. However, actual market prices and operating costs could vary from those used in the impairment evaluations, and the impact of such variations could be material.

Financial Assets — Measurement and Impairment

Our available-for-sale securities, loans and receivables and other financial assets are measured at fair value.

We review whether or not impairment exists for individually significant loans and receivables. For other loans and receivables, we group loans and receivables which have similar credit risks, perform collective impairment test, and estimate the incurred loss as allowance for doubtful loans and receivables.

The fair value of our actively-traded financial instruments (i.e., financial assets available-for-sale, etc.) is based on the traded market-price as of the reporting period end. The fair value of our financial assets is the amount which the 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, 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, we use that technique.

For accounts receivables and payables, we consider the carrying value net of impairment as fair value. For disclosure purposes, the fair value of financial liabilities is estimated by discounting financial instruments with similar contractual cash flows based on the effective interest method.

Retirement Benefit Costs

The retirement benefit amount is appropriated as a defined benefit obligation by actuarial assessment using the projected unit credit method. Also, we recognize our long-term employee benefits obligation using the projected unit credit method with actuarial valuations being carried out at the end of each reporting period. For actuarial valuations, discount rate, future salary increase and expected return on plan assets are estimated and these estimations are uncertain.

Memberships and Guarantee Deposits

Facility-use memberships are recognized as intangible assets with an indefinite useful life and guarantee deposits that satisfy the definition of financial assets are classified as loans and receivables at amortized costs.

Results of Operations

2019 Compared to 2018

Our revenue, substantially all of which was derived from the sales of electric power, decreased by 1.5% to Won 4,896 billion in 2019 from Won 4,973 billion in 2018, reflecting a 5.0% decrease in the volume of electricity sold we sold to KEPCO to 48,149 gigawatt hours in 2019 from 50,697 gigawatt hours in 2018, which was partially offset by a 2.7% increase in the unit price of electricity sold to Won 96.75/kWh in 2019 from 94.21/kWh in 2018 (in each case according to KEPCO data). The decrease in the volume of electricity sold was primarily due to a decrease in overall demand for electricity in Korea. The increase in unit price of electricity sold in 2019 was attributable to an increase in the overall system marginal price primarily reflecting an increase in our depreciation expenses and other fixed costs.

Our cost of sales decreased by 3.5% to Won 4,619 billion in 2019 from Won 4,788 billion in 2018, primarily as a result of a 9.7% decrease in the cost of raw material in use to Won 3,328 billion in 2019 from Won 3,685 billion in 2018 and, to a much smaller extent, a 60.9% decrease in commissions and fees to Won 10 billion in 2019 from Won 26 billion in 2018, which were partially offset by provisions of Won 77 billion in 2019 compared to a reversal of provisions of Won 38 billion in 2018 and an 11.8% increase in depreciation of property, plant and equipment to Won 686 billion in 2019 from Won 613 billion in 2018. The decrease in the cost of raw materials in use was mainly due to a decrease in the volume of electricity we sold, as well as a decrease in market fuel prices of LNG. The decrease in commissions and fees was primarily attributable to the full-year effect of consolidation of our wholly-owned subsidiary EWP Services Co., Ltd., which we established in November 2018 to internalize cleaning and building maintenance services for our generation facilities that were previously provided by third party service providers. The provisions in 2019 were recognized primarily in relation to expected payments for purchases of greenhouse gas emission allowance units in excess of our allocated amount, whereas the reversal of provisions in 2018 primarily related to our previously recognized provisions for RPS obligations. The increase in depreciation of property, plant and equipment in 2019 was primarily due to our recognition of right-of-use assets (which constitute a part of property, plant and equipment) with respect to certain leased properties under K-IFRS 1116, which we adopted as of January 1, 2019.

As of a result of the above factors, our gross profit increased by 50.0% to Won 277 billion in 2019 from Won 185 billion in 2018, and our gross profit margin increased to 5.7% in 2019 from 3.7% in 2018. The increase in our gross profit margin was principally attributable to the decrease in the cost of raw materials in use and to a lesser extent, the increase in the unit price of electricity sold, which outpaced the decrease in the volume of electricity we sold.

Our selling and administrative expenses increased by 22.2% to Won 154 billion in 2019 from Won 126 billion in 2018. This increase was primarily attributable to a 43.7% increase in commissions and fees to Won 33 billion in 2019 from Won 23 billion in 2018, a significant increase in others under our selling and administrative expenses to Won 13 billion in 2019 from Won 3 billion in 2018 and an 18.8% increase in research and development expenses to Won 34 billion in 2019 from Won 29 billion in 2018. The increase in commissions and fees in 2019 was mainly due to consulting and service fees to outside advisers in relation to tax reassessment claims we made with respect to tax deductions for certain of our capital investments. The increase in others under our selling and administrative expenses was primarily related to an increase in legal fees, including in connection with the pending damages claim against us by two insurance companies in connection with an explosion at the Cabras 4 generation facility (which was operated by us at the time of the accident) in Guam in 2015, among others. See "Business — Legal and Regulatory Proceedings." The increase in research and development expenses in 2019 was mainly attributable to an increase in research projects related to environmental compliance and renewable energy.

As a result of the above factors, our operating profit increased by 109.6% to Won 123 billion in 2019 from Won 59 billion in 2018, and our operating profit margin increased to 2.5% in 2019 from 1.2% in 2018.

Our net other income increased by 62.7% to Won 14 billion in 2019 from Won 9 billion in 2018, primarily as a result of a significant increase in revenue from compensation and indemnity to Won 7 billion in 2019 from Won 2 billion in 2018 mainly resulting from a refund of deposits we had paid to a contractor in connection with construction work at our Dangjin units 9 and 10 pursuant to the court's decision in our favor in a lawsuit we had filed against such contractor, as well as compensation we received from our insurers in connection with certain accidental damages we suffered at our Honam unit 1, which was partially offset by a 26.0% decrease in others under our other income to Won 8 billion in 2019 from Won 11 billion in 2018 due mainly to recording no technical fees income in 2019 compared to Won 7 billion in 2018.

Our other profit or loss increased significantly to Won 8 billion in 2019 from Won 1 billion in 2018, primarily as a result of a Won 24 billion gain from assets held for sale, which reflected the disposal of all of the equity interest we held in Ulsan GPS Co., Ltd. in December 2019, the effect of which was partially offset by a significant increase in other losses to Won 25 billion in 2019 from Won 9 billion in 2018, which was primarily attributable to loss on write-off of property, plant and equipment relating to the removal of outdated equipment in our Ulsan units 1, 2 and 3 in 2019.

Our net finance costs increased by 35.6% to Won 108 billion in 2019 from Won 80 billion in 2018, principally due to an 87.8% increase in net loss on foreign currency translations to Won 77 billion from Won 41 billion in 2018, which was due primarily to the appreciation of the Korean Won against the U.S. dollar, in which all of our foreign currency debt was denominated, and a 58.3% decrease in net gain on transaction of derivative instruments to Won 16 billion in 2019 from Won 39 billion in 2018, primarily due to fluctuations in exchange rates related to our cross currency swaps. These effects were partially offset by a 94.9% decrease in net loss on foreign currency transactions to Won 1 billion in 2019 from Won 25 billion in 2018 and a 40.8% increase in net gain on valuation of derivative instruments to Won 58 billion in 2019 from Won 41 billion in 2018, which we entered into to hedge our foreign currency translation and transaction risks.

Our gain (loss) relating to investments in associates and joint ventures changed to a net gain of Won 88 billion in 2019 compared to a net loss of Won 4 billion in 2018, principally due to a decrease in the loss we recognized with respect to the former Dangjin Eco Power Corporation, which was split-up into three separate entities consisting of Ulsan GPS Co., Ltd. Eumseong Natural Gas Power Co., Ltd. and the new Dangjin Eco Power Corporation in August 2019. Following such corporate reorganization, in the fourth quarter of 2019, we disposed of all of the equity interest we held in Ulsan GPS Co., Ltd, and acquired all of equity interest held by our joint venture partners in Eumseong Natural Gas Power Co., Ltd. and merged it into us. See "Business — Independent Power Producer and Community Energy System Projects."

As a result of the above factors, our profit (loss) for the year before tax changed to a net profit of Won 126 billion in 2019 from a net loss of Won 15 billion in 2018.

Our income tax benefit increased by 111.4% to Won 15 billion in 2019 from Won 7 billion in 2018, primarily due to the effects of an increase in positive adjustments to prior year's current income tax expenses.

As a result of the above factors, our profit (loss) for the year changed to a net profit of Won 141 billion in 2019 from a net loss of Won 8 billion in 2018.

2018 Compared to 2017

Our revenue, substantially all of which was derived from the sales of electric power, increased by 6.5% to Won 4,973 billion in 2018 from Won 4,670 billion in 2017, primarily reflecting a 4.9% increase in the volume of electricity we sold to KEPCO to 50,697 gigawatt hours in 2018 from 48,307 gigawatt hours in 2017 (in each case according to KEPCO data), which was enhanced by a 2.2% increase in the unit price of electricity sold to Won 94.21/kWh in 2018 from Won 92.15/kWh in 2017 (in each case according to KEPCO data). The increase in the volume of electricity sold was primarily due to a decrease in the use of nuclear power generation units of KHNP due to increased shutdowns of such units for inspections and safety improvement works following a series of earthquakes in the southeastern region of Korea in 2016 and 2017, creating greater demand for base load energy generation by our and the other non-nuclear Generation Subsidiaries' coal-fired generation units and, to a lesser extent, our non-base load energy, such as LNG and oil. The increase in unit price of electricity sold in 2018 was attributable to an increase in the overall system marginal price following the general increase in market fuel prices, including bituminous coal, anthracite coal and LNG.

Our costs of sales increased by 16.2% to Won 4,788 billion in 2018 from Won 4,121 billion in 2017, primarily as a result of a 19.4% increase in the cost of raw material in use to Won 3,685 billion in 2018 from Won 3,087 billion in 2017 and a 7.3% increase in depreciation of property, plant and equipment to Won 613 billion in 2018 from Won 572 billion in 2017. The increase in the cost of raw materials in use was mainly due to a general increase in market fuel prices, particularly bituminous coal, anthracite coal and LNG. The increase in depreciation of property, plant and equipment in 2018 was primarily due to increased capital expenditures relating to refurbishment of our older generation facilities.

As of a result of the above factors, our gross profit decreased by 66.4% to Won 185 billion in 2018 from Won 549 billion in 2017, and our gross profit margin decreased to 3.7% in 2018 from 11.8% in 2017. The decrease in our gross profit margin was principally attributable to the increase in the cost of raw materials in use, which outpaced the increases in the unit price and volume of electricity sold to KEPCO.

Our selling and administrative expenses remained stable at Won 126 billion in 2018 and 2017, as a 72.4% decrease in insurance expenses to Won 2 billion in 2018 from Won 8 billion in 2017 and a 70.0% decrease in advertising expenses to Won 2 billion in 2018 from Won 6 billion in 2017 were substantially offset by a 28.1% increase in commissions and fees expenses to Won 23 billion in 2018 from Won 18 billion in 2017 and a 7.9% increase in salaries to Won 33 billion in 2018 from Won 31 billion in 2017. The decrease in insurance expenses was primarily attributable to a decrease in the insurance premium rate applicable to us in light of improvements in market conditions and our accident history, while the decrease in advertising expenses mainly reflected a one-time increase in advertising expenses incurred in 2017 in connection with our sponsorship of the PyeongChang Winter Olympics and Paralympics in early 2018, which was not repeated in 2018. The increase in commissions and fees expenses was mainly attributable to an increase in transaction fees paid to the KPX due to an increase in the volume of electricity we generated and sold to KEPCO through the KPX, while the increase in salaries was primarily a result of an increase in the number of employees and an increase in performance-based bonuses.

As a result of the above factors, our operating profit decreased by 86.1% to Won 59 billion in 2018 from Won 423 billion in 2017, and our operating profit margin decreased to 1.2% in 2018 from 9.0% in 2017.

Our net other income increased by 15.9% to Won 9 billion in 2018 from Won 8 billion in 2017, primarily as a result of a decrease in revenue from compensation and indemnity, primarily relating to the compensation received in 2017 in connection with the replacement of certain facilities at the Dangjin power plant complex, which were not repeated in 2018. Such decrease was mostly offset by a decrease in other expenses mainly due to the effects of miscellaneous losses reflecting write-downs of insurance receivables in 2017, which was not repeated in 2018.

Our other profit or loss decreased by 66.7% to Won 1 billion in 2018 from Won 2 billion in 2017, primarily as a result of decreases in net gains on foreign currency transactions and foreign currency translations in 2018 compared to 2017, mainly due to the fluctuations in foreign currency exchange rates between the Won and the U.S. dollar.

Our net finance costs decreased by 30.7% to Won 80 billion in 2018 from Won 115 billion in 2017, principally due to a net gain on valuation of derivative instruments of Won 41 billion in 2018 compared to a net loss on valuation of derivative instruments of Won 170 billion in 2017, which we entered into to hedge our foreign currency translation and transaction risks, and a net gain on transaction of derivative instruments of Won 39 billion in 2018 compared to a net loss on transaction of derivative instruments of Won 42 billion in 2017, primarily due to fluctuations in exchange rates related to our cross currency swaps. Such effects were in large part offset by a net loss on foreign currency translations of Won 41 billion in 2018 compared to a net gain on foreign currency translations of Won 159 billion in 2017, which were due primarily to the depreciation of the Korean Won against the U.S. dollar, in which all of our foreign currency debt was denominated during such years, and a net loss on foreign currency transactions of Won 25 billion in 2018 compared to a net gain on foreign currency transactions of Won 35 billion in 2017, which were also due primarily to the depreciation of the Korean Won against the U.S. dollar.

Our gain (loss) relating to investments in associates and joint ventures changed to a net loss of Won 4 billion in 2018 compared to a net gain of Won 13 billion in 2017, principally due to an increase in net loss of the former Dangjin Eco Power Corporation.

As a result of the above factors, our profit (loss) for the year before tax changed to a net loss of Won 15 billion in 2018 compared to a net profit of Won 330 billion in 2017.

Our income tax expense (benefit) changed to a net benefit of Won 7 billion in 2018 compared to a net expense of Won 113 billion in 2017, primarily due to the change in profit (loss) before income tax to a net loss from a net profit as described above. Our effective income tax rate was 34.16% in 2017.

As a result of the above factors, our profit (loss) for the year changed to a net loss of Won 8 billion in 2018 from a net profit of Won 217 billion in 2017.

Capital Requirements

We anticipate that the following will represent the major sources of our capital requirements in the short-term to intermediate future:

- capital expenditures pursuant to our capital investment program;
- working capital requirements, the largest component of which is fuel purchases;
- payment of principal and interest on our existing debt; and
- overseas investments.

In addition, if unanticipated material changes to the Restructuring Plan, the Basic Plan or other major policy initiatives of the Government relating to the electric power industry, or natural disasters or other calamities, were to occur, such developments may require a significant amount of additional capital requirements.

Capital Expenditures

Our capital expenditures relate primarily to the construction of new generation units and maintenance of existing generation units. Our capital expenditures generally follow budgets established under the Basic Plans, which contain projections relating to the supply and demand of electricity in Korea, based on which we plan the construction of additional generation units. We are currently planning to construct an LNG-fired power plant complex in Eumseong with an installed capacity of 1,122 megawatts for target completion by 2024. We are also currently constructing wind and solar power generation units and hydrogen fuel cells to increase our generation capacity of renewable energy.

The construction of new generating units and power plants requires significant investment over extended periods of time before such power plants can commence operation. We anticipate that capital expenditures for construction and maintenance of generating facilities, and to a lesser extent, investment for renewable energy sources and facilities related to environmental compliance, will be the most significant use of our funds over the next several years.

Our capital expenditures, which represent the sum of (i) purchases of land, buildings, structures, machinery, vehicles, other intangible assets and other property, plant and equipment, (ii) increases in construction-in-progress and investments in joint ventures and associates and (iii) consideration paid in business combination in our statements of cash flows, plus purchases of certain intangible assets such as greenhouse gas emission allowance units, were Won 504 billion, Won 482 billion and Won 1,001 billion in 2017, 2018, 2019, respectively. Largely due to capital expenditures relating to the construction of new generation facilities, the maintenance of existing generation facilities and investments in renewable energy projects, among others, our capital expenditures are estimated to be approximately Won 1,010 billion, Won 1,295 billion and Won 1,401 billion in 2020, 2021 and 2022, respectively. The budgeted amounts of our capital expenditures for 2020, 2021 and 2022 include amounts budgeted for development of renewable energy sources and for compliance with environmental regulations (such as purchases of greenhouse gas emission allowances) as well as potential investments in securities of other companies, and thus they include amounts other than expenditures on the construction of new generation facilities and the maintenance of existing generation facilities that we own. These estimates for our overall capital expenditures and their allocation to different projects are subject to many uncertainties, many of which are beyond our control.

In addition, in order to deal with shortages of fuel and other resources and also to comply with various environmental standards, the Government adopted the RPS in December 2010, 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 penalties being levied on any generation company failing to do so in the prescribed timeline. We have met the RPS targets of 4.0% for 2017, 5.0% for 2018 and 6.0% for 2019. Under the RPS system, we expect to cumulatively incur approximately Won 5.9 trillion in capital expenditure over the next 10 years. In December 2016, we signed an agreement with the MOTIE to reduce greenhouse gas emission and curb fine dust and we expect to incur approximately Won 2.1 trillion by 2030 in connection with such efforts. We expect that such 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. However, 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.

We plan to fund our capital expenditures primarily from net cash provided by operating activities, issuance of debt securities and borrowings from financial institutions. The following table sets forth the budgeted amounts of capital expenditures for 2020, 2021 and 2022.

	For the year ended December 31,		
	2020	2021	2022
	(in billions of Won)		
Construction of new generation facilities	₩ 33	₩ 301	₩ 478
Maintenance of existing generation facilities	346	483	369
Investments in renewable energy projects	330	220	137
Overseas investments	12	18	52
Others(1)	288	273	364
Total	₩1,010	₩1,295	₩1,401

Note:

(1) Miscellaneous expenditures for acquisition and maintenance of non-generation and ancillary facilities and intangible assets, including our purchases of greenhouse gas emission units.

Fuel Purchases

We require significant funds to finance our operations, principally in relation to the purchase of fuels for generation of electricity. In 2017, 2018 and 2019, fuel costs accounted for 66.7%, 74.7% and 68.5% of our revenue, and 75.5%, 77.5% and 72.6% of our cost of sales, respectively. We plan to fund our fuel purchases primarily with net operating cash, although in cases of rapid increases in fuel prices, we may also rely on borrowings and issuance of debt securities in the capital markets. See also "Business — Fuel."

Repayment of Existing Debt

Payments of principal and interest on indebtedness will require considerable resources. The scheduled maturities of our outstanding debt as of December 31, 2019 were as follows:

Year ended December 31,	Local currency borrowings	Foreign currency borrowings	Domestic bonds payable	Foreign bonds payable	Total
	(in billions of Won)				
2020	₩127	—	₩ 100	₩ 579	₩ 806
2021	8	—	580	—	588
2022	7	—	250	579	836
2023	7	—	—	579	586
2024	9	—	50	—	59
Thereafter	39	—	540	—	579
Total	₩197	—	₩1,520	₩1,737	₩3,454

We have incurred interest charges of Won 99 billion, Won 106 billion and Won 118 billion in 2017, 2018 and 2019, respectively.

We plan to repay the principal and interest on our existing debt primarily through borrowings from financial institutions, issuance of securities in the capital markets and net operating cash.

Overseas Investments

As part of our revenue diversification and fuel procurement strategy, we plan to continue to make overseas investments on a selective basis, which will be funded primarily through project financings, foreign currency-denominated borrowings and securities issuances as well as net operating cash from such projects.

Capital Resources

We have met our working capital and other capital requirements primarily from, and we intend to continue to rely on, net cash provided by operating activities, issuance of debt securities and borrowings from financial institutions. For overseas projects and certain consortium projects, we have met capital requirements primarily through project financings, cash from our operations and, in limited circumstances where market conditions so warrant, issuance of debt securities by us. Net cash provided by operating activities was Won 559 billion, Won 594 billion and Won 851 billion in 2017, 2018 and 2019, respectively. Total bonds payable, excluding current portion and net of discounts and premiums, were Won 2,369 billion, Won 2,953 billion and Won 2,568 billion as of December 31, 2017, 2018 and 2019, respectively. Total long-term borrowings, excluding current portion, were Won 78 billion, Won 77 billion and Won 70 billion as of December 31, 2017, 2018 and 2019, respectively. As of December 31, 2017, 2018 and 2019, the current portion of our-long term borrowings and bonds payable (net of discounts and premium) was Won 734 billion, Won 199 billion and Won 686 billion, respectively. As of December 31, 2017, 2018 and 2019, our long-term borrowings and bonds payable (net of discounts and premium), including the current portion thereof, as a percentage of equity was 68.7%, 69.7% and 69.6%, respectively.

Our ability to incur long-term borrowings and bonds payable in the future is subject to a variety of factors, many of which are beyond our control, including the implementation of the Restructuring Plan and the amount of capital that other Korean entities may seek to raise in capital markets. Economic, political and other conditions in Korea may also affect investor demand for our securities and those of other Korean entities. In addition, our ability to incur debt will also be affected by the Government's policies relating to foreign currency borrowings, the liquidity of the Korean capital markets and our operating results and financial condition. In case of adverse developments in Korea, however, the price at which such financing may be available may not be acceptable to us.

In the past, we incurred short-term borrowings primarily through commercial paper sold to domestic financial institutions. We have not had, and we do not expect to have, any material difficulties in obtaining short-term borrowings. Our short-term borrowings fluctuate from time to time depending on working capital requirements. As of December 31, 2017, 2018 and 2019, we had short-term borrowings of Won 123 billion, Won 44 billion and Won 120 billion, respectively.

Liquidity

The following table sets forth a summary of our cash flows for the periods indicated.

	For the Year Ended December 31,		
	2017	2018	2019
	(Audited)		
	(in billions of Won)		
Net cash provided by operating activities	₩ 559	₩ 594	₩ 851
Net cash used in investing activities	(504)	(470)	(863)
Net cash provided by (used in) financing activities	(67)	(121)	63
Effect of exchange rate changes	(3)	1	1
Cash and cash equivalents at the beginning of period	49	33	37
Cash and cash equivalents at the end of period	33	37	89
Net increase (decrease) in cash and cash equivalents (including the effect of exchange rate changes)	₩ (15)	₩ 4	₩ 52

In 2019, cash and cash equivalents (including the effect of exchange rate changes) increased by Won 52 billion, reflecting net cash provided by operating activities of Won 851 billion and net cash provided by financing activities of Won 63 billion, which were mostly offset by net cash used in investing activities of Won 863 billion. In 2018, cash and cash equivalents (including the effect of exchange rate changes) increased by Won 4 billion, reflecting net cash provided by operating activities of Won 594 billion, which was mostly offset by net cash used in investing activities of Won 470 billion and net cash used in financing activities of Won 121 billion. In 2017, cash and cash equivalents (including the effect of exchange rate changes) decreased by Won 15 billion, reflecting net cash used in investing activities of Won 504 billion and net cash used in financing activities of Won 67 billion, which were mostly offset by net cash provided by operating activities of Won 559 billion.

Net cash provided by operating activities increased by 43.3% to Won 851 billion in 2019 from Won 594 billion in 2018, primarily as a result of our net profit of Won 141 billion in 2019 compared to net loss of Won 8 billion in 2018. Net cash used in investing activities increased by 83.6% to Won 863 billion in 2019 from Won 470 billion in 2018, largely as a result of a 43.0% increase in construction-in-progress to Won 555 billion in 2019 from Won 388 billion in 2018, as well as the cash outflow of Won 156.7 billion relating to our acquisition of, and merger with, Eumseong Natural Gas Power Co., Ltd. in 2019. In 2019, we recorded Won 63 billion in net cash provided by financing activities compared to Won 121 billion of net cash used in financing activities in 2018, largely as a result of our incurring net short-term borrowings of Won 76 billion in 2019 compared to making net repayment of short-term borrowings of Won 79 billion in 2018.

Net cash provided by operating activities increased by 6.3% to Won 594 billion in 2018 from Won 559 billion in 2017, primarily as a result of our net loss of Won 8 billion in 2018 compared to net profit of Won 217 billion in 2017. Net cash used in investing activities decreased by 6.7% to Won 470 billion in 2018 from Won 504 billion in 2017, largely as a result of a decrease in the amount of increase in aggregate investments in joint ventures and associates from Won 36 billion in 2018 from Won 63 billion in 2017. Net cash used in financing activities increased by 80.1% to Won 121 billion in 2018 from Won 67 billion in 2017, largely as a result of our making net repayment of short-term borrowings of Won 79 billion in 2018 compared to incurring net short-term borrowings of Won 123 billion in 2017.

Our liquidity is substantially affected by our construction expenditures and fuel purchases. Our construction in progress increased from Won 73 billion as of December 31, 2017 to Won 118 billion as of December 31, 2018 and further to Won 239 billion as of December 31, 2019. Our fuel costs represented 66.7%, 74.7% and 68.5% of our revenue in 2017, 2018 and 2019, respectively.

Due to the capital-intensive nature of our business as well as significant volatility in fuel prices, from time to time we operate with a working capital deficit, and we may have substantial working capital deficits in the future. In order to meet capital requirements related to working capital deficits, we intend to continue to rely primarily upon net cash provided by operating activities, issuance of debt securities and borrowings from financial institutions. We had a working capital deficit of Won 320 billion as of December 31, 2017, working capital of Won 361 billion as of December 31, 2018 and a working capital deficit of Won 173 billion as of December 31, 2019.

We may face liquidity concerns in the case of significant depreciation of the Won against major foreign currencies over a short period of time. While substantially all of our revenues are denominated in Won, we pay for a substantial portion of our fuel purchases in foreign currencies and a substantial portion of our long-term borrowings and bonds payable is denominated in foreign currencies, and payment of principal and interest thereon is made in foreign currencies. In the past, we have incurred foreign currency debt principally due to the limited availability and the high cost of Won-denominated financing in Korea. However, in light of the increasing sophistication of the Korean capital markets and the recent increase in liquidity in the Korean financial markets, we are targeting a 1:1 ratio between the portion of our debt which is denominated in foreign currencies as compared to the Won. We do, however, intend to continue to raise certain amounts of capital through long-term foreign currency debt for purposes of maintaining diversity in our funding sources as well as paying for overseas investments in foreign currencies. As of December 31, 2019, 52% of our sum of bonds payable (net of discount) and long-term borrowings (including the current portion thereof), before accounting for swap transactions, was denominated in currencies other than Won. See "Risk Factors — The movement of the Won against the U.S. dollar and other currencies may have a material adverse effect on us" and "Risk Factors — Our risk management procedures may not prevent losses in debt and foreign currency positions."

The following summarizes our consolidated contractual obligations as of December 31, 2019, and the effect such obligations are expected to have on liquidity and cash flow in future periods.

	Payments Due by Period				
Contractual Obligations	**Total**	**Less than 1 year**	**1-2 years**	**2-5 years**	**After 5 years**
	(in billions of Won)				
Borrowings and bonds payable	₩3,841	₩ 897	₩662	₩1,576	₩ 706
Trade and other payables	462	462	—	—	—
Lease liabilities	610	59	56	168	327
Financial guarantee liabilities	52	24	—	28	—
Total	₩4,965	₩1,442	₩718	₩1,772	₩1,033

For a description of our other commitments and contingent liabilities, see Note 41 to our audited consolidated financial statements as of and for the years ended December 31, 2018 and 2019 included elsewhere in this Offering Circular.

Market Risks

Our primary market risk exposures are to fluctuations in exchange rates, interest rates and fuel prices.

We are exposed to foreign exchange risk related to foreign currency denominated liabilities. Substantially all of our revenues are denominated in Won. However, as of December 31, 2019, Won 1,728 billion, or 52% of the sum of our bonds payable (net of discount) and long-term borrowings (including the current portion thereof), before accounting for swap transactions, was denominated in U.S. dollars. We have mitigated most of our exposure to exchange rate fluctuations through currency forward contracts and currency swap contracts in respect of all of our U.S. dollar-denominated notes. We are also exposed to foreign exchange risk related to our purchase of fuel, a substantial majority of which come from sources outside Korea at prices quoted and paid for in currencies other than Won, primarily the U.S. dollar. In 2019, a 10% depreciation of the Korean Won, with all other variables held constant, would have decreased our profit before tax by Won 234 billion, with a 10% appreciation having the opposite effect.

We are exposed to interest rate risk. Upward fluctuations in interest rates increase the cost of additional debt and the interest cost of outstanding variable rate borrowings. 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. In 2019, a 1% increase in interest rates of variable rate borrowings, with all other variables held constant, would have decreased our profit before tax by Won 0.3 billion, with a 1% decrease having the opposite effect. See Note 41 to our audited consolidated financial statements as of and for the years ended December 31, 2018 and 2019 included elsewhere in this Offering Circular.

We are also exposed to fluctuations in prices of fuel materials. Fuel costs constituted 66.7%, 74.7% and 68.5% of our revenue in 2017, 2018 and 2019, respectively. In 2019, as a percentage of the generated electricity volume, bituminous coal accounted for 76.4% of our fuel requirements, anthracite coal for 5.1%, LNG for 15.4% and oil for 2.5%. See "Risk Factors — Risks Relating to Our Business — We are dependent on fuel imported from overseas suppliers in currencies other than Won and 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" and "Business — Fuel."

In order to limit our foreign exchange and interest rate exposure, we from time to time enter into derivative financial instruments, for hedging purposes, only to a limited extent due primarily to the limited size of the Korean market for such derivative instruments. Such instruments include currency swap contracts, currency forward contracts, currency option contracts and other derivatives. We generally do not enter into derivative financial instruments in order to hedge market risk resulting from fluctuations in fuel costs. Our policy is to hold or issue derivative financial instruments for hedging purposes only. Our derivative financial instruments are entered into with major financial institutions, thereby minimizing the risk of credit loss. For information relating to fair market values of our derivative financial instruments, see Note 7 to our audited consolidated financial statements as of and for the years ended December 31, 2018 and 2019 included elsewhere in this Offering Circular.

Inflation

The effects of inflation in Korea on our financial condition and results of operations are reflected primarily in construction costs as well as in labor expenses. The general rate of inflation in Korea was 1.9% in 2017, 1.5% in 2018 and 0.5% in 2019 according to Statistics Korea. Inflation in Korea has not had a significant impact on our results of operations. It is possible that inflation in the future may have an adverse effect on our financial condition or results of operations.

BUSINESS

Overview

We were established on April 2, 2001 as one of six Generation Subsidiaries of KEPCO. The Generation Subsidiaries generate over 70% of the electricity in Korea. As of December 31, 2019, we had a domestic generation capacity of 11,193 megawatts, or approximately 8.9% of the total electricity generation capacity in Korea (excluding plants generating electricity primarily for private or emergency use). In 2017, 2018 and 2019, we sold 48,307 GWh, 50,697 GWh and 48,149 GWh, 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, particularly with respect to the generation of renewable energy.

Based on our "Enrich the World with Clean Energy" vision, we aspire to strengthen our competitiveness by becoming a solution provider to the various challenges facing the electricity generation industry. By 2030, we aim to increase production capacity of renewable energy in our production mix to 25%. We will operate with sustainability management as a key goal and will continue to strengthen our core businesses while broadening the scope of our business into new growth areas.

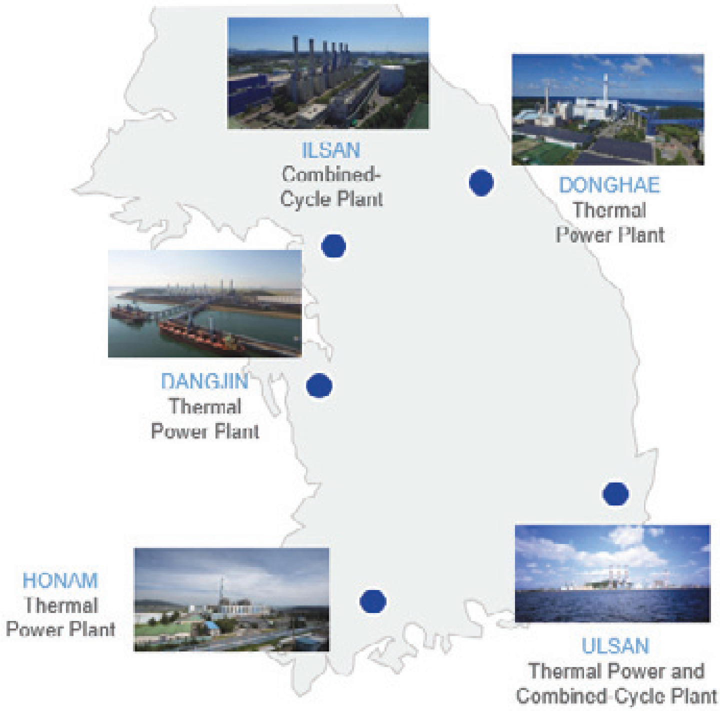
As of December 31, 2019, we had an aggregate domestic installed generation capacity of 11,193 megawatts, of which 6,940 megawatts, 1,200 megawatts, 2,972 megawatts and 81 megawatts were attributable to our coal-fired units, oil-fired units, LNG-combined cycle units and renewable energy units, respectively. We generated revenue of Won 4,670 billion, Won 4,973 billion and Won 4,896 billion in 2017, 2018 and 2019, respectively, and we recorded a profit of Won 217 billion in 2017, a loss of Won 8 billion in 2018 and a profit of Won 141 billion in 2017, 2018 and 2019, respectively.

We are a corporation incorporated with limited liability under the laws of Korea. Our registered office is located at 395, Jongga-ro, Jung-gu, Ulsan 44543, Korea. Our website address is *www.ewp.co.kr.*

Power Generation

As of December 31, 2019, we owned and operated 14 coal-fired thermal generation units at our power plant complexes located in Dangjin, Honam and Donghae, three oil-fired thermal generation units at our power plant complex located in Ulsan and 20 LNG-combined cycle units at our power plant complexes located in Ilsan and Ulsan. We also have three biomass generation units (which are currently undergoing a sale process) and two LNG-fired thermal generation units in the United States through a wholly-owned subsidiary. See "—Overseas Activities." Our thermal units produce electricity using steam turbine generators and include units fired by coal or oil. 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 a number of photovoltaic, biomass thermal, mini-hydropower, wind power and fuel cell units. Our photovoltaic units utilize solar cells to directly convert sunlight into electricity. Our biomass thermal units utilize waste wood, also known as wood chips, as fuel. Our wind power unit converts 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 fuel cell units generate electricity through a chemical reaction of LNG. The following map shows the geographic locations of our power plant complexes as of December 31, 2019 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 December 31, 2019:

	Weighted Average Age of Units	Installed Capacity[1]	Average Capacity Factor[2]	Average Fuel Cost
	(years)	(megawatts)	(%)	(Won/kWh)
Thermal:				
Bituminous:[3]				
Dangjin units no. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10	12.0	6,040	67.1	56.94
Honam units no. 1, 2[4]	46.7	500	77.2	72.98
Anthracite:[5]				
Donghae unit no. 1, 2	20.8	400	74.0	75.10
Oil:				
Ulsan units no. 4, 5, 6[6]	39.4	1,200	11.9	167.86
Total thermal	18.6	8,140	59.9	62.42
Combined cycle:[7]				
LNG:				
Ilsan gas turbine units no. 1, 2, 3, 4, 5, 6; steam turbine units no. 1, 2	25.8	900	16.0	150.96
Ulsan gas turbine units no. 1, 2, 3, 4, 5, 6, 7, 8; steam turbine units no. 1, 2, 3, 4	16.1	2,072	36.2	97.10
Total combined cycle	19.0	2,972	30.0	105.84
Renewable:				
Photovoltaic units	3.9	24	12.4	—
Biomass units	6.4	30	77.4	61.33[8]
Mini-hydropower units	8.1	8	33.4	—
Wind power unit	7.1	3	9.5	—
LNG fuel cell units	5.9	16	65.5	147.45
Total renewable	5.8	81	49.2	75.12
Total	18.6	11,193	51.9	69.40

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 chips.

(4) Honam units no. 1 and 2 are scheduled to be decommissioned in January 2021.

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

(6) Ulsan units no. 4, 5 and 6 are scheduled to be decommissioned in January 2022.

(7) Combined cycle units are fueled by LNG.

(8) Biomass units are fueled by wood chips.

As of December 31, 2019, we had an aggregate domestic installed capacity of 11,193 megawatts. In 2017, 2018 and 2019, the average capacity factor of our generation units was 56.9%, 54.6% and 51.9%, respectively. Our capacity factor decreased in 2019 primarily due to a decrease in demand for electricity, as well as an increase in the use of nuclear power generation, in Korea compared to 2018. In 2017, 2018 and 2019, we sold 48,307 GWh, 50,697 GWh and 48,149 GWh, respectively, to KEPCO through the KPX.

The useful life of each type of units without substantial refurbishment is approximately 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 24 to 48 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 7 to 55 days depending on the unit. In 2017, 2018 and 2019, our repair and maintenance expenses were Won 162 billion, Won 166 billion and Won 163 billion, respectively. Our forced (unplanned) outage factor, which is a percentage of total forced (unplanned) outage time over total available operating time, was 0.04%, 0.03% and 0.01% in 2017, 2018 and 2019, respectively. We have received ISO 22301 and 9001 certifications for our business continuity and quality management systems.

Our productivity increased in 2018 but decreased in 2019, while production costs have slightly increased in both 2018 and 2019. In 2017, 2018 and 2019, our revenue per employee on a separate basis was head was Won 1,918 million, Won 1,972 million and Won 1,893 million, respectively, while our production costs were Won 96.64/kWh, Won 98.87/kWh and Won 101.36/kWh, respectively.

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 Dangjin, Honam and Donghae complexes operate at base load, while our oil-fired unit and LNG combined cycle units in our Ulsan and Ilsan complexes 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,		
	2017	2018	2019
		(megawatts)	
Installed capacity	11,183	11,194	11,193
Peak-load[(1)]	9,001	8,949	9,048
Average load[(2)]	5,835	6,104	5,810

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 66.7%, 74.7% and 68.5% of our revenue, and 75.5%, 77.5% and 72.6% of our cost of sales, in 2017, 2018 and 2019, respectively. The table below sets forth the total fuel costs, which represent the sum of raw materials in use and power costs purchased of our costs of sales, for the periods indicated on a separate basis.

	For the year ended December 31,					
	2017		2018		2019	
	(billions of Won)	(%)	(billions of Won)	(%)	(billions of Won)	(%)
Bituminous coal	1,943	62.8	2,086	56.4	2,034	60.8
Anthracite coal	57	1.8	114	3.1	154	4.6
Oil[(1)]	150	4.8	204	5.5	108	3.2
LNG[(2)]	718	23.2	1,044	28.2	817	24.4
Others[(3)]	228	7.4	249	6.7	232	6.9
Total fuel cost[(4)]	3,097	100.0	3,697	100.0	3,345	100.0

Notes:

(1) Represents bunker-C oil used for our oil-fired thermal units. Excludes diesel oil to initially start up our thermal, combined cycle and wind power generation units.

(2) LNG is used as fuel for our combined cycle units and fuel cell units.

(3) Represents (i) cost of storing and managing fuel stocks at our units, (ii) fuel for our renewable units (excluding LNG for our fuel cell units), (iii) fuel to initially start up our units (primarily wood chips and diesel oil), (iv) bio heavy oil mixed into the fuel for our oil-fired units and (v) other miscellaneous fuel related costs. Fuel storage and management costs amounted to Won 69.2 billion, Won 71.1 billion and Won 84.9 billion in 2017, 2018 and 2019. The cost of wood chips amounted to Won 34.3 billion, Won 36.2 billion and Won 40.9 billion in 2017, 2018 and 2019, respectively. The cost of diesel oil amounted to Won 9.9 billion, Won 12.3 billion and Won 10.3 billion in 2017, 2018 and 2019, respectively. The cost of bio heavy oil amounted to Won 89 billion, Won 102 billion and Won 70 billion in 2017, 2018 and 2019, respectively.

(4) On a consolidated basis, our total fuel costs were Won 3,113 billion, Won 3,713 billion and Won 3,353 billion in 2017, 2018 and 2019, respectively.

In order to ensure stable supplies of fuel, we enter into long-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 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 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

Our coal-fired generation units represent over half of our installed generation capacity. As of December 31, 2019, 54.0% of our total installed generation capacity was represented by units burning bituminous coal and 0.4% was represented by units burning anthracite coal.

Bituminous coal

In 2017, 2018 and 2019, on a separate basis, we purchased 16.5 million tons, 15.1 million tons and 15.9 million tons of bituminous coal, amounting to Won 1,943 billion, Won 2,086 billion and Won 2,034 billion in terms of our recognized fuel cost, respectively. Substantially all of our bituminous coal requirements are imported from various suppliers located in Australia, Indonesia, Russia, South Africa, Colombia, Canada and the United States under long-term or spot contracts. Approximately 92.6%, 88.4% and 82.9% of our bituminous coal requirements were purchased under long-term contracts in 2017, 2018 and 2019, 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 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 by up to approximately 100%. 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 120,488, Won 133,236 and Won 136,237 in 2017, 2018 and 2019, 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 3 to 45 days. Currently, we maintain a reserve of bituminous coal of approximately 20 days.

Anthracite coal

In 2017, 2018 and 2019, on a separate basis, we purchased 0.4 million tons, 0.9 million tons and 1.2 million tons of anthracite coal, amounting to Won 57 billion, Won 114 billion and Won 154 billion in terms of our recognized fuel cost, respectively. Our anthracite coal requirements are sourced from six suppliers located in Russia, Australia and South Africa and two domestic suppliers, including the Korea Coal Association. In each of 2017, 2018 and 2019, almost all of our anthracite coal requirements were purchased from overseas suppliers on the spot market, with the remaining requirements being purchased from domestic suppliers pursuant to long-term supply contracts.

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 125,786, Won 129,948 and Won 136,996 in 2017, 2018 and 2019, respectively. Currently, we maintain a reserve of anthracite coal of approximately 28 days.

Oil

We purchased approximately 0.4 million kiloliters (all of which were the high-sulfur content type), 0.5 million kiloliters (of which 0.1 million kiloliters were the low-sulfur type) and 0.2 million kiloliters (substantially all of which were the low-sulfur content type) of bunker-C fuel oil in 2017, 2018 and 2019 on a separate basis, amounting to Won 150 billion, Won 204 billion and Won 108 billion in terms of our recognized fuel cost, respectively. Since late 2018, we have substantially replaced the primary fuel source for our oil-fired thermal units from the previous source of bunker-C fuel oil with high sulfur content of 2.5% to bunker-C fuel oil with low sulfur content of 0.3%, in order to lessen the environmental impact of our oil-fired generation units.

We purchase oil through a competitive open bidding process with other bidders, including Korean refiners, on the spot market. Purchase prices, including taxes and other expenses, of oil are based on the spot market in Singapore. The average cost per liter of low-sulfur bunker-C fuel oil was Won 612 and Won 581 in 2018 and 2019, respectively, and the average cost per liter of high-sulfur fuel oil was Won 411 and Won 449 in 2017 and 2018, respectively. We estimate that oil purchased from oil refineries in Korea and Singapore takes approximately two days and 10 days, respectively, to be delivered to our power plant complexes. Currently, we maintain a reserve of bunker-C fuel oil of approximately 21 days.

LNG

In 2017, 2018 and 2019, on a separate basis, we purchased approximately 1.0 million tons, 1.4 million tons and 1.1 million tons of LNG, amounting to Won 718 billion, Won 1,044 billion and Won 817 billion in terms of our recognized fuel cost, respectively.

We purchase all of our domestic LNG requirements from KOGAS, a Korean corporation of which KEPCO owns 20.47%, under a 20-year LNG supply contract (the "LNG Contract") with KOGAS, which is scheduled to expire in 2026. However, we may consider direct imports of LNG in the future, including in connection with the operation of the LNG-fired generation unit to be constructed in Eumseong. Under the terms of the LNG Contract, our purchase quantity is determined through negotiations with KOGAS, subject to 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. To date, all our purchases have been within such range. The purchase price for LNG is determined monthly, subject to approval by the MOTIE. KOGAS imports LNG primarily from Indonesia and Malaysia and supplies LNG to us, other Generation Subsidiaries and other Korean gas companies.

The average cost per ton of LNG by us was approximately Won 664,655, Won 770,693 and Won 722,158 in 2017, 2018 and 2019, 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 the years ended December 31, 2017, 2018 and 2019 are as follows:

	For the year ended December 31, 2017				
	Volume[1][2]	Percentage of Total Volume	Sales[1]	Percentage of Total Sales	Unit Price
	(Gigawatt hours)	(%)	(in billions of Won)	(%)	(Won/kWh)
Generation Companies:					
KHNP	146,221	28.1	9,113	21.0	62.33
KOSEP	66,640	12.8	5,183	12.0	77.77
KOMIPO	50,254	9.7	4,410	10.2	87.75
KOWEPO	45,464	8.7	4,176	9.6	91.85
KOSPO	47,659	9.2	4,347	10.0	91.22
EWP	48,307	9.3	4,452	10.3	92.15
Others[3]	115,684	22.2	11,662	26.9	100.81
Total	520,230	100.0	43,345	100.0	83.31
Energy Sources:					
Nuclear	141,098	27.1	8,573	19.8	60.76
Bituminous coal	224,834	43.2	17,755	41.0	78.97
Anthracite coal	4,014	0.8	385	0.9	95.89
Oil	5,735	1.1	949	2.2	165.39
LNG-combined cycle	117,540	22.6	13,163	30.4	111.99
Hydro	2,255	0.4	219	0.5	96.94
Pumped storage	4,171	0.8	450	1.0	107.96
Renewables[1]	20,028	3.8	1,803	4.2	90.03
Others	555	0.1	46	0.1	81.98
Total	520,230	100.0	43,345	100.0	83.31

Source: KEPCO.

Notes:

(1) Excludes sale of RECs by generation companies.

(2) Includes volume from CES projects.

(3) Includes, among others, POSCO, OCI Company Ltd., LG Petrochemical Co., Ltd. and Korea Petrochemical IND. Co., Ltd.

	For the year ended December 31, 2018				
	Volume[1][2]	Percentage of Total Volume	Sales[1]	Percentage of Total Sales	Unit Price
	(Gigawatt hours)	(%)	(in billions of Won)	(%)	(Won/kWh)
Generation Companies:					
KHNP	131,931	24.6	8,503	17.5	64.45
KOSEP	64,128	11.9	5,441	11.2	84.84
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
Others[3]	139,216	25.9	15,470	31.8	111.12
Total	536,288	100.0	48,631	100.0	90.68
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	106.45
Oil	6,834	1.3	1,185	2.4	173.37
LNG-combined cycle	144,039	26.9	17,485	36.0	121.39
Hydro	2,763	0.5	302	0.6	109.34
Pumped storage	3,892	0.7	490	1.0	125.80
Renewables[1]	22,165	4.1	2,161	4.4	97.50
Others	709	0.1	68	0.1	96.19
Total	536,288	100.0	48,631	100.0	90.68

Source: KEPCO.

Notes:

(1) Excludes sale of RECs by generation companies.

(2) Includes volume from CES projects.

(3) Includes, among others, POSCO, OCI Company Ltd., LG Petrochemical Co., Ltd. and Korea Petrochemical IND. Co., Ltd.

	For the year ended December 31, 2019				
	Volume[(1)(2)]	Percentage of Total Volume	Sales[(1)]	Percentage of Total Sales	Unit Price
	(Gigawatt hours)	(%)	(in billions of Won)	(%)	(Won/kWh)
Generation Companies:					
KHNP	142,961	27.0	8,609	18.1	60.22
KOSEP	60,367	11.4	5,355	11.2	88.70
KOMIPO	43,347	8.2	4,436	9.3	102.33
KOWEPO	44,183	8.4	4,354	9.1	98.55
KOSPO	48,936	9.2	4,987	10.5	101.90
EWP	48,149	9.1	4,659	9.8	96.75
Others[(3)]	141,182	26.7	15,291	32.1	108.31
Total	529,125	100.0	47,690	100.0	90.13
Energy Sources:					
Nuclear	138,619	26.2	8,095	17.0	58.40
Bituminous coal	215,033	40.6	18,810	39.4	87.47
Anthracite coal	2,331	0.4	240	0.5	102.85
Oil	5,105	1.0	1,149	2.4	225.11
LNG combined-cycle	138,669	26.2	16,520	34.6	119.13
Hydro	2,193	0.4	237	0.5	107.83
Pumped storage	3,445	0.7	419	0.9	121.61
Renewables[(1)]	23,222	4.4	2,177	4.6	93.73
Others	509	0.1	45	0.1	88.80
Total	529,125	100.0	47,690	100.0	90.13

Source: KEPCO.

Notes:

(1) Excludes sale of RECs by generation companies.

(2) Includes volume from CES projects.

(3) Includes, among others, POSCO, OCI Company Ltd., LG Petrochemical Co., Ltd. and Korea Petrochemical IND. Co., Ltd.

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 2017, 2018 and 2019 on a separate basis based on our internal data.

	For the year ended December 31, 2017				
	Volume[(1)]	Percentage of Total Volume	Sales to KEPCO[(2)]	Percentage of Total Sales	Unit Price
	(Gigawatt hours)	(%)	(in billions of Won)	(%)	(Won/kwh)
Energy Sources:					
Bituminous coal	38,649	75.6	3,073	69.1	79.51
Anthracite coal	2,540	5.0	213	4.8	83.86
Oil	2,086	4.1	259	5.8	124.16
LNG	7,527	14.7	878	19.8	116.65
Renewable	315	0.6	23	0.5	73.02
Total	51,117	100.0	4,446	100.0	86.98
Load:					
Base load	38,649	75.6	3,073	69.1	85.05
Non-base load	12,468	24.4	1,373	30.9	93.04
Total	51,117	100.0	4,446	100.0	86.98

Notes:

(1) This information is based on the volume of electricity generated by our generation units, which is greater than the volume of electricity actually sold to, and recorded by, KEPCO. Such difference is primarily due to our internal use of some of the electricity we generate to power our generation equipment and facilities.

(2) The information regarding sales in the table above differs from the amount of our electricity sales recorded by KEPCO due to the exclusion of our sale of RECs, which is recognized and recorded at various points in time in the previous year that are not always aligned with the KEPCO system.

	For the year ended December 31, 2018				
	Volume(1)	Percentage of Total Volume	Sales to KEPCO(2)	Percentage of Total Sales	Unit Price
	(Gigawatt hours)	(%)	(in billions of Won)	(%)	(Won/kwh)
Energy Sources:					
Bituminous coal	39,034	73.0	3,007	62.9	82.86
Anthracite coal	2,193	4.1	208	4.4	113.93
Oil	2,480	4.6	336	7.0	171.93
LNG	9,446	17.7	1,198	25.1	137.88
Renewable	322	0.6	28	0.6	208.23
Total	53,475	100.0	4,777	100.0	98.87
Load:					
Base load	39,034	73.0	3,007	62.9	82.86
Non-base load	14,441	27.0	1,770	37.1	141.67
Total	53,475	100.0	4,777	100.0	113.93

Notes:

(1) This information is based on the volume of electricity generated by our generation units, which is greater than the volume of electricity actually sold to, and recorded by, KEPCO. Such difference is primarily due to our internal use of some of the electricity we generate to power our generation equipment and facilities.

(2) The information regarding sales in the table above differs from the amount of our electricity sales recorded by KEPCO due to the exclusion of our sale of RECs, which is recognized and recorded at various points in time in the previous year that are not always aligned with the KEPCO system.

	For the year ended December 31, 2019				
	Volume(1)	Percentage of Total Volume	Sales to KEPCO(2)	Percentage of Total Sales	Unit Price
	(Gigawatt hours)	(%)	(in billions of Won)	(%)	(Won/kwh)
Energy Sources:					
Bituminous coal	38,864	76.4	3,181	68.3	85.42
Anthracite coal	2,592	5.1	237	5.1	115.97
Oil	1,247	2.5	244	5.2	253.94
LNG	7,840	15.4	968	20.8	142.39
Renewable	348	0.7	28	0.6	290.73
Total	50,892	100.0	4,658	100.0	101.36
Load:					
Base load	38,864	76.4	3,181	68.3	85.42
Non-base load	12,028	23.6	1,477	31.7	152.41
Total	50,892	100.0	4,658	100.0	101.36

Notes:

(1) This information is based on the volume of electricity generated by our generation units, which is greater than the volume of electricity actually sold to, and recorded by, KEPCO. Such difference is primarily due to our internal use of some of the electricity we generate to power our generation equipment and facilities.

(2) The information regarding sales in the table above differs from the amount of our electricity sales recorded by KEPCO due to the exclusion of our sale of RECs, which is recognized and recorded at various points in time in the previous year that are not always aligned with the KEPCO system.

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.

	For the year ended December 31,				
	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,					% of Total
	2015	2016	2017	2018	2019	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% in 2019 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 is 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. 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.

In 2011, we acquired a minority equity interest in the former Dangjin Eco Power Co., Ltd., which was originally established to construct a coal-fired power plant complex in Dangjin. Pursuant to the Eighth Basic Plan, the Dangjin Eco Power project was converted to the construction of a 1,122 megawatt LNG-f generation unit in Eumseong and a 1,122 megawatt LNG- and LPG-combined generation unit in Ulsan. As a result, in August 2019, the former Dangjin Eco Power Co., Ltd. was split up into three separate companies: (i) Dangjin Eco Power Co., Ltd., which was newly established but has the same name as its predecessor and is constructing a photovoltaic generation and storage complex in Dangjin with initial target completion by June 2020, (ii) Eumseong Natural Gas Power Co., Ltd., which plans to construct the above-mentioned 1,122 megawatt LNG-fired generation unit in Eumseong with target completion by the end of 2024, and (iii) Ulsan GPS Co., Ltd., which plans to construct the above-mentioned 1,122 megawatt LNG- and LPG-fired generation unit in Ulsan. In the fourth quarter of 2019, we acquired all of the equity interests held by our joint venture partners in Eumseong Natural Gas Power Co., Ltd. and merged it into us, and divested ourselves of all of the equity interests we held in Ulsan GPS Co., Ltd. We also currently maintain a 34% equity interest in the new Dangjin Eco Power Co., Ltd. following such split-up. See "Business — Independent Power Producer and Community Energy System Projects."

The Government commenced preparations for the Ninth Basic Plan in March 2019 and aims to issue the finalized plan within 2020. Subject to the contents of the Ninth Basic Plan, we may pursue the construction of additional generation facilities to further expand our generation capacities or replace our older facilities, including our coal-fired Honam units 1 and 2 (which are scheduled to be decommissioned in January 2021) and our oil-fired Ulsan units 4, 5, 6 (which are scheduled to be decommissioned in January 2022), in each case in accordance with the objectives of such plan.

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 using LNG and renewable energy sources.

Our capital expenditures, which represent the sum of (i) purchases of land, buildings, structures, machinery, vehicles, other intangible assets and other property, plant and equipment, (ii) increases in construction-in-progress and investments in joint ventures and associates and (iii) consideration paid in business combination in our statements of cash flows, plus purchases of certain intangible assets such as greenhouse gas emission allowance units, were Won 504 billion, Won 482 billion and Won 1,001 billion in 2017, 2018, 2019, respectively. We are planning to increase our investments in renewable energy generation in order to meet our annual RPS obligations. We are also planning to invest in IPP and CES projects.

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 and 2022, 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	2021	2022
	(in billions of Won)		
Construction of new generation facilities	₩ 33	₩ 301	₩ 478
Maintenance of existing generation facilities	346	483	369
Investments in renewable energy projects	330	220	137
Overseas investments	12	18	52
Others[1]	288	273	364
Total	₩1,010	₩1,295	₩1,401

Note:

(1) Miscellaneous expenditures for acquisition and maintenance of non-generation and ancillary facilities and intangible assets, including our purchases of greenhouse gas emission units.

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 approximately 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.

Independent Power Producer 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.

GS Donghae Electric Power Co., Ltd. is currently operating two 595 megawatt coal-fired units, along with photovoltaic and mini-hydro power units, in Donghae-shi, Kangwon-do, Korea. The first unit came into operation in March 2017 and the second unit came into operation in August 2017. As of December 31, 2019, we held a 34% equity interest in GS Donghae Electric Power Co., Ltd.

In 2011, we acquired a minority equity interest in the former Dangjin Eco Power Co., Ltd., which was originally established to construct a coal-fired power plant complex in Dangjin. Pursuant to the Eighth Basic Plan, the Dangjin Eco Power project was converted to the construction of a 1,122 megawatt LNG-fired generation unit in Eumseong and a 1,122 megawatt LNG- and LPG-combined generation unit in Ulsan. As a result, in August 2019, the former Dangjin Eco Power Co., Ltd. was split up into three separate companies: (i) Dangjin Eco Power Co., Ltd., which was newly established but has the same name as its predecessor and is constructing a photovoltaic generation and storage complex in Dangjin with initial target completion by June 2020, (ii) Eumseong Natural Gas Power Co., Ltd., which plans to construct the above-mentioned 1,122 megawatt LNG-fired generation unit in Eumseong with target completion by the end of 2024, and (iii) Ulsan GPS Co., Ltd., which plans to construct the above-mentioned 1,122 megawatt LNG- and LPG-fired generation unit in Ulsan. In the fourth quarter of 2019, we acquired all of the equity interests held by our joint venture partners in Eumseong Natural Gas Power Co., Ltd. and merged it into us, and divested ourselves of all of the equity interests we held in Ulsan GPS Co., Ltd. We also currently maintain a 34% equity interest in the new Dangjin Eco Power Co., Ltd. following such split-up.

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 CES projects in Dangjin and Chuncheon through IPPs located in such areas. We have a 29% equity interest in Seokmoon Energy, which began supplying heat and electricity to the Seokmoon industrial complex and surrounding residential areas in Dangjin starting from January 2017. In 2019, Seokmoon Energy generated 232 GWh of electricity and sales of Won 45 billion. We also have a 29.9% equity interest in Chuncheon Energy, which commenced operations in June 2017 and provides heat and electricity to the industrial complex and surrounding residential areas in the Chuncheon area. In 2019, Chuncheon Energy generated 2,842 GWh of electricity and sales of Won 313 billion.

In November 2019, we established a new consolidated subsidiary, Paju Eco Energy Co., Ltd., which will engage in power generation using fuel cells for agricultural communities with commercial operation target by the end of 2020.

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 material overseas projects that we were pursuing as of December 31, 2019.

Project/ Investment	Country	Project Period	Project Description	Invested Capital to December 31, 2019	Equity Interest as of December 31, 2019
JPS	Jamaica	2011~	Oil/LNG-fired	US$287 million	40.0%
SJPC	Jamaica	2017~	IPP LNG-fired	US$18.4 million	20.0%
EWPRC	United States	2010~	IPP biomass/LNG-fired	US$95 million	100.0%
DE Energia	Chile	2019~2045	IPP photovoltaic	US$7.1 million	49.0%
PT Tanjung	Indonesia	2012~2044	IPP coal-fired	US$23.8 million	35.0%
PT Bayan	Indonesia	2016~	Resource development	₩80.5 billion	4.0%

IPP Projects

- Jamaica Public Service Co., Ltd. ("JPS") is an integrated utility firm with oil and LNG-fired power plants and the sole distributor of electricity in Jamaica. We provide operation and maintenance services for JPS. As of December 31, 2019, we held a 40.0% equity interest in JPS through EWP (Barbados) 1 SRL, our wholly owned subsidiary.

- South Jamaica Power Company Limited ("SJPC") owns an LNG-fired power plant with an installed capacity of 190 megawatts in Old Harbour Bay, Jamaica, which commenced its operations in December 2019. As of December 31, 2019, we held a 20.0% equity interest in SJPC.

- EWP Renewable Corporation ("EWPRC"), our wholly owned subsidiary in the United States, owns and operates three biomass generation units (which are currently undergoing a sale process) in New Hampshire and California with a combined installed capacity of 58 megawatts. EWPRC also operates two LNG-fired generation units in California with a combined installed capacity of 94 megawatts.

- PT Tanjung Power Indonesia ("PT Tanjung") owns the Kalsel-1 coal-fired power plant in Tanjung, Indonesia with an installed capacity of 200 megawatts. The Kalsel-1 power plant, to which we provide operation and maintenance service, commenced commercial operations in December 2019. As of December 31, 2019, we held a 35.0% equity interest in PT. Tanjung.

- DE Energia SpA is developing a photovoltaic generation complex of 12 generation units with an expected aggregate installed capacity of 104 megawatts in Chile. The photovoltaic generation complex, which will be operated by DE Energia SpA for 25 years upon completion, is expected to commence operations in September 2020. As of December 31, 2019, we held a 49.0% equity interest in DE Energia SpA.

- Guam Ukudu Power LLC, which is a joint venture established by us and KEPCO in January 2020 with ownership interest of 40% and 60%, respectively, is planning to construct a new LNG-fired power plant in Guam. The construction for such unit, which will be operated by Guam Ukudu Power LLC for 25 years upon completion, is expected to commence in August 2021 and is targeted for completion by the end of 2023.

Resource Development Projects

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

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, sulfur dioxides, nitrogen oxides 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 in 18 units at our Dangjin, Ulsan, Honam and Donghae power plant complexes to reduce sulfur oxide emissions. We have installed Electrostatic Precipitation systems in 18 units at our Dangjin, Ulsan, Honam and Donghae power plant complexes to reduce dust emissions and minimize the unintended dispersion of powderized coal. We have also installed Selective Catalytic Reduction systems, which reduces NOx emissions, in 24 units at our power plant complexes at our Dangjin, Ulsan, Honam, Donghae and Ilsan power plant complexes. In addition, we have installed DeNOx systems, such as the Low NOx Burner and Over Fired Air systems, in 24 units at our Dangjin, Ulsan, Honam, Donghae and Ilsan power plant complexes. 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 amount for facilities related to compliance with environmental regulation is Won 467 billion in aggregate for 2020, 2021 and 2022.

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 December 31, 2019, 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 2017, 2018 and 2019, 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.

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 31 billion, Won 30 billion and Won 38 billion, constituting approximately 0.7%, 0.6% and 0.8% of our revenue in 2017, 2018 and 2019, respectively. In 2020, we expect to incur a higher amount of R&D expenses than in 2019 and plan to undertake R&D projects involving the improvement of technologies relating to power generation and environmental compliance as well as the utilization of advanced technologies (such as artificial intelligence, robotics and the Internet-of-Things) comprising the so-called "fourth industrial revolution," among others.

Patents, Utility and Trademark

As of December 31, 2019, we owned 189 patents and six utility model rights, including co-owned patents and utility model rights, and had 250 patent applications and six 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 maintain general commercial insurance policies with an aggregate comprehensive risk coverage of Won 15,022 billion with respect to our facilities and an aggregate machinery damage coverage of Won 4,064 billion with respect to our machinery. We also maintain marine cargo insurance in respect of imported fuel and procurement with insurance coverage of Won 1,917 billion, as well as general vehicle insurance, directors' and officers' liability insurance and environmental 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 December 31, 2019, the net book value of our property, plant and equipment was Won 7,084 billion, including right-of-use assets of Won 671 billion relating to properties that we lease from third parties, which were recognized as a result of the application of K-IFRS 1116 starting in 2019.

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 Ulsan in 2014.

Legal and Regulatory Proceedings

We are subject to the risk of legal claims and regulatory actions in the ordinary course of our business, 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 December 31, 2019, we have been named as a defendant in eight domestic lawsuits for claimed damages of approximately Won 25 billion in the aggregate and one foreign lawsuit in the United States for claimed damages of US$125 million.

In April 2017, Hanjin Heavy Industries filed an arbitration claim of Won 10 billion against us seeking compensation for increased costs due to delays allegedly caused by us in connection with Hanjin Heavy Industries' construction of a new coal storage and handling facility at our Dangjin units 9 and 10. The case is currently pending before Korea Commercial Arbitration Board.

In July 2017, the bankruptcy administrator for Keangnam Enterprises filed a Won 11 billion claim against us seeking compensation for increased costs due to damages allegedly caused by us in connection with the installation of certain new boilers by Keangnam Enterprises in our Dangjin power generation complex. The case is currently pending before the Seoul Northern District Court.

In August 2018, two insurance companies, which had previously reimbursed certain insurance claims made by the Guam Power Authority in connection with the explosion of the Cabras 4 generation facility (which was operated by us at the time of the accident) in Guam in 2015, filed a US$125 million damages claim under their right of subrogation on against us and other defendants named therein, alleging gross negligence and breach of contract. The case is currently pending before the Guam Superior court.

We are also subject to three class action lawsuits, two of which were filed in 2019 and one in January 2020, involving hundreds of our current and former employees with an aggregate claim amount of Won 2.3 billion (which includes amounts claimed against our co-defendants in one of the lawsuits) 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." As of December 31, 2019, we have recognized provisions of Won 3.2 billion to cover any potential future payments of additional retirement benefits to the plaintiffs in the pending cases as of such date as well as other current and former employees who may have similar claims.

The outcome of these lawsuits cannot presently be determined. We cannot presently assure you that there will not be further lawsuits in relation to aforementioned matters or that the amount of provisions that we have set aside will be sufficient to cover any compensation or damages arising from the present or future litigation. However, 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 December 31, 2019, we had 2,565 regular employees in Korea, which include full-time and part-time employees, and 48 temporary employees. The following table sets forth the number of our regular employees at our various work locations as of December 31, 2019.

Location	Number of Regular Employees
Head office in Ulsan	599
Dangjin Thermal Power Plant Complex	883
Honam Thermal Power Plant Complex	183
Donghae Thermal Power Plant Complex	225
Ulsan Thermal Power and Combined Cycle Power Plant Complex	485
Ilsan Combined Cycle Power Plant Complex	190
Total	2,565

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 3.5% in 2017, 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 3.1% 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 December 31, 2019, approximately 82.1% of our employees were members of the Korea East-West Power Labor Union, which membership comprises entirely of our employees, and approximately 14.5% 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 East-West Power Labor Union. The current collective bargaining agreement with the Korea East-West Power Labor Union was entered into in May 2019. Pursuant to applicable Korean law, an Employee-Employer Cooperation Committee, which is currently composed of eight representatives of management and eight 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 December 31, 2019, we had a 7.1% ownership of KPX, which represents our capital contribution to KPX in the amount 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 43 to our audited annual financial statements as of and for the years ended December 31, 2018 and 2017 and Note 42 to our audited annual financial statements as of and for the years ended December 31, 2019 and 2018.

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 31.0 billion as of December 31, 2019.

Share Ownership

The following table sets forth certain information relating to our shareholder as of December 31, 2019 and as of the date hereof:

Title of Class	Identity of Person or Group	Shares Owned	Percentage
Common stock………………	Korea Electric Power Corporation	57,932,221	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 the MOEF. The non-standing directors are appointed by the Minister of the 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 with the Minister of MOTIE set forth in article 35-3 of our articles of incorporation must be re-executed, but the discussion of the officer recommendation committee on the terms and conditions of such management contract is not required.

The presence at board meetings of a majority of the board of directors constitutes a voting quorum and resolutions can be passed by a majority of the board of directors. The names, titles, and outside occupations, if any, of our current board of directors and the respective dates on which they took office are set forth below.

Name	Year of Birth	Title	Outside Occupation	Position Held Since
Park, Il Joon	1964	President and CEO	—	February 2018
Sung, Sik-Gyung	1957	Standing Director and Member of Audit Committee	—	June 2018
Kwon, O Chul	1959	Standing Director	—	May 2018
Pyo, Yung Joon.......	1960	Standing Director	—	May 2018
Yang, Seung Joo	1960	Non-Standing Director	Former Director of Employment Equality, Ministry of Employment and Labor	November 2018
Park, Kyung Ho	1961	Non-Standing Director and Member of Audit Committee	Director, Institute for Climate Change Action	March 2018
Lee, Kyung Won	1973	Non-Standing Director	Former Head, Ulsan Branch of Chub Life Insurance Korea	March 2018
Kim, Hong Cheol	1972	Non-Standing Director and Member of Audit Committee	Managing Partner, Tax-Law Law Firm	November 2018
Bae, Young Il	1957	Non-Standing Director	Former Executive Director, Business Department of GS E&R Corp.	September 2019

Il Joon Park has served as our president and CEO since February 2018. Mr. Park received a bachelor's degree in economics from Seoul National University and a master's degree in economics from the University of Colorado. Prior to joining us, he served as head of the Office of Planning and Coordination at the MOTIE.

Sik-Gyung Sung has served as our standing director and a member of our audit committee since June 2018. Mr. Sung received a bachelor's degree in English from Pusan National University. Prior to joining us, he was a policy research fellow at the National Assembly.

O Chul Kwon has served as our standing director May 2018. Mr. Kwon received a bachelor's degree in mechanical engineering from Yeungnam University. He is currently the head of our Technology Management Division and was previously the director of the Shin Dangjin Thermal Power Plant Construction Division.

Yung Joon Pyo has served as our standing director since May 2018. Mr. Pyo received a bachelor's degree in business from Sungkyunkwan University and a master's degree in economics from the University of Helsinki. He is currently the head of our Operation Headquarters Division and was previously the director of our Strategy and Management Division.

Seung Joo Yang has been our non-standing director since November 2018. Ms. Yang received a bachelor's degree in education from Ewha Women's University and a doctoral degree in agricultural economics from Korea University. She is also the former Director of Employment Equality at the Ministry of Employment and Labor.

Kyung Ho Park has been our non-standing director since March 2018 and a member of our audit committee since November 2018. Mr. Park attended Hankuk University of Foreign Studies for Arabic studies. He is currently also the director of Institute for Climate Change Action.

Kyung Won Lee has been our non-standing director since March 2018. Mr. Lee received a bachelor's degree in nutrition from Kosin University and a master's degree in computer engineering from Dong-A University. He is also the former head of the Ulsan Branch of Chubb Life Insurance Korea Co., Ltd.

Hong Cheol Kim has been our non-standing director and a member of our audit committee since November 2018. Mr. Kim received a bachelor's degree in economics from Seoul National University and a master's degree and a doctorate in taxation from University of Seoul. He is currently also a managing partner at Tax-Law Law Firm.

Young Il Bae has been our non-standing director since September 2019. Mr. Bae received a bachelor's degree and a master's degree in mechanical engineering from Seoul National University. He is also the former Executive Director of Business Operations at GS E&R Corp.

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 an experts' committee 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, as a group, was Won 772 million. The aggregate amount we set aside or accrued during 2019 to provide retirement and severance benefits for directors and executive officers was Won 39 million.

TERMS AND CONDITIONS OF THE NOTES

The following is a summary of the terms and conditions of the Notes to be issued by us under the Fiscal Agency Agreement (as defined below). The following statements do not purport to be a complete description of the Notes and the Fiscal Agency Agreement and are qualified in their entirety by reference to the provisions of the Notes and the Fiscal Agency Agreement.

1. General

(a) This Note is one of a duly authorized issue of Notes of the Company in the initial aggregate principal amount of US$500,000,000 1.750% Notes due 2025 (the "Notes") issued or to be issued pursuant to a Fiscal Agency Agreement, dated as of May 6, 2020 (as amended from time to time, the "Fiscal Agency Agreement"), between the Company and The Bank of New York Mellon, a banking corporation organized and existing under the laws of the State of New York with limited liability, as fiscal agent (such bank and its successors as such fiscal agent being hereinafter called the "Fiscal Agent"), the terms of which are hereby incorporated by reference. Capitalized terms used but not defined herein are used as defined in the Fiscal Agency Agreement. Copies of the Fiscal Agency Agreement are on file and available for inspection at the corporate trust office of the Fiscal Agent at 240 Greenwich Street, New York, New York 10286, United States of America (the "Corporate Trust Office"), and reference thereto is made for a description of the rights and limitations of rights thereunder of the Holders of the Notes and the duties and immunities of the Fiscal Agent. In acting under the Fiscal Agency Agreement, the agents appointed by the Company 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 Holder of this Note except as specifically described below or in the Fiscal Agency Agreement with respect to the Fiscal Agent. The Holders of Notes will be entitled to the benefits of, and be bound by and deemed to have notice of, all of the provisions of the Fiscal Agency Agreement. As used herein, the term "Holder" means the person in whose name a Note is registered in the Note Register (as defined in Condition 7(h) below).

(b) The Notes are issuable only as Notes in fully registered form without coupons in denominations of US$200,000 and any integral multiple of US$1,000 in excess thereof.

(c) The Notes constitute direct, unconditional, unsubordinated and, subject to the provisions of Condition 8, 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 8, 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.

2. Payments

(a) Payments of principal of and interest on this Note will be made in the legal currency of the United States of America.

(b) Payments of principal and interest on this Note shall be made by a wire transfer to the registered account of the Holder. The interest so payable on any Interest Payment Date will be paid to the person in whose name this Note is registered at the close of business on the fifteenth day preceding such Interest Payment Date (each, a "Record Date"), whether or not a business day, notwithstanding the cancelation, transfer or exchange of this Note subsequent to the Record Date and on or prior to such Interest Payment Date, and no interest otherwise so payable on any Interest Payment Date shall be paid on this Note if the name of its Holder was entered as such on the Note Register after the close of business on the Record Date next preceding such Interest Payment Date, except if and to the extent the Company shall default in the payment of the interest due on such Interest Payment Date, in which case such defaulted interest shall (unless paid together with principal of this Note in full other than on an Interest Payment Date) be paid to the person in whose name this Note is registered at the close of business on a subsequent record date (which shall be not less than five business days prior to the date of payment of such defaulted interest) established by notice given by mail by or on behalf of the Company to the Holders of Notes not less than 15 days preceding such subsequent record date. If interest is paid together with principal in full on a date that is not an Interest Payment Date, such interest shall be paid upon presentation and surrender of this Note to the Fiscal Agent in The City of New York or to a paying agent. For the purposes of this paragraph (b) of this Condition 2, a Holder's "registered account" means the U.S. dollar account maintained by or on behalf of it with a bank in the United States that processes payments in U.S. dollars, details of which appear on the Note Register at the close of business on the relevant Record Date.

(c) In any case where the date for the payment of any principal of or interest on any Note is not a day on which banking institutions at any place of payment are open for business in New York and Seoul (a "Business Day"), then payment of such principal or interest need not be made on such date at such place of payment but may be made on the next succeeding day at such place of payment which is a Business Day with the same force and effect as if made on the date for such payment of principal or interest, and no interest shall accrue for the period after such date.

(d) Any monies paid by the Company to the Fiscal Agent for the payment of the principal of or interest on any Notes and remaining unclaimed at the end of two years after such principal or interest shall have become due and payable and shall have been paid to the Fiscal Agent by the Company shall then be repaid to the Company, and upon such repayment, all liability of the Fiscal Agent with respect to such monies shall thereupon cease and the Holder of any Note representing a claim therefor shall thereafter look only to the Company for payment thereof.

3. Interest

(a) The Notes will be issued in an initial aggregate principal amount of US$500,000,000 and will mature at a price equal to 100% of the principal amount on May 6, 2025 (the "Maturity Date"). The Notes will bear interest at the rate of 1.750% per annum payable semi-annually in arrears on May 6 and November 6 of each year (each an "Interest Payment Date") with the first interest payment to be made on November 6, 2020.

