

# CLEAN ENERGY SMART KEPCO

2019 Sustainability Report



# ABOUT THIS REPORT

## Introduction

Korea Electric Power Corporation (KEPCO) has been issuing its Sustainability Report every year since 2005 to look back on its annual sustainability activities and achievements, and to provide transparent information for various stakeholders. Starting from 2019, KEPCO is to integrate the Sustainability Report and the Annual Report.

## Reporting Guidelines

This Report has been prepared in accordance with the Core Option of the GRI (Global Reporting Initiative) Standards. We have also referred to ISO 26000, UN Global Compact and the international integrated reporting framework of the International Integrated Reporting Council (IIRC) in compiling this Report. The financial standards and definitions presented in this Report conform to the Korean-International Financial Reporting Standard (K-IFRS).

## Reporting Period

The 2019 Sustainability Report contains our activities and achievements from January 1 to December 31, 2018. In the case of qualitative activities related to major topics, we have included data up to August 2019. As for main quantitative achievements, this Report shows data for the past three years (2016-2018). Both financial and non-financial information is presented based on our fiscal years in accordance with the internal disclosure system and any information not subject to the above standards is noted otherwise.

## Reporting Scope

This Report covers the domestic and international sustainability achievements of Korea Electric Power Corporation (KEPCO) and includes certain economic and environmental data from six power-generation companies (Korea Hydro & Nuclear Power Co.,Ltd, Korea South-East Power Co.,Ltd, Korea Midland Power Co.,Ltd, Korea Western Power Co.,Ltd, Korea Southern Power Co.,Ltd, and Korea East-West Power Co.,Ltd), fully owned by KEPCO.

## Independent Assurance

This Report has been verified for its reliability through an independent assurance process conducted by a professional verification organization, the Korean Management Registrar (KMR). A detailed assurance statement can be found on pages 98-99 of this Report.

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CLEAN ENERGY  
SMART KEPCO

2019 Sustainability Report

## CEO Message



We extend our gratitude to our **customers** and the **general public** for their warm-hearted interest in and support for KEPCO, to our **partners** and **shareholders** for their trust and cooperation, and to all of our **stakeholders**.

The year 2018 was especially meaningful as we were able to reflect on KEPCO's 120-year history and prepare for a new energy era. At the same time, we faced many challenges at the management front triggered by sluggish domestic demand, and increased international oil prices, to name a few.

Despite the unfavorable circumstances, KEPCO was still able to make outstanding achievements, including being ranked among the highest in the category of Getting Electricity for five consecutive years on Doing Business 2018, published by the World Bank and obtaining the highest-level credit ratings as a global utility from the big three credit rating agencies.

Moreover, we won a contract for a photovoltaic project of the Philippines, were selected as an outstanding corporation responding to climate change in the Carbon Disclosure Project (CDP) for three years in a row and were honored as the winner of the Award of Excellence by the International Smart Grid Action Network (ISGAN). Going Forward, KEPCO will stay committed to grow in sustainability with our customers, while predicting and overcoming uncertainties.

#### Leading the paradigm shift

The power industry is currently facing two enormous changes: energy transition and digital transformation. At KEPCO, we focus on expanding the use of safe and clean energy, while augmenting our competence to reduce carbon emissions and address climate change. We also spare no efforts in leading new industries in the energy sector by securing future cutting-edge technologies.

#### Improving power-supply efficiency and customer-service quality

We are also witnessing changes in market and customers. Distributed generation is on the rise and more prosumers are emerging to directly trade in electricity. In accordance with this new order, KEPCO has set ambitions to renovate existing institutions and systems. We also have placed keener emphasis on further enhancing the efficiency of our power supply, making full use of the technologies including AI, big data, IoT, etc., and providing more convenient and varied service for our customers.

#### Laying the groundwork for Sustainable growth

KEPCO aims to reduce waste and inefficiencies throughout our businesses, and stringently manage expected risks to continue to increase our financial soundness. Our information and resources will be available and shared to the maximum extent with the Korean power industry to foster shared growth. Further, we will stay determined to address the distortions in the energy consumption and lay the foundation for sustainable growth of the power industry by establishing a roadmap for reasonable electricity tariff system.

#### KEPCO, a reliable public corporation built on integrity, transparency, and safe management

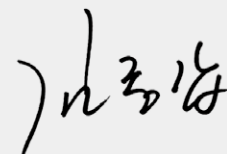
We take responsibility in achieving social values including job creation, shared growth, and support for the underprivileged. Ethical and transparent management will remain as core values of KEPCO, and serve as building blocks to creating a society of integrity. Moreover, all of KEPCO will join hands in placing safety first so that we can serve the role of a reliable public corporation.

KEPCO will continue making strides towards becoming a sustainable global utility with an unwavering commitment to meet challenges and adapting to the changing circumstances. Moving forward, we promise to communicate with all of our stakeholders including customers and stockholders even more actively. Your continued trust and support is of great value to us.

Thank you.

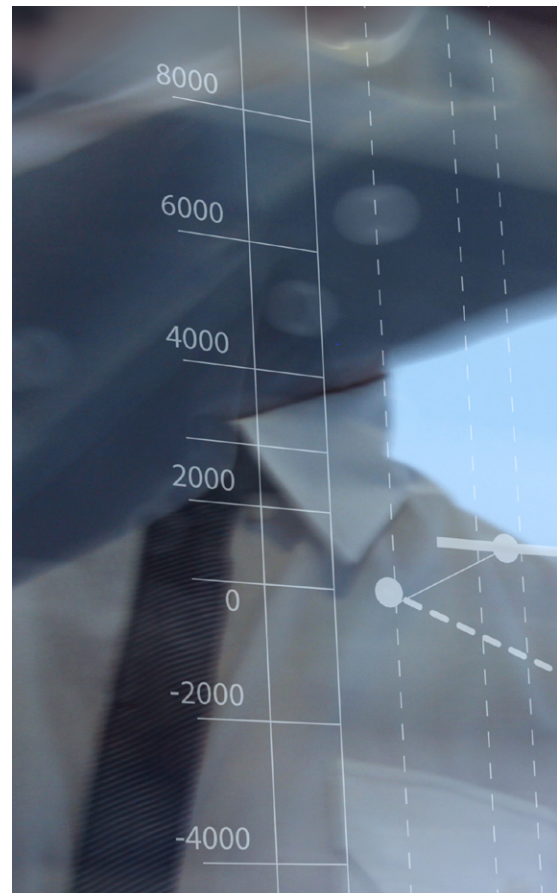
September 2019

JongKap Kim  
President & CEO of KEPCO



# BUSINESS OVERVIEW

KEPCO is taking the initiative in energy transition and digital transformation as a leading public corporation responsible for stable power supply and bolstering our national economy.



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# KEPCO Highlights



## Signing the Energy Valley Investment Agreement with 36 Companies

We held the 2019 Energy Valley Company Investment Agreement Ceremony at the KEPCO headquarters in June 2019, where we signed an agreement with 36 companies including SolbigTech that wish to invest in the energy valley project. Already, seven of them have launched their investments by entering into land-use contracts and starting construction. The value of investment is expected to be worth KRW 99.3 billion at the same time creating 568 new jobs. Including those companies engaged in the agreement, we have invited 397 companies in total, reaching 79% of the initial goal of 500. In particular, we have laid the foundation for supplying energy-related professional workers by signing a business agreement to nurture workers for the energy valley with the Human Resources Development Service of Korea at the Agreement Ceremony. We will continue to work hard to establish an environment for safe investment and sustainable growth of the energy valley by training necessary human resources so as to address investor concerns regarding the energy valley over manpower supply and demand.



\* Micro-Grid : A small-sized and self-sufficient Smart Grid system to supply electric power to a small region. In other words, it is a small-sized independent Power Grid or a next-generation power system into which solar, wind and other new & renewable energy resources and Energy Storage Systems (ESS) are converged.



## Issuing Green Bonds Worth USD 500 Million at the Lowest Interest Rate



KEPCO has issued Green Bonds worth USD 500 million in order to invest in new & renewable energy and eco-friendly businesses. As the investment demand has surged six-fold, more than the estimated amount after inviting investors from the USA, Europe and Asia, we were able to issue Green Bonds at the lowest interest rate out of all that have been issued by public corporations in Korea. In addition, we have enhanced the credibility of the eco-friendly fund use by connecting UN Sustainability Development Goals (UN SDGs) and the use of Green Bonds and acquiring certifications from external certification organizations. The fund is intended to be used for conducting solar & wind power projects, purchasing EVs and establishing charging infrastructure and carrying out other eco-friendly projects. Based on the successful issuance of the Green Bonds, KEPCO will actively pursue new & renewable energy and eco-friendly projects and contribute to the reduction of greenhouse gases for the nation.



## Winner of 2019 Award of the International Smart Grid Action Network

We were honored as winner of the International Smart Grid Action Network (ISGAN) Award for Excellence held in Vancouver, Canada, in May 2019 for our Open Micro-grid Project in Gasado Island and Shinan in Jeollanam-do, Korea. Our projects received the highest evaluation in terms of potential influence, economic rationality, applicability and technical innovation and won the grand prize of the competition. Through such achievement, we introduced to the world KEPCO's technical excellence in Smart Grid. We will continue to play a leading role in transforming energy and opening up the era of the 4<sup>th</sup> Industrial Revolution and take the lead in exploring new overseas markets by developing core technologies of new energy industries with SMEs.







### Advancing into the Philippines' Renewable Energy Market for the First Time

KEPCO explored the Philippines' renewable market for the first time by acquiring 38% of the shares in the 50MW solar power plant in operation in Calatagan, the Philippines, in December 2018.



We have laid the groundwork for additional project cooperation in the future by signing an MOU with Solar Philippines, the largest solar energy provider in the Philippines. Through this, energy sales worth KRW 318 billion in total over a period of 18 years are expected to be achieved. KEPCO will continue to actively strive to improve its competitiveness in the Southeast Asian new & renewable energy market. We will work hard to become a comprehensive energy provider that encompasses not only the existing thermal power generation projects but also new & renewable energy and smart grid projects.



### Being Selected as an Outstanding Company in Responding to Climate Change for Three Consecutive Years

KEPCO was listed in the 'Carbon Management Sector Honors' in the energy & utility sector for the third consecutive year at the 2018 CDP Korea Climate Change Awards in April 2018. Over 7,000 companies around the world disclosed their carbon management information in 2018. KEPCO also transparently disclosed strategies to respond to climate change, information on greenhouse gas emissions and endeavors to reduce greenhouse gas emissions. We will continue to strive to improve corporate value, and to take the lead in responding to global climate change by actively disclosing to global investors opportunities and risks related to climate change and other carbon-related information.



### Winning 'CIO 100 Awards' for Four Consecutive Years



We won the 32<sup>nd</sup> CIO 100 Awards in May 2019, for the fourth consecutive year. 'CIO (Chief Information Officer) 100 Awards' selects and awards companies and organizations that have shown outstanding achievements in the field of IT innovation. The final selection is made after going through two steps: deliberation by 50 external experts; and verification by internal experts of the International Data Group (IDG), an international research organization. KEPCO was awarded in recognition of its establishment of an energy business platform ('EN:TER') that provides new energy-related services to customers based on the utilization of big data and AI, which are core technologies of digital transformation. We will be in the forefront of vitalizing the energy and data market by carrying out platform-based projects under a new paradigm of digital transformation.

# KEPCO Profile

KEPCO is a market-based public corporation established for the purpose of promoting the development of electric power sources, stabilizing electricity supply and demand, and contributing to the development of the national economy. Based on our vision of 'KEPCO - A Smart Energy Creator,' we are stably supplying high-quality electric power.

As of 2018, we stably supplied power to 23,502 thousand households nationwide. The annual power sales volume\* for that year stood at 526,149GWh, of which 54.5% was used for the industrial sector, 26.6% for the general sector, 13.6% for the residential sector and 5.3% for other sectors.

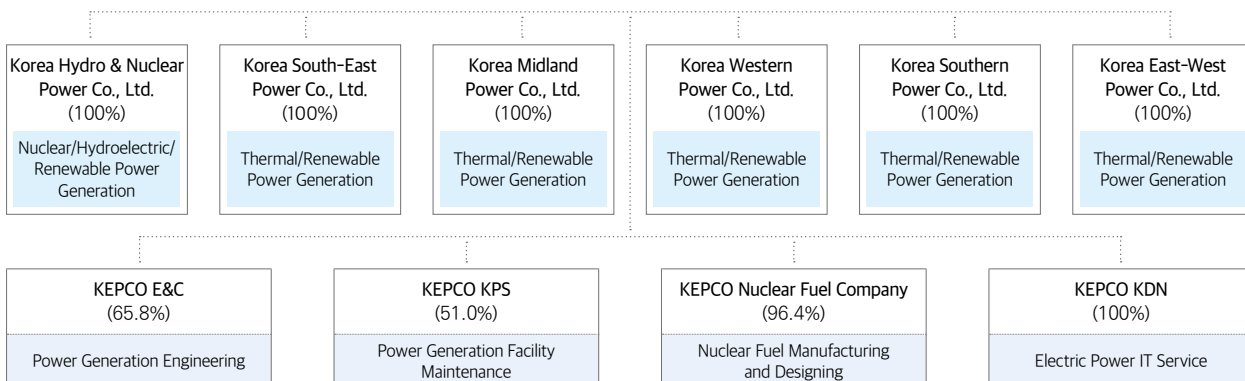
\* 2018 Power Sales Volume : Excluding Pumped-Storage Hydroelectricity Sales Volume

## Corporate Profile

	<b>Company Name</b> Korea Electric Power Corporation (KEPCO)	 <b>Total Assets (Consolidated)</b> KRW <b>185.3</b> Trillion	 <b>Sales Amount (Consolidated)</b> KRW <b>60.6</b> Trillion
	<b>Date of Establishment</b> January 26, 1898		
	<b>Address</b> 55, Jeolyeok-ro (120, Bitgaram-dong), Naju-si, Jeollanam-do, 58322, Republic of Korea		
	<b>CEO</b> JongKap Kim		
	<b>Areas of Businesses</b> Power Resource Development, R&D, Electric Power Generation, Transmission, Substations, Distribution and Sale, Overseas Business, etc.		
	<b>Status of Listed Stocks</b> Paid-in Capital of KRW 4.1 Trillion (USD 3.5 Billion)		
	Domestic Stocks of 96% : ADR (American Depository Receipts) of 4%		
	Exchange Market KRX (Korea Exchange)	Exchange Market NYSE (New York Stock Exchange)	
	Listed Date August 1989 (Stock Code : 015760)	Listed Date October 27, 1994 (Stock Code : KEP)	
	<b>Shareholders</b> (As of December 31, 2018)		 <b>Number of Employees (Full-Time Positions)</b> <b>22,272</b>
	Corporations and Individuals <b>14.6%</b> Government <b>18.2%</b> Foreigners <b>27.1%</b> Korea Development Bank <b>32.9%</b> The National Pension Fund <b>7.2%</b>		
		 <b>641,964,077 shares in total</b>	
		 <b>Power Sales Volume</b> <b>526,149 GWh</b>	



\* () Share ratio of KEPCO

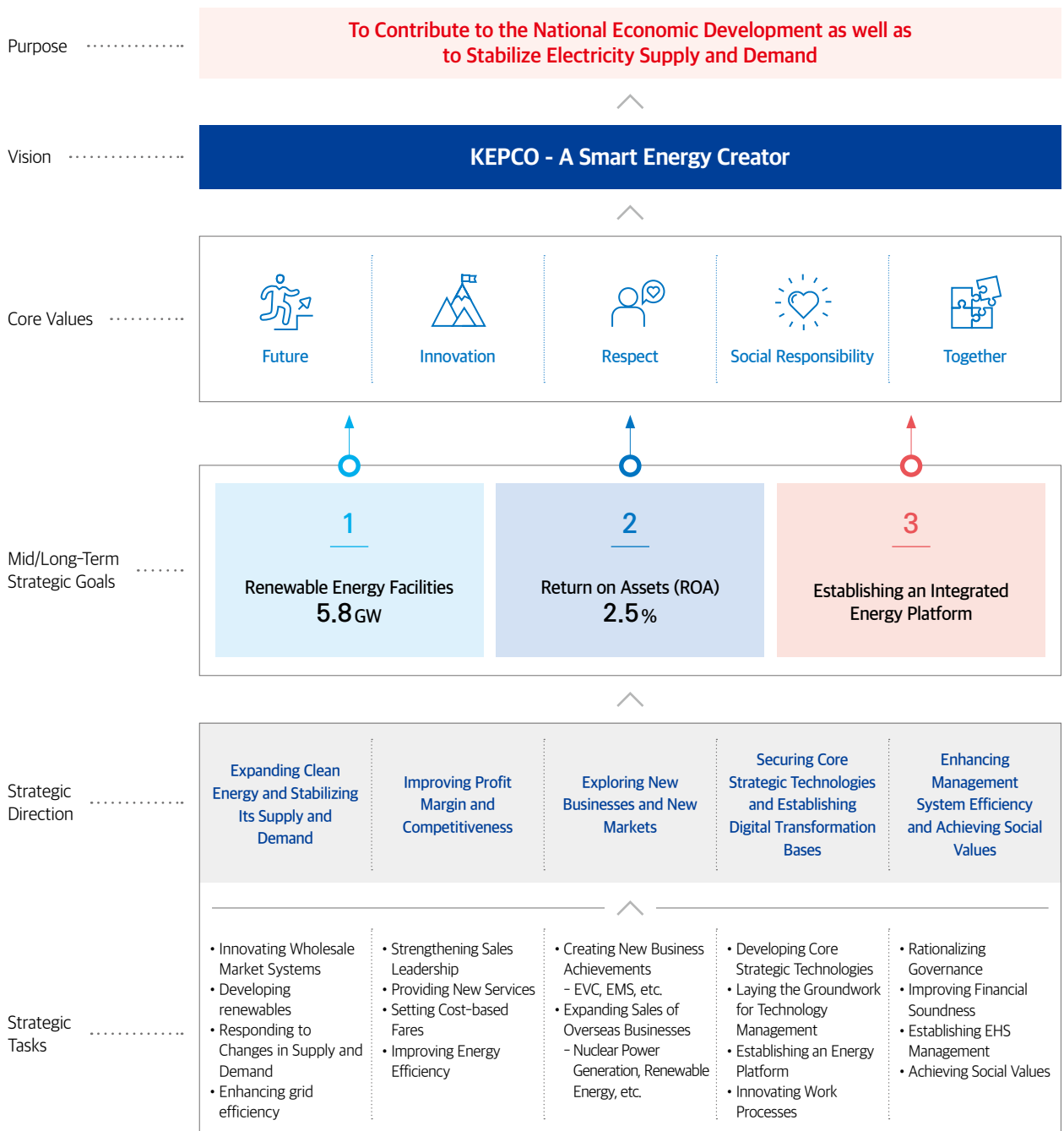


\* Listed KEPCO Group Companies (Three in total) : KEPCO, KEPCO E&C and KEPCO KPS (There are eight listed public corporations out of total 338.)