(b) 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 the date on which all amounts due in respect of such Note have been paid.

(c) 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.

4. Optional Redemption Due to Changes in Tax Treatment

The Notes may be redeemed at the option of the Company, in whole, but not in part, upon not less than 30 nor more than 60 days' notice, at any time at a redemption price equal to 100% of the principal amount thereof plus accrued interest to (but excluding) the date fixed for redemption if, as a result of (a) any change in or amendment to the tax laws or treaties of the Republic (or of any political subdivision or taxing authority thereof or therein) or any regulations or rulings promulgated thereunder or (b) any change in position regarding the application, administration or interpretation of such laws, treaties, regulations or rulings (including a holding, judgment or order by a court of competent jurisdiction), which change or amendment becomes effective on or after April 27, 2020, the Company is or would be obligated on the next succeeding due date for a payment with respect to the Notes to pay Additional Amounts (as described in Condition 6 below) with respect to the Notes, and such obligation cannot be avoided by the use of reasonable measures available to the Company; provided, however, that (i) no such notice of redemption may be given earlier than 60 days prior to the earliest date on which the Company would be obligated to pay such Additional Amounts, and (ii) at the time such notice of redemption is given, such obligation to pay such Additional Amounts remains in effect. Before giving any notice of such redemption, the Company shall deliver to the Fiscal Agent a certificate of the Company stating that the Company is entitled to effect such redemption and setting forth a statement of facts showing that the conditions precedent to the right of redemption have occurred, together with an opinion of counsel to the effect that such a change in, or amendment to the laws or treaties of the Republic (or of any political subdivision or taxing authority thereof or therein) or any regulations or rulings promulgated thereunder or any change in position regarding the application, administration or interpretation of such laws, treaties, regulations or rulings, has occurred.

5. Purchase of Notes; Further Issues

The Company may at any time purchase Notes by tender (available to all Holders alike) or in the open market at any price. Notes purchased or otherwise acquired by the Company may be held, resold or, at its discretion, surrendered to the Fiscal Agent for cancelation. If the Company shall acquire any Notes, such acquisition shall not operate as or be deemed for any purpose to be a satisfaction of the indebtedness represented by such Notes unless and until such Notes are delivered to the Fiscal Agent for cancelation and are canceled and retired by the Fiscal Agent in accordance with the Conditions.

The Company may from time to time, without the consent of the existing Holders, create and issue additional notes under the Fiscal Agency Agreement having the same terms and conditions in all respects except for issue date and issue price. Additional notes issued will be consolidated with and form a single series with the outstanding Notes, provided that such additional notes must be issued with no more than *de minimis* original issue discount for United States federal income tax purposes or pursuant to a qualified reopening of the original series or as part of the same "issue" of debt instruments as the original series for United States federal income tax purposes.

6. Additional Amounts

All payments of principal of, and interest on, the Notes shall be made by the Company without withholding or deduction for, or on account of, any present or future taxes, duties, assessments or governmental charges of whatever nature imposed or levied by or on behalf of the Republic or by or within any political subdivision thereof or any authority therein having power to tax ("Korean Tax"), unless deduction or withholding of such Korean Tax is required by law. In the event that the deduction or withholding of Korean Tax is required by law, the Company will pay such additional amounts ("Additional Amounts") as will result in the payment to the Holders of the Notes of the amounts which would otherwise have been receivable in respect of principal and interest in the absence of such deduction or withholding, except that no such Additional Amount shall be payable in respect of any Note:

(a) to or on behalf of a Holder or beneficial owner who is subject to such Korean Tax in respect of such Note by reason of such Holder or beneficial owner being or having been connected with the Republic (or any political subdivision thereof) otherwise than merely by holding such Note or receiving principal or interest in respect thereof; or

(b) to or on behalf of a Holder or beneficial owner 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 fails to do so within 30 days; or

(c) to or on behalf of a Holder or beneficial owner who presents a Note (where presentation is required) more than 30 days after the relevant date except to the extent that the Holder or beneficial owner thereof would have been entitled to such Additional Amounts on presenting a Note for payment on the last day of such 30-day period; for this purpose the "relevant date" in relation to any payments of interest on, or principal of, any Note means: (i) the due date for payment thereof; or (ii) if the full amount of the monies payable on such date has not been received by the Fiscal Agent on or prior to such due date, the date on which, the full amount of such monies having been so received, notice to that effect is duly given to Holders of the Notes in accordance with the Fiscal Agency Agreement; or

(d) to or on behalf of a Holder or beneficial owner who would have been able to avoid the withholding or deduction by the presentation (where presentation is required) of the relevant Note to, or otherwise accepting payment from, another paying agent in a Member State of the European Union; or

(e) any combination of (a), (b), (c) or (d) above.

The obligation of the Company to pay such Additional Amounts in respect of taxes, duties, assessments and governmental charges shall not apply to (a) any estate, inheritance, gift, sales, transfer, personal property or any similar tax, assessment or other governmental charge or (b) any tax, assessment or other governmental charge which is payable otherwise than by deduction or withholding from payments of principal of or interest on the Notes; provided that, except as otherwise set forth in the Notes and in the Fiscal Agency Agreement, the Company shall pay all stamp and other taxes and duties, if any, which may be imposed by the Republic or any respective political subdivision thereof or any taxing authority of or in the foregoing with respect to the Fiscal Agency Agreement or as a consequence of the initial issuance of the Notes.

Furthermore, no Additional Amounts shall be payable with respect to any payment of the principal of, or any interest on, any Note to any Holder who is a fiduciary or partnership or other than the sole beneficial owner of such payment to the extent such payment would be required by the laws of the Republic (or any political subdivision or taxing authority thereof or therein) to be included in the income for tax purposes of a beneficiary or settlor with respect to such fiduciary or a member of such partnership or a beneficial owner who would not have been entitled to such Additional Amounts had it been the Holder of such Note.

References to principal or interest in respect of the Notes shall be deemed also to refer to any Additional Amounts which may be payable as set forth in the Notes.

7. Transfer, Exchange and Replacement

(a) The transfer of this Note is registrable (upon the terms and subject to the conditions set forth in the Fiscal Agency Agreement and subject to the reasonable requirements of the Company and the Fiscal Agent) on the Note Register upon surrender of this Note for registration at the Corporate Trust Office of the Fiscal Agent, duly endorsed by, or accompanied by a written instrument of transfer in a form approved by the Company and the Fiscal Agent duly executed by, the Holder hereof or his attorney duly authorized in writing.

(b) In the manner and subject to the limitations and upon payment of the charges (if any) provided in the Fiscal Agency Agreement, Notes may be exchanged for a like aggregate principal amount of Notes of other authorized denominations or for a beneficial interest in a Global Note.

(c) No service charge shall be made for any exchange or registration of transfer provided for in Conditions 7(a) and 7(b) hereof, but the Company may require payment of a sum sufficient to cover any tax or other governmental charge payable in connection therewith.

(d) No registrations of transfers or exchanges of Notes shall be made after notice of redemption of the Notes has been given.

(e) All Notes issued upon any registration of transfer or exchange of Notes shall be the valid obligations of the Company, evidencing the same debt, and entitled to the same benefits, as the Notes surrendered upon such registration of transfer or exchange. Any new Note delivered pursuant to this Condition 7 shall be so dated that neither gain nor loss of interest shall result from such transfer or exchange.

(f) If any Note shall at any time become mutilated or destroyed or stolen or lost, then, provided that such Note, or evidence of the destruction, theft or loss thereof (together with the indemnity hereinafter referred to and such other documents or proof as may be required in the premises) shall be delivered during business hours to the Corporate Trust Office of the Fiscal Agent, a replacement Note of like tenor and principal amount will be issued by the Company and, at its request, authenticated by the Fiscal Agent and delivered by the Fiscal Agent at its Corporate Trust Office, in exchange for the Note so mutilated, or in lieu of the Note so destroyed or stolen or lost; provided, further, that, in the case of destroyed, stolen or lost Notes, (i) neither the Company nor the Fiscal Agent shall have notice that such Notes have been acquired by a bona fide purchaser, and (ii) the Company and the Fiscal Agent shall have received evidence satisfactory to them that such Notes were destroyed, stolen or lost, and the Company and the Fiscal Agent shall have received an indemnity satisfactory to each of them. All expenses and reasonable charges associated with procuring such indemnity, and the cost of the preparation and issue of a replacement for any Note mutilated, destroyed, stolen or lost, shall be paid by the Holder of such Note. In case such mutilated, destroyed, stolen or lost Note has become or is about to become due and payable, the Company in its discretion may, instead of issuing a new Note, pay or cause to be paid such Note. Every new Note issued pursuant to this paragraph (f) in exchange for or in lieu of any mutilated, destroyed, stolen or lost Note, shall constitute an additional original contractual obligation of the Company, whether or not the mutilated, destroyed, stolen or lost Note shall be at any time enforceable by anyone. Any new Note delivered pursuant to this paragraph (f) shall be so dated that neither gain nor loss of interest shall result from such replacement. To the extent permitted by law, the provisions of this paragraph (f) are exclusive and shall preclude (to the extent lawful) all other rights and remedies with respect to the replacement or payment of mutilated, destroyed, stolen or lost Notes.

(g) The Company and the Fiscal Agent may deem and treat the registered Holder hereof as the absolute owner hereof (notwithstanding any notice of ownership or other writing hereon) for the purposes of receiving payment hereon or on account hereof and for all other purposes, whether or not this Note shall be overdue.

(h) The Company has appointed the Corporate Trust Office of the Fiscal Agent as its agent for transfers, and for exchanges and replacements, of Notes and has agreed to cause to be kept at the Corporate Trust Office of the Fiscal Agent a register (the "Note Register") in which, subject to such reasonable regulations as it may prescribe, the Company shall provide for such registration and registration of transfers.

(i) All Notes issued as a result of any transfer, exchange or replacement of Notes shall be delivered to the Holder at the Corporate Trust Office of the Fiscal Agent or (at the risk of the Holder) sent by mail to such address as is specified by the Holder in the request for transfer, exchange or replacement.

8. Covenants of the Company

(a) *Limitation on Liens.* So long as any of the Notes are outstanding, the Company will not itself, and will not permit any Restricted Subsidiary to create, incur, issue or assume or guarantee any External Indebtedness secured by any Security Interest on any Principal Property owned by the Company or any Restricted Subsidiary or on any shares of stock or 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 any Restricted 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 (as described in Condition 8(b) below) involving Principal Properties would not exceed 10% of Consolidated Net Tangible Assets; provided that nothing contained in this Condition 8(a) shall prevent, restrict or apply to, and there shall be excluded from secured External Indebtedness in any computation under this Condition 8(a), External Indebtedness secured by:

(1) Security Interests existing as of the date of the Fiscal Agency Agreement;

(2) 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 becoming a Restricted Subsidiary;

(3) 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 of such property, shares of stock or indebtedness;

(4) Security Interests on any Principal Property or Restricted Securities securing the payment of all or any part of the purchase price or cost of construction or improvement of any Principal Property or securing any indebtedness incurred prior to, at the time of or within 12 months after the acquisition of such Principal Property or the completion of any such construction or improvement, whichever is later, for the purpose of financing all or any part of the purchase price or cost of construction or improvement thereof (provided that such Security Interests are limited to such Principal Property or Restricted Securities, improvements on such Principal Property and any other property or assets not constituting a Principal Property or Restricted Securities prior to such construction or improvement);

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

(6) 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

(7) 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 paragraphs (1) through (6) inclusive or any refinancing of External Indebtedness, or a portion thereof, secured by a Security Interest referred to in the foregoing paragraphs (1) through (6) 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.

For the purposes of this Condition 8(a) and Condition 8(b), the giving of a guarantee which is secured by a Security Interest on a Principal Property or Restricted Securities, and the creation of a Security Interest on a Principal Property or Restricted Securities to secure External Indebtedness which existed prior to the creation of such Security Interest, shall be deemed to involve the creation of indebtedness in an amount equal to the principal amount guaranteed or secured by such Security Interest; but the amount of indebtedness secured by Security Interests on Principal Properties and Restricted Securities shall be computed without cumulating the underlying indebtedness with any guarantee thereof or Security Interest securing the same.

(b) *Limitation on Sale and Leaseback Transactions.* So long as any of the Notes are outstanding, the Company will not itself, and will not permit any Restricted Subsidiary to, enter into any arrangement after the date of the Fiscal Agency Agreement with any Person (other than the Company or another Restricted Subsidiary) providing for the leasing by the Company or any Restricted Subsidiary of any

Principal Property (except a lease for a temporary period not to exceed three years by the end of which it is intended that the use of such Principal Property by the lessee will be discontinued), which was or is owned by the Company or a Restricted Subsidiary and 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 or to any other Person to whom funds have been or are to be advanced by such Person on the security of such Principal Property (herein referred to as a "sale and leaseback transaction") unless either:

(1) the Attributable Debt of the Company and its Restricted Subsidiaries in respect of such sale and leaseback transaction and all other sale and leaseback transactions entered into after the date of the Fiscal Agency Agreement (other than such sale and leaseback transactions as are permitted by paragraph (2) 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 paragraphs (1) through (7) of Condition 8(a)) without equally and ratably securing the Notes, would not exceed 10% of Consolidated Net Tangible Assets; or

(2) the Company, within 12 months after the sale or transfer, applies or causes a Restricted Subsidiary to apply an amount equal to the greater of (i) the net proceeds of such sale or transfer or (ii) the fair market value of the Principal Property so sold and leased back at the time of entering into such sale and leaseback transaction (in each case as determined in good faith by two directors or other executive officers who are authorized to represent the Company) to the retirement of External Indebtedness of the Company or a Restricted Subsidiary which is not subordinate to the Notes; provided that the amount to be so applied shall be reduced by (i) the principal amount of Notes delivered within 12 months after such sale or transfer to the Fiscal Agent for retirement and cancelation, and (ii) the principal amount of External Indebtedness of the Company or a Restricted Subsidiary, other than Notes, voluntarily retired by the Company or a Restricted Subsidiary within 12 months after such sale or transfer. Notwithstanding the foregoing, no retirement referred to in this paragraph (2) may be effected by payment at maturity or pursuant to any mandatory sinking fund payment or any mandatory prepayment provision.

Notwithstanding the foregoing, where the Company or any Subsidiary is the lessee in any sale and leaseback transaction, Attributable Debt shall not include any External Indebtedness resulting from the guarantee by the Company or any other Subsidiary of the lessee's obligation thereunder.

(c) *Certain Definitions.* The following terms (except as otherwise expressly provided or unless the context otherwise clearly requires) for all purposes of the Fiscal Agency Agreement and the Notes shall have the respective meanings specified in this Condition. All accounting terms used herein and not expressly defined shall have the meanings given to them in accordance with K-IFRS, and the term "K-IFRS" shall mean the International Financial Reporting Standards as adopted by the Republic at the date or time of any computation.

"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 assets of the Company and its consolidated Subsidiaries, 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 option of the Company) and (ii) all goodwill, industrial rights, usable and profitable donation assets and software and other like intangible assets, all as set forth on the most recent statement of financial position 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 the Republic 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.

"Person" means any individual, corporation, partnership, joint venture, association, joint-stock company, trust, unincorporated organization or government or any agency or political subdivision thereof.

"Principal Property" means any generation facility located in the Republic, whether currently owned or hereafter 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 Board of Directors of the Company 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.

"Security Interest" means any mortgage, pledge, lien, fixed or floating charge or other encumbrance.

"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.

(d) *Provision of Information to Holders.* The Company covenants that for so long as this Note is a "restricted security" within the meaning of Rule 144 under the U.S. Securities Act of 1933, as amended (the "Securities Act"), the Company shall, at any time when it is not subject to either the periodic reporting requirements of Section 13 or Section 15(d) of the U.S. Securities Exchange Act of 1934, as amended, or the requirements of Rule 12g3-2(b) thereunder, provide to any Holder of this Note or prospective purchaser of this Note designated by such Holder, upon the request of such Holder or prospective purchaser, the information required to be provided by Rule 144A(d)(4) under the Securities Act.

9. Merger and Consolidation

Nothing contained in the Fiscal Agency Agreement or in the Notes shall prevent any consolidation of the Company with, or merger of the Company into, any other corporation or corporations (whether or not affiliated with the Company), or successive consolidations or mergers to which the Company or its successor or successors shall be a party or parties, or shall prevent any sale, transfer, lease or conveyance of the property of the Company as an entirety or substantially as an entirety; provided that (a) in case the Company shall consolidate with or merge into another corporation, or sell, transfer, lease or convey its property as an entirety or substantially as an entirety to any corporation, the corporation formed by such consolidation or into which the Company is merged or the corporation which acquires by sale, transfer, lease or conveyance the property of the Company as an entirety or substantially as an entirety shall be a corporation organized under the laws of the Republic and shall expressly assume, by an agreement supplemental to the Fiscal Agency Agreement executed and delivered to, and in form reasonably satisfactory to, the Fiscal Agent, the due and punctual payment of the principal of and interest (including all Additional Amounts, if any, payable pursuant to Condition 6) on the Notes, and the due and punctual performance and observance of all of the covenants and conditions to the Fiscal Agency Agreement and the Notes on the part of the Company to be performed or observed; (b) immediately after giving effect to such transaction and treating any indebtedness which becomes an obligation of the Company as a result of such transaction as having been incurred by the Company at the time of such transaction, no Event of Default (as defined below), 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 consolidation or merger or such sale, transfer, lease or conveyance, properties or assets of the Company or a Restricted Subsidiary would become subject to a Security Interest which would not be permitted by the Notes, the Company or such successor corporation, as the case may be, shall take such steps as shall be necessary effectively to secure the Notes (together with, if the Company shall so determine, any other indebtedness of the Company or such Restricted Subsidiary then existing or thereafter created which is not subordinate to 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 signed by an 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 a supplemental agreement is required in connection with such transaction, such supplemental agreement 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.

10. 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 6).

11. Events of Default

The term "Event of Default" means any of the following events (whatever the reason for such Event of Default and whether it shall be voluntary or involuntary or be effected by operation of law or pursuant to any judgment, decree or order of any court or any order, rule or regulation of any administrative or governmental body) which shall have occurred and be continuing:

(a) default in the payment of any installment of interest upon any of the Notes when it becomes due and continuance of such default for a period of 30 days; or

(b) default in the payment of all or any part of the principal of (or premium, if any, on) any of the Notes as and when the same shall become due and payable, whether at maturity, upon redemption or otherwise and continuance of such default for a period of seven days; or

(c) failure on the part of the Company duly to observe or perform any other of the covenants or agreements on the part of the Company contained in the Notes or the Fiscal Agency Agreement for a period of 60 days after the date on which written notice specifying such failure, stating that such notice is a "Notice of Default" hereunder and demanding that the Company remedy the same, shall have been given by registered or certified mail, return receipt requested, to the Company by the Holders of at least 10% in aggregate principal amount of the Notes at the time outstanding; or

(d) any External Indebtedness of the Company in the aggregate outstanding principal amount of US$15,000,000 or more either (i) becoming due and payable by reason of acceleration thereof following default by the Company or (ii) not being repaid at, and remaining unpaid after, maturity as extended by the period of grace, if any, applicable thereto, or any guarantee given by the Company in respect of External Indebtedness of any other Person not being honored when, and remaining dishonored after becoming, due and called; provided that, in the case of (i) above, if any such default under any such External Indebtedness shall be cured or waived, then the default hereunder by reason thereof shall be deemed to have been cured and waived; or

(e) a court or administrative or other governmental agency or body having jurisdiction in the premises shall enter a decree or order for relief in respect of the Company in an involuntary case under any applicable bankruptcy, insolvency, reorganization, compulsory composition or other similar law now or hereafter in effect, or appointing a receiver, liquidator, assignee, custodian, trustee, sequestrator (or similar official) of the Company or for any substantial part of its property or ordering the winding up, dissolution or liquidation of its affairs, or shall otherwise adjudicate or find the Company to be bankrupt or insolvent and such decree or order shall remain unstayed and in effect for a period of 60 consecutive days; or

(f) the Company shall commence a voluntary case under any applicable bankruptcy, insolvency, reorganization, compulsory composition or other similar law now or hereafter in effect, or consent to the entry of an order for relief in an involuntary case under any such law, or consent to the appointment or taking possession by a receiver, liquidator, assignee, custodian, trustee, sequestrator or similar official of the Company or for any substantial part of its property, or cease to carry on the whole or substantially the whole of its business or make any general assignment for the benefit of creditors, or enter into any composition with its creditors, or take corporate action in furtherance of any such action;

then, and in each and every such case, unless the principal of all of the Notes shall have already become due and payable, the Holders of not less than 25% in aggregate principal amount of the Notes then outstanding, by notice in writing to the Company and to the Fiscal Agent, may declare the aggregate principal amount of the Notes to be due and payable immediately, and upon any such declaration the same shall become immediately due and payable, unless prior to receipt of such notice by the Company, all such defaults shall have been cured.

The Holders of more than 50% in aggregate principal amount of the Notes at the time outstanding, by notice to the Fiscal Agent (and without notice to any other Holders) may rescind and annul an acceleration pursuant to this Condition 11 and its consequences if (i) the rescission or annulment would not conflict with any judgment or decree for the payment of monies due that has been obtained or entered as hereinafter provided, (ii) all existing Events of Default have been cured or waived except nonpayment of the sum of the unpaid principal amount of the Notes plus interest (if any) payable thereon to the date of payment that have become due solely as a result of such acceleration and (iii) all amounts due to the Fiscal Agent under the Fiscal Agency Agreement have been paid. No such rescission shall affect any subsequent Event of Default or impair any right consequent thereto.

The Fiscal Agent shall not be deemed to know or have notice of an Event of Default unless the Corporate Trust Office receives written notice of such Event of Default.

12. Meetings of Holders; Modifications and Amendments

(a) The Company may at any time, and shall at any time after the Notes shall have become immediately due and payable due to a default upon a request in writing made by Holders holding not less than 10% of the aggregate outstanding principal amount of the Notes, convene a meeting of Holders of the Notes. Any such request in writing by the Holders shall be delivered to the Fiscal Agent. Further provisions concerning meetings of the Holders are set forth in the Fiscal Agency Agreement.

(b) Modifications and amendments to the Fiscal Agency Agreement or the Notes requiring consent of Holders may be made, and future compliance therewith or past defaults by the Company may be waived, with the consent of the Company and the Holders of more than 50% in aggregate principal amount of the Notes at the time outstanding, or of such lesser percentage as may act at a meeting of the Holders held in accordance with the provisions of the Fiscal Agency Agreement; provided that no such modification, amendment or waiver of the Fiscal Agency Agreement or any Note may, without the consent of each Holder affected thereby, (i) change the maturity of the principal of, or any date for the payment of interest or Additional Amounts payable on, any Note; reduce the principal amount of, or any interest or Additional Amounts payable on, any Note; change the manner of calculation of interest or principal with respect to any Note; (iv) change the place of payment, or currency of denomination or payment, of the principal of or any interest or Additional Amounts payable on any Note; (v) change the Company's obligation to pay Additional Amounts; (vi) impair the right to institute suit for the enforcement of any payment on or with respect to any Note; or (vii) reduce the percentage of the principal amount of the outstanding Notes, the consent of the Holders of which is required for any such supplemental agreement. Any modifications, amendments or waivers consented to or approved at a meeting will be conclusive and binding on all Holders whether or not they have given such consent or were present at such meeting, and on all future Holders whether or not notation of such modifications, amendments or waivers is made upon the Notes. Any instrument given by or on behalf of any Holder of a Note in connection with any consent to any such modification, amendment or waiver will be irrevocable once given and will be conclusive and binding on all subsequent Holders of such Note.

(c) At a meeting of the Holders of the Notes called for any of the above purposes, persons entitled to vote more than 50% in aggregate principal amount of the Notes at the time outstanding shall constitute a quorum. In the absence of a quorum at any such meeting, the meeting may be adjourned for a period of not less than ten days; in the absence of a quorum at any such adjourned meeting, such adjourned meeting may be further adjourned for a period of not less than ten days; at the reconvening of any meeting further adjourned for lack of a quorum, the persons entitled to vote 25% in aggregate principal amount of the Notes at the time outstanding shall constitute a quorum for the taking of any action set forth in the notice of the original meeting. At a meeting or an adjourned meeting duly convened and at which a quorum is present as aforesaid, any resolution to modify or amend, or to waive compliance with, any of the covenants or conditions referred to above (other than those set forth in Clauses (i) through (vii) of Condition 12(b) hereof) shall be effectively passed if passed by the lesser of (i) more than 50% in aggregate principal amount of Notes then outstanding or (ii) 75% in aggregate principal amount of the Notes represented and voting at the meeting.

(d) The Fiscal Agency Agreement and the terms and conditions of the Notes may be modified, supplemented or amended, without the consent of the Holders, for one or more of the following purposes: (i) to convey, transfer, assign, mortgage or pledge to the Fiscal Agent, acting as security agent following an appointment by the Company and acceptance by the Fiscal Agent of such appointment, as security for the Notes any property or assets; (ii) to evidence the succession of another corporation to the Company, or successive successions, and the assumption by the successor corporation of the covenants, agreements and obligations of the Company pursuant to Condition 9; (iii) to add to the covenants of the Company such further covenants, restrictions, conditions or provisions as the Company shall consider, in its sole discretion, to be for the protection of the Holders of Notes, and to make the occurrence, or the occurrence and continuance, of a default in any such additional covenants, restrictions, conditions or provisions an Event of Default permitting the enforcement of all or any of the several remedies provided in this Note as herein set forth; provided, that in respect of any such additional covenant, restriction, condition or provision such supplemental agreement may provide for a particular period of grace after default (which period may be shorter or longer than that allowed in the case of other defaults) or may provide for an immediate enforcement upon such an Event of Default or may limit the remedies available to the Fiscal Agent or the Holders upon such an Event of Default or may limit the right of the Holders of more than 50% in aggregate principal amount of the Notes to waive such an Event of Default; and (iv) to cure any ambiguity or to correct or supplement any provision contained herein or in any supplemental agreement which may be defective or inconsistent with any other provision contained herein or in any supplemental agreement; or to make such other provisions in regard to matters or questions arising under this Note or the Fiscal Agency Agreement or under any supplemental agreement as the Company may, in its sole discretion, deem necessary or desirable and which shall not adversely affect the interests of the Holders. Any determination pursuant to subsection (iii) and/or (iv) above shall be made by the Company and none of the Agents shall have any responsibility or liability whatsoever with respect to such determinations. In all other cases, amendment of the Fiscal Agency Agreement will require consent of the Holders pursuant to a resolution of the Holders of the Notes adopted pursuant to Section 14 of the Fiscal Agency Agreement and the Notes. Any modification shall be binding on the Holders and, unless the Fiscal Agent agrees otherwise, any modification shall be notified by the Company to the Holders in accordance with Condition 13.

13. Notices to Holders

Except as otherwise expressly provided herein or the Fiscal Agency Agreement, whenever the Fiscal Agency Agreement or this Note provides for notice to Holders, such notice shall be sufficiently given if in writing and mailed at the expense of the Company, first-class postage prepaid, to each Holder entitled thereto, at his last address as it appears in the Note Register. In any case where notice to Holders is given by mail, neither the failure to mail such notice, nor any defect in any notice so mailed, to any particular Holder shall affect the sufficiency of such notice with respect to other Holders and any notice that is mailed in the manner herein provided shall be conclusively presumed to have been duly given. Where the Fiscal Agency Agreement or this Note provides for notice in any manner, such notice may be waived in writing by the Person entitled to receive such notice, either before or after the event, and such waiver shall be the equivalent of such notice. Waivers of notice by Holders shall be filed with the Fiscal Agent, but such filing shall not be a condition precedent to the validity of any action taken in reliance upon such waiver.

In case, by reason of the suspension of or irregularities in regular mail service, it shall be impracticable to mail notice to the Holders when such notice is required to be given pursuant to any provision of the Fiscal Agency Agreement or this Note, then any manner of giving such notice as shall be satisfactory to the Company shall be deemed to be a sufficient giving of such notice.

14. Governing Law and Submission to Jurisdiction

(a) This Note shall be governed by, and construed in accordance with, the laws of the State of New York. To the fullest extent permitted by applicable law, the Company irrevocably submits to the jurisdiction of any federal or state court in the Borough of Manhattan, City of New York, State of New York, United States of America, in any suit or proceeding based on or arising under the Fiscal Agency Agreement or the Notes, and irrevocably agrees that all claims in respect of such suit or proceeding may be determined in any such court. The Company irrevocably and fully waives any objection which it may now or hereafter have to the laying of the venue of any such suit or proceeding and any claim that any such proceeding brought in such a court has been brought in an inconvenient forum.

(b) The Company hereby irrevocably designates and appoints Capitol Services, Inc. (the "Process Agent"), located at 1218 Central Avenue, Suite 100, Albany, New York, NY 12205, United States, as the authorized agent of the Company upon whom process may be served in any such suit or proceeding, it being understood that the designation and appointment of the Process Agent as such authorized agent shall become effective immediately without any further action on the part of the Company. Service of process upon the Process Agent and written notice of said service to the Company mailed by first class mail or delivered to the Process Agent, shall be deemed in every respect effective services of process upon the Company in any such suit or proceeding. Nothing herein shall affect your right or any person controlling you to serve process in any other manner permitted by law.

(c) 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.

FORM OF THE NOTES

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

Upon issuance, the Notes are expected to be represented by Global Notes in fully registered form. The Global Notes will be deposited with or on behalf of DTC and registered in the name of a nominee of DTC. A Global Note may not be transferred except as a whole by DTC to a nominee of DTC or by a nominee of DTC to DTC or another nominee of DTC or by DTC or any such nominee to a successor of or a nominee of such successor.

Upon the issuance of the Global Notes, DTC will credit, on its book-entry registration and transfer system, the respective principal amounts of the Notes represented by such Global Notes to the accounts of persons that have accounts with DTC ("participants"), including depositaries for Euroclear and Clearstream. The accounts to be initially credited shall be designated by the Initial Purchasers participating in the initial offer and sale of the Notes. Ownership of beneficial interests in the Global Notes will be limited to participants or persons that may hold interests through participants. Ownership of beneficial interests in such Global Notes will be shown on, and the transfer of that ownership will be effected only through, records maintained by DTC for such Global Notes (with respect to interests of participants) or by participants or persons that hold through participants (with respect to interests of persons other than participants).

DTC or its nominee, as the case may be, as registered Holder of the Global Notes will be considered the sole owner or holder of the Notes represented by each Global Note for all purposes under the Notes and the Fiscal Agency Agreement.

Principal and interest payments on Notes represented by the Global Notes registered in the name of DTC or its nominee will be made to DTC or its nominee, as the case may be, as the registered owner of such Global Notes. None of us, the Fiscal Agent or any paying agent for such Notes will have any responsibility or liability for any aspect of the records relating to or payments made on account of beneficial ownership interests in such Global Notes or for maintaining, supervising or reviewing any records relating to such beneficial ownership interests.

We expect that DTC, upon receipt of any payment of principal or interest, will credit participants' accounts with payments in amounts proportionate to their respective beneficial interests in the principal amount of such Global Notes as shown on the records of DTC. We also expect that payments by participants to owners of beneficial interests in such Global Notes held through such participants will be governed by standing instructions and customary practices, as is now the case with securities held for the account of customers registered in "street names," and will be the responsibility of such participants.

If (i) at any time DTC notifies us in writing that it is unwilling or unable to continue as depositary or ceases to be a "clearing agency" under the Exchange Act, and a successor depositary is not appointed by us within 90 days after we are notified by DTC or becomes aware of such condition, or (ii) the Notes have become immediately due and payable pursuant to Condition 10, we will issue Notes in definitive registered form in exchange for the Global Notes representing such Notes. The Notes will be issued only in fully registered form without coupons in denominations of US$200,000 and integral multiples of US$1,000 in excess thereof. If the Notes are issued in definitive registered form, we will make payments of principal of, and any premium (if any) and interest on the Notes, and transfers and exchanges of the Notes will be affected, subject to the terms of the Fiscal Agency Agreement and the Notes (without any service charge) upon surrender of the Notes.

For so long as the Notes are listed on the Singapore Stock Exchange and the rules of the Singapore Stock Exchange so require, in the event that a Global Note is exchanged for the Notes in certificated form, we 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 a Global Note is exchanged for the Notes in certificated form, an announcement of such exchange will be made by or on behalf of us through the Singapore Stock Exchange and such announcement will include all material information with respect to the delivery of the Notes in certificated form, including details of the paying agent in Singapore.

UNITED STATES TAXATION

The following is a summary of certain U.S. federal income tax considerations that may be relevant to a U.S. Holder (as defined below) of a Note. This summary is based on provisions of the Internal Revenue Code of 1986, as amended, applicable Treasury regulations, laws, rulings and decisions now in effect, all of which are subject to change, possibly with retroactive effect. This summary deals only with beneficial owners of Notes that will hold Notes as capital assets and that acquired the Notes upon original issuance at their original offering price. It does not address particular tax considerations that may be applicable to investors that are subject to special tax rules, such as banks, tax-exempt entities, insurance companies, regulated investment companies, dealers in securities or currencies, traders in securities electing to mark to market, persons that will hold Notes as a position in a "straddle" or conversion transaction, or as part of a "synthetic security" or other integrated financial transaction, entities or arrangements taxed as partnerships for U.S. federal income tax purposes or the partners therein, U.S. expatriates, nonresident alien individuals present in the United States for more than 182 days in a taxable year or persons that have a "functional currency" other than the U.S. dollar.

This summary addresses only U.S. federal income tax consequences and does not address consequences arising under state, local, foreign tax laws, the alternative minimum tax or the Medicare tax on net investment income. Investors should consult their own tax advisors in determining the tax consequences to them of holding Notes under such tax laws, as well as the application to their particular situation of the U.S. federal income tax considerations discussed below.

As used herein, a "U.S. Holder" is a beneficial owner of a Note that is a citizen or resident of the United States or a U.S. domestic corporation or that otherwise will be subject to U.S. federal income taxation on a net income basis in respect of the Note.

U.S. Holders that use an accrual method of accounting for tax purposes ("accrual method holders") generally are required to include certain amounts in income no later than the time such amounts are reflected on certain financial statements (the "book/tax conformity rule"). The application of the book/tax conformity rule thus may require the accrual of income earlier than would be the case under the general tax rules described below, although it is not clear to what types of income the book/tax conformity rule applies, or, in some cases, how the rule is to be applied if it is applicable. However, recently released proposed regulations generally would exclude, among other items, original issue discount ("OID") and market discount (in either case, whether or not *de minimis*) from the applicability of the book/tax conformity rule. Although the proposed regulations generally will not be effective until taxable years beginning after the date on which they are issued in final form, taxpayers generally are permitted to elect to rely on their provisions currently. Accrual method holders should consult with their tax advisors regarding the potential applicability of the book/tax conformity rule to their particular situation.

Payments of Interest and Additional Amounts

The gross amount of stated interest and any Additional Amounts (i.e., without reduction for Korean withholding taxes determined utilizing the appropriate Korean withholding tax rate applicable to the U.S. Holder) will be taxable to a U.S. Holder as ordinary interest income at the time it accrues or is actually or constructively received, in accordance with the U.S. Holder's method of accounting for U.S. federal income tax purposes. It is expected, and this discussion assumes, that the Notes will be issued with less than a *de minimis* amount of OID. In general, however, if the Notes are issued with OID at or above a *de minimis* threshold, a U.S. Holder will be required to include OID in gross income, as ordinary income, under a "constant-yield method" before the receipt of cash attributable to such income, regardless of the U.S. Holder's regular method of accounting for U.S. federal income tax purposes.

As discussed in "Korean Taxation — Tax on Interest," interest paid on the Notes to a U.S. Holder is expected to be exempt from Korean taxes. If, however, that tax exemption were to cease to apply, then, subject to generally applicable restrictions and conditions under U.S. tax law, Korean withholding taxes paid at the appropriate rate applicable to the U.S. Holder will be treated as foreign income taxes eligible (i) for credit against the U.S. Holder's U.S. federal income tax liability, or (ii) if the U.S. Holder so elects, for deduction in computing the U.S. Holder's taxable income (provided that the U.S. Holder elects to deduct, rather than credit, all foreign income taxes paid or accrued for the relevant taxable year). Interest and Additional Amounts will constitute income from sources without the United States for foreign tax credit purposes. Such income generally will constitute "passive category income" or, in the case of certain U.S. Holders, "general category income." The calculation of foreign tax credits and, in the case of a U.S. Holder that elects to deduct foreign taxes, the availability of such deduction, involves the application of rules that depend on a U.S. Holder's particular circumstances. Investors should consult their tax advisors regarding the availability of foreign tax credits or deductions in their particular situation.

Sale, Exchange and Retirement of the Notes

Upon the sale, exchange or retirement of a Note, a U.S. Holder generally will recognize gain or loss equal to the difference between the amount realized on the sale, exchange or retirement (less any accrued interest, which will be taxable as such) and the U.S. Holder's tax basis in such Note. A U.S. Holder's tax basis in a Note will generally equal the cost of the Note to the U.S. Holder. Gain or loss recognized upon a sale, exchange or retirement of a Note generally will be long-term capital gain or loss if the U.S. Holder has held the Note for more than one year at the time of disposition. Long-term capital gains recognized by an individual holder generally are subject to tax at a lower rate than short-term capital gains or ordinary income. The deduction of capital losses is subject to limitations.

As discussed in "Korean Taxation — Tax on Capital Gains," no Korean tax is currently expected to be imposed in respect of a sale or other disposition of Notes by a U.S. Holder (excluding sale or disposition to a Korean resident). If Korean tax were to be imposed on such a disposition of Notes, however, a U.S. Holder may not be able to credit the tax against the U.S. Holder's U.S. federal income tax liability, unless the credit can be applied (subject to applicable conditions and limitations) against tax due on other income treated as derived from foreign sources, because capital gains recognized by a U.S. Holder generally will be U.S.-source gains. Investors should consult their tax advisors as to the foreign tax credit implications of a disposition of the Notes.

Specified Foreign Financial Assets

Individual U.S. Holders that own "specified foreign financial assets" with an aggregate value in excess of $50,000 on the last day of the taxable year or $75,000 at any time during the taxable year are generally required to file an information statement along with their tax returns, currently on Form 8938, with respect to such assets. "Specified foreign financial assets" include any financial accounts held at a non-U.S. financial institution, as well as securities issued by a non-U.S. issuer (which may include Notes issued in certificated form) that are not held in accounts maintained by financial institutions. Higher reporting thresholds apply to certain individuals living abroad and to certain married individuals. Regulations extend this reporting requirement to certain entities that are treated as formed or availed of to hold direct or indirect interests in specified foreign financial assets based on certain objective criteria. U.S. Holders who fail to report the required information could be subject to substantial penalties. In addition, the statute of limitations for assessment of tax would be suspended, in whole or part. Prospective investors should consult their own tax advisors concerning the application of these rules to their investment in the Notes, including the application of the rules to their particular circumstances.

Information Reporting and Backup Withholding

Information returns will be filed with the IRS in connection with payments on the Notes made to, and the proceeds of dispositions of Notes effected by, certain U.S. Holders. In addition, certain U.S. Holders may be subject to backup withholding in respect of such amounts if they do not provide their taxpayer identification numbers to the person from whom they receive payments. Non-U.S. holders may be required to comply with applicable certification procedures to establish that they are not U.S. Holders in order to avoid the application of such information reporting requirements and backup withholding. The amount of any backup withholding from a payment to a holder will be allowed as a credit against the holder's U.S. federal income tax liability and may entitle the holder to a refund, provided that the required information is timely furnished to the IRS. Investors should consult their tax advisers about these rules and any other reporting obligations that may apply to their ownership or disposition of Notes.

KOREAN TAXATION

Republic of Korea

The information provided below does not purport to be a complete summary of Korean tax law and practice currently applicable. 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 us.

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 us. 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 us a certificate as to his country of tax residence. In the absence of sufficient proof, the payer or we, 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 we are 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"), we have 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

Under the terms and conditions contained in a purchase agreement dated April 27, 2020 (the "Purchase Agreement"), we have agreed to sell to BNP Paribas, Citigroup Global Markets Inc., Crédit Agricole Corporate and Investment Bank, The Hongkong and Shanghai Banking Corporation Limited and Merrill Lynch International (together, the "Initial Purchasers"), the following principal amount of Notes.

Initial Purchasers	Principal Amount of the Notes
BNP Paribas	US$100,000,000
Citigroup Global Markets Inc.	100,000,000
Crédit Agricole Corporate and Investment Bank	100,000,000
The Hongkong and Shanghai Banking Corporation Limited	100,000,000
Merrill Lynch International	100,000,000
Total	US$500,000,000

The Purchase Agreement provides that the Initial Purchasers are obligated to purchase all of the Notes, if any are purchased. The Purchase Agreement also provides that if an Initial Purchaser defaults, the purchase commitments of non-defaulting Initial Purchasers may be increased or the offering may be terminated. Each of the Initial Purchasers proposes to offer the Notes initially at the offering price on the cover page of this Offering Circular. After the initial offering, the offering price may be changed.

We have agreed to indemnify each of the Initial Purchasers against certain liabilities, including liabilities under the Securities Act, or to contribute the Initial Purchasers may be required to make in respect of those liabilities.

The Initial Purchasers are offering the Notes, subject to prior sale, when, as and if issued to and accepted by them, subject to approval of legal matters by their counsel, including the validity of the Notes, and other conditions contained in the Purchase Agreement, such as the receipt by the Initial Purchasers of officer's certificates and legal opinions. The Initial Purchasers reserve the right to withdraw, cancel or modify offers to investors and to reject orders in whole or in part.

Commissions and Discounts

The purchase price for the Notes will be the offering price set forth on the cover page of this Offering Circular net of a combined management and underwriting commission. After the initial offering, the offering price or any other term of the offering may be changed.

New Issue of Notes

The Notes are a new issue of securities with no established trading market. The Initial Purchasers have advised that they presently intend to make a market in the Notes after completion of the offering. However, they are under no obligation to do so and may discontinue any market-making activities at any time without any notice. We cannot assure the liquidity of the trading market for the Notes. If an active trading market for the Notes does not develop, the market price and liquidity of the Notes may be adversely affected. If the Notes are traded, they may trade at a discount from their initial offering price, depending on prevailing interest rates, the market for similar securities, our operating performance and financial condition, general economic conditions and other factors.

Settlement

Delivery of the Notes is expected on or about May 6, 2020.

No Sales of Similar Securities

For a period of thirty (30) days after the date hereof, we will not, without the prior written consent of the Initial Purchasers, (i) offer, sell, contract to sell, pledge or otherwise dispose of, directly or indirectly, any debt securities (other than those denominated in Korean Won) issued or guaranteed by us and having a maturity of more than one year from the date of issue, (ii) enter into any swap or any other agreement or any transaction that transfers, in whole or in part, directly or indirectly, the economic consequence of ownership of the Notes, whether any such swap or transaction described in clause (i) or (ii) above is to be settled by delivery of Notes or such other securities, in cash or otherwise or (iii) publicly disclose the intention to make any transaction described in clause (i) or (ii) above. We will not at any time offer, sell, contract to sell, pledge or otherwise dispose of, directly or indirectly, any securities under circumstances where such offer, sale, pledge, contract or disposition would cause the exemption afforded by Section 4(2) of the Securities Act or the safe harbor of Regulation S to cease to be applicable to the offer and sale of the Notes.

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 us 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 or to, or for the account or benefit of, U.S. persons (as defined in Regulation S) except in transactions exempt from, or not subject to, the registration requirements of the Securities Act and applicable state securities laws. In addition, until 40 days after the commencement of this offering, an offer or sale of Notes within the United States by an Initial Purchaser (whether or not participating in this offering) may violate the registration requirements of the Securities Act if such offer or sale is made otherwise than in accordance with Rule 144A.

The Initial Purchasers, through their respective affiliates, acting as selling agents where applicable, propose to offer the Notes to certain non-U.S. persons in offshore transactions in reliance on Regulation S and in accordance with applicable law and propose to offer the Notes to qualified institutional buyers in the United States pursuant to Rule 144A. Each of the Initial Purchasers has agreed with the Company that, except as permitted under the Purchase Agreement, it will not offer, sell or deliver the Notes within the United States or to U.S. persons. Any offer or sale of the Notes in the United States in reliance on Rule 144A will be made by broker-Initial Purchasers who are registered as such under the Exchange Act. Terms used in this paragraph have the meanings given to them by Regulation S. Transfer of the Notes will be restricted as described under "Transfer Restrictions."

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 of the Initial Purchasers has severally 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 us; 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 (a) 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 (b) 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 such Notes to be made the subject of an invitation for subscription or purchase and will not offer or sell such Notes or cause such 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 such 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.

Switzerland

This Offering Circular is not intended to constitute an offer or solicitation to purchase or invest in the Notes described herein. The Notes may not be publicly offered, sold or advertised, directly or indirectly, in, into or from Switzerland, and will not be listed on SIX Swiss Exchange ("SIX") or on any other exchange or regulated trading facility in Switzerland. Neither this Offering Circular nor any other offering or marketing material relating to the Notes constitutes a prospectus as such term is understood pursuant to article 652a or article 1156 of the Swiss Code of Obligations or a listing prospectus within the meaning of the listing rules of the SIX or any other regulated trading facility in Switzerland or a simplified prospectus or a prospectus as such term is defined in the Swiss Collective Investment Scheme Act, and neither this Offering Circular nor any other offering or marketing material relating to the Notes may be publicly distributed or otherwise made publicly available in Switzerland.

Neither this Offering Circular nor any other offering or marketing material relating to the offering, nor us or the Notes have been or will be filed with or approved by any Swiss regulatory authority. The Notes are not subject to the supervision by any Swiss regulatory authority, e.g., the Swiss Financial Markets Supervisory Authority ("FINMA"), and investors in the Notes will not benefit from protection or supervision by such authority.

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 us or our 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 our 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). We have 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 ours and our affiliates. Certain of the Initial Purchasers or their affiliates that have a lending relationship with us routinely hedge their credit exposure to us 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 our 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 under U.S. Securities Laws

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 or the securities laws of any other jurisdiction. The Notes may not be offered or sold within the United States or to, or for the account or benefit of, U.S. persons (as defined in Regulation S), except in reliance on Rule 144A to QIBs. The Notes may also be offered and sold to non-U.S. persons in offshore transactions in reliance on Regulation S.

Each purchaser of the Notes hereunder will be deemed to have represented and agreed as follows (terms used in this paragraph that are defined in Rule 144A or in Regulations S under the Securities Act are used in this Offering Circular as defined in the Securities Act):

(1) it is purchasing the Notes for its own account or an account with respect to which it exercises sole investment discretion, and it and any such account (i) is a QIB, and is aware that the sale to it is being made in reliance on Rule 144A or (ii) is outside the United States and is not a U.S. person;

(2) it acknowledges that the Notes have not been and will not be registered under the Securities Act or with any securities regulatory authority of any jurisdiction and may not be offered or sold within the United States except as set forth below;

(3) it understands and agrees that if in the future it decides to sell, pledge or otherwise transfer any Notes or any beneficial interest in any Notes, such Notes may be offered, resold, pledged or transferred only (A)(i) to the Company, (ii) to a person whom the seller reasonably believes is a qualified institutional buyer in a transaction meeting the requirements of Rule 144A, (iii) to a non-U.S. person in an offshore transaction meeting the requirements of Rule 903 or 904 of Regulation S under the Securities Act, (iv) pursuant to an exemption from registration under the Securities Act provided by Rule 144 under the Securities Act (if available) or (v) pursuant to another exemption from the Securities Act, provided that, as a condition to the registration of the transfer thereof, the Company or the Fiscal Agent may require the delivery of any documents, including an opinion of counsel that it, in its sole discretion, may deem necessary or appropriate to evidence compliance with such exemption, or (B) pursuant to an effective registration statement under the Securities Act, and, in each of such cases in accordance with any applicable securities laws of any state of the United States;

(4) it agrees to, and each subsequent holder is required to, notify any purchaser of the Notes from it of the resale restrictions referred to in clause (3)(A) above, if then applicable;

(5) it understands and agrees that Notes initially offered in the United States to QIBs will be represented by one or more Restricted Global Notes and that Notes initially offered to non-U.S. persons outside the United States in reliance on Regulation S will be represented by one or more Unrestricted Global Notes;

(6) it understands that the Restricted Global Notes will, unless otherwise agreed by the Company, bear a legend substantially to the following effect:

“THIS SECURITY HAS NOT BEEN REGISTERED UNDER THE U.S. SECURITIES ACT OF 1933, AS AMENDED (THE “SECURITIES ACT”). THE HOLDER HEREOF, BY PURCHASING

THIS SECURITY, AGREES FOR THE BENEFIT OF KOREA EAST-WEST POWER CO., LTD. (THE "COMPANY") THAT THIS SECURITY MAY BE OFFERED, RESOLD, PLEDGED OR OTHERWISE TRANSFERRED ONLY (A)(i) TO THE COMPANY, (ii) TO A PERSON WHOM THE SELLER REASONABLY BELIEVES IS A QUALIFIED INSTITUTIONAL BUYER, AS DEFINED IN RULE 144A UNDER THE SECURITIES ACT, IN A TRANSACTION MEETING THE REQUIREMENTS OF RULE 144A UNDER THE SECURITIES ACT, (iii) TO A NON-U.S. PERSON IN AN OFFSHORE TRANSACTION MEETING THE REQUIREMENTS OF RULE 903 OR 904 OF REGULATION S UNDER THE SECURITIES ACT, (iv) PURSUANT TO AN EXEMPTION FROM REGISTRATION UNDER THE SECURITIES ACT PROVIDED BY RULE 144 UNDER THE SECURITIES ACT (IF AVAILABLE) OR (v) PURSUANT TO ANOTHER EXEMPTION FROM THE SECURITIES ACT, PROVIDED THAT, AS A CONDITION TO THE REGISTRATION OF THE TRANSFER THEREOF, THE COMPANY OR THE FISCAL AGENT MAY REQUIRE THE DELIVERY OF ANY DOCUMENTS, INCLUDING AN OPINION OF COUNSEL THAT IT, IN ITS SOLE DISCRETION, MAY DEEM NECESSARY OR APPROPRIATE TO EVIDENCE COMPLIANCE WITH SUCH EXEMPTION, OR (B) PURSUANT TO AN EFFECTIVE REGISTRATION STATEMENT UNDER THE SECURITIES ACT, AND, IN EACH OF SUCH CASES IN ACCORDANCE WITH ANY APPLICABLE SECURITIES LAWS OF ANY STATE OF THE UNITED STATES."

(7) it understands that the offer or sale of Notes represented by the Unrestricted Global Notes may not be made to a U.S. person or for the account or benefit of a U.S. person (other than a distributor) until the 40th day following the later of the commencement of the offering and the original issue date of the Notes and that the Unrestricted Global Notes will bear a legend to the following effect unless otherwise agreed to by the Company:

"THIS SECURITY (OR ITS PREDECESSOR) WAS ORIGINALLY ISSUED IN A TRANSACTION EXEMPT FROM REGISTRATION UNDER THE U.S. SECURITIES ACT OF 1933, AS AMENDED (THE "SECURITIES ACT"), AND MAY NOT BE TRANSFERRED IN THE UNITED STATES OR TO, OR FOR THE ACCOUNT OR BENEFIT OF, ANY U.S. PERSON EXCEPT PURSUANT TO AN AVAILABLE EXEMPTION FROM THE REGISTRATION REQUIREMENTS OF THE SECURITIES ACT AND ALL APPLICABLE STATE SECURITIES LAWS. TERMS USED ABOVE HAVE THE MEANINGS GIVEN TO THEM IN REGULATIONS UNDER THE SECURITIES ACT."

(8) it acknowledges that prior to any proposed transfer of the Notes in certificated form or of beneficial interests in the Global Notes (other than pursuant to an effective registration statement), the holder of the Notes or the holder of beneficial interests in the Global Notes, as the case may be, may be required to provide certificates and other documentation relating to the manner of such transfer and submit such certifications and other documentation as provided in the Fiscal Agency Agreement; and

(9) it acknowledges that the Company, the Initial Purchasers, the Fiscal Agent and others will rely upon the truth and accuracy of the foregoing acknowledgments, representations and agreements and agrees that if any of such acknowledgments, representations or warranties deemed to have been made by virtue of its purchase of the Notes are no longer accurate, it shall promptly notify the Company; and if it is acquiring any Notes as a fiduciary or agent for one or more accounts, it represents that it has sole investment discretion with respect to each such account and that it has full power to make the foregoing acknowledgments, representations and agreements on behalf of each such account.

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 REGISTERED WITH THE FINANCIAL SERVICES COMMISSION OF KOREA UNDER THE FINANCIAL INVESTMENT SERVICES AND CAPITAL MARKETS ACT OF KOREA. 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 QUALIFIED INSTITUTIONAL BUYER (OR A "KOREAN QIB," AS DEFINED IN THE REGULATION ON THE ISSUANCE OF SECURITIES AND PUBLIC DISCLOSURE, ETC. OF KOREA) REGISTERED WITH THE KOREA FINANCIAL INVESTMENT ASSOCIATION 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 Singapore Law

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.

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, our Korean counsel, will pass upon certain matters as to Korean law. 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

Our audited consolidated financial statements as of and for the years ended December 31, 2017 and 2018 have been audited by Ernst & Young Han Young, independent auditors, and our audited consolidated financial statements as of and for the year ended December 31, 2019 have been audited by Hanul LLC, independent auditors, as stated in their respective reports included elsewhere in this Offering Circular.

INDEX TO FINANCIAL STATEMENTS

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Independent auditors' report

English translation of a report originally issued in Korean

To the Shareholder and the Board of Directors of
Korea East-West Power Co., Ltd.

Opinion

We have audited the accompanying consolidated financial statements of Korea East-West Power Co., Ltd. (the "Company") and its subsidiaries (collectively referred to as the "Group"), which comprise the consolidated statements of financial position as at December 31, 2019, and the consolidated statements of comprehensive income, changes in equity and cash flows for the years then ended, and notes to the consolidated financial statements, including a summary of significant accounting policies.

In our opinion, the accompanying consolidated financial statements present fairly, in all material respects, the consolidated financial position of the Group as at December 31, 2019, and its consolidated financial performance and its consolidated cash flows for the years then ended in accordance with the Rules for Accounting Affairs of Public Corporation and Quasi-governmental Institutions in the Republic of Korea.

Basis for opinion

We conducted our audits in accordance with Korean Standards on Auditing. Our responsibilities under those standards are further described in the *Auditor's responsibilities for the audit of the consolidated financial statements* section of our report. We are independent of the Group in accordance with the ethical requirements in the Republic of Korea that are relevant to our audit of the consolidated financial statements, and we have fulfilled our other ethical responsibilities in accordance with 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

Without qualifying our opinion, users of this audit report need to pay attention to the following matter. As explained in Note 2 to the consolidated financial statements, for those matters not specified in the Rules for Accounting affairs of Public Corporation and Quasi-governmental Institutions in the Republic of Korea, the accompanying consolidated financial statements have been prepared in accordance with Korean International Financial Reporting Standards.

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 Corporation and Quasi-governmental Institutions in the Republic of Korea, and for such internal control as management determines is necessary to enable the preparation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

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

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

Auditor's responsibilities for the audit of the consolidated financial statements

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

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

- Identify and assess the risks of material misstatement of the consolidated financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.

- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Group's internal control.

- Evaluate the appropriateness of accounting policies used in the preparation of the consolidated financial statements 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 audit of the Group. 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.

Other matters

The consolidated financial statements of the Group as of and for the year ended December 31, 2018, presented herein for comparative purpose, were audited by Ernst & Young Han Young Accounting Corp., who expressed an unqualified opinion thereon in their report dated March 22, 2019.

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

Hanul LLC

Seoul, Korea
March 12, 2020

This audit report is effective as of the date of this audit report. Accordingly, certain material subsequent events or circumstances may have occurred during the period from the audit report date to the time this audit report is read. Such events and circumstances could significantly affect the accompanying financial statements and may result in modifications to this report.

Korean East-West Power Co., Ltd. and its subsidiaries
Consolidated statements of financial position
as of December 31, 2019 and 2018
(Korean Won)

	Notes		2019		2018
Assets					
Current assets					
Cash and cash equivalents	5, 6, 40, 41	₩	89,233,253,069	₩	37,248,237,505
Current financial assets	7, 10, 11, 40, 41		84,921,438,656		12,837,861,334
Trade and other receivables	8, 40, 41, 42		707,274,233,886		615,635,053,019
Inventories	12		340,072,187,627		316,202,116,232
Current income tax receivables			23,978,850		41,503,207,697
Current non-financial assets	13		123,741,363,478		47,600,253,895
Assets held for sale	37		4,327,919,986		-
			1,349,594,375,552		1,071,026,729,682
Non-current assets					
Non-current financial assets	7, 9, 10, 11, 40, 41		246,127,004,023		252,605,931,923
Long-term trade and other receivables	8, 40, 41, 42		3,036,100,655		2,489,834,895
Property, plant and equipment, net	15, 19, 24		7,084,260,227,891		6,634,767,673,791
Goodwill	16, 43		103,338,846,648		7,671,613,940
Intangible assets excluding goodwill	17, 24		310,254,006,931		129,733,368,321
Investments in associates and joint ventures	14, 42		774,124,609,785		701,049,742,942
Deferred tax assets	36		189,316,079		188,310,807
Non-current non-financial assets	13		11,778,881,224		12,543,748,752
			8,533,108,993,236		7,741,050,225,371
Total assets		**₩**	**9,882,703,368,788**	**₩**	**8,812,076,955,053**
Liabilities and equity					
Current liabilities					
Trade and other payables	18, 19, 40, 41, 42	₩	520,708,547,704	₩	419,240,507,062
Current financial liabilities	7, 20, 21, 40, 41		806,987,312,939		242,748,205,131
Current non-financial liabilities	25		49,481,627,856		7,226,894,626
Current portion of provision	23		115,544,386,325		39,527,315,483
Current income tax liabilities			30,371,551,708		1,396,458,901
			1,523,093,426,532		710,139,381,203
Non-current liabilities					
Long-term trade and other payables	18, 19, 40, 41		475,373,568,431		14,395,538
Non-current financial liabilities	7, 20, 21, 40, 41		2,637,619,420,037		3,060,865,281,816
Non-current non-financial liabilities	25		5,675,546,301		5,709,433,544
Defined benefit obligation	22, 41		70,655,398,357		58,181,742,032
Deferred tax liabilities	36		387,681,773,097		343,402,208,742
Provisions	23		10,708,815,878		3,581,566,832
			3,587,714,522,101		3,471,754,628,504
Total liabilities			**5,110,807,948,633**		**4,181,894,009,707**
Equity					
Issued capital	26		2,218,598,774,310		2,218,598,774,310
Retained earnings	20, 27, 28		2,550,258,672,649		2,406,254,067,993
Other components of equity	7, 9, 29		(20,481,860,524)		(12,457,934,616)
Equity attributable to owners of the Company			4,748,375,586,435		4,612,394,907,687
Non-controlling interests			23,519,833,720		17,788,037,659
Total equity			**4,771,895,420,155**		**4,630,182,945,346**
Total liabilities and equity		**₩**	**9,882,703,368,788**	**₩**	**8,812,076,955,053**

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

Korea East-West Power Co., Ltd. and its subsidiaries
Consolidated statements of comprehensive income
for the years ended December 31, 2019 and 2018
(Korean Won)

	Notes	2019	2018
Sale of goods		₩ 4,893,532,022,822	₩ 4,971,421,846,379
Rendering of services		2,501,390,499	1,361,773,089
Revenue	4, 30, 42	**4,896,033,413,321**	**4,972,783,619,468**
Cost of sales	38, 42	4,619,238,001,845	4,788,228,693,677
Gross profit		**276,795,411,476**	**184,554,925,791**
Selling and administrative expenses	15,17,19,22, 31,38,42	153,880,666,278	125,916,727,661
Operating profit		**122,914,745,198**	**58,638,198,130**
Other income	32	18,462,221,991	16,072,610,623
Other expenses	32	(4,098,015,789)	(7,244,376,526)
Other profit or loss	14,33,40,41	8,369,684,247	570,066,415
Finance income	7,34,40,41,42	97,954,665,404	107,360,133,790
Finance costs	7,19,35,40,41	(205,722,555,901)	(186,860,672,886)
Gain (loss) on investments in associates and joint ventures	14	88,476,932,184	(3,766,492,394)
Profit (loss) for the year before tax		**126,357,677,334**	**(15,230,532,848)**
Income tax expense (benefit)	36	(15,136,577,088)	(7,161,114,754)
Profit (loss) for the year		**141,494,254,422**	**(8,069,418,094)**
Other comprehensive income			
Other comprehensive income not to be reclassified to profit or loss in subsequent periods:			
Re-measurement gain (loss) on defined benefit plans	22, 27	4,711,789,128	(3,739,157,324)
Gain (loss) on valuation of financial assets at FVOCI	9	(24,553,601,490)	69,362,167,641
Share of other comprehensive income (loss) of associates and joint ventures in equity method	14	(207,795,073)	(103,418,119)
Other comprehensive income to be reclassified to profit or loss in subsequent periods:			
Net gain (loss) on cash flow hedges	7	9,376,365,130	(7,225,406,356)
Exchange differences on translation of foreign operations		2,615,704,305	(440,154,493)
Share of other comprehensive income (loss) of associates and joint ventures in equity method	14	4,537,606,147	12,175,780,492
Other comprehensive income for the year, net of tax		**(3,519,931,853)**	**70,029,811,841**
Total comprehensive income for the year, net of tax		**₩ 137,974,322,569**	**₩ 61,960,393,747**
Profit (loss) for the year, attributable to:			
Owners of the Company		₩ 140,479,112,111	₩ (10,710,309,335)
Non-controlling interests		1,015,142,311	2,640,891,241
		₩ 141,494,254,422	**₩ (8,069,418,094)**
Total comprehensive income for the year, attributable to:			
Owners of the Company		₩ 136,965,526,508	₩ 59,320,394,568
Non-controlling interests		1,008,796,061	2,639,999,179
		₩ 137,974,322,569	**₩ 61,960,393,747**
Earnings (losses) per share:	39		
Basic earnings (losses) per share		₩ 2,425	₩ (185)
Diluted earnings (losses) per share		₩ 2,425	₩ (185)

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

Korea East-West Power Co., Ltd. and its subsidiaries
Consolidated statements of changes in equity
for the years ended December 31, 2019 and 2018

(Korean Won)

	Attributable to owners of the Company					
	Issued capital	Retained earnings	Other components of equity	Total	Non-controlling interest	Total equity
As of January 1, 2018	**₩ 2,218,598,774,310**	**₩ 2,473,110,754,159**	**₩ (77,226,861,090)**	**₩ 4,614,482,667,379**	**₩ 15,148,038,480**	**₩ 4,629,630,705,859**
Changes in accounting policies	-	9,103,460,810	(9,103,460,810)	-		-
Adjusted total equity at the beginning of the year	**2,218,598,774,310**	**2,482,214,214,969**	**(86,330,321,900)**	**4,614,482,667,379**	**15,148,038,480**	**4,629,630,705,859**
Profit (loss) for the year	-	(10,710,309,335)	-	(10,710,309,335)	2,640,891,241	(8,069,418,094)
Changes in comprehensive income:						
Gain on valuation of financial assets at FVOCI	-	-	69,362,167,641	69,362,167,641	-	69,362,167,641
Net loss on cash flow hedges	-	-	(7,225,406,356)	(7,225,406,356)	-	(7,225,406,356)
Re-measurement loss on defined benefit plans	-	(3,738,265,262)	-	(3,738,265,262)	(892,062)	(3,739,157,324)
Share of other comprehensive income (loss) of associates and joint ventures in equity method	-	(103,418,119)	12,175,780,492	12,072,362,373	-	12,072,362,373
Exchange differences on translation of foreign	-	-	(440,154,493)	(440,154,493)	-	(440,154,493)
Total comprehensive income	-	(14,551,992,716)	73,872,387,284	59,320,394,568	2,639,999,179	61,960,393,747
Transaction with owner directly reflected in equity:						
Dividends (Note 27)	-	(61,408,154,260)	-	(61,408,154,260)	-	(61,408,154,260)
As of December 31, 2018	**₩ 2,218,598,774,310**	**₩ 2,406,254,067,993**	**₩ (12,457,934,616)**	**₩ 4,612,394,907,687**	**₩ 17,788,037,659**	**₩ 4,630,182,945,346**
As of January 1, 2019	**₩ 2,218,598,774,310**	**₩ 2,406,254,067,993**	**₩ (12,457,934,616)**	**₩ 4,612,394,907,687**	**₩ 17,788,037,659**	**₩ 4,630,182,945,346**
Profit for the year	-	140,479,112,111	-	140,479,112,111	1,015,142,311	141,494,254,422
Changes in comprehensive income:						
Loss on valuation of financial assets at FVOCI	-	-	(24,553,601,490)	(24,553,601,490)	-	(24,553,601,490)
Net gain on cash flow hedges	-	-	9,376,365,130	9,376,365,130	-	9,376,365,130
Re-measurement gain on defined benefit plans	-	4,718,135,378	-	4,718,135,378	(6,346,250)	4,711,789,128
Share of other comprehensive income (loss) of associates and joint ventures in equity method	-	(207,795,073)	4,537,606,147	4,329,811,074	-	4,329,811,074
Exchange differences on translation of foreign	-	-	2,615,704,305	2,615,704,305	-	2,615,704,305
Total comprehensive income	-	144,989,452,416	(8,023,925,908)	136,965,526,508	1,008,796,061	137,974,322,569
Transaction with owner directly reflected in equity:						
Dividends (Note 27)	-	(984,847,760)	-	(984,847,760)	(1,200,000,000)	(2,184,847,760)
Changes in scope for consolidation	-	-	-	-	5,923,000,000	5,923,000,000
As of December 31, 2019	**₩ 2,218,598,774,310**	**₩ 2,550,258,672,649**	**₩ (20,481,860,524)**	**₩ 4,748,375,586,435**	**₩ 23,519,833,720**	**₩ 4,771,895,420,155**

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

Korea East-West Power Co., Ltd. and its subsidiaries
Consolidated statements of cash flows
for the years ended December 31, 2019 and 2018
(Korean Won)

		2019		2018
Operating activities				
Profit (loss) for the year	₩	141,494,254,422	₩	(8,069,418,094)
Adjustments to reconcile profit (loss) for the year to net cash flows provided by operating activities:				
Pension benefit		34,267,138,844		13,303,877,443
Depreciation of property, plant and equipment		702,072,211,774		631,068,836,018
Amortization of intangible assets		16,610,202,853		15,584,706,177
Income tax expense (benefit)		(15,136,577,088)		(7,161,114,754)
Loss on disposal of property, plant and equipment		8,463,785		390,946,572
Loss on write-off of property, plant and equipment		13,363,539,865		5,911,090,884
Interest expenses		118,244,430,161		106,026,369,194
Gain on disposal of property, plant and equipment		(7,706,341,077)		(4,027,734,192)
Interest income		(6,196,339,837)		(6,000,623,105)
Dividend income		(14,374,776,227)		(5,534,916,651)
Loss on foreign currency translation		76,073,330,057		40,157,170,935
Loss on foreign currency transaction		-		24,992,376,811
Gain on valuation of financial assets at fair value through profit or loss		(53,896,701)		-
Gain on derivative instruments, net		(74,318,084,895)		(80,252,024,168)
Loss (gain) on valuation of investments in associates and joint ventures		(27,032,594,941)		3,766,492,394
Impairment loss on investments in associates and joint ventures		248,141,456		-
Gain on disposal of investments in associates and joint ventures		(61,692,478,699)		-
Gain on disposal of assets held for sale		(23,740,920,952)		-
Net transfer of provisions		75,381,790,355		32,544,259,821
Others		663,931,812		(1,956,577,866)
Changes in operating assets and liabilities:				
Trade receivables		37,484,625,968		(24,424,673,895)
Accrued income		(51,942,090,194)		150,722,057,949
Other receivables		27,460,490,205		(18,733,162,821)
Prepayments		(220,675,710)		(1,386,787,925)
Prepaid expenses		(2,733,806,736)		5,831,960,848
Other current assets		3,065,990,690		(20,739,411,971)
Other non-current assets		-		21,974,091
Inventories		(23,786,678,988)		(12,955,670,084)
Trade payables		(22,480,907,446)		(99,282,164,786)
Other payables		7,859,609,152		48,742,978,398
Accrued expenses		4,614,132,945		(1,851,764,266)
Unearned revenue		(19,797,450)		(823,998,755)
Withholdings		(2,100,511,965)		1,237,960,201
Other current liabilities		589,540,916		(4,054,020,848)
Other non-current liabilities		(47,310,237)		(57,582,990)
Other non-current provisions		-		(483,266,220)
Payment of provision		(39,595,777,382)		(55,558,462,838)
Pension benefits paid		(9,458,948,017)		(3,159,857,200)
Increase in plan assets		(5,070,240,829)		(7,000,000,000)
		871,793,069,889		716,789,824,307
Dividends received		25,591,446,227		10,623,866,651
Interest paid		(105,023,247,161)		(92,097,248,343)
Interest received		6,961,911,388		7,089,228,938
Income tax refund (paid)		51,437,031,672		(48,529,804,206)
Net cash flows provided by operating activities	₩	**850,760,212,015**	₩	**593,875,867,347**

(Continued)

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

Korea East-West Power Co., Ltd. and its subsidiaries
Consolidated statements of cash flows (cont'd)
for the years ended December 31, 2019 and 2018
(Korean Won)

		2019		2018
Investing activities				
Collection of loans	₩	27,757,585,867	₩	4,179,828,994
Collection of deposits		1,533,341,137		3,959,970,294
Decrease in financial assets at amortized cost		77,180,000		-
Proceeds from disposal of land		-		68,434,360
Proceeds from disposal of buildings		2,419,773,644		217,254,828
Proceeds from disposal of machinery		7,672,341,664		10,143,317,540
Proceeds from disposal of vehicles		6,335,091		114,811,847
Proceeds from disposal of other property, plant and		526,874		-
Proceeds from disposal of other intangible asset		6,325,061,840		
Proceeds from disposal of assets held for sale		29,100,000,000		
Receipt of government grants		2,767,419,000		-
Cash and cash equivalents acquired in merge		2,388,982,427		
Changes in scope for consolidation		5,923,000,000		
Net increase in financial assets at fair value through profit or loss		(43,200,000,000)		(100,000,000)
Increase in investment in joint ventures		(60,879,540,690)		(35,515,499,000)
Increase in loans		(42,163,961,923)		(5,938,098,281)
Payment of deposits		(1,148,685,454)		(2,320,047,509)
Increase in financial assets at amortized cost		(2,104,200,000)		(1,116,560,000)
Purchase of land		-		(236,571,213)
Purchase of structures				(427,468,214)
Purchase of machinery		(32,446,911,332)		(54,339,642,278)
Purchase of vehicles		(214,983,532)		(319,893,520)
Purchase of other property, plant and equipment		(371,431,014)		(365,318,908)
Increase in construction-in-progress		(554,638,179,146)		(388,080,936,818)
Purchase of other intangible asset		(55,027,782,475)		-
Cash outflow from merge		(156,700,000,000)		-
Net cash flows used in investing activities		**(862,924,128,022)**		**(470,076,417,878)**
Financing activities				
Net borrowing (repayments) of short-term borrowings		76,000,000,000		(78,500,000,000)
Proceeds from borrowings and bonds		229,268,720,000		736,249,213,135
Repayment of borrowings and bonds		(198,805,652,490)		(757,745,096,811)
Settlement of derivative instruments		16,448,365,859		40,650,382,257
Lease payments		(57,275,025,922)		-
Dividen		(2,184,847,760)		(61,408,154,260)
Net cash flows used in financing activities		**63,451,559,687**		**(120,753,655,679)**
Net foreign exchange difference		697,371,884		813,199,744
Net increase in cash and cash equivalents		51,985,015,564		3,858,993,534
Cash and cash equivalents at the beginning of the year		37,248,237,505		33,389,243,971
Cash and cash equivalents at the end of the year	₩	**89,233,253,069**	₩	**37,248,237,505**

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

1. Corporate information

Korea East-West Power Co., Ltd. (the "Company") was incorporated on April 2, 2001, for the purpose of developing and producing electric power in the Republic of Korea. The Company and its subsidiaries (collectively referred to as the "Group") were established through the spin-off of the power generation division of Korea Electric Power Corporation ("KEPCO") and designated as market-type public institution in August 2010 in accordance with Article 5 of the *Act on Management of Public Institutions (the "Act")* and Article 3 of the Addendum to the Act. As of December 31, 2019, the Group's power generating capacity is 11,193.4MW and the Group owns and operates five power plants, including the Dangjin Thermal Power Plant.

As of December 31, 2019 and 2018, KEPCO wholly owns the Company's issued and outstanding shares, amounting to ₩289,661 million.

The Group's consolidated subsidiaries as of December 31, 2019 and 2018 are as follows:

			Equity interest and voting rights (%)	
	Principal activity	Country of domicile	Dec. 31, 2019	Dec. 31, 2018
EWP Philippines Corporation	Holding company	Philippines	100.0	100.0
EWP America, Inc.	Overseas investment	USA	100.0	100.0
EWP Renewable Corporation	Overseas investment	USA	100.0	100.0
DG Fairhaven Power, LLC	Power plants operation	USA	100.0	100.0
DG Whitefield, LLC	Power plants operation	USA	100.0	100.0
Springfield Power, LLC	Power plants operation	USA	100.0	100.0
California Power Holdings, LLC	Power plants operation	USA	100.0	100.0
EWP RC Biomass Holdings, LLC	Overseas investment	USA	100.0	100.0
EWP (Barbados) 1 SRL	Overseas investment	Barbados	100.0	100.0
PT. EWP Indonesia	Overseas investment	Indonesia	99.9	99.9
Gyeongju Wind Power Co., Ltd.	Renewable energy	South Korea	70.0	70.0
EWP Bylong Pty Ltd.	Overseas investment	Australia	100.0	100.0
EWP Service Co., Ltd.	Service rendering	South Korea	100.0	100.0
Paju EcoEnergy Co., Ltd.	Power plants operation	South Korea	89.0	-

The summarized financial information of the consolidated subsidiaries as of December 31, 2019 and 2018 and for the years then ended is as follows (Korean won):

	2019			
	Total assets	Total liabilities	Sales	Profit (loss) for the year
EWP Philippines Corporation	₩ 1,690,984,962	₩ 887,705,947	₩ -	₩ (110,708,130)
EWP America, Inc. (*)	66,621,588,238	2,619,079,282	21,718,766,617	(6,497,358,794)
EWP (Barbados) 1 SRL	279,294,974,729	1,031,300,383	2,914,125,000	2,367,590,156
Gyeongju Wind Power Co., Ltd.	113,745,397,165	75,427,484,608	15,547,777,009	3,383,776,112
PT. EWP Indonesia	34,454,761,486	4,759,252	-	5,124,113,940
EWP Bylong Pty Ltd.	3,591,427	39,947,331	-	(12,158,578)
EWP Service Co., Ltd.	4,785,716,920	4,063,535,853	20,837,222,044	162,092,546
Paju EcoEnergy Co., Ltd.	53,839,000,000	-	-	-

(*) The summarized financial information of EWP America Inc. includes EWP Renewable Corporation and 5 other subsidiaries.

1. Corporate information (cont'd)

	2018			
	Total assets	Total liabilities	Sales	Profit (loss) for the year
EWP Philippines Corporation	₩ 1,683,655,758	₩ 828,914,909	₩ -	₩ (10,824,195)
EWP America, Inc. (*)	72,525,061,183	4,902,730,974	29,556,817,552	(4,483,096,433)
EWP (Barbados) 1 SRL	268,032,604,678	1,581,370,200	687,687,500	11,220,819,790
Gyeongju Wind Power Co., Ltd.	122,303,240,280	83,347,981,258	21,906,103,471	8,802,953,103
PT. EWP Indonesia	7,443,567,382	14,395,538	-	3,138,226,146
EWP Bylong Pty Ltd.	5,543,568,447	16,291,911	-	(15,458,488)
EWP Service Co., Ltd.	666,545,806	96,677,800	-	(30,131,994)

(*) The summarized financial information of EWP America Inc. includes EWP Renewable Corporation and 5 other subsidiaries.

Changes in scope for consolidation for the year ended December 31, 2019 are as follows:

Subsidiary	Changes	Purpose
Paju EcoEnergy Co., Ltd.	Newly included in the consolidation	Investment in new establishment for sustainable fuel cell power generation project in rural area

Restrictions on ability to use the assets and settle the liabilities of the Group are as follows:

Subsidiary	Restrictions
Gyeongju Wind Power Co., Ltd.	Dividends and payments for renewable energy supply certification can only be paid by the Group when all conditions in the loan agreement between Gyeongju Wind Power Co., Ltd. and the financial institutions are met, or with prior written consent from the relevant financial institutions.

2. Basis of preparation of the consolidated financial statements and summary of significant accounting policies

2.1 Basis of preparation

The consolidated financial statements of the Group have been prepared in accordance with the Rules for Accounting Affairs of Public Corporation and Quasi-governmental Institutions in the Republic of Korea (the "Rules"). For those matters not specified in the Rules, the consolidated financial statements have been prepared, pursuant to Article 2, paragraph 5 of th Rules, in accordance with Korean International Financial Reporting Standards ("KIFRS"), which is an accounting standard set by adopting International Financial Reporting Standards ("IFRS") established and published by the International Accounting Standards Board.

The accompanying consolidated financial statements have been translated into English from the Korean language financial statements. In the event of any differences in interpreting the consolidated financial statements or the independent auditors' report thereon, the Korean version, which is used for regulatory reporting purposes, shall prevail.

The consolidated financial statements are presented in Korean won, except when otherwise indicated.

2.2 New and revised KIFRS in issue, but not yet effective

The following new standards have been published but are not mandatory for the Group for annual period begun on January 1, 2019, and the Group has not early adopted them.

The Group does not expect that these amendments have a significant impact on the financial statements.

- Amendments to *The Conceptual Framework for Financial Reporting*
- Amendments to KIFRS 1103 *Business Combination* – Definition of a Business
- Amendments to KIFRS 1001 *Presentation of Financial Statements* and KIFRS 1008 *Accounting policies, changes in accounting estimates and errors* – Definition of Materiality
- Amendments to KIFRS 1117 *Insurance Contracts*

2.3 New and amended standards adopted by the Group

The Group applied the accounting policies which were applied as of December 31, 2018 except those described below. The Group applied the following amended and enacted standards for the year begun on January 1, 2019.

2.3.1 KIFRS 1116 *Leases*

This standard will replace KIFRS 1017 *Leases*, KIFRS 2104 *Determining whether an Arrangement contains a Lease*, KIFRS 2015 *Operating Leases-Incentives* and KIFRS 2027 *Evaluating the Substance of Transactions Involving the Legal Form of a Lease.*

KIFRS 1116 *Leases* introduced a single accounting model for lessees. As a result, the Group, as a lessee, recognized right-of-use assets representing its rights to use the underlying assets and lease liabilities representing its obligation to make lease payments. Lessor accounting remains similar to previous accounting policies.

The Group adopted KIFRS 1116 using the modified retrospective method by recognizing the cumulative effect of initial application as of January 1, 2019, the date of initial application. Accordingly, the comparative information presented for 2018 has been prepared by applying KIFRS 1017 and has not been restated.

The Group determined whether a contract is, or contains, a lease at inception of a contract by applying KIFRS 2104 *Determining whether an Arrangement contains a Lease*. Applying the new standard KIFRS 1116, the Group assesses whether a contract is, or contains, a lease at inception of a contract based on the new definition of a lease from the date of initial application. Under KIFRS 1116, a contract is, or contains, a lease if the contract conveys the right to control the use of an identified asset for a period of time in exchange for consideration.

The Group elects a practical expedient which is not to separate non-lease components from lease components at the committed date or revaluation date of a lease contract, and the Group instead will account for each lease component and any associated non-lease components as a single component.

At the lease commencement date, the Group recognizes a right-of-use asset and a lease liability. The right-of-use asset is initially measured at cost and is subsequently measured at cost:

- less any accumulated depreciation and any accumulated impairment losses; and
- adjusted for any remeasurement of the lease liability.

The lease liability is initially measured at the present value of the lease payments that are not paid at the commencement date, discounted using the interest rate implicit in the lease. If that rate cannot be readily determined, the Group shall use the Group's incremental borrowing rate.

2.3.1 KIFRS 1116 *Leases* (cont'd)

The lease liability is subsequently increasing the carrying amount to reflect interest on the lease liability and reducing the carrying amount to reflect the lease payments made.

The Group remeasures the lease liability by discounting the revised lease payments, if either:
- there is a change in future lease payments resulting from a change in an index or a rate used to determine those payments
- there is a change in the amounts expected to be payable under a residual value guarantee
- there is a change in determining the lease term if the contract contains options to extend or terminate the lease

The Group assesses whether it is reasonably certain to exercise the option to extend the lease to determine the lease term, which significantly affects the amounts of the right-of-use assets and lease liabilities to be recognized.

The Group previously classified the contracts of consecutive voyage charter and etc. as an operating lease in accordance with KIFRS 1017. At the date of initial application for those agreements except short-term leases and leases of low-value assets, the Group measured lease liabilities at the present value of the lease payments that were not paid at that date using its incremental borrowing rate as of January 1, 2019. The cost of the right-of-use assets comprised the same amounts of the lease liabilities. The Group adjusted the amounts of lease payments prepaid or incurred related to the lease recognized in the consolidated statement of financial position immediately before the date of initial application.

In addition, the Group previously classified some of its facilities as a finance lease according to KIFRS 1017. For the lease that was classified as a finance lease, the carrying amount of the right-of-use asset and the lease liability at the date of initial application is the carrying amount of the lease asset and lease liability measured in accordance with KIFRS 1017 immediately before that date.

The effects of the initial application of KIFRS 1116 and details of the practical expedients applied by the Group, are described in Note 2.4.9.

2.3.2 Amendment to KIFRS 1109 *Financial Instruments*

The amendment specifies that particular financial assets with prepayment features that may result in reasonable negative compensation for the early termination of such contracts are eligible to be measured at amortised cost. If financial liabilities measured at amortized cost has been changed but not removed, the effect of the change should be recognized in profit or loss. The amendment does not have a significant impact on the consolidated financial statements.

2.3.3 Amendment to KIFRS 1019 *Employee Benefits*

The amendment requires that assumptions used in remeasurement of net defined benefit liability (asset) should be used to calculate current service cost and net interest for the remaining period after the plan amendment, curtailment or settlement due to the changes in defined benefit plan. The amendment also requires that decrease of unrecognized surplus due to the effect of the asset ceiling should be recognized as part of past service cost or settlement gain or loss. The amendment does not have a significant impact on the consolidated financial statements.

2.3.4 Amendment to KIFRS 1028 *Investments in Associates and Joint Ventures*

The amendment clarifies that KIFRS 1109 should be applied for other financial instruments in an associate or joint venture to which the equity method is not applied. Regarding the accounting for impairment of long-term interests that form part of the net investment in an associate or joint venture, the amendment requires that KIFRS 1109 should be applied preferentially. The amendment does not have a significant impact on the consolidated financial statements.

2.3.5 Enactment to Interpretation of KIFRS 2123 *Uncertainty over Income Tax Treatments*

The enacted Interpretation applies to the recognition and measurement of current and deferred taxes when there is uncertainty as to whether the tax authorities will accept the tax treatment applied by the entity, and provides guidance on the accounting unit of uncertainty regarding income taxes and circumstances in which revaluation is necessary. The enactment does not have a significant impact on the consolidated financial statements.

2.3.6 Annual Improvements 2015-2017 Cycle

- **Amendment to KIFRS 1103 *Business Combination***

The amendment clarifies that when a party to a joint arrangement obtains control of a business that is a joint operation, and had rights to the assets and obligations for the liabilities relating to that joint operation immediately before the acquisition date, the transaction is a business combination achieved in stages. In such cases, the acquirer should remeasure its entire previously held interest in the joint operation. The amendment does not have a significant impact on the consolidated financial statements.

- **Amendment to KIFRS 1111 *Joint Agreements***

The amendment clarifies that when 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. In such cases, previously held interests in the joint operation are not remeasured. The amendment does not have a significant impact on the consolidated financial statements.

- **Amendment to KIFRS 1012 *Income Tax***

The amendment clarifies that income tax consequences of dividends are linked more directly to past transactions or events that generated distributable profits than to distributions to owners. Therefore, an entity shall recognize the income tax consequences of dividends in profit or loss, other comprehensive income or equity according to where the entity originally recognized those past transactions or events. The amendment does not have a significant impact on the consolidated financial statements.

- **Amendment to KIFRS 1023 *Borrowing Costs***

The amendment clarifies that an entity should include borrowings made specifically to obtain a qualifying asset in general borrowings when that qualifying asset is ready for its intended use or sale. The amendment does not have a significant impact on the consolidated financial statements.

2.4 Summary of significant accounting policies

The significant accounting policies under KIFRS followed by the Group in the preparation of its consolidated financial statements are summarized below. Except for those as disclosed in Note 2.3, these accounting policies have been applied consistently to the consolidated financial statements for the current period and accompanying comparative periods.

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 based on the fair value of the consideration given in exchange for assets. The Group's significant accounting policies are as follows.

2.4.1 Basis of consolidation

The consolidated financial statements incorporate the financial statements of the Company and entities (including special-purpose entities) controlled by the Company (its subsidiaries). Control is achieved where an entity has the power to govern the financial and operating policies of an entity so as to obtain benefits from its activities.

Gain and loss on subsidiaries acquired or disposed of during the year are included in the consolidated statements of comprehensive income from the effective date of acquisition and up to the effective date of disposal, as appropriate. The carrying amounts of non-controlling interests are the amount to be reflected of the changes in their relative interests in the subsidiaries. Total comprehensive income of subsidiaries is attributed to the non-controlling interests even if this results in the non-controlling interests having a deficit balance.

If a member of the Group uses accounting policies other than those adopted in the consolidated financial statements for like transactions and events in similar circumstances, appropriate adjustments are made to that Group member's financial statements in preparing the consolidated financial statements to ensure conformity with the Group's accounting policies. When necessary, adjustments are made to the financial statements of subsidiaries to bring their accounting policies into line with those used by the Group.

All intragroup transactions, balances, income and expenses are eliminated in full upon consolidation for the years ended December 31, 2019 and 2018.

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 Company.

When the Company loses control of a subsidiary, the 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 amount 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 other comprehensive income and accumulated in equity, the amounts previously recognized in other comprehensive income and accumulated in equity are accounted for as if the Company had directly disposed 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 recognized as the fair value on initial recognition for subsequent accounting under KIFRS 1039 *Financial Instruments: Recognition and Measurement* or, when applicable, the cost on initial recognition of an investment in an associate or a jointly controlled entity.

2.4 Summary of significant accounting policies (cont'd)

2.4.2 Cash and cash equivalents

Cash and cash equivalents in the consolidated statement of financial position comprise cash at banks and on hand and short-term deposits with a maturity of three months or less from the date of acquisition.

2.4.3 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 acquisition-date 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 KIFRS 1012 *Income Taxes* and KIFRS *1019 Employee Benefits,* respectively;
- the acquirer shall measure a liability or an equity instrument related to share-based payment transactions of the acquiree or the replacement of an acquiree's share-based payment transactions with share-based payment transactions of the acquirer in accordance with the method in KIFRS 1102 *Share-based Payment* at the acquisition date.
- assets (or disposal groups) that are classified as held for sale in accordance with KIFRS 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 the consideration transferred, the amount of any non-controlling interests in the acquiree, and 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, net of the acquisition-date amounts of the identifiable assets acquired and liabilities assumed exceeds the sum of the consideration transferred, the amount of any non-controlling interests in the acquiree and the fair value of the acquirer's previously held interest in the acquiree (if any), the excess is recognized immediately in profit or loss as a bargain purchase gain.

Non-controlling interest that is present on acquisition day and if it entitles the holder to a proportionate share of the entity's net assets in an event of a liquidation, the non-controlling interest may be initially measured either at fair value or at the non-controlling interest's proportionate share of the recognized amounts of the acquiree's identifiable net assets. The choice of measurement can be elected 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 other KIFRSs.

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. Contingent consideration that is classified as an asset or a liability is remeasured at subsequent reporting dates in accordance with KIFRS 1109 *Financial Instruments* or KIFRS 1037 *Provisions, Contingent Liabilities and Contingent Assets*, as appropriate, with the corresponding gain or loss being recognized in profit or loss.

2.4 Summary of significant accounting policies (cont'd)

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 (i.e. the date when the Group obtains control) and the resulting gain or loss, if any, is recognized in profit or loss.

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.

2.4.4 Investments in associates (Equity-accounted investees)

An associate is an entity over which the Group has significant influence and that is neither a subsidiary nor an interest in a joint venture.

The existence of significant influence by an entity is usually evidenced in one or more of the following ways:
① representation on the Board of Directors or equivalent governing body of the investee;
② participation in policy-making processes, including participation in decisions about dividends or other distributions;
③ material transactions between the entity and its investee;
④ interchange of managerial personnel; or
⑤ provision of essential technical information.

The results and assets and liabilities of associates 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 KIFRS 1105 *Non-current Assets Held for Sale and Discontinued Operations*. Under the equity method, an investment in an associate is initially recognized in the consolidated statement of financial position at cost and adjusted thereafter to recognize the Group's share of the profit or loss and other comprehensive income of the associate. When the Group's share of losses of an associate exceeds the Group's interest in that associate (which includes any long-term interests that, in substance, form part of the Group's net investment in the associate), the Group discontinues recognizing its share of further losses. 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.

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 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.

The requirements of KIFRS 1028 *Investments in Associates and Joint Ventures* are applied to determine whether it is necessary to recognize any impairment loss with respect to the Group's investment in an associate. When necessary, the entire carrying amount of the investment (including goodwill) is tested for impairment in accordance with KIFRS 1036 *Impairment of Assets* as a single asset by comparing its recoverable amount (higher of value in use and fair value less costs to sell) with its carrying amount, any impairment loss recognized forms part of the carrying amount of the investment. Any reversal of that impairment loss is recognized in accordance with KIFRS 1036 to the extent that the recoverable amount of the investment subsequently increases.

When the Group transacts with its associate, incomes and losses resulting from the transactions with the associate are recognized in the Group's consolidated financial statements only to the extent of interests in the associate that are not related to the Group.

2.4 Summary of significant accounting policies (cont'd)

2.4.5 Investments in joint ventures

A joint venture is a contractual arrangement whereby the Group and other parties undertake an economic activity that is subject to joint control (i.e. when the strategic financial and operating policy decisions relating to the activities of the joint venture require the unanimous consent of the parties sharing control).

When the Group performs the economic activities according to the joint arrangement, its share of any liabilities incurred jointly by the Group and other joint ventures is recognized in the financial statement of the relevant entity and classified by nature. Any liabilities and expenses incurred jointly by the Group and other joint ventures are accounted for by accrual principle. Among the output of the joint venture, revenue from sales and use of interests of the Group and interests in expenses occurred by joint venture is recognized to the extent that it is probable that the economic benefits will flow to the Group and the revenue can be reliably measured.

The Group reports its interests in jointly controlled entities using the equity method, except when the investment is classified as held for sale, in which case it is accounted for in accordance with KIFRS 1105 *Non-current Assets Held for Sale and Discontinued Operations*.

Any goodwill arising on the acquisition of the Group's interest in a jointly controlled entity is accounted for in accordance with the Group's accounting policy for goodwill arising in a business combination.

When the Group transacts with its jointly controlled entity, income and loss resulting from jointly controlled entities are recognized in the Group's consolidated financial statements only to the extent of interests in the jointly controlled entity that are not related to the Group.

2.4.6 Goodwill

Goodwill generated by business combinations is measured at cost at acquisition date less any accumulated impairment losses.(Note 43)

For the purpose of impairment testing, goodwill acquired in a business combination is, from the acquisition date, allocated to each of the Group's cash generating units (CGUs) that are expected to benefit from the combination, irrespective of whether other assets or liabilities of the acquiree are assigned to those units.

Goodwill is tested for impairment annually and when circumstances indicate that the carrying value may be impaired. Impairment is determined for goodwill by assessing the recoverable amount of each CGU (or group of CGUs) to which the goodwill relates. When the recoverable amount of the CGU is less than its carrying value, an impairment loss is recognized to goodwill and then other assets proportionately. Impairment losses related to goodwill cannot be reversed in the future periods.

When disposing of CGUs, the related goodwill amount is considered in determining gain or loss from disposal.

Accounting policy for goodwill from acquisition of associates is explained in Note 2.4.4.

2.4 Summary of significant accounting policies (cont'd)

2.4.7 Non-current assets held for sale

Non-current assets or disposal groups comprising assets and liabilities that are expected to be recovered primarily through sale rather than through continuing use are classified as held for sale. In order to be classified as held for sale, the assets or disposal groups must be available for immediate sale in their present condition and their sale must be highly probable. The assets or disposal groups that are classified as non-current assets held for sale are measured at the lower of their carrying amount and fair value less cost to sell.

The assets or disposal groups that are classified as non-current assets held for sale are not depreciated. The Group recognizes an impairment loss for any initial or subsequent write-down of an asset or disposal group to fair value less costs to sell, and a gain for any subsequent increase in fair value less costs to sell, up to the cumulative impairment loss previously recognized.

2.4.8 Revenue from contracts with customers

The Group recognizes revenue by applying a five-step revenue recognition model. A five-step revenue recognition model is applied to all types of contracts (① Identifying the contract → ② Identifying performance obligation→ ③ Determining the transaction price → ④ Allocating the transaction price to performance obligations→ ⑤ Recognizing recognition when satisfying a performance obligation).

Identify the performance obligations in the contract
The electricity supply in the Korea Power Exchange pursuant to the Electricity Market Rule is identified as a series of distinct goods or services as a single performance obligation. In addition to power supply, the Group is engaged in contracts with customers to provide power generation byproducts, power generation related services, and heat supply, and identifies distinct performance obligations for each contract.

The performance obligations over time
The Group provides customers with power supply, plant operation and management service, power generation operation system and technical service over time. The Group recognizes revenues according to the progress depicted the Group's performance in transferring control of goods or services on a reasonable basis.

Customers are required to make and use assets that are controlled by the customer at the same time as the Group performs the benefits provided by the performance of the Group. If the entity does not have a substitute purpose and the entitlement to be paid for the portion that has been completed up to now is recognized by the entity, the entity can recognize the profit by applying the progress criteria.

Variable consideration
An amount of consideration can vary because of discounts, rebates, refunds, credits, price concessions, incentives, performance bonuses, penalties or other similar items. Transfer price consists of fixed and variable consideration when variable consideration is included in and the Company estimates an amount of variable consideration by using either of the expected value or the most likely amount. The Group shall include in the transaction price some or all of an amount of variable consideration estimated 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. The amount of consideration received (or receivable) for which the Group does not expect to be entitled shall be recognized as a refund liability.

Allocating the transaction price
The Group allocates the transaction price to each performance obligation identified in a contract on a relative stand-alone selling price basis. The Group will use the ' Adjusted market assessment approach' to estimate the stand-alone selling price of each performance obligation and will use the 'Expected cost plus a margin approach', which forecasts its expected costs of satisfying a performance obligation and then adds an appropriate margin for that good or service exceptionally for some transaction.

2.4 Summary of significant accounting policies (cont'd)

2.4.9 Lease

The Group has applied KIFRS 1116 *Leases* from January 1, 2019, the date of initial application.

Under the new standard, with implementation of a single lease model, lessee is required to recognize assets and liabilities for all leases of which lease term is over 12 months and underlying assets are not low value assets. A lessee is required to recognize a right-of-use asset and a lease liability representing its obligation to make lease payments.

An entity shall assess whether the contract is, or contains, a lease at inception of a contract and also at initial adoption of KIFRS 1116. However, the Group may not reassess all arrangements entered into before the date of initial application of the standard by applying the practical expedient.

For a contract that is, or contains, a lease, an entity shall account for each lease component within the contract as a lease separately from non-lease components of the contract. As a practical expedient, the Group may elect, by class of the 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 component.

The lease accounting as a lessor has not changed significantly under the new standard. 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.

(a) The Group as a lessor

Amounts due from lessees under finance leases are recognized as receivables at the amount of the Group's net investment in the leases. Interest income is recognized using the effective interest method on the Group's net investment outstanding in respect of the finance leases.

Lease 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 as expenses on a straight-line basis over the lease term.

(b) The Group as a lessee

Leases classified as finance leases previously
For finance leases under KIFRS No. 1017, the carrying amounts of the right-of-use assets and the lease liabilities as of January 1, 2019 were determined at the carrying amounts of the finance lease assets and lease liabilities under KIFRS No. 1017 immediately before that date.

The Group used the carrying amount of the lease assets and the lease liabilities that were classified as finance leases previously for the carrying amount of the right-of-use assets and the lease liabilities at the date of initial application. For those leases, the Group has accounted for the right-of-use assets and the lease liabilities applying this standard from the date of initial application.

2.4 Summary of significant accounting policies (cont'd)

Leases classified as operating leases previously
For leases previously classified as an operating lease in accordance with KIFRS 1017, the Group recognized right-of-use assets and lease liabilities at the date of initial application due to changes in accounting policies.

Initial measurement of the lease liability
At the date of initial application, the Group measured the lease liabilities at the present value of the lease payments discounted using the incremental borrowing rate at the date of initial application. The incremental borrowing rate used to measure the lease liabilities was 2.12% as of January 1, 2019.

		January 1, 2019
Operating lease commitments as of December 31, 2018	₩	532,467,054,024
Present value discounted using the incremental borrowing rate as of January 1, 2019, the date of initial application		472,950,828,722
Lease liabilities recognized as of December 31, 2018		-
Recognition exemption for leases of low-value assets		(784,442,308)
Recognition exemption for short-term leases		(44,057,400)
Lease liabilities recognized as of January 1, 2019		472,122,329,014

The Group applied a single discount rate to a portfolio of leases with reasonably similar characteristic and used hindsight, such as in determining the lease term if the contract contains options to extend or terminate the lease based on practical expedients when applying this standard.

Initial measurement of the right-of-use assets
For leases previously classified as an operating lease in accordance with KIFRS 1017, the Group recognized a right-of-use asset at the date of initial application. The Group measured a right-of-use asset at an amount equal to the lease liability, adjusted by the amount of any prepaid or accrued lease payments relating to that lease recognized in the consolidated statement of financial position immediately before the date of initial application.

When measuring a right-of-use asset applying this standard retrospectively ('cumulative catch-up' transition method), the Group applied the practical expedients on a lease-by-lease basis described below:

- a lessee may rely on its assessment of whether leases are onerous applying KIFRS 1037 *Provisions, Contingent Liabilities and Contingent Assets* immediately before the date of initial application as an alternative to performing an impairment review.
- a lessee may exclude initial direct costs from the measurement of the right-of-use asset at the date of initial application.

A contract recognized as a lease prior to the date of initial application is accounted for as a lease regardless of whether the contract is, or contains, a lease under the new standard. After the date of initial application, the Group shall evaluate a new contract whether the contract is, or contains, a lease.

(c) Summary of the new standard KIFRS 1116 Leases

The summary of new accounting policies for applying the KIFRS 1116 *Leases* from January 1, 2019, the date of initial application, are described below.

Right-of-use asset
The Group recognizes a right-of-use asset and a lease liability at the lease commencement date. A right-of-use asset is initially measured at cost and subsequently, at the amount less accumulated depreciation and impairment loss. If remeasurement of the related lease liability is needed, the right-of-use asset is adjusted. The cost of the right-of-use asset shall comprise the amount of the initial measurement of the lease liability, any initial direct costs incurred, any lease payments made at or before the commencement date and any lease incentives received. If it is not reasonably estimated that the ownership of the lease asset transfers to the Group at the end of the lease term, the Group shall depreciate the right-of-use asset for the shorter of the estimated useful life or the lease term. The Group reviews impairment losses for the right-of-use assets.

2.4 Summary of significant accounting policies (cont'd)

Lease liability

At the commencement date, the Group shall measure the lease liability at the present value of the lease payments that are not paid at that date. The lease payments included in the measurement of the lease liability comprise the following payments for the right to use the underlying asset during the lease term that are not paid at the commencement date:

(a) fixed payments (including in-substance fixed payments), less any lease incentives receivable;
(b) variable lease payments that depend on an index or a rate;
(c) amounts expected to be payable by the lessee under residual value guarantees;
(d) the exercise price of a purchase option if the lessee is reasonably certain to exercise that option (assessed considering the factors); and
(e) payments of penalties for terminating the lease, if the lease term reflects the lessee exercising an option to terminate the lease.

Variable lease payments that do not depend on an index or a rate are recognized in profit or loss in the period in which they are incurred.

The Group shall measure the lease liability at the present value of the lease payments discounted using the Group's incremental borrowing rate if interest rate implicit in the lease can not be readily determined.
After the commencement date, the Group shall measure the lease liability by:

(a) increasing the carrying amount to reflect interest on the lease liability;
(b) reducing the carrying amount to reflect the lease payments made; and
(c) remeasuring the carrying amount to reflect any reassessment or lease modifications or to reflect revised in-substance fixed lease payments

Lease of low-value asset and short-term lease

Related to the short-term leases of machinery the Group applies recognition exemption for short-term leases and, also related to the leases of low-value furniture the Group applies recognition exemption for leases of low-value assets. Lease payments for the short-term leases and the leases of low-value assets are recognized in profit or loss on a straight-line basis over the lease term.

The carrying amounts of right-of-use assets and lease liabilities and the changes for the year ended December 31, 2019, are described in Note 19.

2.4 Summary of significant accounting policies (cont'd)

The effects of applying KIFRS 1116 on the consolidated statements of financial position as of January 1, 2019 (the date of initial application) are as follows (Korean won):

	January 1, 2019		
	Amount before adopting KIFRS 1116	Adjustment	Amount after adjustment of KIFRS 1116
Current assets:			
Cash and cash equivalents	₩ 37,248,237,505	₩ -	₩ 37,248,237,505
Current financial assets	12,837,861,334	-	12,837,861,334
Trade and other receivables	615,635,053,019	-	615,635,053,019
Inventories	316,202,116,232	-	316,202,116,232
Current income tax assets	41,503,207,697	-	41,503,207,697
Current non-financial assets	47,600,253,895	-	47,600,253,895
Non-current assets:			
Non-current financial assets	252,605,931,923	-	252,605,931,923
Long-term trade and other receivables	2,489,834,895	-	2,489,834,895
Property, plant and equipment	6,634,767,673,791	472,122,329,014	7,106,890,002,805
Goodwill	7,671,613,940		7,671,613,940
Intangible assets excluding goodwill	129,733,368,321	-	129,733,368,321
Investments in associates and joint ventures	701,049,742,942	-	701,049,742,942
Deferred tax assets	188,310,807	-	188,310,807
Non-current & non-financial assets	12,543,748,752		12,543,748,752
	8,812,076,955,053	472,122,329,014	9,284,199,284,067
Current liabilities:			
Trade and other payables	419,240,507,062	39,791,509,573	459,032,016,635
Current financial liabilities	242,748,205,131	-	242,748,205,131
Current non-financial liabilities	7,226,894,626	-	7,226,894,626
Current provisions	39,527,315,483	-	39,527,315,483
Current income tax liabilities	1,396,458,901		1,396,458,901
Non-current liabilities:			
Long-term trade and other payables	14,395,538	432,330,819,441	432,345,214,979
Non-current financial liabilities	3,060,865,281,816	-	3,060,865,281,816
Non-current & non-financial liabilities	5,709,433,544	-	5,709,433,544
Defined benefit obligation	58,181,742,032	-	58,181,742,032
Deferred tax liabilities	343,402,208,742	-	343,402,208,742
Non-current provisions	3,581,566,832	-	3,581,566,832
	4,181,894,009,707	472,122,329,014	4,654,016,338,721
Equity attributable to owners of the Company			
Issued capital	2,218,598,774,310	-	2,218,598,774,310
Retained earnings	2,406,254,067,993	-	2,406,254,067,993
Other components of equity	(12,457,934,616)	-	(12,457,934,616)
Non-controlling interests	17,788,037,659	-	17,788,037,659
	₩ 4,630,182,945,346	₩ -	₩ 4,630,182,945,346

2.4 Summary of significant accounting policies (cont'd)

2.4.10 Foreign currencies

The individual financial statements of each subsidiary 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 entity are expressed in Korean won which is the functional currency of the Group and the presentation currency for the consolidated financial statements.

Transactions in foreign currencies are initially recorded by the Group entities at their respective functional currency spot rates at the date the transaction first qualifies for recognition. Monetary assets and liabilities denominated in foreign currencies are retranslated at the functional currency spot rate of exchange at the reporting date. Non-monetary items that are measured in terms of historical cost in a foreign currency are translated using the exchange rates as at the dates of the initial transactions. Non-monetary items measured at fair value in a foreign currency are translated using the exchange rates at the date when the fair value is determined.

The transaction date for determining the exchange rate to be applied to the initial recognition of related assets, expenses and revenues (or parts thereof) is the date on which the Group first recognizes a non-monetary asset or a non-monetary liability by prepayment or advance received. In case that prepayments or advances received are incurred at various times, the Group determines each transaction date of the prepayment or advance received.

Differences arising on settlement or translation of monetary items are recognized in profit or loss except for:

(a) 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
(b) exchange differences on transactions entered into in order to hedge certain foreign currency risks; and
(c) exchange differences on monetary items receivable from or payable to a foreign operation for which settlement is neither planned nor likely to occur (therefore forming part of the net investment in the foreign operation), which are recognized initially in other comprehensive income and reclassified from equity to profit or loss on disposal or partial disposal of the net investment.

For the purpose of presenting consolidated financial statements, the assets and liabilities of the Group's foreign operations are expressed in Korean won using exchange rates prevailing at the end of the reporting period. Income and expense items are translated at the average exchange rates for the period, unless exchange rates fluctuated significantly during that period, in which case the exchange rates at the dates of the transactions are used. Exchange differences arising, if any, are recognized in other comprehensive income and accumulated in equity (attributed to non-controlling interests as appropriate).

On the disposal of a foreign operation (i.e. a disposal of the Group's entire interest in a foreign operation, or a disposal involving loss of control over a subsidiary that includes a foreign operation, loss of joint control over a jointly controlled entity that includes a foreign operation, or loss of significant influence over an associate that includes a foreign operation), all of the accumulated exchange differences in respect of that operation attributable to the Group are reclassified to profit or loss. Any exchange differences that have previously been attributed to non-controlling interests are derecognized, but they are not reclassified to profit or loss.

In addition, in relation to a partial disposal of a subsidiary that does not result in the Group losing control over the subsidiary, the proportionate share of accumulated exchange differences is re-attributed to non-controlling interests and are not recognized in profit or loss. For all other partial disposals (i.e. partial disposals of associates or jointly controlled entities that do not result in the Group losing significant influence or joint control), the proportionate share of the accumulated exchange differences is reclassified to profit or loss.

Goodwill and fair value adjustments on identifiable assets and liabilities acquired arising on the acquisition of a foreign operation are treated as assets and liabilities of the foreign operation and translated at the rate of exchange prevailing at the end of each reporting period. Exchange differences arising are recognized in equity.

2.4 Summary of significant accounting policies (cont'd)

2.4.11 Borrowing costs

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

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

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

2.4.12 Government grants

Government grants are not recognized until there is reasonable assurance that the Group will comply with the conditions attached to the grants and that the receipt of the grants are probable.

A benefit from a government loan at a below-market interest rate 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, which are conditional to the Group purchasing, constructing or otherwise acquiring non-current assets, are recognized as deductions for related assets in the consolidated statements of financial position and transferred to profit or loss over the estimated useful lives of the related assets.

Government grants are recognized in the consolidated statements of comprehensive income over the periods in which the Group recognizes the related costs, for which the grants are intended to compensate as expense.

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.

2.4.13 Pension benefit obligation

For defined contribution plans, payments to defined contribution plan are recognized as costs when the employees provide with the service to the Group.

For defined benefit pension plans, employee benefit liability is actuarially determined using the projected unit credit method performed by the independent actuarial company at each reporting date. The present value of the pension obligation is discounted expected future cash flows, and discount rate is the market rate of high grade corporate bonds with similar maturity of the time when pension obligation will be paid. When there is no market with a wide spectrum for such corporate bonds, the market rate of public bond is used as at reporting date.

Re-measurements, comprising of actuarial gains and losses, which are occurred by change in actuarial assumption, and difference of actuarial assumption from actual result, are recognized immediately in the consolidated statement of financial position with a corresponding debit or credit to retained earnings through other comprehensive income in the period in which they occur. Re-measurements are not reclassified to profit or loss in subsequent periods. Past service costs are recognized in profit or loss immediately or amortized on a straight-line basis over the average remaining period until the benefits become vested.

The retirement benefit obligation recognized in the consolidated statement of financial position represents the present value of the defined benefit obligation as adjusted for unrecognized actuarial gains and losses and unrecognized past service cost, and as reduced by the fair value of plan assets. Any asset resulting from this calculation is limited to unrecognized actuarial losses and past service cost, plus the present value of available refunds and reductions in future contributions to the plan.

2.4 Summary of significant accounting policies (cont'd)

2.4.14 Income tax

Income tax consists of current tax and deferred tax.

Current tax
The tax currently payable is based on taxable income for the year. Taxable income differs from income as reported in the consolidated statement 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.

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 income. Deferred tax liabilities are generally recognized for all taxable temporary differences. Deferred tax assets are generally recognized for all deductible temporary differences to the extent that it is probable that taxable income 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 income nor the accounting income.

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 that it is probable that there will be sufficient taxable income against which to utilize the benefits of the temporary differences 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 that it is no longer probable that sufficient taxable income will be available to allow all or part of the asset to be recovered.

Deferred tax assets and liabilities are measured at the tax rates that are expected to apply in the period in which the liability is settled or the asset realized, based on tax rates (and tax laws) that have been enacted or substantively enacted by the end of the reporting period. The measurement of deferred tax liabilities and assets reflects the tax consequences that would follow from the manner in which the 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 deferred tax liabilities are offset if a legally enforceable right exists to set off current tax assets against current income tax liabilities and the deferred taxes relate to the same taxable entity and the same taxation authority.

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

2.4 Summary of significant accounting policies (cont'd)

2.4.15 Property, plant and equipment

Property, plant and equipment is stated at cost, net of accumulated depreciation and accumulated impairment losses, if any.

Such cost comprises its purchasing price and construction cost including the cost 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 the present value of the expected cost for the decommissioning of an asset after its use is included in the cost of the respective asset if the recognition criteria for a provision are met.

Subsequent costs are recognized in carrying amount of a separate asset or as an 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 and carrying value of replaced part is removed. Routine maintenance and repairs are expensed as incurred.

Property, plant and equipment, except for land, is depreciated using the straight-line method based on the estimated useful years of the assets as follows:

	Years
Buildings	12 ~ 34
Structures	22 ~ 30
Machinery	6 ~ 24
Vehicles	3 ~ 8
Right-of-use assets	1 ~ 30
Others	4 ~ 5

If the cost of a part of property, plant and equipment is significant compared to the overall total cost of the property, plant and equipment, the cost of the part is separately depreciated from the related property, plant and equipment.

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 expectation differs from previous estimates, the changes were accounted for as a change in an accounting estimate.

Property, plant and equipment is derecognized on disposal, or when no future economic benefits are expected from its use or disposal. Gains or losses arising from derecognition of an item of property, plant and equipment, 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.

2.4.16 Intangible assets

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. Amortization of intangible assets is provided using the straight-line method over the estimated useful life of the assets as follows:

	Years
Industrial rights	10
Usable and profitable donated assets	10, 20
Software	5
Others	20, 30

2.4 Summary of significant accounting policies (cont'd)

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. An internally-generated intangible asset arising from development (or from the development phase of an internal project) is recognized if, and only if, all of the following have been demonstrated:

- the fact that result of development plan is for development of a new product or substantial upgrade of product function;
- the technical and commercial feasibility of completing the intangible asset so that it will be available for use or sale;
- the ability to measure reliably the expenditure 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 listed above. When the development expenditure does not meet the criteria listed above, an internally-generated intangible asset cannot be recognized and the expenditure is recognized in profit or loss in the period in which it is incurred.

Internally-generated intangible assets are presented at cost less accumulated amortization and accumulated impairment losses.

Intangible assets acquired in a business combination
Intangible assets that are acquired in a business combination are recognized separately from goodwill 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.

Derecognition of intangible assets
An intangible asset is derecognized on disposal, or when no future economic benefits are expected from its use or disposal. 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.

2.4.17 Impairment of property, plant, equipment and intangible assets excluding goodwill

At the end of each reporting period, the Group reviews the carrying amounts of its tangible and intangible assets with definite useful lives 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). The Group estimates the recoverable amount by an individual asset and where 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 regardless of an indication that the asset may be impaired.

Recoverable amount is the higher of fair value less costs to sell and value in use. If the recoverable amount of an asset (or a 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 an impairment loss is recognized immediately in profit or loss.

When 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 so that 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 cash-generating unit) in prior years. A reversal of an impairment loss is recognized immediately in profit or loss.

2.4 Summary of significant accounting policies (cont'd)

2.4.18 Inventories

Inventories are stated at the lower of cost and net realizable value. Cost of inventories, except for those in transit, are measured under the 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.

The carrying amount of inventories sold in the period and the amount of any write-down of inventories to net realizable value and all losses of inventories in the period are recognized as an expense during the period. Also, the amount of any reversal in the period of any write-down of the inventories, arising from an increase in net realizable value, is recognized as deduction of expense during the period.

2.4.19 Provisions

Provisions are recognized when the Group has a present obligation (legal or constructive) as a result of a past event, it is probable that the Group 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. Where the effect of the time value of money is material, a provision is measured at the present value of the expected future cash flows. The discount rate is pretax interest rate reflecting risks specific to the liability and the current market assessment of the time value of money. Increase in provision pursuant to passage of time is recognized as finance cost at the time of occurrence in the consolidated statements of comprehensive income.

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.

Employee bonus
The Group pays bonuses to its employee based on the result of performance evaluation of the Group by the Ministry of Strategy and Finance. The Group reasonably estimates the amount of bonuses and accounts for provision for employee bonuses in accordance with KIFRS 1037.

Provision for Renewable Portfolio Standard (RPS)
The Group is obligated to produce and supply certain amount of energies from renewable energy sources such as solar, wind and biomass in accordance with the *Act on the Promotion of the Development and Use of New and Renewable Sources of Energy*. As of December 31, 2019, the Group recognized provision for RPS for the amount not executed.

Emission rights and emission liabilities
The Group is allocated emission allowances free of charge by the government in accordance with the *Act on Allocation and Trading of Emission Allowances* in the Republic of Korea. The emission allowances are allocated to the Group annually for the planned periods, and the Group is to deliver the equivalent quantity of emission allowances for actual emission to the government.

The Group measures the emission allowances that it receives from the government free of charge at nil, and measures any purchased emission allowances at cost.

In addition, emission allowances are derecognized in the consolidated financial statements when they are delivered to the government or sold.

2.4 Summary of significant accounting policies (cont'd)

Where any unused allocated emission allowances after their delivery to the government, are sold, a gain or loss on disposal of the allocated emission allowances is subtracted from the cost of emissions; where emission allowances purchased are sold, the gain or loss on disposal is classified as non-operating income or expense; where the allocated emission allowances are sold when it is uncertain whether to achieve a reduction of emissions through the use of emission trading scheme, a difference between the book value and net sales price is recognized as deferred revenue which is offset against the cost of emissions over the period in which the allocated emission allowances pertain to.

A liability (emission obligation) is recognized only where actual emissions exceed the allocated emission allowances, and the cost of emissions is recognized as an operating cost. The liability is measured by adding the following (1) and (2).

(1) The book value of emission allowances for the year to be delivered to the government
(2) The best estimate of expenditures, as at the end of a reporting period, in performing emission obligations exceeding the above emission allowances

Where the Group borrows a part of the allocated emission allowances for any of future periods to deliver to the government, it recognizes the borrowed portion as deferred revenue when derecognizing the liability, and offsets the deferred revenue against the actual cost of emission, as it purchases the emission allowances to fill any shortfall in the period which the borrowed emission allowances belong to.

2.4.20 Financial instruments – initial recognition and subsequent measurement

A financial instrument is any contract that gives rise to a financial asset of one entity and a financial liability or equity instrument of another entity.

1) Financial assets

Initial recognition and measurement
Financial assets are classified, at initial recognition, as subsequently measured at amortized cost, fair value through other comprehensive income (OCI), and fair value through profit or loss.

The classification of financial assets at initial recognition depends on the financial asset's contractual cash flow characteristics and the Group's business model for managing them. With the exception of trade receivables that do not contain a significant financing component or for which the Group has applied the practical expedient, the Group initially measures a financial asset at its fair value plus, in the case of a financial asset not at fair value through profit or loss, transaction costs. Trade receivables that do not contain a significant financing component or for which the Group has applied the practical expedient are measured at the transaction price determined under KIFRS 1115.

In order for a financial asset to be classified and measured at amortized cost or fair value through OCI, it needs to give rise to cash flows that are 'solely payments of principal and interest (SPPI)' on the principal amount outstanding. This assessment is referred to as the SPPI test and is performed at an instrument level.

The Group's business model for managing financial assets refers to how it manages its financial assets in order to generate cash flows. The business model determines whether cash flows will result from collecting contractual cash flows, selling the financial assets, or both.

Purchases or sales of financial assets that require delivery of assets within a time frame established by regulation or convention in the market place (regular way trades) are recognized on the trade date, i.e., the date that the Group commits to purchase or sell the asset.

2.4 Summary of significant accounting policies (cont'd)

Subsequent measurement

For purposes of subsequent measurement, financial assets are classified in four categories:

- Financial assets at amortised cost (debt instruments)
- Financial assets at fair value through other comprehensive income ("FVOCI") with recycling of cumulative gains and losses (debt instruments)
- Financial assets designated at FVOCI with no recycling of cumulative gains and losses upon
- Financial assets at fair value through profit or loss ("FVPL")

Financial assets at amortised cost (debt instruments)

The Group measures financial assets at amortised cost if both of the following conditions are met:

- The financial asset is held within a business model with the objective to hold financial assets in order to collect contractual cash flows and,
- 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

Financial assets at amortised cost are subsequently measured using the effective interest (EIR) method and are subject to impairment. Gains and losses are recognized in profit or loss when the asset is derecognized, modified or impaired.

Financial assets at FVOCI (debt instruments)

The Group measures debt instruments at FVOCI if both of the following conditions are met:

- The financial asset is held within a business model with the objective of both holding to collect contractual cash flows and selling and,
- 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

For debt instruments at FVOCI, interest income, foreign exchange revaluation and impairment losses or reversals are recognized in the statement of profit or loss and computed in the same manner as for financial assets measured at amortised cost. The remaining fair value changes are recognized in other comprehensive income ("OCI"). Upon derecognition, the cumulative fair value change recognized in OCI is recycled to profit or loss.

Financial assets designated at FVOCI (equity instruments)

Upon initial recognition, the Group can elect to classify irrevocably its equity investments as equity instruments designated at FVOCI when they meet the definition of equity under KIFRS 1032 Financial Instruments: Presentation and are not held for trading. The classification is determined on an instrument-by-instrument basis.

Gains and losses on these financial assets are never recycled to profit or loss. Dividends are recognized as other income in profit or loss when the right of payment has been established, except when the Group benefits from such proceeds as a recovery of part of the cost of the financial asset, in which case, such gains are recorded in OCI. Equity instruments designated at FVOCI are not subject to impairment assessment.

2.4 Summary of significant accounting policies (cont'd)

Financial assets at FVPL

Financial assets at FVPL include financial assets held for trading and financial assets designated upon initial recognition at fair value through profit or loss. Financial assets are classified as held for trading if they are acquired for the purpose of selling or repurchasing in the near term. Derivatives, including separated embedded derivatives, are also classified as held for trading unless they are designated as effective hedging instruments. Financial assets with cash flows that are not solely payments of principal and interest are classified and measured at fair value through profit or loss, irrespective of the business model. Notwithstanding the criteria for debt instruments to be classified at amortised cost or at FVOCI, as described above, debt instruments may be designated at fair value through profit or loss on initial recognition if doing so eliminates, or significantly reduces, an accounting mismatch.

Financial assets at FVPL are carried in the consolidated statement of financial position at fair value with net changes in fair value recognized in profit or loss.

This category includes derivatives and listed equity instruments that do not make irrevocable choices that changes in fair value account for other comprehensive income. Dividends on listed equity instruments are recognized in profit or loss when the rights are settled.

A derivative embedded in a hybrid contract, with a financial liability or non-financial host, is separated from the host and accounted for as a separate derivative if: the economic characteristics and risks are not closely related to the host; a separate instrument with the same terms as the embedded derivative would meet the definition of a derivative; and the hybrid contract is not measured at fair value through profit or loss. Embedded derivatives are measured at fair value with changes in fair value recognized in profit or loss. Reassessment only occurs if there is either a change in the terms of the contract that significantly modifies the cash flows that would otherwise be required or a reclassification of a financial asset out of the FVPL category.

A derivative embedded within a hybrid contract containing a financial asset host is not accounted for separately. The financial asset host together with the embedded derivative is required to be classified in its entirety as a financial asset at FVPL.

Derecognition

A financial asset (or, where applicable, a part of a financial asset or part of a group of similar financial assets) is primarily derecognized (i.e., removed from the Group's consolidated statement of financial position) when:

- the rights to receive cash flows from the asset have expired, or
- the Group has transferred its rights to receive cash flows from the asset or has assumed an obligation to pay the received cash flows in full without material delay to a third party under a 'pass-through' arrangement; and either (a) the Group has transferred substantially all the risks and rewards of the asset, or (b) the Group has neither transferred nor retained substantially all the risks and rewards of the asset, but has transferred control of the asset

When the Group has transferred its rights to receive cash flows from an asset or has entered into a pass-through arrangement, it evaluates if, and to what extent, it has retained the risks and rewards of ownership. When it has neither transferred nor retained substantially all of the risks and rewards of the asset, nor transferred control of the asset, the Group continues to recognize the transferred asset to the extent of its continuing involvement. In that case, the Group also recognizes an associated liability. The transferred asset and the associated liability are measured on a basis that reflects the rights and obligations that the Group has retained.

2.4 Summary of significant accounting policies (cont'd)

Continuing involvement that takes the form of a guarantee over the transferred asset is measured at the lower of the original carrying amount of the asset and the maximum amount of consideration that the Group could be required to repay.

Impairment of financial assets

The Group recognizes an allowance for expected credit losses ("ECLs") for all debt instruments not held at fair value through profit or loss. ECLs are based on the difference between the contractual cash flows due in accordance with the contract and all the cash flows that the Group expects to receive, discounted at an approximation of the original effective interest rate. The expected cash flows will include cash flows from the sale of collateral held or other credit enhancements that are integral to the contractual terms.

ECLs are recognized in two stages. For credit exposures for which there has not been a significant increase in credit risk since initial recognition, ECLs are provided for credit losses that result from default events that are possible within the next 12-months (a 12-month ECL). For those credit exposures for which there has been a significant increase in credit risk since initial recognition, a loss allowance is required for credit losses expected over the remaining life of the exposure, irrespective of the timing of the default (a lifetime ECL).

For trade receivables and contract assets, the Group applies a simplified approach in calculating ECLs. Therefore, the Group does not track changes in credit risk, but instead recognises a loss allowance based on lifetime ECLs at each reporting date. The Group has established a provision matrix that is based on its historical credit loss experience, adjusted for forward-looking factors specific to the debtors and the economic environment.

For debt instruments at FVOCI, the Group applies the low credit risk simplification. At every reporting date, the Group evaluates whether the debt instrument is considered to have low credit risk using all reasonable and supportable information that is available without undue cost or effort. In making that evaluation, the Group reassesses the internal credit rating of the debt instrument. In addition, the Group considers that there has been a significant increase in credit risk when contractual payments are more than 30 days past due.

The Group's debt instruments at FVOCI comprise solely of quoted bonds that are graded in the top investment category (Very Good and Good) by the Good Credit Rating Agency and, therefore, are considered to be low credit risk investments. It is the Group's policy to measure ECLs on such instruments on a 12-month basis. However, when there has been a significant increase in credit risk since origination, the allowance will be based on the lifetime ECL. The Group uses the ratings from the Good Credit Rating Agency both to determine whether the debt instrument has significantly increased in credit risk and to estimate ECLs.

The Group considers a financial asset in default when contractual payments are 90 days past due. However, in certain cases, the Group may also consider a financial asset to be in default when internal or external information indicates that the Group is unlikely to receive the outstanding contractual amounts in full before taking into account any credit enhancements held by the Group. A financial asset is written off when there is no reasonable expectation of recovering the contractual cash flows.

2.4 Summary of significant accounting policies (cont'd)

2) Financial liabilities

Initial recognition and measurement

Financial liabilities are classified, at initial recognition, as financial liabilities at FVPL, loans and borrowings, payables, or as derivatives designated as hedging instruments in an effective hedge, as appropriate.

All financial liabilities are recognized initially at fair value and, in the case of loans and borrowings and payables, net of directly attributable transaction costs.

The Group's financial liabilities include trade and other payables, loans and borrowings including bank overdrafts, financial guarantee contracts and derivative financial instruments.

Subsequent measurement

The measurement of financial liabilities depends on their classification, as described below:

Financial liabilities at FVPL

Financial liabilities at FVPL include financial liabilities held for trading and financial liabilities designated upon initial recognition at FVPL.

Financial liabilities are classified as held for trading if they are incurred for the purpose of repurchasing in the near term. This category also includes derivative financial instruments entered into by the Group that are not designated as hedging instruments in hedge relationships as defined by KIFRS 1109. Separated embedded derivatives are also classified as held for trading unless they are designated as effective hedging instruments. Gains or losses on liabilities held for trading are recognized in profit or loss.

Financial liabilities designated upon initial recognition at FVPL are designated at the initial date of recognition, and only if the criteria in KIFRS 1109 are satisfied. The Group has not designated any financial liability at FVPL.

Loans and borrowings

After initial recognition, interest-bearing loans and borrowings are subsequently measured at amortized cost using the EIR method. Gains and losses are recognized in profit or loss when the liabilities are derecognized as well as through the EIR amortization process.

Amortized cost is calculated by taking into account any discount or premium on acquisition and fees or costs that are an integral part of the EIR. This category generally applies to interest-bearing loans and borrowings.

2.4 Summary of significant accounting policies (cont'd)

Derecognition

A financial liability is derecognized when the obligation under the liability is discharged or cancelled or expires. When an existing financial liability is replaced by another from the same lender on substantially different terms, or the terms of an existing liability are substantially modified, such an exchange or modification is treated as the derecognition of the original liability and the recognition of a new liability. The difference in the respective carrying amounts is recognized in profit or loss.

3) Offsetting of financial instruments

Financial assets and financial liabilities are offset and the net amount is reported in the consolidated statement of financial position if there is a currently enforceable legal right to offset the recognized amounts and there is an intention to settle on a net basis, to realize the assets and settle the liabilities simultaneously.

2.4.21 Derivative financial instruments

Initial recognition and subsequent measurement

The Group uses derivative financial instruments, such as forward currency contracts, interest rate swaps and forward commodity contracts, to hedge its foreign currency risks, interest rate risks and commodity price risks, respectively. Such derivative financial instruments are initially recognized at fair value on the date on which a derivative contract is entered into and are subsequently remeasured at fair value. Derivatives are carried as financial assets when the fair value is positive and as financial liabilities when the fair value is negative.

For the purpose of hedge accounting, hedges are classified as:

- fair value hedges when hedging the exposure to changes in the fair value of a recognized asset or liability or an unrecognized firm commitment
- cash flow hedges when hedging the exposure to variability in cash flows that is either attributable to a particular risk associated with a recognized asset or liability or a highly probable forecast transaction or the foreign currency risk in an unrecognized firm commitment
- hedges of a net investment in a foreign operation

At the inception of a hedge relationship, the Group formally designates and documents the hedge relationship to which the Group wishes to apply hedge accounting and the risk management objective and strategy for undertaking the hedge.

The documentation includes identification of the hedging instrument, the hedged item, the nature of the risk being hedged and how the Group will assess whether the hedging relationship meets the hedge effectiveness requirements (including the analysis of sources of hedge ineffectiveness and how the hedge ratio is determined). A hedging relationship qualifies for hedge accounting if it meets all of the following 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 Group actually hedges and the quantity of the hedging instrument that the Group actually uses to hedge that quantity of hedged item.

2.4 Summary of significant accounting policies (cont'd)

Hedges that meet the strict criteria for hedge accounting are accounted for, as described below:

Fair value hedges

The change in the fair value of a hedging derivative is recognized in profit or loss. The change in the fair value of the hedged item attributable to the risk hedged is recorded as part of the carrying value of the hedged item and is also recognized in profit or loss.

For fair value hedges relating to items carried at amortized cost, any adjustment to carrying value is amortized through profit or loss over the remaining term of the hedge using the EIR method. EIR amortization may begin as soon as an adjustment exists and no later than when the hedged item ceases to be adjusted for changes in its fair value attributable to the risk being hedged.

If the hedged item is derecognized, the unamortized fair value is recognized immediately in profit or loss.

When an unrecognized firm commitment is designated as a hedged item, the subsequent cumulative change in the fair value of the firm commitment attributable to the hedged risk is recognized as an asset or liability with a corresponding gain or loss recognized in profit and loss.

Cash flow hedges

The effective portion of the gain or loss on the hedging instrument is recognized in OCI in the cash flow hedge reserve, while any ineffective portion is recognized immediately in profit or loss. The cash flow hedge reserve is adjusted to the lower of the cumulative gain or loss on the hedging instrument and the cumulative change in fair value of the hedged item.

The Group uses forward currency contracts as hedges of its exposure to foreign currency risk in forecast transactions and firm commitments, as well as forward commodity contracts for its exposure to volatility in the commodity prices. The ineffective portion relating to foreign currency contracts is recognized as other expense and the ineffective portion relating to commodity contracts is recognized in other operating income or expenses.

The Group designates only the spot element of forward contracts as a hedging instrument. The forward element is recognized in OCI and accumulated in a separate component of equity under cost of hedging reserve.

2.4 Summary of significant accounting policies (cont'd)

The amounts accumulated in OCI are accounted for, depending on the nature of the underlying hedged transaction. If the hedged transaction subsequently results in the recognition of a non-financial item, the amount accumulated in equity is removed from the separate component of equity and included in the initial cost or other carrying amount of the hedged asset or liability. This is not a reclassification adjustment and will not be recognized in OCI for the period. This also applies where the hedged forecast transaction of a non-financial asset or non-financial liability subsequently becomes a firm commitment for which fair value hedge accounting is applied.

For any other cash flow hedges, the amount accumulated in OCI is reclassified to profit or loss as a reclassification adjustment in the same period or periods during which the hedged cash flows affect profit or loss.

If cash flow hedge accounting is discontinued, the amount that has been accumulated in OCI must remain in accumulated OCI if the hedged future cash flows are still expected to occur. Otherwise, the amount will be immediately reclassified to profit or loss as a reclassification adjustment. After discontinuation, once the hedged cash flow occurs, any amount remaining in accumulated OCI must be accounted for depending on the nature of the underlying transaction as described above.

Hedges of a net investment

Hedges of a net investment in a foreign operation, including a hedge of a monetary item that is accounted for as part of the net investment, are accounted for in a way similar to cash flow hedges. Gains or losses on the hedging instrument relating to the effective portion of the hedge are recognized as OCI while any gains or losses relating to the ineffective portion are recognized in profit or loss. On disposal of the foreign operation, the cumulative value of any such gains or losses recorded in equity is transferred to profit or loss.

2.4.22 Issued capital

Ordinary shares are classified as capital, and incremental costs arising directly due to capital transactions are deducted from equity as a net amount reflecting the tax effect.

2.4.23 Earnings per share

The Group calculates basic earnings per share and diluted earnings per share for income from continuing operations and net income and discloses it in the consolidated statement of comprehensive income. Basic earnings per share is calculated by dividing the profit attributable to owners of the Group by the weighted average number of ordinary shares outstanding during the financial year. Diluted earnings per share is calculated by adjusting the weighted average number of ordinary shares outstanding to assume conversion of all dilutive potential ordinary shares.

3. Significant accounting estimate and assumptions

The Group makes assumptions and estimations concerning the future. Assumptions and estimations are verified continuously based on past experience and reasonably expected future events. This accounting estimation, however, could be different from actual results. Assumptions and estimations for significant risks which may cause adjustment to the carrying amounts of assets and liabilities are as follows:

3.1 Corporate taxes

The Group recognizes expected corporate tax effect as current corporate tax expense and deferred corporate taxes using best estimation. Final corporate tax burden in the future, however, may not correspond with related assets or liabilities, which may cause changes in assets or liabilities at the time of confirmation of corporate tax effect.

3.2 Fair value of financial instruments

When the fair values of financial assets and financial liabilities recorded in the consolidated statements of financial position cannot be measured based on quoted prices in active markets, their fair value is measured using valuation techniques including the discounted cash flow ("DCF") model. The Group selects various valuation methods and makes a judgment about assumptions based on key market circumstances as at the financial reporting date.

3.3 Provisions

The Group recognizes provisions for financial guarantees and obligations for not-supplying new renewable energy and so on. This provision is determined based on the historical experience and additional disclosures are described in Notes 2.4.19 and 23.

3.4 Pension benefits

The present value of the defined benefit pension can change depending on various factors determined using actuarial valuations. Assumptions to determine pension cost (income) include discount rate, where changes in assumptions will result in changes in the present value of the defined benefit pension. The Group has determined the discount rate every year-end which is defined as interest rate used to decide present value of expected future cash outflow. The Group determines discount rate considering discount rate of outstanding corporate bonds which have similar maturity with pension obligations. Other assumptions related with pension obligations are based on market circumstances. Additional disclosures are described in Note 22.

3.5 Impairment of non-financial assets

The Group assesses at the end of each reporting period whether there is any indication that an asset may be impaired. The Group performs an impairment test for goodwill and intangible assets with infinite useful lives at the end of each reporting period or when there is an indication of impairment of an asset. It is required to conduct an impairment test for other non-financial assets when there is an indication that carrying values go below recoverable amount. To calculate value in use, management needs to estimate the future expected cash flows from related assets or CGUs and choose proper rate to discount future expected cash flows.

4. Operating segment information

The Group is organized for management purposes as a single business unit based on the nature of goods and services provided and details of operating revenue and assets required in its operations are presented below.

The following table presents revenue and operating profit from the sole reportable segment for the years ended December 31, 2019 and 2018 (Korean won):

	2019	2018
Sales	₩4,896,033,413,321	₩4,972,783,619,468
Sales from external customers	4,896,033,413,321	4,972,783,619,468
Operating profit	122,914,745,198	58,638,198,130
Depreciation and amortization	718,682,414,627	646,653,542,195

The following table presents assets and liabilities for the sole reportable segment as of December 31, 2019 and 2018 (Korean won):

	2019	2018
Total assets	₩9,882,703,368,788	₩8,812,076,955,053
Investment in associates	319,870,730,548	64,745,698,999
Investment in joint ventures	454,253,879,237	636,304,043,943
Acquisition of non-current assets (*)	1,132,237,443,566	444,214,363,198
Total liabilities	5,110,807,948,633	4,181,894,009,707

(*) Exclude financial assets and deferred tax assets.

The Group operates its principal business, the production and sale of electricity, in the Republic of Korea. Geographical information for the years ended December 31, 2019 and 2018 of external customers and non-current assets as of December 31, 2019 and 2018 are as follows (Korean won):

	Revenue from external customers		Non-current assets (*2)	
	2019	2018	Dec. 31, 2019	Dec. 31, 2018
Domestic	₩4,871,813,256,205	₩4,941,865,028,827	₩7,929,458,682,946	₩ 7,167,754,105,213
Americas	21,718,766,617	29,556,817,552	51,681,834,719	53,001,636,439
Others (*1)	2,501,390,499	1,361,773,089	302,616,054,814	265,010,406,094
	₩4,896,033,413,321	₩4,972,783,619,468	₩8,283,756,572,479	₩ 7,485,766,147,746

(*1) The majority of sales and non-current assets are derived from Asia. Sales and non-current assets attributable to specific countries are not significant, and accordingly, no country specific information was disclosed separately.

(*2) Exclude financial assets and deferred tax assets.

Revenue from KEPCO, as a single source, representing 10% or more of the Group's total revenue amounts to ₩4,669,266,553,449 and ₩4,850,207,284,579 (Note 42) for the years ended December 31, 2019 and 2018, respectively. There are no other customers having sales representing 10% or more of the Group's total revenue.

5. Cash and cash equivalents

Details of cash and cash equivalents as of December 31, 2019 and 2018 are as follows (Korean won):

	Dec. 31, 2019	Dec. 31, 2018
Other demand deposits	₩ 89,233,253,069	₩ 37,248,237,505

6. Financial assets restricted for use

Financial assets restricted for use as of December 31, 2019 and 2018 are as follows (Korean won):

	Dec. 31, 2019	Dec. 31, 2018
Other demand deposits (*)	₩ 17,623,759,593	₩ 14,462,014,235

(*) Other demand deposits defined as collateral for the Group's borrowing (Note 45).

7. Financial assets and liabilities at FVPL (including derivative assets and liabilities)

Details of financial assets and liabilities at FVPL as of December 31, 2019 and 2018 are as follows (Korean won):

	Dec. 31, 2019		Dec. 31, 2018	
	Current	Non-current	Current	Non-current
Financial assets at FVPL:				
Beneficiary certificates	₩ -	₩ 300,000,000	₩ 100,000,000	₩ -
MMT	43,053,896,701	-	-	-
Derivative assets	6,788	-	198,307,912	-
	₩43,053,903,489	₩ 300,000,000	₩ 298,307,912	₩ -
Financial liabilities at FVPL:				
Derivative assets	₩ 1,223,062,637	₩ -	₩ 31,961,954	₩ -

Details derivative instruments as of December 31, 2019 and 2018 are as follows (Korean won):

	Dec. 31, 2019		Dec. 31, 2018	
	Current	Non-current	Current	Non-current
Derivative assets:				
Currency forwards	₩ 6,788	₩ -	₩ 198,307,912	₩ -
Currency swaps	23,780,195,613	17,134,891,868	-	-
	₩ 23,780,202,401	₩ 17,134,891,868	₩ 198,307,912	₩ -
Derivative liabilities:				
Currency forwards	₩ 1,223,062,637	₩ -	₩ 31,961,954	₩ -
Currency swaps	-	-	-	30,713,908,204
	₩ 1,223,062,637	₩ -	₩ 31,961,954	₩ 30,713,908,204

7. Financial assets and liabilities at FVPL (including derivative assets and liabilities) (cont'd)

Details of currency swaps as of December 31, 2019 are as follows (Korean won and USD):

		Contract amount			Contract interest rate (%)		
Counterparty	Contract term	Sell (KRW)	Purchase (USD)		Sell	Purchase	Contract exchange rate
Cash flow hedge:							
Credit Agricole	2014.12~2020.06	110,680,000,000	USD	100,000,000	2.29	2.50	1,106.80
Societe Generale	2014.12~2020.06	55,340,000,000	USD	50,000,000	2.16	2.50	1,106.80
Hanabank	2014.12~2020.06	55,340,000,000	USD	50,000,000	2.16	2.50	1,106.80
Hanabank	2014.12~2020.06	55,340,000,000	USD	50,000,000	2.21	2.50	1,106.80
Standard Chartered	2014.12~2020.06	55,340,000,000	USD	50,000,000	2.21	2.50	1,106.80
HSBC	2014.12~2020.06	55,340,000,000	USD	50,000,000	2.21	2.50	1,106.80
NOMURA	2014.12~2020.06	55,340,000,000	USD	50,000,000	2.21	2.50	1,106.80
BNP Paribas	2014.12~2020.06	55,340,000,000	USD	50,000,000	2.21	2.50	1,106.80
HSBC	2014.12~2020.06	55,340,000,000	USD	50,000,000	2.21	2.50	1,106.80
Hanabank	2017.06~2022.06	226,600,000,000	USD	200,000,000	1.94	2.63	1,133.00
KDB Bank	2017.06~2022.06	113,300,000,000	USD	100,000,000	1.94	2.63	1,133.00
NOMURA	2017.06~2022.06	113,300,000,000	USD	100,000,000	1.95	2.63	1,133.00
Wooribank	2017.06~2022.06	56,650,000,000	USD	50,000,000	1.95	2.63	1,133.00
KB Bank	2017.06~2022.06	56,650,000,000	USD	50,000,000	1.95	2.63	1,133.00
KDB Bank	2018.07~2023.07	169,335,000,000	USD	150,000,000	2.26	3.88	1,128.90
Woori Bank	2018.07~2023.07	169,335,000,000	USD	150,000,000	2.26	3.88	1,128.90
Credit Agricole	2018.07~2023.07	112,890,000,000	USD	100,000,000	2.26	3.88	1,128.90
Hanabank	2018.07~2023.07	56,445,000,000	USD	50,000,000	2.26	3.88	1,128.90
KB Bank	2018.07~2023.07	56,445,000,000	USD	50,000,000	2.26	3.88	1,128.90

Details of currency forwards as of December 31, 2019 are as follows (Korean won and USD):

			Contract amount			
Counterparty	Contract date	Maturity date	Sell(KRW)	Purchase(USD)		Contract exchange rate
Trading:						
Standard Chartered	2019-12-03	2020-01-06	315,489,300	USD	266,000	1,186.05
Nova Scotia	2019-12-06	2020-01-10	4,393,195,000	USD	3,700,000	1,187.35
Credit Agricole	2019-12-06	2020-01-10	4,761,400,000	USD	4,000,000	1,190.35
Nova Scotia	2019-12-10	2020-01-13	1,490,875,000	USD	1,250,000	1,192.70
Standard Chartered	2019-12-12	2020-01-16	8,302,700,000	USD	7,000,000	1,186.10
Credit Agricole	2019-12-12	2020-01-16	5,929,750,000	USD	5,000,000	1,185.95
Societe Generale	2019-12-12	2020-01-16	5,931,000,000	USD	5,000,000	1,186.20
Nova Scotia	2019-12-12	2020-01-16	6,524,650,000	USD	5,500,000	1,186.30
Standard Chartered	2019-12-16	2020-01-21	9,367,200,000	USD	8,000,000	1,170.90
Nova Scotia	2019-12-17	2020-01-21	4,648,000,000	USD	4,000,000	1,162.00
Hanabank	2019-12-19	2020-01-23	6,054,880,000	USD	5,200,000	1,164.40
Woori Bank	2019-12-20	2020-01-28	9,413,820,000	USD	8,100,000	1,162.20
Shinhan Bank	2019-12-20	2020-01-28	4,939,137,500	USD	4,250,000	1,162.15
Shinhan Bank	2019-12-20	2020-01-28	5,806,250,000	USD	5,000,000	1,161.25
Shinhan Bank	2019-12-26	2020-01-30	7,539,025,000	USD	6,500,000	1,159.85
Woori Bank	2019-12-26	2020-01-30	4,059,650,000	USD	3,500,000	1,159.90
Shinhan Bank	2019-12-30	2020-02-03	4,048,800,000	USD	3,500,000	1,156.80

7. Financial assets and liabilities at FVPL (including derivative assets and liabilities) (cont'd)

Details of gain and loss on valuation and settlement of derivative instruments for the years ended December 31, 2019 and 2018 are as follows (Korean won):

	Gain (loss) on valuation		Gain (loss) on settlement		Other comprehensive income (*)	
	2019	2018	2019	2018	2019	2018
Currency forwards	₩ (1,223,055,849)	₩ 166,345,958	₩ (166,345,958)	₩ 3,342,212,723	₩ -	₩ -
Currency swaps	59,259,120,846	41,042,550,513	16,448,365,856	35,700,914,974	12,369,874,842	(9,532,198,358)
	₩ 58,036,064,997	₩ 41,208,896,471	₩ 16,282,019,898	₩ 39,043,127,697	₩ 12,369,874,842	₩ (9,532,198,358)

(*) As of December 31, 2019, loss on valuation of derivative instruments amounting to ₩9,376,365,130 recognized in accumulated other comprehensive income are presented excluding tax effect which is directly charged to equity.

8. Trade and other receivables

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

	Dec. 31, 2019		
	Gross amounts	Present value discounts	Book value
Current assets:			
Trade receivables	₩ 431,186,830,245	₩ -	₩ 431,186,830,245
Other receivables	276,106,869,562	(19,465,921)	276,087,403,641
	707,293,699,807	(19,465,921)	707,274,233,886
Non-current assets:			
Other receivables	3,076,151,046	(40,050,391)	3,036,100,655
	3,076,151,046	(40,050,391)	3,036,100,655
	₩ 710,369,850,853	₩ (59,516,312)	₩ 710,310,334,541

	Dec. 31, 2018		
	Gross amounts	Present value discounts	Book value
Current assets:			
Trade receivables	₩ 463,826,113,448	₩ -	₩ 463,826,113,448
Other receivables	151,814,757,578	(5,818,007)	151,808,939,571
	615,640,871,026	(5,818,007)	615,635,053,019
Non-current assets:			
Other receivables	2,547,474,900	(57,640,005)	2,489,834,895
	2,547,474,900	(57,640,005)	2,489,834,895
	₩ 618,188,345,926	₩ (63,458,012)	₩ 618,124,887,914

8. Trade and other receivables (cont'd)

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

	Dec. 31, 2019		
	Gross amounts	Present value discounts	Book value
Current assets:			
Accounts receivable	₩ 96,345,212,450	₩ -	₩ 96,345,212,450
Accrued income	177,404,727,361	-	177,404,727,361
Deposits	2,356,929,751	(19,465,921)	2,337,463,830
	276,106,869,562	(19,465,921)	276,087,403,641
Non-current assets:			
Accrued income	289,990,692	-	289,990,692
Deposits	2,288,832,454	(40,050,391)	2,248,782,063
Others	497,327,900	-	497,327,900
	3,076,151,046	(40,050,391)	3,036,100,655
	₩ 279,183,020,608	₩ (59,516,312)	₩ 279,123,504,296

	Dec. 31, 2018		
	Gross amounts	Present value discounts	Book value
Current assets:			
Accounts receivable	₩ 32,919,529,561	₩ -	₩ 32,919,529,561
Accrued income	115,999,168,862	-	115,999,168,862
Deposits	2,896,059,155	(5,818,007)	2,890,241,148
	151,814,757,578	(5,818,007)	151,808,939,571
Non-current assets:			
Deposits	2,050,147,000	(57,640,005)	1,992,506,995
Others	497,327,900	-	497,327,900
	2,547,474,900	(57,640,005)	2,489,834,895
	₩ 154,362,232,478	₩ (63,458,012)	₩ 154,298,774,466

There are no trade and other receivables that have been past due or impaired as of December 31, 2019.

9. Financial assets at FVOCI

Details of financial assets at FVOCI as of December 31, 2019 and 2018 are as follows (Korean won):

	Dec. 31, 2019				
	Equity ratio (%)	Number of shares held	Acquisition	Book value	Fair value
Quoted securities:					
Bunji Corporation Limited (*)	0.07	99,763	₩ 11,553,936,882	₩ -	₩ -
PT. Bayan Resources TBK	4.00	133,333,340	80,533,337,360	176,172,008,809	176,172,008,809
STX Heavy industry	0.00	1,220	106,092,000	3,727,100	3,727,100
			92,193,366,242	176,175,735,909	176,175,735,909
Unquoted securities:					
Korea Power Exchange	7.14	1,826,275	9,131,374,714	16,363,917,854	16,363,917,854
KEPCO-Uhde Inc.	2.40	103,230	516,150,000	14,198,304	14,198,304
HeeMang Sunlight Power	8.33	78,600	393,000,000	393,000,000	393,000,000
KEPCO Bylong Australia Pty Ltd.	2.00	3,537,032	6,134,697,340	-	-
			16,175,222,054	16,771,116,158	16,771,116,158
			₩108,368,588,296	₩ 192,946,852,067	₩192,946,852,067

(*) The name of Baralaba Coal Company Limited was changed to Bunji Corporation Limited in 2019.

	Dec. 31, 2018				
	Equity ratio (%)	Number of shares held	Acquisition	Book value	Fair value
Quoted securities:					
Baralaba Coal Company Limited	0.07	99,763	₩ 11,553,936,882	₩ -	₩ -
PT. Bayan Resources TBK	4.00	133,333,340	80,533,337,360	203,520,010,176	203,520,010,176
STX Heavy industry	0.00	1,220	106,092,000	6,917,400	6,917,400
			92,193,366,242	203,526,927,576	203,526,927,576
Unquoted securities:					
Korea Power Exchange	7.14	1,826,275	9,131,374,714	15,863,254,505	15,863,254,505
KEPCO-Uhde Inc.	2.40	103,230	516,150,000	14,198,304	14,198,304
HeeMang Sunlight Power	8.33	78,600	393,000,000	393,000,000	393,000,000
KEPCO Bylong Australia Pty Ltd.	2.00	3,537,032	6,134,697,340	5,542,085,788	5,542,085,788
			16,175,222,054	21,812,538,597	21,812,538,597
			₩108,368,588,296	₩ 225,339,466,173	₩225,339,466,173

9. Financial assets at FVOCI (cont'd)

Changes in financial assets at FVOCI for the year ended December 31, 2019 and 2018 are as follows (Korean won):

	2019					
	Jan. 1		Valuation(*)		Dec. 31	
Quoted equity shares	₩	203,526,927,576	₩	(27,351,191,667)	₩	176,175,735,909
Unquoted equity shares		21,812,538,597		(5,041,422,439)		16,771,116,158
	₩	225,339,466,173	₩	(32,392,614,106)	₩	192,946,852,067
Current financial assets at FVOCI	₩	-	₩	-	₩	-
Non-current financial assets at FVOCI		225,339,466,173		(32,392,614,106)		192,946,852,067

(*) As of December 31, 2019, valuation changes amounting to ₩(-)24,553,601,490 recognized in accumulated OCI are presented excluding tax effect which is directly charged to equity.