# KEPCO 2030 Strategy

KEPCO, promoting a better life through stable power supply, is now preparing for a new energy future. To respond to a paradigm shift arising from 'Energy Transition' due to the expansion of renewable and eco-friendly energy and 'Digital Transformation' due to AI, big data and other new technologies, we have prepared '2030 Mid/Long-Term Strategies'. We will lay the foundation for providing safer and cleaner energy to the people and create an easier and more convenient electric power environment by providing efficient energy solutions.

## 2030 Mid/Long-Term Strategies










# Status of KEPCO Group Companies

(As of December 31, 2018)








## Power Generation Companies

### Korea Hydro & Nuclear Power Co., Ltd.

 Address	1655, Bulguk-ro, Yangbuk-myeon, Gyeongju-si, Gyeongsangbuk-do, Korea
 Number of Employees	12,301
 Website	www.khnp.co.kr
 Share Ratio	100%
 Total Installed Capacity	27,186MW (22.9% of the Total Domestic Power Generation Facilities)
 Generation Capacity	138,590GWh (24.3% of the Gross Domestic Power Generation)
 Revenue	KRW 8.858717 Trillion








Korea Hydro & Nuclear Power Co., Ltd. is the only company that runs nuclear power plants in Korea and is operating hydroelectric and pumped-storage hydroelectric power plants.

### Korea South-East Power Co., Ltd.

 Address	32, Sadeul-ro 123beon-gil, Jinju-si, Gyeongsangnam-do, Korea
 Number of Employees	2,417
 Website	www.koenergy.kr
 Share Ratio	100%
 Total Installed Capacity	10,377MW (8.7% of the Total Domestic Power Generation Facilities)
 Generation Capacity	67,966GWh (11.9% of the Gross Domestic Power Generation)
 Revenue	KRW 5.521038 Trillion








Korea South-East Power Co., Ltd. is operating five power plants including Yeongheung Power Generation Division, Samcheonpo Power Generation Division, Yeongdong Eco Power Generation Division, Yeosu Power Generation Division and Bundang Power Generation Division.

### Korea Midland Power Co., Ltd.

 Address	160, Boryeongbuk-ro, Boryeong-si, Chungcheongnam-do, Korea
 Number of Employees	2,483
 Website	www.komipo.co.kr
 Share Ratio	100%
 Total Installed Capacity	9,836MW (8.3% of the Total Domestic Power-Generation Facilities)
 Generation Capacity	47,942GWh (8.4% of the Gross Domestic Power Generation)
 Revenue	KRW 4.368467 Trillion








Korea Midland Power Co., Ltd. is operating six power plants including Boryeong Power Generation Division, Incheon Power Generation Division, Seoul Construction Division, Shin-Boryeong Power Generation Division, Jeju Power Generation Division and Sejong Power Generation Division.

### Korea Western Power Co., Ltd.

 Address	285, Jungang-ro, Taeon-eup, Taeon-gun, Chungcheongnam-do, Korea
 Number of Employees	2,432
 Website	www.iwest.co.kr
 Share Ratio	100%
 Total Installed Capacity	11,332MW (9.5% of the Total Domestic Power Generation Facilities)
 Generation Capacity	51,890GWh (9.1% of the Gross Domestic Power Generation)
 Revenue	KRW 4.841261 Trillion








Korea Western Power Co., Ltd. is operating four power plants including Taeon Power Generation Division, Pyeongtaek Power Generation Division, West Incheon Power Generation Division, and Gunsan Power Generation Division.

### Korea Southern Power Co., Ltd.

 Address	40, Munhyeongeumyung-ro, Nam-gu, Busan, Korea
 Number of Employees	2,373
 Website	www.kospo.co.kr
 Share Ratio	100%
 Total Installed Capacity	11,239MW (9.4% of the Total Number of Power-Generation Facilities)
 Generation Capacity	58,175GWh (10.2% of the Gross Domestic Power Generation)
 Revenue	KRW 5.539793 Trillion

Korea Southern Power Co., Ltd. is operating seven power plants including Hadong Power Generation Division, Shin-Incheon Power Generation Division, Busan Power Generation Division, South Jeju Power Generation Division, Yeongwol Power Generation Division, Andong Power Generation Division and Samcheok Power Generation Division.

### Korea East-West Power Co., Ltd.

 Address	395, Jongga-ro, Jung-gu, Ulsan, Korea
 Number of Employees	2,522
 Website	www.ewp.co.kr
 Share Ratio	100%
 Total Installed Capacity	11,194MW (9.4% of the Total Number of Power-Generation Facilities)
 Generation Capacity	53,409GWh (9.4% of the Gross Domestic Power Generation)
 Revenue	KRW 4.933525 Trillion

Korea East-West Power Co., Ltd. is operating five power plants including Ilsan Thermal Power Generation Division, Dangjin Thermal Power Generation Division, Honam Thermal Power Generation Division, Ulsan Thermal Power Generation Division, and Donghea Bio Thermal Power Generation Division.

## Major Invested Companies

### KEPCO E&C

📍 Address	269, Hyeoksins-ro, Gimcheon-si, Gyeong-sangbuk-do, Korea
👤 Number of Employees	2,386
🏠 Website	www.kepco-enc.com
📈 Share Ratio	65.8%
📊 Revenue	KRW 433.701 Billion

KEPCO E&C is an engineering company related to power-generation facilities and plants. Since its establishment in 1975, KEPCO E&C has designed nuclear power plants as well as hydroelectric and thermal power plants and carried out power generation facility O&M, plant construction projects and PM/CM businesses. The company has designed and standardized a Korean nuclear power plant with a capacity of 1,000MWe and developed technology (APR1400) of designing a next-generation nuclear power plant with a capacity of 1,400MWe. By applying the design technology, KEPCO E&C has designed Shin Kori 3 and 4 nuclear reactors, Shin Hanul 1 and 2 nuclear reactors, Shin Kori 5 and 6 nuclear reactors and the UAE Barakah nuclear power plant.

### KEPCO KPS

📍 Address	211, Munhwa-ro, Naju-si, Jeollanam-do, Korea
👤 Number of Employees	6,195
🏠 Website	www.kps.co.kr
📈 Share Ratio	51.0%
📊 Revenue	KRW 1,239.604 Billion

KEPCO KPS is a world-class comprehensive plant service company that conducts high-quality maintenance of power-generation facilities (nuclear/thermal/hydroelectric power), transmission and substation facilities and industrial facilities. By implementing test-operating maintenance in the process of constructing a power plant, operational routine maintenance, planned outage maintenance, renovations, etc., KEPCO KPS is contributing to the prevention of sudden failures and the increase of the usage rate of facilities.

### KEPCO Nuclear Fuel

📍 Address	988-242, Daedeok-daero, Yuseong-gu, Daejeon, Korea
👤 Number of Employees	2,236
🏠 Website	www.knfc.co.kr
📈 Share Ratio	96.4%
📊 Revenue	KRW 230.667 Billion

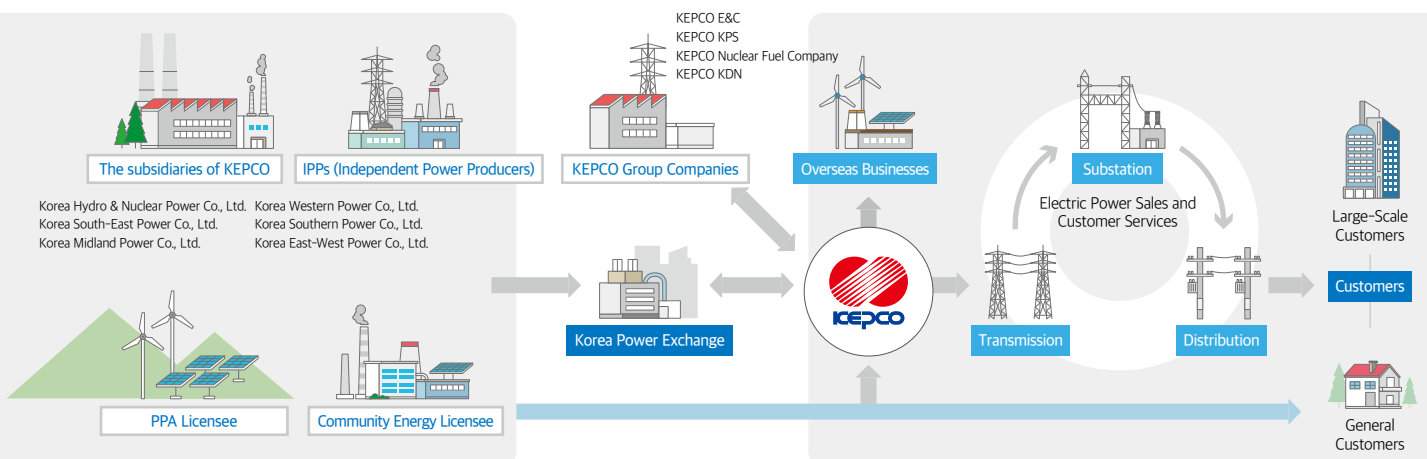
KEPCO Nuclear Fuel is the only Korean nuclear fuel designing and manufacturing company established for the localization and technical independence of nuclear fuel. The company produces and supplies the entire of nuclear fuel for light-water and heavy-water reactors of the domestic nuclear power plants and is to supply nuclear fuel to the UAE nuclear power plant as well. KEPCO NF also enhanced the export competitiveness of the Korean nuclear fuel through development of two new types of high-performance nuclear fuels.

### KEPCO KDN

📍 Address	661, Bitgaram-ro, Naju-si, Jeollanam-do, Korea
👤 Number of Employees	2,123
🏠 Website	www.kdn.com
📈 Share Ratio	100%
📊 Revenue	KRW 622.154 Billion

Ever since its establishment as a company exclusively devoted to IT works for KEPCO, KEPCO KDN has provided total IT services related to all power systems and is now growing into a global electric power IT professional company. Its main businesses are information system establishment and operation, electric power IT service, information communication infrastructure establishment and maintenance, intelligent distribution, information security, etc. At the same time, KEPCO KDN is also enhancing technologies of PLC AMI and smart distribution systems and so forth for Smart Grid.

## Value Chain of Electric Power Industry



# SUSTAINABILITY ISSUES

KEPCO's clean and safe energy and smart power services foster not only a sustainable energy industry but a brighter future for everyone.

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Issue

1

# Taking the Lead in Responding to Climate Change

## Issue Background

After the new climate regime, Paris Agreement, was officially adopted in 2015, KEPCO has been playing a leading role in the transition to clean and safe energy as a leading energy supplier. In order to respond to climate change, KEPCO is working together with KEPCO Group Companies to make and implement plans to reduce greenhouse gases. In order to achieve the goal of disseminating renewable energy nationwide, we are expanding the infrastructure for new & renewable energy power system connections to the grid and independently developing new & renewable energy projects. Through such endeavors, we are taking the lead in responding to global climate change and creating a sustainable energy ecosystem in Korea.

## Management Approach

Establishing a System to Respond to the New Climate Regime

Strengthening Activities to Reduce Greenhouse Gases

Expanding the Use of New & Renewable Energy

Achieving Eco-Friendly Value Chains

## 2018 Key Performance

Reduced Greenhouse Gases



**55,000** Tons  
CO<sub>2</sub>eq

Expanding Infrastructure for Connecting New & Renewable Energy to the Grid



**1,275** MW

CDP Carbon Management Sector Honors Energy & Utility Sector



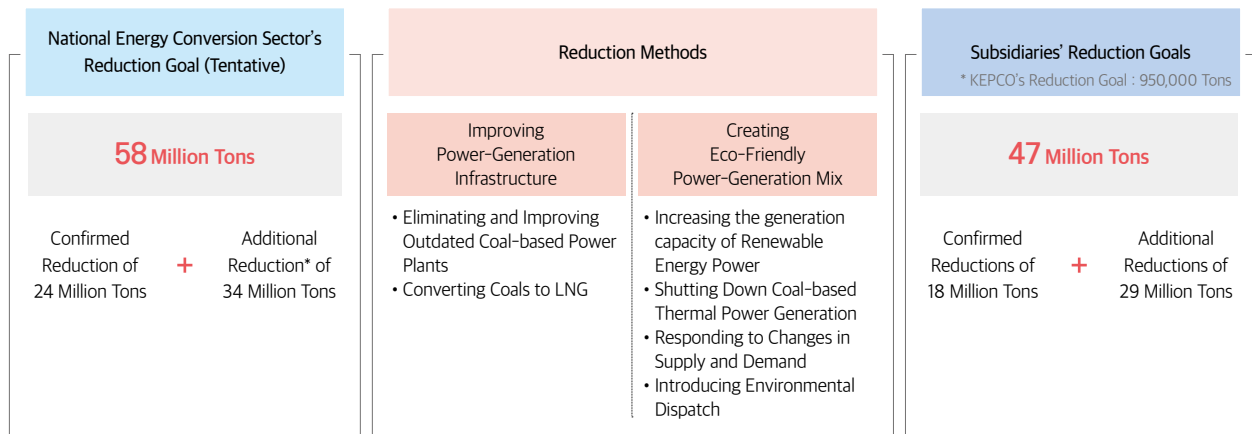
Selected as an Outstanding Company for **3** Consecutive Years



## Establishing a System to Respond to the New Climate Regime

### Establishing Strategies to Respond to Climate Change

The Korean government is actively participating in the new climate regime in accordance with the Paris Agreement adopted at the 21<sup>st</sup> Conference of the Parties in December 2015 to respond to climate change. In line with the government, KEPCO and six of the KEPCO Group companies have come up with 「2030 Mid/Long-Term Strategies for Climate Change Response」 to achieve the National Energy Conversion Sector's reduction goal of reducing greenhouse gases by 58 million tons.



\* Out of the National Energy Conversion Sector's Reduction Goal 58 million tons, additional and potential reductions amount to 34 million tons. We are planning to finalize the goal before submitting the Nationally Determined Contributions (NDCs) by 2020.

### Establishing Cooperative Response Systems among KEPCO Group Companies

In order to respond to the new climate regime, KEPCO is regularly holding CEO level meetings together with its Group Companies and is trying to come up with countermeasures against climate change. At a meeting with KEPCO Group Companies held in April 2019, we finalized the roadmap of RE 3020 to establish cooperative systems for carbon reductions and new & renewable energy power-generation projects. Furthermore, we are also actively carrying out technical development tasks and cooperative R&D to reduce carbon emissions.

#### Establishing KEPCO Group Companies' Implementation Systems to Achieve the Goal of Greenhouse Gas Reductions



## Reinforcing Greenhouse Gas Reduction Activities

### Strengthening R&D and Expanding Technology-based Projects

KEPCO, with the goal of becoming a leader of environmental technologies in the electric power sector, is concentrating its capabilities on developing technologies to respond to climate change, improve energy efficiency, reduce greenhouse gases and commercialize its technologies. In order to actively respond to the new climate regime, we have developed the world's best technology for capturing and utilizing CO<sub>2</sub> to reduce large amounts of CO<sub>2</sub> emitted by power plants. We have also developed purifying technology to reduce SF<sub>6</sub> greenhouse gases used in various power generation facilities for insulation purposes. In addition, we have developed MW-level supercritical CO<sub>2</sub> power-generation technologies by utilizing waste heat from engines as next-generation, eco-friendly and high-efficiency power-generation technology, and have secured and started to commercialize technologies related to waste-heat-based ORC (Organic Rankine Cycle\*) and co-firing power generation applicable to island areas. We will spare no efforts to carry out R&D of the climate and environmental fields in order to actively respond to climate change, environmental regulations and other external environment changes and proactively implement greenhouse gas reduction policies.

\* ORC Power Generation : An electric-energy-producing system by collecting and utilizing waste-heat energy from industries. In the system, organic matters with lower evaporating temperature than steam are utilized for power generation.

### Developing CO<sub>2</sub> Capture and Utilization Technologies

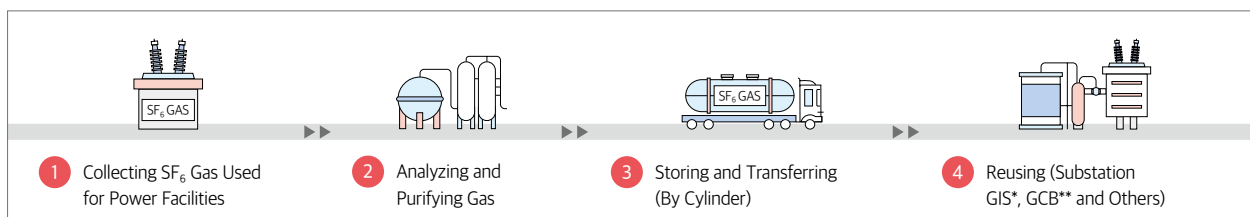
CO<sub>2</sub>-capturing technology collects CO<sub>2</sub> produced from large-scale emission sources like thermal power plants after going through absorption and desorption processes by using absorbents. We are conducting researches to demonstrate CO<sub>2</sub> storage technology and expand the size by utilizing the 10MW wet-scrubbing CO<sub>2</sub> capture plant installed in Boryeong thermal power plant. As for dry-scrubbing CO<sub>2</sub> capture technology, we are conducting researches to enhance relevant technologies and apply them to the integrated process of compression & liquefaction facilities by utilizing the 10MW demonstration plant in Hadong thermal power plant.

The technology of utilizing CO<sub>2</sub> can reduce CO<sub>2</sub> and create added value at the same time by converting CO<sub>2</sub> produced or captured into carbon compounds and utilizing them. KEPCO has completed the research and demonstration of its technology to convert sodium bicarbonate, calcium carbonate, etc., into high value-added usable compounds with the size of 200kg CO<sub>2</sub>/day without a separate process of capturing exhaust gases from power plants. In addition, we have constructed and been operating a 5kW (100kg CO<sub>2</sub>/day) plant that produces methane based on CO<sub>2</sub> as a raw material by utilizing microbes that we developed independently. We are also developing technologies to produce carbon monoxide by splitting CO<sub>2</sub> through electrochemical methods.

### Developing and Applying SF<sub>6</sub>-Reduction Technologies to Power Facilities

As much as 74% of the greenhouse gas emissions from KEPCO are created out of SF<sub>6</sub> gas used as an insulation substance for power transmission and distribution. SF<sub>6</sub>, one of the six greenhouse gases, is 23,900 times higher than CO<sub>2</sub> in terms of GWP (Global Warming Potential). By establishing a center for collecting and purifying SF<sub>6</sub> gas in Shin-Okcheon substation in order to collect and purify SF<sub>6</sub> gas emitted from distribution switches and reuse it for substations, we could lay the groundwork for reducing greenhouse gases by 200,000 tons annually. In addition, we are planning to expand eco-friendly facilities to fundamentally curtail the use of SF<sub>6</sub> gas. By developing eco-friendly switchgears that utilize alternatives such as solid insulators and nitrogen instead of SF<sub>6</sub> gas, we aim to gradually reduce greenhouse gases produced while transmitting electric power.

#### SF<sub>6</sub> Gas Collecting Process



\* GIS : Gas Insulated Switchgear

\*\* GCB : Gas Circuit Breaker

## Implementing ETS (Emission Trading System)

KEPCO, as a corporation subject to ETS quotas introduced and executed to achieve the national greenhouse gas reduction goal (BAU reduction of 37% by 2030), is implementing ETS for the 2<sup>nd</sup> planning period (2018-2020). KEPCO's insufficient amount of emission permits for the 2<sup>nd</sup> planning period is expected to be around 660,000 tons. And, we are planning to secure them through our own reduction project and external project. As for our own reduction project, we are going to collect and purify SF<sub>6</sub> gas. And, we will carry out building energy reduction projects, secure new & renewable facility emission permits, push forward with overseas CDM (Clean Development Mechanism) projects, jointly discover carbon reduction projects together with our Group Companies and conduct other external projects to reduce greenhouse gases in various ways.

## Obtaining Greenhouse Gas Reduction Global Certification

KEPCO is disclosing its carbon emissions and relevant data to 525 investors around the world by submitting a report on its climate change information to CDP (Carbon Disclosure Project). As a result, we were selected as an outstanding corporation in the sector of energy and utility for three consecutive years from 2016 to 2018 in recognition of our endeavors to enhance transparency of information on greenhouse gas emissions and to reduce greenhouse gases.

### BUSINESS CASE

### KEPCO's CDM (Clean Development Mechanism) Projects

External methods of reducing greenhouse gases a company could carry out to respond to ETS are external projects at home and CDM (Clean Development Mechanism) projects abroad. Out of them, CDM is a system through which advanced nations invest money and technologies in greenhouse gas reduction projects of underdeveloped nations to contribute to their sustainable development and to reduce greenhouse gases, and then use such reduction outcomes to implement their own reduction obligations.

#### Examples of CDM Projects

Reduction Technologies	Details	Annual Reductions
High Efficiency LED	Reducing Electric Energy by Replacing Incandescent Lamps with LED	0.73MWh/One LED
Cooking Stove	Reducing the Use of Charcoal and Wood by Distributing Cooking Stoves (Cooking equipment)	1-3 Tons/One Cook Stove
Mangrove	Absorbing CO <sub>2</sub> by Planting Mangroves	0.06 Ton/One Mangrove

The key example of CDM in the electric power sector is the wind power generation project in China. In order to enlist a KEPCO-invested renewable project in China into a CDM project, and thus acquire domestic emission permits, we signed an agreement on the purchase of emission permits with Chinese Asset Corporation in April 2019. As a result, we were able to secure 150,000 tons of emission permits at an economical price.

In addition, we also signed an agreement on the CDM Project by Creating Mangrove Forest in Myanmar in May 2019. Mangroves are trees that grow along shorelines in tropical and subtropical regions and absorb CO<sub>2</sub> four times more than a tropical rain forest of the same size. Thanks to the 1<sup>st</sup> forestation agreement, we could secure 170,000 tons of emission permits for 20 years by planting 180,000 mangrove trees in an area of 50ha. In addition, the mangrove forestation project could not only respond to climate change but also protect the people of Myanmar from natural disasters such as typhoons, tsunamis and so forth.



Agreement Ceremony for China's Renewable Energy CDM Project (April 2019)



Agreement Ceremony for Myanmar's Mangrove CDM Project (May 2019)

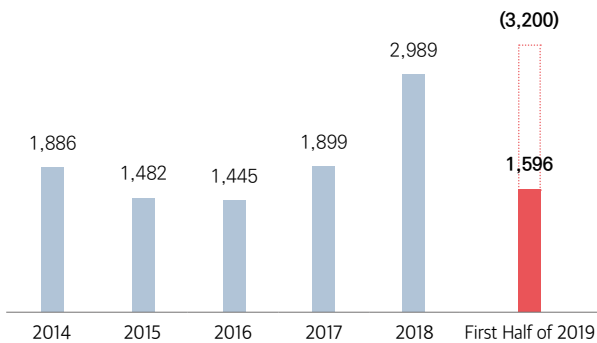
## Expanding the Use of New & Renewable Energy

### Expanding Infrastructure for Connecting New & Renewable Energy to the Grid

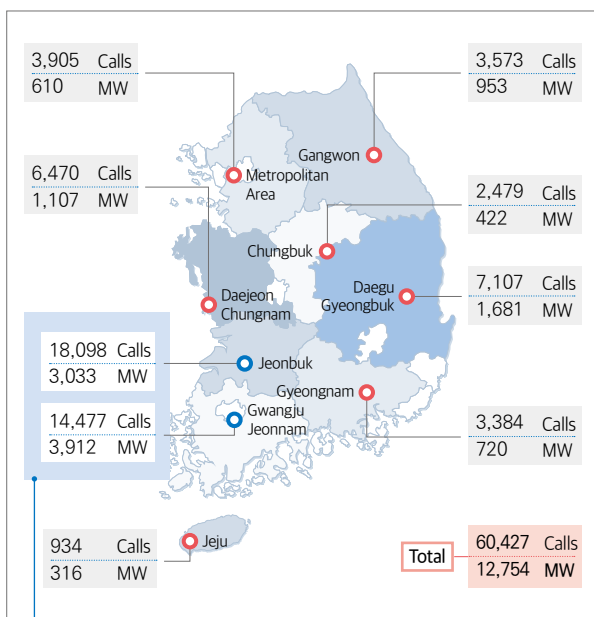
The government has recently announced that it would increase the proportion of new & renewable energy to 20% by 2030. As the access delay has increased due to a surge in the volume of renewable energy accessing to the grid, we have made and been implementing short/long-term plans on infrastructure and institutions to address such access delays. As a short-term plan, we are planning to address the waiting volume of 4.4GW (67%) out of the current total of 6.6GW within one year by setting measures to improve relevant facilities such as increasing the use of facilities by expanding their access capacities and installing more transformers.

#### Newly Expanded Capacity of Renewable Energy

[Unit : MW, Reference: Ministry of Trade, Industry and Energy]



#### Status of Delay Calls [Small Size under 1MW (March 2019)]

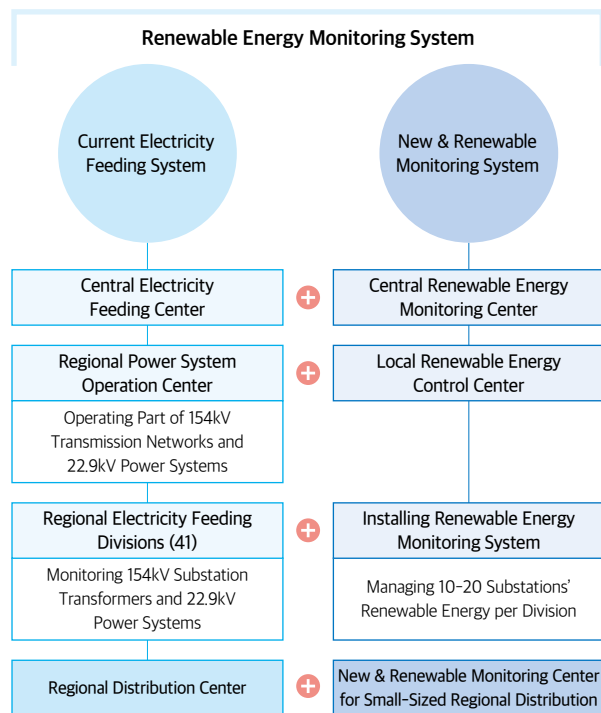


→ Honam area (Jeonbuk, Gwangju and Jeonnam) takes up 54.5% of the total capacity called.

### Establishing a System to Monitor and Control Renewable Energy

Considering the status of regional renewable energy power generation for which demand is concentrated in certain regions, we are in the middle of constructing the nation's first central monitoring system that can monitor the status of operating renewable energy power plants nationwide on a real-time basis and send signals to control their output. This is a national and hierarchical monitoring system that exchanges information with the central monitoring center of the power exchange. Furthermore, we will lead the national energy transition by establishing a platform to prepare for change in supply and demand due to the increase in renewable energy and to stably operate power systems.

#### System to Monitor and Control Renewable Energy

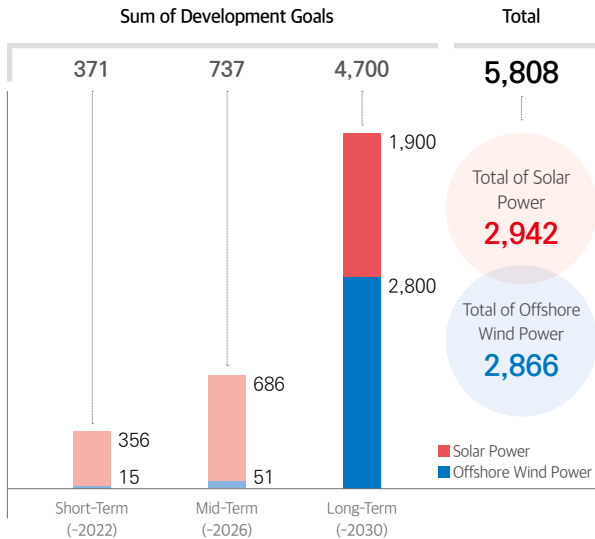


### Pursuing Large-Sized New & Renewable Power Generation Projects

In order to contribute to the achievement of the government's renewable energy dissemination goal, KEPCO is conducting the direct development of large-sized new & renewable energy projects. Centering on offshore wind power and large-scale solar power projects, we are planning to complete a project with 5.8GW capacity by 2030. We will also be at the forefront of creating a resident-participating new & renewable complex on a regional basis, carrying out solar power projects that are coexistent with farms and salt ponds and implementing new types of projects to expand clean energy and reduce carbon emissions in the electric power sector.

**KEPCO's New & Renewable Energy Project Development Goal**

[Unit : MW]

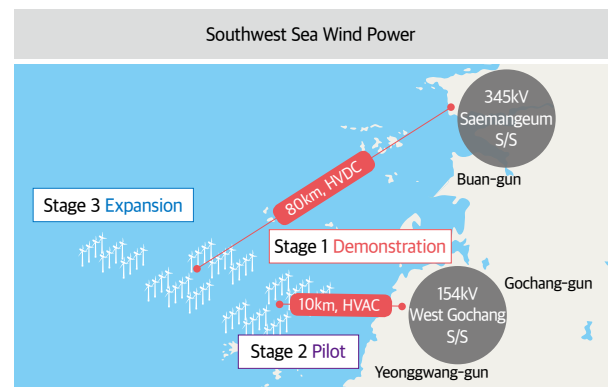


As major new & renewable projects, we are currently carrying out the Southwest Sea offshore wind power demonstration (60MW), Jeju Hallim offshore wind power (100MW), Anjwa-do solar power (300MW) and others, and are planning to select suitable sites and review ways of connecting to power systems together with KEPCO Group Companies in order to create additional new & renewable power generation complexes.

**Developing a System to Monitor Offshore Wind Power Environment and Expanding R&D on the Field of New & Renewable Energy**

KEPCO is contributing to the commercialization and dissemination of new & renewable energy by converging and integrating technologies of utilizing new & renewable energy sources, energy-storing-and-converting technologies and power-related new material technologies in accordance with the government's new & renewable energy dissemination policies. In the sector of renewable energy, we are particularly focusing on developing and disseminating full-cycle offshore power technologies. And, we are actively conducting the development of new & renewable energy technologies that can be coexistent with agricultural and fishery industries to increase their social acceptability. In 2018, we were able to collect necessary data through remote and unmanned ways and utilize high-quality broad environmental information at affordable prices by developing offshore wind power environment monitoring systems that efficiently monitor weather, high waves, current speed, seawater quality and bottom topography of offshore wind power complexes that are placed widely and remotely. By utilizing offshore wind power environment monitoring systems, we are planning to collect and use information by monitoring environment while constructing and operating the Southwest Sea offshore wind power test-bed complex

by 2020 for addressing civil complaints and conducting follow-up management of offshore wind power licensing processes. We have a plan to prepare a service of providing environmental information needed to develop offshore wind power projects for customers by establishing a system that displays environment information on all sea areas nationwide in the future.



Total Project Cost	Development Period	Capacity
KRW 457.3 Billion	Dec. 2012 to Nov. 2019 (Planned)	60MW

Scope	Offshore Wind Power 100MW (Surface 5.5km <sup>2</sup> ) * Planning to Install Large-Sized 13-19 Turbines with Capacities of 5.5-8MW
Development Period	(Construction) 2020 to 2023 (Operation) 20 years after completion
Total Project Cost	KRW 534.6 Billion
Site address	Suwon-ri, Hallim-eup, Jeju (Offshore)

**Creating Favorable Conditions to Implement RE100**

RE100 (Renewable Energy 100%) is a voluntary campaign launched in 2014 by nonprofit organizations of The Climate Group and CDP (Carbon Disclosure Project) to utilize 100% renewable energy for power consumption. KEPCO is planning to fully support the creation of conditions to implement RE100 at home by establishing a roadmap related with RE100 and selecting short/long-term implementation tasks. We will design institutions related to the purchasing of renewable energy such as the Green Premium\*, Green Tariff\*\*, etc., while actively fulfilling our role as an utility in supporting domestic companies' participation in RE 100 through expanding renewables and securing Power network flexibility.