	2018					
	Jan. 1		Valuation (*)		Dec. 31	
Quoted equity shares	₩	111,698,266,073	₩	91,828,661,503	₩	203,526,927,576
Unquoted equity shares		22,134,382,632		(321,844,035)		21,812,538,597
	₩	133,832,648,705	₩	91,506,817,468	₩	225,339,466,173
Current financial assets at FVOCI	₩	-	₩	-	₩	-
Non-current financial assets at FVOCI		133,832,648,705		91,506,817,468		225,339,466,173

(*) As of December 31, 2018, valuation changes amounting to ₩69,362,167,641 recognized in accumulated OCI are presented excluding tax effect which is directly charged to equity.

10. Financial assets at amortised cost

Changes in financial assets at amortised cost for the year ended December 31, 2019 and 2018 are as follows (Korean won):

	2019				
	Jan.1	Acquisition	Disposal	Others	Dec. 31
Public bonds	₩ 612,135,000	₩ 3,600,000	₩ (77,180,000)	₩ -	₩ 538,555,000
Others	11,000,000,000	2,100,600,000	-	-	13,100,600,000
	₩ 11,612,135,000	₩ 2,104,200,000	₩ (77,180,000)	₩ -	₩ 13,639,155,000
Current financial assets at amortised cost	₩ 11,077,180,000	₩ 1,000,600,000	₩ (77,180,000)	₩ 64,750,000	₩ 12,065,350,000
Non-current financial assets at amortised cost	₩ 534,955,000	₩ 1,103,600,000	₩ -	₩ (64,750,000)	₩ 1,573,805,000

	2018				
	Jan.1	Acquisition	Disposal	Others	Dec. 31
Public bonds	₩ 495,575,000	₩ 116,560,000	₩ -	₩ -	₩ 612,135,000
Others (*)	-	1,000,000,000	-	10,000,000,000	11,000,000,000
	₩ 495,575,000	₩ 1,116,560,000	₩ -	₩ 10,000,000,000	₩ 11,612,135,000
Current financial assets at amortised cost	₩ -	₩ 1,000,000,000	₩ -	₩ 10,077,180,000	₩ 11,077,180,000
Non-current financial assets at amortised cost	₩ 495,575,000	₩ 116,560,000	₩ -	₩ (77,180,000)	₩ 534,955,000

(*) Changes in others are due to the reclassification of accounts under KIFRS 1109.

11. Loans

Details of loans as of December 31, 2019 and 2018 are as follows (Korean won):

	Dec. 31, 2019		Dec. 31, 2018	
	Current	Non-current	Current	Non-current
Tuition loans (*1)	₩ 684,760,040	₩ 17,987,822,998	₩ 857,640,400	₩ 18,473,143,713
Home loans (*2)	1,004,842,212	11,298,290,299	717,199,752	10,139,607,943
Loans to related party	4,441,600,896	7,247,869,671	-	615,875,491
Present value discount	(109,213,594)	(2,362,527,880)	(112,466,730)	(2,497,116,397)
	₩ 6,021,989,554	₩ 34,171,455,088	₩ 1,462,373,422	₩ 26,731,510,750

(*1) The Group provides student loans to employees for their children without any interests, and these student loans are repaid in installments from the quarterly paid out bonuses.

(*2) The Group also provides loans for purchasing property to employees with COFIX rate to support employees in securing residence. The loan is payable in 15 years for lease and in 20 years for purchase.

12. Inventories

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

	Dec. 31, 2019		
	Gross amounts	Valuation allowance	Book value
Raw materials (*)	₩210,991,627,934	₩ -	₩210,991,627,934
Supplies (*)	25,520,992,264	-	25,520,992,264
Goods in transit	103,559,567,429	-	103,559,567,429
	₩340,072,187,627	₩ -	₩340,072,187,627

	Dec. 31, 2018		
	Gross amounts	Valuation allowance	Book value
Raw materials	₩160,378,866,053	₩ -	₩160,378,866,053
Supplies	29,136,639,349	-	29,136,639,349
Goods in transit	126,686,610,830	-	126,686,610,830
	₩316,202,116,232	₩ -	₩316,202,116,232

(*) Inventories of DG Fairhaven Power, LLC, a subsidiary of the Group, were transferred to assets held for sale (Note 37).

13. Non-financial assets

Details of non-financial assets as of December 31, 2019 and 2018 are as follows (Korean won):

	Dec. 31, 2019		Dec. 31, 2018	
	Current	Non-current	Current	Non-current
Prepayments	₩ 2,621,536,710	₩ -	₩ 2,410,494,588	₩ -
Prepaid expenses	9,838,223,482	11,778,881,224	6,350,109,828	12,543,748,752
Others (*)	111,281,603,286	-	38,839,649,479	-
	₩ 123,741,363,478	₩ 11,778,881,224	₩ 47,600,253,895	₩ 12,543,748,752

(*) Details of other non-financial assets as of December 31, 2019 and 2018 are as follows (Korean won):

	Dec. 31, 2019		Dec. 31, 2018	
	Current	Non-current	Current	Non-current
Emission rights	₩ 75,445,783,059	₩ -	₩ -	₩ -
Non-refunded value added tax	35,419,813,009	-	17,699,283,385	-
Non-deductible input tax	14,804,878	-	27,418,265	-
Other quick assets	401,202,340	-	956,740,076	-
Others	-	-	20,156,207,753	-
	₩ 111,281,603,286	₩ -	₩ 38,839,649,479	₩ -

14. Investments in associates and joint ventures

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

Investments in associates and joint ventures	Principal activity	Country of domicile	Equity ratio (%)	Dec. 31, 2019 Cost		Dec. 31, 2019 Book value	
<Associates>							
Green Biomass Co., Ltd. (*1)	Power plants operation	South Korea	7.85	₩	714,000,000	₩	108,206,570
Korea Offshore Wind Power Co., Ltd. (*1)	Power plants operation	South Korea	12.50		26,600,000,000		21,171,070,916
Solar School Plant Co., Ltd. (*1)	Resource development for solar energy	South Korea	8.33		16,650,000,000		17,104,578,225
KEPCO Energy Solution Inc. (*1)	Investment in facilities for energy efficiency	South Korea	8.33		25,000,000,000		25,503,827,202
GS Donghae Electric Power Co., Ltd.(*5)	Power plants operation	South Korea	34.00		204,000,000,000		255,983,047,635
					272,964,000,000		319,870,730,548
<Joint ventures>							
Pusan Shinho Solar Power Co., Ltd.	Power plants operation	South Korea	25.00		2,100,000,000		5,045,225,035
Honam Wind Power Co., Ltd.	Power plants operation	South Korea	29.00		3,480,000,000		4,375,480,614
Dangjin Eco Power Corporation(New) (*4)	Power plants operation	South Korea	34.00		25,661,385,206		25,661,385,206
Seokmun Energy Co., Ltd	Power plants operation	South Korea	29.00		15,370,000,000		17,341,554,889
Chun-cheon Energy Co., Ltd.	Power plants operation	South Korea	29.90		52,699,945,000		34,872,461,289
Yeonggwangbaeksu Wind Power Co., Ltd. (*2)	Power plants operation	South Korea	15.00		3,000,000,000		3,040,135,066
Yeonggwang Wind Power Co., Ltd.	Power plants operation	South Korea	46.00		17,475,000,000		17,626,636,903
Yangyang Wind Power Co., Ltd.	Power plants operation	South Korea	50.00		10,800,000,000		10,800,000,000
Jamaica Public Service Company Limited	Power plants operation	Jamaica	40.00		301,909,577,842		253,607,487,671
South Jamaica Power Company Limited	Power plants operation	Jamaica	20.00		20,520,732,000		13,863,497,200
PT.Tanjung Power Indonesia	Power plants operation	Indonesia	35.00		26,892,068,794		34,327,188,445
DE Energia SpA (*3)	Power plants operation	Chile	49.00		8,363,732,090		8,664,579,232
Daesan Green Energy Co., Ltd.	Power plants operation	South Korea	35.00		17,850,000,000		17,181,876,132
Taebaekgaduksan Wind Power Co., Ltd.	Power plants operation	South Korea	37.78		8,500,000,000		7,846,371,555
					514,622,440,932		454,253,879,237
				₩	787,586,440,932	₩	774,124,609,785

(*1) Although the Group holds less than 20% equity interest in the investee, the investee has been classified as an associate because they can exercise voting rights on the investee's Board of Directors.

(*2) Although the Group holds less than 20% equity shares in the investee, the investee has been classified as a joint venture based on the judgement of having a joint control.

(*3) The Group invested newly in preferred stocks with voting rights and classified the investee as a joint venture based on their judgement of having a joint control.

(*4) On August 19, 2019, Dangjin Eco Power Co., Ltd., spun off into Ulsan GPS Co., Ltd. (existing entity), Dangjin Eco Power Co., Ltd. (newly established), and Eumseong Natural Gas Power Co., Ltd. (newly established). The Group recognized the acquisition cost of the shares of Dangjin Eco Power Co., Ltd. at fair value of ₩16,481,385,206 as of spin-off date plus ₩9,180,000,000 of additional acquisition in November 2019.

(*5) Reclassified from a joint venture to an associate for the year ended December 31, 2019.

14. Investments in associates and joint ventures (cont'd)

Investments in associates and joint ventures	Principal activity	Country of domicile	Equity ratio (%)	Dec. 31, 2018	
				Cost	Book value
<Associates>					
Green Biomass Co., Ltd. (*1)	Power plants operation	South Korea	8.80	₩ 714,000,000	₩ 114,723,071
Korea Offshore Wind Power Co., Ltd. (*1)	Power plants operation	South Korea	12.50	26,600,000,000	22,467,059,439
Solar School Plant Co., Ltd. (*1)	Resource development for solar energy	South Korea	8.33	16,650,000,000	16,892,726,416
KEPCO Energy Solution Inc. (*1)	Investment in facilities for energy efficiency	South Korea	8.33	25,000,000,000	25,271,190,073
				68,964,000,000	64,745,698,999
<Joint ventures>					
GS Donghae Electric Power Co., Ltd.	Power plants operation	South Korea	34.00	204,000,000,000	240,591,084,527
Pusan Shinho Solar Power Co., Ltd.	Power plants operation	South Korea	25.00	2,100,000,000	4,761,105,495
Honam Wind Power Co., Ltd.	Power plants operation	South Korea	29.00	3,480,000,000	4,859,554,579
Dangjin Eco Power Corporation	Power plants operation	South Korea	34.00	61,540,000,000	19,911,956,147
Seokmun Energy Co., Ltd	Power plants operation	South Korea	29.00	15,370,000,000	16,750,765,559
Chun-cheon Energy Co., Ltd.	Power plants operation	South Korea	29.90	52,699,945,000	42,505,111,817
Yeonggwangbaeksu Wind Power Co., Ltd. (*2)	Power plants operation	South Korea	15.00	3,000,000,000	2,843,257,993
Yeonggwang Wind Power Co., Ltd.	Power plants operation	South Korea	41.00	15,375,000,000	15,303,885,401
Jamaica Public Service Company Limited	Power plants operation	Jamaica	40.00	301,909,577,842	239,632,132,322
South Jamaica Power Company Limited	Power plants operation	Jamaica	20.00	16,230,755,000	16,123,672,860
PT.Tanjung Power Indonesia	Power plants operation	Indonesia	35.00	746,237,194	7,080,667,901
Daesan Green Energy Co., Ltd.	Power plants operation	South Korea	35.00	17,850,000,000	17,432,696,297
Taebaekgaduksan Wind Power Co., Ltd.	Power plants operation	South Korea	46.58	8,500,000,000	8,508,153,045
				702,801,515,036	636,304,043,943
				₩ 771,765,515,036	₩ 701,049,742,942

(*1) Although the Group holds less than 20% equity interest in the investee, the investee has been classified as an associate because they can exercise voting rights on the investee's Board of Directors.

(*2) Although the Group holds less than 20% equity shares in the investee, the investee has been classified as a joint venture based on the judgement of having a joint control.

As of December 31, 2019 and 2018, the Group has no associates and joint ventures that were listed on a stock market.

14. Investments in associates and joint ventures (cont'd)

Changes in investments in associates and joint ventures for the years ended December 31, 2019 and 2018 are as follows (Korean won):

	2019					
	Jan. 1	Additions	Dividend received	Share of profit (loss)	Changes in equity adjustments in equity method	Others	Dec. 31
<Associates>							
Green Biomass Co., Ltd.	₩ 114,723,071	₩ -	₩ -	₩ (72,543,021)	₩ -	₩ 66,026,520	₩ 108,206,570
Korea Offshore Wind Power Co., Ltd.	22,467,059,439	-	-	(1,295,988,523)	-	-	21,171,070,916
Solar School Plant Co., Ltd.	16,892,726,416	-	-	212,562,227	-	(710,418)	17,104,578,225
KEPCO Energy Solution Inc.	25,271,190,073	-	-	233,781,530	-	(1,144,401)	25,503,827,202
GS Donghae Electric Power Co., Ltd. (*1)	-	-	-	-	-	255,983,047,635	255,983,047,635
	64,745,698,999	-	-	(922,187,787)	-	256,047,219,336	319,870,730,548
<Joint ventures>							
GS Donghae Electric Power Co., Ltd. (*1)	240,591,084,527	-	(10,200,000,000)	25,786,446,191	-	(256,177,530,718)	-
Pusan Shinho Solar Power Co., Ltd.	4,761,105,495	-	(430,000,000)	714,119,540	-	-	5,045,225,035
Honam Wind Power Co., Ltd.	4,859,554,579	-	(586,670,000)	102,596,035	-	-	4,375,480,614
Dangjin Eco Power Corporation (*2)	19,911,956,147		-	(657,212,737)	15,728,645	(19,270,472,055)	-
Dangjin Eco Power Corporation(New)	-	9,180,000,000	-	-	-	16,481,385,206	25,661,385,206
Seokmun Energy Co., Ltd.	16,750,765,559	-	-	590,789,330	-	-	17,341,554,889
Chun-cheon Energy Co., Ltd. (*3)	42,505,111,817	-	-	(7,384,509,072)	-	(248,141,456)	34,872,461,289
Yeonggwangbaeksu Wind Power Co., Ltd.	2,843,257,993	-	-	196,877,073	-	-	3,040,135,066
Yeonggwang Wind Power Co., Ltd (*4)	15,303,885,401	2,100,000,000	-	222,751,502	-	-	17,626,636,903
Yangyang Wind Power Co., Ltd.	-	10,800,000,000	-	-	-	-	10,800,000,000
Jamaica Public Service Company Limited	239,632,132,322	-	(4,631,200,000)	10,166,483,467	8,440,071,882	-	253,607,487,671
South Jamaica Power Company Limited	16,123,672,860	4,289,977,000	-	(7,129,896,386)	579,743,726	-	13,863,497,200
PT.Tanjung Power Indonesia	7,080,667,901	26,145,831,600	-	5,601,274,632	(4,489,128,517)	(11,457,171)	34,327,188,445
DE Energia SpA	-	8,363,732,090	-	647,315,199	-	(346,468,057)	8,664,579,232
Daesan Green Energy Co., Ltd.	17,432,696,297	-	-	(250,820,165)	-	-	17,181,876,132
Taebaekgaduksan Wind Power Co., Ltd.	8,508,153,045	-	-	(651,431,881)	(8,809,589)	(1,540,020)	7,846,371,555
	636,304,043,943	60,879,540,690	(15,847,870,000)	27,954,782,728	4,537,606,147	(259,574,224,271)	454,253,879,237
	₩ 701,049,742,942	₩ 60,879,540,690	₩ (15,847,870,000)	₩ 27,032,594,941	₩ 4,537,606,147	₩ (3,527,004,935)	₩ 774,124,609,785

14. Investments in associates and joint ventures (cont'd)

(*1) Reclassified from a joint venture to an associate for the year ended December 31, 2019.

(*2) Dangjin Eco Power Co., Ltd., spun off into Ulsan GPS Co., Ltd. (existing entity), Dangjin Eco Power Co., Ltd. (newly established) and Eumseong Natural Gas Power Co., Ltd. (newly established) on August 19, 2019. Due to this spin-off, the shares in Ulsan GPS Co., Ltd. (existing entity) amounting to ₩5,359,079,048, Dangjin Eco Power Co., Ltd. (newly established) amounting to ₩16,481,385,206 and Eumseong Natural Gas Power Co., Ltd. (newly established) amounting to ₩59,058,000,000 were recognized as joint investments. Also, the Group recognized gain on disposal of investments in the total amount of ₩61,627,992,199. The investment in Ulsan GPS Co., Ltd. was classified as assets held for sale because of signing a sale agreement after the spin-off and recognized gain on assets held for sale in the total amount of ₩23,740,920,952 after completing the sale in October 2019. Lastly, the Group merged Eumseong Natural Gas Power Co., Ltd. (newly established) into the Group in December 2019, and the amount of ₩59,058,000,000 was included in the consideration for merge.

(*3) Recognized impairment loss amounting to ₩248,141,456 by conducting an impairment test in accordance with KIFRS 1036 due to the ongoing operating losses of Chun-cheon Energy Co., Ltd.

(*4) Acquired 5% shares of Yeonggwang Wind Power Co., Ltd. owned by UNISON Co., Ltd. by exercising a call option under the shareholders' agreement.

14. Investments in associates and joint ventures (cont'd)

	2018						
	Jan. 1	Additions	Dividend received	Share of profit (loss)	Changes in equity adjustments in equity method	Others	Dec. 31
<Associates>							
Green Biomass Co., Ltd.	₩ 207,744,483	₩ -	₩ -	₩ (93,021,412)	₩ -	₩ -	₩ 114,723,071
Korea Offshore Wind Power Co., Ltd.	23,526,175,021	-	-	(1,059,115,582)	-	-	22,467,059,439
Solar School Plant Co., Ltd.	16,723,523,613	-	-	169,202,803	-	-	16,892,726,416
KEPCO Energy Solution Inc.	25,085,422,115	-	-	186,614,788	(17,217)	(829,613)	25,271,190,073
	65,542,865,232	-	-	(796,319,403)	(17,217)	(829,613)	64,745,698,999
<Joint ventures>							
GS Donghae Electric Power Co., Ltd.	220,727,568,388	-	-	20,061,322,632	-	(197,806,493)	240,591,084,527
Pusan Shinho Solar Power Co., Ltd.	4,346,456,357	-	(339,750,000)	754,399,138	-	-	4,761,105,495
Honam Wind Power Co., Ltd.	4,302,142,948	-	(348,000,000)	905,411,631	-	-	4,859,554,579
Dangjin Eco Power Corporation	57,928,052,299	-	-	(38,042,195,068)	(64,994,400)	91,093,316	19,911,956,147
Seokmun Energy Co., Ltd.	13,785,992,962	-	-	2,964,772,597	-	-	16,750,765,559
Chun-cheon Energy Co., Ltd.	48,118,355,677	-	-	(5,613,243,860)	-	-	42,505,111,817
Yeonggwangbaeksu Wind Power Co., Ltd.	2,733,981,379	-	-	109,276,614	-	-	2,843,257,993
Yeonggwang Wind Power Co., Ltd.	15,293,638,958	-	-	10,246,443	-	-	15,303,885,401
Jamaica Public Service Company Limited	221,153,579,557	-	(4,472,400,000)	13,099,433,499	9,851,519,266	-	239,632,132,322
South Jamaica Power Company Limited.	6,704,392,640	9,140,895,000	-	(183,750,100)	462,135,320	-	16,123,672,860
PT.Tanjung Power Indonesia	1,776,101,565	-	-	3,373,304,141	1,927,137,523	4,124,672	7,080,667,901
Daesan Green Energy Co., Ltd.	-	17,850,000,000	-	(417,303,703)	-	-	17,432,696,297
Taebaekgaduksan Wind Power Co., Ltd.	-	8,500,000,000	-	8,153,045	-	-	8,508,153,045
	596,870,262,730	35,490,895,000	(5,160,150,000)	(2,970,172,991)	12,175,797,709	(102,588,505)	636,304,043,943
	₩ 662,413,127,962	₩ 35,490,895,000	₩ (5,160,150,000)	₩ (3,766,492,394)	₩ 12,175,780,492	₩ (103,418,118)	₩ 701,049,742,942

14. Investments in associates and joint ventures (cont'd)

The summary of associates and joint ventures' financial information as of December 31, 2019 and 2018 and for the years then ended, is as follows (Korean won):

	Dec. 31, 2019			
	Total assets	Total liabilities	Sales	Profit (loss) for the year
<Associates>				
Green Biomass Co., Ltd.	₩ 3,865,662,857	₩ 2,486,559,518	₩ 17,351,072	₩ (924,567,919)
Korea Offshore Wind Power Co., Ltd.	284,495,319,775	115,126,752,450	-	(10,367,908,185)
Solar School Plant Co., Ltd.	208,729,610,117	3,269,211,017	1,962,309,595	2,553,300,035
KEPCO Energy Solution Inc.	308,187,606,316	2,141,679,897	2,843,429,141	2,805,378,363
GS Donghae Electric Power Co., Ltd.	2,301,774,265,373	1,548,882,948,800	688,055,210,864	75,842,488,796
<Joint ventures>				
Pusan Shinho Solar Power Co., Ltd.	42,317,711,857	22,136,811,717	7,842,799,867	2,856,478,161
Honam Wind Power Co., Ltd.	39,680,040,674	24,702,816,380	5,365,338,805	353,779,450
Dangjin Eco Power Corporation (Newly established)	99,906,902,423	25,436,105,022	107,000,000	(736,831,387)
Seokmun Energy Co., Ltd.	242,331,620,597	182,533,155,460	44,732,690,313	2,605,868,553
Chun-cheon Energy Co., Ltd.	607,823,120,943	490,374,593,440	313,438,407,927	(24,489,579,047)
Yeonggwangbaeksu Wind Power Co., Ltd.	99,552,382,868	79,322,329,252	11,738,860,378	1,341,893,295
Yeonggwang Wind Power Co., Ltd	262,609,617,490	225,360,728,645	24,255,635,416	(2,031,555,826)
Yangyang Wind Power Co., Ltd.	10,763,746,176	-	-	(10,619,485)
Jamaica Public Service Company Limited (*)	1,543,049,113,092	940,608,926,685	1,035,399,103,350	32,828,200,950
South Jamaica Power Company Limited	364,346,924,200	295,029,438,200	7,223,533,050	(35,649,794,322)
PT.Tanjung Power Indonesia	654,364,884,362	556,287,203,308	109,824,569,508	16,488,977,052
DE Energia SpA	64,958,703,177	50,971,487,927	1,254,218,062	(2,644,973,165)
Daesan Green Energy Co., Ltd.	232,169,574,763	183,078,500,100	-	(716,629,044)
Taebaekgaduksan Wind Power Co., Ltd.	70,270,041,099	49,500,234,040	-	(1,601,942,871)

(*) The summarized financial information is adjusted to reflect adjustments of fair values on the date of acquisition.

	Dec. 31, 2018			
	Total assets	Total liabilities	Sales	Profit (loss) for the year
<Associates>				
Green Biomass Co., Ltd.	₩ 4,410,698,039	₩ 3,107,026,781	₩ 908,784,516	₩ (1,057,061,469)
Korea Offshore Wind Power Co., Ltd.	216,113,706,140	36,377,230,631	-	(8,472,924,658)
Solar School Plant Co., Ltd.	204,281,637,113	1,366,004,493	1,148,696,119	2,032,522,420
KEPCO Energy Solution Inc.	304,103,022,241	848,741,372	5,583,921,611	2,532,422,075
<Joint ventures>				
GS Donghae Electric Power Co., Ltd.	2,259,129,435,130	1,551,508,598,285	787,425,105,739	58,975,678,130
Pusan Shinho Solar Power Co., Ltd.	45,538,334,810	26,493,912,831	7,900,617,541	3,017,596,548
Honam Wind Power Co., Ltd.	43,712,663,713	27,066,218,849	7,700,290,879	3,122,109,072
Dangjin Eco Power Corporation	51,125,354,974	260,462,764	-	(111,788,718,497)
Seokmun Energy Co., Ltd.	253,543,607,676	195,782,347,126	50,051,678,184	10,224,160,577
Chun-cheon Energy Co., Ltd.	666,050,299,344	523,904,417,085	320,950,050,704	(19,133,247,535)
Yeonggwangbaeksu Wind Power Co., Ltd.	99,367,885,560	80,450,345,769	11,366,463,210	733,976,452
Yeonggwang Wind Power Co., Ltd.	255,777,375,214	219,012,728,764	-	(144,788,160)
Jamaica Public Service Company Limited (*)	1,396,421,323,421	827,836,722,876	992,677,456,400	32,507,263,200
South Jamaica Power Company Limited	294,340,943,100	213,722,578,800	-	(931,954,100)
PT.Tanjung Power Indonesia	505,551,184,655	485,320,706,253	109,028,862,469	9,717,351,637
Daesan Green Energy Co., Ltd.	52,582,144,221	2,774,440,514	-	(1,192,296,293)
Taebaekgaduksan Wind Power Co., Ltd.	18,766,098,537	498,593,470	-	17,505,067

(*) The summarized financial information is adjusted to reflect adjustments of fair values on the date of acquisition.

14. Investments in associates and joint ventures (cont'd)

The agreement that have occurred but are not recognized regarding the investments in associates and joint ventures as of December 31, 2019 are as follows:

	Agreements
Yeonggwang Wind Power Co., Ltd.	If the Group decides to acquire all or a portion of the shares in Yeonggwang Wind Power Co., Ltd. that are owned by Daehan Green Energy Co., Ltd., a shareholder other than the Group, Daehan Green Energy Co., Ltd. is obliged to evaluate the shares at fair value first and to transfer them to the Group.

As of December 31, 2019, following significant restrictions are posed on transfer funds to investors or to repay or return borrowings or advances to investors by associates or joint ventures:

	Significant restrictions
Korea Offshore Wind Power Co., Ltd.	Repayment of subordinated loans or dividends and payments for renewable energy supply certification are permitted only if all the conditions in the loan agreement between Korea Offshore Wind Power Co., Ltd. and financial institutions are met and with prior written consent from the financial institutions.
GS Donghae Electric Power Co., Ltd.	Dividends to shareholders are permitted only if all conditions in the loan agreement between GS Donghae Electric Power Co., Ltd. and financial institutions are met, or with prior written consent from the financial institutions.
Pusan Shinho Solar Power Co., Ltd.	Dividends to shareholders are permitted only if all conditions in the loan agreement between Pusan Shinho Solar Power Co., Ltd. and financial institutions are met.
Honam Wind Power Co., Ltd.	Dividends and payments for renewable energy supply certification are permitted only if all conditions in the loan agreement between Honam Wind Power Co., Ltd. and financial institutions are met.
Seokmun Energy Co., Ltd.	Dividends and payments for renewable energy supply certification are permitted only if all conditions in the loan agreement between Seokmun Energy Co., Ltd. and financial institutions are met. Repayment of principal and interest on subordinated loans is not permitted without prior written consent from the financial institutions.
Chun-cheon Energy Co., Ltd.	Dividends to shareholders are permitted only when all the conditions in the loan agreement between Chun-cheon Energy Co., Ltd. and financial institutions are met. Also, repayment of subordinated loans is not permitted before all secured debts are fully repaid.
Yeonggwangbaeksu Wind Power Co., Ltd.	Dividends and payments for renewable energy supply certification are permitted only if all conditions in the loan agreement between Yeonggwangbaeksu Wind Power Co., Ltd. and financial institutions are met and with prior written consent from the financial institutions. Repayment of principal and interest on subordinated loans is not permitted without prior written consent from the financial institutions.
Yeonggwang Wind Power Co., Ltd.	Dividends and payments for renewable energy supply certification are permitted only if all conditions in the loan agreement between Yeonggwang Wind Power Co., Ltd. and financial institutions are met and with prior written consent from the financial institution.
Jamaica Public Service Company Limited	Dividends to shareholders are permitted only if all conditions in the loan agreement between Jamaica Public Service Company Limited and financial institutions are met and with prior written consent from the financial institutions.
PT.Tanjung Power Indonesia	Dividends to shareholders are permitted only if all conditions in the loan agreement between PT.Tanjung Power Indonesia and financial institutions are met.

14. Investments in associates and joint ventures (cont'd)

	Significant restrictions
DE Energia SpA	Dividends to shareholders are permitted only if all the conditions in the loan agreement between DE Energia SpA and financial institutions are met.
Daesan Green Energy Co., Ltd.	Dividends and payments for renewable energy supply certification are permitted only if all the conditions in the loan agreement between Daesan Green Energy Co., Ltd. and financial institutions are met and with prior written consent from the financial institutions.
Taebaekgaduksan Wind Power Co., Ltd.	Dividends and payments for renewable energy supply certification are permitted only if all the conditions in the loan agreement between Taebaekgaduksan Wind Power Co., Ltd. and financial institutions are met, or with prior written consent from the financial institutions. Repayment of principal and interest on subordinated loans is not permitted without prior written consent from the financial institutions.

15. Property, plant and equipment

The acquisition cost and net book value of property, plant and equipment as of December 31, 2019 and 2018 are as follows (Korean won):

	Dec. 31, 2019			
	Acquisition cost	Government grants	Accumulated depreciation	Book value
Land	₩ 834,424,938,895	₩ -	₩ -	₩ 834,424,938,895
Buildings	1,261,860,813,801	(175,529,748)	(502,423,621,524)	759,261,662,529
Structures	1,352,027,433,413	-	(624,238,109,025)	727,789,324,388
Machinery	6,931,176,880,855	-	(3,130,352,675,486)	3,800,824,205,369
Vehicles	15,389,016,313	(28,583,334)	(10,843,430,973)	4,517,002,006
Furniture and fixtures	121,353,546,242	-	(79,731,774,001)	41,621,772,241
Tools and equipment	23,755,058,573	-	(18,282,038,366)	5,473,020,207
Construction-in-progress	242,052,490,047	(2,767,419,000)	-	239,285,071,047
Right-of-use assets	947,879,110,563	-	(276,815,879,354)	671,063,231,209
	₩ 11,729,919,288,702	₩ (2,971,532,082)	₩ (4,642,687,528,729)	₩ 7,084,260,227,891

	Dec. 31, 2018			
	Acquisition cost	Government grants	Accumulated depreciation	Book value
Land	₩ 835,649,150,199	₩ -	₩ -	₩ 835,649,150,199
Buildings	1,248,951,903,402	(183,600,082)	(450,643,968,862)	798,124,334,458
Structures	1,342,451,321,642	-	(575,720,040,795)	766,731,280,847
Machinery	6,917,721,577,871	-	(3,020,801,756,835)	3,896,919,821,036
Vehicles	12,270,739,572	(47,291,668)	(10,368,500,866)	1,854,947,038
Furniture and fixtures	99,505,755,843	-	(67,076,656,404)	32,429,099,439
Tools and equipment	22,909,038,203	-	(16,506,583,182)	6,402,455,021
Construction-in-progress	118,217,984,719	-	-	118,217,984,719
Finance lease assets	384,648,937,991	-	(206,210,336,957)	178,438,601,034
	₩ 10,982,326,409,442	₩ (230,891,750)	₩ (4,347,327,843,901)	₩ 6,634,767,673,791

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

Changes in the net book value of property, plant and equipment for the years ended December 31, 2019 and 2018 are as follows (Korean won):

	2019							
	Jan. 1	Acquisition / capital expenditure	Disposal	Disuse	Depreciation	Others (*1) Transfer (*2)	Others (*1) Others	Dec. 31
Land	₩ 835,649,150,199	₩ -	₩ -	₩ (635,397,307)	₩ -	₩ (666,228,997)	₩ 77,415,000	₩ 834,424,938,895
Buildings	798,307,934,540	-	(2,342,443,143)	(406,579,586)	(55,412,991,901)	19,239,055,439	52,216,928	759,437,192,277
(Government grant)	(183,600,082)	-	-	-	8,070,334	-	-	(175,529,748)
Structures	766,731,280,847	-	-	-	(48,903,035,330)	9,866,636,440	94,442,431	727,789,324,388
Machinery	3,896,919,821,036	32,446,911,332	(58,127,798)	(11,237,768,599)	(510,111,456,992)	392,291,145,713	573,680,677	3,800,824,205,369
Vehicles	1,902,238,706	214,983,532	(1,000)	-	(906,091,522)	3,324,364,062	10,091,562	4,545,585,340
(Government grant)	(47,291,668)	-	-	-	18,708,334	-	-	(28,583,334)
Furniture and fixtures	32,429,099,439	324,836,795	(528,039)	(1,011,903)	(13,888,878,927)	22,725,432,862	32,822,014	41,621,772,241
Tools and equipment	6,402,455,021	46,594,219	-	(29,000)	(2,277,890,984)	1,300,737,563	1,153,388	5,473,020,207
Construction-in-progress	118,217,984,719	584,332,905,759	-	(1,082,753,470)	-	(461,009,283,485)	1,593,636,524	242,052,490,047
(Government grant)	-	(2,767,419,000)	-	-	-	-	-	(2,767,419,000)
Finance lease assets	178,438,601,034	-	-	-	-	-	(178,438,601,034)	-
Right-of-use asset	-	89,276,843,567	-	-	(70,598,644,786)	1,812,737,991	650,572,294,437	671,063,231,209
	₩ 6,634,767,673,791	₩ 703,875,656,204	₩ (2,401,099,980)	₩ (13,363,539,865)	₩ (702,072,211,774)	₩ (11,115,402,412)	₩ 474,569,151,927	₩ 7,084,260,227,891

(*1) Represents amounts from construction-in-progress, amounts to assets held for sale, changes in exchange rates, effects of newly adopted KIFRS 1106 *Leases* and etc.

(*2) Assets of DG Fairhaven Power, LLC, a subsidiary of the Group, were transferred to assets held for sale (Note 37).

	2018					
	Jan. 1	Acquisition / capital expenditure	Disposal / disuse	Depreciation	Others (*1)	Dec. 31
Land	₩ 820,635,185,750	₩ 236,571,213	₩ (68,434,360)	₩ -	₩ 14,845,827,596	₩ 835,649,150,199
Buildings	838,558,174,899	-	(217,254,828)	(54,248,267,565)	14,215,282,034	798,307,934,540
(Government grant)	(191,670,415)	-	-	8,070,333	-	(183,600,082)
Structures	807,625,270,394	332,090,909	-	(48,591,576,110)	7,365,495,654	766,731,280,847
Machinery	4,052,539,918,833	56,238,052,115	(6,416,522,376)	(491,527,101,664)	286,085,474,128	3,896,919,821,036
Vehicles	1,368,867,973	32,846,156	(15,687,275)	(774,093,323)	1,290,305,175	1,902,238,706
(Government grant)	(66,291,668)	-	-	19,000,000	-	(47,291,668)
Finance lease assets	196,596,208,991	-	-	(18,899,097,914)	741,489,957	178,438,601,034
Furniture and fixtures	39,281,791,089	317,780,446	(78,000)	(14,810,930,449)	7,640,536,353	32,429,099,439
Tools and equipment	6,648,323,506	-	(33,000)	(2,244,839,326)	1,999,003,841	6,402,455,021
Construction-in-progress	72,958,505,270	380,956,910,359	-	-	(335,697,430,910)	118,217,984,719
	₩ 6,835,954,284,622	₩ 438,114,251,198	₩ (6,718,009,839)	₩ (631,068,836,018)	₩ (1,514,016,172)	₩ 6,634,767,673,791

(*1) Represents amounts from construction-in-progress, changes in exchange rates and etc.

16. Goodwill

Details of goodwill as of December 31, 2019 and 2018 are as follows (Korean won):

	Dec. 31, 2019	Dec. 31, 2018
Acquisition cost	₩ 103,338,846,648	₩ 7,671,613,940
Accumulated impairment loss	-	-
Book value	₩ 103,338,846,648	₩ 7,671,613,940

Changes in goodwill for the years ended December 31, 2019 and 2018 are as follows (Korean won):

	2019	2018
Jan. 1	₩ 7,671,613,940	₩ 7,351,191,463
Business combination	95,394,839,297	-
Effect on exchange rates change	272,393,411	320,422,477
Dec. 31	₩ 103,338,846,648	₩ 7,671,613,940

Goodwill was recognized from the acquisition of California Power Holdings, LLC ("CPH") in 2011 and the acquisition and merger of Eumseong Natural Gas Power Co., Ltd. in 2019.

CPH is considered as a separate CGU in the Group. Recoverable value was calculated based on the cash flows from the financial budget for 16 years approved by management and an estimated discount rate of 7.5% in 2019 (8.4% in 2018). Based on this calculation of value in use, the carrying value of the CGU is unlikely to exceed the recoverable amount.

Additionally, the Group acquired 100% shares in Eumseong Natural Gas Power Plant Co., Ltd., to secure stable power supply and generate incomes through diversification of power generations, and merged on December 23, 2019. As a result, additional goodwill of ₩95,394,839,297 was recognized for the year ended December 31, 2019 (Note 43).

There is no accumulated impairment loss on goodwill recognized as of December 31, 2019.

17. Intangible assets excluding goodwill

Intangible assets as of December 31, 2019 and 2018 are as follows (Korean won):

	Dec. 31, 2019				
	Acquisition cost	Government grant	Accumulated amortization	Accumulated impairment loss	Book value
Software	₩ 51,775,198,670	₩ -	₩ (38,893,064,704)	₩ -	₩ 12,882,133,966
Industrial property rights	2,600,212,971	-	(100,386,519)	-	2,499,826,452
Intangible assets before amortization	9,575,941,179	(5,634,618,107)	-	(3,941,323,072)	-
Usable and profitable donated assets	225,429,427,625	-	(217,094,673,469)	-	8,334,754,156
Others	306,288,474,049	-	(19,608,149,152)	(143,032,540)	286,537,292,357
	₩ 595,669,254,494	₩ (5,634,618,107)	₩ (275,696,273,844)	₩ (4,084,355,612)	₩ 310,254,006,931

	Dec. 31, 2018				
	Acquisition cost	Government grant	Accumulated amortization	Accumulated impairment loss	Book value
Software	₩ 50,233,352,546	₩ -	₩ (38,239,167,089)	₩ -	₩ 11,994,185,457
Industrial property rights	100,212,971	-	(73,865,103)	-	26,347,868
Intangible assets before amortization	9,575,941,179	(5,634,618,107)	-	(3,941,323,072)	-
Usable and profitable donated assets	225,429,427,625	-	(210,426,474,736)	-	15,002,952,889
Others	116,079,041,046	-	(13,226,126,399)	(143,032,540)	102,709,882,107
	₩ 401,417,975,367	₩ (5,634,618,107)	₩ (261,965,633,327)	₩ (4,084,355,612)	₩ 129,733,368,321

17. Intangible assets excluding goodwill (cont'd)

Changes in the net book value of intangible assets for the years ended December 31, 2019 and 2018 are as follows (Korean won):

	2019		
	Jan. 1	Acquisition (*1)	Disposal
Software	₩ 11,994,185,457	₩ -	₩ -
Industrial property rights	26,347,868	-	-
Usable and profitable donated assets	15,002,952,889	-	-
Others	102,709,882,107	272,087,407,375	(6,918,101,190)
	₩ 129,733,368,321	₩ 272,087,407,375	₩ (6,918,101,190)

	2019		
	Amortization	Others (*2)	Dec.31
Software	₩ (3,885,911,846)	₩ 4,773,860,355	₩ 12,882,133,966
Industrial property rights	(26,521,416)	2,500,000,000	2,499,826,452
Usable and profitable donated assets	(6,668,198,733)	-	8,334,754,156
Others	(6,029,570,858)	(75,312,325,077)	286,537,292,357
	₩ (16,610,202,853)	₩ (68,038,464,722)	₩ 310,254,006,931

(*1) Includes the business operation right valued at ₩172,434,000,000 due to the merger with Eumseong Natural Gas Power Co., Ltd.

(*2) Includes ₩7,593,459,367 from construction-in-progress, effects from changes in exchange rates and ₩(-)75,445,783,059 transferred to current non-financial assets of emission rights.

	Dec. 31, 2018			
	Jan. 1	Amortization	Others (*)	Dec.31
Software	₩ 10,394,317,163	₩ (3,379,218,951)	₩ 4,979,087,245	₩ 11,994,185,457
Industrial property rights	32,521,610	(6,173,742)	-	26,347,868
Usable and profitable donated assets	21,671,151,622	(6,668,198,733)	-	15,002,952,889
Others	108,380,669,834	(5,531,114,751)	(139,672,976)	102,709,882,107
	₩ 140,478,660,229	₩ (15,584,706,177)	₩ 4,839,414,269	₩ 129,733,368,321

(*) Represents amounts from construction-in-progress and changes in exchange rates.

Key intangible assets as of December 31, 2019 and 2018 are as follows (Korean won):

	Dec. 31, 2019		
	Contents	Amount	Residual amortization period
Usable and profitable donated assets	Right to use landing and loading facilities at Dangjin Power Plant	₩ 7,870,327,732	1 year 3 months
Others	Right to use public water surface	92,446,430,908	17 years 1 month
	Emission rights	17,289,523,126	-
	Business operation rights	171,955,016,667	29 years 11 months

	Dec. 31, 2018		
	Contents	Amount	Residual amortization period
Usable and profitable donated assets	Right to use landing and loading facilities at Dangjin Power Plant	₩ 14,166,589,917	2 years 3 months
Others	Right to use public water surface	97,857,929,302	18 years 1 month

18. Trade and other payables

Details of trade and other payables as of December 31, 2019 and 2018 are as follows (Korean won):

	Dec. 31, 2019		Dec. 31, 2018	
	Current	Non-current	Current	Non-current
Trade payables	₩ 222,635,586,272	₩ -	₩ 246,007,435,716	₩ -
Non-trade payables	189,877,380,934	-	128,180,012,363	-
Accrued expenses	48,403,623,117	-	44,283,804,656	14,395,538
Leasehold deposits received	5,856,500	-	9,731,550	-
Other deposits	1,009,645,282	-	759,522,777	-
Lease liabilities	58,776,455,599	475,373,568,431	-	-
	₩ 520,708,547,704	₩ 475,373,568,431	₩ 419,240,507,062	₩ 14,395,538

19. Lease

Details of right-of-use assets as of December 31, 2019 are as follows (Korean won):

	Dec. 31, 2019		
	Acquisition cost	Accumulated depreciation	Book value
Land	₩ 2,179,811,053	₩ (87,259,427)	₩ 2,092,551,626
Vessels	538,070,281,692	(50,410,788,226)	487,659,493,466
Power transmission facilities	386,479,937,982	(225,411,474,736)	161,068,463,246
Other right-of-use assets	21,149,079,836	(906,356,965)	20,242,722,871
	₩ 947,879,110,563	₩ (276,815,879,354)	₩ 671,063,231,209

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

	2019		
	Jan. 1	Changes in accounting standard	Acquisition
Land (*1)	₩ -	₩ 2,179,811,053	₩ -
Vessels (*1)	-	448,793,438,125	89,276,843,567
Power transmission facilities (*2)	178,438,601,034	-	-
Other right-of-use assets (*1)	-	21,149,079,836	-
	₩ 178,438,601,034	₩ 472,122,329,014	₩ 89,276,843,567

	2019		
	Depreciation	Others	Dec.31
Land(*1)	₩ (87,259,427)	₩ -	₩ 2,092,551,626
Vessels(*1)	(50,410,788,226)	-	487,659,493,466
Power transmission facilities (*2)	(19,194,240,168)	1,824,102,380	161,068,463,246
Other right-of-use assets (*1)	(906,356,965)	-	20,242,722,871
	₩ (70,598,644,786)	₩ 1,824,102,380	₩ 671,063,231,209

(*1) Under new standard KIFRS 1106, the Group assessed whether the contract is, or contains, a lease. For the contract identified as a lease, the Group measured lease liabilities at the present value of the lease payments that were not paid at that date using their incremental borrowing rate as of January 1, 2019. Also, the Group measured right-of-use asset at the same amount of lease liability measured.

(*2) Previously classified as a finance lease according to KIFRS 1017. For the lease, the carrying amount of right-of-use asset at the date of initial application is the carrying amount of lease asset measured applying KIFRS 1017 immediately before that date.

19. Lease (cont'd)

The table below summarizes the maturity profile of lease liabilities as of December 31, 2019 based on the contracts as of December 31, 2019 (Korean won):

		Dec. 31, 2019
Less than 1 year	₩	59,496,078,075
2 to 5 years		224,733,298,886
Over 5 years		327,246,770,645
Sum of undiscounted lease payments		611,476,147,606
Adjustments (discount and etc.)		(77,326,123,576)
Sum of discounted lease payments	₩	534,150,024,030

Details of lease liabilities by category as of December 31, 2019 are as follows (Korean won):

		Dec. 31, 2019		Dec. 31, 2018
Current	₩	58,776,455,599	₩	-
Non-current		475,373,568,431		-
	₩	534,150,024,030	₩	-

Changes in lease liabilities for the year ended December 31, 2019 are as follows (Korean won):

		2019
Jan. 1, 2019	₩	-
Changes in accounting standard (*)		472,122,329,014
Increase		89,276,843,567
Payments		(57,275,025,922)
Interest expenses		12,338,077,747
Fluctuation of exchange rates		17,687,799,624
Dec. 31, 2019		534,150,024,030

(*) Under new standard KIFRS 1106, the Group assessed whether the contract is, or contains, a lease. For the contract identified as a lease, the Group measured lease liabilities at the present value of the lease payments that were not paid at that date using their incremental borrowing rate as of January 1, 2019.

The amounts recognized in the consolidated statements of comprehensive income for the year ended December 31, 2019 related to leases are as follows (Korean won):

		2019
Depreciation of right-of-use assets	₩	70,598,644,786
Interest expenses of lease liabilities		12,338,077,747
Expenses related to the leases applying exemption for short-term leases		44,057,400
Expenses related to the leases applying exemption for leases of low-value assets		206,516,820
Loss on foreign currency translation of long-term consecutive voyage charter		17,687,799,624
	₩	100,875,096,377

As the lessee, total cash outflow for lease payments of ₩57,275,025,922 is recognized in the consolidated statements of cash flows for the year ended December 31, 2019.

20. Borrowings and bonds payable

Details of borrowings and bonds payable as of December 31, 2019 and 2018 are as follows (Korean won):

	Dec. 31, 2019	Dec. 31, 2018
Current liabilities:		
Short term borrowing	₩ 120,000,000,000	₩ 44,000,000,000
Current-portion of long-term borrowings	7,596,040,000	8,741,836,672
Current-portion of bonds payable	678,900,000,000	190,000,000,000
Less: discount on current portion of bonds payable	(731,789,698)	(25,593,495)
	805,764,250,302	242,716,243,177
Non-current liabilities:		
Long-term borrowings	69,866,490,000	77,462,920,000
Bonds payable	2,577,800,000,000	2,967,150,000,000
Less: discount on bonds payable	(10,047,069,963)	(14,461,546,388)
	2,637,619,420,037	3,030,151,373,612
	₩ 3,443,383,670,339	₩ 3,272,867,616,789

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

Financial institution	Annual interest rate (%)	Maturity	Dec. 31, 2019	Dec. 31, 2018
BNK Securities	2.10	2020.01.13	₩ 30,000,000,000	₩ -
SK SECURITIES CO.,LTD	2.10	2020.01.13	10,000,000,000	-
KTB Investment & Securities Co., Ltd.	2.15	2020.01.13	20,000,000,000	-
Woori Investment Bank Co., Ltd	2.15	2020.01.13	10,000,000,000	-
SK SECURITIES CO.,LTD	2.00	2020.01.10	50,000,000,000	-
KTB Investment & Securities Co., Ltd.	2.31	2019.01.28	-	10,000,000,000
Woori Investment Bank Co., Ltd.	2.29	2019.01.30	-	10,000,000,000
KB Securities Co., Ltd.	2.30	2019.01.28	-	24,000,000,000
			₩ 120,000,000,000	₩ 44,000,000,000

20. Borrowings and bonds payable (cont'd)

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

Financial institution	Description	Annual interest rate (%)	Maturity	Dec. 31, 2019 USD	Dec. 31, 2019 KRW
<Long-term borrowings denominated in Korean won>					
Korea Energy Agency	Development funds	0.75	2024.09.15	$ -	₩ 803,130,000
Korea Energy Agency	Development funds	1.75	2028.09.15	-	4,506,950,000
Korea Energy Agency	Development funds	1.75	2028.09.15	-	1,836,450,000
Samsung Life Insurance Co., Ltd.,	Facility funds	Non-guaranteed bond rate+1.2	2023.09.30	-	12,569,119,072
Fubon Hyundai Life Insurance Co., Ltd.	Facility funds	Non-guaranteed bond rate+1.2	2023.09.30	-	5,318,440,464
Hyundai Marine & Fire Insurance Co., Ltd.	Facility funds	Non-guaranteed bond rate+1.2	2023.09.30	-	5,318,440,464
Samsung Fire & Marine Insurance Co., Ltd.,	Facility funds	3.80	2029.09.30	-	2,982,000,000
KB Insurance Co., Ltd.	Facility funds	3.80	2029.09.30	-	12,579,000,000
Fubon Hyundai Life Insurance Co., Ltd.	Facility funds	3.80	2029.09.30	-	12,670,000,000
Hyundai Marine & Fire Insurance Co., Ltd.	Facility funds	3.80	2029.09.30	-	12,579,000,000
KB Insurance Co., Ltd.	Facility funds	1.75	2026.09.30	-	2,100,000,000
Fubon Hyundai Life Insurance Co., Ltd.	Facility funds	1.75	2026.09.30	-	2,100,000,000
Hyundai Marine & Fire Insurance Co., Ltd.	Facility funds	1.75	2026.09.30	-	2,100,000,000
					77,462,530,000
Less: current portion of long-term borrowings denominated in Korean won				-	(7,596,040,000)
				$ -	₩ 69,866,490,000

20. Borrowings and bonds payable (cont'd)

Financial institution	Description	Annual interest rate (%)	Maturity	Dec. 31, 2018 USD	Dec. 31, 2018 KRW
<Long-term borrowings denominated in Korean won>					
Korea Energy Agency	Development funds	0.75	2024.09.15	$ -	₩ 972,210,000
Korea Energy Agency	Development funds	1.75	2028.09.15	-	5,022,030,000
Korea Energy Agency	Development funds	1.75	2028.09.15	-	2,046,330,000
Samsung Life Insurance Co., Ltd.,	Facility funds	Non-guaranteed bond rate+1.2	2023.09.30	-	15,711,559,536
Fubon Hyundai Life Insurance Co., Ltd.	Facility funds	Non-guaranteed bond rate+1.2	2023.09.30	-	6,648,220,232
Hyundai Marine & Fire Insurance Co., Ltd.	Facility funds	Non-guaranteed bond rate+1.2	2023.09.30	-	6,648,220,232
Samsung Fire & Marine Insurance Co., Ltd.,	Facility funds	3.80	2029.09.30	-	2,982,000,000
KB Insurance Co., Ltd.	Facility funds	3.80	2029.09.30	-	12,579,000,000
Fubon Hyundai Life Insurance Co., Ltd.	Facility funds	3.80	2029.09.30	-	12,670,000,000
Hyundai Marine & Fire Insurance Co., Ltd.	Facility funds	3.80	2029.09.30	-	12,579,000,000
KB Insurance Co., Ltd.	Facility funds	1.75	2026.09.30	-	2,400,000,000
Fubon Hyundai Life Insurance Co., Ltd.	Facility funds	1.75	2026.09.30	-	2,400,000,000
Hyundai Marine & Fire Insurance Co., Ltd.	Facility funds	1.75	2026.09.30	-	2,400,000,000
<Long-term borrowings denominated in foreign currency>					
Whitehaven Springs Biomass LLC	Borrowings from TEI (Tax Equity Investment)	-	2019.12.31	1,025,120	1,146,186,672
				1,025,120	86,204,756,672
Less: current portion of long-term borrowings denominated in USD				(1,025,120)	(1,146,186,672)
Less: current portion of long-term borrowings denominated in Korean won				-	(7,595,650,000)
				$ -	₩ 77,462,920,000

20. Borrowings and bonds payable (cont'd)

Details of bonds payable as of December 31, 2019 and 2018 are as follows (Korean won and USD):

Financial institution	Annual interest rate (%)	Maturity	Dec. 31, 2019 USD	Dec. 31, 2019 KRW	Dec. 31, 2018 USD	Dec. 31, 2018 KRW
Corporate bond #11-2	4.38	2021.05.26	$ -	₩ 290,000,000,000	$ -	₩ 290,000,000,000
Corporate bond #11-4	4.27	2026.11.08	-	110,000,000,000	-	110,000,000,000
Corporate bond #12-2	4.21	2022.03.22	-	200,000,000,000	-	200,000,000,000
Corporate bond #14-2	3.40	2019.01.28	-	-	-	100,000,000,000
Corporate bond #14-5	3.13	2019.06.03	-	-	-	90,000,000,000
Corporate bond #14-6	3.07	2021.07.02	-	90,000,000,000	-	90,000,000,000
Corporate bond #14-7	3.00	2021.08.01	-	100,000,000,000	-	100,000,000,000
Corporate bond #17-1	1.95	2020.04.28	-	100,000,000,000	-	100,000,000,000
Corporate bond #17-2	2.33	2024.04.28	-	50,000,000,000	-	50,000,000,000
Corporate bond #17-3	2.45	2027.04.28	-	50,000,000,000	-	50,000,000,000
Corporate bond #17-4	2.55	2022.11.10	-	50,000,000,000	-	50,000,000,000
Corporate bond #17-5	2.74	2027.11.10	-	80,000,000,000	-	80,000,000,000
Corporate bond #18-1	1.99	2021.11.05	-	100,000,000,000	-	100,000,000,000
Corporate bond #18-2	2.30	2038.11.05	-	30,000,000,000	-	30,000,000,000
Corporate bond #18-3	2.23	2048.11.05	-	40,000,000,000	-	40,000,000,000
Corporate bond #19-1	2.18	2039.03.07	-	40,000,000,000	-	-
Corporate bond #19-2	2.16	2049.03.07	-	40,000,000,000	-	-
Corporate bond #19-3	1.47	2039.10.07	-	70,000,000,000	-	-
Corporate bond #19-4	1.42	2049.10.07	-	80,000,000,000	-	-
Foreign currency corporate bonds #14-1	2.50	2020.06.02	500,000,000	578,900,000,000	500,000,000	559,050,000,000
Foreign currency corporate bonds #17-1	2.63	2022.06.19	500,000,000	578,900,000,000	500,000,000	559,050,000,000
Foreign currency corporate bonds #18-1	3.88	2023.07.19	500,000,000	578,900,000,000	500,000,000	559,050,000,000
			$ 1,500,000,000	₩ 3,256,700,000,000	$ 1,500,000,000	₩ 3,157,150,000,000
Less: discount on bonds			-	(10,778,859,661)	-	(14,487,139,883)
Less: current portion of bonds payable			-	(678,900,000,000)	-	(190,000,000,000)
Add: discount on current portion of bonds			-	731,789,698	-	25,593,495
			$ 1,500,000,000	₩ 2,567,752,930,037	$ 1,500,000,000	₩ 2,952,688,453,612

The table below summarizes the maturity profile of borrowings and bonds payable based on the contractual undiscounted repayment schedules as of December 31, 2019.

	Borrowings	Bonds payable	Total
Within the next 12 months	₩ 127,596,040,000	₩ 678,900,000,000	₩ 806,496,040,000
Between 1 and 5 years	31,339,890,000	2,037,800,000,000	2,069,139,890,000
Beyond 5 years	38,526,600,000	540,000,000,000	578,526,600,000
	₩ 197,462,530,000	₩ 3,256,700,000,000	₩ 3,454,162,530,000

21. Other financial liabilities

Details of other financial liabilities as of December 31, 2019 and 2018 are as follows (Korean won):

	Dec. 31, 2019		Dec. 31, 2018	
	Current	Non-current	Current	Non-current
Derivative liabilities	₩ 1,223,062,637	₩ -	₩ 31,961,954	₩ 30,713,908,204

22. Pension benefits

Defined c ontribution plan

The Group operates a defined contribution plan which 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 vested, the Group's obligation to make contributions to the plan decreases on a pro rata basis. The Group's sole obligation to this retirement benefit plan is to pay the prescribed contribution. The amount recognized in profit or loss and construction in progress during the year represents contributions made by the Group to the retirement benefit plan at the rates stipulated by the retirement benefit plan.

Costs related to defined contribution plan were recognized in profit or loss as follows (Korean won):

	2019	2018
Cost of sales	₩ 7,475,856,139	₩ 5,431,315,221
Selling and administrative expenses and others	1,512,418,202	1,958,615,554
	₩ 8,988,274,341	₩ 7,389,930,775

Defined benefits plan

The components of defined benefits liability (assets) as of December 31, 2019 and 2018 are as follows (Korean won):

	Dec. 31, 2019	Dec. 31, 2018
Present value of defined benefit obligation	₩131,734,787,160	₩ 114,644,771,024
Fair value of plan assets	(61,517,300,084)	(56,900,940,273)
	₩ 70,217,487,076	₩ 57,743,830,751

Changes in the present value of defined benefit obligation for the years ended December 31, 2019 and 2018 are as follows (Korean won):

	2019	2018
Jan. 1	₩114,644,771,024	₩ 100,916,477,230
Current service costs	13,098,153,244	11,804,066,832
Interest costs	2,856,915,645	3,019,637,067
Past service costs	10,687,742,634	-
Benefits paid	(3,092,626,820)	(5,460,068,080)
Re-measurement of the defined benefit obligation	(6,460,168,567)	4,364,657,975
Dec. 31	₩131,734,787,160	₩ 114,644,771,024

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

	2019	2018
Jan. 1	₩ 56,900,940,273	₩ 51,251,162,086
Interest income on plan assets	1,363,947,020	1,517,306,986
Re-measurement of plan assets	(237,334,218)	(567,317,919)
Contribution by employer	5,070,240,829	7,000,000,000
Benefits paid	(1,580,493,820)	(2,300,210,880)
Dec. 31	₩ 61,517,300,084	₩ 56,900,940,273

As of December 31, 2019 and 2018, re-measurements of defined benefit liability of ₩4,711,789,128 and ₩(-)3,739,157,324 recorded in OCI are presented excluding tax effect which is directly charged to equity, respectively.

22. Pension benefits (cont'd)

Defined benefits plan (cont'd)

Details of plan assets and fair value as of December 31, 2019 and 2018 are as follows (Korean won):

	2019	2018
Equity instruments	₩ 1,014,882,975	₩ 1,740,933,548
Debt instruments	16,025,544,461	15,046,485,179
Deposits	7,747,319,695	18,304,436,566
Others	36,729,552,953	21,809,084,980
	₩ 61,517,300,084	₩ 56,900,940,273

Details of costs related to the defined benefit plan recognized in profit or loss for the years ended December 31, 2019 and 2018 are as follows (Korean won):

	2019	2018
Current service costs	₩ 13,098,153,244	₩ 11,804,066,832
Interest costs	1,492,968,625	1,502,330,081
Past service costs	10,687,742,634	-
	₩ 25,278,864,503	₩ 13,306,396,913

Costs related to the defined benefit plan were recognized as follows (Korean won):

	2019	2018
Cost of sales	₩ 21,872,273,104	₩ 12,856,998,603
Selling and administrative expenses	3,406,591,399	446,878,840
Construction-in-progress	-	2,519,470
	₩ 25,278,864,503	₩ 13,306,396,913

Details of change in re-measurement gain (loss) in other comprehensive income for the years ended December 31, 2019 and 2018 are as follows (Korean won):

	2019	2018
Actuarial gains and losses from changes in financial assumptions	₩ 3,787,129,207	₩ 7,322,636,321
Return on plan assets	237,334,218	568,003,108
Changes in the effect of the asset ceiling and others	4,159,138,548	(2,958,663,535)
Actuarial gains and losses from changes in demographic assumptions	(14,406,436,322)	-
	₩ (6,222,834,349)	₩ 4,931,975,894

The principal assumptions used in determining pension benefit obligations for the Group's plans are shown below (Percentages in units):

	2019	2018
Discount rate	1.99 ~ 2.00	2.85 ~ 2.87
Future salary increases	2.00 ~ 5.75	1.01 ~ 5.78

Other long-term employee benefits liabilities as of December 31, 2019 and 2018 are as follows (Korean won):

	Dec. 31, 2019	Dec. 31, 2018
Long-term accrued expense	₩ 437,911,281	₩ 437,911,281

23. Provisions

Details of provisions as of December 31, 2019 and 2018 are as follows (Korean won):

	Dec. 31, 2019	
	Current	Non-current
Provision for employee bonuses	₩ 41,637,800,589	₩ -
Provision for financial guarantees	-	7,098,334,226
Provision for lawsuit (*1)	3,329,033,360	-
Provision for decommissioning cost (*2)	-	3,610,481,652
Provision for greenhouse gas emissions	70,577,552,376	-
	₩ 115,544,386,325	₩ 10,708,815,878

	Dec. 31, 2018	
	Current	Non-current
Provision for employee bonuses	₩ 38,158,573,586	₩ -
Provision for financial guarantees	1,165,361,220	83,610,000
Provision for lawsuit (*1)	203,380,677	-
Provision for decommissioning cost (*2)	-	3,497,956,832
	₩ 39,527,315,483	₩ 3,581,566,832

(*1) As of December 31, 2019, the Group has recognized a provision for ordinary wages based on en banc Supreme Court decision. The provision was estimated based on the assumptions such as possibility and timing of payments to employees. The provision may be subject to change when there is a change in these assumptions.

(*2) Related to the land leased from GYEONGJU-SI where wind power generation facilities exist, the Group estimated the decommissioning cost to occur at the end of the lease term by reflecting 1% annual inflation rate and 5% market uncertainty premium. The Group discounted the estimate of decommissioning cost at a discount rate on government bonds and recognized it as a provision.

23. Provisions (cont'd)

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

2019	Jan. 1	Addition	Utilization	Reversal	Others	Dec. 31
Provision for employee bonuses	₩ 38,158,573,586	₩ 42,982,145,205	₩ (39,502,918,202)	₩ -	₩ -	₩ 41,637,800,589
Provision for financial guarantees	1,248,971,220	6,986,239,100	-	(1,483,461,999)	346,585,905	7,098,334,226
Provision for RPS	-	20,181,938,783	-	(20,181,938,783)	-	-
Provision for lawsuit	203,380,677	3,218,511,863	(92,859,180)	-	-	3,329,033,360
Provision for decommissioning cost	3,497,956,832	112,524,820	-	-	-	3,610,481,652
Provision for greenhouse gas emissions	-	23,565,831,366	-	-	47,011,721,010	70,577,552,376
	₩ 43,108,882,315	₩ 97,047,191,137	₩ (39,595,777,382)	₩ (21,665,400,782)	₩ 47,358,306,915	₩ 126,253,202,203

2018	Jan. 1	Addition	Utilization	Reversal	Others	Dec. 31
Provision for employee bonuses	₩ 30,005,154,425	₩ 59,112,290,981	₩ (50,958,871,820)	₩ -	₩ -	₩ 38,158,573,586
Provision for financial guarantees	2,699,433,203	291,590,904	-	(956,725,763)	(785,327,124)	1,248,971,220
Provision for RPS	25,739,424,864	-	-	(25,739,424,864)	-	-
Provision for lawsuit	4,802,971,695	-	(4,599,591,018)	-	-	203,380,677
Provision for decommissioning cost	2,055,081,504	75,106,159	-	-	1,367,769,169	3,497,956,832
	₩ 65,302,065,691	₩ 59,478,988,044	₩ (55,558,462,838)	₩ (26,696,150,627)	₩ 582,442,045	₩ 43,108,882,315

23. Provisions (cont'd)

The Group is allocated emission allowances free of charge by the government in accordance with the Act on Allocation and Trading of Emission Allowances in the Republic of Korea. The emission allowances are allocated to the Group annually for the planned periods, and the Group is to deliver the equivalent quantity of emission allowances for actual emission to the government.

Details of annual emission allowances allocated as of December 31, 2019 are as follows (tCO2-eq in unit):

	2018	2019	2020 (Prediction)	2018 – 2020 Total
Allocated emissions	39,298,829	31,315,456	31,315,455	101,929,740

The quantity of greenhouse gas emission estimated by the Group in 2019 was 38,522,210 tCO2-eq, which exceeds the allocated emission allowances as of December 31, 2019. Therefore, the Group recognized the best estimate of expenditures in performing emission obligations as a provision.

24. Government grants

Details of government grants as of December 31, 2019 and 2018 are as follows (Korean won):

	Dec. 31, 2019	Dec. 31, 2018
Buildings	₩ 175,529,748	₩ 183,600,082
Vehicles	28,583,334	47,291,668
Construction-in-progress	2,767,419,000	-
Intangible assets under development	5,634,618,107	5,634,618,107
	₩ 8,606,150,189	₩ 5,865,509,857

Changes in government grants for the years ended December 31, 2019 and 2018 are as follows (Korean won):

	2019			
	Jan. 1	Receipt	Amortization	Dec. 31
Buildings	₩ 183,600,082	₩ -	₩ (8,070,334)	₩ 175,529,748
Vehicles	47,291,668	-	(18,708,334)	28,583,334
Construction-in-progress	-	2,767,419,000	-	2,767,419,000
Intangible assets under development	5,634,618,107	-	-	5,634,618,107
	₩ 5,865,509,857	₩ 2,767,419,000	₩ (26,778,668)	₩ 8,606,150,189

	2018			
	Jan. 1	Receipt	Amortization	Dec. 31
Buildings	₩ 191,670,415	₩ -	₩ (8,070,333)	₩ 183,600,082
Vehicles	66,291,668	-	(19,000,000)	47,291,668
Intangible assets under development	5,634,618,107	-	-	5,634,618,107
	₩ 5,892,580,190	₩ -	₩ (27,070,333)	₩ 5,865,509,857

25. Non-financial liabilities

Details of non-financial liabilities as of December 31, 2019 and 2018 are as follows (Korean won):

	Dec. 31, 2019		Dec. 31, 2018	
	Current	Non-current	Current	Non-current
Unearned revenue	₩ 186,887,773	₩ -	₩ 206,685,223	₩ -
Withholdings	4,045,554,568	-	6,082,989,842	-
Others	45,249,185,515	5,675,546,301	937,219,561	5,709,433,544
	₩ 49,481,627,856	₩ 5,675,546,301	₩ 7,226,894,626	₩ 5,709,433,544

26. Issued capital

Details of issued capital as of December 31, 2019 and 2018 are as follows (Korean won):

Share class	Number of shares authorized	Number of shares issued	Par value	Dec. 31, 2019 Owned by Government	Dec. 31, 2019 Owned by Non-government	Dec. 31, 2019 Total
Ordinary stock	100,000,000	57,932,221	₩ 5,000	₩ -	₩ 289,661,105,000	₩ 289,661,105,000

Share class	Number of shares authorized	Number of shares issued	Par value	Dec. 31, 2018 Owned by Government	Dec. 31, 2018 Owned by Non-government	Dec. 31, 2018 Total
Ordinary stock	100,000,000	57,932,221	₩ 5,000	₩ -	₩ 289,661,105,000	₩ 289,661,105,000

There is no change in the number of shares issued and outstanding during 2019 and 2018.

Details of share premium as of December 31, 2019 and 2018 are as follows (Korean won):

	Dec. 31, 2019	Dec. 31, 2018
Share premium	₩ 1,928,937,669,310	₩ 1,928,937,669,310

27. Retained earnings and dividends

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

	Dec. 31, 2019	Dec. 31, 2018
Legal reserves (*)	₩ 66,634,482,040	₩ 66,534,482,040
Voluntary reserves	1,474,849,066,683	1,472,588,625,199
Unappropriated retained earnings	1,008,775,123,926	867,130,960,754
	₩ 2,550,258,672,649	₩ 2,406,254,067,993

(*) In accordance with the *Commercial Law*, an amount equal to at least 10% of cash dividend for each accounting period is required to be appropriated as a legal reserve until the reserve equals 50% of issued capital. The legal reserve cannot be used as a source for cash dividends and may be used to offset an accumulated deficit.

Details of voluntary reserves as of December 31, 2019 and 2018 are as follows (Korean won):

	Dec. 31, 2019	Dec. 31, 2018
Reserve for business expansion	₩ 1,474,849,066,683	₩ 1,472,588,625,199

27. Retained earnings and dividends (cont'd)

Changes in retained earnings for the years ended December 31, 2019 and 2018 are as follows (Korean won):

	2019	2018
Jan. 1	₩ 2,406,254,067,993	₩ 2,473,110,754,159
Effect of changes in accounting policies (*)	-	9,103,460,810
Profit (loss) for the year attributable to owners of the Company	140,479,112,111	(10,710,309,335)
Re-measurement gain (loss) on defined benefit plans	4,718,135,378	(3,738,265,262)
Changes in retained earnings in equity method	(207,795,073)	(103,418,119)
Dividend paid	(984,847,760)	(61,408,154,260)
Dec. 31	₩ 2,550,258,672,649	₩ 2,406,254,067,993

(*) Effect of applying KIFRS 1109 Financial Instruments in 2018.

Details of cash dividends paid by the Company for the years ended December 31, 2019 and 2018 are as follows (Korean won in unit, except for shares and dividend per share):

Dec. 31, 2019

Share class	Number of shares issued	Dividends per share	Total dividends
Ordinary stock	57,932,221	₩ 17	₩ 984,847,760

Dec. 31, 2018

Share class	Number of shares issued	Dividends per share	Total dividends
Ordinary stock	57,932,221	₩ 1,060	₩ 61,408,154,260

Changes in re-measurement of net defined benefit liability for the years ended December 31, 2019 and 2018 are as follows (Korean won):

	2019	2018
Jan. 1	₩ (12,381,033,984)	₩ (8,642,768,722)
Changes for the year	6,229,180,599	(4,931,083,832)
Tax effect	(1,511,045,221)	1,192,818,570
Dec. 31	₩ (7,662,898,606)	₩ (12,381,033,984)

28. Statements of appropriation of retained earnings

For the year ended December 31, 2019, the Company's retained earnings are expected to be appropriated on March 27, 2020. For the year ended December 31, 2018, the Company's retained earnings were appropriated on March 22, 2019.

Details on appropriation of retained earnings presented on the Company's separate financial statements for the years ended December 31, 2019 and 2018 are as follow (Korean won):

	2019	2018
Retained earnings before appropriations	₩ 963,567,110,292	₩ 905,481,942,341
Unappropriated retained earnings carried forward from the prior year	902,136,653,097	896,769,376,072
Profit for the year	56,697,513,900	3,345,289,244
Re-measurement gain (loss) on defined benefit plans	4,732,943,295	(3,736,183,785)
Effect of adoption of new accounting standards	-	9,103,460,810
Transfer from other reserves	-	-
	963,567,110,292	905,481,942,341
Appropriations:		
Legal reserve	(1,800,000,000)	(100,000,000)
Cash dividends	(17,958,988,510)	(984,847,760)
Reserve for business expansion	(36,938,525,390)	(2,260,441,484)
	(56,697,513,900)	(3,345,289,244)
Unappropriated retained earnings to be carried forward to the next year	₩ 906,869,596,392	₩ 902,136,653,097

29. Other components of equity

Details of other components of equity as of December 31, 2019 and 2018 are as follows (Korean won):

	Dec. 31, 2019	Dec. 31, 2018
Accumulated other comprehensive income	₩ 61,753,656,039	₩ 69,777,581,947
Other equity	(82,235,516,563)	(82,235,516,563)
	₩ (20,481,860,524)	₩ (12,457,934,616)

Details of accumulated OCI as of December 31, 2019 and 2018 are as follows (Korean won):

	Dec. 31, 2019	Dec. 31, 2018
Reserve for valuation on financial instruments at FVOCI	₩ 64,110,323,941	₩ 88,663,925,431
Reserve for valuation of derivative instruments designated to cash flow hedge	(8,409,764,225)	(17,786,129,355)
Share of OCI of associates and joint ventures under the equity method	8,728,131,539	4,190,525,392
Translation of foreign operations	(2,675,035,216)	(5,290,739,521)
	₩ 61,753,656,039	₩ 69,777,581,947

Details of other equity as of December 31, 2019 and 2018 are as follows (Korean won):

	Dec. 31, 2019	Dec. 31, 2018
Loss on capital reduction (*)	₩ (82,235,516,563)	₩ (82,235,516,563)

(*) Other equity represents loss on capital reduction due to spin-off of the hydroelectric power operations before 2018.