\* Green Premium : A system by which customers voluntarily pay more for new & renewable power than they do for the existing power.

\*\* Green Tariff : A system in which power licensees design and mediate renewable energy purchase fair systems for individual customers.

## Achieving Eco-Friendly Value Chains



### Reducing Fine Dust

As health problems and environmental damage arising from fine dust have recently reached a critical point, KEPCO and KEPCO Group Companies are planning to contribute to the improvement of people's lives through intense measures to reduce fine dust. We reduced fine dust emissions by 31% in 2018 compared with 2016 (32,000 tons in 2016 → 22,000 tons in 2018) by shutting down outdated coal-based power generators in early stages, suspending their operations in spring (March-June), restricting the cap\* when highly concentrated fine particulates are produced and intensively conducting planned prevention maintenance activities in spring. In addition, we are going to invest some KRW 6.5 trillion in improving desulfurization and denitrification facilities and other environmental facilities by 2024. KEPCO and KEPCO Group Companies have started developing technologies to reduce fine particulates emitted by outdoor coal yards by investing KRW 2.4 billion and are planning to apply such technologies to indoor coal yards as well.

\* The power-generation cap is limited to 80% of the rated capacity when highly-concentrated fine particulates are found in the air.

### Converting into Eco-Friendly Power Infrastructure in Island Areas

KEPCO is making preemptive efforts to reduce air pollutants by promoting eco-friendly power supply systems in island areas. By 2021, we plan to reduce about 163.8 tons of fine dust by deploying 18 of 1.5MW or larger small exhaust gas post-processing diesel-type facilities (DOC+ DPF+SCR\*) in Ulleung-do, Baengnyeongdo and Yeonpyeongdo. Additionally, KEPCO is playing a leading role in building eco-friendly power generation systems in the island area by speeding up development of catalyst filters as small-sized emission reduction facilities for simultaneous treatment of NOx and fine dust from internal combustion engines.

\* ① DOC (Diesel Oxidation Catalyst : Eliminating Unburned Carbon Particulates) → ② DPF (Diesel Particulate Filter : Capturing Dust) → ③ SCR (Selective Catalytic Reduction : Denitrification)



### Constructing and Operating Eco-Friendly Power Facilities

KEPCO is pursuing the construction of eco-friendly power facilities to minimize environmental damage when constructing power facilities. By studying and identifying habitats through environmental impact assessments before the construction, we come up with and disclose measures to minimize environmental impacts and conduct follow-up environmental impact surveys in the process of the construction or restoration. And, we are also working hard to restore damaged sites by applying eco-friendly construction methods including the use of retaining bags\*. In the distribution stage, we have established and been operating management systems with the goal of eradicating the use of Polychlorinated Biphenyls (PCBs) to protect the environment. Discarded transformers of which use has been suspended are strictly controlled based on PCBs management procedures. And, discarded transformers with over 2ppm concentration levels of PCBs are handled by professional companies to strictly control them.

\* Retaining Bag : An eco-friendly construction method of restoring inclines by piling up bags with seeds attached and inserting soils like retaining walls.

### Protecting Biodiversity

When selecting construction sites for transmission and substation facilities, KEPCO avoids conducting projects in biodiversity protection areas such as wetland conservation areas, wild animal & plant protection areas, plant genetic resource protection forests, test forests, mountain range protection areas and others. We exclude biodiversity protection areas from project candidate sites by selecting a professional company to conduct power impact assessment services before starting a project. In the stage of environmental impact assessments, we analyze environmental risks of each of the animals and plants and come up with protection measures by conducting documentary surveys, inquiries, on-site investigations etc., to double check if the site is a biodiversity protection area. In addition, both of the power impact assessments and environmental impact assessments contain items related with the protection of animals & plants and ecosystems.

At the same time, when modifying or expanding the planned site of transmission and substation facilities, we evaluate risks by conducting environmental impact surveys in accordance with the Environmental Impact Assessments Act to come up with measures to minimize relevant environmental impacts and conduct discussions with approval authorities and regional stakeholders including regional environmental offices. In addition, we are also disclosing [Environmental Impact Assessment Data Support System (<http://www.eiass.go.kr>)] the results of environmental impact assessments by monitoring environmental impacts and submitting the results to approval authorities and regional environmental offices.



## Sales Stage

Sales & Consumption | Improving National Energy Consumption Efficiency

### Developing and Disseminating K-SEMS\*

K-SEMS is KEPCO's own smart energy management system to improve energy efficiency and reduce energy costs by monitoring, analyzing and controlling information on all energy including electric power, gas, heat, etc., consumed by customers on a real-time basis. KEPCO is working hard to provide smart services and solutions through the brand of K-SMES. By carrying out energy efficiency projects for private buildings, factories and colleges, we introduced K-SMES to 21 sites in 2017 and 25 sites in 2018 and are planning to install K-SMES to 2,000 sites including industrial complexes by 2026. Through such endeavors, we will play the main role in leading and optimizing energy-use efficiency at the national level.

\* K-SEMS (KEPCO - Smart Energy Management System) : An integrated solution developed by KEPCO to manage all energy resources including power, gas, heat and others.

### Expanding EERS\* Project Bases

KEPCO, as a leading energy provider at home, operated a test project of EERS\* for the first time in Korea in May 2018 to take the initiative in implementing the government's policy to improve energy efficiency. We have established taskforces including EERS Planning & Operation Department in the HQs and Energy Efficiency Departments in 15 divisions nationwide. By adding high-efficiency devices including high-efficiency LED & turbo blowers, we could save energy of 837GWh in total and reduce greenhouse gases by 390,000 tons of CO<sub>2</sub>eq in 2018. We are continuously discovering new devices and pushing forward with the expansion of EERS recognition ranges from performance econometrics focusing on the dissemination of devices to K-SEMS, ESCO\*\* and other agency businesses. By studying foreign cases on system operation methods, we are going to set up M&V\*\*\* standards including the calculation of energy-saving for each item.

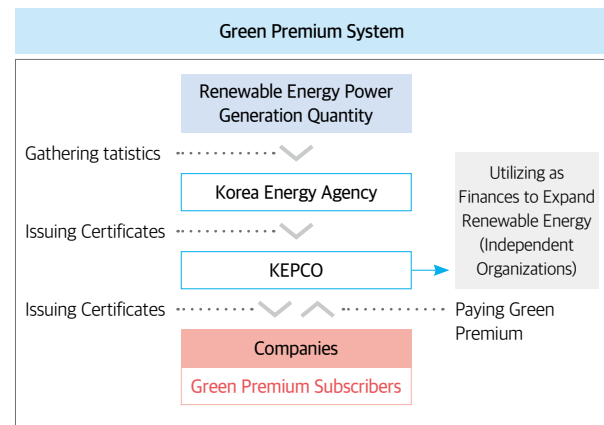
\* EERS (Energy Efficiency Resource Standard) : A mandatory institution to improve energy efficiency.

\*\* ESCO (Energy Service Company) : An energy-saving professional company that invests in energy-saving facilities instead of energy users and retrieves investment costs through subsequent energy savings.

\*\*\* M&V (Measurement and Verification) : A measurement and verification process to reliably measure the actual volume of saved energy.

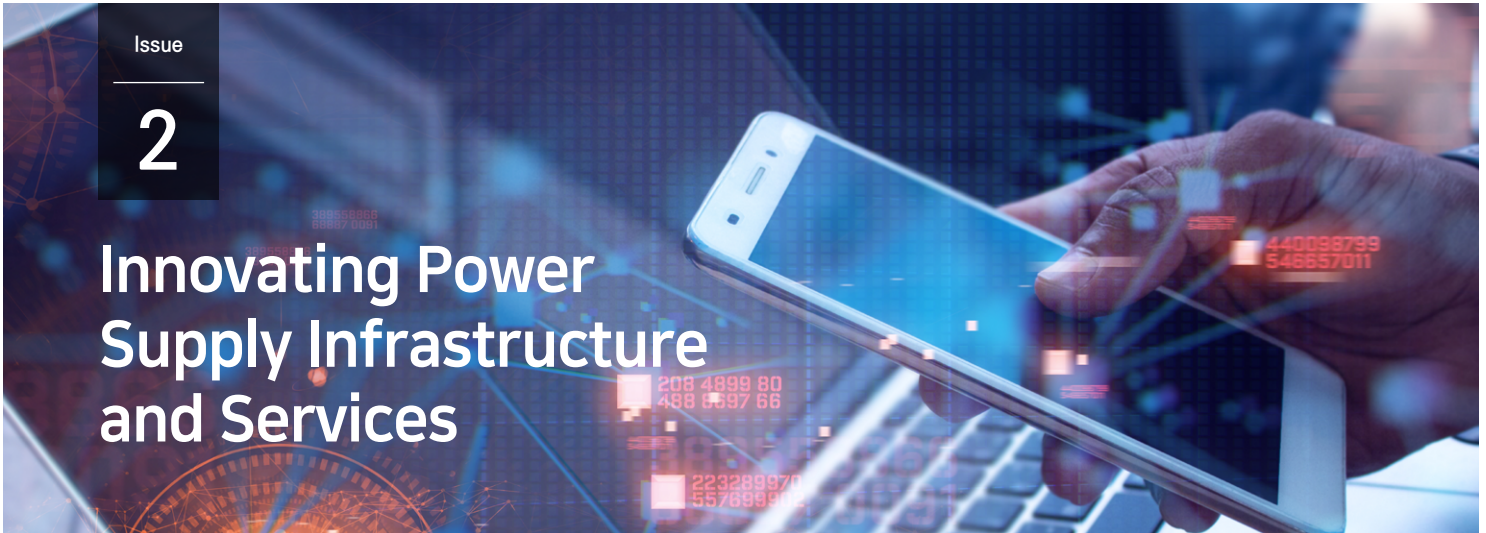
### Introducing Green Premium System

As interest in and responsibilities for clean energy and environment have spread, KEPCO is planning to launch a pilot project of Green Premium within the year after discussing with the government to improve the competitiveness of the domestic renewable energy industry. Green Premium is one of the ways of participating in 'RE100' which is the users' voluntary global campaign to declare to use 100% renewable energy for their electric power consumption. More specifically, the Green Premium is a system in which participants purchase renewable energy at rates added with a certain level of premium. When RE100 fully takes root after going through the operation of the pilot project of Green Premium, the demand for renewable energy power would increase and then investments in the sector of renewable energy would expand. As such, a virtuous cycle for energy transition is expected to be established.



### Strengthening Capabilities to Control Demand based on Stable Electric Power Supply & Demand

KEPCO is contributing to the stabilization of electric power supply & demand by actively and systematically controlling the demand for electric power. Thanks to the development of AI-based systems, we have improved our forecasting capabilities in preparation for pattern changes in power demand and strengthened our responding capabilities to manage emergency demand by grouping targets that should urgently save power after considering their regions and businesses. We will continue to play a leading role in setting up short/long-term policies on power supply & demand in order to change into a demand-controlling high-efficiency energy society.



Issue

2

# Innovating Power Supply Infrastructure and Services

## Issue Background

KEPCO has contributed to the national economic development by stably supplying world-class high-quality electric power. Ushering in the era of the 4<sup>th</sup> Industrial Revolution, we will construct and operate Power Grid in optimized and efficient ways by establishing next-generation power systems and will also improve services to enhance customer value.

## Management Approach

Operating Highly Reliable Power Systems

Innovating Facility Planning and Construction Paradigm

Establishing Proactive Disaster Response Systems

Enhancing Customer Values

## 2018 Key Performance

Outage



**8.59**

Min./Household

Specific Voltage Persistency Rate



**99.98%**

Transmission & Distribution Loss Factor



**3.56%**

World's Best Level



## Operating Highly Reliable Power Systems

### Achieving Global Top Power Quality

It is KEPCO's fundamental responsibility to stably supply good quality power to customers. In 2018, the outage time dropped by 5.4% from the previous year at 8.59 minutes per household, achieving the best-level reliability in the history of power systems. We have fundamentally prevented facility failures by precisely diagnosing distribution and transmission lines through drones and other cutting-edge digital devices and also minimized power service restoration time by utilizing IoT technologies.

In addition, we recorded a transmission & distribution loss factor of 3.56% in 2018, achieving the world's-best level thanks to our endeavors to lower power dissipation by optimally operating power facilities and utilizing low-loss equipment. In other words, we maximized the efficiency of power supply by minimizing losses created out of power transmission. We will continue to do our best for the people to safely use high-quality electric power.



### Supplying Flawless Power to the Nation's Major Events

KEPCO is working hard to ensure that elections, international events and other important national events are held without any setbacks. By conducting preventive maintenance of power lines to event locations and securing multiple power sources, we have provided 100% outage-free electric power and been fully prepared to support events by establishing quick restoration systems in emergency situations. Thanks to such endeavors, we could provide flawless power to the Pyeongchang 2018 Winter Olympics, the 7<sup>th</sup> Simultaneous Nationwide Local Election, 2019 College Scholastic Ability Test, and other main events.

### Securing Stable Power Supply & Demand in Winter & Summer

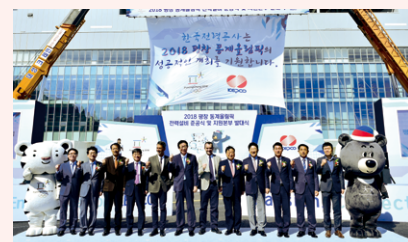
KEPCO is trying to stabilize power supply & demand by establishing a system to systemically control demands and swiftly respond to emergencies. We are well-prepared to maintain stable power supply & demand even in emergency situations where power reserves sharply drop due to unexpected failures of generators by conducting Power Supply Emergency Drills during every winter & summer peak demand in response to power supply emergency situations.



#### BUSINESS CASE

#### Supplying Flawless Power to the Pyeongchang Winter Olympics

KEPCO has shown the world it possesses top-notch technical power by supplying defect-free and stable power for 63 days of the Pyeongchang Winter Olympics. Despite unfavorable conditions such as the second worst cold snap in the history of the Winter Olympics (the lowest temperature of -17.1°C), disadvantageous geographical position of main facilities placed in mountain areas at 850m above sea-level and lack of electrical engineers within the Olympic Organizing Committee, we completed our mission to supply power without outages. To support a successful Olympics, we established defect-free power supply infrastructure by installing 42 substations for the Olympics and conducting 111 jobs of laying underground distribution power cables. To this end, KEPCO united corporate-wide capabilities to utilize the budget of KRW 150.1 billion and 8,870 workers. Thanks to such endeavors, KEPCO was praised by the International Olympic Committee saying "the Pyeongchang Winter Olympics is the only sporting event without a single power outage ('John Paul Giancarlo' in charge of the energy part)" and was chosen as a benchmarking model for the 2020 Tokyo Summer Olympics.



### Applying Advanced and New Technologies to Power Systems

In response to the era of the 4<sup>th</sup> Industrial Revolution, KEPCO has established and been operating Smart Grids. As for the distribution part, we are planning to complete the development of the Advanced Distribution Management System (ADMS) into which the existing Distribution Automation System (DAS) and ICT are converged by 2020. Thanks to the development of ADMS, active distribution networks are to be established in response to the spread of various distributed generations including ESS (Energy Storage System). The transmission & transformation part is expected to adopt an intelligent SCADA\* system that can monitor, control and interpret power systems on a real-time basis. Moreover, we are planning to establish 150 IoT-based digital substations that can independently diagnose and operate power facilities. In addition, we will further strengthen power supply reliability by detecting abnormal symptoms of power systems at an early stage and quickly restoring facility failures.