30. Revenue

Details of revenue for the years ended December 31, 2019 and 2018 are as follows (Korean won):

	2019		2018	
	Domestic	Overseas	Domestic	Overseas
Revenue from goods sales:				
Electricity sales	₩ 4,477,750,558,952	₩ 18,803,017,610	₩ 4,644,534,181,076	₩ 23,816,808,822
Other electricity sales	313,199,977,718	2,915,749,007	230,046,341,768	5,740,008,730
Heat sales	60,016,198,353	-	62,078,982,709	-
Revenue from business incidental	20,846,521,182	-	5,205,523,274	-
	4,871,813,256,205	21,718,766,617	4,941,865,028,827	29,556,817,552
Revenue from rendering of services:				
Overseas business	-	2,501,390,499	-	1,361,773,089
	₩ 4,871,813,256,205	₩ 24,220,157,116	₩ 4,941,865,028,827	₩ 30,918,590,641

31. Selling and administrative expenses

Details of selling and administrative expenses for the years ended December 31, 2019 and 2018 are as follows (Korean won):

	2019	2018
Salaries	₩ 35,398,354,480	₩ 32,944,604,148
Pension benefits	4,919,009,601	2,405,494,394
Employee welfare benefits	3,886,081,381	3,685,761,998
Employee welfare fund	-	973,677,899
Insurance	697,974,585	2,310,556,816
Depreciation of property, plant and equipment	16,506,148,399	17,693,128,338
Amortization of intangible assets	4,366,346,039	3,341,702,535
Commissions and fees	32,926,908,394	22,916,684,363
Advertisement	1,630,328,226	1,693,080,853
Education and training	108,707,094	85,070,351
Vehicle maintenance	76,501,975	49,403,417
Publication	179,493,171	130,482,514
Business promotion	113,282,136	123,666,382
Rental fees	695,768,938	534,604,832
Communication	1,549,170,452	1,529,062,448
Tax and dues	1,055,847,786	799,577,174
Supplies	240,270,241	182,654,194
Utilities	647,156,009	617,200,513
Repairs and maintenance	1,239,265,020	1,023,475,761
Research and development	34,337,284,683	28,892,551,373
Travel	624,395,970	451,427,300
Uniform	40,919,727	561,249,007
Investigation and analysis	88,289,185	59,940,323
Others (*)	12,553,162,786	2,911,670,728
	₩ 153,880,666,278	₩ 125,916,727,661

(*) Details of other selling and administrative expenses for the years ended December 31, 2019 and 2018 are as follows (Korean won):

	2019	2018
Awards expense	₩ 98,366,381	₩ 64,609,109
Lawsuit expense	5,649,196,288	361,670,543
Lawsuit compensation expense	3,218,511,863	-
Miscellaneous salaries	2,698,463,780	1,543,841,251
Association fees	134,190,035	205,204,337
Miscellaneous expenses	754,434,439	736,345,488
	₩ 12,553,162,786	₩ 2,911,670,728

32. Other income and expenses

Details of other income for the years ended December 31, 2019 and 2018 are as follows (Korean won):

	2019	2018
Revenue from compensation and indemnity	₩ 7,215,428,566	₩ 1,765,418,551
Rental revenue	2,872,439,493	2,993,096,200
Others	8,374,353,932	11,314,095,872
	₩ 18,462,221,991	₩ 16,072,610,623

Details of others in other income for the years ended December 31, 2019 and 2018 are as follows (Korean won):

	2019	2018
Technical fee income	₩ -	₩ 6,908,963,132
Refunded tax income	-	466,136,480
Port usage fee	1,933,130,256	1,591,544,894
Miscellaneous revenues - others	6,441,223,676	2,347,451,366
	₩ 8,374,353,932	₩ 11,314,095,872

Details of other expenses for the years ended December 31, 2019 and 2018 are as follows (Korean won):

	2019	2018
Donations	₩ 3,396,791,833	₩ 3,805,261,019
Others	701,223,956	3,439,115,507
	₩ 4,098,015,789	₩ 7,244,376,526

Details of others in other expenses for the years ended December 31, 2019 and 2018 are as follows (Korean won):

	2019	2018
Deemed rent	₩ 18,493	₩ 18,737
Miscellaneous loss	701,205,463	3,439,096,770
	₩ 701,223,956	₩ 3,439,115,507

33. Other profit or loss

Details of other profit and loss for the years ended December 31, 2019 and 2018 are as follows (Korean won):

	2019	2018
Gain on disposal of property, plant and equipment	₩ 7,706,341,077	₩ 4,027,734,192
Gain on disposal of assets held for sale	23,740,920,952	-
Gain on foreign currency translations (*)	1,278,790,054	1,130,076,287
Gain on foreign currency transactions (*)	2,382,840,677	3,757,802,896
Other gains	2,746,668,397	4,633,066,995
Loss on disposal of property, plant and equipment	(8,463,785)	(390,946,572)
Loss on foreign currency translations (*)	(261,242,356)	(241,917,111)
Loss on foreign currency transactions (*)	(4,005,316,758)	(3,578,840,355)
Other losses	(25,210,854,011)	(8,766,909,917)
	₩ 8,369,684,247	₩ 570,066,415

(*) Related to operating activities

Details of other gains for the years ended December 31, 2019 and 2018 are as follows (Korean won):

	2019	2018
Gain on disposal of inventories	₩ 110,612,537	₩ 429,962,914
Gain on disposal of scrapped equipment	512,939,544	728,969,265
Miscellaneous revenues-other	2,123,116,316	3,474,134,816
	₩ 2,746,668,397	₩ 4,633,066,995

Details of other losses for the years ended December 31, 2019 and 2018 are as follows (Korean won):

	2019	2018
Loss on write-off of property, plant and equipment	₩ 25,153,277,443	₩ 8,767,647,974
Others	57,576,568	(738,057)
	₩ 25,210,854,011	₩ 8,766,909,917

34. Finance income

Details of finance income for the years ended December 31, 2019 and 2018 are as follows (Korean won):

	2019	2018
Interest income	₩ 6,196,339,837	₩ 6,000,623,105
Dividend income	14,374,776,227	5,534,916,651
Gain on transaction of financial assets at FVPL	53,896,701	-
Gain on valuation of derivative instruments	59,259,127,634	41,240,858,425
Gain on transaction of derivative instruments	16,480,327,810	43,226,611,183
Gain on foreign currency translation (*)	42,218,897	5,354,068,405
Gain on foreign currency transaction (*)	-	4,373,782,901
Other finance income	1,547,978,298	1,629,273,120
	₩ 97,954,665,404	₩ 107,360,133,790

(*) Related to financing activities

Details of interest income included in finance income for the years ended December 31, 2019 and 2018 are as follows (Korean won):

	2019	2018
Cash and cash equivalents	₩ 347,708,457	₩ 226,162,084
Financial assets at FVPL	4,445,342,550	4,737,525,930
Financial assets at amortised cost	8,920,423	6,742,780
Loans	1,281,960,487	763,702,292
Trade and other receivables	112,407,920	266,490,019
	₩ 6,196,339,837	₩ 6,000,623,105

35. Finance costs

Details of finance costs for the years ended December 31, 2019 and 2018 are as follows (Korean won):

	2019	2018
Interest expenses	₩ 118,244,430,161	₩ 106,026,369,194
Loss on valuation of derivative instruments	1,223,062,637	31,961,954
Loss on transaction of derivative instruments	198,307,912	4,183,483,486
Loss on foreign currency translation (*)	77,133,096,652	46,399,398,516
Loss on foreign currency transaction (*)	1,285,560,538	29,366,159,712
Other finance costs	7,638,098,001	853,300,024
	₩ 205,722,555,901	₩ 186,860,672,886

(*) Related to financing activities

Details of interest expense included in finance costs for the years ended December 31, 2019 and 2018 are as follows (Korean won):

	2019	2018
Short-term borrowings	₩ 325,243,363	₩ 293,307,048
Long-term borrowings	2,540,886,108	2,974,017,466
Bonds payables	104,696,977,748	105,336,282,589
Lease liabilities	12,338,077,747	-
Others	87,316	-
	119,901,272,282	108,603,607,103
Less: capitalized borrowing costs	(1,656,842,121)	(2,577,237,909)
	₩ 118,244,430,161	₩ 106,026,369,194

The effective interest rate used for capitalizing borrowing costs for the years ended December 31, 2019 and 2018 were 2.81% and 3.07%, respectively.

36. Income tax

The major components of income tax expense for the years ended December 31, 2019 and 2018 are as follows (Korean won):

	2019	2018
Current income tax:	₩ (17,686,136,171)	₩ (34,454,145,297)
Current income tax expense	34,766,592,399	1,527,897,992
Adjustments to prior year current income tax expense	(55,787,186,253)	(17,399,806,367)
Recognized directly in equity	3,334,457,683	(18,582,236,922)
Deferred tax:	2,549,559,083	27,293,030,543
Changes in deferred tax arising from temporary differences	1,199,519,134	27,293,030,543
Effect of recognizing deferred tax assets on tax loss, tax credit and temporary differences not recognized in the past	1,350,039,949	-
Income tax expense (benefits)	₩ (15,136,577,088)	₩ (7,161,114,754)

36. Income tax (cont'd)

A reconciliation between income tax expense and the product of accounting profit multiplied by Korea's domestic tax rate for the years ended December 31, 2019 and 2018 are as follows (Korean won):

	2019	2018
Profit (loss) for the year before tax	₩ 126,357,677,334	₩ (15,230,532,848)
Tax at the statutory income tax rate (24.2%)	₩ 30,578,557,915	₩ 2,504,716,485
Adjustments:		
Effect of applying progressive tax rate	(604,385,337)	(22,000,000)
Effect of expenses not deductible (income not subject to tax)	(9,028,578,392)	731,830,393
Effect of tax deduction and exemption	(4,198,971,866)	(848,828,095)
Effect from not recognizing deferred tax assets on deductible temporary difference	42,800,913,520	549,366,570
Deferred income tax effect from consolidation	(20,523,734,941)	4,599,702,612
Additional income tax paid	(54,437,146,304)	(3,724,831,554)
Effect of change in tax rate on changes in deferred tax	-	(8,405,432,878)
Others	276,768,317	(2,545,638,287)
	(45,715,135,003)	(9,665,831,239)
Income tax expense (benefits)	₩ (15,136,577,088)	₩ (7,161,114,754)
Effective tax rate	-	-

The tax effects relating to the components of other comprehensive income or loss for the years ended December 31, 2019 and 2018 are as follows (Korean won):

	2019	2018
Loss (gain) on valuation of financial assets at FVOCI	₩ 7,839,012,616	₩ (22,081,847,494)
Loss (gain) on valuation of cash flow hedges	(2,993,509,712)	2,306,792,002
Re-measurement loss (gain) on defined benefit plans	(1,511,045,221)	1,192,818,570
	₩ 3,334,457,683	₩ (18,582,236,922)

36. Income tax (cont'd)

Details of deferred tax assets and liabilities recognized in the consolidated statements of financial position as of December 31, 2019 and 2018 are as follows (Korean won):

	2019				
	Jan. 1	Income tax expenses	Recognized directly in equity	Others (*)	Dec. 31
Deferred tax liabilities, net of temporary differences:					
Long-term employee benefits	₩ 14,275,095,980	₩ 4,535,512,066	₩ (1,511,045,221)	₩ -	₩ 17,299,562,825
Cash flow hedge	(37,385,431,498)	(14,340,707,244)	(2,993,509,712)	-	(54,719,648,454)
Investments in associates & joint ventures	(3,469,794,531)	(4,397,549,121)	-	-	(7,867,343,652)
Investments in subsidiaries	(640,744,994)	4,514,479,809	-	-	3,873,734,815
Property, plant & equipment	(336,699,298,024)	(111,107,036,620)	-	-	(447,806,334,644)
Intangible assets	2,311,402,479	(22,422,316,149)	-	(41,729,000,000)	(61,839,913,670)
Financial asset at FVPL	(991,516,765)	323,192,235	-	-	(668,324,530)
Financial assets at FVOCI	(19,672,601,207)	(2,906,381,631)	7,839,012,616	-	(14,739,970,222)
Provisions	17,621,222,863	190,029,491	-	-	17,811,252,354
Other financial liabilities	11,595,671,499	1,035,414,778	-	-	12,631,086,277
Others	9,362,202,613	138,691,345,620	-	-	148,053,548,233
	(343,693,791,585)	(5,884,016,766)	3,334,457,683	(41,729,000,000)	(387,972,350,668)
Deferred tax assets from tax credit	479,893,650	-	-	-	479,893,650
	₩ (343,213,897,935)	₩ (5,884,016,766)	₩ 3,334,457,683	₩ (41,729,000,000)	₩ (387,492,457,018)

(*) Related to the business combination with Eumseong Natural Gas Power Co., Ltd.

	2018			
	Jan. 1	Income tax expenses	Recognized directly in equity	Dec. 31
Deferred tax liabilities, net of temporary differences:				
Long-term employee benefits	₩ 12,115,399,387	₩ 966,878,023	₩ 1,192,818,570	₩ 14,275,095,980
Cash flow hedge	(30,626,505,312)	(9,065,718,188)	2,306,792,002	(37,385,431,498)
Investments in associates	(404,508,499)	(3,065,286,032)	-	(3,469,794,531)
Investments in subsidiaries	(379,378,220)	(261,366,774)	-	(640,744,994)
Property, plant & equipment	(332,461,879,756)	(4,237,418,268)	-	(336,699,298,024)
Intangible assets	2,385,368,059	(73,965,580)	-	2,311,402,479
Financial asset at FVPL	(61,441,970)	(930,074,795)	-	(991,516,765)
Financial assets at FVOCI	2,205,312,648	203,933,639	(22,081,847,494)	(19,672,601,207)
Provisions	26,063,399,358	(8,442,176,495)	-	17,621,222,863
Other financial liabilities	9,669,740,193	1,925,931,306	-	11,595,671,499
Others	909,010,599	8,453,192,014	-	9,362,202,613
	(310,585,483,513)	(14,526,071,150)	(18,582,236,922)	(343,693,791,585)
Deferred tax assets from tax credit	479,893,650	-	-	479,893,650
	₩ (310,105,589,863)	₩ (14,526,071,150)	₩ (18,582,236,922)	₩ (343,213,897,935)

Details of deferred tax assets and liabilities presented in the consolidated statements of financial position are as follows (Korean won):

	Dec. 31, 2019	Dec. 31, 2018
Deferred tax assets	₩ 200,149,078,154	₩ 55,645,489,084
Deferred tax liabilities	(587,641,535,172)	(398,859,387,019)
	₩(387,492,457,018)	₩ (343,213,897,935)

Deductible temporary differences not recognized as deferred tax assets as of December 31, 2019 and 2018 are as follows (Korean won):

	Dec. 31, 2019	Dec. 31, 2018
Deductible temporary differences	₩ 177,702,040,505	₩ 221,409,047,816

37. Assets held for sale

Details of assets held for sale as of December 31, 2019 are as follows (Korean won):

	Dec. 31, 2019		
	Acquisition cost	Accumulated depreciation	Book value
Inventories	₩ 805,976,940	₩ -	₩ 805,976,940
Property, plant and equipment			
Land	1,018,864,000	-	1,018,864,000
Building	295,333,940	(191,583,482)	103,750,458
Structures	683,872,342	(453,543,836)	230,328,506
Machinery	4,709,348,953	(2,710,436,429)	1,998,912,524
Vehicles	277,101,727	(148,964,864)	128,136,863
Furniture and fixtures	25,301,531	(17,273,218)	8,028,313
Tools and equipment	107,265,539	(73,343,157)	33,922,382
	₩ 7,923,064,972	₩ (3,595,144,986)	₩ 4,327,919,986

The Group made a decision to sell some part of the assets in DG Fairhaven Power, LLC, a subsidiary of the Group, and classified the inventories and property, plant and equipment to be sold as assets held for sale. The Group expects that the assets held for sale will be sold in 2020, and no impairment loss has been recognized.

38. Classification based on nature of expense

Details of expenses based on nature of expense for the years ended December 31, 2019 and 2018 are as follows (Korean won):

	2019		
	Selling and administrative expenses	Cost of sales	Total
Raw material in use	₩ -	₩ 3,327,651,563,811	₩ 3,327,651,563,811
Power costs purchased	-	25,439,081,099	25,439,081,099
Salaries	35,398,354,480	212,477,884,278	247,876,238,758
Retirement benefit	4,919,009,601	29,348,129,243	34,267,138,844
Employee welfare benefits	3,886,081,381	19,118,655,577	23,004,736,958
Insurance	697,974,585	4,670,850,306	5,368,824,891
Depreciation of property, plant and equipment	16,506,148,399	685,566,063,375	702,072,211,774
Amortization of intangible assets	4,366,346,039	12,243,856,814	16,610,202,853
Commissions and fees	32,926,908,394	10,214,002,629	43,140,911,023
Provisions	-	76,848,509,084	76,848,509,084
Advertisement	1,630,328,226	502,110,025	2,132,438,251
Education and training	108,707,094	618,441,430	727,148,524
Vehicle maintenance	76,501,975	92,351,668	168,853,643
Publication	179,493,171	91,935,202	271,428,373
Business promotion	113,282,136	225,662,873	338,945,009
Rental fees	695,768,938	13,587,372,880	14,283,141,818
Communications	1,549,170,452	285,830,135	1,835,000,587
Transportation	-	17,865,423	17,865,423
Taxes and dues	1,055,847,786	29,068,252,615	30,124,100,401
Supplies	240,270,241	1,447,120,517	1,687,390,758
Utilities	647,156,009	1,451,806,488	2,098,962,497
Repairs and maintenance	1,239,265,020	161,378,601,017	162,617,866,037
Research and development	34,337,284,683	3,352,099,591	37,689,384,274
Travel	624,395,970	764,277,108	1,388,673,078
Uniform	40,919,727	-	40,919,727
Investigation and analysis	88,289,185	285,473,294	373,762,479
Institute fee	-	66,197,846	66,197,846
Others	12,553,162,786	2,424,007,517	14,977,170,303
	₩ 153,880,666,278	₩ 4,619,238,001,845	₩ 4,773,118,668,123

38. Classification based on nature of expense (cont'd)

	2018		
	Selling and administrative expenses	Cost of sales	Total
Raw material in use	₩ -	₩ 3,684,892,479,857	₩ 3,684,892,479,857
Power costs purchased	-	27,969,630,796	27,969,630,796
Salaries	32,944,604,148	202,614,633,508	235,559,237,656
Retirement benefit	2,405,494,394	18,288,313,824	20,693,808,218
Employee welfare fund	973,677,899	5,561,073,101	6,534,751,000
Employee welfare benefits	3,685,761,998	17,575,290,545	21,261,052,543
Insurance	2,310,556,816	5,202,123,693	7,512,680,509
Depreciation of property, plant and equipment	17,693,128,338	613,375,707,678	631,068,836,016
Amortization of intangible assets	3,341,702,535	12,243,003,642	15,584,706,177
Commissions and fees	22,916,684,363	26,130,454,490	49,047,138,853
Provisions	-	(37,575,866,551)	(37,575,866,551)
Advertisement	1,693,080,853	460,430,015	2,153,510,868
Education and training	85,070,351	462,368,314	547,438,665
Vehicle maintenance	49,403,417	125,026,825	174,430,242
Publication	130,482,514	53,162,925	183,645,439
Business promotion	123,666,382	177,148,596	300,814,978
Rental fees	534,604,832	14,329,715,111	14,864,319,943
Communications	1,529,062,448	290,169,258	1,819,231,706
Transportation	-	22,421,765	22,421,765
Taxes and dues	799,577,174	26,319,042,453	27,118,619,627
Supplies	182,654,194	1,019,770,079	1,202,424,273
Utilities	617,200,513	1,141,535,179	1,758,735,692
Repairs and maintenance	1,023,475,761	164,974,250,132	165,997,725,893
Research and development	28,892,551,373	1,401,828,352	30,294,379,725
Travel	451,427,300	605,031,719	1,056,459,019
Uniform	561,249,007	-	561,249,007
Investigation and analysis	59,940,323	235,104,560	295,044,883
Institute fee	-	51,814,227	51,814,227
Others	2,911,670,728	283,029,584	3,194,700,312
	₩ 125,916,727,661	₩ 4,788,228,693,677	₩ 4,914,145,421,338

39. Earnings per share

Earnings per share ("EPS") for the years ended December 31, 2019 and 2018 are as follows (Korean won):

	2019	2018
Basic earnings (losses) per share	₩ 2,425	₩ (185)

Profit for the year and weighted-average number of ordinary shares issued and outstanding for the years ended December 31, 2019 and 2018 are as follows (Korean won and share in units):

	2019	2018
Profit (loss) for the year attributable to owners of the Company	₩ 140,479,112,111	₩ (10,710,309,335)
Profit (loss) for the year attributable to ordinary shares of owners of the Company	140,479,112,111	(10,710,309,335)
Weighted-average number of ordinary shares	57,932,221	57,932,221

Diluted EPS is the same as basic EPS since no dilutive securities are issued and outstanding as of the end of the reporting period.

40. Financial instruments by category

Details of the net book value of financial assets by category as of December 31, 2019 and 2018 are as follows (Korean won):

	Dec. 31, 2019				
	Financial assets at FVPL	Financial assets at amortised cost	Financial assets at FVOCI	Derivatives designated as hedging instruments	Total
Current:					
Cash and cash equivalents	₩ -	₩ 89,233,253,069	₩ -	₩ -	₩ 89,233,253,069
Financial assets at FVPL	43,053,896,701	-	-	-	43,053,896,701
Financial assets at amortised cost	-	12,065,350,000	-	-	12,065,350,000
Derivative instruments	6,788	-	-	23,780,195,613	23,780,202,401
Loans	-	6,021,989,554	-	-	6,021,989,554
Trade and other receivables	-	707,274,233,886	-	-	707,274,233,886
	43,053,903,489	814,594,826,509	-	23,780,195,613	881,428,925,611
Non-current:					
Financial assets at FVPL	300,000,000	-	-	-	300,000,000
Financial assets at FVOCI		-	192,946,852,067	-	192,946,852,067
Financial assets at amortised cost	-	1,573,805,000	-	-	1,573,805,000
Derivative instruments	-	-	-	17,134,891,868	17,134,891,868
Loans	-	34,171,455,088	-	-	34,171,455,088
Trade and other receivables	-	3,036,100,655	-	-	3,036,100,655
	300,000,000	38,781,360,743	192,946,852,067	17,134,891,868	249,163,104,678
	₩ 43,353,903,489	₩ 853,376,187,252	₩ 192,946,852,067	₩ 40,915,087,481	₩ 1,130,592,030,289

	Dec. 31, 2018			
	Financial assets at FVPL	Financial assets at amortised cost	Financial assets at FVOCI	Total
Current:				
Cash and cash equivalents	₩ -	₩ 37,248,237,505	₩ -	₩ 37,248,237,505
Financial assets at FVPL	100,000,000	-	-	100,000,000
Financial assets at amortised cost	-	11,077,180,000	-	11,077,180,000
Derivative instruments	198,307,912	-	-	198,307,912
Loans	-	1,462,373,422	-	1,462,373,422
Trade and other receivables	-	615,635,053,019	-	615,635,053,019
	298,307,912	665,422,843,946	-	665,721,151,858
Non-current:				
Financial assets at FVOCI	-	-	225,339,466,173	225,339,466,173
Financial assets at amortised cost	-	534,955,000	-	534,955,000
Loans	-	26,731,510,750	-	26,731,510,750
Trade and other receivables	-	2,489,834,895	-	2,489,834,895
	-	29,756,300,645	225,339,466,173	255,095,766,818
	₩ 298,307,912	₩ 695,179,144,591	₩ 225,339,466,173	₩ 920,816,918,676

40. Financial instruments by category (cont'd)

Details of the net book value of financial liabilities by category as of December 31, 2019 and 2018 are as follows (Korean won):

	Dec. 31, 2019		
	Financial liabilities at FVPL	Financial liabilities with amortized cost	Total
Current financial liabilities:			
Short-term borrowings	₩ -	₩ 120,000,000,000	₩ 120,000,000,000
Long-term borrowings	-	7,596,040,000	7,596,040,000
Bonds payable	-	678,168,210,302	678,168,210,302
Derivative liabilities	1,223,062,637	-	1,223,062,637
Trade and other payables	-	520,708,547,704	520,708,547,704
	1,223,062,637	1,326,472,798,006	1,327,695,860,643
Non-current financial liabilities:			
Long-term borrowings	-	69,866,490,000	69,866,490,000
Bonds payable	-	2,567,752,930,037	2,567,752,930,037
Trade and other payables	-	475,373,568,431	475,373,568,431
	-	3,112,992,988,468	3,112,992,988,468
	₩ 1,223,062,637	₩ 4,439,465,786,474	₩ 4,440,688,849,111

	Dec. 31, 2018			
	Financial liabilities at FVPL	Financial liabilities with amortized cost	Derivatives designated as hedging instruments	Total
Current financial liabilities:				
Short-term borrowings	₩ -	₩ 44,000,000,000	₩ -	₩ 44,000,000,000
Long-term borrowings	-	8,741,836,672	-	8,741,836,672
Bonds payable	-	189,974,406,505	-	189,974,406,505
Derivative liabilities	31,961,954	-	-	31,961,954
Trade and other payables	-	419,240,507,062	-	419,240,507,062
	31,961,954	661,956,750,239	-	661,988,712,193
Non-current financial liabilities:				
Long-term borrowings	-	77,462,920,000	-	77,462,920,000
Bonds payable	-	2,952,688,453,612	-	2,952,688,453,612
Derivative liabilities	-	-	30,713,908,204	30,713,908,204
Trade and other payables	-	14,395,538	-	14,395,538
	-	3,030,165,769,150	30,713,908,204	3,060,879,677,354
	₩ 31,961,954	₩ 3,692,122,519,389	₩ 30,713,908,204	₩ 3,722,868,389,547

40. Financial instruments by category (cont'd)

Details of profit (loss) from financial instruments by category for the years ended December 31, 2019 and 2018 are as follows (Korean won):

		2019
Cash and cash equivalents		
Interest income	₩	347,708,457
Loss on fluctuation of exchange rates		(5,458,987)
Financial assets at FVPL		
Interest income		4,445,342,550
Gain on valuation of financial instruments		53,896,701
Gain on valuation of derivative instruments		6,788
Gain on transaction of derivative instruments		31,961,954
Financial assets at amortized cost		
Interest income		8,920,423
Financial assets at FVOCI		
Loss on valuation of financial assets at FVOCI (recognized in equity before tax)		(32,392,614,106)
Loans		
Interest income		1,281,960,487
Loss on fluctuation of exchange rates		(171,608,607)
Trade and other receivables		
Interest income		112,407,920
Gain on fluctuation of exchange rates		91,681,806
Derivatives designated as hedging instruments		
Gain on valuation of derivatives (recognized in profit or loss)		59,259,120,846
Gain on valuation of derivatives (recognized in equity before tax)		12,369,874,842
Gain on transaction of derivative contracts		16,448,365,856
Financial liabilities at FVPL		
Loss on valuation of derivative instruments		(1,223,062,637)
Loss on transaction of derivative instruments		(198,307,912)
Financial liabilities at amortized cost		
Loss on fluctuation of exchange rates		(75,987,944,269)
Interest expenses on borrowings and bonds payable		(105,906,265,098)
Interest expenses on trade and other liabilities		(12,338,165,063)

40. Financial instruments by category (cont'd)

		2018
Cash and cash equivalents		
Interest income	₩	226,162,084
Loss on fluctuation of exchange rates		(723,167)
Financial assets at FVPL		
Interest income		4,737,525,930
Gain on valuation of derivative instruments		198,307,912
Gain on transaction of derivative instruments		3,576,443,218
Financial assets at amortized cost		
Interest income		24,959,303
Loans		
Interest income		954,144,417
Gain on fluctuation of exchange rates		-
Trade and other receivables		
Interest income		57,831,371
Gain on fluctuation of exchange rates		(38,540,053)
Financial assets at FVOCI		
Gain on valuation of financial assets at FVOCI(recognized in equity before tax)		91,839,915,248
Financial liabilities at FVPL		
Loss on valuation of derivative instruments		(31,961,954)
Loss on transaction of derivative instruments		(234,230,495)
Financial liabilities at amortized cost		
Loss on fluctuation of exchange rates		(64,931,321,985)
Interest expenses on borrowings and bonds payable		(105,761,898,885)
Interest expenses on trade and other liabilities		(264,470,309)
Derivatives designated as hedging instruments		
Gain on valuation of derivatives (recognized in profit or loss)		41,042,550,513
Loss on valuation of derivatives (recognized in equity before tax)		(9,532,198,358)
Gain on transaction of derivatives		35,700,914,974

41. Risk management

41.1 Risk management policies

The Group manages various risks that can be encountered by each business line, and main subjects are credit risk, market risk, interest rate risk, and liquidity risk and so on. These risks are identified, measured, controlled and reported according to the basic strategy set by the Group.

41.2 Capital risk management

The objective of the Group's capital management is to maintain the optimum capital structure to protect the ability of maximizing returns to the shareholder and reduce capital costs. The Group adjusts dividend payment to the shareholder to maintain and adjust the capital structure, returns investment, issues new stocks and disposes assets to reduce liabilities

The Group manages its capital based on the gearing ratio. The gearing ratio is calculated by dividing net borrowings and debentures by total capital. Net borrowings and debentures means total borrowings (short and long-term borrowings in the consolidated statement of financial position) less cash and cash equivalent, and total capital means equity in the consolidated statement of financial position plus net borrowings and debentures.

Details of the Group's capital management account as of December 31, 2019 and 2018 are as follows (Korean won):

	Dec. 31, 2019	Dec. 31, 2018
Total borrowings and bonds payable (A)	₩ 3,443,383,670,339	₩ 3,272,867,616,789
Less: Cash and cash equivalents (B)	89,233,253,069	37,248,237,505
Net borrowings and bonds payable (A-B=C)	3,354,150,417,270	3,235,619,379,284
Total equity (D)	4,771,895,420,155	4,630,182,945,346
Total capital (C+D=E)	8,126,045,837,425	7,865,802,324,630
Gearing ratio (C/E)	41.28%	41.14%
Debt to equity ratio (C/D)	70.29%	69.88%

41.3 Financial risk management

The Group is exposed to various risks related to its financial instruments, such as market risk (foreign 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 analyse exposures by the degree and magnitude of risks. The Group uses derivative financial instruments for certain hedge risk exposures. The Group's overall financial risk management strategy remained unchanged from the prior period.

41.3.1 Credit risk

Credit risk is the risk of a financial loss to the Group when a customer or counterparty to a financial instrument fails to meet its contractual obligations, and arises primarily from the Group's sales activities, loans and receivables, derivative instruments. In addition, credit risk exposure may exist within financial guarantees and unused lines of credit. The Group transacts with banks and financial institutions with excellent credit rating, so the credit risk from financial institutions is limited. In case of ordinary customers, the Group evaluates the customers' credit worthiness considering their financial statements, past experience and other factors.

Credit risk management

The Group uses publicly available information and its own internal data related to accounts receivables to rate its major customers and to measure the credit risk that a counter party will default on a contractual obligation. As the majority of the Group's accounts receivables are due from governmental entities (KEPCO and so on), the Group does not have significant credit risk exposure. Regarding its debt securities, the Group continuously reviews credit ratings issued by credit agencies, and the Group's working capital (i.e., cash) is deposited in financial institutions with healthy-credit ratings.

41.3.1 Credit risk (cont'd)

Impairment and allowance account
In accordance with the Group's policies, financial assets that are individually significant are assessed on a regular basis. Trade receivables that are assessed individually are, in addition, assessed for impairment through assessing whether impairment loss is occurred on an individual basis at the end of the reporting period and it applies to all of the significant trade receivables. These assessments include securities acquired relating to an individual account (including reassessment of feasibility) and expected receipts.

The carrying value of financial assets represents maximum exposure to the credit risk. The Group's maximum exposure to the credit risk as of December 31, 2019 and 2018 are as follows (Korean won):

	Dec. 31, 2019	Dec. 31, 2018
Cash and cash equivalents	₩ 89,233,253,069	₩ 37,248,237,505
Financial assets at FVPL	43,353,896,701	100,000,000
Derivatives held for trading	6,788	198,307,912
Financial assets at FVOCI	192,946,852,067	225,339,466,173
Financial assets at amortized cost	13,639,155,000	11,612,135,000
Loans	40,193,444,642	28,193,884,172
Derivatives designated as hedging instruments	40,915,087,481	-
Trade and other receivables	710,310,334,541	618,124,887,914
Financial guarantee contract (*1)	51,804,698,140	74,851,743,424

(*1) These are amounts of maximum guarantee to be paid in case of being requested by the principal debtor.

Details of financial guarantee contracts as of December 31, 2019 and 2018 are as follows (USD):

		Total guarantee amount	
	Group name	2019	2018
Joint venture	PT.Tanjung Power Indonesia (*1)	$ 24,544,082	$ 46,983,378
Joint venture	South Jamaica Power Company Limited (*2)	6,750,000	6,750,000
Joint venture	South Jamaica Power Company Limited (*2)	7,650,000	7,650,000
Other related party	KEPCO Bylong Australia Pty Ltd.(*3)	5,800,000	5,562,104

(*1) It is a financial guarantee contract under which the Group provides guarantee to PT. Tanjung Power Indonesia which is a joint venture of the Group.

(*2) The payment guarantee related to the promotion of the gas combined fire power project for South Jamaica Power Company Limited, a joint venture of the Group.

(*3) KEPCO Bylong Australia Pty Ltd., a subsidiary of KEPCO, guarantees the payment of borrowings. When the borrower fails to pay the obligation, the Group is obliged to repay the full amount of the loan principal at the interest rate of 2%.

There were no payment guarantees exercised or other credit guarantees pledged on any financial or non-financial assets during the year.

41.3.2 Liquidity risk

The Group has established an appropriate liquidity risk management framework for the management of the Group's short-term, medium-term 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; 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, and the Group's subsidiaries also maintain an adequate credit (borrowing) line. In addition, in case of major construction investment, the Group minimizes the liquidity risk by matching maturities through using internally reserved cash or utilizing long-term borrowings.

The table below summarizes the maturity profile of the Group's non-derivative financial liabilities based on the contractual undiscounted payments as at December 31, 2019 and 2018 (Korean won):

	Dec. 31, 2019				
	Less than 1 year	1 to 2 years	2 to 5 years	Over 5 years	Total
Borrowings and bonds payable	₩ 897,080,062,582	₩ 661,812,491,929	₩ 1,575,763,315,283	₩ 705,991,487,106	₩ 3,840,647,356,900
Trade and other payables	461,932,092,105	-	-	-	461,932,092,105
Lease liabilities	59,496,078,075	56,422,762,719	168,310,536,167	327,246,770,645	611,476,147,606
Financial guarantee liabilities	23,978,038,000	-	27,826,660,140	-	51,804,698,140
	₩ 1,442,486,270,762	₩ 718,235,254,648	₩ 1,771,900,511,590	₩ 1,033,238,257,751	₩ 4,965,860,294,751

	Dec. 31, 2018				
	Less than 1 year	1 to 2 years	2 to 5 years	Over 5 years	Total
Borrowings and bonds payable	₩ 242,741,836,672	₩ 666,646,040,000	₩ 1,970,886,120,000	₩ 407,080,760,000	₩ 3,287,354,756,672
Trade and other payables	419,240,507,062	-	14,395,538	-	419,254,902,600
Financial guarantee liabilities	68,632,754,942	-	6,218,988,482	-	74,851,743,424
	₩ 730,615,098,676	₩ 666,646,040,000	₩ 1,977,119,504,020	₩ 407,080,760,000	₩ 3,781,461,402,696

As the Group manages its liquidity based on net assets and net liability balances, in order to understand the Group's liquidity risk management, non-derivative financial assets should be included.

The maturity profile of the Group's non-derivative financial assets based on the contractual undiscounted receipts as at December 31, 2019 and 2018 as follows (Korean won):

	Dec. 31, 2019				
	Less than 1 year	1 to 5 years	Over 5 years	Others	Total
Cash and cash equivalents	₩ 89,233,253,069	₩ -	₩ -	₩ -	₩ 89,233,253,069
Financial assets at FVPL	43,053,896,701	-	-	300,000,000	43,353,896,701
Financial assets at FVOCI	-	-	-	192,946,852,067	192,946,852,067
Financial assets at amortized cost	12,065,350,000	1,573,805,000	-	-	13,639,155,000
Loans	6,131,203,148	11,881,264,704	24,652,718,264	-	42,665,186,116
Trade and other receivables	707,293,699,807	3,076,151,046	-	-	710,369,850,853
	₩ 857,777,402,725	₩ 16,531,220,750	₩ 24,652,718,264	₩ 193,246,852,067	₩ 1,092,208,193,806

41.3.2 Liquidity risk (cont'd)

	Dec. 31, 2018									
		Less than 1 year		1 to 5 years		Over 5 years		Others		Total
Cash and cash equivalents	₩	37,248,237,505	₩	-	₩	-	₩	-	₩	37,248,237,505
Financial assets at FVPL		100,000,000		-		-		-		100,000,000
Financial assets at FVOCI		-		-		-		225,339,466,173		225,339,466,173
Financial assets at amortized cost		11,077,180,000		534,955,000		-		-		11,612,135,000
Loans		1,574,840,152		21,957,818,212		7,270,808,935		-		30,803,467,299
Trade and other receivables		615,640,871,026		2,547,474,900		-		-		618,188,345,926
	₩	665,641,128,683	₩	25,040,248,112	₩	7,270,808,935	₩	225,339,466,173	₩	923,291,651,903

The table below summarizes the maturity profile of the Group's derivative financial instruments based on the contractual undiscounted receipt schedules (Korean won):

	Dec.31, 2019									
		Less than 1 year		1 to 2 years		2 to 5 years		Over 5 years		Total
Derivative financial assets										
- Held for trading	₩	6,788	₩	-	₩	-	₩	-	₩	6,788
- Risk hedge		23,780,195,613		7,658,964,827		9,475,927,041		-		40,915,087,481
	₩	23,780,202,401	₩	7,658,964,827	₩	9,475,927,041	₩	-	₩	40,915,094,269
Derivative financial liabilities										
- Held for trading	₩	1,223,062,637	₩	-	₩	-	₩	-	₩	1,223,062,637

	Dec.31, 2018									
		Less than 1 year		1 to 2 years		2 to 5 years		Over 5 years		Total
Derivative financial assets										
- Held for trading	₩	198,307,912	₩	-	₩	-	₩	-	₩	198,307,912
- Risk hedge		-		-		-		-		-
	₩	198,307,912	₩	-	₩	-	₩	-	₩	198,307,912
Derivative financial liabilities										
- Held for trading	₩	31,961,954	₩	-	₩	-	₩	-	₩	31,961,954
- Risk hedge		-		4,928,775,634		25,785,132,570		-		30,713,908,204
	₩	31,961,954	₩	4,928,775,634	₩	25,785,132,570	₩	-	₩	30,745,870,158

41.3.3 Market risk

The Group is exposed by market risk that its fair value of the financial instruments or future cash flows is affected by the changes in market price. Market risk consists of interest rate risk, currency risk and other price risk.

41.3.4 Sensitivity analysis

Major assets and liabilities with uncertainties in underlying assumptions

Defined benefit obligation
A sensitivity analysis on the Group's defined benefit obligation assuming a 1% point increase and decrease in various assumptions as of December 31, 2019 and 2018 are as follows (Korean won):

	Dec. 31, 2019		Dec. 31, 2018	
	1%p inc.	1%p dec.	1%p inc.	1%p dec.
Future salary increase rate	₩ 13,505,519,211	₩ (11,826,927,754)	₩ 15,063,628,505	₩ (12,759,784,272)
Discount rate	(12,418,168,595)	14,559,792,136	(13,238,793,274)	16,018,060,747

Effect on the overall financial statements by the management assumptions

Foreign currency risk
The Group conducts transactions denominated in foreign currencies; consequently, exposures to currency exchange rate fluctuations may arise. The carrying amounts of the Group's foreign currency denominated monetary assets and monetary liabilities at the end of the reporting period are as follows (USD, EUR, JPY, AUD, IDR):

	Foreign currency assets		Foreign currency liabilities	
	Dec. 31, 2019	Dec. 31, 2018	Dec. 31, 2019	Dec. 31, 2018
USD	₩ 20,645	₩ 1,135,854	₩ 2,020,444,552	₩ 1,600,565,841
EUR	-	-	3,661	57,635
JPY	-	-	-	184,108,780
AUD	-	-	-	10,230
IDR	-	-	-	68,109,421

The following table illustrates the sensitivity of the Group's profit before tax and equity to a fluctuation of 10% in the foreign exchange rate (Korean won):

	2019		2018	
	10% inc.	10% dec.	10% inc.	10% dec.
Effect on profit before tax	₩ (233,925,155,011)	₩ 233,925,155,011	₩ (179,027,504,176)	₩ 179,027,504,176
Effect on shareholder's equity (*)	(233,925,155,011)	233,925,155,011	(179,027,504,176)	179,027,504,176

(*) Represents amounts before income tax effects.

The sensitivity analysis was made for monetary assets and liabilities denominated in foreign currencies except functional currency and the Group measures the risk of exchange rate fluctuations before reflecting the hedge effect of derivatives. Furthermore, The Group has a policy to enter into currency swap contracts in order to avoid the risk of volatility in foreign exchange rates related to the payment of foreign currency denominated long-term borrowings. In addition, the Group enters into currency forward contract in order to manage the foreign exchange risk of expected purchases.

41.3.4 Sensitivity analysis (cont'd)

Interest rate risk
The Group is exposed to interest rate risk due to its borrowings with floating interest rates. The effect of a change of 1% is used for a sensitivity analysis when reporting interest rate risk internally to key management personnel that represents management's assessment of a reasonably possible change in interest rates.

The Group's long-term borrowings and bonds payable with floating interest rates as of December 31, 2019 and 2018 are as follows (Korean won):

	Dec. 31, 2019	Dec. 31, 2018
Long-term borrowings	₩ 30,352,530,000	₩ 37,048,570,000

A sensitivity analysis on the Group's borrowings and bonds payable assuming a 1% point increase and decrease in interest rates as of December 31, 2019 and 2018 are as follows (Korean won):

	2019		2018	
	1%p inc.	1%p dec.	1%p inc.	1%p dec.
Effect on profit before tax	₩ (303,525,300)	₩ 303,525,300	₩ (370,485,700)	₩ 370,485,700
Effect on shareholder's equity (*)	(303,525,300)	303,525,300	(370,485,700)	370,485,700

(*) Represents amounts before income tax effects.

To manage its interest rate risks, the Group maintains an appropriate balance of fixed and floating rate loans, and enters into interest rate swap agreements. The analysis above presents the interest rates effect not reflecting hedge transactions on the Group's consolidated financial statements.

41.4 Fair value measurement

The fair value of the Group's actively traded financial instruments is based on the traded market price as at the end of the reporting period. The fair value of the Group's financial assets is the asking price for purchase.

41.4.1 Fair and book value

The Group's book and fair values of financial assets and liabilities as of December 31, 2019 and 2018 are as follows (Korean won):

	Dec. 31, 2019		Dec. 31, 2018	
	Book value	Fair value	Book value	Fair value
Assets (fair value):				
Financial assets at FVPL	₩ 43,353,896,701	₩ 43,353,896,701	₩ 100,000,000	₩ 100,000,000
Financial assets at FVOCI	192,946,852,067	192,946,852,067	225,339,466,173	225,339,466,173
Derivatives held for trading	6,788	6,788	198,307,912	198,307,912
Derivatives designated as hedging instruments	40,915,087,481	40,915,087,481	-	-
	₩ 277,215,843,037	₩ 277,215,843,037	₩ 225,637,774,085	₩ 225,637,774,085
Assets (amortized cost):				
Financial assets at amortized cost	₩ 13,639,155,000	₩ 13,639,155,000	₩ 11,612,135,000	₩ 11,612,135,000
Loans	40,193,444,642	40,193,444,642	28,193,884,172	28,193,884,172
Trade and other receivables	710,310,334,541	710,310,334,541	618,124,887,914	618,124,887,914
Cash and cash equivalents	89,233,253,069	89,233,253,069	37,248,237,505	37,248,237,505
	₩ 853,376,187,252	₩ 853,376,187,252	₩ 695,179,144,591	₩ 695,179,144,591
Liabilities (fair value):				
Derivatives designated as hedging instruments	₩ -	₩ -	₩ 30,713,908,204	₩ 30,713,908,204
Derivative held for trading	1,223,062,637	1,223,062,637	31,961,954	31,961,954
	₩ 1,223,062,637	₩ 1,223,062,637	₩ 30,745,870,158	₩ 30,745,870,158
Liabilities (amortized cost):				
Secured borrowings	₩ 70,316,000,000	₩ 70,316,000,000	₩ 77,018,000,000	₩ 77,018,000,000
Unsecured bonds payable	3,245,921,140,339	3,379,958,665,313	3,142,662,860,117	3,291,920,100,941
Unsecured borrowings	127,146,530,000	127,146,530,000	53,186,756,672	53,186,756,672
Trade and other payables	461,932,092,105	461,932,092,105	419,254,902,600	419,254,902,600
Lease liabilities	534,150,024,030	534,150,024,030	-	-
	₩ 4,439,465,786,474	₩ 4,573,503,311,448	₩ 3,692,122,519,389	₩ 3,841,379,760,213

Discount rate used for calculating fair value

The discount rate used for calculating fair value is derived from interest rates that are market-observable, such as government bond interest rates, after considering credit spread.

Hierarchy for determining and disclosing the fair value

The Group uses the following hierarchy for determining and disclosing the fair value of financial instruments by valuation technique. The level of hierarchy of fair value is as follows:

	The significance of input variables
Level 1	Quoted (unadjusted) prices in active markets for identical assets or liabilities
Level 2	Other techniques for which all inputs which have a significant effect on the recorded fair value are observable, either directly or indirectly
Level 3	Techniques which use inputs that have a significant effect on the recorded fair value that are not based on observable market data

41.4.1 Fair and book value (cont'd)

As of December 31, 2019 and 2018, the Group holds the following financial instruments carried at fair value in the consolidated statements of financial position (Korean won):

	Dec. 31, 2019			
	Level 1	Level 2	Level 3	Total
Financial assets at FVOCI	₩ 176,175,735,909	₩ -	₩ 16,771,116,158	₩ 192,946,852,067
Financial assets at FVPL	-	43,353,896,701	-	43,353,896,701
Derivative assets	-	40,915,094,269	-	40,915,094,269
Derivative liabilities	-	(1,223,062,637)	-	(1,223,062,637)
	₩ 176,175,735,909	₩ 83,045,928,333	₩ 16,771,116,158	₩ 275,992,780,400

	Dec. 31, 2018			
	Level 1	Level 2	Level 3	Total
Equity instruments at FVOCI	₩ 203,526,927,576	₩ -	₩ 21,812,538,597	₩ 225,339,466,173
Financial assets at FVPL	-	100,000,000	-	100,000,000
Derivative assets	-	198,307,912	-	198,307,912
Derivative liabilities	-	(30,745,870,158)	-	(30,745,870,158)
	₩ 203,526,927,576	₩ (30,447,562,246)	₩ 21,812,538,597	₩ 194,891,903,927

Changes in Level 3 financial assets for the years ended December 31, 2019 and 2018 are as follows (Korean won):

	2019		
	Jan. 1	Valuation	Dec. 31
Financial assets at FVOCI:			
Unlisted equity securities	₩ 21,812,538,597	₩ (5,041,422,439)	₩ 16,771,116,158

	2018		
	Jan. 1	Valuation	Dec. 31
Financial assets at FVOCI:			
Unlisted equity securities	₩ 21,801,284,852	₩ 11,253,745	₩ 21,812,538,597

There was no significant movement between Level 1 and Level 2 of the fair value hierarchy for the year ended December 31, 2019.

42. Related party disclosures

The related parties of the Group and nature of their relationship with the Group as of December 31, 2019 are as follows:

Relationship	Related party
Ultimate parent Group	Korean Government
Parent Group	KEPCO
Associates	Green Biomass Co., Ltd.
	Korea Offshore Wind Power Co., Ltd.
	Solar School Plant Co., Ltd.
	KEPCO Energy Solution, Inc.
	GS Donghae Electric Power Co., Ltd
Joint ventures	Pusan Shinho Solar Power Co., Ltd.
	Honam Wind Power. Co., Ltd.
	Dangjin Eco Power Corporation
	Seokmun Energy Co., Ltd.
	Chun-cheon Energy Co., Ltd.
	Yeonggwang Wind Power Co., Ltd.
	Yeonggwangbaeksu Wind Power Co., Ltd.
	Daesan Green Energy Co., Ltd.
	Taebaekgaduksan Wind Power Co., Ltd.
	DE Energia SpA
	Yangyang Wind Power Co., Ltd.
	Jamaica Public Service Company Limited
	PT Tanjung Power Indonesia
	South Jamaica Power Company Limited
Others	Korea South-East Power Co., Ltd.
	Korea Western Power Co., Ltd.
	Korea Midland Power Co., Ltd.
	Korea Southern Power Co., Ltd.
	KEPCO Data Network Co., Ltd.
	Korea Gas Corporation
	Korea Electronic Power Industrial Development Co., Ltd.
	Korea Power Exchange
	KEPCO Plant Service & Engineering Co., Ltd.
	KEPCO Engineering & Construction Group, Inc.
	Korea Hydro & Nuclear Power Co., Ltd.
	KEPCO Bylong Australia Pty Ltd, etc.

42. Related party disclosures (cont'd)

Significant transactions with the related parties for the years ended December 31, 2019 and 2018 are as follows (Korean won):

		Sales		Purchases	
Related party	Transaction	2019	2018	2019	2018
KEPCO	Sales and purchase of electricity and others	₩ 4,671,401,900,981	₩ 4,851,489,259,989	₩ 33,652,037,919	₩ 37,568,868,015
	Dividend payment	-	-	984,847,760	61,408,154,260
Green Biomass Co., Ltd.	Other income/ purchase of woodchip	-	136,082	-	440,188,884
Korea Offshore Wind Power Co., Ltd.	Other power generation service revenue and others	165,332,810	164,069,060	-	-
KEPCO Energy Solution, Inc.	Other power generation service revenue and others	135,504,610	86,990,726	-	-
Solar School Plant Co., Ltd.	Other power generation service revenue and others	157,100,980	81,886,760	-	-
GS Donghae Electric Power Co., Ltd.	Engineering service revenue and others	11,482,599,960	1,785,277,357	-	-
Dangjin Eco Power Corporation (before spin-off)	Engineering service revenue	-	3,499,345,130	-	-
Seokmun Energy Co., Ltd.	Engineering service/ purchase of REC and others	859,743,031	1,052,857,480	26,369,826,016	31,759,020,672
Pusan Shinho Solar Power Co., Ltd.	Dividend income/ purchase of REC and others	430,000,000	339,750,000	5,420,376,000	5,374,512,000
Honam Wind Power Co., Ltd.	Dividend income/ purchase of REC and others	586,670,000	348,000,000	2,587,108,074	4,554,316,620
Chun-cheon Energy Co., Ltd.	Engineering service revenue and others	735,105,533	789,959,740	-	-
Yeonggwang Wind Power Co., Ltd.	O&M revenue /purchase of REC and others	547,740,000	-	11,940,472,638	-
Yeonggwangbaeksu Wind Power Co., Ltd.	Other power generation service revenue/purchase of REC and others	1,653,080,400	1,451,321,000	6,375,410,762	5,739,332,628
DE Energia SpA	Interest income and others	289,990,692		-	-
South Jamaica Power Company Limited	O&M revenue/other expenses	124,535,455	151,702,762	-	67,295,448
Jamaica Public Service Company Limited	O&M revenue/other expenses	2,914,125,000	687,687,500	97,129,633	108,186,216
PT Tanjung Power Indonesia	O&M revenue	622,992,353	-	-	-

42. Related party disclosures (cont'd)

Related party	Transaction	Sales 2019	Sales 2018	Purchases 2019	Purchases 2018
Korea Gas Corporation	Rental income/ purchase of LNG and others	₩ 179,865,491	₩ -	₩ 817,158,077,070	₩1,043,607,841,854
KEPCO Plant Service & Engineering Co., Ltd.	Rental income/ repairs and others	1,245,417,302	773,181,773	106,223,014,215	97,481,622,060
Korea Electric Power Industrial Development Co., Ltd.	Rental income /repairs and maintenance expenses	442,169,473	248,278,987	58,373,754,006	55,843,080,009
KEPCO Engineering & Construction Group, Inc.	Rental income/investment	-	-	1,173,378,560	832,173,405
Korea South-East Power Co., Ltd.	Other income/ raw material and repairs	19,660,081	28,042,635	16,510,000	-
Korea Midland Power Co., Ltd.	Other income/other expense	22,045,873	57,512,671	16,510,000	184,533,960
Korea Western Power Co., Ltd.	Other income/other expense	60,870,383	181,847,971	1,048,200	989,140
Korea Southern Power Co., Ltd.	Other income/investment	32,148,263	37,094,011	31,843,622	26,643,061
KEPCO Data Network Co., Ltd.	Commission	-	-	11,513,465,723	8,340,828,688
Korea Power Exchange	Other income/ commission	639,404,180	858,286,600	4,918,914,717	5,881,919,361
		₩4,694,748,002,851	₩ 4,864,112,488,234	₩1,086,853,724,915	₩ 1,359,219,506,281

42. Related party disclosures (cont'd)

Outstanding balances of receivables and payables with the related parties as of December 31, 2019 and 2018 are as follows (Korean won):

		Receivables		Payables	
Related party	Transaction	Dec. 31, 2019	Dec. 31, 2018	Dec. 31, 2019	Dec. 31, 2018
KEPCO	Trade receivables/trade payables	₩ 409,343,640,336	₩ 421,516,108,797	₩ 1,034,295,828	₩ 3,112,387,282
	Other receivables, accrued income/other payables	267,020,057	155,776,433,877	-	46,775,410
Korea Offshore Wind Power Co., Ltd.	Other receivables	100,044,098	113,293,004	-	-
KEPCO Energy Solution, Inc.	Other receivables	44,724,130	38,971,594	-	-
Solar School Plant Co., Ltd.	Other receivables	50,216,133	6,526,260	-	-
GS Donghae Electric Power Co., Ltd.	Other receivables	209,802,238	448,521,027	-	-
Dangjin Eco Power Corporation (before spin-off)	Other receivables	-	17,964,130	-	-
Seokmun Energy Co., Ltd.	Other receivables/ other payables	135,941,745	303,197,893	4,750,008,640	5,042,506,896
Pusan Shinho Solar Power Co., Ltd.	Other payables	-	-	732,888,000	716,820,000
Honam Wind Power Co., Ltd.	Other payables	-	-	1,670,721,638	3,572,899,461
Chun-cheon Energy Co., Ltd.	Other receivables, loans	5,331,371,480	307,735,462	-	-
Yeonggwang Wind Power Co., Ltd	Other receivables/ other payables	50,209,500	-	2,432,060,270	-
Yeonggwangbaeksu Wind Power Co., Ltd.	Other receivables/ other payables	156,846,140	-	1,526,105,788	788,616,817
DE Energia SpA	Loans and others	6,921,984,872	-	-	-
South Jamaica Power Company Limited	Trade receivables	9,878,072	-	-	-
Jamaica Public Service Company Limited	Trade receivables/ other payables	6,476,443,750	593,990,625	57,106,818	-
Korea Gas Corporation	Trade payables	-	-	92,237,965,020	138,958,175,550
KEPCO Plant Service & Engineering Co., Ltd.	Other receivables/other payables, unearned revenue	-	705,128,315	20,188,139,400	15,537,043,598
Korea electric Power Industrial Development Co., Ltd.	Trade payables	-	-	3,755,597,745	4,314,136,404

42. Related party disclosures (cont'd)

Related party	Transaction	Receivables Dec. 31, 2019	Receivables Dec. 31, 2018	Payables Dec. 31, 2019	Payables Dec. 31, 2018
KEPCO Engineering & Construction Group, Inc.	Other payables	₩ -	₩ -	₩ 352,851,031	₩ 268,302,095
Korea South-East Power Co., Ltd.	Other receivables	-	9,220,810	-	-
Korea Midland Power Co., Ltd.	Other payables	-	-	939,895,123	22,000,000
Korea Western Power Co., Ltd.	Other receivables	-	137,500,000	-	-
Korea Southern Power Co., Ltd.	Other payables	-	-	-	485,757,803
KEPCO Data Network Co., Ltd.	Other payables	-	-	1,024,726,731	838,079,502
Korea Power Exchange	Other receivables/ other payables	9,852,940	56,894,850	34,193,940	2,036,375
		₩ 429,107,975,491	₩ 580,031,486,644	₩ 130,736,555,972	₩ 173,705,537,193

Details of changes in loans for the related parties for the years ended December 31, 2019 and 2018 are as follows (Korean won):

	Related party	2019 Jan. 1	Loan	Collection	Exchange rate fluctuation	Dec. 31
Joint venture	Chun-cheon Energy Co., Ltd. (*1)	₩ 615,875,491	₩ 4,441,600,896	₩ -	₩ -	₩ 5,057,476,387
	DE Energia SpA (*2)	-	6,799,254,700	-	(167,260,520)	6,631,994,180
	Dangjin Eco Power Corporation (before spin-off)	-	2,600,000,000	(2,600,000,000)	-	-
	Eumseong Natural Gas Power Co., Ltd. (*3)	-	20,000,000,000	(20,000,000,000)	-	-
		₩ 615,875,491	₩ 33,840,855,596	₩ (22,600,000,000)	₩ (167,260,520)	₩ 11,689,470,567

(*1) The Group loaned operating funds to Chun-cheon Energy Co., Ltd., Dangjin Eco Power Corporation and Eumseong Natural Gas Power Co., Ltd, joint ventures, with interest rates of 4.6%.

(*2) The Group loaned operating funds to DE Energia SpA, a joint venture, with interest rates of 7.0%.

(*3) After spin-off from Dangjin Eco Power Co., Ltd., it was merged into the Group.

	Group name	2018 Jan. 1	Loan	Others	Dec. 31
Joint venture	Chun-cheon Energy Co., Ltd. (*)	₩ -	₩ 615,875,491	₩ -	₩ 615,875,491

(*) The Group loaned operating funds to Chun-cheon Energy Co., Ltd., a joint venture, with interest rates of 4.52%.

Details of transactions of derivatives with the related parties for the year ended December 31, 2019 are as follows (Korean won and USD) :

Counterparty	Contract term	Contract amount Sell (KRW)	Contract amount Purchase (USD)	Contract interest rate (%) Sell	Contract interest rate (%) Purchase	Contract exchange rate
Cash flow hedge:						
KDB Bank	2017.06~2022.06	113,300,000,000	100,000,000	1.94	2.63	1,133.00
KDB Bank	2018.07~2023.07	169,335,000,000	150,000,000	2.26	3.88	1,128.90

42. Related party disclosures (cont'd)

As of December 31, 2019, there are no borrowings arising from related-party transactions.

The Group has made new investments in Yangyang Wind Power Co., Ltd. and DE Energia SpA, and in addition, the Group has decided to make additional investments in Dangjin Eco Power Corporation, Yeonggwang Wind Power Co., Ltd., South Jamaica Power Company Limited and PT. Tanjung Power Indonesia for the year ended December 31, 2019 (Note 14).

Details of guarantees provided to the related parties as of December 31, 2019 are as follows (USD):

Provider	Provided	Description	Credit limit		Financial institution
Korea East-West Power Co., Ltd.	PT. Tanjung Power Indonesia	Guarantee related to borrowings	$	24,544,082	Sumitomo mitsui banking
	PT. Tanjung Power Indonesia	Water change cost payment guarantee		3,150,000	PT Adaro Indonesia
	South Jamaica Power Company Limited (*1)	PPA L/C		6,750,000	Societe Generale
	South Jamaica Power Company Limited (*1)	GSA L/C		7,650,000	Societe Generale
	KEPCO Bylong Australia Pty Ltd (*2)	Debt Payment Guarantee		5,800,000	Korea Export-Import Bank

(*1) It is an L / C opening guarantee for the execution of each contract in connection with the power sales contract and gas supply contract of South Jamaica Power Company Limited, a joint venture of the Group.
(*2) KEPCO Bylong Australia Pty Ltd., a subsidiary of KEPCO, guarantees the payment of borrowings. When the borrower fails to pay the obligation, the Group is obliged to repay the full amount of the loan principal at the interest rate of 2%.

Salary and other compensation to the key members of management for the years ended December 31, 2019 and 2018 are as follows (Korean won):

	2019		2018	
Short-term salaries	₩	626,205,383	₩	601,462,906
Retirements benefits expenses		29,074,974		15,226,653
	₩	655,280,357	₩	616,689,559

As of December 31, 2019, the Group pledged its shares in investees as collateral on behalf of borrowings for the related parties (Korean won):

Lender	Borrower	Collateral	Total collateral limit (*)	
Korea Development bank and others	Pusan Shinho Solar Power Co., Ltd.	Shares in Pusan Shinho Solar Power Co., Ltd.	₩	5,045,225,035
Shinhan Bank and others	Honam Wind Power Co., Ltd	Shares in Honam Wind Power Co., Ltd.		4,375,480,614
Korea Development bank and others	GS Donghae Electric Power Co., Ltd.	Shares in GS Donghae Electric Power Co., Ltd.		255,983,047,635
Kookmin Bank and others	Yeonggwangbaeksu Wind Power Co., Ltd.	Shares in Yeonggwangbaeksu Wind Power Co., Ltd.		3,040,135,066
Kookmin Bank and others	Chun-cheon Energy Co., Ltd.	Shares in Chun-cheon Energy Co., Ltd.		34,872,461,289
Kookmin Bank and others	Seokmun Energy Co., Ltd.	Shares in Seokmun Energy Co., Ltd.		17,341,554,889
KDB Capital Corp. and others	Yeonggwang Wind Power Co., Ltd.	Shares in Yeonggwang Wind Power Co., Ltd.		17,626,636,903
Wooribank and others	Korea Offshore Wind Power Co., Ltd	Shares in Korea Offshore Wind Power Co., Ltd		21,171,070,916
Industrial Bank of Korea	Daesan Green Energy Co., Ltd.	Shares in Daesan Green Energy Co., Ltd.		17,181,876,132
Samsung Fire & Marine Insurance Co., Ltd. and others	Taebaekgaduksan Wind Power Co., Ltd.	Shares in Taebaekgaduksan n Wind Power Co., Ltd.		7,846,371,555
MIRAE ASSET DAEWOO CO.,LTD. and others	DE Energia SpA	Shares in DE Energia SpA		8,664,579,232
MIRAE ASSET DAEWOO CO.,LTD. and others	DE Energia SpA	Loans for DE Energia SpA		6,631,994,180
MUFG Bank Ltd. and others	PT.Tanjung Power Indonesia	Shares in PT.Tanjung Power Indonesia		34,327,188,445
JCSD Trustee Services Ltd. and others	South Jamaica Power Company Limited	Shares in South Jamaica Power Company Limited		13,863,497,200

(*) Represents the carrying amount of equity securities that are held by the Group as of December 31, 2019.

42. Related party disclosures (cont'd)

As of December 31, 2019, financial commitments that the Group has provided to the related parties are as follows (Korean won and USD):

Related party	Lender	Description	Executed capital injection		Total collateral limit	
Chun-cheon Energy Co., Ltd.	Kookmin Bank and others	Financial commitment (*1)	₩	52,699,945,000	₩	20,000,000,000
South Jamaica Power Company Limited	JCSD Trustee Services Limited and others	Financial commitment (*2)	USD	18,400,000		-

(*1) The arrangement is an obligation for the Group to support funds to the guarantee company through capital increase or credit loans for the amount of the loan deficiencies.

(*2) This arrangement is a guarantee for shareholder's capital payment in connection with Jamaica's 190MW gas combined cycle power project. Currently, EWP Barbados 1 SRL has a capital contribution of USD 18,440,000. There is no remaining guarantee amount of the Group among the total collateral limits.

In addition to the above, details of the funding agreements provided by the Group to the related parties as of December 31, 2019 are as follows:

	Funding arrangements
Korea Offshore Wind Power Co., Ltd.	When total investment cost exceeds the sum of equity capital and relevant loans during the construction period due to an increase in construction costs or other operating costs, each of the investors in Korea Offshore & Wind Power Co., an associate of the Group, should fund the excess cost in proportion to shares they hold in a form of subordinated loan.
GS Donghae Electric Power Co., Ltd.	When additional investment is required due to an increase in construction costs or loss of profit due to financial commitments, each of the investors in GS Donghae Electric Power Co., Ltd., an associate of the Group, should make additional investment in proportion to shares they hold.
Honam Wind Power Co., Ltd.	When additional investment is required due to an increase in construction costs, each of the investors in Honam Wind Power Co., Ltd., a joint venture of the Group, should fund excess costs in a form of additional equity capital investment or subordinated loan.
Seokmun Energy Co., Ltd.	The investors of Seokmun Energy Co., Ltd.(other than the Company), a joint venture of the Group, should make additional investments in a form of additional equity capital injection or subordinated loan when operating expenses or loan principal repayment funds are insufficient. In case there are any investors who cannot fulfill this obligation, the Company shall fulfill the obligation on behalf.
Yeonggwang Wind Power Co., Ltd.	The investors in Yeonggwang Wind Power Co., Ltd., a joint venture of the Group, should fund the total expenditure in excess of the budgeted expenditure specified in loan agreement or insufficient amount for the payment for the renewable energy supply certification, in proportion to shares the investors hold as additional equity capital injection.
Daesan Green Energy Co., Ltd.	The investors in Daesan Green Energy Co., Ltd., a joint venture of the Group, should fund the total expenditure in excess of the budgeted expenditure specified in loan agreement in proportion to shares the investors hold as additional equity capital investment or subordinated loan. Additionally, the investors should either execute cash payment, provide subordinated loan, or accept non-receipt of payment if there are settlement costs as per the settlement procedure agreement signed with Daesan Green Energy Co., Ltd.
PT.Tanjung Power Indonesia	When total required investment costs increase due to an increase in construction costs for instance, the investors of PT.Tanjung Power Indonesia, a joint venture of the Group, should fund excess costs in a form of additional equity capital investment or subordinated loan.

43. Business combination(merger)

Details of business combination during 2019 are as follows (Korean won):

	Business	Acquisition date	Consideration transferred	
Eumseong Natural Gas Power Co., Ltd.	Power plants operationn	Dec. 23, 2019	₩	225,758,000,000

Eumseong Natural Gas Co., Ltd. was established in August 2019 by spin-off of Dangjin Eco Power Co., Ltd. and obtained a permission to operate LNG combined cycle power plant in accordance to the 8th basic plan for electricity supply and demand. The Group acquired 100% shares in Eumseong Natural Gas Power Co., Ltd. to secure stable electricity supply through diversification of electricity generation and to generate income, the Group has decided to merge Eumseong Natural Gas Power Co., Ltd. on December 23, 2019.

The fair value of consideration transferred in the business combination are as follows (Korean won):

		2019
Cash	₩	156,700,000,000
Other payables		10,000,000,000
Fair value of previously held equity interest in investee		59,058,000,000
	₩	225,758,000,000

The fair value of assets acquired and liabilities assumed at the acquisition date are as follows (Korean won):

		2019
Identifiable assets	₩	174,992,160,703
Current:		
Cash and cash equivalents		2,388,982,427
Trade and other receivables		54,727,087
Non-current:		
Property, plant and equipment		54,451,189
Intangible assets		172,434,000,000
Others		60,000,000
Identifiable liabilities		44,629,000,000
Current:		
Borrowings		2,900,000,000
Non-current:		
Deferred tax liabilities		41,729,000,000
Fair value of identifiable net assets	₩	130,363,160,703

43. Business combination (cont'd)

Details of goodwill measured are as follows (Korean won):

		2019
Consideration transferred	₩	225,758,000,000
Less: fair value of identifiable net assets		(130,363,160,703)
Goodwill	₩	95,394,839,297

As the consideration transferred includes a premium for controlling Eumseong Natural Gas Power Co., Ltd., goodwill has been recognized. Also, synergy and income increase from the permission to operate LNG combined cycle power generation business were considered. The right to operate was distinguished from goodwill and recognized as an intangible asset as it meets the recognition criteria of separability and identifiability.

Meanwhile, related benefits such as direct fuel introduction and reduction in O&M costs were not recognized separately from goodwill as they do not meet the recognition criteria of separability and identifiability.

Net cash outflows from the business combination in 2019 are as follows (Korean won):

		2019
Consideration transferred in cash	₩	156,700,000,000
Less: Cash and cash equivalents acquired		(2,388,982,427)
	₩	154,311,017,573

The legal and due diligence fees in the total amount of ₩23,553,480 were not included in the transferred consideration. These costs were recorded as administrative expenses.

There are no revenues nor net income relating from the operation of Eumseong Natural Gas Power Co., Ltd.. If the merger took place on January 1, 2019, the Group could have recognize net income of ₩140,953,830,125 but no revenues.

44. Supplementary cash flow information

Significant transactions not involving cash flows for the years ended December 31, 2019 and 2018 are as follows (Korean won):

	2019	2018
Transfer from construction-in-progress to depreciable assets	₩ 461,009,283,485	₩ 338,082,737,278
Transfer from bonds and long-term borrowings to current-portion of those	663,976,225,813	192,414,518,805
Effect of changes in accounting policies	472,122,329,014	9,103,460,810
Effect of increase in right-of-use assets	89,276,843,567	-

44. Supplementary cash flow information (cont'd)

Details of changes in liabilities arising from financial activities during 2019 and 2018 are as follows(Korean won):

	Jan. 1, 2019	Cash flow	Non-cash change: Exchange rate fluctuation	Non-cash change: Changes in fair value	Other	Dec. 31, 2019
Short-term borrowings	₩ 44,000,000,000	₩ 76,000,000,000	₩ -	₩ -	₩ -	₩ 120,000,000,000
Long-term borrowings	86,204,756,672	(8,805,652,490)	63,425,818	-	-	77,462,530,000
Bonds	3,142,662,860,117	39,268,720,000	59,259,120,846	-	4,730,439,376	3,245,921,140,339
Lease liabilities	-	(57,275,025,922)	17,687,799,624	-	573,737,250,328	534,150,024,030
Assets held in order to hedge exchange rate risk of foreign currency bonds	30,713,908,204	16,448,365,859	-	(71,628,995,685)	(16,448,365,859)	(40,915,087,481)
Total liabilities from financing activities	₩ 3,303,581,524,993	₩ 65,636,407,447	₩ 77,010,346,288	₩ (71,628,995,685)	₩ 562,019,323,845	₩ 3,936,618,606,888

	Jan. 1, 2018	Cash flow	Non-cash change: Exchange rate fluctuation	Non-cash change: Changes in fair value	Other	Dec. 31, 2018
Short-term borrowings	₩ 122,500,000,000	₩ (78,500,000,000)	₩ -	₩ -	₩ -	₩ 44,000,000,000
Long-term borrowings	87,407,847,961	767,280,000	102,313,335	(2,072,684,624)	-	86,204,756,672
Bonds	3,093,804,235,679	(22,613,883,676)	66,385,647,324	-	5,086,860,790	3,142,662,860,117
Assets held in order to hedge exchange rate risk of foreign currency bonds	57,040,562,581	34,480,000,000	-	(24,029,455,468)	(36,777,198,909)	30,713,908,204
Total liabilities from financing activities	₩ 3,360,752,646,221	₩ (65,866,603,676)	₩ 66,487,960,659	₩ (26,102,140,092)	₩ (31,690,338,119)	₩ 3,303,581,524,993

45. Commitments and contingencies

Legal contingencies

Details of significant pending lawsuits and total claims against the Group as of December 31, 2019 and 2018 are as follows (Korean won and USD):

	Dec. 31, 2019 (*)			Dec. 31, 2018		
	Litigation in progress	Litigation values		Litigation in progress	Litigation values	
Pending lawsuits	9 cases	₩	25,157,981,124	9 cases	₩	24,233,893,063
		$	125,000,000		$	125,000,000

(*) Details of major lawsuits (appeals) under way as of December 31, 2019 are as follows (Korean won and USD):

Court	Plaintiff	Defendant	Reasons	Claims		Progress
Seoul Central	Hyundai E&C, Seohee Construction	Group	Construction price and etc.	₩	1,200,000,000	First trial
Northern Seoul	Keangnam Enterprise's manager Lee xx	Group	Construction price and etc.	₩	10,789,277,623	First trial
Guam Superior Court	GPA and 2 others	Group	Claim for an indemnity	$	125,000,000	First trial
Ulsan High	Jeong xx and 1,444 others	Group	Claim for wages	₩	315,460,000	First trial
Seoul Southern	Lim xx and 279 others	Group	Claim for wages	₩	1,815,716,246	First trial
Daejeon High	Criminal suit	Group	Violation of Occupational Safety and Health Act	₩	5,000,000	Second trial
Commercial Arbitrator	Hanjin Heavy industry	Group	Construction price arbitration	₩	10,000,000,000	Arbitration
Commercial Arbitrator	Daelim Industrial	Group	Construction price and etc.	₩	1,000,000,000	Arbitration
Commercial Arbitrator	KEPCO Plant Service & Engineering Co., Ltd.	Group	Construction price arbitration	₩	32,527,255	Arbitration

As of December 31, 2019, in addition to the above cases, there is a pending lawsuit on the ordinary wages in which the co-defendants are four power generation entities including the Group, and the Group recognized provision for the litigation amounting to ₩3,329,033,360.

Guarantees

As of December 31, 2019, the Group has no debt guarantee agreement other than those provided to the related parties.

45. Commitment and contingencies (cont'd)

Purchase agreements

The Group has key purchase agreements for raw materials and details as of December 31, 2019 are as follows:

Raw material	Supply source	Contract period	Annual contract quantity (tones in thousands)
Bituminous coal	Australia	2015-2021	10,175
	Indonesia	2015-2021	7,300
	Russia	2015-2021	6,585
	U.S.A	2015-2022	1,640
	Colombia	2017-2020	560
	South Africa	2017-2021	1,400
	Canada	2019-2021	280

As of December 31, 2019, the Group maintains lines of credit with various financial institutions, and details are as follows (Korean won and USD):

	Financial institution	Executed amount		Credit limit	
Commitments on bank-over draft	Hana Bank	₩	-	₩	50,000,000,000
Limit amount available for CP	Samsung Securities	₩	-	₩	100,000,000,000
Certification of payment on L/C	Shinhan Bank	$	11,862,600	$	50,000,000
	Kookmin Bank	$	22,644,272	$	45,000,000
	Woori Bank	$	8,374,821	$	27,000,000
	Hana Bank	$	22,230,476	$	30,000,000
Loan limit	Hana Bank	₩	-	₩	10,000,000,000
	Woori Bank	₩	-	₩	1,000,000,000
	NH Bank	₩	-	₩	5,000,000,000
	CREDIT AGRICOLE	$	-	$	70,000,000
	DBS	$	-	$	100,000,000
	BNP Paribas	$	-	$	30,000,000
	Shinhan Bank	$	-	$	20,000,000
	Société Générale	$	14,400,000	$	50,000,000
	BTMU	$	-	$	30,000,000
	Samsung Fire & Marine Insurance	₩	15,551,119,072	₩	21,900,000,000
	Fubon Hyundai Life	₩	20,088,440,464	₩	23,700,000,000
	Hyundai Marine & Fire Insurance	₩	19,997,440,464	₩	23,600,000,000
	KB Insurance	₩	14,679,000,000	₩	15,600,000,000
Energy use rationalization loan	Hana Bank	₩	4,506,950,000	₩	5,151,000,000
	Hana Bank	₩	1,836,450,000	₩	2,099,000,000
Others	Shinhan Bank	$	7,268,420	$	7,500,000
	Korea Export-Import Bank	$	5,800,000	$	5,800,000
	Australia and New Zealand Banking	$	1,200,000	$	1,200,000
	Sumitomo mitsui banking	$	24,484,491	$	24,544,082

45. Commitment and contingencies (cont'd)

For the steady supply of raw materials, the Group holds long-term contracts for bituminous coal shipments and details are as follows:

Group	Ship	Contract period
NYK Line Co., Ltd.	OCEAN PROMETHEUS	2007.06–2025.05
NYK Bulkship Korea	Oriental Frontier	2009.08–2020.07
NYK Bulkship Korea	ORIENTAL NAVIGATOR	2010.02–2025.01
NYK Bulkship Korea	ORIENTAL LEADER	2013.03–2028.02
NYK Bulkship Korea	Frontier Discovery	2018.01–2032.12
H-Line Shipping Co., Ltd.	HL.Dangjin	2011.09–2029.09
Hansung Line Co., Ltd.	OCEAN CARRIER	2013.05–2028.04
Pan Ocean Co., Ltd.	Pan Dangjin	2018.09–2036.08
Polaris Shipping Co., Ltd.	Solar Legend	2019.02–2034.01

As of December 31, 2019, Gyeongju Wind Power Co.,Ltd. has pledged the following assets as collateral for the Group's borrowings (Korean won):

Lender	Collaterals	Nominal value	Collateral limit	Objective
Samsung Fire & Marine Insurance Co., Ltd. and others	Deposits pledged	₩ 17,623,759,593	₩ 110,240,000,000	Financing to invest for construction and operation of wind power plant
	Accounts receivable pledged by means of transfer	4,954,790,260		
	Facilities pledged by means of transfer	88,120,628,541		
		₩ 110,699,178,394	₩ 110,240,000,000	

In addition to the above collateralized assets, right to claim for insured amount are pledged.

46. The approval of the consolidated financial statements

The consolidated financial statements of the Group for the year ended December 31, 2019 are scheduled to be approved at the shareholder's meeting to be held on March 27, 2020.

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Independent auditor's report

The Shareholder and Board of Directors
Korea East-West Power Co., Ltd.

Opinion

We have audited the consolidated financial statements of Korea East-West Power Co., Ltd. (the "Company") and its subsidiaries (collectively referred to as the "Group"), which comprise the consolidated statements of financial position as of December 31, 2018 and 2017, 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 notes to the financial statements, including a summary of significant accounting policies.

In our opinion, the accompanying consolidated financial statements present fairly, in all material respects, the financial position of the Group as of December 31, 2018 and 2017 and its financial performance and its cash flows for the years then ended in accordance with the Rules for Accounting Affairs of Public Corporations and Quasi-governmental Institutions.

Emphasis of matter

Without qualifying our opinion, we draw attention to Note 2 to the consolidated financial statements, for those matters not specified in the Rules for Accounting Affairs of Public Corporations and Quasi-governmental Institutions, the consolidated financial statements have been prepared in accordance with Korean International Financial Reporting Standards (KIFRS).

Basis of 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.

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.

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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 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 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 financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation.

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

Ernst & Young Han Young

March 22, 2019

This audit report is effective as of March 22, 2019, the independent auditor's report date. Accordingly, certain material subsequent events or circumstances may have occurred during the period from the 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 report.

Korea East-West Power Co., Ltd. and its subsidiaries
Consolidated statements of financial position
as of December 31, 2018 and 2017
(Korean won)

	Notes		2018		2017
Assets					
Current assets					
Cash and cash equivalents	5, 41, 42, 45	₩	37,248,237,505	₩	33,389,243,971
Current financial assets	41, 42		12,837,861,334		11,253,380,080
Trade and other receivables	8, 41, 42, 43		615,635,053,019		725,519,825,816
Inventories	15		316,202,116,232		302,182,751,731
Current income tax receivables			41,503,207,697		3,142,785
Current non-financial assets	16		47,600,253,895		30,484,904,584
			1,071,026,729,682		1,102,833,248,967
Non-current assets					
Non-current financial assets	41, 42		252,605,931,923		159,452,544,358
Long-term trade and other receivables	8, 41, 42		2,489,834,895		3,591,735,531
Property, plant and equipment, net	18, 45		6,634,767,673,791		6,835,954,284,622
Goodwill	19		7,671,613,940		7,351,191,463
Intangible assets excluding goodwill	20		129,733,368,321		140,478,660,229
Investments in associates and joint ventures	4, 17, 43		701,049,742,942		662,413,127,962
Deferred tax assets	38		188,310,807		600,474,631
Non-current non-financial assets	16		12,543,748,752		13,890,418,582
			7,741,050,225,371		7,823,732,437,378
Total assets		₩	**8,812,076,955,053**	₩	**8,926,565,686,345**
Liabilities and equity					
Current liabilities					
Trade and other payables	21, 41, 42, 43	₩	419,240,507,062	₩	459,418,460,853
Current financial liabilities	41, 42, 43, 44		242,748,205,131		862,038,004,011
Current non-financial liabilities	27		7,226,894,626		10,976,035,946
Current portion of provision	25		39,527,315,483		60,587,870,984
Current income tax liabilities			1,396,458,901		29,353,453,335
			710,139,381,203		1,422,373,825,129
Non-current liabilities					
Long-term trade and other payables	21		14,395,538		-
Non-current financial liabilities	41, 42, 43, 44		3,060,865,281,816		2,502,291,085,428
Non-current non-financial liabilities	27		5,709,433,544		875,651,362
Employee benefit obligation	24		58,181,742,032		50,118,053,958
Deferred tax liabilities	38		343,402,208,742		316,562,169,902
Provisions	25		3,581,566,832		4,714,194,707
			3,471,754,628,504		2,874,561,155,357
Total liabilities			**4,181,894,009,707**		**4,296,934,980,486**
Equity					
Issued capital	28		2,218,598,774,310		2,218,598,774,310
Retained earnings	29		2,406,254,067,993		2,473,110,754,159
Other components of equity	31		(12,457,934,616)		(77,226,861,090)
Equity attributable to owners of the parent			4,612,394,907,687		4,614,482,667,379
Non-controlling interests			17,788,037,659		15,148,038,480
Total equity			**4,630,182,945,346**		**4,629,630,705,859**
Total liabilities and equity		₩	**8,812,076,955,053**	₩	**8,926,565,686,345**

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

Korean East-West 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
Sale of goods		₩ 4,971,421,846,379	₩ 4,668,962,003,578
Rendering of services		1,361,773,089	862,080,281
Revenue	4, 32, 43	**4,972,783,619,468**	**4,669,824,083,859**
Cost of sales	39, 43	4,788,228,693,677	4,120,945,072,643
Gross profit		**184,554,925,791**	**548,879,011,216**
Selling and administrative expenses	33, 39, 43	125,916,727,661	126,308,916,145
Operating profit	4	**58,638,198,130**	**422,570,095,071**
Other income	34, 43	16,072,610,623	22,433,784,035
Other expenses	34, 43	(7,244,376,526)	(14,816,081,505)
Other profit or loss	35	570,066,415	1,712,124,678
Finance income	36, 41	107,360,133,790	212,619,657,171
Finance costs	37, 41	(186,860,672,886)	(327,321,335,674)
Gain (loss) on investments in associates and joint ventures	17	(3,766,492,394)	12,641,218,757
Profit (loss) for the year before tax		**(15,230,532,848)**	**329,839,462,533**
Income tax expense (benefit)	38	(7,161,114,754)	112,676,036,634
Profit (loss) for the year		**(8,069,418,094)**	**217,163,425,899**
Other comprehensive income			
Other comprehensive income not to be reclassified to profit or loss in subsequent periods:			
Gain on valuation of equity instruments at FVOCI		69,362,167,641	-
Re-measurement gain (loss) on defined benefit plans	24, 29	(3,739,157,324)	10,388,761,890
Share of other comprehensive income (loss) of associates and joint ventures		(103,418,119)	55,421,910
Other comprehensive income to be reclassified to profit or loss in subsequent periods:			
Gain on valuation of available-for-sale financial assets		-	29,443,440,819
Net gain (loss) on cash flow hedges		(7,225,406,356)	9,090,381,864
Exchange differences on translation of foreign operations		(440,154,493)	(4,324,620,861)
Share of other comprehensive income (loss) of associates and joint ventures		12,175,780,492	(31,261,681,876)
Other comprehensive income for the year, net of tax		**70,029,811,841**	**13,391,703,746**
Total comprehensive income for the year, net of tax		**₩ 61,960,393,747**	**₩ 230,555,129,645**
Profit (loss) for the year, attributable to:			
Owners of the parent		₩ (10,710,309,335)	₩ 216,299,395,481
Non-controlling interests		2,640,891,241	864,030,418
		₩ (8,069,418,094)	**₩ 217,163,425,899**
Total comprehensive income for the year, attributable to:			
Owners of the parent		₩ 59,320,394,568	₩ 229,691,418,485
Non-controlling interests		2,639,999,179	863,711,160
		₩ 61,960,393,747	**₩ 230,555,129,645**
Earnings (losses) per share:	40		
Basic earnings (losses) per share		₩ (185)	₩ 3,734
Diluted earnings (losses) per share		₩ (185)	₩ 3,734

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

Korea East-West Power Co., Ltd. and its subsidiaries
Consolidated statements of changes in equity
for the years ended December 31, 2018 and 2017

(Korean won)

	Attributable to owners of the parent				Non-controlling interest	Total equity
	Issued capital	Retained earnings	Other components of equity	Total		
As of January 1, 2017	**₩ 2,218,598,774,310**	**₩ 2,340,796,375,850**	**₩ (80,174,381,036)**	**₩ 4,479,220,769,124**	**₩ 14,284,327,320**	**₩ 4,493,505,096,444**
Profit for the year	-	216,299,395,481	-	216,299,395,481	864,030,418	217,163,425,899
Changes in comprehensive income:						
Gain on valuation of available-for-sale financial assets	-	-	29,443,440,819	29,443,440,819	-	29,443,440,819
Net gain on cash flow hedges	-	-	9,090,381,864	9,090,381,864	-	9,090,381,864
Re-measurement gain on defined benefit plans	-	10,389,081,148	-	10,389,081,148	(319,258)	10,388,761,890
Share of other comprehensive income (loss) of associates and joint ventures	-	55,421,910	(31,261,681,876)	(31,206,259,966)	-	(31,206,259,966)
Exchange differences on translation of foreign operations	-	-	(4,324,620,861)	(4,324,620,861)	-	(4,324,620,861)
Total comprehensive income	-	226,743,898,539	2,947,519,946	229,691,418,485	863,711,160	230,555,129,645
Transaction with owner directly reflected in equity:						
Dividends	-	(94,429,520,230)	-	(94,429,520,230)	-	(94,429,520,230)
As of December 31, 2017	**₩ 2,218,598,774,310**	**₩ 2,473,110,754,159**	**₩ (77,226,861,090)**	**₩ 4,614,482,667,379**	**₩ 15,148,038,480**	**₩ 4,629,630,705,859**
As of January 1, 2018	**₩ 2,218,598,774,310**	**₩ 2,473,110,754,159**	**₩ (77,226,861,090)**	**₩ 4,614,482,667,379**	**₩ 15,148,038,480**	**₩ 4,629,630,705,859**
Changes in accounting policies (Note 2)	-	9,103,460,810	(9,103,460,810)	-	-	-
Adjusted total equity at the beginning of the year	**2,218,598,774,310**	**2,482,214,214,969**	**(86,330,321,900)**	**4,614,482,667,379**	**15,148,038,480**	**4,629,630,705,859**
Loss for the year	-	(10,710,309,335)	-	(10,710,309,335)	2,640,891,241	(8,069,418,094)
Changes in comprehensive income:						
Gain on valuation of equity instruments at FVOCI	-	-	69,362,167,641	69,362,167,641	-	69,362,167,641
Net loss on cash flow hedges	-	-	(7,225,406,356)	(7,225,406,356)	-	(7,225,406,356)
Re-measurement loss on defined benefit plans	-	(3,738,265,262)	-	(3,738,265,262)	(892,062)	(3,739,157,324)
Share of other comprehensive income (loss) of associates and joint ventures	-	(103,418,119)	12,175,780,492	12,072,362,373	-	12,072,362,373
Exchange differences on translation of foreign operations	-	-	(440,154,493)	(440,154,493)	-	(440,154,493)
Total comprehensive income	-	(14,551,992,716)	73,872,387,284	59,320,394,568	2,639,999,179	61,960,393,747
Transaction with owner directly reflected in equity:						
Dividends	-	(61,408,154,260)	-	(61,408,154,260)	-	(61,408,154,260)
As of December 31, 2018	**₩ 2,218,598,774,310**	**₩ 2,406,254,067,993**	**₩ (12,457,934,616)**	**₩ 4,612,394,907,687**	**₩ 17,788,037,659**	**₩ 4,630,182,945,346**

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

Korea East-West Power Co., Ltd. and its subsidiaries
Consolidated statements of cash flows
for the years ended December 31, 2018 and 2017
(Korean won)

		2018		2017
Operating activities				
Profit (loss) for the year	₩	(8,069,418,094)	₩	217,163,425,899
Adjustments to reconcile profit (loss) for the year to net cash flows provided by operating activities:				
Pension benefit		13,303,877,443		14,198,074,165
Depreciation of property, plant and equipment		631,068,836,018		587,938,706,363
Amortization of intangible assets		15,584,706,177		26,001,486,494
Income tax expense (benefit)		(7,161,114,754)		112,676,036,634
Loss on disposal of property, plant and equipment		390,946,572		54,253,964
Loss on write-off of property, plant and equipmei		5,911,090,884		10,348,849,704
Gain on disposal of property, plant and equipmei		(4,027,734,192)		(3,010,643,285)
Interest expenses		106,026,369,194		99,135,172,702
Interest income		(6,000,623,105)		(1,985,113,185)
Dividend income		(5,534,916,651)		-
Loss (gain) on foreign currency translation		40,157,170,935		(160,825,516,301)
Loss (gain) on foreign currency transaction		24,992,376,811		(38,668,417,957)
Loss (gain) on derivative instruments, net		(80,252,024,168)		212,015,004,651
Loss (gain) on valuation of investments in associates and joint ventures		3,766,492,394		(12,367,358,990)
Gain on disposal of investments in associates and joint ventures		-		(273,859,767)
Net transfer of provisions		32,544,259,821		16,890,064,819
Others		(1,956,577,866)		(3,881,677,275)
Changes in operating assets and liabilities:				
Trade receivables		(24,424,673,895)		(7,699,639,173)
Other receivables		(18,733,162,821)		31,003,560,081
Accrued income		150,722,057,949		(92,173,697,587)
Prepayments		(1,386,787,925)		(50,093,915)
Prepaid expenses		5,831,960,848		78,530,171
Other current assets		(20,739,411,971)		(14,266,598,762)
Other non-current assets		21,974,091		(22,584,006)
Inventories		(12,955,670,084)		(52,590,525,908)
Trade payables		(99,282,164,786)		45,619,892,524
Other payables		48,742,978,398		(71,367,339,330)
Accrued expenses		(1,851,764,266)		(800,410,435)
Advancd receipts		-		3,823,509,090
Unearned revenue		(823,998,755)		663,396,886
Withholdings		1,237,960,201		1,192,259,844
Other current liabilities		(4,054,020,848)		(12,345,304,136)
Other non-current liabilities		(57,582,990)		(172,226,697)
Other non-current provisions		(483,266,220)		-
Payment of provision		(55,558,462,838)		(65,264,370,844)
Pension benefits paid		(3,159,857,200)		(2,377,111,801)
Increase in plan assets		(7,000,000,000)		(3,375,339,900)
		716,789,824,307		835,284,394,737
Dividends received		10,623,866,651		550,450,000
Interest paid		(92,097,248,343)		(99,295,636,844)
Interest received		7,089,228,938		3,700,137,113
Income tax paid		(48,529,804,206)		(181,377,339,239)
Net cash flows provided by operating activities		**593,875,867,347**		**558,862,005,767**

(Continued)

Korea East-West Power Co., Ltd. and its subsidiaries
Consolidated statements of cash flows
for the years ended December 31, 2018 and 2017 (cont'd)
(Korean won)

	2018	2017
Investing activities		
Collection of loans	₩ 4,179,828,994	₩ 2,830,129,540
Collection of deposits	3,959,970,294	790,095,859
Decrease in held-to-maturity financial assets	-	77,515,000
Proceeds from disposal of land	68,434,360	-
Proceeds from disposal of buildings	217,254,828	4,325,489,541
Proceeds from disposal of structures	10,143,317,540	-
Proceeds from disposal of vehicles	114,811,847	48,598,986
Receipt of government grants	-	74,000,000
Proceeds from disposal of other intangible asset	-	586,000
Increase in loans	(5,938,098,281)	(4,795,678,233)
Payment of deposits	(2,320,047,509)	(439,658,573)
Net increase in financial assets at fair value through profit or loss	(100,000,000)	-
Net increase in short-term financial instruments	-	(5,000,000,000)
Increase in available-for-sale financial assets	-	(127,148,882)
Increase in financial assets at amortized cost	(1,116,560,000)	-
Increase in held-to-maturity financial assets	-	(226,145,000)
Purchase of land	(236,571,213)	(108,820,573)
Purchase of buildings	-	(2,250,372)
Purchase of structures	(427,468,214)	-
Purchase of machinery	(54,339,642,278)	(64,285,471,241)
Purchase of vehicles	(319,893,520)	-
Purchase of other property, plant and equipment	(365,318,908)	(859,113,948)
Increase in construction-in-progress	(388,080,936,818)	(372,949,036,198)
Increase in investment in joint ventures	(35,515,499,000)	(42,842,376,000)
Increase in investment in associates	-	(20,150,000,000)
Net cash flows used in investing activities	**(470,076,417,878)**	**(503,639,284,094)**
Financing activities		
Net borrowing (repayments) of short-term borrowings	(78,500,000,000)	122,500,000,000
Proceeds from borrowings	736,249,213,135	916,986,971,477
Repayment of borrowings	(757,745,096,811)	(1,006,422,412,047)
Dividends	(61,408,154,260)	(94,429,520,230)
Settlement of derivative instruments	40,650,382,257	(5,695,711,137)
Net cash flows used in financing activities	**(120,753,655,679)**	**(67,060,671,937)**
Net increase (decrease) in cash and cash equivalents	3,045,793,790	(11,837,950,264)
Net foreign exchange difference	813,199,744	(3,382,740,571)
Cash and cash equivalents at January 1	33,389,243,971	48,609,934,806
Cash and cash equivalents at December 31	**₩ 37,248,237,505**	**₩ 33,389,243,971**

The accompanying notes are an integral part of the consolidated financial statemen

1. Corporate information

Korea East-West Power Co., Ltd. (the "Company") was incorporated on April 2, 2001, for the purpose of developing and producing electric power in the Republic of Korea. The Group was established through the spin-off of the power generation division of Korea Electric Power Corporation ("KEPCO") and designated as market-type public institution in August 2010 in accordance with the Article 5 of the *Act on Management of Public Institutions (the "Act")* and the article 3 of the Addendum to the Act. As at December 31, 2018, the Group's power generating capacity is 11,194.4MW and the Group owns and operates five power plants, including the Dangjin Thermal Power Plant.

As of December 31, 2018 and 2017, KEPCO wholly owns the Company's outstanding shares, and issued capital amounting to ₩289,661 million.

The Company's consolidated subsidiaries as of December 31, 2018 and 2017 are as follows:

			Equity interest and voting rights (%)	
	Principal activity	Country of domicile	Dec. 31, 2018	Dec. 31, 2017
EWP Philippines Corporation	Holding company	Philippines	100	100
EWP America, Inc.	Overseas investment	USA	100	100
EWP Renewable Corporation	Overseas investment	USA	100	100
DG Fairhaven Power, LLC	Power plants operation	USA	100	100
DG Whitefield, LLC	Power plants operation	USA	100	100
Springfield Power, LLC	Power plants operation	USA	100	100
California Power Holdings, LLC	Power plants operation	USA	100	100
EWP RC Biomass Holdings, LLC	Overseas investment	USA	100	100
EWP (Barbados) 1 SRL	Overseas investment	Barbados	100	100
PT. EWP Indonesia	Overseas investment	Indonesia	99.9	99.9
Gyeongju Wind Power Co., Ltd.	Renewable energy	South Korea	70	70
EWP Bylong Pty Ltd.	Overseas investment	Australia	100	100
EWP Service Co., Ltd.	Service rendering	South Korea	100	-

The summarized financial information ot the consolidated subsidiaries as of December 31, 2018 and 2017 and for the years then ended is as follows (Korean won):

	2018			
	Total assets	Total liabilities	Sales	Profit (loss) for the year
EWP Philippines Corporation	₩ 1,683,655,758	₩ 828,914,909	₩ -	₩ (10,824,195)
EWP America, Inc. (*)	72,525,061,183	4,902,730,974	29,556,817,552	(4,483,096,433)
EWP (Barbados) 1 SRL	268,032,604,678	1,581,370,200	687,687,500	11,220,819,790
Gyeongju Wind Power Co., Ltd.	122,303,240,280	83,347,981,258	21,906,103,471	8,802,953,103
PT. EWP Indonesia	7,443,567,382	14,395,538	-	3,138,226,146
EWP Bylong Pty Ltd.	5,543,568,447	16,291,911	-	(15,458,488)
EWP Service Co., Ltd.	666,545,806	96,677,800	-	(30,131,994)

(*) The summarized financial information of EWP America Inc. includes EWP Renewable Corporation and 5 other subsidiaries.

1. Corporate information (cont'd)

	2017			
	Total assets	Total liabilities	Sales	Profit (loss) for the year
EWP Philippines Corporation	₩ 1,707,554,205	₩ 836,495,361	₩ -	₩ (16,823,918)
EWP America, Inc. (*1)	79,854,142,999	67,308,012,571	23,543,153,596	(9,736,916,883)
EWP (Barbados) 1 SRL	235,096,378,453	449,926,930	-	(2,584,514,465)
Gyeongju Wind Power Co., Ltd.	112,279,378,669	82,124,116,912	7,219,039,276	2,399,932,305
PT. EWP Indonesia	2,035,317,153	22,527,257	-	1,915,649,746
EWP Bylong Pty Ltd.	5,875,185,238	-	-	-

(*1) The summarized financial information of EWP America Inc. includes EWP Renewable Corporation and 5 other subsidiaries.

2. Basis of preparation of financial statements and summary of significant accounting policies

2.1 Basis of preparation

The Company and its subsidiaries (collectively referred to as the "Group") prepare statutory consolidated financial statements in the Korean language in accordance with the Rules for Accounting Affairs of Public Corporations and Quasi-governmental Institutions in the Republic of Korea. The Rules for Accounting Affairs of Public Corporations and Quasi-governmental Institutions further mandates application of KIFRS as enacted by the *Act on External Audit of Stock Companies* where specific accounting treatments are not prescribed by the Rules for Accounting Affairs of Public Corporations and Quasi-governmental Institutions.

The accompanying consolidated financial statements have been translated into English from the Korean language financial statements. In the event of any differences in interpreting the consolidated financial statements or the independent auditors' report thereon, the Korean version, which is used for regulatory reporting purposes, shall prevail.

The consolidated financial statements have been prepared on a historical cost basis, except for derivative financial instruments, available-for-sale (AFS) financial assets that have been measured at fair value. The consolidated financial statements are presented in Korean won, except when otherwise indicated.

2.2 Standards issued but not yet effective

The standards and interpretations that are issued, but not yet effective, up to the date of issuance of the Group's financial statements are disclosed below. The Group intends to adopt these standards, if applicable, when they become effective.

2.2.1 KIFRS 1116 *Leases*

(a) General effect of application of KIFRS 1116

The standard provides a comprehensive model for both lessee and lessor to identify and account for lease arrangements and is effective for annual periods beginning on or after January 1, 2019, with early application permitted. This standard will replace KIFRS 1017 *Leases*, KIFRS 2104 *Determining whether an Arrangement contains a Lease*, KIFRS 2015 *Operating Leases-Incentives* and KIFRS 2027 *Evaluating the Substance of Transactions Involving the Legal Form of a Lease.*

2.2.1 KIFRS *1116 Leases (cont'd)*

The lessee has an option to adopt KIFRS 1116 using either the full retrospective method or the modified retrospective method. The full retrospective method of adoption will need to apply the provisions of KIFRS 1116 to each period presented in the financial statements, in accordance with KIFRS 1008. The lesses that elects the modified retrospective method would apply KIFRS 1116 retrospectively to only the current period by recognising the cumulative effect of initially applying KIFRS 1116 as an adjustment to the opening balance of retained earnings (or other components of equity) at the date of initial application.

The Group plans to adopt KIFRS 1116 using the modified retrospective method as of January, 1, 2019. Accordingly, the cumulative effects of the application of KIFRS 1116 are adjusted in retained earnings (or where appropriate, other components of equity) as of the date of the initial application. The Group will not restate comparative financial statements.

For a contract that is, or contains a lease, the Group will account for each lease component within the contract as a lease separately from non-lease components of the contract. A lessee will recognize an asset representing the right to use the underlying asset during the lease term (i.e., the right-of-use asset) and a liability representing the right to make lease payments (i.e., the lease liability). However, in case of short-term leases (i.e., leases with a lease term of 12 months or less at the commencement date) and leases of 'low-value' assets, the Group may elect to apply the exception under KIFRS 1116. As a practical expedient, a lessee may elect, by class of the 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 component.

Lessor accounting under KIFRS 1116 is not significantly changed from today's accounting under KIFRS 1017.

(b) Identification of lease

The Group assesses whether a contract is, or contains, a lease at inception of a contract and also assesses whether a contract is, or contains, a lease at the initial adoption of KIFRS 1116. However, the Group may not reassess all arrangements entered into before the date of initial application of the standard by applying the simplified approach.

The definition of a lease under KIFRS 1116 is primarily related to the control model. KIFRS 1116 distinguishes between lease and service contracts based on whether the identified asset is controlled by the customer. If the customer has all of the following rights, the right to control the use will be transferred to the customer:

- The right to obtain substantially all of the economic benefits from use of identified assets.
- The right to direct the use of identified assets

The Group expects the revised definition of a lease under KIFRS 1116 will not significantly affect the scope of the contract that meets the definition of a lease.

(c) Group as a lessee

Operating lease
The application of the KIFRS 1116 revise the accounting treatment for operating leases that were not recorded in the statement of financial position under KIFRS 1017 and at the date of initial application of the KIFRS 1116, the Group account for all leases except for short-term leases and leases of 'low-value' assets as follows:

- The present value of the lease payments that are not paid at initial recognition is recognised as a the right-of-use asset and a lease liability in the statement of financial position
- The depreciation expense of a right-of-use asset and the interest expense of a lease liability are recognised in the statement of comprehensive income.
- Cash payments for principal portion shall be classified within financial activities and interest portion shall be classified within operating activities in the statement of cash flows

2.2.1 KIFRS 1116 *Leases (cont'd)*

KIFRS 1116 requires the Group to apply KIFRS 1036 *Impairment of Assets* to determine whether the right-of-use asset is impaired. This supersedes the previous requirement to recognise a provision for a loss-bearing contract.

As permitted by KIFRS 1116, the Group will apply a method of recognising lease payments on a straight-line basis for short-term leases (leases with a lease term of 12 months or less) and leases of 'low-value' assets (e.g. personal computers, small office furniture).

Finance lease
The main difference between KIFRS 1116 and KIFRS 1017 regarding assets in a finance lease arises from the measurement of the residual value guarantees that the lessee provides to the lessor. Under KIFRS 1116, the Group recognizes the amount expected to be payable by the lessee under residual value guarantees, rather than the maximum guarantees required by KIFRS 1017, in the measurement of lease liability. At the date of initial application, the Group will present separately the finance lease assets included in property, plant and equipment as separate items for the right-of-use asset.

As of December 31, 2018, the Group expects these changes will not significantly affect the amounts recognized in the Group's financial statements.

(d) Group as a lessor

Lessors will continue to classify all leases using the same classification principle as in KIFRS 1017 and distinguish between two types of leases: operating and finance leases. However, the disclosure requirements under KIFRS 1116 have been revised and extended in relation to how the lessor manages the risk for all rights it retains in the leased asset.

In accordance with the KIFRS 1116, an intermediate lessor accounts for a head lease and a sublease in two separate contracts and classifies the lease as a finance lease or operating lease depending on the leased asset that arises from the head lease (a sublease is classified depending on the underlying assets under KIFRS 1017).

Due to these changes, the Group will reclassify some of its sublease contacts into finance leases. In accordance with KIFRS 1109 *Financial Instruments*, the Group will recognise a loss allowance for expected credit losses for financial lease receivables. Lease assets will be derecognised and finance lease receivables recognised, and the change in accounting will change the timing of the recognition of the related revenue (recognised as a financial gain).

The Group is analyzing the effects on the financial statements, and will apply these amendments when they become effective.

2.2.2 Amendments to KIFRS 1109: *Prepayment Features with Negative Compensation*

Under KIFRS 1109, a debt instrument can be measured at amortised 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 the 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.

The amendments should be applied retrospectively and are effective from January 1, 2019, with earlier application permitted.

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

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

2.2.4 Amendments to KIFRS 1019: *Plan Amendment, Curtailment or Settlement*

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 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
- Determine 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).

The amendments also clarify that an entity first determines any past service cost, or a gain or loss on settlement, without considering the effect of the asset ceiling. This amount is recognised in profit or loss. An entity then determines the effect of the asset ceiling after the plan amendment, curtailment or settlement. Any change in that effect, excluding amounts included in the net interest, is recognised in other comprehensive income.

The amendments apply to plan amendments, curtailments, or settlements occurring on or after the beginning of the first annual reporting period that begins on or after January 1, 2019, with early application permitted. These amendments will apply only to any future plan amendments, curtailments, or settlements of the Group.

2.2.5 Amendments to KIFRS 1028: *Long-term interests in associates and joint ventures*

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, recognised as adjustments to the net investment in the associate or joint venture that arise from applying KIFRS 1028 *Investments in Associates and Joint Ventures.*

The amendments should be applied retrospectively and are effective from January 1, 2019, with early application permitted. Since the Group does not have such long-term interests in its associate and joint venture, the amendments will not have an impact on its financial statements.

2.2.6 IFRIC Interpretation 23 *Uncertainty over Income Tax Treatment*

The Interpretation addresses the accounting for income taxes when tax treatments involve uncertainty that affects the application of KIFRS 1012 and 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 should be followed. The interpretation is effective for annual reporting periods beginning on or after January 1, 2019, but certain transition reliefs are available. The Group will apply the interpretation from its effective date.

2.2.7 Annual Improvements 2015-2017 Cycle (issued in December 2017)

These improvements include:

- **KIFRS 1103 *Business Combinations***

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.

An entity 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 January 1, 2019, with early application permitted. These amendments will apply on future business combinations of the Group.

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. An entity 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. These amendments are currently not applicable to the Group but may apply to future transactions.

- **KIFRS 1111 *Joint Arrangements***

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. An entity 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. These amendments are currently not applicable to the Group but may apply to future transactions.

2.2.7 Annual Improvements 2015-2017 Cycle (issued in December 2017) (cont'd)

- **KIFRS 1012 *Income Taxes***

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, an entity recognises the income tax consequences of dividends in profit or loss, other comprehensive income or equity according to where the entity originally recognised those past transactions or events. An entity applies those amendments for annual reporting periods beginning on or after January 1, 2019, with early application is permitted. When an entity first applies those amendments, it applies them to the income tax consequences of dividends recognised on or after the beginning of the earliest comparative period. Since the Group's current practice is in line with these amendments, the Group does not expect any effect on its financial statements.

- **KIFRS 1023 *Borrowing Costs***

The amendments clarify that an entity treats as part of general borrowings any borrowing originally made to develop a qualifying asset when substantially all of the activities necessary to prepare that asset for its intended use or sale are complete. An entity applies those 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. Since the Group's current practice is in line with these amendments, the Group does not expect any effect on its financial statements.

2.3 New and amended standards adopted by the Group

The Group applied KIFRS 1115 and KIFRS 1109 for the first time. The nature and effect of the changes as a result of adoption of these new accounting standards are described below.

Several other amendments and interpretations apply for the first time in 2018, but do not have an impact on the financial statements of the Group. The Group has not early adopted any standards, interpretations or amendments that have been issued but are not yet effective.

2.3.1 KIFRS 1115 *Revenue from Contracts with Customers*

KIFRS 1115 supersedes KIFRS 1011 Construction Contracts, KIFRS 1018 Revenue and related Interpretations and it applies, with limited exceptions, to all revenue arising from contracts with its customers. KIFRS 1115 establishes a five-step model to account for revenue arising from contracts with customers and requires that revenue be recognised at an amount that reflects the consideration to which an entity expects to be entitled in exchange for transferring goods or services to a customer.

KIFRS 1115 requires entities to exercise judgement, taking into consideration all of the relevant facts and circumstances when applying each step of the model to contracts with their customers. The standard also specifies the accounting for the incremental costs of obtaining a contract and the costs directly related to fulfilling a contract. In addition, the standard requires extensive disclosures.

The Group adopted KIFRS 1115 using the modified retrospective method of adoption with the date of initial application of January 1, 2018. Under this method, the standard can be applied either to all contracts at the date of initial application or only to contracts that are not completed at this date. The Group elected to apply the standard to only to contracts that are not completed as of January 1, 2018.

The cumulative effect of initially applying KIFRS 1115 is recognised at the date of initial application as an adjustment to the opening balance of retained earnings. Therefore, the comparative information was not restated and continues to be reported under KIFRS 1011, KIFRS 1018 and related Interpretations. The amendments has no significant effect on the Group's financial statements.

2.3.2 KIFRS 1109 *Financial Instruments*

KIFRS 1109 *Financial Instruments* replaces KIFRS 1039 *Financial Instruments: Recognition and Measurement* for annual eriods beginning on or after January 1, 2018, bringing together all three aspects of the accounting for financial instruments: classification and measurement; impairment; and hedge accounting. With the exception of hedge accounting, which the Group applied KIFRS 1109 prospectively, with an initial application date of January 1, 2018. The Group has not restated the comparative information, which continues to be reported under KIFRS 1039. Differences arising from the adoption of KIFRS 1109 have been recognised directly in retained earnings and other components of equity.The initial application of KIFRS 1109 resulted in an increase in retained earnings of ₩9,103 million and a decrease of ₩9,103 million in accumulated other comprehensive income in equity as of January 1, 2018.

(a) Classification and measurement

Except for the certain trade receivables, at initial recognition, a financial asset is measured at its fair value plus or minus, in the case of a financial asset not at fair value through profit or loss, transaction costs that are directly attributable to the acquisition or issue of the financial asset under KIFRS 1109.

Under KIFRS 1109, debt instruments are subsequently measured at fair value through profit or loss, amortised cost, or fair value through other comprehensive income. The classification is based on two criteria: the Group's business model for managing the assets; and whether the instruments' contractual cash flows represent 'solely payments of principal and interest' on the principal amount outstanding.

The following are the changes in the classification of the Group's debt instruments:

- Debt instruments at amortised cost that pass the SPPI test and in a business model whose objective is achieved by by collecting contractual cash flows. This category includes trade and other receivables, loans that are included in other non-current financial assets.

- Debt instruments at fair value through other comprehensive income in which derecognition gain and losses are reclassified to profit or loss. Financial assets in this category include its debt instruments that meet SPPI criterion under a business model whose objective is achieved by both collecting contractual cash flows and selling financial assets

Other financial assets are classified and subsequently measured as follows:

- Equity instruments designated at fair value through other comprehensive income in which gain or losses on derecognition are not recycled to profit or loss.
  This category includes only those equity instruments that the Group intends to hold for the foreseeable future and that are initially recognised and that are irrevocable in the transaction. The Group classifies equity instruments as equity instruments designated at fair value through other comprehensive income. Equity instruments designated at fair value through other comprehensive income are not tested for impairment under KIFRS 1109. Under KIFRS 1039, the Group's equity instruments were classified as available-for-sale financial assets. In relation to equity instruments, impairment losses on available-for-sale financial assets that were recognised as retained earnings in the previous period were reclassified as accumulated other comprehensive income.

- Financial assets at fair value through profit or loss that consist of derivatives and quoted equity instruments that is not irrevocably designated as a financial asset as measured at fair value through other comprehensive income at initial recognition.
  This category includes debt instruments that do not pass the SPPI test or are not held in a business model whose objective is achieved by collecting contractual cash flows or whose objective is achieved by both collecting contractual cash flows and selling financial assets.

2.3.2 KIFRS 1109 *Financial Instruments* (cont'd)

The assessment of the Group's business model was made as of the date of initial application, January 1, 2018, and then applied retrospectively to those financial assets that were not derecognised before January 1, 2018. The assessment of whether contractual cash flows on debt instruments are solely comprised of principal and interest was made based on the facts and circumstances as of the initial recognition of the assets.

The accounting for the Group's financial liabilities is mostly consistent with those under KIFRS 1039. Similar to the requirements of KIFRS 1039, KIFRS 1109 requires contingent consideration to be accounted for as a financial instrument measured at fair value in which changes in fair value recognised in the statement of comprehensive income.

Under KIFRS 1109, embedded derivatives are no longer separated from the host contract. Instead, financial assets are classified on the basis of contractual definitions and our business model.

The accounting for derivative embedded in non-financial host contract has not changed from the requirements of KIFRS 1039

In summary, upon the adoption of KIFRS 1109, the Group had the following required or elected reclassifications as at January 1, 2018 (Korean won in millions):

	KIFRS 1109 measurement category							
Classification		Total		Fair value through profit or loss		Amortised cost		Fair value through OCI
KIFRS 1039 measurement category								
Loans and receivables:								
Cash and cash equivalents	₩	33,389	₩	5,000	₩	28,389	₩	-
Trade and other receivables		729,111		-		729,111		-
Loans		26,378		-		26,378		-
Short-term financial instruments		10,000		-		10,000		-
Available for sale		133,833		-		-		133,833
Holding-to-maturity financial assets		496		-		496		-
	₩	933,207	₩	5,000	₩	794,374	₩	133,833

(b) Impairment

The adoption of KIFRS 1109 has fundamentally changed the Group's accounting for impairment losses for financial assets by replacing KIFRS 1039's incurred loss approach with a forward-looking expected credit loss (ECL) approach. KIFRS 1109 requires the Group to recognise an allowance for ECLs for all debt instruments not held at fair value through profit or loss and contract assets.

KIFRS 1109 requires the Group to recognise provisions for expected credit losses on loans and other debt instruments that are not measured at fair value through profit or loss.

ECLs are based on the difference between the contractual cash flows due in accordance with the contract and all the cash flows that the Group expects to receive, discounted at an approximation of the original effective interest rate.

2.3.2 KIFRS 1109 *Financial Instruments* (cont'd)

For contract assets, account receivables and other receivables, the Group applies a simplified approach in calculating ECLs. Therefore, the Group does not track changes in credit risk, but instead recognises a loss allowance based on lifetime ECLs at each reporting date. The Group has established a provision matrix that is based on its historical credit loss experience, adjusted for forward-looking factors specific to the debtors and the economic environment.

The Group considers a financial asset in default when contractual payments are 90 days past due. However, in certain cases, the Group may also consider a financial asset to be in default when internal or external information indicates that the Group is unlikely to receive the outstanding contractual amounts in full before taking into account any credit enhancements held by the Group.

(c) Hedge accounting

Although KIFRS 1109 maintains the mechanics of hedge accounting as set out under KIFRS 1039, it has changed the hedge accounting requirements of KIFRS 1039 to a principle-based manner that focuses on the entity's risk management activities.

The effect of these changes has expanded the hedged item and hedging instrument, and the hedge accounting requirements were mitigated by the elimination of the conditions for hindsight and quantitative assessment of whether there is actually a high hedge effectiveness (80 to 125 percent).

(d) Other adjustments

In addition to the adjustments described above, upon adoption of KIFRS 1109, other items of the primary financial statements such as deferred taxes, investment in an associate and a joint venture (arising from the financial instruments held by these entities), income tax expense, non-controlling interests and retained earnings were adjusted as necessary.

2.3.3 Amendments to KIFRS 2122 *Foreign Currency Transactions and Advance Consideration*

The Interpretation clarifies that, in determining the spot exchange rate to use on initial recognition of the related asset, expense or income (or part of it) on the derecognition of a non-monetary asset or non-monetary liability relating to advance consideration, the date of the transaction is the date on which an entity initially recognises the non-monetary asset or non-monetary liability arising from the advance consideration. If there are multiple payments or receipts in advance, then the entity must determine the transaction date for each payment or receipt of advance consideration. The amendments has no effect on the Group's consolidated financial statements.

2.3.4 Amendments to KIFRS 1040 *Investment Property* - Transfers of Investment Property

The amendments clarify when an entity should transfer property, including property under construction or development into, or out of investment property. The amendments state that a change in use occurs when the property meets, or ceases to meet, the definition of investment property and there is evidence of the change in use. A mere change in management's intentions for the use of a property does not provide evidence of a change in use. The amendments has no effect on the Group's financial statements.

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

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

2.3.5 Amendments to KIFRS 1102 *Share-based Payment - Classification and Measurement of Share-based Payment Transactions* (cont'd)

The Group's accounting policy for cash-settled share based payments is consistent with the approach clarified in the amendments. In addition, the Group has no share-based payment transaction with net settlement features for withholding tax obligations and had not made any modifications to the terms and conditions of its share-based payment transaction. Therefore, these amendments do not have any impact on the Group's financial statements.

2.3.6 Amendments to KIFRS 1028 *Investments in Associates and Joint Ventures - Clarification that measuring investees at fair value through profit or loss is an investment-by-investment choice*

The amendments clarify that:

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

The amendments has no effect on the Group's financial statements.

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

Short-term exemptions in paragraphs E3–E7 of KIFRS 1101 were deleted because they have now served their intended purpose. This amendment is not applicable to the Group

2.4 Summary of significant accounting policies

The significant accounting policies under KIFRS followed by the Group in the preparation of its consolidated financial statements are summarized below. Unless stated otherwise, these accounting policies have been applied consistently to the financial statements for the current period and accompanying comparative periods.

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 based on the fair value of the consideration given in exchange for assets. The Group's significant accounting policies are as follows.

2.4.1 Basis of consolidation

The consolidated financial statements incorporate the financial statements of the Company and entities (including special-purpose entities) controlled by the Company (its subsidiaries). Control is achieved where an entity has the power to govern the financial and operating policies of an entity so as to obtain benefits from its activities.

Gain and loss on subsidiaries acquired or disposed of during the year are included in the consolidated statements of comprehensive income from the effective date of acquisition and up to the effective date of disposal, as appropriate. The carrying amounts of non-controlling interests are the amount to be reflected of the changes in their relative interests in the subsidiary. Total comprehensive income of subsidiaries is attributed to the non-controlling interests even if this results in the non-controlling interests having a deficit balance.

If a member of the Group uses accounting policies other than those adopted in the consolidated financial statements for like transactions and events in similar circumstances, appropriate adjustments are made to that group member's financial statements in preparing the consolidated financial statements to ensure conformity with the Group's accounting policies. When necessary, adjustments are made to the financial statements of subsidiaries to bring their accounting policies into line with those used the Company.

All intragroup transactions, balances, income and expenses are eliminated in full upon consolidation for the years ended December 31, 2018 and 2017.

Changes in the Company's ownership interests in subsidiaries that do not result in the Company losing control over the subsidiaries are accounted for as equity transactions. The carrying amounts of the Company'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 Company.

When the Company loses control of a subsidiary, the 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 amount 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 other comprehensive income and accumulated in equity, the amounts previously recognized in other comprehensive income and accumulated in equity are accounted for as if the Company had directly disposed 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 recognized as the fair value on initial recognition for subsequent accounting under KIFRS 1039 *Financial Instruments: Recognition and Measurement* or, when applicable, the cost on initial recognition of an investment in an associate or a jointly controlled entity.

2.4 Summary of significant accounting policies (cont'd)

2.4.2 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 acquisition-date 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 KIFRS 1012 *Income Taxes* and KIFRS *1019 Employee Benefits* respectively;
- The acquirer shall measure a liability or an equity instrument related to share-based payment transactions of the acquiree or the replacement of an acquiree's share-based payment transactions with share-based payment transactions of the acquirer in accordance with the method in KIFRS 1102 *Share-based Payment* at the acquisition date.
- Assets (or disposal groups) that are classified as held for sale in accordance with KIFRS 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 the consideration transferred, the amount of any non-controlling interests in the acquiree, and 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, net of the acquisition-date amounts of the identifiable assets acquired and liabilities assumed exceeds the sum of the consideration transferred, the amount of any non-controlling interests in the acquiree and the fair value of the acquirer's previously held interest in the acquiree (if any), the excess is recognized immediately in profit or loss as a bargain purchase gain.

Non-controlling interest that is present on acquisition day and if it entitles the holder to a proportionate share of the entity's net assets in an event of a liquidation, the non-controlling interest may be initially measured either at fair value or at the non-controlling interest's proportionate share of the recognized amounts of the acquiree's identifiable net assets. The choice of measurement can be elected 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 other KIFRSs.

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. Contingent consideration that is classified as an asset or a liability is remeasured at subsequent reporting dates in accordance with KIFRS 1039 *Financial Instruments: Recognition and Measurement*, or KIFRS 1037 *Provisions, Contingent Liabilities and Contingent Assets*, as appropriate, with the corresponding gain or loss being recognized in profit or loss.

2.4 Summary of significant accounting policies (cont'd)

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 (i.e. the date when the Group obtains control) 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 other comprehensive income are reclassified to profit or loss where such treatment would be appropriate if that interest 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.

2.4.3 Investments in associates (Equity-accounted investees)

An associate is an entity over which the Group has significant influence and that is neither a subsidiary nor an interest in a joint venture.

The existence of significant influence by an entity is usually evidenced in one or more of the following ways: ① representation on the Board of Directors or equivalent governing body of the investee; ② participation in policy-making processes, including participation in decisions about dividends or other distributions; ③ material transactions between the entity and its investee; ④ interchange of managerial personnel; or ⑤ provision of essential technical information.

The results and assets and liabilities of associates 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 KIFRS 1105 *Non-current Assets Held for Sale and Discontinued Operations*. Under the equity method, an investment in an associate is initially recognized in the consolidated statement of financial position at cost and adjusted thereafter to recognize the Group's share of the profit or loss and other comprehensive income of the associate. When the Group's share of losses of an associate exceeds the Group's interest in that associate (which includes any long-term interests that, in substance, form part of the Group's net investment in the associate), the Group discontinues recognizing its share of further losses. 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.

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 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.

The requirements of KIFRS 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. When necessary, the entire carrying amount of the investment (including goodwill) is tested for impairment in accordance with KIFRS 1036 *Impairment of Assets* as a single asset by comparing its recoverable amount (higher of value in use and fair value less costs to sell) with its carrying amount, any impairment loss recognized forms part of the carrying amount of the investment. Any reversal of that impairment loss is recognized in accordance with KIFRS 1036 to the extent that the recoverable amount of the investment subsequently increases.

When the Group transacts with its associate, incomes and losses resulting from the transactions with the associate are recognized in the Group's consolidated financial statements only to the extent of interests in the associate that are not related to the Group.

2.4 Summary of significant accounting policies (cont'd)

2.4.4 Investments in joint ventures

A joint venture is a contractual arrangement whereby the Group and other parties undertake an economic activity that is subject to joint control (i.e. when the strategic financial and operating policy decisions relating to the activities of the joint venture require the unanimous consent of the parties sharing control). Joint venture arrangements that involve the establishment of a separate entity in which each venturer has an interest are referred to as jointly controlled entities.

When the Group performs the economic activities according to the joint arrangement, its share of any liabilities incurred jointly by the Group and other joint ventures is recognized in the financial statement of the relevant entity and classified by nature. Any liabilities and expenses incurred jointly by the Group and other joint ventures are accounted for by accrual principle. Among the output of the joint venture, revenue from sales and use of interests of the Group and interests in expenses occurred by joint venture is recognized to the extent that it is probable that the economic benefits will flow to the Group and the revenue can be reliably measured.

The Group reports its interests in jointly controlled entities using the equity method, except when the investment is classified as held for sale, in which case it is accounted for in accordance with KIFRS 1105 *Non-current Assets Held for Sale and Discontinued Operations*.
Any goodwill arising on the acquisition of the Group's interest in a jointly controlled entity is accounted for in accordance with the Group's accounting policy for goodwill arising in a business combination.

When the Group transacts with its jointly controlled entity, income and loss resulting from jointly controlled entities are recognized in the Group's consolidated financial statements only to the extent of interests in the jointly controlled entity that are not related to the Group.

2.4.5 Goodwill

Goodwill generated by business combinations is measured at cost at acquisition date less any accumulated impairment losses. For the purpose of impairment testing, goodwill acquired in a business combination is, from the acquisition date, allocated to each of the Group's cash generating units (CGUs) that are expected to benefit from the combination, irrespective of whether other assets or liabilities of the acquiree are assigned to those units.

Goodwill is tested for impairment annually and when circumstances indicate that the carrying value may be impaired. Impairment is determined for goodwill by assessing the recoverable amount of each CGU (or group of CGUs) to which the goodwill relates. When the recoverable amount of the CGU is less than its carrying value, an impairment loss is recognized to goodwill and then other assets proportionately. Impairment losses related to goodwill cannot be reversed in the future periods.

When disposing of CGUs, the related goodwill amount is considered in determining gain or loss from disposal.

Accounting policy for goodwill from acquisition of related company is explained in Note 2 (investments in associates)

2.4.6 Cash and cash equivalents

Cash and cash equivalents in the statement of financial position comprise cash at banks and on hand and short-term deposits with a maturity of three months or less.

2.4 Summary of significant accounting policies (cont'd)

2.4.7 Non-current assets held for sale

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

In case that the Group is committed to a sale plan involving loss of control of a subsidiary shall classify all the assets and liabilities of that subsidiary as held for sale when the criteria set out before, regardless of whether the entity will retain a non-controlling interest in its former subsidiary after the sale.

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

2.4.8 Revenue from contracts with customers

The Group recognizes revenue by applying a five-step revenue recognition model a five-step revenue recognition model is applied to all types of contracts (① Identifying the contract → ② Identifying performance obligation→ ③ Determining the transaction price → ④ Allocating the transaction price to performance obligations→ ⑤ Recognizing recognition when satisfying a performance obligation).

Identify the performance obligations in the contract
The electricity supply in the Korea Power Exchange pursuant to the Electricity Market Rule is identified as a series of distinct goods or services as a single performance obligation. In addition to power supply, the Group is engaged in contracts with customers to provide power generation byproducts, power generation related services, and heat supply, and identifies distinct performance obligations for each contract.

The performance obligations over time
The Group provides customers with power supply, plant operation and management service, power generation operation system and technical service over time. The Group recognizes revenues according to the progress depicted the Group's performance in transferring control of goods or services on a reasonable basis.

Customers are required to make and use assets that are controlled by the customer at the same time as the Group performs the benefits provided by the performance of the Group, If the entity does not have a substitute purpose and the entitlement to be paid for the portion that has been completed up to now is recognized by the entity, the entity can recognize the profit by applying the progress criteria.

Variable consideration
An amount of consideration can vary because of discounts, rebates, refunds, credits, price concessions, incentives, performance bonuses, penalties or other similar items. Transfer price consists of fixed and variable consideration when variable consideration is included in and the Compnay estimates an amount of variable consideration by using either of the expected value or the most likely amount. The Group shall include in the transaction price some or all of an amount of variable consideration estimated to the extent that it is highly probable that a significant reversal in the amount of cumulative revenue recognised will not occur when the uncertainty associated with the variable consideration is subsequently resolved. The amount of consideration received (or receivable) for which the Group does not expect to be entitled shall be recognized as a refund liability.

2.4 Summary of significant accounting policies (cont'd)

Allocating the transaction price

The Group allocates the transaction price to each performance obligation identified in a contract on a relative stand-alone selling price basis. The Group will use the ' Adjusted market assessment approach' to estimate the stand-alone selling price of each performance obligation and will use the 'Expected cost plus a margin approach', which forecasts its expected costs of satisfying a performance obligation and then adds an appropriate margin for that good or service excpetionally for some transaction.

2.4.9 Lease

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.

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.

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 statement of financial position as a finance lease obligation.

Lease payments are apportioned between finance expenses and reduction of the lease obligation so as to achieve a constant rate of interest on the remaining balance of the liability. Finance expenses are recognized immediately in profit or loss, unless they are directly attributable to qualifying assets, in which case they are capitalized in accordance with the 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.

2.4.10 Foreign currencies

The individual financial statements of each subsidiary 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 entity are expressed in Korean won which is the functional currency of the Group and the presentation currency for the consolidated financial statements.

Transactions in foreign currencies are initially recorded by the Group entities at their respective functional currency spot rates at the date the transaction first qualifies for recognition. Monetary assets and liabilities denominated in foreign currencies are retranslated at the functional currency spot rate of exchange at the reporting date. Non-monetary items that are measured in terms of historical cost in a foreign currency are translated using the exchange rates as at the dates of the initial transactions. Non-monetary items measured at fair value in a foreign currency are translated using the exchange rates at the date when the fair value is determined.

2.4 Summary of significant accounting policies (cont'd)

Differences arising on settlement or translation of monetary items are recognized in profit or loss except for:

(a) 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
(b) exchange differences on transactions entered into in order to hedge certain foreign currency risks; and
(c) exchange differences on monetary items receivable from or payable to a foreign operation for which settlement is neither planned nor likely to occur (therefore forming part of the net investment in the foreign operation), which are recognized initially in other comprehensive income and reclassified from equity to profit or loss on disposal or partial disposal of the net investment.

For the purpose of presenting consolidated financial statements, the assets and liabilities of the Group's foreign operations are expressed in Korean won using exchange rates prevailing at the end of the reporting period. Income and expense items are translated at the average exchange rates for the period, unless exchange rates fluctuated significantly during that period, in which case the exchange rates at the dates of the transactions are used. Exchange differences arising, if any, are recognized in other comprehensive income and accumulated in equity (attributed to non-controlling interests as appropriate).

On the disposal of a foreign operation (i.e. a disposal of the Group's entire interest in a foreign operation, or a disposal involving loss of control over a subsidiary that includes a foreign operation, loss of joint control over a jointly controlled entity that includes a foreign operation, or loss of significant influence over an associate that includes a foreign operation), all of the accumulated exchange differences in respect of that operation attributable to the Group are reclassified to profit or loss. Any exchange differences that have previously been attributed to non-controlling interests are derecognized, but they are not reclassified to profit or loss.

In addition, in relation to a partial disposal of a subsidiary that does not result in the Group losing control over the subsidiary, the proportionate share of accumulated exchange differences are re-attributed to non-controlling interests and are not recognized in profit or loss. For all other partial disposals (i.e. partial disposals of associates or jointly controlled entities that do not result in the Group losing significant influence or joint control), the proportionate share of the accumulated exchange differences is reclassified to profit or loss.

Goodwill and fair value adjustments on identifiable assets and liabilities acquired arising on the acquisition of a foreign operation are treated as assets and liabilities of the foreign operation and translated at the rate of exchange prevailing at the end of each reporting period. Exchange differences arising are recognized in equity.

2.4.11 Borrowing costs

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

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

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

2.4 Summary of significant accounting policies (cont'd)

2.4.12 Government grants

Government grants are not recognized until there is reasonable assurance that the Group will comply with the conditions attached to the grants and that the receipt of the grants are probable.

A benefit from a government loan at a below-market interest rate 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, which are conditional to the Group purchasing, constructing or otherwise acquiring non-current assets, are recognized as deductions for related assets in the consolidated statements of financial position and transferred to profit or loss over the estimated useful lives of the related assets.

Government grants are recognized in the consolidated statements of comprehensive income over the periods in which the Group recognizes the related costs, for which the grants are intended to compensate as expense.

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.

2.4.13 Pension benefit obligation

For defined contribution plans, payments to defined contribution plan are recognized as costs when the employees provide with the service to the Group.

For defined benefit pension plans, employee benefit liability is actuarially determined using the projected unit credit method performed by the independent actuarial company at each reporting date. The present value of the pension obligation is discounted expected future cash flows, and discount rate is the market rate of high grade corporate bonds with similar maturity of the time when pension obligation will be paid. When there is no market with a wide spectrum for such corporate bonds, the market rate of public bond is used as at reporting date.

Re-measurements, comprising of actuarial gains and losses, which are occurred by change in actuarial assumption, and difference of actuarial assumption from actual result, are recognized immediately in the statement of financial position with a corresponding debit or credit to retained earnings through OCI in the period in which they occur. Re-measurements are not reclassified to profit or loss in subsequent periods. Past service costs are recognized in profit or loss immediately or amortized on a straight-line basis over the average remaining period until the benefits become vested.

The retirement benefit obligation recognized in the consolidated statement of financial position represents the present value of the defined benefit obligation as adjusted for unrecognized actuarial gains and losses and unrecognized past service cost, and as reduced by the fair value of plan assets. Any asset resulting from this calculation is limited to unrecognized actuarial losses and past service cost, plus the present value of available refunds and reductions in future contributions to the plan.

2.4.14 Income tax

Income tax consists of current tax and deferred tax.

Current tax
The tax currently payable is based on taxable income for the year. Taxable income differs from income as reported in the consolidated statement 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.

2.4 Summary of significant accounting policies (cont'd)

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 income. Deferred tax liabilities are generally recognized for all taxable temporary differences. Deferred tax assets are generally recognized for all deductible temporary differences to the extent that it is probable that taxable income 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 income nor the accounting income.

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 that it is probable that there will be sufficient taxable income against which to utilize the benefits of the temporary differences 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 that it is no longer probable that sufficient taxable income will be available to allow all or part of the asset to be recovered.

Deferred tax assets and liabilities are measured at the tax rates that are expected to apply in the period in which the liability is settled or the asset realized, based on tax rates (and tax laws) that have been enacted or substantively enacted by the end of the reporting period. The measurement of deferred tax liabilities and assets reflects the tax consequences that would follow from the manner in which the 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 deferred tax liabilities are offset if a legally enforceable right exists to set off current tax assets against current income tax liabilities and the deferred taxes relate to the same taxable entity and the same taxation authority.

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

2.4.15 Property, plant and equipment

Property, plant and equipment is stated at cost, net of accumulated depreciation and accumulated impairment losses, if any.

Such cost comprises its purchasing price and construction cost including the cost 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 the present value of the expected cost for the decommissioning of an asset after its use is included in the cost of the respective asset if the recognition criteria for a provision are met.

Subsequent costs are recognized in carrying amount of a separate asset or as an 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 and carrying value of replaced part is removed. Routine maintenance and repairs are expensed as incurred.

2.4 Summary of significant accounting policies (cont'd)

Property, plant and equipment, except for land, is depreciated using the straight-line method based on the estimated useful years of the assets as follows:

	Years
Buildings	12 ~ 34
Structures	22 ~ 30
Machinery	6 ~ 24
Vehicles	3 ~ 8
Finance lease assets	8 ~ 30
Others	4 ~ 5

If the cost of a part of property, plant and equipment is significant compared to the overall total cost of the property, plant and equipment, the cost of the part is separately depreciated from the related property, plant and equipment.

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 expectation differs from previous estimates, the changes were accounted for as a change in an accounting estimate.

Property, plant and equipment is derecognized on disposal, or when no future economic benefits are expected from its use or disposal. Gains or losses arising from derecognition of an item of property, plant and equipment, 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.

2.4.16 Intangible assets

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. Amortization of intangible assets is provided using the straight-line method over the estimated useful life of the assets as follows:

	Years
Industrial rights	10
Usable and profitable donated assets	10, 20
Software	5
Others	20

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. An internally-generated intangible asset arising from development (or from the development phase of an internal project) is recognized if, and only if, all of the following have been demonstrated:

- the fact that result of development plan is for development of a new product or substantial upgrade of product function;
- the technical and commercial feasibility of completing the intangible asset so that it will be available for use or sale;
- the ability to measure reliably the expenditure 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 listed above. When the development expenditure does not meet the criteria listed above, an internally-generated intangible asset cannot be recognized and the expenditure is recognized in profit or loss in the period in which it is incurred.

2.4 Summary of significant accounting policies (cont'd)

Internally-generated intangible assets are presented at cost less accumulated amortization and accumulated impairment losses.

Intangible assets acquired in a business combination
Intangible assets that are acquired in a business combination are recognized separately from goodwill 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.

Derecognition of intangible assets
An intangible asset is derecognized on disposal, or when no future economic benefits are expected from its use or disposal. 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.

2.4.17 Impairment of property, plant, equipment and intangible assets excluding goodwill

At the end of each reporting period, the Group reviews the carrying amounts of its tangible and intangible assets with definite useful lives 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). The Group estimates the recoverable amount by an individual asset and where 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 regardless of an indication that the asset may be impaired.

Recoverable amount is the higher of fair value less costs to sell and value in use. If the recoverable amount of an asset (or a 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 an impairment loss is recognized immediately in profit or loss.

When 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 so that 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 cash-generating unit) in prior years. A reversal of an impairment loss is recognized immediately in profit or loss.

2.4.18 Inventories

Inventories are stated at the lower of cost and net realizable value. Cost of inventories, except for those in transit, are measured under the 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.

The carrying amount of inventories sold in the period and the amount of any write-down of inventories to net realizable value and all losses of inventories in the period are recognized as an expense during the period. Also the amount of any reversal in the period of any write-down of the inventories, arising from an increase in net realizable value, is recognized as deduction of expense during the period.

2.4 Summary of significant accounting policies (cont'd)

2.4.19 Provisions

Provisions are recognized when the Group has a present obligation (legal or constructive) as a result of a past event, it is probable that the Group 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. Where the effect of the time value of money is material, a provision is measured at the present value of the expected future cash flows. The discount rate is pretax interest rate reflecting risks specific to the liability and the current market assessment of the time value of money. Increase in provision pursuant to passage of time is recognized as finance cost at the time of occurrence in the statements of comprehensive income.

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.

Employee bonuse
The Group pays bonuses to its employee based on the result of performance evaluation of the Group from the Ministry of Strategy and Finance. The Group reasonably estimates the amount of bonuses and accounts for provision for employee bonuses in accordance with KIFRS 1037.

Provision for Renewable Portfolio Standard (RPS)
The Group is obligated to produce and supply certain amount of energies from renewable energy sources such as solar, wind and biomass in accordance with the *Act on the Promotion of the Development and Use of New and Renewable Sources of Energy*. As at December 31, 2017, the Group recognized provision for RPS for the amount not executed.

Emission rights and emission liabilities
The Group is allocated emission allowances free of charge by the government in accordance with the *Act on Allocation and Trading of Emission Allowances* in the Republic of Korea. The emission allowances are allocated to the Group annually for the planned periods, and the Group is to deliver the equivalent quantity of emission allowances for actual emission to the government.

The Group measures the emission allowances that it receives from the government free of charge at nil, and measures any purchased emission allowances at cost.

In addition, emission allowances are derecognized in the financial statements when they are delivered to the government or sold.

Where any unused allocated emission allowances after their delivery to the government, are sold, a gain or loss on disposal of the allocated emission allowances is subtracted from the cost of emissions; where emission allowances purchased are sold, the gain or loss on disposal is classified as non-operating income or expense; where the allocated emission allowances are sold when it is uncertain whether to achieve a reduction of emissions through the use of emission trading scheme, a difference between the book value and net sales price is recognized as deferred revenue which is offset against the cost of emissions over the period in which the allocated emission allowances pertain to.

A liability (emission obligation) is recognized only where actual emissions exceed the allocated emission allowances, and the cost of emissions is recognized as an operating cost. The liability is measured by adding the following (1) and (2).

(1) The book value of emission allowances for the year to be delivered to the government
(2) The best estimate of expenditures, as at the end of a reporting period, in performing emission obligations exceeding the above emission allowances

2.4 Summary of significant accounting policies (cont'd)

Where the Group borrows a part of the allocated emission allowances for any of future periods to deliver to the government, it recognizes the borrowed portion as deferred revenue when derecognizing the liability, and offsets the deferred revenue against the actual cost of emission, as it purchases the emission allowances to fill any shortfall in the period which the borrowed emission allowances belong to.

2.4.20 Financial instruments – initial recognition and subsequent measurement

A financial instrument is any contract that gives rise to a financial asset of one entity and a financial liability or equity instrument of another entity.

1) Financial assets

Initial recognition and measurement

Financial assets are classified, at initial recognition, as subsequently measured at amortised cost, fair value through other comprehensive income (OCI), and fair value through profit or loss.

The classification of financial assets at initial recognition depends on the financial asset's contractual cash flow characteristics and the Group's business model for managing them. With the exception of trade receivables that do not contain a significant financing component or for which the Group has applied the practical expedient, the Group initially measures a financial asset at its fair value plus, in the case of a financial asset not at fair value through profit or loss, transaction costs. Trade receivables that do not contain a significant financing component or for which the Group has applied the practical expedient are measured at the transaction price determined under KIFRS 1115.

In order for a financial asset to be classified and measured at amortised cost or fair value through OCI, it needs to give rise to cash flows that are 'solely payments of principal and interest (SPPI)' on the principal amount outstanding. This assessment is referred to as the SPPI test and is performed at an instrument level.

The Group's business model for managing financial assets refers to how it manages its financial assets in order to generate cash flows. The business model determines whether cash flows will result from collecting contractual cash flows, selling the financial assets, or both.

Purchases or sales of financial assets that require delivery of assets within a time frame established by regulation or convention in the market place (regular way trades) are recognised on the trade date, i.e., the date that the Group commits to purchase or sell the asset.

Subsequent measurement

For purposes of subsequent measurement, financial assets are classified in four categories:

- Financial assets at amortised cost (debt instruments)
- Financial assets at fair value through OCI with recycling of cumulative gains and losses (debt instruments)
- Financial assets designated at fair value through OCI with no recycling of cumulative gains and losses upon
- Financial assets at fair value through profit or loss

2.4 Summary of significant accounting policies (cont'd)

Financial assets at amortised cost (debt instruments)
This category is the most relevant to the Group. The Group measures financial assets at amortised cost if both of the following conditions are met:

- The financial asset is held within a business model with the objective to hold financial assets in order to collect contractual cash flows

  And

- 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

Financial assets at amortised cost are subsequently measured using the effective interest (EIR) method and are subject to impairment. Gains and losses are recognised in profit or loss when the asset is derecognised, modified or impaired.

Financial assets at fair value through OCI (debt instruments)
The Group measures debt instruments at fair value through OCI if both of the following conditions are met:

- The financial asset is held within a business model with the objective of both holding to collect contractual cash flows and selling

  And

- 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

For debt instruments at fair value through OCI, interest income, foreign exchange revaluation and impairment losses or reversals are recognized in the statement of profit or loss and computed in the same manner as for financial assets measured at amortised cost. The remaining fair value changes are recognized in OCI. Upon derecognition, the cumulative fair value change recognized in OCI is recycled to profit or loss.

The Group's debt instruments at fair value through OCI includes investments in quoted debt instruments included under other non-current financial assets.

Financial assets designated at fair value through OCI (equity instruments)
Upon initial recognition, the Group can elect to classify irrevocably its equity investments as equity instruments designated at fair value through OCI when they meet the definition of equity under KIFRS 1032 Financial Instruments: Presentation and are not held for trading. The classification is determined on an instrument-by-instrument basis.

Gains and losses on these financial assets are never recycled to profit or loss. Dividends are recognised as other income in the statement of profit or loss when the right of payment has been established, except when the Group benefits from such proceeds as a recovery of part of the cost of the financial asset, in which case, such gains are recorded in OCI. Equity instruments designated at fair value through OCI are not subject to impairment assessment.

The Group elected to classify irrevocably its non-listed equity investments under this category.

2.4 Summary of significant accounting policies (cont'd)

Financial assets at fair value through profit or loss

Financial assets at fair value through profit or loss include financial assets held for trading and financial assets designated upon initial recognition at fair value through profit or loss. Financial assets are classified as held for trading if they are acquired for the purpose of selling or repurchasing in the near term. Derivatives, including separated embedded derivatives, are also classified as held for trading unless they are designated as effective hedging instruments. Financial assets with cash flows that are not solely payments of principal and interest are classified and measured at fair value through profit or loss, irrespective of the business model. Notwithstanding the criteria for debt instruments to be classified at amortised cost or at fair value through OCI, as described above, debt instruments may be designated at fair value through profit or loss on initial recognition if doing so eliminates, or significantly reduces, an accounting mismatch.

Financial assets at fair value through profit or loss are carried in the statement of financial position at fair value with net changes in fair value recognized in the statement of profit or loss.

A derivative embedded in a hybrid contract, with a financial liability or non-financial host, is separated from the host and accounted for as a separate derivative if: the economic characteristics and risks are not closely related to the host; a separate instrument with the same terms as the embedded derivative would meet the definition of a derivative; and the hybrid contract is not measured at fair value through profit or loss. Embedded derivatives are measured at fair value with changes in fair value recognised in profit or loss. Reassessment only occurs if there is either a change in the terms of the contract that significantly modifies the cash flows that would otherwise be required or a reclassification of a financial asset out of the fair value through profit or loss category.

A derivative embedded within a hybrid contract containing a financial asset host is not accounted for separately. The financial asset host together with the embedded derivative is required to be classified in its entirety as a financial asset at fair value through profit or loss.

Derecognition

A financial asset (or, where applicable, a part of a financial asset or part of a group of similar financial assets) is primarily derecognized (i.e., removed from the Group's consolidated statement of financial position) when:

- The rights to receive cash flows from the asset have expired, or
- The Group has transferred its rights to receive cash flows from the asset or has assumed an obligation to pay the received cash flows in full without material delay to a third party under a 'pass-through' arrangement; and either (a) the Group has transferred substantially all the risks and rewards of the asset, or (b) the Group has neither transferred nor retained substantially all the risks and rewards of the asset, but has transferred control of the asset

When the Group has transferred its rights to receive cash flows from an asset or has entered into a pass-through arrangement, it evaluates if, and to what extent, it has retained the risks and rewards of ownership. When it has neither transferred nor retained substantially all of the risks and rewards of the asset, nor transferred control of the asset, the Group continues to recognize the transferred asset to the extent of its continuing involvement. In that case, the Group also recognizes an associated liability. The transferred asset and the associated liability are measured on a basis that reflects the rights and obligations that the Group has retained.

2.4 Summary of significant accounting policies (cont'd)

Continuing involvement that takes the form of a guarantee over the transferred asset is measured at the lower of the original carrying amount of the asset and the maximum amount of consideration that the Group could be required to repay.

1) Impairment of financial assets

Further disclosures relating to impairment of financial assets are also provided in the following notes:

	Notes
➢ Disclosures for significant assumptions	3
➢ Debt instruments at fair value through OCI	16
➢ Trade receivables, including contract assets	20

The Group recognises an allowance for expected credit losses (ECLs) for all debt instruments not held at fair value through profit or loss. ECLs are based on the difference between the contractual cash flows due in accordance with the contract and all the cash flows that the Group expects to receive, discounted at an approximation of the original effective interest rate. The expected cash flows will include cash flows from the sale of collateral held or other credit enhancements that are integral to the contractual terms.

ECLs are recognised in two stages. For credit exposures for which there has not been a significant increase in credit risk since initial recognition, ECLs are provided for credit losses that result from default events that are possible within the next 12-months (a 12-month ECL). For those credit exposures for which there has been a significant increase in credit risk since initial recognition, a loss allowance is required for credit losses expected over the remaining life of the exposure, irrespective of the timing of the default (a lifetime ECL).

For trade receivables and contract assets, the Group applies a simplified approach in calculating ECLs. Therefore, the Group does not track changes in credit risk, but instead recognises a loss allowance based on lifetime ECLs at each reporting date. The Group has established a provision matrix that is based on its historical credit loss experience, adjusted for forward-looking factors specific to the debtors and the economic environment.

For debt instruments at fair value through OCI, the Group applies the low credit risk simplification. At every reporting date, the Group evaluates whether the debt instrument is considered to have low credit risk using all reasonable and supportable information that is available without undue cost or effort. In making that evaluation, the Group reassesses the internal credit rating of the debt instrument. In addition, the Group considers that there has been a significant increase in credit risk when contractual payments are more than 30 days past due.

The Group's debt instruments at fair value through OCI comprise solely of quoted bonds that are graded in the top investment category (Very Good and Good) by the Good Credit Rating Agency and, therefore, are considered to be low credit risk investments. It is the Group's policy to measure ECLs on such instruments on a 12-month basis. However, when there has been a significant increase in credit risk since origination, the allowance will be based on the lifetime ECL. The Group uses the ratings from the Good Credit Rating Agency both to determine whether the debt instrument has significantly increased in credit risk and to estimate ECLs.

The Group considers a financial asset in default when contractual payments are 90 days past due. However, in certain cases, the Group may also consider a financial asset to be in default when internal or external information indicates that the Group is unlikely to receive the outstanding contractual amounts in full before taking into account any credit enhancements held by the Group. A financial asset is written off when there is no reasonable expectation of recovering the contractual cash flows.

2.4 Summary of significant accounting policies (cont'd)

2) Financial liabilities

Initial recognition and measurement

Financial liabilities are classified, at initial recognition, as financial liabilities at fair value through profit or loss, loans and borrowings, payables, or as derivatives designated as hedging instruments in an effective hedge, as appropriate.

All financial liabilities are recognized initially at fair value and, in the case of loans and borrowings and payables, net of directly attributable transaction costs.

The Group's financial liabilities include trade and other payables, loans and borrowings including bank overdrafts, financial guarantee contracts and derivative financial instruments.

Subsequent measurement

The measurement of financial liabilities depends on their classification, as described below:

Financial liabilities at fair value through profit or loss

Financial liabilities at fair value through profit or loss include financial liabilities held for trading and financial liabilities designated upon initial recognition as of fair value through profit or loss.

Financial liabilities are classified as held for trading if they are incurred for the purpose of repurchasing in the near term. This category also includes derivative financial instruments entered into by the Group that are not designated as hedging instruments in hedge relationships as defined by KIFRS 1109. Separated embedded derivatives are also classified as held for trading unless they are designated as effective hedging instruments. Gains or losses on liabilities held for trading are recognized in the statement of profit or loss.

Financial liabilities designated upon initial recognition at fair value through profit or loss are designated at the initial date of recognition, and only if the criteria in KIFRS 1109 are satisfied. The Group has not designated any financial liability as of fair value through profit or loss.

Loans and borrowings

This is the category most relevant to the Group. After initial recognition, interest-bearing loans and borrowings are subsequently measured at amortized cost using the EIR method. Gains and losses are recognized in profit or loss when the liabilities are derecognized as well as through the EIR amortization process.

Amortized cost is calculated by taking into account any discount or premium on acquisition and fees or costs that are an integral part of the EIR. The EIR amortization is included as finance costs in the statement of profit or loss.

This category generally applies to interest-bearing loans and borrowings. For more information, refer to Note 16.

2.4 Summary of significant accounting policies (cont'd)

Derecognition

A financial liability is derecognized when the obligation under the liability is discharged or cancelled or expires. When an existing financial liability is replaced by another from the same lender on substantially different terms, or the terms of an existing liability are substantially modified, such an exchange or modification is treated as the derecognition of the original liability and the recognition of a new liability. The difference in the respective carrying amounts is recognized in the statement of profit or loss.

3) Offsetting of financial instruments

Financial assets and financial liabilities are offset and the net amount is reported in the consolidated statement of financial position if there is a currently enforceable legal right to offset the recognized amounts and there is an intention to settle on a net basis, to realize the assets and settle the liabilities simultaneously.

2.4.21 Derivative financial instruments

Initial recognition and subsequent measurement

The Group uses derivative financial instruments, such as forward currency contracts, interest rate swaps and forward commodity contracts, to hedge its foreign currency risks, interest rate risks and commodity price risks, respectively. Such derivative financial instruments are initially recognized at fair value on the date on which a derivative contract is entered into and are subsequently remeasured at fair value. Derivatives are carried as financial assets when the fair value is positive and as financial liabilities when the fair value is negative.

For the purpose of hedge accounting, hedges are classified as:

- Fair value hedges when hedging the exposure to changes in the fair value of a recognized asset or liability or an unrecognized firm commitment
- Cash flow hedges when hedging the exposure to variability in cash flows that is either attributable to a particular risk associated with a recognized asset or liability or a highly probable forecast transaction or the foreign currency risk in an unrecognized firm commitment
- Hedges of a net investment in a foreign operation

At the inception of a hedge relationship, the Group formally designates and documents the hedge relationship to which the Group wishes to apply hedge accounting and the risk management objective and strategy for undertaking the hedge.

Before January 1, 2018, the documentation includes identification of the hedging instrument, the hedged item or transaction, the nature of the risk being hedged and how the Group will assess the effectiveness of changes in the hedging instrument's fair value in offsetting the exposure to changes in the hedged item's fair value or cash flows attributable to the hedged risk. Such hedges are expected to be highly effective in achieving offsetting changes in fair value or cash flows and are assessed on an ongoing basis to determine that they actually have been highly effective throughout the financial reporting periods for which they were designated.

2.4 Summary of significant accounting policies (cont'd)

Beginning January 1, 2018, the documentation includes identification of the hedging instrument, the hedged item, the nature of the risk being hedged and how the Group will assess whether the hedging relationship meets the hedge effectiveness requirements (including the analysis of sources of hedge ineffectiveness and how the hedge ratio is determined). A hedging relationship qualifies for hedge accounting if it meets all of the following 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 Group actually hedges and the quantity of the hedging instrument that the Group actually uses to hedge that quantity of hedged item.