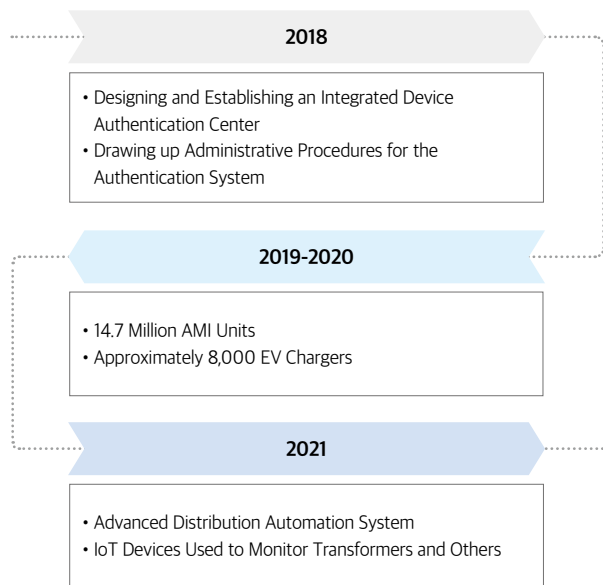
\* SCADA (Supervisory Control and Data Acquisition) : A control system for gathering and analyzing real time data for power systems

### Strengthening Information Security Activities

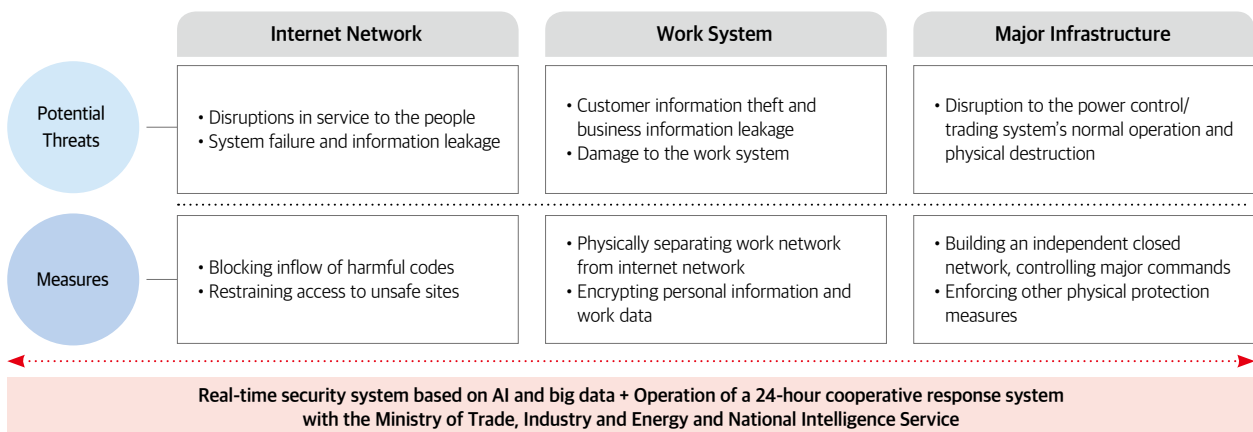
As the importance of data has increased in the process of digital transformation, personal information protection and high-level information security are required. Thus, KEPCO is improving its security management system to protect national Power Grid and customer information from intelligent cyber threats. In order to strengthen security of main facilities and information systems, we have developed transmission & transformation control systems and AI-based security monitoring technologies and established other infrastructure in response to potential intelligent cyber attacks. At the same time, we continue to conduct various security diagnoses to improve cyber security levels. And, we are working hard to correct and improve detected vulnerable points. Thanks to such endeavors, we have not faced a single cyber infringement accident in 2018.

### Establishing an authentication system for on-site IoT devices

As security threats against Power Grid have increased due to the surge of IoT devices used for operating on-site power facilities scattered nationwide, KEPCO has established an authentication system for EV chargers, telemetering devices, power facility monitoring devices and other on-site IoT devices. We designed and established an integrated device authentication center in 2018. We are planning to conduct authentication processes for 14.7 Million AMI Units (Advanced Metering Infrastructure) units and some 8,000 EV chargers by 2020 and to complete authentication processes for IoT devices used to monitor next generation DAS (Distribution Automation System) and transformers.



### Establishing a Defense System against Cyber Threats



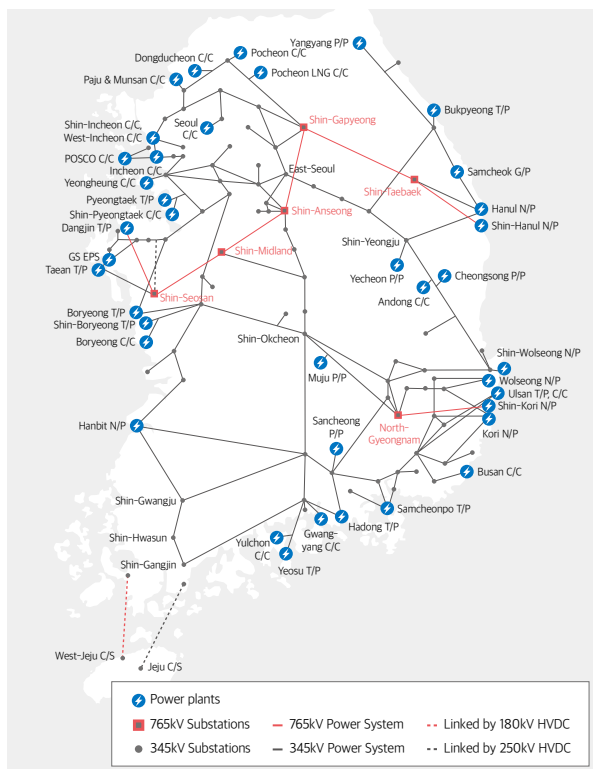
## Innovating Facility Planning and Construction Paradigms

### Establishing Optimized Power System Plans

KEPCO is making plans to construct optimized power systems in order to prepare for the increase in power demand and the proliferation of new & renewable power sources. In order to create power supply networks in which people, the environment and efficiency are all well harmonized, we are trying to maximize the utilization of the existing power facilities and take various elements into account when forming new Power Grid.

When making the 8<sup>th</sup> Transmission & Distribution Plan (2018), we placed top priority on the stable operation of power systems by including a plan to reinforce the single system that is currently connected to only one route. We also added a plan to lay relatively-well-accepted and eco-friendly underground power cables, expand DC transmission and introduce a new way of transmission voltage (70kV) to the plan. By establishing the optimal facility plan that comprehensively takes the fields of transmission, transformation and distribution into account for connecting renewable generation to the grid, we are trying to construct facilities in a timely manner and improve the availability of facilities. In particular, we are swiftly responding in line with the progress of projects by dividing the grid connection plan into two: a confirmed plan and a tentative plan, considering the uncertainty of a facility plan for renewable energy system connections. Upon confirming a tentative plan, we immediately reflect it onto our plan to enhance our responsiveness.

Power System Map



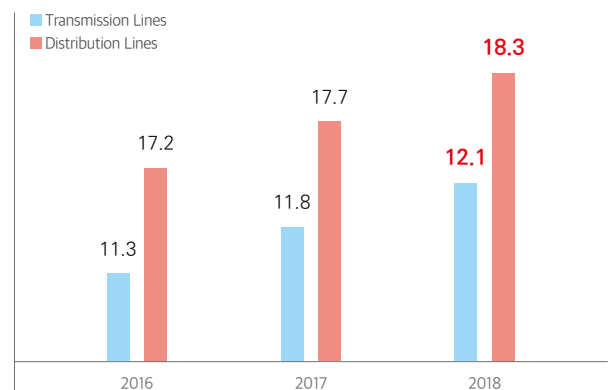
### Constructing People-Centered Power Facilities

KEPCO is striving to minimize conflicts by setting up a system to manage conflicts during the whole cycle when selecting construction sites for power facilities. We are also striving to smoothly carry out construction projects and enhance residential welfare at the same time by operating a mutual growth council together with locals.

To co-prosper with residents near transmission & substation facilities, we continue to carry out projects to commonly support some 5,000 towns nationwide for their regional development. In addition, we are creating eco-friendly facilities open to locals by making efforts to establish new-concept power facilities including 'substations open to locals', which include residential welfare facilities, and 'urbanized substations,' which takes into account the urban landscapes.

As for power facilities in downtown areas, we are laying underground power cables to create safe and pleasant streets and will continue to develop advanced new underground facility models to minimize ground equipment.

Status of Transmission & Distribution Underground Work Rate [Unit : %]



Aerial View of Urbanized Substation (154kV East-Pyeongtaek Substation 'Energy Park')

### Expanding and Applying Transmission & Distribution Network DC Technology

The DC transmission system converts AC power into DC power to efficiently and safely transmit power. The necessity of introducing DC grid core technologies has been highlighted as the need has emerged to come up with new measures to supply power to customers in dense downtown areas from distribution lines and the issue of long-distance and large-capacity transmissions due to a surge of large-scale renewable energy in transmission networks. At the same time, such issues as the limited underground distance (20-30km) due to the charging capacity, which is a technical restriction of the AC transmission system, residential concerns over harmfulness arising from electromagnetic waves and the inevitability of constructing large-scale transmission towers due to high voltage peaks have emerged. Therefore, we are expanding and applying DC grid core technologies to the existing AC transmission & distribution networks in order to establish high-efficiency power supply systems.

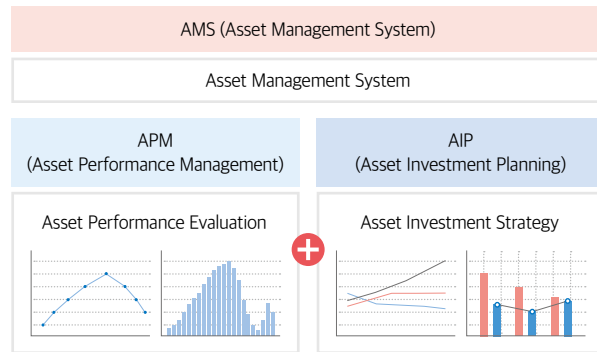
As for transmission networks, we are striving to secure residential acceptability and enhance the efficiency of power system structures by reducing long-distance transmission loss and the tower size through application of DC facilities to large-scale transmission lines including North-Dangjin-Godeok and East Coast Line-Shin-Gapyeng HVDC. The DC technology applied to such transmission lines is expected to be used as a core technology to connect power systems of Korea, China and Japan when establishing the Northeast Asian Super Grid. We are also expanding and applying DC technologies to distribution networks by establishing a test-bed complex for DC distribution systems in Seogeocho-do, Jindogun, Jeollanam-do, Korea in response to the increase in DC loads and the proliferation of new & renewable power generation.

### Establishing an Integrated Asset Management System (AMS)

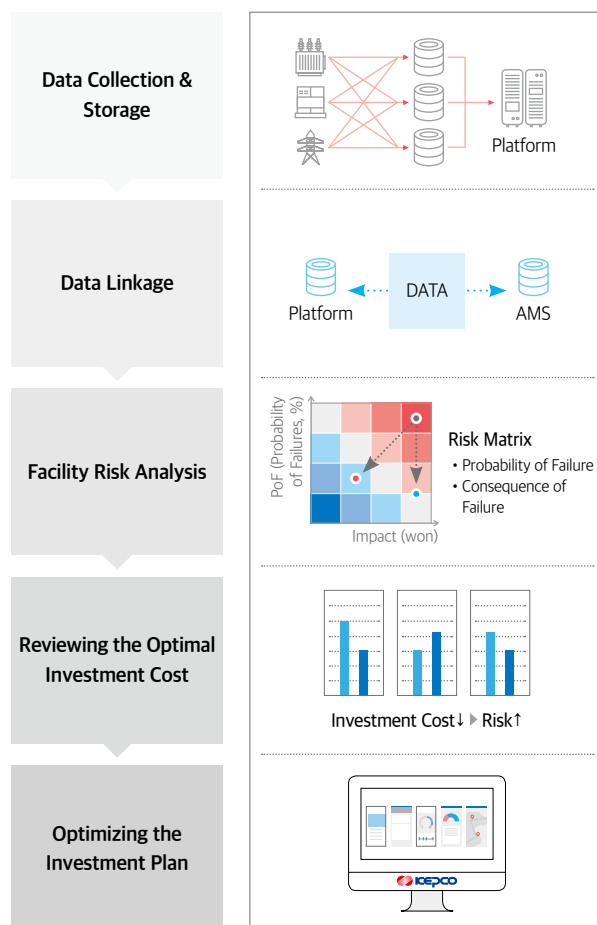
KEPCO is planning to establish an integrated asset management system that supports the optimal maintenance and investment decisions by checking all cycles of power facilities and comprehensively evaluating their residual life and management costs. The system is expected to be completed by 2021 after introducing IT infrastructure used for AMS, connecting to big data platforms, improving management systems for each of the facilities and processing facility data. Based on the system, we believe we could quantify PoF (Probability of Failure) and CoF (Consequence of Failure) and evaluate risks to calculate the optimal investment size. Thanks to an efficient investment plan made by the integrated asset management system, costs of up to KRW 200 billion (around 10% of OPEX\*) is expected to be saved. And, we are planning to achieve the optimization of the asset management and to contribute to conducting efficient business management by setting conditions to maintain the optimal performance of power facilities and comprehensively managing economic values. Furthermore, we expect that we could export 'KEPCO AMS' and move into asset management consulting businesses in the future.

\* OPEX : Operating Expenditure

Asset Management System Diagram



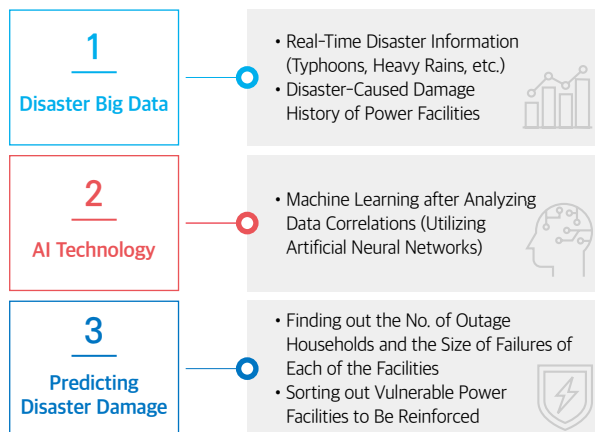
Asset Management Process



## Establishing Proactive Disaster Response Systems

### Establishing Smart Disaster Management Integrated Systems

KEPCO has enhanced disaster management systems to strengthen its capabilities to respond to natural disasters and other crisis. By analyzing weather information and other big data, we have predicted real-time disaster situations including typhoons, heavy rains, etc., prepared preliminarily-responding systems and strengthened the management of disaster-caused damage history of power facilities. Furthermore, we are figuring out the number of households faced with outages and the size of failures of each of the facilities by utilizing AI-based technologies and analyzing data correlations. We are also predicting and swiftly responding to facility damage by identifying and reinforcing weak power facilities in advance.



### Establishing Earthquake Disaster Prevention & Response Systems

Korea was considered to be safe in terms of earthquakes in the past. But earthquakes that were regarded as potential threats have become actual threats since the earthquake (magnitude 5.8) hit Gyeongju in September 2016. KEPCO has established earthquake disaster prevention & response systems to proactively respond to change due to disaster situations and to strengthen disaster-preventing activities. We have completed jobs of conducting seismic reinforcement and securing performance of transmission & distribution facilities (2,688 units), substation structures (848 units), transmission & distribution power ducts (665km) and nuclear plant switchyards (11 units) earlier than initial schedules (2020 → 2018) and have introduced new seismic construction methods including basic earthquake vibrant absorbers that can be used when constructing new power facilities. In addition, we are researching earthquake damage notification & prediction systems that can be used for facilities vulnerable to earthquake damage and be applied to overall power systems. We are also planning to complete the development of earthquake damage simulation programs that can identify expected power facility damage in advance by May 2020. We will maintain stable power supply systems by enhancing our capabilities to respond to earthquake disasters.

### Expanding and Establishing BCM (Business Continuity Management)

KEPCO has expanded and established the BCM (Business Continuity Management) system throughout the corporation in order to deliver quick responses and restoration when facing crises that would cause the suspension of power supply. We gained international recognition for our comprehensive crisis management systems after obtaining a relevant international certificate of ISO 22301. We have secured operational capabilities to swiftly normalize within the target time in accordance with preliminarily prepared and customized restoration schedules in the event that operational works related with transmission, transformation and distribution have stopped due to earthquakes, tsunamis, fires, cyber attacks or a surge in power demand. Starting from the pilot establishment & operation targeting the HQs and Gwangju & Jeonnam Division in March, 2017, the HQs and other eight regional divisions acquired BCM certificates in June, 2018. We will continue to work hard to stably supply power by enhancing comprehensive crisis management systems and practical response capabilities.

### Establishing and Implementing Measures for Power Facilities to Adapt to Climate Changes

The risk of damaging power facilities is expected to rise due to extremely unusual weathers caused by climate changes. Thus, we have planned to complete the establishment of countermeasures and detailed annual implementation plans by 2020 by selecting climate change risks that we have to preemptively respond to for facility protection, public safety and power supply service continuity. We have also strengthened our capabilities to adapt to climate change under the goal of securing the stabilization of power supply and enhanced internal awareness of adjustment to climate changes. In particular, we have established IoT-based power facility monitoring systems, developed drone-based operations systems and tested them on 32 towers in three regional divisions. Furthermore, we were selected as an outstanding organization in the Safe Korea Exercise organized by the Ministry of the Interior and Safety for our efforts to enhance disaster response capabilities by continuing to conduct disaster response drills.



Response to Disaster-Safe Korea Training (2017)

\* Selected as an excellent organization in 2017 and maintaining qualification until 2018.

## Enhancing Customer Value

### Alleviating Cost of Air-Conditioning in Summer Seasons

As power consumption surges due to abnormally high temperatures caused by climate change, KEPCO is taking the lead in delivering public rights to access to air-conditioning by introducing a tariff system to ease the tariff burdens on customers. In order to ensure more affordable use of air-conditioners to the public and ensure basic rights of the unprivileged to use energy, we temporarily alleviated the progress billing for electricity for households in 2018, lowering the average tariff system per household by KRW 12,220, or to KRW 358.7 billion in total.