Hedges that meet the strict criteria for hedge accounting are accounted for, as described below:

Fair value hedges

The change in the fair value of a hedging derivative is recognized in the statement of profit or loss. The change in the fair value of the hedged item attributable to the risk hedged is recorded as part of the carrying value of the hedged item and is also recognized in the statement of profit or loss.

For fair value hedges relating to items carried at amortized cost, any adjustment to carrying value is amortized through profit or loss over the remaining term of the hedge using the EIR method. EIR amortization may begin as soon as an adjustment exists and no later than when the hedged item ceases to be adjusted for changes in its fair value attributable to the risk being hedged.

If the hedged item is derecognized, the unamortized fair value is recognized immediately in profit or loss.

When an unrecognized firm commitment is designated as a hedged item, the subsequent cumulative change in the fair value of the firm commitment attributable to the hedged risk is recognized as an asset or liability with a corresponding gain or loss recognized in profit and loss.

Cash flow hedges

The effective portion of the gain or loss on the hedging instrument is recognized in OCI in the cash flow hedge reserve, while any ineffective portion is recognized immediately in the statement of profit or loss. The cash flow hedge reserve is adjusted to the lower of the cumulative gain or loss on the hedging instrument and the cumulative change in fair value of the hedged item.

The Group uses forward currency contracts as hedges of its exposure to foreign currency risk in forecast transactions and firm commitments, as well as forward commodity contracts for its exposure to volatility in the commodity prices. The ineffective portion relating to foreign currency contracts is recognised as other expense and the ineffective portion relating to commodity contracts is recognised in other operating income or expenses.

Before January 1, 2018, the Group designated all of the forward contracts as hedging instrument. Any gains or losses arising from changes in the fair value of derivatives were taken directly to profit or loss, except for the effective portion of cash flow hedges, which were recognised in OCI and later reclassified to profit or loss when the hedge item affects profit or loss.

Beginning January 1, 2018, the Comapny designates only the spot element of forward contracts as a hedging instrument. The forward element is recognised in OCI and accumulated in a separate component of equity under cost of hedging reserve.

2.4 Summary of significant accounting policies (cont'd)

The amounts accumulated in OCI are accounted for, depending on the nature of the underlying hedged transaction. If the hedged transaction subsequently results in the recognition of a non-financial item, the amount accumulated in equity is removed from the separate component of equity and included in the initial cost or other carrying amount of the hedged asset or liability. This is not a reclassification adjustment and will not be recognised in OCI for the period. This also applies where the hedged forecast transaction of a non-financial asset or non-financial liability subsequently becomes a firm commitment for which fair value hedge accounting is applied.

For any other cash flow hedges, the amount accumulated in OCI is reclassified to profit or loss as a reclassification adjustment in the same period or periods during which the hedged cash flows affect profit or loss.

If cash flow hedge accounting is discontinued, the amount that has been accumulated in OCI must remain in accumulated OCI if the hedged future cash flows are still expected to occur. Otherwise, the amount will be immediately reclassified to profit or loss as a reclassification adjustment. After discontinuation, once the hedged cash flow occurs, any amount remaining in accumulated OCI must be accounted for depending on the nature of the underlying transaction as described above.

Hedges of a net investment
Hedges of a net investment in a foreign operation, including a hedge of a monetary item that is accounted for as part of the net investment, are accounted for in a way similar to cash flow hedges. Gains or losses on the hedging instrument relating to the effective portion of the hedge are recognized as OCI while any gains or losses relating to the ineffective portion are recognized in the statement of profit or loss. On disposal of the foreign operation, the cumulative value of any such gains or losses recorded in equity is transferred to the statement of profit or loss.
The Group uses a loan as a hedge of its exposure to foreign exchange risk on its investments in foreign subsidiaries.

3. Significant accounting estimate and assumptions

The Group makes assumptions and estimations concerning the future. Assumptions and estimations are verified continuously based on past experience and reasonably expected future events. This accounting estimation, however, could be different from actual results. Assumptions and estimations for significant risks which may cause adjustment to the carrying amounts of assets and liabilities are as follows:

3.1 Corporate taxes

The Group recognized expected corporate tax effect as current corporate tax expense and deferred corporate taxes using best estimation. Final corporate tax burden in the future, however, may not correspond with related assets or liabilities, which may cause changes in assets or liabilities at the time of confirmation of corporate tax effect.

The Group shall pay an additional surtax where the use of corporate earnings on qualifying investments, wage increase and dividend payments fall below a certain portion of its taxable income for 3 years from 2015. As the Group considers the surtax on its undistributed earnings when computing its corporate income tax, the Group's income tax may change due to changes in investment, wage growth or dividend payouts.

3.2 Fair value of financial instruments

When the fair values of financial assets and financial liabilities recorded in the statements of financial position cannot be measured based on quoted prices in active markets, their fair value is measured using valuation techniques including the DCF model. The Group selects various valuation methods and makes a judgment about assumptions based on key market circumstances as at the financial reporting date.

3.3 Provisions

The Group recognizes provisions for financial guarantees and obligations for not-supplying new renewable energy and so on. This provision is determined based on the historical experience and additional disclosures are described in Note 2 and 25.

3.4 Pension benefits

The present value of the defined benefit pension can change depending on various factors determined using actuarial valuations. Assumptions to determine pension cost (income) include discount rate, where changes in assumptions will result in changes in present value of the defined benefit pension. The Group has determined the discount rate every year-end which is defined as interest rate used to decide present value of expected future cash outflow. The Group determines discount rate considering discount rate of outstanding corporate bonds which have similar maturity with pension obligations. Other assumptions related with pension obligations are based on market circumstances. Additional disclosures are described in Note 24.

3.5 Impairment of non-financial assets

The Group assesses at the end of each reporting period whether there is any indication that an asset may be impaired. The Group performs an impairment test for goodwill and intangible assets with infinite useful lives at the end of each reporting period or when there is an indication of impairment of an asset. It is required to conduct an impairment test for other non-financial assets when there is an indication that carrying values go below recoverable amount. To calculate value in use, management needs to estimate the future expected cash flows from related assets or CGUs and choose proper rate to discount future expected cash flows.

4. Operating segment information

The Group is organized for management purposes as a single business unit based on the nature of goods and services provided and details of operating revenue and assets required in its operations are presented below.

The following table presents revenue and operating profit from the sole reportable segment for the years ended December 31, 2018 and 2017 (Korean won):

	2018	2017
Sales	₩4,972,783,619,468	₩4,669,824,083,859
Sales from external customers	4,972,783,619,468	4,669,824,083,859
Operating profit	58,638,198,130	422,570,095,071
Depreciation and amortization	646,653,542,195	613,940,192,858

The following table presents assets and liabilities for the sole reportable segment as of December 31, 2018 and 2017, respectively (Korean won):

	2018	2017
Total assets	₩8,812,076,955,053	₩8,926,565,686,345
Investment in associates	64,745,698,999	65,542,865,232
Investment in joint ventures	636,304,043,943	596,870,262,730
Acquisition of non-current assets (*)	444,214,363,198	429,445,484,985
Total liabilities	4,181,894,009,707	4,296,934,980,486

(*) Exclude financial assets and deferred tax assets.

The Group operates its principal business, the production and sale of electricity, in Republic of Korea. Geographical information for the years ended December 31, 2018 and 2017 of external customers and non-current assets as of December 31, 2018 and 2017 are as follows (Korean won):

	Revenue from external customers		Non-current assets (*2)	
	Dec. 31, 2018	Dec. 31, 2017	Dec. 31, 2018	Dec. 31, 2017
Domestic	₩4,941,865,028,827	₩4,645,418,849,982	₩7,167,754,105,213	₩7,374,498,438,568
Overseas (*1)	30,918,590,641	24,405,233,877	318,012,042,533	285,589,244,290
	₩4,972,783,619,468	₩4,669,824,083,859	₩7,485,766,147,746	₩7,660,087,682,858

(*1) The majority of sales and non-current assets derive from the US and Asia. Sales and non-current assets attributable to specific countries are not significant, and accordingly, no country specific information was disclosed separately.

(*2) Exclude financial assets and deferred tax assets.

Revenue from a single source representing 10% or more of the Group's total revenue amounts to ₩4,850, 207,284,579 and ₩4,451,163,182,811 (Note 43) for the years ended December 31, 2018 and 2017, respectively. There are no other customers having sales representing 10% or more of the Group's total revenue.

5. Cash and cash equivalents

Details of cash and cash equivalents as of December 31, 2018 and 2017 are as follows (Korean won):

	Dec.31, 2018	Dec.31, 2017
Other demand deposits	₩ 37,248,237,505	₩ 28,389,243,971
Current financial instruments classified as cash equivalents	-	5,000,000,000
	₩ 37,248,237,505	₩ 33,389,243,971

6. Financial assets restricted for use

Financial assets restricted for use as of December 31, 2018 and 2017 are as follows (Korean won):

	Dec.31, 2018	Dec.31, 2017
Other demand deposits (*)	₩ 14,462,014,235	₩ 8,769,184,133

(*) Other demand depostis defined as collateral for the Group's borrowing.

7. Financial assets and liabilities at fair value through profit or loss (including derivative assets and liabilities)

Details of financial assets and liabilities at fair value through profit or loss as of December 31, 2018 and 2017 are as follows (Korean won):

	Dec.31, 2018		Dec.31, 2017	
	Current	Non-current	Current	Non-current
Financial assets at fair value through profit or loss:	₩ 100,000,000	₩ -	₩ -	₩ -
Derivative assets	198,307,912	-	-	-
	₩ 298,307,912	₩ -	₩ -	₩ -
Financial liabilities at fair value through profit or loss:				
Derivative assets	₩ 31,961,954	₩ -	₩ 3,576,443,218	₩ -

Details derivative instruments as of December 31, 2018 and 2017 are as follows (Korean won and USD):

	Dec.31, 2018		Dec.31, 2017	
	Current	Non-current	Current	Non-current
Derivative assets:				
Currency forwards	₩ 198,307,912	₩ -	₩ -	₩ -
Currency swaps	-	-	-	-
	₩ 198,307,912	₩ -	₩ -	₩ -
Derivative liabilities:				
Currency forwards	₩ 31,961,954	₩ -	₩ 3,576,443,218	₩ -
Currency swaps	-	30,713,908,204	2,297,198,908	54,743,363,673
	₩ 31,961,954	₩ 30,713,908,204	₩ 5,873,642,126	₩ 54,743,363,673

7. Financial assets and liabilities at fair value through profit or loss (including derivative assets and liabilities) (cont'd)

Details of currency swaps as of December 31, 2018 are as follows (Korean won and USD):

Counterparty	Contract term	Contract amount: Sell (KRW)	Contract amount: Purchase (USD)	Contract interest rate (%): Sell	Contract interest rate (%): Purchase	Contract exchange rate
Cash flow hedge:						
Credit Agricole	2014~2020	110,680,000,000	USD 100,000,000	2.29	2.5	1,106.80
Societe Generale	2014~2020	55,340,000,000	USD 50,000,000	2.16	2.5	1,106.80
KEB Hana Bank	2014~2020	55,340,000,000	USD 50,000,000	2.16	2.5	1,106.80
KEB Hana Bank	2014~2020	55,340,000,000	USD 50,000,000	2.21	2.5	1,106.80
Standard Chartered	2014~2020	55,340,000,000	USD 50,000,000	2.21	2.5	1,106.80
HSBC	2014~2020	55,340,000,000	USD 50,000,000	2.21	2.5	1,106.80
NOMURA	2014~2020	55,340,000,000	USD 50,000,000	2.21	2.5	1,106.80
BNP Paribas	2014~2020	55,340,000,000	USD 50,000,000	2.21	2.5	1,106.80
HSBC	2014~2020	55,340,000,000	USD 50,000,000	2.21	2.5	1,106.80
KEB Hanabank	2017~2022	226,600,000,000	USD 200,000,000	1.94	2.63	1,133.00
KDB Bank	2017~2022	113,300,000,000	USD 100,000,000	1.94	2.63	1,133.00
NOMURA	2017~2022	113,300,000,000	USD 100,000,000	1.95	2.63	1,133.00
Wooribank	2017~2022	56,650,000,000	USD 50,000,000	1.95	2.63	1,133.00
KB Bank	2017~2022	56,650,000,000	USD 50,000,000	1.95	2.63	1,133.00
KDB Bank	2018~2023	169,335,000,000	USD 150,000,000	2.26	3.88	1,128.90
Woori Bank	2018~2023	169,335,000,000	USD 150,000,000	2.26	3.88	1,128.90
Credit Agricole	2018~2023	112,890,000,000	USD 100,000,000	2.26	3.88	1,128.90
KEB Hanabank	2018~2023	56,445,000,000	USD 50,000,000	2.26	3.88	1,128.90
KB Bank	2018~2023	56,445,000,000	USD 50,000,000	2.26	3.88	1,128.90

Details of currency forwards as of December 31, 2018 are as follows (Korean won and USD):

Counterparty	Contract date	Maturity date	Contract amount: Sell(KRW)	Contract amount: Purchase(USD)	Contract exchange rate
Trading:					
Credit Agricole	2018-11-02	2019-02-07	3,038,734,953	USD 2,728,749	1,113.60
Credit Agricole	2018-11-05	2019-02-07	5,563,500,000	USD 5,000,000	1,112.70
Novascotia	2018-11-07	2019-02-13	5,567,000,000	USD 5,000,000	1,113.40
Novascotia	2018-11-07	2019-02-13	4,457,600,000	USD 4,000,000	1,114.40
Societe Generale	2018-11-29	2019-03-04	5,567,500,000	USD 5,000,000	1,113.50
Societe Generale	2018-11-29	2019-03-04	3,674,052,753	USD 3,296,593	1,114.50
Credit Agricole	2018-12-03	2019-03-05	255,825,006	USD 230,660	1,109.10
Novascotia	2018-12-04	2019-03-06	5,521,500,000	USD 5,000,000	1,104.30
Novascotia	2018-12-04	2019-03-06	5,526,500,000	USD 5,000,000	1,105.30
Novascotia	2018-12-20	2019-03-26	5,589,000,000	USD 5,000,000	1,117.80
Novascotia	2018-12-20	2019-03-26	1,750,726,210	USD 1,564,825	1,118.80
Novascotia	2018-12-28	2019-04-02	5,565,000,000	USD 5,000,000	1,113.00
Novascotia	2018-12-28	2019-04-02	5,569,000,000	USD 5,000,000	1,113.80
Novascotia	2018-12-28	2019-04-02	5,576,000,000	USD 5,000,000	1,115.20
Novascotia	2018-12-28	2019-04-03	5,553,000,000	USD 5,000,000	1,110.60
Novascotia	2018-12-28	2019-04-03	5,558,000,000	USD 5,000,000	1,111.60
Novascotia	2018-12-28	2019-04-03	5,563,000,000	USD 5,000,000	1,112.60

7. financial assets and liabilities at fair value through profit or loss (including derivative assets and liabilities) (cont'd)

Details of gain and loss on valuation and settlement of derivative instruments for the years ended December 31, 2018 and 2017 are as follows (Korean won):

	Gain (loss) on valuation		Gain (loss) on settlement		Other comprehensive income	
	2018	2017	2018	2017	2018	2017
Currency forwards	₩ 166,345,958	₩ (3,576,443,218)	₩ 3,342,212,723	₩ (138,532,436)	₩ -	₩ -
Currency swaps	41,042,550,513	(166,920,873,466)	35,700,914,974	(41,379,155,531)	(9,532,198,358)	11,992,588,212
	₩ 41,208,896,471	₩(170,497,316,684)	₩ 39,043,127,697	₩(41,517,687,967)	₩ (9,532,198,358)	₩ 11,992,588,212

As of December 31, 2018, loss on valuation of derivative instruments amounting to ₩17,786,129,355 which in directly carried to equity is recognized in other comprehensive income and presented excluding income tax effect.

8. Trade and other receivables

Details of trade and other receivables as of December 31, 2018 and 2017 are as follows (Korean won):

	Dec. 31, 2018		
	Gross amounts	Present value discounts	Book value
Current assets:			
Trade receivables	₩ 463,826,113,448	₩ -	₩ 463,826,113,448
Other receivables	151,814,757,578	(5,818,007)	151,808,939,571
	615,640,871,026	(5,818,007)	615,635,053,019
Non-current assets:			
Other receivables	2,547,474,900	(57,640,005)	2,489,834,895
	2,547,474,900	(57,640,005)	2,489,834,895
	₩ 618,188,345,926	₩ (63,458,012)	₩ 618,124,887,914

	Dec. 31, 2017		
	Gross amounts	Present value discounts	Book value
Current assets:			
Trade receivables	₩ 439,212,750,053	₩ -	₩ 439,212,750,053
Other receivables	286,330,598,712	(23,522,949)	286,307,075,763
	725,543,348,765	(23,522,949)	725,519,825,816
Non-current assets:			
Other receivables	3,633,176,024	(41,440,493)	3,591,735,531
	3,633,176,024	(41,440,493)	3,591,735,531
	₩ 729,176,524,789	₩ (64,963,442)	₩ 729,111,561,347

Details of other receivables as of December 31, 2018 and 2017 are as follows (Korean won):

	Dec. 31, 2018		
	Gross amounts	Present value discounts	Book value
Current assets:			
Accounts receivable	₩ 32,919,529,561	₩ -	₩ 32,919,529,561
Accrued income	115,999,168,862	-	115,999,168,862
Deposits	2,896,059,155	(5,818,007)	2,890,241,148
	151,814,757,578	(5,818,007)	151,808,939,571
Non-current assets:			
Deposits	2,050,147,000	(57,640,005)	1,992,506,995
Others	497,327,900	-	497,327,900
	2,547,474,900	(57,640,005)	2,489,834,895
	₩ 154,362,232,478	₩ (63,458,012)	₩ 154,298,774,466

8. Trade and other receivables (Cont'd)

	Dec. 31, 2017		
	Gross amounts	Present value discounts	Book value
Current assets:			
Accounts receivable	₩ 16,960,244,788	₩ -	₩ 16,960,244,788
Accrued income	264,605,716,568	-	264,605,716,568
Deposits	4,764,637,356	(23,522,949)	4,741,114,407
	286,330,598,712	(23,522,949)	286,307,075,763
Non-current assets:			
Accounts receivable	1,180,038,889	-	1,180,038,889
Deposits	1,955,809,235	(41,440,493)	1,914,368,742
Others	497,327,900	-	497,327,900
	3,633,176,024	(41,440,493)	3,591,735,531
	₩ 289,963,774,736	₩ (64,963,442)	₩ 289,898,811,294

As of December 31, 2018 and 2017, the aging analysis of trade receivables is as follows (Korean won):

	Dec.31, 2018	Dec.31, 2017
Neither past due nor impaired	₩ 463,826,113,448	₩ 439,212,750,053
Past due buy not impaired		
- 60 days ~90 days	-	-
- 90 days ~120 days	-	-
- 120 days ~365 days	-	-
- Over 1 year	-	-
	₩ 463,826,113,448	₩ 439,212,750,053

As of December 31, 2018 and 2017, the ageing analysis of other receivables is as follows (Korean won):

	Dec.31, 2018	Dec.31, 2017
Neither past due nor impaired	₩ 154,362,232,478	₩ 289,963,774,736
Past due buy not impaired:	-	-
- 60 days ~90 days	-	-
- 90 days ~120 days	-	-
- 120 days ~365 days	-	-
- Over 1 year	-	-
Impaired receivables:	-	3,996,330
- Within 60 days	-	-
- 60 days ~90 days	-	-
- 90 days ~120 days	-	-
- Over 120 days	-	3,996,330
	154,362,232,478	289,967,771,066
Reduction : Allowance for bad debts	-	(3,996,330)
Reduction : Present value discount	(63,458,012)	(64,963,442)
	₩ 154,298,774,466	₩ 289,898,811,294

9. Financial assets at fair value through other comprehensive income

Details of financial assets at fair value through other comprehensive income as of December 31, 2018 are as follows (Korean won):

	Dec.31, 2018				
	Equity ratio (%)	Number of shares held	Acquisition	Book value	Fair value
Quoted securities:					
Baralaba Coal Campany Limited	0.07	99,763	₩ 11,553,936,882	₩ -	₩ -
PT. Bayan Resources TBK	4.00	133,333,340	80,533,337,360	203,520,010,176	203,520,010,176
STX Heavy industry	0.01	1,220	106,092,000	6,917,400	6,917,400
Unquoted securities:					
Korea Power Exchange	7.14	1,826,275	9,131,374,714	15,863,254,505	15,863,254,505
KEPCO-Uhde Inc.	2.40	103,230	516,150,000	14,198,304	14,198,304
HeeMang Sunlight Power (*)	8.33	78,600	393,000,000	393,000,000	393,000,000
KEPCO Bylong Australia Pty Ltd.(*)	2.00	3,537,032	6,134,697,340	5,542,085,788	5,542,085,788
			₩108,368,588,296	₩225,339,466,173	₩225,339,466,173

(*) As there were neither quoted market prices for these securities, nor could their fair values be reasonably assessed, these investments were recorded at their acquisition cost.

Changes in financial assets at fair value through other comprehensive income for the year ended December 31, 2018 are as follows (Korean won):

	2018					
	Jan. 1	Acquisition	Disposal	Valuation	Impairment loss	Dec. 31
Quoted equity shares	₩ 111,698,266,073	₩ -	₩ -	₩ 91,828,661,503	₩ -	₩ 203,526,927,576
Unquoted equity shares	22,134,382,632	-	-	(321,844,035)	-	21,812,538,597
	₩ 133,832,648,705	₩ -	₩ -	₩ 91,506,817,468	₩ -	₩ 225,339,466,173
Current financial assets at FVOCI	₩ -	₩ -	₩ -	₩ -	₩ -	₩ -
Non-current financial assets at FVOCI	133,832,648,705	-	-	91,506,817,468	-	225,339,466,173

10. Available-for-sale financial assets

Details of available-for-sale financial assets as of December 31, 2017 are as follows (Korean won):

	Dec.31, 2017				
	Equity ratio (%)	Number of shares held	Acquisition	Book value	Fair value
Quoted securities:					
Baralaba Coal Campany Limited	0.07	99,763	₩ 11,553,936,882	₩ 21,662,697	₩ 21,662,697
PT. Bayan Resources TBK	4.00	133,333,340	80,533,337,360	111,653,338,916	111,653,338,916
STX Heavy industry	0.02	5,052	106,092,000	23,264,460	23,264,460
Unquoted securities:					
Korea Power Exchange	7.14	1,826,275	9,131,374,714	15,852,000,760	15,852,000,760
KEPCO-Uhde Inc.	2.40	103,230	516,150,000	14,198,304	14,198,304
HeeMang Sunlight Power (*)	8.33	78,600	393,000,000	393,000,000	393,000,000
KEPCO Bylong Australia Pty Ltd.(*)	2.00	3,537,032	6,134,697,340	5,875,183,568	5,875,183,568
			₩108,368,588,296	₩133,832,648,705	₩133,832,648,705

(*1) As there were neither quoted market prices for these securities nor could their fair values be reasonably assessed, these investments were recorded at their acquisition cost.

Changes in available-for-sale financial assets for the year ended December 31, 2017 are as follows (Korean won):

	2017					
	Jan. 1	Acquisition	Disposal	Valuation	Impairment loss	Dec. 31
Quoted equity shares	₩ 71,864,992,531	₩ 127,148,882	₩ -	₩ 39,706,124,660	₩ -	₩ 111,698,266,073
Unquoted equity shares	22,996,917,821	-	-	(862,535,189)	-	22,134,382,632
	₩ 94,861,910,352	₩ 127,148,882	₩ -	₩ 38,843,589,471	₩ -	₩133,832,648,705
Short-term available-for-sale financial assets	₩ -	₩ -	₩ -	₩ -	₩ -	₩ -
Long-term available-for-sale financial assets	94,861,910,352	127,148,882	-	38,843,589,471	-	133,832,648,705

11. Financial assets at amortised cost

Changes in financial assets at amortised cost for the year ended December 31, 2018 are as follows (Korean won):

	2018				
	Jan.1	Acquisition	Disposal	Others	Dec. 31
Public bonds	₩ 495,575,000	₩ 116,560,000	₩ -	₩ -	₩ 612,135,000
Financial bonds (*1)	-	1,000,000,000	-	10,000,000,000	11,000,000,000
	₩ 495,575,000	₩ 1,116,560,000	₩ -	₩ 10,000,000,000	₩ 11,612,135,000
Current financial assets at amortised cost	₩ -	₩ 1,000,000,000	₩ -	₩ 10,077,180,000	₩ 11,077,180,000
Non-current financial assets at amortised cost	495,575,000	116,560,000	-	(77,180,000)	534,955,000

(*) Others of financial bonds are due to the reclassification of accounts under KIFRS 1109.

12. Held-to-maturity financial assets

Changes in held-to-maturity financial assets for the year ended December 31, 2017 are as follows (Korean won):

	2017				
	Jan.1	Acquisition	Disposal	Others	Dec. 31
Public bonds	₩ 346,945,000	₩ 226,145,000	₩ (77,515,000)	₩ -	₩ 495,575,000
Financial bonds	-	-	-	-	-
	₩ 346,945,000	₩ 226,145,000	₩ (77,515,000)	₩ -	₩ 495,575,000
Short-term held-to-maturity financial assets	₩ 77,515,000	₩ -	₩ (77,515,000)	₩ -	₩ -
Long-term held-to-maturity financial assets	269,430,000	226,145,000	-	-	495,575,000

13. Loans

Details of loans as of December 31, 2018 and 2017 are as follows (Korean won):

	Dec.31, 2018		Dec.31, 2017	
	Current	Non-current	Current	Non-current
Tuition loans	₩ 857,640,400	₩ 18,473,143,713	₩ 825,595,600	₩ 18,538,592,379
Home loans	717,199,752	10,139,607,943	544,958,520	9,104,006,713
Loans to related party	-	615,875,491	-	-
Present value discount	(112,466,730)	(2,497,116,397)	(117,174,040)	(2,518,278,439)
	₩ 1,462,373,422	₩ 26,731,510,750	₩ 1,253,380,080	₩ 25,124,320,653

14. Financial instruments

Details of financial instruments as of December 31, 2018 and 2017 are as follows (Korean won):

	Dec.31, 2018		Dec.31, 2017 (*)	
	Current	Non-current	Current	Non-current
Short-term financial	₩ -	₩ -	₩ 10,000,000,000	₩ -

(*) This amount has been reclassified as current financial asset at amortised cost during the year due to application of KIFRS 1109.

15. Inventories

Details of inventories as of December 31, 2018 and 2017 are as follows (Korean won):

	Dec. 31, 2018		
	Gross amounts	Valuation allowance	Book value
Raw materials	₩ 160,378,866,053	₩ -	₩ 160,378,866,053
Supplies	29,136,639,349	-	29,136,639,349
Goods in transit	126,686,610,830	-	126,686,610,830
	₩ 316,202,116,232	₩ -	₩ 316,202,116,232

	Dec. 31, 2017		
	Gross amounts	Valuation allowance	Book value
Raw materials	₩ 196,428,237,049	₩ -	₩ 196,428,237,049
Supplies	25,050,429,097	-	25,050,429,097
Goods in transit	80,704,085,585	-	80,704,085,585
	₩ 302,182,751,731	₩ -	₩ 302,182,751,731

16. Non-financial assets

Details of non-financial assets as of December 31, 2018 and 2017 are as follows (Korean won):

	Dec.31, 2018		Dec.31, 2017	
	Current	Non-current	Current	Non-current
Prepayments	₩ 2,410,494,588	₩ -	₩ 709,921,457	₩ -
Prepaid expenses	6,350,109,828	12,543,748,752	11,364,465,269	13,890,418,582
Others (*)	38,839,649,479	-	18,410,517,858	-
	₩ 47,600,253,895	₩ 12,543,748,752	₩ 30,484,904,584	₩ 13,890,418,582

(*) Details of other non-financial assets as of December 31, 2018 and 2017 are as follows (Korean won):

	Dec.31, 2018		Dec.31, 2017	
	Current	Non-current	Current	Non-current
Non-refunded value added tax	₩ 17,699,283,385	₩ -	₩ 15,683,917,998	₩ -
Non-deductible input tax	27,418,265	-	19,633,462	-
Other quick assets	956,740,076	-	2,706,966,398	-
Other non-financial assets	20,156,207,753	-	-	-
	₩ 38,839,649,479	₩ -	₩ 18,410,517,858	₩ -

17. Investments in associates and joint ventures

Details of investments in associates and joint ventures as of December 31, 2018 and 2017 are as follows (Korean won):

Investments in associates and joint ventures	Principal activity	Country of domicile	Equity ratio (%)	2018 Cost	2018 Book value
<Associates>					
Green Biomass Co., Ltd. (*1)	Power plants operation	South Korea	8.80	₩ 714,000,000	₩ 114,723,071
Korea Offshore Wind Power Co., Ltd. (*1)	Power plants operation	South Korea	12.50	26,600,000,000	22,467,059,439
Solar School Plant Co.,Ltd. (*1)	Resource development for solar energy	South Korea	8.33	16,650,000,000	16,892,726,416
KEPCO Energy Solution Inc. (*1)	Investment in facilities for energy efficiency	South Korea	8.33	25,000,000,000	25,271,190,073
				68,964,000,000	64,745,698,999
<Joint ventures>					
GS Donghae Electric Power Co., Ltd.	Power plants operation	South Korea	34.00	204,000,000,000	240,591,084,527
Pusan Shinho Solar Power Co., Ltd.	Power plants operation	South Korea	25.00	2,100,000,000	4,761,105,495
Honam Wind Power Co.,Ltd.	Power plants operation	South Korea	29.00	3,480,000,000	4,859,554,579
Dangjin Eco Power Corporation	Power plants operation	South Korea	34.00	61,540,000,000	19,911,956,147
Seokmun Energy Co.,Ltd	Power plants operation	South Korea	29.00	15,370,000,000	16,750,765,559
Chun-cheon Energy Co., Ltd.	Power plants operation	South Korea	29.90	52,699,945,000	42,505,111,817
Yeonggwangbaeksu Wind Power Co., Ltd. (*2)	Power plants operation	South Korea	15.00	3,000,000,000	2,843,257,993
Yeonggwang Wind Power Co., Ltd.	Power plants operation	South Korea	41.00	15,375,000,000	15,303,885,401
Jamaica Public Service Group Limited	Power plants operation	Jamaica	40.00	301,909,577,842	239,632,132,322
PT.Tanjung Power Indonesia	Power plants operation	Indonesia	35.00	746,237,194	7,080,667,901
South Jamaica Power Co., Ltd.	Power plants operation	Jamaica	20.00	16,230,755,000	16,123,672,860
Daesan Green Energy Co., Ltd. (*3)	Power plants operation	South Korea	35.00	17,850,000,000	17,432,696,297
Taebaekgaduksan Wind Power Co., Ltd. (*3)	Power plants operation	South Korea	46.58	8,500,000,000	8,508,153,045
				702,801,515,036	636,304,043,943
				₩ 771,765,515,036	₩ 701,049,742,942

(*1) Although the Group holds less than 20% equity interest in the investee, the investee has been classified as an associate because they can exercise voting rights on the investee's Board of Directors.

(*2) Although the Group holds less than 20% equity interest in the investee, the investee has been classified as a joint venture because they can exercise voting rights on the investee's Board of Directors.

(*3) The Group newly acquired the shares in 2018.

17. Investments in associates and joint ventures (cont'd)

Investments in associates and joint ventures	Principal activity	Country of domicile	Equity ratio (%)	2017 Cost	2017 Book value
<Associates>					
Green Biomass Co., Ltd. (*1)	Power plants operation	South Korea	8.80	₩ 714,000,000	₩ 207,744,483
Korea Offshore Wind Power Co., Ltd. (*1,2)	Power plants operation	South Korea	12.50	26,600,000,000	23,526,175,021
Solar School Plant Co.,Ltd. (*1)	Resource development for solar energy	South Korea	8.33	16,650,000,000	16,723,523,613
KEPCO Energy Solution Inc. (*1)	Investment in facilities for energy efficiency	South Korea	8.33	25,000,000,000	25,085,422,115
				68,964,000,000	65,542,865,232
<Joint ventures>					
GS Donghae Electric Power Co., Ltd.	Power plants operation	South Korea	34.00	204,000,000,000	220,727,568,388
Pusan Shinho Solar Power Co., Ltd.	Power plants operation	South Korea	25.00	2,100,000,000	4,346,456,357
Honam Wind Power Co.,Ltd.	Power plants operation	South Korea	29.00	3,480,000,000	4,302,142,948
Dangjin Eco Power Corporation (*2)	Power plants operation	South Korea	34.00	61,540,000,000	57,928,052,299
Seokmun Energy Co.,Ltd(*3)	Power plants operation	South Korea	29.00	15,370,000,000	13,785,992,962
Chun-cheon Energy Co., Ltd.	Power plants operation	South Korea	29.90	52,699,945,000	48,118,355,677
Yeonggwangbaeksu Wind Power Co., Ltd. (*4)	Power plants operation	South Korea	15.00	3,000,000,000	2,733,981,379
Yeonggwang Wind Power Co., Ltd. (*5)	Power plants operation	South Korea	41.00	15,375,000,000	15,293,638,958
Jamaica Public Service Group Limited	Power plants operation	Jamaica	40.00	301,909,577,842	221,153,579,557
PT.Tanjung Power Indonesia	Power plants operation	Indonesia	35.00	746,237,194	1,776,101,565
South Jamaica Power Co., Ltd.	Power plants operation	Jamaica	20.00	7,089,860,000	6,704,392,640
				667,310,620,036	596,870,262,730
				₩ 736,274,620,036	₩ 662,413,127,962

(*1) Although the Group holds less than 20% equity interest in the investee, the investee has been classified as an associate because they can exercise voting rights on the investee's Board of Directors..

(*2) As the Group participated in a proportionate capital increase, there was no change in the ownership ratio.

(*3) The book value increased as a result of the conversion of the convertible bond issued by Seokmoon Energy Co., Ltd. to shares in 2017 but there is no change in the ownership ratio.

(*4) Although the Group holds less than 20% equity interest in the investee, the investee has been classified as a joint venture because they have common control on the shares.

(*5) The Group newly acquired the shares in 2017.

(*6) The Group newly acquired the shares of South Jamaica Power Co., Ltd. in 2017.

As of December 31, 2018 and 2017, the Group has no associates and joint ventures that were listed on a stock market.

17. Investments in associates and joint ventures (cont'd)

Changes in investments in associates and joint ventures for the years ended December 31, 2018 and 2017 are as follows (Korean won):

	2018							
	Jan. 1	Additions	Disposal	Dividend received	Share of profit (loss)	Changes in equity adjustments in equity method	Others	Dec. 31
<Associates>								
Green Biomass Co., Ltd.	₩ 207,744,483	₩ -	₩ -	₩ -	₩ (93,021,412)	₩ -	₩ -	₩ 114,723,071
Korea Offshore Wind Power Co., Ltd.	23,526,175,021	-	-	-	(1,059,115,582)	-	-	22,467,059,439
Solar School Plant Co., Ltd.	16,723,523,613	-	-	-	169,202,803	-	-	16,892,726,416
KEPCO Energy Solution Inc.	25,085,422,115	-	-	-	186,614,788	(17,217)	(829,613)	25,271,190,073
	65,542,865,232	-	-	-	(796,319,403)	(17,217)	(829,613)	64,745,698,999
<Joint ventures>								
GS Donghae Electric Power Co., Ltd.	220,727,568,388	-	-	-	20,061,322,632	-	(197,806,493)	240,591,084,527
Pusan Shinho Solar Power Co., Ltd.	4,346,456,357	-	-	(339,750,000)	754,399,138	-	-	4,761,105,495
Honam Wind Power Co., Ltd.	4,302,142,948	-	-	(348,000,000)	905,411,631	-	-	4,859,554,579
Dangjin Eco Power Corporation	57,928,052,299	-	-	-	(38,042,195,068)	(64,994,400)	91,093,316	19,911,956,147
Seokmun Energy Co., Ltd.	13,785,992,962	-	-	-	2,964,772,597	-	-	16,750,765,559
Chun-cheon Energy Co., Ltd.	48,118,355,677	-	-	-	(5,613,243,860)	-	-	42,505,111,817
Yeonggwangbaeksu Wind Power Co., Ltd.	2,733,981,379	-	-	-	109,276,614	-	-	2,843,257,993
Yeonggwang Wind Power Co., Ltd	15,293,638,958	-	-	-	10,246,443	-	-	15,303,885,401
Jamaica Public Service Group Limited	221,153,579,557	-	-	(4,472,400,000)	13,099,433,499	9,851,519,266	-	239,632,132,322
PT.Tanjung Power Indonesia	1,776,101,565	-	-	-	3,373,304,141	1,927,137,523	4,124,672	7,080,667,901
South Jamaica Power Co Limited.	6,704,392,640	9,140,895,000	-	-	(183,750,100)	462,135,320	-	16,123,672,860
Daesan Green Energy Co., Ltd.	-	17,850,000,000		-	(417,303,703)	-	-	17,432,696,297
Taebaekgaduksan Wind Power Co., Ltd.	-	8,500,000,000		-	8,153,045	-	-	8,508,153,045
	596,870,262,730	35,490,895,000	-	(5,160,150,000)	(2,970,172,991)	12,175,797,709	(102,588,505)	636,304,043,943
	₩ 662,413,127,962	₩ 35,490,895,000	₩ -	₩ (5,160,150,000)	₩ (3,766,492,394)	₩ 12,175,780,492	₩ (103,418,118)	₩ 701,049,742,942

17. Investments in associates and joint ventures (cont'd)

	2017							
	Jan. 1	Additions	Disposal	Dividend received	Share of profit (loss)	Changes in equity adjustments in equity method	Others	Dec. 31
<Associates>								
Green Biomass Co., Ltd.	₩ 46,980,245	₩ -	₩ -	₩ -	₩ (113,095,529)	₩ -	₩ 273,859,767	₩ 207,744,483
Korea Offshore Wind Power Co., Ltd.	4,472,286,218	20,150,000,000	-	-	(874,591,197)	(221,520,000)	-	23,526,175,021
Solar School Plant Co., Ltd.	16,652,341,048	-	-	-	71,182,565	-	-	16,723,523,613
KEPCO Energy Solution Inc.	24,975,024,169	-	-	-	110,378,362	17,217	2,367	25,085,422,115
	46,146,631,680	20,150,000,000	-	-	(806,125,799)	(221,502,783)	273,862,134	65,542,865,232
<Joint ventures>								
GS Donghae Electric Power Co., Ltd.	205,947,983,667	-	-		14,713,578,997	-	66,005,724	220,727,568,388
Pusan Shinho Solar Power Co., Ltd.	3,814,039,375	-	-	(63,250,000)	595,666,982	-	-	4,346,456,357
Honam Wind Power Co., Ltd.	4,451,217,311	-	-	(487,200,000)	338,125,637	-	-	4,302,142,948
Dangjin Eco Power Corporation	53,252,623,312	5,440,000,000	-	-	(751,205,089)	(3,383,612)	(9,982,312)	57,928,052,299
Seokmun Energy Co., Ltd.	391,068,628	14,790,000,000	-	-	(1,219,255,058)	(175,820,608)	-	13,785,992,962
Chun-cheon Energy Co., Ltd.	50,592,007,547	-	-	-	(2,473,651,870)	-	-	48,118,355,677
Yeonggwangbaeksu Wind Power Co., Ltd.	2,689,448,332	-	-	-	44,533,047	-	-	2,733,981,379
Yeonggwang Wind Power Co., Ltd	-	15,375,000,000	-	-	(25,448,030)	(55,913,012)	-	15,293,638,958
Jamaica Public Service Group Limited	249,453,146,252		-	-	-	(28,299,566,695)	-	221,153,579,557
PT.Tanjung Power Indonesia	1,945,593,067	-	-	-	2,112,171,789	(2,281,059,422)	(603,869)	1,776,101,565
South Jamaica Power Co Limited	-	7,089,860,000	-	-	(161,031,616)	(224,435,744)	-	6,704,392,640
	572,537,127,491	42,694,860,000	-	(550,450,000)	13,173,484,789	(31,040,179,093)	55,419,543	596,870,262,730
	₩ 618,683,759,171	₩ 62,844,860,000	₩ -	₩ (550,450,000)	₩ 12,367,358,990	₩ (31,261,681,876)	₩ 329,281,677	₩ 662,413,127,962

17. Investments in associates and joint ventures (cont'd)

The summary of associates and joint ventures' financial information as of December 31, 2018 and 2017 and for the years then ended, is as follows (Korean won):

	Dec. 31, 2018			
	Total assets	Total liabilities	Sales	Profit (loss) for the year
<Associates>				
Green Biomass Co., Ltd.	₩ 4,410,698,039	₩ 3,107,026,781	₩ 908,784,516	₩ (1,057,061,469)
Korea Offshore Wind Power Co., Ltd.	216,113,706,140	36,377,230,631	-	(8,472,924,658)
Solar School Plant Co., Ltd.	204,281,637,113	1,366,004,493	1,148,696,119	2,032,522,420
KEPCO Energy Solution Inc.	304,103,022,241	848,741,372	5,583,921,611	2,532,422,075
<Joint ventures>				
GS Donghae Electric Power Co., Ltd.	2,259,129,435,130	1,551,508,598,285	787,425,105,739	58,975,678,130
Pusan Shinho Solar Power Co., Ltd.	45,538,334,810	26,493,912,831	7,900,617,541	3,017,596,548
Honam Wind Power Co., Ltd.	43,712,663,713	27,066,218,849	7,700,290,879	3,122,109,072
Dangjin Eco Power Corporation	51,125,354,974	260,462,764	-	(111,788,718,497)
Seokmun Energy Co., Ltd	253,543,607,676	195,782,347,126	50,051,678,184	10,224,160,577
Chun-cheon Energy Co., Ltd	666,050,299,344	523,904,417,085	320,950,050,704	(19,133,247,535)
Yeonggwangbaeksu Wind Power Co., Ltd.	99,367,885,560	80,450,345,769	11,366,463,210	733,976,452
Yeonggwang Wind Power Co., Ltd	255,777,375,214	219,012,728,764	-	(144,788,160)
Jamaica Public Service Group Limited (*1)	1,396,421,323,421	827,836,722,876	992,677,456,400	32,507,263,200
PT.Tanjung Power Indonesia	505,551,184,655	485,320,706,253	109,028,862,469	9,717,351,637
South Jamaica Power Co., Limited	294,340,943,100	213,722,578,800	-	(931,954,100)
Daesan Green Energy Co., Ltd.	52,582,144,221	2,774,440,514	-	(1,192,296,293)
Taebaekgaduksan Wind Power Co., Ltd.	18,766,098,537	498,593,470	-	17,505,067

(*1) The summarized financial information is adjusted to reflect adjustments of fair value on the date of acquisition.

	Dec. 31, 2017			
	Total assets	Total liabilities	Sales	Profit (loss) for the year
<Associates>				
Green Biomass Co., Ltd.	₩ 6,378,623,782	₩ 4,017,891,055	₩ 2,336,932,526	₩ (956,298,591)
Korea Offshore Wind Power Co., Ltd.	190,194,646,210	1,985,246,043	-	(6,996,729,573)
Solar School Plant Co., Ltd.	201,482,493,081	599,326,558	66,861,962	873,999,536
KEPCO Energy Solution Inc.	313,400,619,518	12,375,554,142	5,544,306,435	1,324,540,337
<Joint ventures>				
GS Donghae Electric Power Co., Ltd.	2,179,465,014,027	1,530,266,283,471	351,813,504,166	43,179,864,742
Pusan Shinho Solar Power Co., Ltd.	47,958,980,499	30,573,155,068	7,984,111,357	2,382,667,933
Honam Wind Power Co., Ltd.	39,675,236,420	24,950,900,628	5,961,279,033	1,165,950,472
Dangjin Eco Power Corporation	163,197,450,438	520,510,720	-	(2,182,237,212)
Seokmun Energy Co., Ltd	247,734,849,766	200,196,943,000	35,134,518,210	(3,938,599,156)
Jamaica Public Service Group Limited (*1)	1,276,279,062,306	752,617,119,854	946,364,939,960	24,601,424,200
PT.Tanjung Power Indonesia	374,701,653,756	369,627,077,922	209,923,135,113	6,219,202,189
Chun-cheon Energy Co., Ltd	699,652,074,806	538,732,801,713	164,293,932,709	(8,144,825,063)
Yeonggwangbaeksu Wind Power Co., Ltd.	94,810,233,835	76,621,204,809	11,123,667,599	296,886,967
Yeonggwang Wind Power Co., Ltd	212,801,794,204	176,062,139,078	-	(62,068,365)
South Jamaica Power Co., Limited	153,958,037,200	120,436,074,000	-	(755,337,000)

(*1) The summarized financial information is adjusted to reflect adjustments of fair value on the date of acquisition.

18. Property, plant and equipment

The acquisition cost and net book value of property, plant and equipment as of December 31, 2018 and 2017 are as follows (Korean won):

	Dec. 31, 2018			
	Acquisition cost	Government grants	Accumulated depreciation	Book value
Land	₩ 835,649,150,199	₩ -	₩ -	₩ 835,649,150,199
Buildings	1,248,951,903,402	(183,600,082)	(450,643,968,862)	798,124,334,458
Structures	1,342,451,321,642	-	(575,720,040,795)	766,731,280,847
Machinery	6,917,721,577,871	-	(3,020,801,756,835)	3,896,919,821,036
Vehicles	12,270,739,572	(47,291,668)	(10,368,500,866)	1,854,947,038
Finance lease assets	384,648,937,991	-	(206,210,336,957)	178,438,601,034
Others	122,414,794,046	-	(83,583,239,586)	38,831,554,460
Construction-in-progress	118,217,984,719	-	-	118,217,984,719
	₩ 10,982,326,409,442	₩ (230,891,750)	₩ (4,347,327,843,901)	₩ 6,634,767,673,791

	Dec. 31, 2017			
	Acquisition cost	Government grants	Accumulated depreciation	Book value
Land	₩ 820,635,185,750	₩ -	₩ -	₩ 820,635,185,750
Buildings	1,234,929,976,089	(191,670,415)	(396,371,801,190)	838,366,504,484
Structures	1,334,607,452,646	-	(526,982,182,252)	807,625,270,394
Machinery	6,589,108,969,469	-	(2,536,569,050,636)	4,052,539,918,833
Vehicles	11,511,031,916	(66,291,668)	(10,142,163,943)	1,302,576,305
Finance lease assets	383,899,802,130	-	(187,303,593,139)	196,596,208,991
Others	116,124,713,984	-	(70,194,599,389)	45,930,114,595
Construction-in-progress	72,958,505,270	-	-	72,958,505,270
	₩ 10,563,775,637,254	₩ (257,962,083)	₩ (3,727,563,390,549)	₩ 6,835,954,284,622

18. Property, plant and equipment

Changes in the net book value of property, plant and equipment for the years ended December 31, 2018 and 2017 are as follows (Korean won):

	2018					
	Jan. 1	Addition	Disposal/disuse	Depreciation	Others	Dec. 31
Land	₩ 820,635,185,750	₩ 236,571,213	₩ (68,434,360)	₩ -	₩ 14,845,827,596	₩ 835,649,150,199
Buildings	838,558,174,899	-	(217,254,828)	(54,248,267,565)	14,215,282,034	798,307,934,540
(Government grant)	(191,670,415)	-	-	8,070,333	-	(183,600,082)
Structures	807,625,270,394	332,090,909	-	(48,591,576,110)	7,365,495,654	766,731,280,847
Machinery	4,052,539,918,833	56,238,052,115	(6,416,522,376)	(491,527,101,664)	286,085,474,128	3,896,919,821,036
Vehicles	1,368,867,973	32,846,156	(15,687,275)	(774,093,323)	1,290,305,175	1,902,238,706
(Government grant)	(66,291,668)	-	-	19,000,000	-	(47,291,668)
Finance lease assets	196,596,208,991	-	-	(18,899,097,914)	741,489,957	178,438,601,034
Others	45,930,114,595	317,780,446	(111,000)	(17,055,769,775)	9,639,540,194	38,831,554,460
Construction-in-progress	72,958,505,270	380,956,910,359	-	-	(335,697,430,910)	118,217,984,719
	₩ 6,835,954,284,622	₩ 438,114,251,198	₩ (6,718,009,839)	₩ (631,068,836,018)	₩ (1,514,016,172)	₩ 6,634,767,673,791

	2017					
	Jan. 1	Addition	Disposal/disuse	Depreciation	Others	Dec. 31
Land	₩ 803,507,895,587	₩ 108,820,573	₩ (191,577,273)	₩ -	₩ 17,210,046,863	₩ 820,635,185,750
Buildings	784,576,310,164	2,250,372	(1,489,224,561)	(54,104,796,036)	109,573,634,960	838,558,174,899
(Government grant)	(199,740,749)	-	-	8,070,334	-	(191,670,415)
Structures	1,082,091,237,182	-	-	(46,703,290,430)	(227,762,676,358)	807,625,270,394
Machinery	4,163,935,227,695	64,285,457,241	(10,234,811,862)	(452,183,555,779)	286,737,601,538	4,052,539,918,833
Vehicles	1,688,768,639	-	(5,000)	(821,911,599)	502,015,933	1,368,867,973
(Government grant)	(1,208,334)	(74,000,000)	-	8,916,666	-	(66,291,668)
Finance lease assets	173,652,980,230	-	-	(18,398,290,558)	41,341,519,319	196,596,208,991
Others	39,383,511,037	859,113,948	(15,057,192)	(15,743,848,961)	21,446,395,763	45,930,114,595
Construction-in-progress	85,384,502,760	362,811,418,139	-	-	(375,237,415,629)	72,958,505,270
	₩ 7,134,019,484,211	₩ 427,993,060,273	₩ (11,930,675,888)	₩ (587,938,706,363)	₩ (126,188,877,611)	₩ 6,835,954,284,622

19. Goodwill

Details of goodwill as of December 31, 2018 and 2017 are as follows (Korean won):

	Dec. 31, 2018	Dec. 31, 2017
Acquisition cost	₩ 7,671,613,940	₩ 7,351,191,463
Accumulated impairment loss	-	-
Book value	₩ 7,671,613,940	₩ 7,351,191,463

Changes in goodwill for the years ended December 31, 2018 and 2017 are as follows (Korean won):

	2018	2017
Jan. 1	₩ 7,351,191,463	₩ 8,291,875,008
Effect on exchange rates change	320,422,477	(940,683,545)
Dec. 31	₩ 7,671,613,940	₩ 7,351,191,463

Goodwill was recognized from the acquisition of California Power Holdings, LLC ("CPH") in 2011 as the purchase cost exceeded the fair value of the net assets acquired. CPH is considered as a separate CGU in the Group. Recoverable value was calculated based on the cash flows from the financial budget for 18 years approved by management and an estimated discount rate of 8.40% in 2018 (7.50% in 2017). Based on this calculation, the carrying value of the CGU is unlikely to exceed the recoverable amount.

20. Intangible assets excluding goodwill

Intangible assets as of December 31, 2018 and 2017 are as follows (Korean won):

	Dec.31, 2018				
	Acquisition cost	Government grant	Accumulated amortization	Accumulated impairment loss	Book value
Software	₩ 50,233,352,546	₩ -	₩ (38,239,167,089)	₩ -	₩ 11,994,185,457
Industrial property rights	100,212,971	-	(73,865,103)	-	26,347,868
Intangible assets before amortization	9,575,941,179	(5,634,618,107)	-	(3,941,323,072)	-
Usable and profitable donated assets	225,429,427,625	-	(210,426,474,736)	-	15,002,952,889
Others	116,079,041,046	-	(13,226,126,399)	(143,032,540)	102,709,882,107
	₩ 401,417,975,367	₩ (5,634,618,107)	₩(261,965,633,327)	₩ (4,084,355,612)	₩ 129,733,368,321

	Dec.31, 2017				
	Acquisition cost	Government grant	Accumulated amortization	Accumulated impairment loss	Book value
Software	₩ 45,340,281,356	₩ -	₩ (34,945,964,193)	₩ -	₩ 10,394,317,163
Industrial property rights	100,212,971	-	(67,691,361)	-	32,521,610
Intangible assets before amortization	9,575,941,179	(5,634,618,107)	-	(3,941,323,072)	-
Usable and profitable donated assets	225,429,427,625	-	(203,758,276,003)	-	21,671,151,622
Others	115,887,571,046	-	(7,363,868,672)	(143,032,540)	108,380,669,834
	₩ 396,333,434,177	₩ (5,634,618,107)	₩(246,135,800,229)	₩ (4,084,355,612)	₩ 140,478,660,229

20. Intangible assets excluding goodwill (cont'd)

Changes in the net book value of intangible assets for the years ended December 31, 2018 and 2017 are as follows (Korean won):

	2018		
	Jan. 1	Acquisition	Disposal
Software	₩ 10,394,317,163	₩ -	₩ -
Industrial property rights	32,521,610	-	-
Usable and profitable donated assets	21,671,151,622	-	-
Others	108,380,669,834	-	-
	₩ 140,478,660,229	₩ -	₩ -

	2018		
	Amortization	Others (*1)	Dec.31
Software	₩ (3,379,218,951)	₩ 4,979,087,245	₩ 11,994,185,457
Industrial property rights	(6,173,742)	-	26,347,868
Usable and profitable donated assets	(6,668,198,733)	-	15,002,952,889
Others	(5,531,114,751)	(139,672,976)	102,709,882,107
	₩ (15,584,706,177)	₩ 4,839,414,269	₩ 129,733,368,321

(*) Represents amounts from property, plant and equipment and the changes in exchange rates.

	2018		
	Jan. 1	Acquisition	Disposal
Software	₩ 6,946,959,121	₩ -	₩ -
Industrial property rights	39,482,803	-	-
Usable and profitable donated assets	28,339,350,354	-	-
Others	6,060,697,754	-	(586,000)
	₩ 41,386,490,032	₩ -	₩ (586,000)

	2018		
	Amortization	Others (*1)	Dec.31
Software	₩ (2,867,380,978)	₩ 6,314,739,020	₩ 10,394,317,163
Industrial property rights	(6,961,193)	-	32,521,610
Usable and profitable donated assets	(6,668,198,732)	-	21,671,151,622
Others	(16,458,945,591)	118,779,503,671	108,380,669,834
	₩ (26,001,486,494)	₩ 125,094,242,691	₩ 140,478,660,229

(*) Represents amounts from construction-in-progress and the reversal of an impairment loss.

Key intangible assets as of December 31, 2018 and 2017 are as follows (Korean won):

	2018		
	Contents	Amount	Residual amortization period
Usable and profitable donated assets	Right to use landing and loading facilities at Dangjin Power Plant	₩ 14,166,589,917	2 years 3 months
Other intangible assets	Right to use public water surface	97,857,929,302	17 years 11 months

	2017		
	Contents	Amount	Residual amortization period
Usable and profitable donated assets	Right to use landing and loading facilities at Dangjin Power Plant	₩ 20,462,852,103	3 years 3 months
Other intangible assets	Right to use public water surface	103,269,427,696	18 years 11 months

21. Trade and other payables

Details of trade and other payables as of December 31, 2018 and 2017 are as follows (Korean won):

	Dec. 31, 2018		Dec. 31, 2017	
	Current	Non-current	Current	Non-current
Trade payables	₩ 246,007,435,716	₩ -	₩ 346,201,107,075	₩ -
Non-trade payables	128,180,012,363	-	80,900,294,629	-
Accrued expenses	44,283,804,656	14,395,538	31,657,699,967	-
Leasehold deposits received	9,731,550	-	11,281,870	-
Other deposits	759,522,777	-	648,077,312	-
	₩ 419,240,507,062	₩ 14,395,538	₩ 459,418,460,853	₩ -

22. Borrowings and bonds payable

Details of borrowings and bonds payable as of December 31, 2018 and 2017 are as follows (Korean won):

	Dec.31, 2018	Dec.31, 2017
Current liabilities:		
Short term borrowing	₩ 44,000,000,000	₩ 122,500,000,000
Current-portion of long-term borrowings	8,741,836,672	9,077,641,915
Current-portion of bonds payable	190,000,000,000	725,700,000,000
Less: discount on current portion of bonds payable	(25,593,495)	(1,113,280,030)
	242,716,243,177	856,164,361,885
Non-current liabilities:		
Long-term borrowings	77,462,920,000	78,330,206,046
Bonds payable	2,967,150,000,000	2,381,400,000,000
Less: discount on bonds payable	(14,461,546,388)	(12,182,484,291)
	3,030,151,373,612	2,447,547,721,755
	₩ 3,272,867,616,789	₩ 3,303,712,083,640

Details of short-term borrowings as of December 31, 2018 and 2017 are as follows (Korean won):

Financial institution	Annual interest rate (%)	Maturity	Dec.31, 2018	Dec.31, 2017
KTB Investment & Securities Co., Ltd.	2.31	2019.01.28	₩ 10,000,000,000	₩ -
Woori Investment Bank	2.29	2019.01.30	10,000,000,000	-
KB Securities Co., Ltd.	2.30	2019.01.28	24,000,000,000	-
Woori Investment Bank	2.16	2018.03.21	-	52,500,000,000
		2018.03.26	-	50,000,000,000
		2018.03.26	-	20,000,000,000
			₩ 44,000,000,000	₩ 122,500,000,000

22. Borrowings and bonds payable (cont'd)

Details of long-term borrowings as of December 31, 2018 and 2017 are as follows (Korean won and USD):

Financial institution	Description	Annual interest rate (%)	Maturity	Dec. 31, 2018 USD	Dec. 31, 2018 KRW
<Long-term borrowings denominated in Korean won>					
Korea Energy Agency (*1)	Development funds	Benchmark rate -2.25	2024.09.15	$ -	₩ 972,210,000
Korea Energy Agency	Development funds	Policy rate	2028.09.15	-	5,022,030,000
Korea Energy Agency	Development funds	Policy rate	2028.09.15	-	2,046,330,000
Samsung Life Insurance Co., Ltd.,	Facility funds	Non-guaranteed bond rate+1.2	2023.09.30	-	15,711,559,536
Hyundai Life Co., Ltd.,	Facility funds	Non-guaranteed bond rate+1.2	2022.09.30	-	6,648,220,232
Hyundai Marine & Fire Insurance Co., Ltd.	Facility funds	Non-guaranteed bond rate+1.2	2022.09.30	-	6,648,220,232
Samsung Fire & Marine Insurance Co., Ltd.,	Facility funds	3.80	2029.09.30	-	2,982,000,000
KB Insurance Co., Ltd.	Facility funds	3.80	2029.09.30	-	12,579,000,000
Hyundai Life Co., Ltd.,	Facility funds	3.80	2029.09.30	-	12,670,000,000
Hyundai Marine & Fire Insurance Co., Ltd.	Facility funds	3.80	2029.09.30	-	12,579,000,000
KB Insurance Co., Ltd.	Facility funds	1.75	2026.09.30	-	2,400,000,000
Hyundai Life Co., Ltd.,	Facility funds	1.75	2026.09.30	-	2,400,000,000
Hyundai Marine & Fire Insurance Co., Ltd.	Facility funds	1.75	2026.09.30	-	2,400,000,000
<Long-term borrowings denominated in foreign currency>					
Whitehaven Springs Biomass LLC	Borrowings from TEI (Tax Equity Investment) (*2)	-	2019.12.31	1,025,120	1,146,186,672
					86,204,756,672
Less: current portion				(1,025,120)	(1,146,186,672)
Less: current portion				-	(7,595,650,000)
				$ -	₩ 77,462,920,000

22. Borrowings and bonds payable (cont'd)

Financial institution	Description	Annual interest rate (%)	Maturity	Dec. 31, 2017 USD	Dec. 31, 2017 KRW
<Long-term borrowings denominated in Korean won>					
Korea Energy Agency (*1)	Development funds	Benchmark rate -2.25	2024.09.15	$ -	₩ 1,141,290,000
Korea Energy Agency	Development funds	Policy rate	2028.09.15	-	5,151,000,000
Korea Energy Agency	Development funds	Policy rate	2028.09.15	-	2,099,000,000
Samsung Life Insurance Co., Ltd.,	Facility funds	Non-guaranteed bond rate+1.2	2023.09.30	-	16,920,000,000
Hyundai Life Co., Ltd.,	Facility funds	Non-guaranteed bond rate+1.2	2022.09.30	-	7,160,000,000
Hyundai Marine & Fire Insurance Co., Ltd.	Facility funds	Non-guaranteed bond rate+1.2	2022.09.30	-	7,160,000,000
Samsung Fire & Marine Insurance Co., Ltd.,	Facility funds	3.80	2029.09.30	-	11,270,000,000
KB Insurance Co., Ltd.	Facility funds	3.80	2029.09.30	-	2,670,000,000
Hyundai Life Co., Ltd.,	Facility funds	3.80	2029.09.30	-	11,270,000,000
Hyundai Marine & Fire Insurance Co., Ltd.	Facility funds	3.80	2029.09.30	-	11,350,000,000
KB Insurance Co., Ltd.	Facility funds	1.75	2026.09.30	-	2,700,000,000
Hyundai Life Co., Ltd.,	Facility funds	1.75	2026.09.30	-	2,700,000,000
Hyundai Marine & Fire Insurance Co., Ltd.	Facility funds	1.75	2026.09.30	-	2,700,000,000
<Long-term borrowings denominated in foreign currency>					
Whitehaven Springs Biomass LLC	Borrowings from TEI (Tax Equity Investment) (*2)	-	2019.12.31	2,908,865	3,116,557,961
				2,908,865	87,407,847,961
Less: current portion				(1,890,342)	(2,025,311,915)
Less: current portion				-	(7,052,330,000)
				$ 1,018,523	₩ 78,330,206,046

22. Borrowings and bonds payable (cont'd)

Details of bonds payable denominated in Korean won as of December 31, 2018 and 2017 are as follows (Korean won and USD):

Financial institution	Annual interest rate (%)	Maturity	Dec. 31, 2018 USD	Dec. 31, 2018 KRW	Dec. 31, 2017 USD	Dec. 31, 2017 KRW
Corporate bond #11-2	4.38	2021.05.26	$ -	₩ 290,000,000,000	$ -	₩ 290,000,000,000
Corporate bond #11-4	4.27	2026.11.08	-	110,000,000,000	-	110,000,000,000
Corporate bond #12-2	4.21	2022.03.22	-	200,000,000,000	-	200,000,000,000
Corporate bond #13-2	2.86	2018.03.13	-	-	-	90,000,000,000
Corporate bond #13-4	3.51	2018.07.26	-	-	-	100,000,000,000
Corporate bond #14-2	3.40	2019.01.28	-	100,000,000,000	-	100,000,000,000
Corporate bond #14-5	3.13	2019.06.03	-	90,000,000,000	-	90,000,000,000
Corporate bond #14-6	3.07	2021.07.02	-	90,000,000,000	-	90,000,000,000
Corporate bond #14-7	3.00	2021.08.01	-	100,000,000,000	-	100,000,000,000
Corporate bond #17-1	1.95	2020.04.28	-	100,000,000,000	-	100,000,000,000
Corporate bond #17-2	2.33	2024.04.28	-	50,000,000,000	-	50,000,000,000
Corporate bond #17-3	2.45	2027.04.28	-	50,000,000,000	-	50,000,000,000
Corporate bond #17-4	2.55	2022.11.10	-	50,000,000,000	-	50,000,000,000
Corporate bond #17-5	2.72	2027.11.10	-	80,000,000,000	-	80,000,000,000
Corporate bond #18-1	1.99	2021.11.05	-	100,000,000,000	-	-
Corporate bond #18-2	2.30	2038.11.05	-	30,000,000,000	-	-
Corporate bond #18-3	2.23	2048.11.05	-	40,000,000,000	-	-
Foreign currency corporate bonds #13-1	2.63	2018.11.27	-	-	500,000,000	535,700,000,000
Foreign currency corporate bonds #14-1	2.5	2020.06.02	500,000,000	559,050,000,000	500,000,000	535,700,000,000
Foreign currency corporate bonds #17-1	2.63	2022.06.19	500,000,000	559,050,000,000	500,000,000	535,700,000,000
Foreign currency corporate bonds #18-1	3.88	2023.07.19	500,000,000	559,050,000,000	-	-
			$ 1,500,000,000	3,157,150,000,000	$ 1,500,000,000	3,107,100,000,000
Less: discount on bonds				(14,487,139,883)		(13,295,764,321)
Less: current portion				(190,000,000,000)		(725,700,000,000)
Add: discount on current portion of bonds				25,593,495		1,113,280,030
				₩ 2,952,688,453,612		₩ 2,369,217,515,709

The table below summarizes the maturity profile of borrowings and bonds payable based on the contractual undiscounted repayment schedules as of December 31, 2018.

	Borrowings	Bonds payable	Total
Within the next 12 months	₩ 52,741,836,672	₩ 190,000,000,000	₩ 242,741,836,672
Between 1 and 5 years	30,382,160,000	2,607,150,000,000	2,637,532,160,000
Beyond 5 years	47,080,760,000	360,000,000,000	407,080,760,000
	₩ 130,204,756,672	₩ 3,157,150,000,000	₩ 3,287,354,756,672

23. Other financial liabilities

Details of other financial liabilities as of December 31, 2018 and 2017 are as follows (Korean won):

	Dec. 31, 2018		Dec. 31, 2017	
	Current	Non-current	Current	Non-current
Derivative liabilities	₩ 31,961,954	₩ 30,713,908,204	₩ 5,873,642,126	₩ 54,743,363,673

24. Pension benefits

The Group operates a defined contribution plan which 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 vested, the Group's obligation to make contributions to the plan decreases on a pro rata basis. The Group's sole obligation to this retirement benefit plan is to pay the prescribed contribution. The amount recognized in profit or loss and construction in progress during the year represents contributions made by the Group to the retirement benefit plan at the rates stipulated by the retirement benefit plan.

Costs related to the defined contribution plan were recognized in profit or loss as follows (Korean won):

	2018	2017
Cost of sales	₩ 5,431,315,221	₩ 6,034,337,984
Selling and administrative expenses and others	1,958,615,554	1,398,153,162
	₩ 7,389,930,775	₩ 7,432,491,146

The components of the defined benefits liability (assets) as of December 31, 2018 and 2017 are as follows (Korean won):

	Dec. 31, 2018	Dec. 31, 2017
Present value of defined benefit obligation	₩ 114,644,771,024	₩ 100,916,477,230
Fair value of plan assets	(56,900,940,273)	(51,251,162,086)
	₩ 57,743,830,751	₩ 49,665,315,144

Changes in the present value of the defined benefit obligation for the years ended December 31, 2018 and 2017 are as follows (Korean won):

	2018	2017
Jan. 1	₩ 100,916,477,230	₩ 102,551,191,298
Current service costs	11,804,066,832	12,781,456,989
Interest costs	3,019,637,067	2,992,842,451
Benefits paid	4,364,657,975	(13,997,661,918)
Re-measurement of the defined benefit obligation	(5,460,068,080)	(3,411,351,590)
Dec. 31	₩ 114,644,771,024	₩ 100,916,477,230

Changes in the fair value of plan assets for the years ended December 31, 2018 and 2017 are as follows (Korean won):

	2018	2017
Jan. 1	₩ 51,251,162,086	₩ 47,922,746,297
Interest income on plan assets	1,517,306,986	1,279,147,220
Re-measurement of plan assets	(567,317,919)	(291,831,542)
Contribution by employer	7,000,000,000	3,375,339,900
Benefits paid	(2,300,210,880)	(1,034,239,789)
Dec. 31	₩ 56,900,940,273	₩ 51,251,162,086

As of December 31, 2018 and 2017, re-measurements of the defined benefit liability of ₩(-)12,381,033,984 and ₩(-)8,642,768,722 recorded in accumulated other comprehensive income are presented before tax effect which is directly charged to equity.

24. Pension benefits (cont'd)

Details of costs related to the defined benefit plan recognized in profit or loss for the years ended December 31, 2018 and 2017 are as follows (Korean won):

	2018	2017
Current service costs	₩ 11,804,066,832	₩ 12,781,456,989
Interest costs	1,502,330,081	1,713,695,231
	₩ 13,306,396,913	₩ 14,495,152,220

Costs related to the defined benefit plan were recognized as follows (Korean won):

	2018	2017
Cost of sales	₩ 12,856,998,603	₩ 12,421,181,892
Selling and administrative expenses and others	446,878,840	2,073,970,328
Construction-in-progress	2,519,470	-
	₩ 13,306,396,913	₩ 14,495,152,220

Details of change in re-measurement gain (loss) in other comprehensive income for the years ended December 31, 2018 and 2017 are as follows (Korean won):

	2018	2017
Actuarial changes arising from changes in financial assumptions	₩ 7,322,636,321	₩ (11,043,808,322)
Return on plan assets	568,003,108	291,831,542
Experience adjustments and others	(2,958,663,535)	(2,954,917,789)
	₩ 4,931,975,894	₩ (13,706,894,569)

The principal assumptions used in determining pension benefit obligations for the Group's plans are shown below (Percentages in units):

	2018	2017
Discount rate	2.85 ~ 2.87	2.85 ~ 2.87
Future salary increases	1.01 ~ 5.78	2.00 ~ 5.60

Other long-term employee benefits liabilities as of December 31, 2018 and 2017 are as follows (Korean won):

	Dec. 31, 2018	Dec. 31, 2017
Long-term accrued expense	₩ 437,911,281	₩ 452,738,814

25. Provisions

Details of provisions as of December 31, 2018 and 2017 are as follows (Korean won):

	Dec. 31, 2018	
	Current	Non-current
Provision for employee bonuses	₩ 38,158,573,586	₩ -
Provision for financial guarantees	1,165,361,220	83,610,000
Provision for RPS	-	-
Provision for lawsuit (*1)	203,380,677	-
Provision for decommissioning cost	-	3,497,956,832
	₩ 39,527,315,483	₩ 3,581,566,832

	Dec. 31, 2017	
	Current	Non-current
Provision for employee bonuses	₩ 30,005,154,425	₩ -
Provision for financial guarantees	40,320,000	2,659,113,203
Provision for RPS	25,739,424,864	-
Provision for lawsuit (*1)	4,802,971,695	-
Provision for decommissioning cost	-	2,055,081,504
	₩ 60,587,870,984	₩ 4,714,194,707

(*1) As of December 31, 2018, the Group has recognized a provision for ordinary wages based on en banc Supreme Court decision. The provision was estimated based on the assumptions such as possibility and timing of payments to employees. As of December 31, 2018, the Group recorded provision for ordinary wages calculated based on the best estimate amounting to ₩ 203 million. The provision may be subject to change when there is a change in these assumptions.

25. Provisions (cont'd)

Changes in provisions for the years ended December 31, 2018 and 2017 are as follows (Korean won):

	2018					
	Jan. 1	Addition	Utilization	Reversal	Others	Dec. 31
Provision for employee bonuses	₩ 30,005,154,425	₩ 59,112,290,981	₩ (50,958,871,820)	₩ -	₩ -	₩ 38,158,573,586
Provision for financial guarantees	2,699,433,203	291,590,904	-	(956,725,763)	(785,327,124)	1,248,971,220
Provision for RPS	25,739,424,864	-	-	(25,739,424,864)	-	-
Provision for lawsuit	4,802,971,695	-	(4,599,591,018)	-	-	203,380,677
Provision for decommissioning cost	2,055,081,504	75,106,159	-	-	1,367,769,169	3,497,956,832
	₩ 65,302,065,691	₩ 59,478,988,044	₩ (55,558,462,838)	₩ (26,696,150,627)	₩ 582,442,045	₩ 43,108,882,315

	2017					
	Jan. 1	Addition	Utilization	Reversal	Others	Dec. 31
Provision for employee bonuses	₩ 28,514,202,760	₩ 59,006,398,230	₩ (57,515,446,565)	₩ -	₩ -	₩ 30,005,154,425
Provision for financial guarantees	2,689,066,104	1,169,968,793	-	(1,159,601,694)	-	2,699,433,203
Provision for RPS	69,560,172,346	-	-	(43,820,747,482)	-	25,739,424,864
Provision for lawsuit	10,881,288,364	1,670,607,610	(7,748,924,279)	-	-	4,802,971,695
Provision for decommissioning cost	507,035,797	1,548,045,707	-	-	-	2,055,081,504
	₩ 112,151,765,371	₩ 63,395,020,340	₩ (65,264,370,844)	₩ (44,980,349,176)	₩ -	₩ 65,302,065,691

25. Provisions (cont'd)

Details of annual emission allowances allocated as of December 31, 2018 are as follows (tCO2-eq in unit):

	2018	2019	2020	2018 – 2020 Total
Allocated emissions	39,298,829	31,315,456	31,315,455	101,929,740

There are no emissions that have been provided as collateral as of December 31, 2018.

The quantity of greenhouse gas emission estimated by the Group in 2018 was 39,008,803 tCO2-eq.

26. Government grants

Details of government grants as of December 31, 2018 and 2017 are as follows (Korean won):

	Dec. 31, 2018	Dec. 31, 2017
Buildings	₩ 183,600,082	₩ 191,670,415
Vehicles	47,291,668	66,291,668
Intangible assets before amortization	5,634,618,107	5,634,618,107
	₩ 5,865,509,857	₩ 5,892,580,190

Changes in government grants for the years ended December 31, 2018 and 2017 are as follows (Korean won):

	2018			
	Jan. 1	Receipt	Amortization	Dec. 31
Buildings	₩ 191,670,415	₩ -	₩ (8,070,333)	₩ 183,600,082
Vehicles	66,291,668	-	(19,000,000)	47,291,668
Intangible assets before amortization	5,634,618,107	-	-	5,634,618,107
	₩ 5,892,580,190	₩ -	₩ (27,070,333)	₩ 5,865,509,857

	2017			
	Jan. 1	Receipt	Amortization	Dec. 31
Buildings	₩ 199,740,749	₩ -	₩ (8,070,334)	₩ 191,670,415
Vehicles	1,208,334	74,000,000	(8,916,666)	66,291,668
Intangible assets before amortization	5,634,618,107	-	-	5,634,618,107
	₩ 5,835,567,190	₩ 74,000,000	₩ (16,987,000)	₩ 5,892,580,190

27. Non-financial liabilities

Details of non-financial liabilities as of December 31, 2018 and 2017 are as follows (Korean won):

	Dec. 31, 2018		Dec. 31, 2017	
	Current	Non-current	Current	Non-current
Advance receipts	₩ -	₩ -	₩ 3,823,509,090	₩ -
Unearned revenue	206,685,223	-	1,030,683,978	-
Withholdings	6,082,989,842	-	5,373,241,588	-
Others	937,219,561	5,709,433,544	748,601,290	875,651,362
	₩ 7,226,894,626	₩ 5,709,433,544	₩ 10,976,035,946	₩ 875,651,362

28. Issued capital

Details of issued capital as of December 31, 2018 and 2017 are as follows (Korean won):

				Dec. 31, 2018		
				Owned by		
Share class	Number of shares authorized	Number of shares issued	Par value	Government	Non-government	Total
Ordinary stock	100,000,000	57,932,221	₩ 5,000	₩ -	₩ 289,661,105,000	₩ 289,661,105,000

				Dec. 31, 2017		
				Owned by		
Share class	Number of shares authorized	Number of shares issued	Par value	Government	Non-government	Total
Ordinary stock	100,000,000	57,932,221	₩ 5,000	₩ -	₩ 289,661,105,000	₩ 289,661,105,000

There is no change in the number of shares outstanding during 2018 and 2017.

Details of share premium as of December 31, 2018 and 2017 are as follows (Korean won):

	Dec. 31, 2018	Dec. 31, 2017
Share premium	₩ 1,928,937,669,310	₩ 1,928,937,669,310

29. Retained earnings and dividends

Details of retained earnings as of December 31, 2018 and 2017 are as follows (Korean won):

	Dec. 31, 2018	Dec. 31, 2017
Legal reserves (*1)	₩ 66,534,482,040	₩ 59,534,482,040
Voluntary reserves	1,472,588,625,199	1,323,397,548,406
Unappropriated retained earnings	867,130,960,754	1,090,178,723,713
	₩ 2,406,254,067,993	₩ 2,473,110,754,159

(*1) In accordance with the *Commercial Law*, an amount equal to at least 10% of cash dividend for each accounting period is required to be appropriated as a legal reserve until the reserve equals 50% of issued capital. The legal reserve cannot be used as a source for cash dividends and may be used to offset an accumulated deficit.

Details of voluntary reserves as of December 31, 2018 and 2017 are as follows (Korean won):

	Dec 31, 2018	Dec 31, 2017
Reserve for business expansion	₩ 1,472,588,625,199	₩ 1,319,997,548,406
Reserve for research and human resource development (*)	-	3,400,000,000
	₩ 1,472,588,625,199	₩ 1,323,397,548,406

(*) Pursuant to the revised *Tax Incentive Limitation Law*, the reserve for research and human development are provided in order to obtain tax benefits with respect the year for which the appropriations are proposed. These reserves may be utilized for cash dividends after the expiration of the specified grace period.

Changes in retained earnings for the years ended December 31, 2018 and 2017 are as follows (Korean won):

	2018	2017
Jan. 1	₩ 2,473,110,754,159	₩ 2,340,796,375,850
Profit for the year	(10,710,309,335)	216,299,395,481
Effect of changes in accounting policies (Note 2)	9,103,460,810	-
Dividend paid	(61,408,154,260)	(94,429,520,230)
Re-measurement loss on defined benefit plans	(3,738,265,262)	10,389,081,148
Changes in retained earnings in equity method	(103,418,119)	55,421,910
Dec. 31	₩ 2,406,254,067,993	₩ 2,473,110,754,159

29. Retained earnings and dividends (cont'd)

Details of cash dividends paid by the Company for the years ended December 31, 2018 and 2017 are as follows (Korean won in unit, except for shares and dividend per share):

Dec.31, 2018

Share class	Number of shares issued	Dividends per share	Total dividends
Ordinary stock	57,932,221	₩ 1,060	₩ 61,408,154,260

Dec.31, 2017

Share class	Number of shares issued	Dividends per share	Total dividends
Ordinary stock	57,932,221	₩ 1,630	₩ 94,429,520,230

Changes in re-measurement of the net defined benefit liability for the years ended December 31, 2018 and 2017 are as follows (Korean won):

	2018	2017
Jan. 1	₩ (8,642,768,722)	₩ (19,031,849,870)
Changes for the year	(4,931,083,832)	13,705,911,805
Tax effect	1,192,818,570	(3,316,830,657)
Dec. 31	₩ (12,381,033,984)	₩ (8,642,768,722)

30. Statements of appropriation of retained earnings

Details on appropriation of retained earnings presented on the Company's separate financial statements for the years ended December 31, 2018 and 2017 are as follow (Korean won):

	2018	2017
Retained earnings before appropriations	₩ 905,481,942,341	₩ 1,114,368,607,125
Unappropriated retained earnings carried forward from the prior year	896,769,376,072	886,379,549,989
Profit for the year	3,345,289,244	217,599,231,053
Re-measurement gain on defined benefit plans	(3,736,183,785)	10,389,826,083
Effect of adoption of new accounting standards	9,103,460,810	-
Transfer from other reserves	-	3,400,000,000
	905,481,942,341	1,117,768,607,125
Appropriations:		
Legal reserve	(100,000,000)	(7,000,000,000)
Cash dividends	(984,847,760)	(61,408,154,260)
Reserve for business expansion	(2,260,441,484)	(152,591,076,793)
	(3,345,289,244)	(220,999,231,053)
Unappropriated retained earnings to be carried forward to the next year	₩ 902,136,653,097	₩ 896,769,376,072

31. Other components of equity

Details of other components of equity as of December 31, 2018 and 2017 are as follows (Korean won):

	Dec. 31, 2018	Dec. 31, 2017
Accumulated other comprehensive income	₩ 69,777,581,947	₩ 5,008,655,473
Other equity	(82,235,516,563)	(82,235,516,563)
	₩ (12,457,934,616)	₩ (77,226,861,090)

31. Other components of equity (cont'd)

Details of accumulated other comprehensive income as of December 31, 2018 and 2017 are as follows (Korean won):

	Dec. 31, 2018	Dec. 31, 2017
Reserve for valuation on equity instruments at FVOCI	₩ 88,663,925,431	₩ -
Gain on valuation of available-for-sale financial assets	-	28,405,218,600
Reserve for loss on valuation of derivative instruments	(17,786,129,355)	(10,560,722,999)
Equity adjustments in equity method	4,190,525,392	(7,985,255,100)
Translation of foreign operations	(5,290,739,521)	(4,850,585,028)
	₩ 69,777,581,947	₩ 5,008,655,473

Details of other equity as of December 31, 2018 and 2017 are as follows (Korean won):

	Dec. 31, 2018	Dec. 31, 2017
Loss on capital reduction (*1)	₩ (82,235,516,563)	₩ (82,235,516,563)

(*1) Other equity represents loss on capital reduction due to spin-off of the hydroelectric power operations in 2011.

32. Revenue

Details of revenue for the years ended December 31, 2018 and 2017 are as follows (Korean won):

	2018		2017	
	Domestic	Overseas	Domestic	Overseas
Revenue from goods sales:				
Electricity sales	₩ 4,644,534,181,076	₩ 23,816,808,822	₩ 4,231,167,923,598	₩ 19,333,722,696
Other electricity sales	158,588,333,623	-	239,450,318,432	-
Heat sales	62,078,982,709	-	52,456,419,376	-
Revenue from business incidental	5,205,523,274	-	5,320,887,669	-
Revenue from rendering of services:				
Overseas business	-	1,361,773,089	-	862,080,281
Others:				
Government grants	71,458,008,145	5,740,008,730	117,023,300,907	4,209,430,900
	₩ 4,941,865,028,827	₩ 30,918,590,641	₩ 4,645,418,849,982	₩ 24,405,233,877

33. Selling and administrative expenses

Details of selling and administrative expenses for the years ended December 31, 2018 and 2017 are as follows (Korean won):

	2018	2017
Salaries	₩ 32,944,604,148	₩ 30,546,153,391
Pension benefits	2,405,494,394	3,175,045,435
Employee welfare benefits	3,685,761,998	3,258,896,073
Employee welfare fund	973,677,899	1,960,505,465
Insurance	2,310,556,816	8,362,483,665
Depreciation of property, plant and equipment	17,693,128,338	16,258,755,135
Amortization of intangible assets	3,341,702,535	2,815,320,989
Commissions and fees	22,916,684,363	17,884,805,086
Advertising	1,693,080,853	5,643,956,692
Education and training	85,070,351	93,280,096
Vehicle maintenance	49,403,417	41,990,998
Printing	130,482,514	31,348,738
Business promotion	123,666,382	120,337,151
Rental fees	534,604,832	410,615,347
Communication	1,529,062,448	842,089,813
Tax and dues	799,577,174	1,020,337,954
Supplies	182,654,194	167,848,740
Utilities	617,200,513	576,674,923
Repairs and maintenance	1,023,475,761	1,143,701,813
Research and development	28,892,551,373	27,953,893,177
Travel	451,427,300	554,819,058
Uniform	561,249,007	5,277,038
Investigation and analysis	59,940,323	67,024,201
Institute fee	-	4,885,229
Others (*)	2,911,670,728	3,368,869,938
	₩ 125,916,727,661	₩ 126,308,916,145

Details of other selling and administrative expenses for the years ended December 31, 2018 and 2017 are as follows (Korean won):

	2018	2017
Awards expense	₩ 64,609,109	₩ 26,835,367
Registration expense	361,670,543	521,094,476
Compensation for damages	-	60,916,810
Miscellaneous Salaries	1,543,841,251	1,757,201,742
Association fees	205,204,337	112,493,313
Miscellaneous expenses	736,345,488	890,328,230
	₩ 2,911,670,728	₩ 3,368,869,938

34. Other income and expenses

Details of other income for the years ended December 31, 2018 and 2017 are as follows (Korean won):

	2018	2017
Revenue from compensation and indemnity	₩ 1,765,418,551	₩ 12,767,582,900
Rental revenue	2,993,096,200	3,028,384,174
Others	11,314,095,872	6,637,816,961
	₩ 16,072,610,623	₩ 22,433,784,035

Details of others in other income for the years ended December 31, 2018 and 2017 are as follows (Korean won):

	2018	2017
Technical fee income	₩ 6,908,963,132	₩ 2,887,506,161
Refunded tax income	466,136,480	49,661,820
Port usage fee	1,591,544,894	-
Miscellaneous revenues - others	2,347,451,366	3,700,648,980
	₩ 11,314,095,872	₩ 6,637,816,961

Details of other expenses for the years ended December 31, 2018 and 2017 are as follows (Korean won):

	2018	2017
Other bad debt expenses	₩ -	₩ 3,996,330
Donations	3,805,261,019	1,228,440,106
Others (*)	3,439,115,507	13,583,645,069
	₩ 7,244,376,526	₩ 14,816,081,505

Details of others in other expenses for the years ended December 31, 2018 and 2017 are as follows (Korean won):

	2018	2017
Deemed rent	₩ 18,737	₩ 15,842
Miscellaneous loss	3,439,096,770	13,583,629,227
	₩ 3,439,115,507	₩ 13,583,645,069

35. Other profit or loss

Details of other profit and loss for the years ended December 31, 2018 and 2017 are as follows (Korean won):

	2018	2017
Gain on disposal of property, plant and equipment	₩ 4,027,734,192	₩ 3,010,643,285
Gain on foreign currency translations	1,130,076,287	2,027,709,390
Gain on foreign currency transactions	3,757,802,896	5,312,563,368
Other gains	4,633,066,995	4,309,532,834
Loss on disposal of property, plant and equipment	(390,946,572)	(54,253,964)
Loss on foreign currency translations	(241,917,111)	(359,732,248)
Loss on foreign currency transactions	(3,578,840,355)	(2,180,964,143)
Other losses	(8,766,909,917)	(10,353,373,844)
	₩ 570,066,415	₩ 1,712,124,678

Details of other gain for the years ended December 31, 2018 and 2017 are as follows (Korean won):

	2018	2017
Gain on disposal of inventories	₩ 429,962,914	₩ 257,086,648
Gain on disposal of scrapped equipment	728,969,265	442,397,716
Miscellaneous revenues-other	3,474,081,079	3,610,041,814
Others	53,737	6,656
	₩ 4,633,066,995	₩ 4,309,532,834

Details of other loss for the years ended December 31, 2018 and 2017 are as follows (Korean won):

	2018	2017
Loss on disposal of inventories	₩ 3,484,641	₩ 28,814,908
Loss on valuation of inventories	(4,232,100)	(24,523,434)
Loss on write-off of property, plant and equipment	8,767,647,974	10,277,448,629
Others	9,402	71,633,741
	₩ 8,766,909,917	₩ 10,353,373,844

36. Finance income

Details of finance income for the years ended December 31, 2018 and 2017 are as follows (Korean won):

	2018	2017
Interest income	₩ 6,000,623,105	₩ 1,985,113,185
Dividend income	5,534,916,651	-
Gain on valuation of derivative instruments	41,240,858,425	-
Gain on transaction of derivative instruments	43,226,611,183	3,885,650,512
Gain on foreign currency translation (*)	5,354,068,405	166,920,873,823
Gain on foreign currency transaction (*)	4,373,782,901	38,668,417,957
Other finance income	1,629,273,120	1,159,601,694
	₩ 107,360,133,790	₩ 212,619,657,171

(*) Related to financing activities

Details of interest income included in finance income for the years ended December 31, 2018 and 2017 are as follows (Korean won):

	2018	2017
Cash and cash equivalents	₩ 226,162,084	₩ 745,533,967
Financial assets at FVPL	4,737,525,930	-
Financial assets at amortised cost	6,742,780	-
Held-to-maturity financial assets	-	6,433,855
Loans and receivables	763,702,292	647,780,468
Trade and other receivables	266,490,019	585,364,895
	₩ 6,000,623,105	₩ 1,985,113,185

37. Finance costs

Details of finance costs for the years ended December 31, 2018 and 2017 are as follows (Korean won):

	2018	2017
Interest expenses	₩ 106,026,369,194	₩ 99,135,172,702
Loss on valuation of derivative instruments	31,961,954	170,497,316,684
Loss on transaction of derivative instruments	4,183,483,486	45,403,338,479
Loss on foreign currency translation (*)	46,399,398,516	7,763,334,664
Loss on foreign currency transaction (*)	29,366,159,712	3,363,941,451
Other finance costs	853,300,024	1,158,231,694
	₩ 186,860,672,886	₩ 327,321,335,674

(*) Related to financing activities

Details of interest expense included in finance costs for the years ended December 31, 2018 and 2017 are as follows (Korean won):

	2018	2017
Trade and other payables	₩ -	₩ 300,507
Short-term borrowings	293,307,048	2,260,748,996
Long-term borrowings	2,974,017,466	2,506,900,363
Bonds payables	105,336,282,589	97,993,638,140
	108,603,607,103	102,761,588,006
Less: capitalized borrowing costs	(2,577,237,909)	(3,626,415,304)
	₩ 106,026,369,194	₩ 99,135,172,702

The effective interest rate used for capitalizing borrowing costs for the years ended December 31, 2018 and 2017 were 3.07% and 3.57%, respectively.

38. Income tax

The major components of income tax expense for the years ended December 31, 2018 and 2017 are as follows (Korean won):

	2018	2017
Current income tax:	₩ (15,871,908,375)	₩ 122,439,354,711
Current income tax expense	1,527,897,992	100,409,075,484
Adjustments to prior year current income tax expense	(17,399,806,367)	22,030,279,227
Deferred tax:	8,710,793,621	(9,763,318,077)
Changes in deferred tax arising from temporary differences	27,293,030,543	5,856,105,408
Recognition or discharge temporary differences prior to previous years	(18,582,236,922)	(15,619,423,485)
Income tax expense (benefits)	₩ (7,161,114,754)	₩ 112,676,036,634

38. Income tax (cont'd)

A reconciliation between income tax expense and the product of accounting profit multiplied by Korea's domestic tax rate for the years ended December 31, 2018 and 2017 are as follows (Korean won):

	2018	2017
Profit for the year before tax	₩ (15,230,532,848)	₩ 329,839,462,533
Tax at the statutory income tax rate (24.2%)	₩ 2,504,716,485	₩ 79,821,149,933
Adjustments:		
Effect of applying progressive tax rate	(22,000,000)	(462,000,000)
Income not subject to tax	(654,178)	-
Expenses not deductible for tax purposes	732,484,571	244,554,720
Effect of tax deduction and exemption	(848,828,095)	(2,052,277,199)
Effect from not recognizing deferred tax assets on deductible temporary difference	549,366,570	-
Deferred income tax effect from consolidation	4,599,702,612	3,134,682,538
Additional income tax paid	(3,724,831,554)	23,875,516,395
Effect of change in tax rate (22% to 25%) on changes in deferred tax (Effective January 1, 2018)	(8,405,432,878)	8,405,432,878
Others	(2,545,638,287)	(291,022,631)
	(9,665,831,239)	32,854,886,701
Income tax expense (benefits)	₩ (7,161,114,754)	₩ 112,676,036,634
Effective tax rate	-	34.16%

The tax effects relating to the components of other comprehensive income or loss for the years ended December 31, 2018 and 2017 are as follows (Korean won):

	2018	2017
Loss on valuation of financial assets at FVOCI	₩ (22,081,847,494)	₩ -
Gain (loss) on valuation of available-for-sale financial assets	-	(9,400,148,651)
Gain (loss) on valuation of cash flow hedges	2,306,792,002	(2,902,206,348)
Re-measurement loss on defined benefit plans	1,192,818,570	(3,317,068,486)
	₩ (18,582,236,922)	₩ (15,619,423,485)

Details of deferred tax assets and liabilities recognized in the statements of financial position as of December 31, 2018 and 2017 are as follows (Korean won):

	2018			
	Jan. 1	Income tax expenses	Recognized directly in equity	Dec. 31
Deferred tax liabilities, net of temporary differences:				
Long-term employee benefits	₩ 12,115,399,387	₩ 966,878,023	₩ 1,192,818,570	₩ 14,275,095,980
Cash flow hedge	(30,626,505,312)	(9,065,718,188)	2,306,792,002	(37,385,431,498)
Subsidiaries	(404,508,499)	(3,065,286,032)	-	(3,469,794,531)
Cash flow hedge	(379,378,220)	(261,366,774)	-	(640,744,994)
Property, plant & equipment	(332,461,879,756)	(4,237,418,268)	-	(336,699,298,024)
Intangible assets	2,385,368,059	(73,965,580)	-	2,311,402,479
Financial asset at fair value through profit or loss	(61,441,970)	(930,074,795)	-	(991,516,765)
Financial assets at FVOCI	2,205,312,648	203,933,639	(22,081,847,494)	(19,672,601,207)
Provisions	26,063,399,358	(8,442,176,495)	-	17,621,222,863
Other financial liabilities	9,669,740,193	1,925,931,306	-	11,595,671,499
Others	909,010,599	8,453,192,014	-	9,362,202,613
	(310,585,483,513)	(14,526,071,150)	(18,582,236,922)	(343,693,791,585)
Deferred tax assets from tax credit	479,893,650	-	-	479,893,650
	₩ (310,105,589,863)	₩ (14,526,071,150)	₩ (18,582,236,922)	₩ (343,213,897,935)

38. Income tax (cont'd)

	2017			
	Jan. 1	Income tax expenses	Recognized directly in equity	Dec. 31
Deferred tax liabilities, net of temporary differences:				
Long-term employee benefits	₩ 12,115,399,387	₩ 3,009,815,937	₩ (3,317,068,486)	₩ 11,808,146,838
Cash flow hedge	(30,626,505,312)	47,720,403,631	(2,902,206,348)	14,191,691,971
Subsidiaries	(404,508,499)	(3,065,286,032)	-	(3,469,794,531)
Cash flow hedge	(379,378,220)	(261,366,774)	-	(640,744,994)
Property, plant & equipment	(332,461,879,756)	14,742,465,200	-	(317,719,414,556)
Intangible assets	2,385,368,059	81,211,705	-	2,466,579,764
Financial asset at fair value through profit or loss	(61,441,970)	951,261,043	-	889,819,073
Available-for-sale financial assets	2,205,312,648	(203,933,640)	(9,400,148,651)	(7,398,769,643)
Provisions	26,063,399,358	(9,413,116,481)	-	16,650,282,877
Other financial liabilities	9,669,740,193	1,975,083,309	-	11,644,823,502
Others	909,010,599	(45,855,177,108)	-	(44,946,166,509)
	(310,585,483,513)	9,681,360,790	(15,619,423,485)	(316,523,546,208)
Deferred tax assets from tax credit	479,893,650	81,957,287	-	561,850,937
	₩ (310,105,589,863)	₩ 9,763,318,077	₩ (15,619,423,485)	₩ (315,961,695,271)

Details of deferred tax assets and liabilities presented in the statements of financial position are as follows (Korean won):

	Dec. 31, 2018	Dec. 31, 2017
Deferred tax assets	₩ 188,310,807	₩ 600,474,631
Deferred tax liabilities	343,402,208,742	316,562,169,902

39. Classification based on nature of expense

Details of expenses based on nature of expense for the years ended December 31, 2018 and 2017 are as follows (Korean won):

	2018		
	Selling and administrative expenses	Cost of sales	Total
Raw material in use	₩ -	₩ 3,684,892,479,857	₩ 3,684,892,479,857
Power costs purchased	-	27,969,630,796	27,969,630,796
Salaries	32,944,604,148	202,614,633,508	235,559,237,656
Retirement benefit	2,405,494,394	18,288,313,824	20,693,808,218
Employee welfare fund	973,677,899	5,561,073,101	6,534,751,000
Employee welfare benefits	3,685,761,998	17,575,290,545	21,261,052,543
Insurance	2,310,556,816	5,202,123,693	7,512,680,509
Depreciation of property, plant and equipment	17,693,128,338	613,375,707,678	631,068,836,016
Amortization of intangible assets	3,341,702,535	12,243,003,642	15,584,706,177
Commissions and fees	22,916,684,363	26,130,454,490	49,047,138,853
Provisions	-	(37,575,866,551)	(37,575,866,551)
Advertising	1,693,080,853	460,430,015	2,153,510,868
Education and training	85,070,351	462,368,314	547,438,665
Vehicle maintenance	49,403,417	125,026,825	174,430,242
Publication	130,482,514	53,162,925	183,645,439
Business promotion	123,666,382	177,148,596	300,814,978
Rental fees	534,604,832	14,329,715,111	14,864,319,943
Communications	1,529,062,448	290,169,258	1,819,231,706
Transport	-	22,421,765	22,421,765
Taxes and dues	799,577,174	26,319,042,453	27,118,619,627
Supplies	182,654,194	1,019,770,079	1,202,424,273
Utilities	617,200,513	1,141,535,179	1,758,735,692
Repairs and maintenance	1,023,475,761	164,974,250,132	165,997,725,893
Research and development	28,892,551,373	1,401,828,352	30,294,379,725
Travel	451,427,300	605,031,719	1,056,459,019
Uniform	561,249,007	-	561,249,007
Investigation and analysis	59,940,323	235,104,560	295,044,883
Institute fee	-	51,814,227	51,814,227
Others	2,911,670,728	283,029,584	3,194,700,312
	₩ 125,916,727,661	₩ 4,788,228,693,677	₩ 4,914,145,421,338

39. Classification based on nature of expense (cont'd)

	2017		
	Selling and administrative expenses	Cost of sales	Total
Raw material in use	₩ -	₩ 3,086,909,396,808	₩ 3,086,909,396,808
Power costs purchased	-	26,226,470,693	26,226,470,693
Salaries	30,546,153,391	188,347,229,315	218,893,382,706
Retirement benefit	3,175,045,435	18,455,519,876	21,630,565,311
Employee welfare fund	1,960,505,465	10,463,483,535	12,423,989,000
Employee welfare benefits	3,258,896,073	16,619,366,374	19,878,262,447
Insurance	8,362,483,665	957,882,835	9,320,366,500
Depreciation of property, plant and equipment	16,258,755,135	571,679,951,229	587,938,706,364
Amortization of intangible assets	2,815,320,989	23,186,165,505	26,001,486,494
Commissions and fees	17,884,805,086	29,128,794,837	47,013,599,923
Provisions	-	(56,935,656,852)	(56,935,656,852)
Advertising	5,643,956,692	394,804,286	6,038,760,978
Education and training	93,280,096	438,618,410	531,898,506
Vehicle maintenance	41,990,998	106,941,720	148,932,718
Publication	31,348,738	57,337,321	88,686,059
Business promotion	120,337,151	176,474,752	296,811,903
Rental fees	410,615,347	11,189,531,037	11,600,146,384
Communications	842,089,813	906,385,274	1,748,475,087
Transport	-	22,346,983	22,346,983
Taxes and dues	1,020,337,954	25,091,972,142	26,112,310,096
Supplies	167,848,740	1,112,550,394	1,280,399,134
Utilities	576,674,923	914,625,330	1,491,300,253
Repairs and maintenance	1,143,701,813	160,647,546,681	161,791,248,494
Research and development	27,953,893,177	3,062,186,893	31,016,080,070
Travel	554,819,058	576,632,867	1,131,451,925
Uniform	5,277,038	28,136,034	33,413,072
Investigation and analysis	67,024,201	300,513,475	367,537,676
Institute fee	4,885,229	60,211,576	65,096,805
Others	3,368,869,938	819,653,313	4,188,523,251
	₩ 126,308,916,145	₩ 4,120,945,072,643	₩ 4,247,253,988,788

40. Earnings per share

Earnings per share for the years ended December 31, 2018 and 2017 are as follows (Korean won):

	2018	2017
Basic earnings per share	₩ (185)	₩ 3,734

Profit for the year and weighted-average number of ordinary shares outstanding for the years ended December 31, 2018 and 2017 are as follows (Korean won and share in units):

	2018	2017
Profit for the year attributable to owners of the parent	₩ (10,710,309,335)	₩ 216,299,395,481
Profit for the year attributable to ordinary shares of owners of the parent	(10,710,309,335)	216,299,395,481
Weighted-average number of ordinary shares	57,932,221	57,932,221

Diluted EPS is the same as basic EPS since no dilutive securities are issued as of the end of the reporting period.

41. Financial instruments by category

Details of the net book value of financial assets by category as of December 31, 2018 and 2017 are as follows (Korean won):

	Dec.31, 2018			
	Financial assets at fair value through profit or loss	Financial assets at amortised cost	Financial assets at FVOCI	Total
Current:				
Cash and cash equivalents	₩ -	₩ 37,248,237,505	₩ -	₩ 37,248,237,505
Financial assets at fair value through profit or loss ("Financial assets at FVPL")	100,000,000	-	-	100,000,000
Loans	-	1,462,373,422	-	1,462,373,422
Trade and other receivables	-	615,635,053,019	-	615,635,053,019
Financial assets at amortised cost	-	11,077,180,000	-	11,077,180,000
Derivative instruments	198,307,912	-	-	198,307,912
	298,307,912	665,422,843,946	-	665,721,151,858
Non-current:				
Financial assets at FVOCI	-	-	225,339,466,173	225,339,466,173
Financial assets at amortised cost	-	534,955,000	-	534,955,000
Loans	-	26,731,510,750	-	26,731,510,750
Trade and other receivables	-	2,489,834,895	-	2,489,834,895
	-	29,756,300,645	225,339,466,173	255,095,766,818
	₩ 298,307,912	₩ 695,179,144,591	₩ 225,339,466,173	₩ 920,816,918,676

	Financial assets at fair value through profit or loss	Loans and receivables	Available-for-sale financial assets	Held-to-maturity maturity assets	Total
Current:					
Cash and cash equivalents	₩ -	₩ 33,389,243,971	₩ -	₩ -	₩ 33,389,243,971
Loans	-	1,253,380,080	-	-	1,253,380,080
Financial instruments	-	10,000,000,000	-	-	10,000,000,000
Trade and other receivables	-	725,519,825,816	-	-	725,519,825,816
	-	770,162,449,867	-	-	770,162,449,867
Non-current:					
Available-for-sale financial assets	-	-	133,832,648,705	-	133,832,648,705
Held-to-maturity financial assets	-	-	-	495,575,000	495,575,000
Loans	-	25,124,320,653	-	-	25,124,320,653
Trade and other receivables	-	3,591,735,531	-	-	3,591,735,531
	-	28,716,056,184	133,832,648,705	495,575,000	163,044,279,889
	₩ -	₩ 798,878,506,051	₩ 133,832,648,705	₩ 495,575,000	₩933,206,729,756

41. Financial instruments by category (cont'd)

Details of the net book value of financial liabilities by category as of December 31, 2018 and 2017 are as follows (Korean won):

	Dec. 31, 2018			
	Financial liabilities at fair value through profit or loss	Financial liabilities with amortized cost	Derivatives designated as hedging instruments	Total
Current financial liabilities:				
Trade and other payables	₩ -	₩ 419,240,507,062	₩ -	₩ 419,240,507,062
Short-term borrowings		44,000,000,000	-	44,000,000,000
Current portion of long-term borrowings	-	8,741,836,672	-	8,741,836,672
Current portion of bonds payable	-	189,974,406,505	-	189,974,406,505
Derivative liabilities	31,961,954	-	-	31,961,954
	31,961,954	661,956,750,239	-	661,988,712,193
Non-current financial liabilities:				
Trade and other payables	-	14,395,538	-	14,395,538
Long-term borrowings	-	77,462,920,000	-	77,462,920,000
Bonds payable	-	2,952,688,453,612	-	2,952,688,453,612
Derivative liabilities	-	-	30,713,908,204	30,713,908,204
	-	3,030,165,769,150	30,713,908,204	3,060,879,677,354
	₩ 31,961,954	₩ 3,692,122,519,389	₩ 30,713,908,204	₩ 3,722,868,389,547

	Dec. 31, 2017			
	Financial liabilities at fair value through profit or loss	Financial liabilities with amortized cost	Derivatives designated as hedging instruments	Total
Current financial liabilities:				
Trade and other payables	₩ -	₩ 459,418,460,853	₩ -	₩ 459,418,460,853
Short-term borrowings	-	122,500,000,000	-	122,500,000,000
Current portion of long-term borrowings	-	9,077,641,915	-	9,077,641,915
Current portion of bonds payable	-	724,586,719,970	-	724,586,719,970
Derivative liabilities	3,576,443,218	-	2,297,198,908	5,873,642,126
	3,576,443,218	1,315,582,822,738	2,297,198,908	1,321,456,464,864
Non-current financial liabilities:				
Borrowings	-	78,330,206,046	-	78,330,206,046
Bonds payable	-	2,369,217,515,709	-	2,369,217,515,709
Derivative liabilities	-	-	54,743,363,673	54,743,363,673
	-	2,447,547,721,755	54,743,363,673	2,502,291,085,428
	₩ 3,576,443,218	₩ 3,763,130,544,493	₩ 57,040,562,581	₩ 3,823,747,550,292

41. Financial instruments by category (cont'd)

Details of profit (loss) from financial instruments by category for the years ended December 31, 2018 and 2017 are as follows (Korean won):

		2018
Cash and cash equivalents		
Interest income	₩	226,162,084
Loss on fluctuation of exchange rates		(723,167)
Financial assets at FVPL		
Interest income		4,737,525,930
Gain on valuation of derivative instruments		198,307,912
Gain on settlement of derivative instruments		3,576,443,218
Financial assets at amortized cost		
Interest income		24,959,303
Loans and receivables		
Interest income		954,144,417
Gain on fluctuation of exchange rates		-
Trade and other receivables		
Interest income		57,831,371
Gain on fluctuation of exchange rates		(38,540,053)
Loss on valuation of financial assets at FVOCI		91,839,915,248
Financial liabilities at fair value through profit or loss		
Gain on valuation of derivative instruments		(31,961,954)
Gain on settlement of derivative instruments		(234,230,495)
Finanacial liabilities at amortized cost		
Loss on fluctuation of exchange rates		(64,931,321,985)
Interest expenses on borrowings and bonds payable		(105,761,898,885)
Interest expenses on trade and other liabilities		(264,470,309)
Derivatives designated as hedging instruments		
Gain (loss) on valuation of derivatives (recognized in profit or loss)		41,042,550,513
Gain on valuation of derivatives (recognized in equity before tax)		(9,532,198,358)
Loss on settlement of derivative contracts		35,700,914,974

		2017
Cash and cash equivalents		
Interest income	₩	745,533,967
Loss on fluctuation of exchange rates		(643,963)
Available-for-sale financial assets		
Gain (loss) valuation (recognized in equity before tax)		38,843,589,471
Held-to-maturity financial assets		
Interest income		6,433,855
Loans and receivables		
Interest income		647,780,468
Gain on fluctuation of exchange rates		(6,754,292,855)
Trade and other receivables		
Interest income		585,364,895
Gain on fluctuation of exchange rates		(1,052,518,056)
Financial assets (liabilities) at fair value through profit or loss		
Gain on valuation of derivative instruments		(3,576,443,218)
Gain on settlement of derivative instruments		(138,532,436)
Financial liabilities with amortized cost		
Loss on fluctuation of exchange rates		207,069,046,906
Interest expenses on borrowings and bonds payable		(99,134,872,195)
Interest expenses on trade and other liabilities		(300,607)
Derivatives designated as hedging instruments		
Gain (loss) on valuation of derivatives (recognized in profit or loss)		(166,920,873,466)
Gain on valuation of derivatives (recognized in equity before tax)		11,992,588,211
Loss on settlement of derivative contracts		(41,379,155,531)

42. Risk management

42.1 Risk management policies

The Group manages various risks that can be occurred by each business line, and main subjects are credit risk, market risk, interest rate risk, and liquidity risk and so on. These risks are identified, measured, controlled and reported according to basic strategy set by the Group.

42.2 Capital risk management

The objective of the Group's capital management is to maintain the optimum capital structure to protect the ability of maximizing returns to shareholder and reduce capital costs. The Group adjusts dividend payment to the shareholder to maintain and adjust the capital structure, returns investment, issues new stocks and disposes assets to reduce liabilities

The Group manages its capital based on the gearing ratio. The gearing ratio is calculated by dividing net borrowings and debentures by total capital. Net borrowings and debentures amounts total borrowings (short and long-term borrowings in the statement of financial position) less cash and cash equivalent, and total capital means equity in the statement of financial position plus net borrowings and debentures.

Details of the Group's capital management account as of December 31, 2018 and 2017 are as follows (Korean won):

	Dec. 31, 2018	Dec. 31, 2017
Total borrowings and bonds payable (A)	₩ 3,272,867,616,789	₩ 3,303,712,083,640
Cash and cash equivalents (B)	37,248,237,505	33,389,243,971
Net borrowings and bonds payable (A-B=C)	3,235,619,379,284	3,270,322,839,669
Total equity (D)	4,630,182,945,346	4,629,630,705,859
Total capital (C+D=E)	7,865,802,324,630	7,899,953,545,528
Gearing ratio (C/E)	41.14%	41.45%
Debt to equity ratio (C/D)	69.88%	70.64%

42.3 Financial risk management

The Group is exposed to various risks related to its financial instruments, such as market risk (foreign 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 analyses exposures by the degree and magnitude of risks. The Group uses derivative financial instruments for certain hedge risk exposures. The Group's overall financial risk management strategy remained unchanged from the prior period.

42.3.1 Credit risk

Credit risk is the risk of a financial loss to the Group when a customer or counterparty to a financial instrument fails to meet its contractual obligations, and arises primarily from the Group's sales activities, loans and receivables, derivative instruments. In addition, credit risk exposure may exist within financial guarantees and unused line of credits. The Group transacts with banks and financial institutions with excellent credit rating, so the credit risk from financial institutions is limited. In case of ordinary customers, the Group evaluates the customers' credit worthiness considering their financial statements, past experience and other factors.

Credit risk management
The Group uses publicly available information and its own internal data related to accounts receivables to rate its major customers and to measure the credit risk that a counter party will default on a contractual obligation. As the majority of the Group's accounts receivables are due from governmental entities (Korea Electric Power Corporation and so on), the Group does not have significant credit risk exposure. Regarding its debt securities, the Group continuously reviews credit ratings issued by credit agencies, and the Group's working capital (i.e., cash) is deposited in financial institutions with healthy-credit ratings.

42.3.1 Credit risk (cont'd)

Impairment and allowance account

In accordance with Group's policies, financial assets that are individually significant are assessed on a regular basis. Trade receivables that are assessed individually are, in addition, assessed for impairment through assessing whether impairment loss is occurred on an individual basis at the end of reporting period and it applies to all of the significant trade receivables. These assessments include securities acquired relating to an individual account (including reassessment of feasibility) and expected receipts.

The carrying value of financial assets represents maximum exposure to the credit risk. The Group's maximum exposure to credit risk as of December 31, 2018 and 2017 are as follows (Korean won):

	Dec. 31, 2018	Dec. 31, 2017
Cash and cash equivalents	₩ 37,248,237,505	₩ 33,389,243,971
Financial assets at FVPL	100,000,000	-
Derivatives designated as hedging instruments	198,307,912	-
Financial assets at FVOCI	225,339,466,173	-
Available-for-sale financial assets	-	133,832,648,705
Financial assets at amortized cost	11,612,135,000	-
Held-to-maturity financial assets	-	495,575,000
Loans	28,193,884,172	26,377,700,733
Short and long-term financial instruments	-	10,000,000,000
Trade and other receivables	618,124,887,914	729,111,561,347
Financial guarantee contract (*1)	74,851,743,424	55,807,750,682

(*1) These are amounts of maximum guarantee to be paid in case of being requested by the principal debtor.

Details of financial guarantee contracts as of December 31, 2018 and 2017 are as follows (USD):

		Total guarantee amount (USD)	
	Group name	2018	2017
Joint venture	PT.Tanjung Power Indonesia (*1)	$ 46,983,378	$ 46,983,378
Other related party	KEPCO Bylong Australia Pty Ltd.(*2)	5,562,104	5,105,245
Joint venture	South Jamaica Power Group Limited (*3)	6,750,000	-
Joint venture	South Jamaica Power Group Limited (*3)	7,650,000	-

(*1) It is a financial guarantee contract under which the Group provides guarantee to PT. Tanjung Power Indonesia which is jointly controlled by the Group.

(*2) KEPCO Bylong Australia Pty Ltd., a subsidiary of KEPCO, guarantees the payment of borrowings. When the borrower fails to pay the obligation, the Group is obliged to repay the full amount of the loan principal at the rate of interest (2%).

(*3) The payment guarantee related to the promotion of the gas combined fire power project for South Jamaica Power Group Limited, a joint venture company.

There were no payment guarantees exercised or other credit guarantees pledged on any financial or non-financial assets during the year.

42.3.2 Liquidity risk

The Group has established an appropriate liquidity risk management framework for the management of the Group's short-term, medium-term 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; 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 minimizes the liquidity risk by matching maturities through using internally reserved cash or utilizing long-term borrowings.

The table below summarizes the maturity profile of the Group's non-derivative financial liabilities based on the contractual undiscounted payments (Korean won):

	Dec.31, 2018				
	Less than 1 year	1 to 2 years	2 to 5 years	Over 5 years	Total
Borrowings and bonds payable	₩ 242,741,836,672	₩ 666,646,040,000	₩ 1,970,886,120,000	₩ 407,080,760,000	₩ 3,287,354,756,672
Trade and other payables	419,240,507,062	-	14,395,538	-	419,254,902,600
Financial guarantee liabilities	68,632,754,942	-	6,218,988,482	-	74,851,743,424
	₩ 730,615,098,676	₩ 666,646,040,000	₩ 1,977,119,504,020	₩ 407,080,760,000	₩ 3,781,461,402,696

	Dec.31, 2017				
	Less than 1 year	1 to 2 years	2 to 5 years	Over 5 years	Total
Borrowings and bonds payable	₩ 857,277,642,419	₩ 198,687,325,542	₩ 1,924,188,240,000	₩ 336,854,640,000	₩ 3,317,007,847,961
Trade and other payables	459,418,460,853	-	-	-	459,418,460,853
Financial guarantee liabilities	5,469,759,493	-	50,337,991,189	-	55,807,750,682
	₩ 1,322,165,862,765	₩ 198,687,325,542	₩ 1,974,526,231,189	₩ 336,854,640,000	₩ 3,832,234,059,496

As the Group manages its liquidity based on net assets and net liability balances, in order to understand the Group's liquidity risk management, non-derivative financial assets should be included.

The maturity profile of the Group's non-derivative financial assets based on the contractual undiscounted receipts as at December 31, 2018 and 2017 as follows (Korean won):

	Dec.31, 2018				
	Less than 1 year	1 to 5 years	Over 5 years	Others	Total
Cash and cash equivalents	₩ 37,248,237,505	₩ -	₩ -	₩ -	₩ 37,248,237,505
Financial assets at FVPL	100,000,000	-	-	-	100,000,000
Financial assets at FVOCI	-	-	-	225,339,466,173	225,339,466,173
Financial assets at amortized cost	11,077,180,000	534,955,000	-	-	11,612,135,000
Long-term and short-term and financial instruments	1,574,840,152	21,957,818,212	7,270,808,935	-	30,803,467,299
Trade and other receivables	615,640,871,026	2,547,474,900	-	-	618,188,345,926
	₩ 665,641,128,683	₩ 25,040,248,112	₩ 7,270,808,935	₩ 225,339,466,173	₩ 923,291,651,903

42.3.2 Liquidity risk (cont'd)

	Dec.31, 2017				
	Less than 1 year	1 to 5 years	Over 5 years	Others	Total
Cash and cash equivalents	₩ 33,389,243,971	₩ -	₩ -	₩ -	₩ 33,389,243,971
Available-for-sale financial assets	-	-	-	133,832,648,705	133,832,648,705
Held-to-maturity financial assets	-	495,575,000	-	-	495,575,000
Loans	1,370,554,120	5,482,216,480	22,160,382,612	-	29,013,153,212
Long-term and short-term and financial instruments	10,000,000,000	-	-	-	10,000,000,000
Trade and other receivables	725,558,657,999	3,120,538,890	497,327,900	-	729,176,524,789
	₩ 770,318,456,090	₩ 9,098,330,370	₩ 22,657,710,512	₩ 133,832,648,705	₩ 935,907,145,677

The table below summarizes the maturity profile of the Group's derivative liabilities based on the contractual undiscounted receipt schedules (Korean won):

	Dec.31, 2018				
	Less than 1 year	1 to 2 years	2 to 5 years	Over 5 years	Total
Gross payment					
- Held for trading	₩ 31,961,954	₩ -	₩ -	₩ -	₩ 31,961,954
- Risk averse	-	4,928,775,634	25,785,132,570	-	30,713,908,204

	Dec.31, 2017				
	Less than 1 year	1 to 2 years	2 to 5 years	Over 5 years	Total
Gross payment					
- Held for trading	₩ 3,576,443,218	₩ -	₩ -	₩ -	₩ 3,576,443,218
- Risk averse	2,297,198,908	-	54,743,363,673	-	57,040,562,581

42.3.3 Market risk

The Group is exposed by market risk that its fair value of the financial instruments or future cash flows is affected by the changes in market price. Market risk consists of interest rate risk, currency risk and other price risk.

42.3.4 Sensitivity analysis

Major assets and liabilities with uncertainties in underlying assumptions

Defined benefit obligation
A sensitivity analysis on the Group's defined benefit obligation assuming a 1% point increase and decrease in various assumptions as of December 31, 2018 and 2017 are as follows (Korean won):

	Dec. 31, 2018		Dec. 31, 2017	
	1%p inc.	1%p dec.	1%p inc.	1%p dec.
Future salary increase rate	₩ 15,063,628,505	₩ (12,759,784,272)	₩ 12,717,919,448	₩ (11,016,291,466)
Discount rate	(13,238,793,274)	16,018,060,747	(11,383,103,299)	13,464,071,395

42.3.4 Sensitivity analysis (cont'd)

Effect on the overall financial statements by the management assumptions

Foreign currency risk
The Group conducts transactions denominated in foreign currencies; consequently, exposures to currency exchange rate fluctuations may arise. The carrying amounts of the Group's foreign currency denominated monetary assets and monetary liabilities at the end of the reporting period are as follows (USD, EUR and JPY):

	Foreign currency assets		Foreign currency liabilities	
	Dec. 31, 2018	Dec. 31, 2017	Dec. 31, 2018	Dec. 31, 2017
USD	₩ 1,135,854	₩ 871,466	₩ 1,600,565,841	₩ 1,590,268,467
EUR	-	3,661	57,635	-
JPY	-	-	184,108,780	104,258
AUD	-	-	10,230	-
IDR	-	-	68,109,421	-

The following table illustrates the sensitivity of the Group's profit before tax and equity to a fluctuation of 10% in the foreign exchange rate (Korean won):

	2018		2017	
	10% inc.	10% dec.	10% inc.	10% dec.
Effect on profit before tax	₩ (179,027,504,176)	₩ 179,027,504,176	₩ (170,287,625,306)	₩ 170,287,625,306
Effect on shareholder's equity (*)	(179,027,504,176)	179,027,504,176	(170,287,625,306)	170,287,625,306

(*) Represents amounts before income tax effects.

The sensitivity analysis was made for monetary assets and liabilities denominated in foreign currencies except functional currency and the Group measures the risk of exchange rate fluctuations before reflecting the hedge effect of derivatives. Furthermore, The Group has a policy to enter into currency swap contracts in order to avoid the risk of volatility in foreign exchange rates related to the payment of foreign currency denominated long-term borrowings. In addition, the Group enters into currency forward contract in order to manage the foreign exchange risk of expected purchases.

Interest rate risk
The Group is exposed to interest rate risk due to its borrowings with floating interest rates. The effect of a change of 1% is used for a sensitivity analysis when reporting interest rate risk internally to key management personnel that represents management's assessment of a reasonably possible change in interest rates.

The Group's long-term borrowings and bonds payable with floating interest rates as of December 31, 2018 and 2017 are as follows (Korean won):

	Dec. 31, 2018	Dec. 31, 2017
Long-term borrowings	₩ 37,048,570,000	₩ 39,631,290,000

A sensitivity analysis on the Group's borrowings and bonds payable assuming a 1% point increase and decrease in interest rates as of December 31, 2018 and 2017 are as follows (Korean won):

	2018		2017	
	1%p inc.	1%p dec.	1%p inc.	1%p dec.
Effect on profit before tax	₩ (370,485,700)	₩ 370,485,700	₩ (396,312,900)	₩ 396,312,900
Effect on shareholder's equity (*)	(370,485,700)	370,485,700	(396,312,900)	396,312,900

(*) Represents amounts before income tax effects.

To manage its interest rate risks, the Group maintains an appropriate balance of fixed and floating rate loans, and enters into interest rate swap agreements. The analysis above presents the interest rates effect not reflecting hedge transactions on the Group's consolidated financial statements.

42.4 Fair value measurement

The fair value of the Group's actively traded financial instruments (i.e., held for trading and available-for-sale financial assets) is based on the traded market price as at the end of the reporting periods. The fair value of the Group's financial assets is the asking price for purchase.

42.4.1 Fair and book value

The Group's book and fair values of financial assets and liabilities as of December 31, 2018 and 2017 are as follows (Korean won):

	Dec. 31. 2018		Dec. 31. 2017	
	Book value	Fair value	Book value	Fair value
Assets (fair value):				
Fianacial assets at fair value through profit or loss	₩ 100,000,000	₩ 100,000,000	₩ -	₩ -
Financail assets at FVOCI	225,339,466,173	225,339,466,173	-	-
Available-for-sale financial assets	-	-	133,832,648,705	133,832,648,705
Derivatives designated as hedging instruments	198,307,912	198,307,912	-	-
	₩ 225,637,774,085	₩ 225,637,774,085	₩ 133,832,648,705	₩ 133,832,648,705
Assets (amortized cost):				
Financial assets at amortized cost	₩ 11,612,135,000	₩ 11,612,135,000	₩ -	₩ -
Held-to-maturity financial assets	-	-	495,575,000	495,575,000
Loans	28,193,884,172	28,193,884,172	26,377,700,733	26,377,700,733
Trade and other receivables	618,124,887,914	618,124,887,914	729,111,561,347	729,111,561,347
Long and short-term financial instruments	-	-	10,000,000,000	10,000,000,000
Cash and cash equivalents	37,248,237,505	37,248,237,505	33,389,243,971	33,389,243,971
	₩ 695,179,144,591	₩ 695,179,144,591	₩ 799,374,081,051	₩ 799,374,081,051
Liabilities (fair value):				
Derivative hedging derivatives	₩ 31,961,954	₩ 31,961,954	₩ 3,576,443,218	₩ 3,576,443,218
Derivatives designated as hedging instruments	30,713,908,204	30,713,908,204	57,040,562,581	57,040,562,581
	₩ 30,745,870,158	₩ 30,745,870,158	₩ 60,617,005,799	₩ 60,617,005,799
Liabilities (amortized cost):				
Secured borrowings	₩ 77,018,000,000	₩ 77,018,000,000	₩ 75,900,000,000	₩ 75,900,000,000
Unsecured bonds payable	3,142,662,860,117	3,291,920,100,941	3,093,804,235,679	3,160,923,463,705
Unsecured borrowings	53,186,756,672	53,186,756,672	134,007,847,961	134,007,847,961
Trade and other payables	419,254,902,600	419,254,902,600	459,418,460,853	459,418,460,853
	₩ 3,692,122,519,389	₩ 3,841,379,760,213	₩ 3,763,130,544,493	₩ 3,830,249,772,519

Discount rate used for calculating fair value

The discount rate used for calculating fair value is derived from interest rates that are market-observable, such as government bond interest rates, after considering credit spread.

Hierarchy for determining and disclosing the fair value

The Group uses the following hierarchy for determining and disclosing the fair value of financial instruments by valuation technique. The level of hierarchy of fair value is as follows:

	The significance of input variables
Level 1	Quoted (unadjusted) prices in active markets for identical assets or liabilities
Level 2	Other techniques for which all inputs which have a significant effect on the recorded fair value are observable, either directly or indirectly
Level 3	Techniques which use inputs which have a significant effect on the recorded fair value that are not based on observable market data

42.4.1 Fair and book value (cont'd)

As of December 31, 2018 and 2017, the Group held the following financial instruments carried at fair value in the statement of financial position (Korean won):

	Dec. 31, 2018			
	Level 1	Level 2	Level 3	Total
Equity instruments at FVOCI	₩ 203,526,927,576	₩ -	₩ 21,812,538,597	₩ 225,339,466,173
Financial assets at FVPL	-	100,000,000	-	100,000,000
Derivative assets	-	198,307,912	-	198,307,912
Derivative liabilities	-	(30,745,870,158)	-	(30,745,870,158)
	₩ 203,526,927,576	₩ (30,447,562,246)	₩ 21,812,538,597	₩ 194,891,903,927

	Dec. 31, 2017			
	Level 1	Level 2	Level 3	Total
Available-for-sale financial assets	₩ 111,698,266,073	₩ -	₩ 15,866,199,064	₩ 127,564,465,137
Derivative liabilities	-	(60,617,005,799)	-	(60,617,005,799)
	₩ 111,698,266,073	₩ (60,617,005,799)	₩ 15,866,199,064	₩ 66,947,459,338

Changes in Level 3 financial assets for years ended December 31, 2018 and 2017 are as follows (Korean won):

	Dec. 31, 2017			
	Jan. 1	Acquisition	Valuation	Dec. 31
Financial assets at FVOCI:				
Unlisted securities	₩ 15,866,199,064	₩ -	₩ 11,253,745	₩ 15,877,452,809

	Dec. 31, 2017			
	Jan. 1	Acquisition	Valuation	Dec. 31
Available-for-sale financial assets:				
Unlisted securities	₩ 16,469,220,481	₩ -	₩ (603,021,417)	₩ 15,866,199,064

There was no significant movement between Level 1 and Level 2 of the fair value hierarchy for the year ended December 31, 2018.

Detail of fair value by level of financial assets and liabilities to be disclosed at fair value but not measured at fair value as of December 31, 2018 are as follows (Korean won):

	Fair value	Level 1	Level 2	Level 3
Financial assets:				
Financial assets at amortized cost	₩ 11,612,135,000	₩ -	₩ -	₩ 11,612,135,000
Long-term and short-term loans	28,193,884,172	-	-	28,193,884,172
Trade and other receivables	618,124,887,914	-	-	618,124,887,914
Cash and cash equivalents	37,248,237,505	-	37,248,237,505	-
	₩ 695,179,144,591	₩ -	₩ 37,248,237,505	₩ 657,930,907,086
Financial liabilities:				
Secured borrowings from banks	₩ 77,018,000,000	₩ -	₩ 77,018,000,000	₩ -
Unsecured bonds payable	3,291,920,100,941	-	3,291,920,100,941	-
Unsecured borrowings from banks	53,186,756,672	-	53,186,756,672	-
Trade and other payables	419,254,902,600	-	-	419,254,902,600
	₩ 3,841,379,760,213	₩ -	₩ 3,422,124,857,613	₩ 419,254,902,600

43. Related party disclosures

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

Relationship	Related party
Ultimate parent Group	Korean Government
Parent Group	KEPCO
Associates	Green Biomass Co., Ltd.
	Korea Offshore Wind Power Co., Ltd.
	Solar School Plant Co., Ltd.
	KEPCO Energy Solution, Inc.
Joint ventures	GS Donghae Electric Power Co., Ltd.
	Pusan Shinho Solar Power Co., Ltd.
	Honam Wind Power. Co., Ltd.
	Dangjin Eco Power Corporation
	Seokmun Energy Co., Ltd.
	Chun-cheon Energy Co., Ltd.
	Yeonggwangbaeksu Wind Power Co., Ltd.
	Yeonggwang Wind Power Co., Ltd.
	Daesan Green Energe Co., Ltd.
	Taebaek Gadeoksan Wind Power Co., Ltd.
	Jamaica Public Service Group Limited
	PT Tanjung Power Indonesia
	South Jamaica Power Co., Ltd.
Others	Korea Hydro & Nuclear Power Co., Ltd.
	Korea South-East Power Co., Ltd.
	Korea Western Power Co., Ltd.
	Korea Midland Power Co., Ltd.
	Korea Southern Power Co., Ltd.
	KEPCO Data Network Co., Ltd.
	KEPCO Plant Service & Engineering Co., Ltd.
	KEPCO Engineering & Construction Group, Inc.
	Korea Power Exchange
	Korea Gas Corporation
	Korea Electronic Power Industrial Development Co., Ltd.
	KEPCO SPC Power Corporation
	KEPCO Bylong Australia Pty Ltd, etc.

43. Related party disclosures (cont'd)

Significant transactions with related parties for the years ended December 31, 2018 and 2017 are as follows (Korean won):

		Sales		Purchases	
Related party	Transaction	2018	2017	2018	2017
KEPCO	Sales and purchase of electricity and others	₩ 4,851,489,259,989	₩ 4,451,163,812,811	₩ 37,568,868,015	₩ 37,222,320,041
Green Biomass Co., Ltd.	Purchase of woodchip and others	136,082	47,181	440,188,884	1,344,695,897
KEPCO Energy Solution, Inc	Engineering service	86,990,726	-	96,276,250	-
Solar School Plant Co., Ltd.	Engineering service	81,886,760	-	-	-
Korea Offshore Wind Power Co., Ltd.	Engineering service	164,069,060	134,325,780	-	-
Chun-cheon Energy Co.,Ltd.	Engineering service	789,959,740	2,644,041,590	-	-
Yeonggwangbaeksu Wind Power Co., Ltd.	Other service fee /REC Purchase	1,451,321,000	1,569,168,000	5,739,332,628	5,798,464,799
GS Donghae Electric Power Co., Ltd.	Engineering service and others	1,785,277,357	1,578,904,090	-	2,160,058,076
Honam Wind Power Co., Ltd.	Purchase of REC and others	348,000,000	487,200,000	4,554,316,620	3,076,423,068
Pusan Shinho Solar Power Co., Ltd.	Purchase of REC and others	339,750,000	63,250,000	5,374,512,000	5,672,472,000
Dangjin Eco Power Corporation	Engineering service	3,499,345,130	82,132,540	-	-
Seokmun Energy Co., Ltd.	Engineering service/REC Purchase	1,052,857,480	786,501,017	31,759,020,672	21,674,385,888
Jamaica Public Service Group Limited	O&M sales and others	687,687,500	-	108,186,216	154,314,705
South Jamaica Power Co., Ltd.	Other income/investment	151,702,762	-	67,295,448	-

43. Related party disclosures (cont'd)

		Sales		Purchases	
Related party	Transaction	2018	2017	2018	2017
Korea Gas Corporation	Purchase of LNG	₩ -	₩ -	₩ 1,043,607,841,854	₩ 718,141,394,818
KEPCO Plant Service & Engineering Co., Ltd.	Repairs and other expenses	773,181,773	559,350,446	97,481,622,060	104,682,469,642
Korea Electric Power Industrial Development Co., Ltd.	Rent/repairs and maintenance expenses	248,278,987	291,486,362	55,843,080,009	45,303,835,419
KEPCO Engineering & Construction Group, Inc.	Investment	-	-	832,173,405	8,273,210,148
Korea Southern Power Co., Ltd.	Other income/investment	37,094,011	155,027,621	26,643,061	100,081,999
Korea Western Power Co., Ltd.	Other income	181,847,971	119,323,061	989,140	501,100
Korea South-East Power Co., Ltd.	Other income, raw material and maintenance expenses	28,042,635	42,860,730	-	516,750
Korea Midland Power Co., Ltd.	Other income and other expense	57,512,671	298,425,031	184,533,960	24,916,990
KEPCO Data Network Co., Ltd.	Commission	-	-	8,340,828,688	8,573,495,244
Korea Power Exchange	Other income and commission	858,286,600	1,107,615,540	5,881,919,361	4,744,148,100
		₩ 4,864,112,488,234	₩ 4,461,083,471,800	₩ 1,359,315,782,531	₩ 1,061,377,224,914

43. Related party disclosures (cont'd)

Outstanding balances of receivables and payables with related parties as of December 31, 2018 and 2017 are as follows (Korean won):

		Receivables		Payables	
Related party	Transaction	Dec.31, 2018	Dec.31, 2017	Dec.31, 2018	Dec.31, 2017
KEPCO	Trade receivables	₩ 421,516,108,797	₩ 419,082,538,776	₩ -	₩ -
	Other receivables,	155,776,433,877	264,447,604,333	-	-
	Advance payment	-	6,813,501,208	-	-
	Trade payables	-	-	3,112,387,282	3,319,934,910
	Other payables	-	-	46,775,410	920,589,470
Green Biomass Co., Ltd.	Other payables	-	-	-	84,913,782
KEPCO Energy Solution, Inc.	Other receivables	38,971,594	-	-	-
Solar School Plant Co., Ltd.	Other receivables	6,526,260	-	-	-
Chun-cheon Energy Co., Ltd.	Other receivables	307,735,462	251,765,242	-	-
Yeonggwangbaeksu Wind Power Co., Ltd.	Other receivables and other payables	-	143,728,200	788,616,817	1,299,976,035
Korea Offshore Wind Power Co., Ltd.	Other receivables	113,293,004	149,679,561	-	-
GS Donghae Electric Power Co., Ltd.	Other receivables	448,521,027	252,032,475	-	-
Honam Wind Power Co., Ltd.	Other payables	-	-	3,572,899,461	3,013,160,148
Pusan Shinho Solar Power Co., Ltd.	Other payables	-	-	716,820,000	810,888,000
Dangjin Eco Power Corporation	Other receivables	17,964,130	205,798,365	-	-
Seokmun Energy Co., Ltd.	Other receivables/ other payables	303,197,893	275,635,044	5,042,506,896	3,052,261,764
Jamaica Public Service Group Limited	Trade receivables/ other payables	593,990,625	-	-	-

43. Related party disclosures (cont'd)

Related party	Transaction	Receivables Dec.31, 2018	Receivables Dec.31, 2017	Payables Dec.31, 2018	Payables Dec.31, 2017
Korea Gas Corporation	Trade payables	₩ -	₩ -	₩ 138,958,175,550	₩ 140,635,340,240
KEPCO Plant Service & Engineering Co., Ltd.	Other payables and others	705,128,315	-	15,537,043,598	14,176,286,228
Korea electric Power Industrial Development Co., Ltd.	Trade payables	-	-	4,314,136,404	4,948,340,768
KEPCO Engineering & Construction Group, Inc.	Other payables	-	-	268,302,095	73,208,300
Korea South-East Power Co., Ltd.	Other payables	9,220,810	1,383,096	-	430,780,081
Korea Midland Power Co., Ltd.	Other payables	-	-	22,000,000	167,612,200
Korea Western Power Co., Ltd.	Other receivables and other payables	137,500,000	-	-	47,432,000
Korea Southern Power Co., Ltd.	Other receivables and other payables	-	-	485,757,803	71,148,000
KEPCO Data Network Co., Ltd.	Other payables	-	-	838,079,502	2,248,586,590
Korea Power Exchange	Other receivables and other payables	56,894,850	128,264,350	2,036,375	70,188,560
		₩ 580,031,486,644	₩ 691,751,930,650	₩ 173,705,537,193	₩ 175,370,647,076

The details of changes in loans for related parties during 2018 are as follows:

	Group name	Jan. 1, 2018	Loans	Others	Dec.31, 2018
Joint venture	Chun-cheon Energy Co.,Ltd. (*)	-	615,875,491	-	615,875,491

(*) The Group loaned operating funds to Chuncheon Energy Co., Ltd., a joint venture, with interest rates of 4.6%.

As of December 31, 2018, there are no borrowings arising from related-party transactions.

In addition, the Group has newly invested in Daesan Green Energy Co., Ltd. and Taebaek Gadeoksan Wind Power Co., Ltd. and made additional investments in South Jamaica Power Group Limited (Note 17).

43. Related party disclosures (cont'd)

Details of guarantees provided to related parties as of December 31, 2017 are as follows (USD):

Provider	Provided	Description	Credit limit		Financial institution
Korea East-West Power Co., Ltd.	PT. Tanjung Power Indonesia (*1)	Guarantee related to borrowings	USD	46,983,378	MUFG Bank, Ltd.
	PT. Tanjung Power Indonesia (*1)	Water change cost payment guarantee		3,150,000	PT Adaro Indonesia
	South Jamaica Power Co., Ltd. (*2)	PPA L/C		6,750,000	Societe Generale
	South Jamaica Power Co., Ltd. (*2)	GSA L/C		7,650,000	Societe Generale
	KEPCO Bylong Australia Pty Ltd (*3)	Debt Payment Guarantee		5,800,000	Korea Export-Import Bank

(*1) PT. EWP Indonesia has 35% equity interest in PT. Tanjung Power Indonesia. The Group has provided payment guarantee on the borrowings of PT. Tanjung Power Indonesia.
(*2) It is an L / C opening guarantee for the execution of each contract in connection with the power sales contract and gas supply contract of South Jamaica Power Co., Ltd., a joint venture of the Group.
(*3) KEPCO Bylong Australia Pty Ltd., a subsidiary of KEPCO, guarantees the payment of borrowings. When the borrower fails to pay the obligation, the Group is obliged to repay the full amount of the loan principal at the rate of interest (2%).

Salary and other compensation to the key members of management for the years ended December 31, 2018 and 2017 are as follows (Korean won):

	2018	2017
Short-term salaries	₩ 601,462,906	₩ 483,598,246
Retirements benefits expenses	15,226,653	31,135,229
	₩ 616,689,559	₩ 514,733,475

As of December 31, 2018, the Group pledged its shares in investees as collateral on behalf of borrowings for related parties (Korean won):

Lender	Borrower	Collateral	Total collateral limit (*)
Korea Development bank and others	Pusan Shinho Solar Power Co., Ltd.	Shares in Pusan Shinho Solar Power Co., Ltd.	₩ 4,761,105,495
Shinhan Bank and others	Honam Wind Power Co., Ltd	Shares in Honam Wind Power Co., Ltd.	4,859,554,579
Korea Development bank and others	GS Donghae Electric Power Co., Ltd.	Shares in GS Donghae Electric Power Co., Ltd.	240,591,084,527
Kookmin Bank and others	Yeonggwangbaeksu Wind Power Co., Ltd.	Shares in Yeonggwangbaeksu Wind Power Co., Ltd.	2,843,257,993
Kookmin Bank and others	Chun-cheon Energy Co., Ltd.	Shares in Chun-cheon Energy Co., Ltd.	42,505,111,817
Kookmin Bank and others	Seokmun Energy Co., Ltd.	Shares in Seokmun Energy Co., Ltd.	16,750,765,559
KDB Capital Corp. and others	Yeonggwang Wind Power Co., Ltd.	Shares in Yeonggwang Wind Power Co., Ltd.	15,303,885,401
Wooribank and others	Korea Offshore Wind Power Co., Ltd	Shares in Korea Offshore Wind Power Co., Ltd	22,467,059,439
Industrial Bank of Kroea	Daesan Green Energe Co., Ltd.	Shares in Daesan Green Energe Co., Ltd.	17,432,696,297
Samsung Fire & Marine Insurance Co., Ltd. and others	Taebaek Gadeoksan Wind Power Co., Ltd.	Shares in Taebaek Gadeoksan Wind Power Co., Ltd.	8,500,000,000

(*) Represents the carrying amount of equity securities that are held by the Group as of December 31, 2018.

43. Related party disclosures (cont'd)

As of December 31, 2018, financial commitments that the Group has provided to related parties are as follows (Korean won):

Related party	Lender	Description	Executed capital injection		Total collateral limit
Chun-cheon Energy Co., Ltd.	Kookmin Bank and others	Financial commitment (*1)	₩	52,699,945,000	₩ 20,000,000,000
South Jamaica Power Co., Ltd.	JCSD Trustee Services Limited and others	Financial commitment (*2)	USD	14,730,000	18,350,000

(*1) The arrangement is an obligation for the parent company to support funds to the guarantee company through capital increase or credit loans for the amount of the loan deficiencies. The Group's guarantee is 29.9% in which amounts to ₩5,980 million of the total collateral limit however, the remaining debtor will be paid in proportion to the share ratio of the obligation if some of the lenders fail to perform their obligations.

(*2) This arrangement is a guarantee for shareholder's capital payment in connection with Jamaica's 190MW gas combined cycle power project. Currently, EWP Barbados 1 SRL has a capital contribution of USD 14,730,000. The total amount of the guarantee amounts to USD 8,257,500, which is the sum of EWP (Barbados) 1 SRL investment obligation amount of USD 3,670,000 and USD 4,587,500 of which is 50% of the SJEH's obligation.

44. Supplementary cash flow information

Significant transactions not involving cash flows for the years ended December 31, 2018 and 2017 are as follows (Korean won):

	2018	2017
Transfer from construction-in-progress to depreciable assets	₩ 338,082,737,278	₩ 378,633,402,597
Transfer from bonds and long-term borrowings to current-portion of those	192,414,518,805	799,734,652,258
Effect of changes in accounting policies	9,103,460,810	-

44. Supplementary cash flow information (cont'd)

Details of changes in liabilities arising from financial activities during 2018 and 2017 are as follows:

	Jan. 1, 2018	Cash flow (*1)	Non-cash change: Exchange rate fluctuation	Non-cash change: Changes in fair value	Non-cash change: Liquidity substitution	Non-cash change: Other	Dec. 31, 2018
Short-term borrowings	₩ 122,500,000,000	₩ (78,500,000,000)	₩ -	₩ -	₩ -	₩ -	₩ 44,000,000,000
Long-term borrowings	78,330,206,046	7,820,000,000	54,940,626	-	(8,742,226,672)	-	77,462,920,000
Liquidity long-term borrowings	9,077,641,915	(7,052,720,000)	47,372,709	(2,072,684,624)	8,742,226,672	-	8,741,836,672
Bonds	2,369,217,515,709	728,429,213,135	41,042,550,513	-	(189,872,046,755)	3,871,221,010	2,952,688,453,612
Liquidity bonds	724,586,719,970	(757,745,096,811)	32,045,096,811	-	189,872,046,755	1,215,639,780	189,974,406,505
Assets held in order to hedge exchange rate risk of foreign currency bonds	57,040,562,581	34,480,000,000	-	(24,029,455,468)	-	(36,777,198,909)	30,713,908,204
Total liabilities from financing activities	₩ 3,360,752,646,221	₩ (72,568,603,676)	₩ 73,189,960,659	₩ (26,102,140,092)	₩ -	₩ (31,690,338,119)	₩ 3,303,581,524,993

	Jan. 1, 2017	Cash flow (*1)	Non-cash change: Exchange rate fluctuation	Non-cash change: Changes in fair value	Non-cash change: Liquidity substitution	Non-cash change: Other	Dec. 31, 2017
Short-term borrowings	₩ -	₩ 122,500,000,000	₩ -	₩ -	₩ -	₩ -	₩ 122,500,000,000
Long-term borrowings	61,646,795,379	26,243,750,000	(432,447,666)	-	(9,127,891,667)		78,330,206,046
Liquidity long-term borrowings	4,921,540,209	(1,662,830,000)	(181,158,297)	-	9,127,891,667	(3,127,801,664)	9,077,641,915
Bonds	2,367,916,837,482	888,486,971,477	(98,507,726,605)	-	(791,540,826,460)	2,862,259,815	2,369,217,515,709
Liquidity bonds	1,033,581,845,694	(1,034,250,000,004)	(68,413,146,861)	-	791,540,826,460	2,127,194,681	724,586,719,970
Assets held in order to hedge exchange rate risk of foreign currency bonds	(126,555,807,068)	(5,811,071,123)	-	154,928,285,241	-	34,479,155,531	57,040,562,581
Total liabilities from financing activities	₩ 3,341,511,211,696	₩ (4,493,179,650)	₩ (167,534,479,429)	₩ 154,928,285,241	₩ -	₩ 36,340,808,363	₩ 3,360,752,646,221

45. Commitments and contingencies

Legal contingencies

Details of significant pending lawsuits and total claims against the Group as of December 31, 2018 and 2017 are as follows (Korean won):

	Dec. 31, 2018 (*)		Dec. 31, 2017	
	Litigation in progress	Litigation values	Litigation in progress	Litigation values
Pending lawsuits	9 cases	₩ 24,233,893,063 USD 125,000,000	10 cases	₩ 22,782,264,737

(*) The details of major lawsuits (appeals) under way as of December 31, 2018 are as follows. (Korean won):

Court	Complainant	The accused	Contents	Litigation cost	Progress situation
Seoul High	Kang xx and 95 others	Group	Claim for retirement	₩ 596,687,048	The second instance
Pusan High	Kim xx	Group	Claim for unfair advantage return	408,300,022	The second instance
Pusan High	Kwon xx	Group	Worker Status Confirmation	50,000,000	The second instance
Seoul Central	Hyundai E&C,Soehee Construction	Group	Construction price and etc	1,200,000,000	First trial
Commercial Arbitrator	Hanjin Heavy industry	Group	Dangjin 9,10 Coal handling facility construction price intervention	10,000,000,000	Arbitration
Northern Seoul	Keangnam Enterprise's manager Lee xx	Group	Construction price and etc	10,789,277,623	First trial
Changwon Local	Haksan Matal Industry.	Group	Claim for unfair advantage return	189,628,370	The second instance
Guam Superior Court	GPA and 2 others	Group	Claim for an indemnity	USD 125,000,000	First trial
Commercial Arbitrator	Daelim Industrial	Group	Construction price and etc	1,000,000,000	First trial

As of December 31, 2018, in addition to the above cases, there is a pending lawsuit on the ordinary wages in which the co-defendants are four power generation entities including the Group, and the Group recognized provision for the litigation amounting to ₩203 million (Note 25).

Guarantees

As of December 31, 2018, the Group has no debt guarantee agreement other than those provided to related parties.

45. Commitment and contingencies (cont'd)

Purchase agreements
The Group has key purchase agreements for raw materials and details as of December 31, 2018 are as follows:

Raw material	Supply source	Contract period	Annual contract quantity (tones in thousands)
Bituminous coal	Australia	2012-2021	8,985
	Indonesia	2012-2021	4,340
	Russia	2012-2021	6,285
	U.S.A	2012-2021	1,640
	Colombia	2017-2020	560
	South Africa	2017-2020	1,120

As of December 31, 2018, the Group maintains lines of credit with various financial institutions, and the details are as follows (Korean won and USD):

	Financial institution	Executed amount		Credit limit	
Commitments on bank-over draft	KEB Hana Bank	KRW	-	KRW	80,000,000,000
Limit amount available for CP	Samsung Securities	KRW	-	KRW	100,000,000,000
Certification of payment on L/C	Shinhan Bank	USD	38,033,954	USD	50,000,000
〃	Kookmin Bank	USD	35,906,625	USD	45,000,000
〃	Woori Bank	USD	21,098,698	USD	27,000,000
〃	Industrial Bank	USD	-	USD	20,000,000
〃	KEB Hana Bank	USD	10,752,866	USD	30,000,000
Loan limit	KEB Hana Bank	KRW	-	KRW	10,000,000,000
〃	Crédit Agricole	USD	-	USD	70,000,000
〃	ING bank	USD	-	USD	50,000,000
〃	Société Générale	USD	-	USD	50,000,000
〃	MUFG Bank, Ltd	USD	-	USD	30,000,000
〃	DBS	USD	-	USD	100,000,000
〃	BNP Paribas	USD	-	USD	30,000,000
〃	B.O.A.	USD	-	USD	20,000,000
〃	Shinhan Bank	USD	-	USD	20,000,000
	NH Bank	USD	-	KRW	5,000,000,000
	Samsung Fire & Marine Insurance	KRW	18,693,559,536	KRW	21,900,000,000
	Hyundai Life	KRW	21,718,220,232	KRW	23,700,000,000
	Hyundai Marine & Fire Insurance	KRW	21,627,220,232	KRW	23,600,000,000
	KB Insurance	KRW	14,979,000,000	KRW	15,600,000,000
Energy use rationalization loan	KEB Hana Bank	KRW	5,022,030,000	KRW	5,151,000,000
〃	KEB Hana Bank	KRW	2,046,330,000	KRW	2,099,000,000
Others	Shinhan Bank	USD	7,446,800	USD	7,500,000
〃	MUFG Bank, Ltd	USD	46,983,378	USD	46,983,378
	Woori Bank	KRW	-	KRW	1,000,000,000

45. Commitment and contingencies (cont'd)

For the steady supply of raw materials, the Group holds long-term contracts for bituminous coal shipments and details are as follows:

Group	Ship	Contract period
NYK Line Co., Ltd.	Ocean Prometheus	2007.06–2025.05
NYK Bulkship Korea	Ocean Frontier	2009.08–2020.07
Korea Shipping Corp.	Dangjin Friendship	2008.12–2018.12
SK Shipping Co., Ltd.	K.Promise	2009.11–2019.10
NYK Bulkship Korea	Oriental Navigator	2010.02–2025.01
H-Line Shipping Co., Ltd.	HL.Dangjin	2011.09–2029.09
NYK Bulkship Korea	Oriental Leader	2013.03–2028.02
Hansung Line Co., Ltd.	Ocean Carrier	2013.05–2028.04
NYK Bulkship Korea	Frontier Discovery	2018.01–2032.12
Pan Ocean Co., Ltd.	Pan Dangjin	2018.09–2032.09
Polaris Shipping Co., Ltd.	Solar Legend	2019.02–2034.02

As of December 31, 2018, the Group has pledged following assets as collateral for its borrowings (Korean won):

Lender	Collaterals		Nominal value	Objective
Samsung Fire & Marine Insurance Co., Ltd. and others and others	Deposits pledged	₩	14,462,014,235	Financing to invest for construction and operation of wind power plant
	Accounts receivable pledged by means of transfer (*1)		13,005,346,946	
	Facilities pledged by means of transfer (*1)		93,614,665,989	
		₩	121,082,027,170	

(*) In addition to the above collateralized assets, right to claim for insured amount are pledged.

46. Events after the reporting period

As of March 7, 2019, the Company issued unsecured bearer bond with coupon attached amounting to ₩80,000,000,000, and details are as follows (Korean won):

Issuer	Classification	Issue date	Maturity date	Annual interest rate (%)	Amount
Korea East-West Power Co., Ltd.	Non-guaranteed public bond (No. 32-1)	March 7, 2019	March 7, 2039	2.177	₩ 40,000,000,000
	Non-guaranteed public bond (No. 32-2)	March 7, 2019	March 7, 2049	2.164	40,000,000,000

47. The approval of the financial statements

The consolidated financial statements of the Group for the year ended December 31, 2018 are scheduled to be appoved at the shareholder's meeting to be held on March 22, 2019.

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