Alleviating the Progressive Billing Section in Summer (July-September, 2018)

Section	Power Rate for Household Low-Voltage (KWR/kWh)	Before	After
1	93.3	200kWh or Less	300kWh or Less (+100kWh)
2	187.9	201-400kWh	301-500kWh (+100kWh)
3	280.6	Above 400kWh	Above 500kWh

### Striving to Create Efficient Energy Consumption Structure by Improving the Tariff System

KEPCO is planning to improve the discount tariff system for customers who use less electricity in order to alleviate electricity bill burdens in summer and prepare a sustainable tariff system that could reduce financial burdens for the public. We also have a plan to come up with measures to reshuffle the current tariff system to include a seasonal and hourly household electricity billing system. By establishing a tariff system roadmap to reflect the generation cost and reforming electricity rates, we will address the distorted power consumption. And, we will set up procedures of disclosing information on electricity rates and secure external reliability to suppress the waste of energy costs nationwide and to keep the electric power industry sustainable.

### Expanding Customer-Oriented Power Services

KEPCO is taking the lead in enhancing customer values by providing power services with customer convenience on top priority. By improving Smart KEPCO APP functions, we have enhanced real-time power consumption solutions and customer-friendly information service provision functions. By utilizing computing technologies, we have improved call center work systems to decrease the waiting time by 75% during the peak business hours, minimizing customer inconveniences. In addition, we will continue to endeavor to enhance customer satisfaction by providing mobile voice bills for the underprivileged to increase services for them and carrying out the service of 'My House Power Rate Preview' based on Smart KEPCO APP and KEPCO's cyber branches.

### Implementing the Service of 'A Peek into My Household Electricity Bill'

KEPCO launched the service of 'A Peek into My Household Electricity Bill' for household power customers to preview their power rates in advance and to efficiently consume electricity by providing them real-time power consumption information online in June 2019. Customers using low-voltage electricity for detached houses and using high-voltage electricity for apartments\* can access Smart KEPCO APP or KEPCO's cyber branches to check the amount of electricity they consumed, their power-consumption trends and expected power rates and to actively manage their power consumption patterns by comparing with the electricity consumed in the same month of the previous year and/or in the previous month. By delivering customer handbooks on KEPCO services, strengthening service accessibility, providing additional information and gathering opinions from customers, apartment management offices and others, we are planning to enhance services and improve the management of customer information.

\* This enables a customer to check the power rate of his/her apartment household through his/her own apartment maintenance fee statement without receiving the electricity bill directly from KEPCO as the whole apartment complex is contracted under a single customer number.

#### BUSINESS CASE

#### Enhancing Customer Services by Operating 'Power Planner'

KEPCO has a plan to expand the construction of AMI (Advanced Meter Infrastructure) in the medium- to long-term. To this end, we are going to apply AMI data to internal and external businesses and develop and operate various services for the enhancement of customer satisfaction. 'Power Planner' developed as part of such endeavors is an electric power portal service that provides real-time electricity information and customized services through our website and app for customers who have installed AMI. This service is to help our customers to efficiently consume electric power and voluntarily save electricity. The service of 'Power Planner' is to be used by around seven million low & high-voltage household customers that have installed AMI and they would get information on the amount of electricity consumed, power generation quantity and estimated power rate through their smart phones. Those who wish to use the service can check its availability for their household at the power planner site (<https://pp.kepco.co.kr>) and sign up for cyber membership and find their customer number. The same service is available through 'KEPCO Power Planner' App.



## Strengthening Customer Information Protection Management

### Personal Information Protection System

KEPCO is protecting national Power Grid and customer information from cybersecurity threats including ransomware attacks and malignant codes by establishing preemptive security systems. In order to improve the security of main infrastructure and information systems, we have enhanced power control systems, information systems and Internet service security systems and established security infrastructure for new industries in the energy sector. At the same time, we are finding and improving weak points by continuously conducting security diagnoses.

### Acquiring PIMS\*

KEPCO is at the forefront of protecting customer information by strengthening personal information protection management systems. We acquired the international certificate of PIMS in December, 2018 and gained international recognition for our security and reliability of public information services. We have secured the system security by applying officially certified standard systems.

\* PIMS (Personal Information Management System) : An internationally-certified system to protect and manage personal information.



Certificate of Personal Information Management System






### Strengthening Personal Information Protection Activities

KEPCO is preemptively responding to various security attacks by applying new technologies related with information protection and carrying out participatory campaigns with its employees. We have encrypted 270 million cases of personal information database, established an integrated monitoring system, strengthened leakage prevention systems, utilized electricity big data and beefed up technical protective measures. In addition, we have conducted various participatory personal information protection activities including monthly personal information leakages mock drills & hacking e-mail drills, relevant e-learning programs and pledge campaigns to protect personal information. Thanks to such personal information protection activities, we had no personal information infringement accident in 2018, recorded the best score of 97.34 among other public corporations in the diagnosis of personal information management conducted by the Ministry of the Interior and Safety and selected as an outstanding corporation for five consecutive years.

### Strengthening Technical Protection Measures to Prevent Personal Information Leakage

Establishing Integrated Monitoring Systems	<ul style="list-style-type: none"> <li>• Detecting and Warning Abnormal Behaviors of Administrators in Charge of Personal Information</li> <li>• Establishing a Search Filter to Check Personal Information Exposure</li> <li>• Intensively Monitoring Partners' Handling of Personal Information</li> </ul>
Strengthening Leakage Prevention Systems	<ul style="list-style-type: none"> <li>• Automatically Encrypting Personal Information Files inside PCs</li> <li>• Encrypting PDF, JPG and Other Image Files</li> <li>• De-Identification of Personal Information in Printed Documents</li> </ul>
Utilizing Electricity Big Data	<ul style="list-style-type: none"> <li>• Establishing a System for De-Identification of Personal Information in Data</li> <li>• Drawing up Procedures in Providing Electricity Big Data</li> <li>• Nurturing Experts in Charge of De-Identification of Personal Information</li> </ul>

### 2018 Main Activities for Personal Information Projection

 <p><b>Educating People in Charge of Information Security</b></p> <p>Conducting Trainings on Information Security through the Ministry of Industry and External Education Organizations</p>	 <p><b>Educating the Whole Corporation</b></p> <p>Conducting Online Trainings on Cyber Security Education Systems and Implementing On-Site Education</p>	 <p><b>Implementing Information Security Mileage Programs</b></p> <p>Settling Down Voluntary Security Culture by Implementing Programs</p>	 <p><b>Conducting Cyber Crisis Response Drills</b></p> <p>Conducting Hacking E-Mail Response Drills for All Employees</p>	 <p><b>Holding Hacking Prevention Contests</b></p> <p>Holding Vulnerability-Eliminating Contests of People in Charge of ICT and Information Security</p>
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Issue

3

# Creating Future Growth Engines

## Issue Background

As the convergence of other industries has expanded, digital transformation is also required in the power industry. By utilizing our outstanding ICT capabilities, we will enhance the efficiency in operating our primary businesses, strengthen new industries in the energy sector to create future growth engines and develop and commercialize next-generation technologies. In addition, we will take the initiative in moving into the global market based on our experiences, brand and competitiveness we have built up in the electricity filled home and abroad in line with the deregulation of electricity markets in emerging nations and the expansion of IPP (Independent Power Plant) markets.

## Management Approach

Leading Digital Transformation in the Power Industry

Expanding Profitable New Industries in the Energy Sector

Developing and Innovating Convergence Technologies

Exploring New Global Markets

## 2018 Key Performance

R&D Commercialization Outcomes



KRW  
**119.4** Billion

EV Charging Infrastructure



**8,014**  
Chargers

Core Strategic Technologies



**89** Technologies  
(Accumulated)

Accumulated Overseas Power Generation Facility Capacity

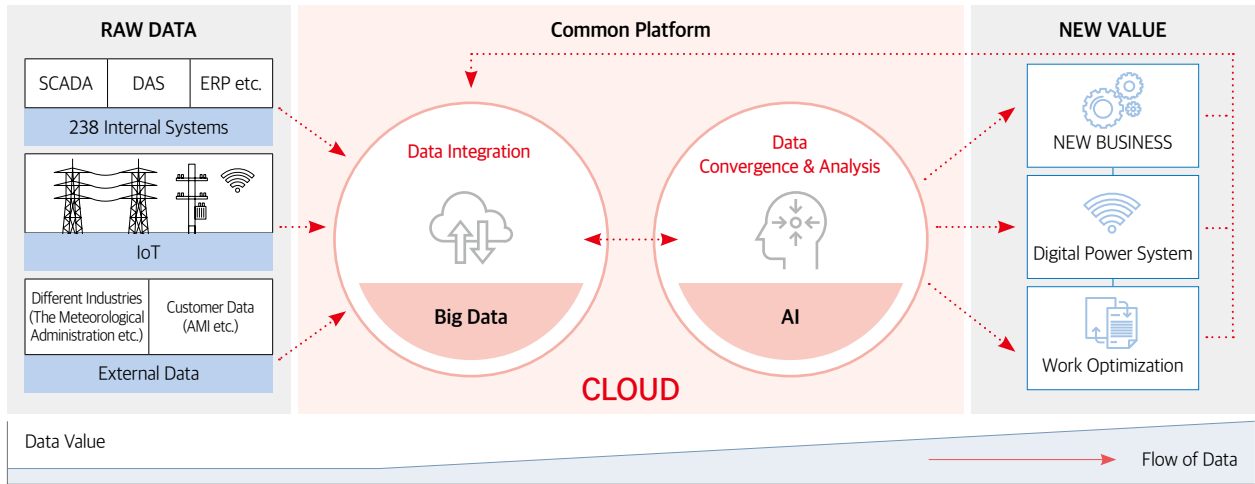


**27,339** MW  
(8,525MW Based on the Share Ratio)  
\* As of June, 2019



## Leading Digital Transformation in the Power Industry

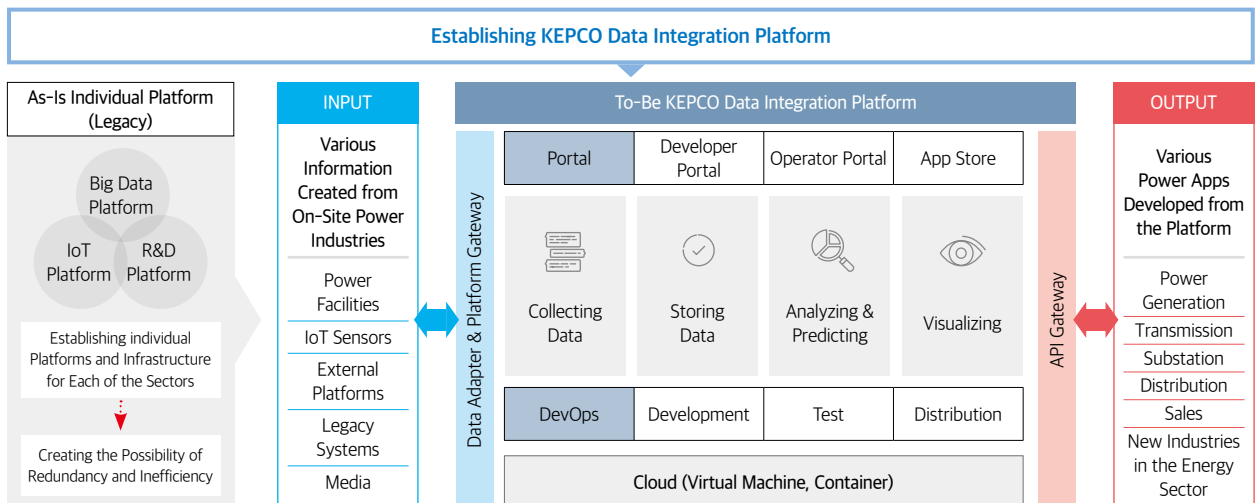
KEPCO is pushing forward with digital transformation in overall business areas, infrastructure, services and processes by combining digital technologies and culture. We are striving to secure capabilities to lead the paradigm shift in the future power industry and to become 'Digital KEPCO' by coming up with strategies to lead the future directions of digital transformation, newly establishing taskforces and DSL (Data Science Lab) and launching energy business platforms.



Digital transformation is essential to respond to an ICT-centered industrial paradigm shift. By realizing digital transformation, we could increase the competitiveness of the existing power industry, improve the efficiency in operating facilities, create new businesses based on AICBM technologies and develop platforms and solutions for the corporation to sustainably grow.

### Establishing Data Integration Platform

For digital transformation in the power industry, KEPCO is in the middle of establishing the KEPCO Data Integration Platform. We believe we can address redundancy and inefficiency due to the operation of individual platforms for each of the sectors and more efficiently utilize managerial resources by collecting and analyzing data through the integrated platform. The integrated platform is divided mainly into two: 'big data platform,' to collect and analyze data and 'development platform,' to develop an App that can visualize and utilize data based on AI analysis. We completed the establishment of the big data platform (February 2018) and are operating it. And, we are planning to complete the establishment of the development platform by the end of 2019. And then, we are going to lay the groundwork for creating new value by utilizing enormous electricity big data through data correlations and optimization processes.

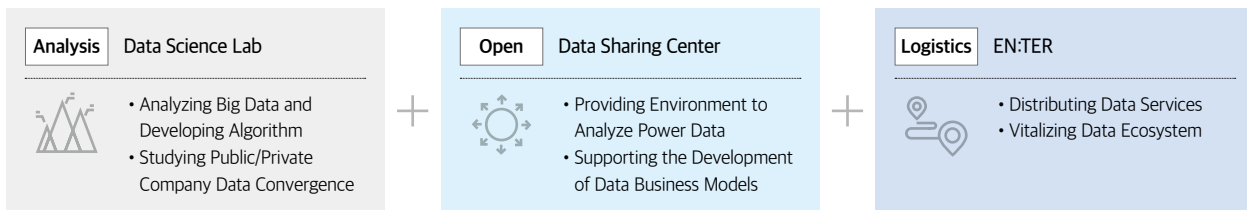


\* Collecting Corporate-Wide 216 Work Systems and External Data

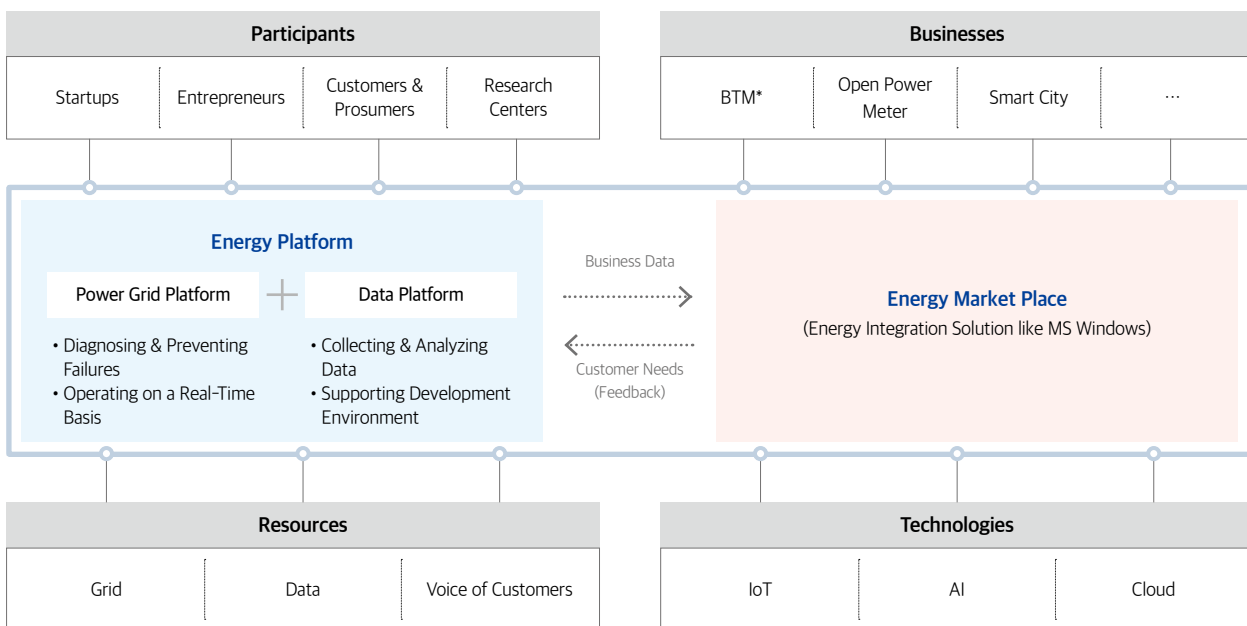
### Opening the Power Big Data Convergence Center

KEPCO became the first public corporation to launch a 'Power Big Data Convergence Center' in April 2019 to lay the foundation for creating new services based on big data and environment to share data. We are planning to create new services and vitalize the ecosystem of sharing data by analyzing and utilizing enormous amount of power data of over three trillion cases produced annually from the current power systems. And, we will expand digital business areas by actively utilizing 'Sand Box', which is the government's exemption regulation on industry convergence. In addition, we are improving work processes based on big data analysis and cooperation with working-level people in the field by utilizing Data Science Lab made up of data experts, S/W experts, in-house researchers and employees.

#### Power Big Data Convergence Center



### Opening an Energy Business Platform of EN:TER



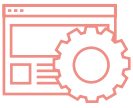


KEPCO opened an energy business platform of EN:TER\*\* as of August 2019. EN:TER, an energy business platform that mediates various energy services for its users, is providing 'business matching services' and 'customer convenience' services. The business matching services are made up of 'ESCO (Energy Service Company) Market', 'DR (Demand Response) Market', and 'EDS (Electric Power Data) Market'. Customers can replace outdated or inefficient energy facilities of companies, buildings and factories with high-efficiency facilities without burdens of initial investment costs through ESCO or sell saved electricity to the electric power market through DR Market. In addition, they can easily check the amount of electricity consumption and efficiently manage energy at EDS Market and experience various services developed by service providers by connecting customers' electric power data and different data. Meanwhile, EN:TER is providing not only business matching services but also customer convenience services including KEPCO mobile App download services for its users to easily access various information on the energy sector, information on neighboring electrical work providers, information on distributed power connections, power statistics, KEPCO patent search services and others.

\* BTM (Behind the Meter) : Services performed by the customers based on the power meter (demand management, control of household appliances, etc.)

\*\* EN:TER : Defined as enTERing KEPCO's new ENergy market.

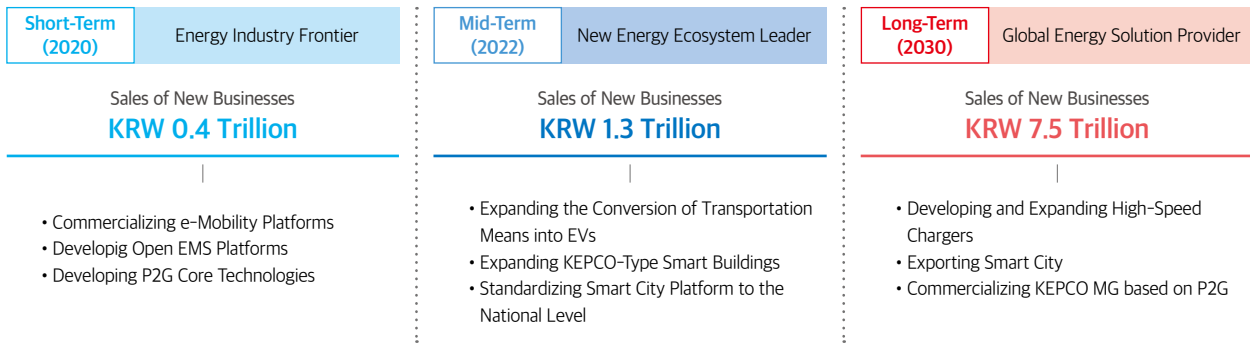
## Developing Digital Solutions for the Electric Power Industry

KEPCO is developing various ICT-based solutions in order to expedite digital transformation. We will enhance the efficiency of overall value chains of the electric power industry by innovating work processes based on digital technologies, optimize investments in power facilities and maintenance systems based on AI and establish a system to support swift decision-making processes based on internal & external big data analysis.

Classification		Details
 <p><b>FTM*</b></p> <p><b>Enhancing Managerial Efficiency</b></p>	<p><b>Power Quality Management Solutions</b> (AMI, Power Data)</p>	<ul style="list-style-type: none"> <li>Monitoring Regional Voltage (High Voltage, Low Voltage)</li> <li>Analyzing New &amp; Renewable Electric Power Quality and Effect</li> <li>Monitoring Overload Transformers on a Real-Time Basis</li> </ul>
	<p><b>Management Information Systems</b> (Internal &amp; External, AMI)</p>	<ul style="list-style-type: none"> <li>Predicting Power Sales Volume and Other Main Management Information</li> <li>Supporting the Management to Make Decisions by Providing Them with Information on Loss &amp; Profit, Financial Status, Profitability Index and Others</li> </ul>
	<p><b>Social Data Analysis</b> (External Data)</p>	<ul style="list-style-type: none"> <li>Analyzing News, Portals, Social Media, Replies and Other Issues on a Real-Time Basis</li> <li>Analyzing User Opinions and Customer Complaints over Electromagnetic Waves and Others</li> <li>Analyzing Papers, Patents, Global Trends and Technical Trends</li> </ul>
<p>* FTM (Front The Meter, Utility-Scale i.e. Power Producers)</p>		
 <p><b>BTM*</b></p> <p><b>Enhancing Customer Services</b></p>	<p><b>Power Consumption Prediction Solutions</b> (AMI Data)</p>	<ul style="list-style-type: none"> <li>Predicting Monthly Power Consumption by Analyzing Previous Power Consumptions</li> <li>Inducing Smart Power Use (Avoiding the Progress Billing System)</li> </ul>
	<p><b>Home-Along Senior Caring Services</b> (AMI Data)</p>	<ul style="list-style-type: none"> <li>Scheduling Municipal Governments' Public Servants' Visits to Seniors Living in Solitude by Analyzing Quantitative Information</li> <li>Developing Algorithm to Analyze Power Consumption</li> </ul>
	<p><b>APT Power Substation Facility Management</b> (AMI Data)</p>	<ul style="list-style-type: none"> <li>Solution to Diagnose Risks of High-Voltage Power Substation Facilities</li> <li>Monitoring Status of Facilities through Sensors and Notifying Customers of Abnormalities</li> </ul>
<p>* BTM (Behind The Meter, Customers)</p>		
 <p><b>Convergence with Private Companies</b></p> <p><b>External Cooperation Model</b></p>	<p><b>Analyzing Suitable Sites to Install CCTVs</b> (Internal &amp; External, AMI)</p>	<ul style="list-style-type: none"> <li>Providing Optimal Sites to Install CCTVs</li> <li>Checking Correlations by Analyzing the Convergence of Power, Crime, Floating Population and Other Public Data</li> </ul>
	<p><b>Data Market (Inside EN:TER)</b> (Internal &amp; External, AMI)</p>	<ul style="list-style-type: none"> <li>AMI Data Logistics Platform to Purchase and Sell Power Data of Customers</li> <li>Developing Service Models to Utilize AMI Data</li> </ul>

## Expanding New Profitable Industries in the Energy Sector

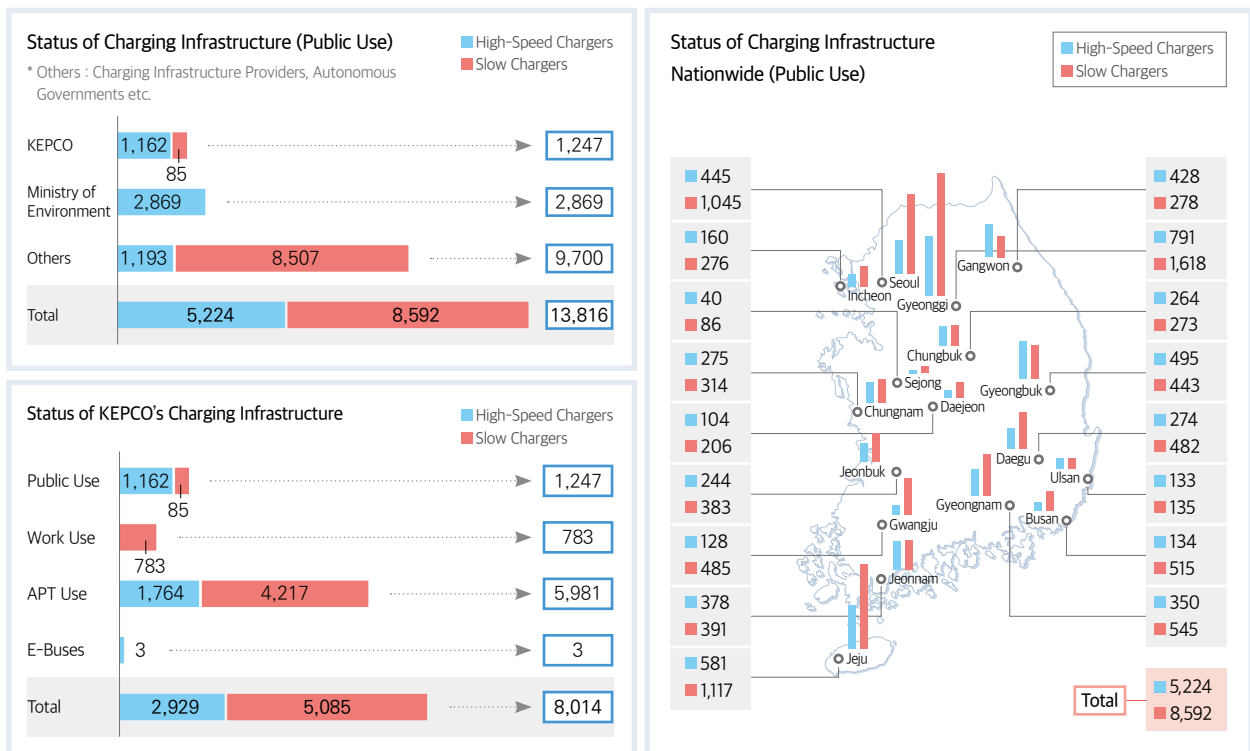
KEPCO is working hard to actively discover and carry out future growth engines and create new profits by thoroughly analyzing future trends of the power industry. To this end, we will install EV charging infrastructure, enhance core businesses including the dissemination of energy management systems and develop new business models including smart city, Micro Grid etc. in order to lay the groundwork for sustainable growth.



### Establishing EV Charging Infrastructure

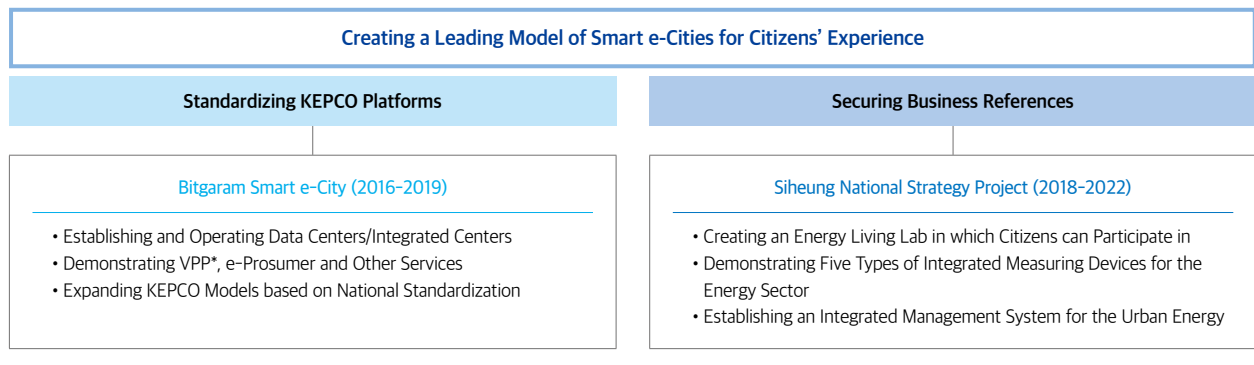
Since KEPCO started establishing EV chargers in 2009, it has been establishing public charging infrastructure and other various charging models including those installed in apartments and other residential areas from 2016 to contribute to the proliferation of EVs and create new profits. In 2017, we laid the foundation for nurturing charging infrastructure providers by establishing charging infrastructure, launching paid charging services and providing access to charging infrastructure. Furthermore, we are pushing forward with the project of establishing charging infrastructure for electric buses and other transportation means and are striving to develop convergence services to lay the groundwork for the dissemination and proliferation of EVs with the goal of installing 3,000 high-speed chargers for the public by 2022.

Status of Installing Charging Infrastructure (As of June 2019)



### Constructing Smart Cities

Smart City is a future urban platform with ICT, big data and other innovative technologies grafted onto urban infrastructures to improve life quality. Currently, KEPCO is constructing a leading model of KEPCO Energy City in the innovative city of Naju. In addition, we are going to expand the project of establishing smart cities in Korea and abroad by demonstrating integrated energy management technologies and securing relevant references while pursuing the national project of Siheung Smart City.

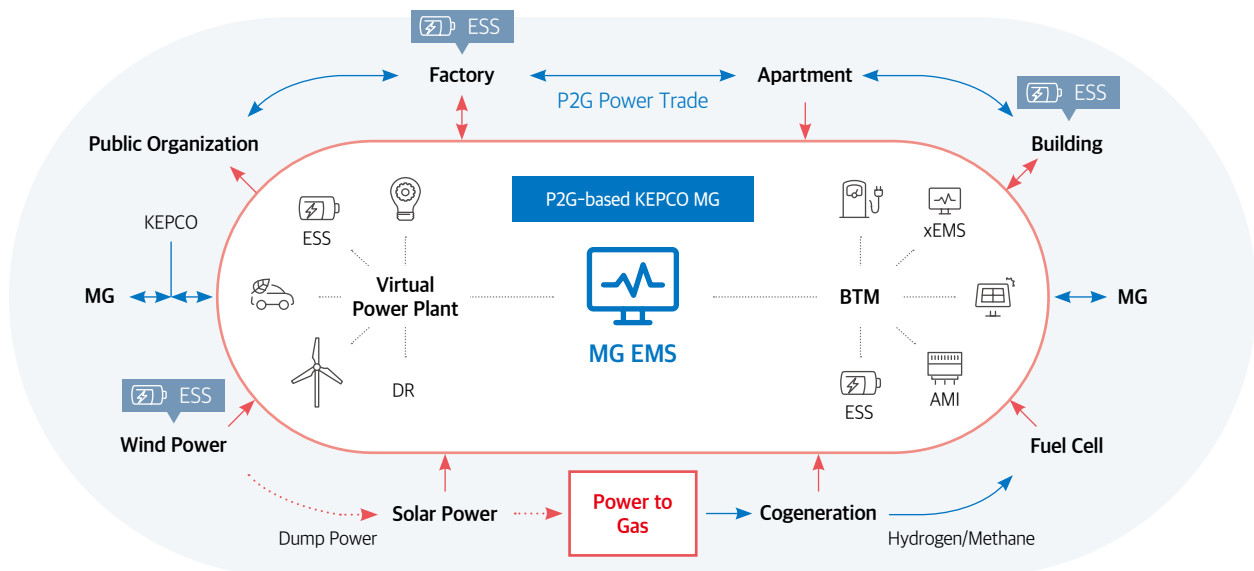


\* VPP (Virtual Power Unit) : A system that manages and integrates a number of dispersed power sources from small-sized new & renewable energy power generating facilities into one virtual power plant by utilizing cloud-based software.

Singapore, Spain (Barcelona), Austria (Aspern) and other advanced nations and emerging nations are pushing ahead with Smart Cities as a new model of innovating a city. KEPCO is also planning to realize a sustainable Smart City model to increase citizens' quality of life.

### Micro Grid Demonstration Project

KEPCO is pushing ahead with 'P2G (Power to Gas) MG Demonstration Project' by grafting hydrogen technologies onto small-sized independent Power Grid. In the future, it is likely to make it possible to have regional energy independence and use energy efficiently by converting new & renewable energy dump power into hydrogen through P2G technology, storing it in ESS (Energy Storage System) or trading it with individuals based on block chain technology. By doing so, we believe we could contribute to the establishment of energy infrastructure for a hydrogen economical society which has emerged as a new growth engine of a nation and greatly help to create new business ecosystems and jobs.



## Developing & Innovating Convergence Technologies

### Strengthening R&D Capabilities through the Expansion of Convergence & Open R&D

KEPCO is expanding convergence and open R&D to create new growth engines and contribute to the innovative growth of the nation by securing sustainable future innovative technologies. 'Open R&D', a research and development project based on cooperation with industries, universities and institutes, carried out 18 tasks: 12 in 2017, and 6 in 2018, and suggested technical business models based on outstanding research outcomes that can be applied to actual work-site operations including the project of demonstrating seawater batteries, the project of converting waste solar power modules into resources and the project of commercializing CO<sub>2</sub>-containing eco-friendly materials. In addition, we started various international joint researches on the evaluation of residual life of equipment, the connection to distributed generation with advanced R&D institutes including Electric Power Research Institute (EPRI) in the USA and Fraunhofer in Germany and carried out international cooperative projects such as 10 global joint researches and 58 technical agreements as of 2018. At the same time, we have jointly designated small but strong R&D special zones\* together with local municipal governments including Pohang City. We have also signed an agreement with the integrated R&D strategic committee to jointly plan and implement research tasks with our subsidiaries and strengthened internal and external cooperative systems for technical development based on 'open' and 'share' approaches to fortify technical development synergies and enhance the management efficiency of KEPCO Group Companies.

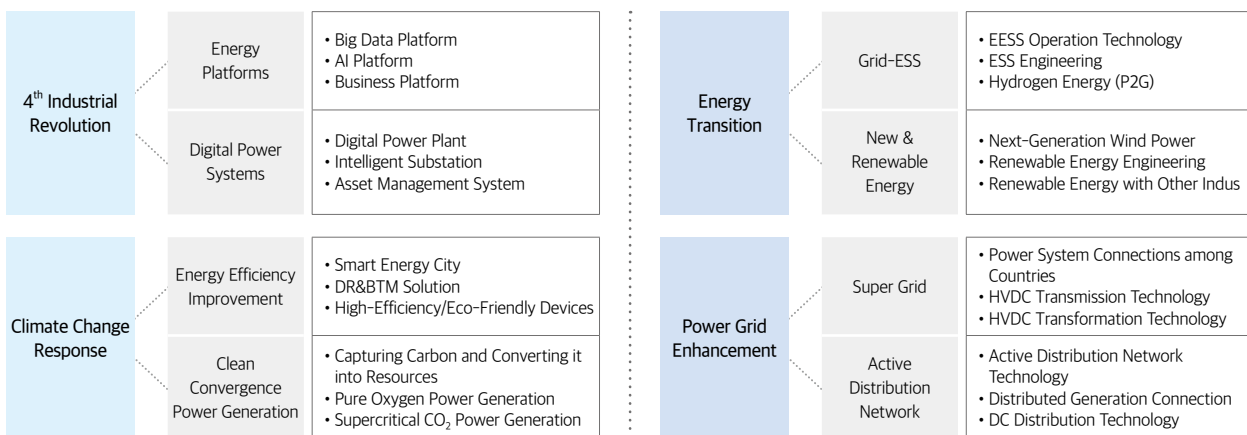
\* Small but Strong R&D Special Zone : A small-sized special zone to back up core technical organizations. (Act on R&D Special Zone enacted in May 2018)

Status of Patent Application/Registration <small>[Accumulated]</small>				Technology Transfer Outcome				Technology Support Outcome <small>[in 100 millions of KRW]</small>			
Classification	2016	2017	2018	Classification	2016	2017	2018	Classification	2016	2017	2018
Application	343	520	651	Agreement (Case)	57	119	119	In-House	29	37	28
Registration	143	165	233	Transferred to (Company)	48	98	96	Overseas	35	22	20
Total	486	685	884	KEPCO Profit (KRW 100 Million)	9	20	20	Group Companies	110	94	109
				Sales of Commercializing Technologies (KRW 100 Million)	913	1,200	1,327	Private Companies	11	13	13
								Total	185	166	170

### Setting up KEPCO 2030 Technical Strategies and Developing Eight Core Strategic Technologies

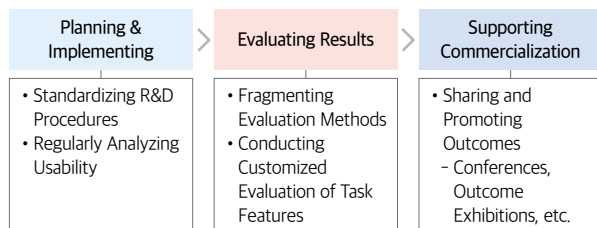
KEPCO established KEPCO 2030 technical strategies at the end of 2018 to proactively respond to megatrends of 'Decarbonization,' 'Digitalization,' and 'Decentralization' that the power industry is facing today. We are striving to pursue digital transformation based on the 4th Industrial Revolution technologies to create future growth engines and address various issues arising from the power industry, increasing the use of clean energy to be prepared for energy transition and climate change, and coming up with measures for the development of grid-operating core technologies to expand the acceptability of electric power systems in the future. In addition, we are also focusing on our R&D capabilities in order to select and develop eight core strategic technologies including energy platforms, energy-efficiency improvement, etc.

#### Developing Eight Core Strategic Technologies



### Coming up with Innovative Measures for All-Cycle R&D Processes

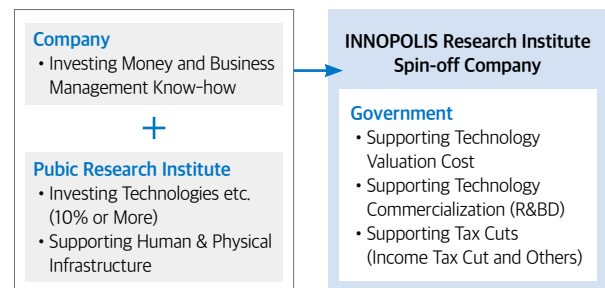
KEPCO has come up with innovative measures for all-cycle R&D processes ranging from technical strategy, to development, to commercialization and utilization, in order to implement research tasks efficiently and rationally, and lay the foundation for innovative growth based on our own technologies. We also improved convenience of R&D procedures by unifying 26 forms used for suggestion, selection, implementation and assessment. In addition, we estimated the cost-benefit ratio of completed research tasks and analyzed the level of their business contributions in order to pursue usability-oriented and commercialization-based R&D from the research planning stage. When assessing research outcomes, we laid out detailed assessment methods based on features of R&D tasks to reflect the property of each task and held conferences and outcome exhibitions to share and promote R&D outcomes as well as to commercialize them at an early stage. In addition, we carried out activities to improve quality of research task outcomes by establishing an integrated operation system for material purchases and specifications. We will continue to simplify and clarify relevant regulations and procedures, connect to relevant systems, establish systematic R&D infrastructures and improve productivity of R&D works in order to enhance efficiency and convenience in implementing R&D tasks.



### Establishing 'INNPOPOLIS Research Institute Spin-off Company' to Commercialize Outstanding Technologies

KEPCO is leading the innovative growth by establishing KEPCO 'INNPOPOLIS Research Institute Spin-off Company' to commercialize and utilize its own outstanding technologies. INNPOPOLIS Research Institute Spin-off Company that we are currently pushing ahead with is divided into three categories: employees' startup type into which KEPCO and its internal employees jointly invest technologies and money, joint venture type into which KEPCO and companies jointly invest technologies and money and converting-to-company type in which KEPCO invests its technologies in an existing company and then the company is later converted into INNPOPOLIS Research Institute Spin-off Company. Thanks to the establishment of KEPCO INNPOPOLIS Research Institute Spin-off Company, we believe we could lay the groundwork for the virtuous R&D cycle through which outstanding technologies are developed into businesses and contribute to the vitalization of startup ecosystems nationwide and the creation of quality jobs.

**INNPOPOLIS Research Institute Spin-off Company** | It is a company established, in the R&D special zone by investing at least 10-20% of the capital to directly commercialize a public research institute's technologies into businesses in accordance with 'the Special Act on Nurturing R&D Special Zone.'



### BUSINESS CASE

### KEPRI (Korea Electric Power Research Institute), the Leader of Future Power Technologies

KEPRI is KEPCO's annex research institute, which started as KEPCO Electricity Test Institute in 1961 and then moved to Daedeok Science Complex in 1993, has 571 employees including 465 researchers working in six offices, two departments and one center\* as of December, 2018 to carry out R&D on electricity. The institute has developed the technology of interpreting broad electric power systems to stabilize power supply, the 765kV super-high-voltage transmission technology and the Korean distribution automation system technology to contribute to the creation of the world's best power quality. Ushering in the era of the 4<sup>th</sup> Industrial Revolution and future energy transition, it has also preemptively responded to such drastic technical environment changes by developing Micro Grid, the technology of capturing and utilizing CO<sub>2</sub> and the technology of connecting offshore wind power generation to electric power systems. In 2018, it constructed a test-bed for the integrated demonstration of distribution systems and jointly developed a common platform to comprehensively operate distributed generation and Micro Grid and established the world's first 12kW underwater photovoltaic power generation system used in salt ponds. In addition, it completed 258 patent applications and transferred 78 technologies in 2018. It was honored as the winner at two International Invention Fairs in Malaysia and Silicon Valley and won the award of the year in the part of technology transfer at EPRI of the USA, gaining high recognition for its outstanding technologies.



Boryeong Thermal Power 10MW Wet-Scrubbing CO<sub>2</sub> Capture Plant

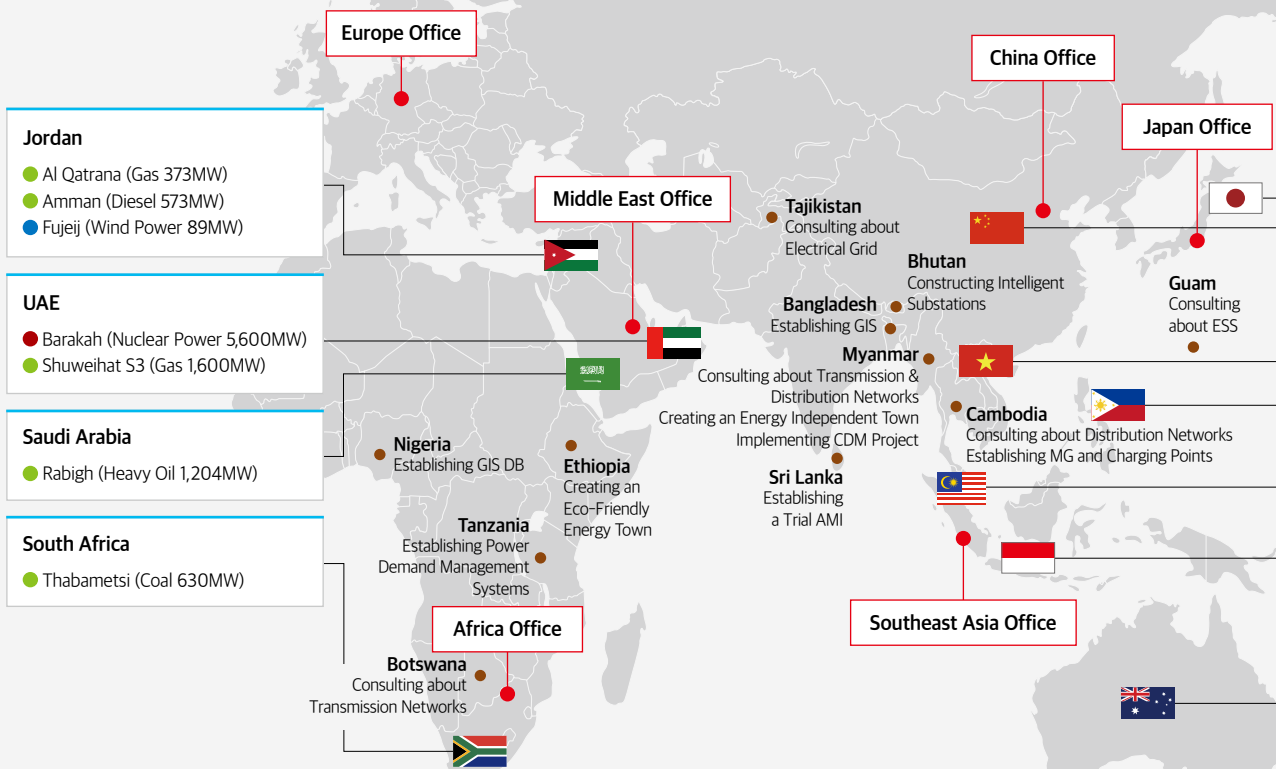
\* New & Renewable Energy Research Institute, Digital Solution Research Institute, Power Generation Technology Research Institute, Next-Generation Transmission & Substation Research Institute, Smart Distribution Research Institute/Planning & Management Office, Research & Strategy Office/Basic Electric Power Research Center

## Securing Global Leadership through Overseas Projects

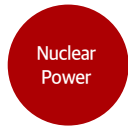
KEPCO is currently implementing 43 projects including thermal power, nuclear power, new & renewable energy, transmission & distribution, resources, etc., in 27 countries around the world (as of June 2019). We will continue to work hard to become a global eco-friendly energy provider not only by constructing and operating existing thermal power & nuclear power plants but also by expanding low-carbon & high-efficiency thermal power generation and new & renewable projects and to secure global leadership by discovering convergence new business models and winning contracts on constructing new nuclear power plants in the medium & long term.

### Status of KEPCO Overseas Projects (Contracted, under Construction or in Operation)

Implementing  
**43** Projects in **27**  
 Countries Worldwide



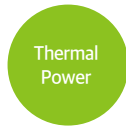




UAE, 1 Project



Construction : 5,600MW



14 Project in 11 Countries



Contract : 4,028MW  
Construction : 3,803MW  
Operation : 12,392MW



7 Projects in 5 Countries



Contract : 60MW  
Construction : 89MW  
Operation : 1,367MW



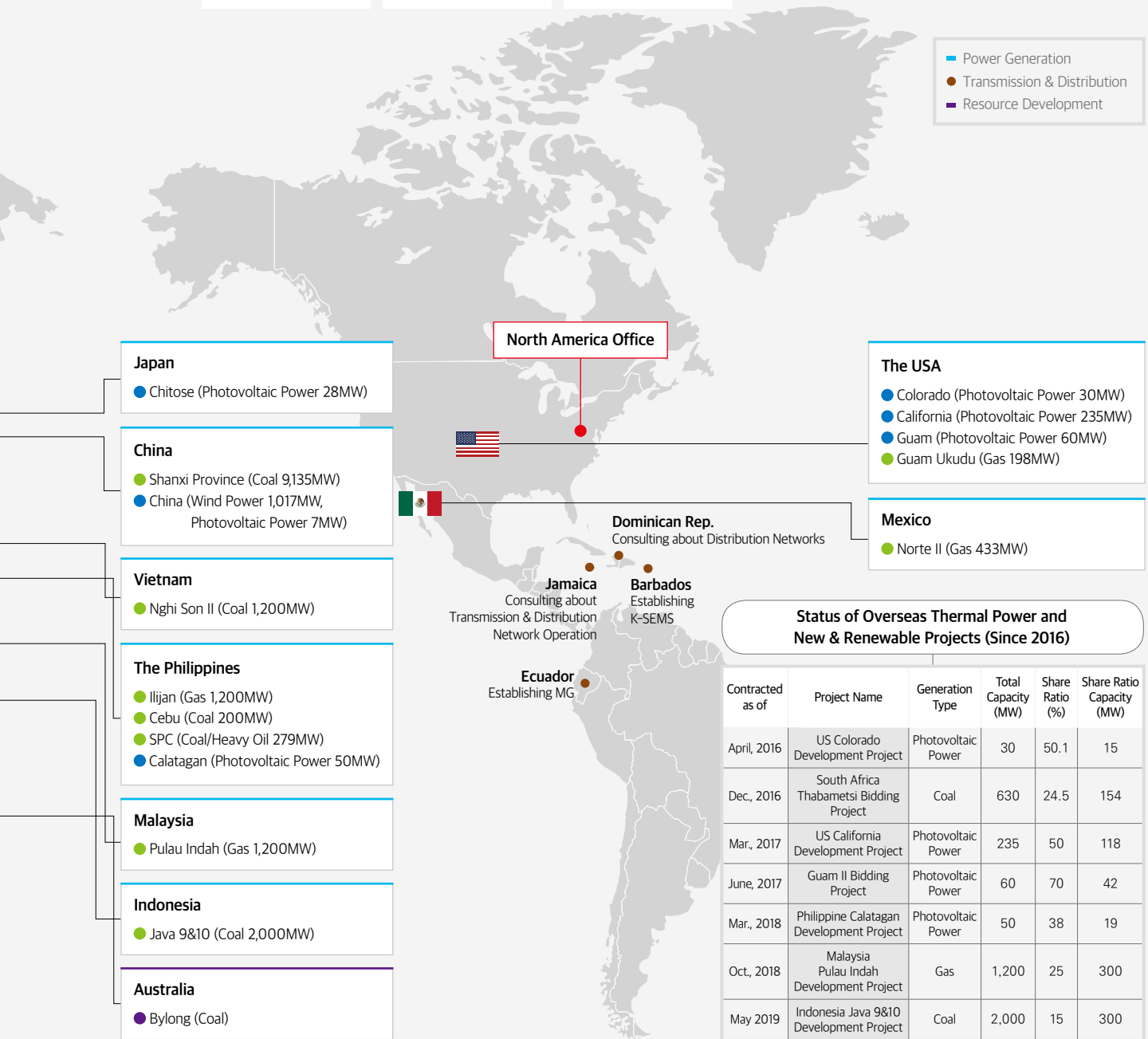
20 Projects in 15 Countries



\* Overseas Power Facility Capacities: 13,759MW in Operation, 13,580MW in the Process of Signing Contracts or under Construction



Australia, 1 Project



## Creating Profits by Expanding Overseas Power-Generation Markets

KEPCO is striving to create sustainable future growth engines by carrying out overseas projects. In 1995, we took the first step in the global market as a project of restoring and operating the Philippines' Malaya thermal power plant. Since then, we have been leading the global market thanks to our abundant experience in implementing various projects, global networks and excellent competitiveness in conducting overseas projects for the past 20 years. As of the end of 2019, we are implementing 43 projects in sectors of thermal power, nuclear power, new & renewable, transmission & distribution and new business in 27 countries worldwide including Asia, the Middle East, Latin America, North America, Africa, Oceania and others.

In the Philippines, we have successfully completed the Rehabilitation, Operation Maintenance & Management (ROMM) project for Malaya 650MW heavy oil power generation plant, which was our first overseas project. We are now making stable profits by efficiently operating Ilijan's 1,200MW gas-fired power plant and Cebu's 200MW fluidized bed coal-fired power plant. We gained global recognition for our business capabilities and technologies after successfully launching a heavy oil power plant (1,204MW) in Rabigh, Saudi Arabia and a gas-fired power plant (433MW) in Norte II, Mexico in 2013 and a gas-fired power plant (1,600MW) in Shuweihat S3, UAE and a diesel combustion power plant (573MW) in Amman, Jordan in 2014. In addition, we achieved financial close for the project of Nghi Son II coal-fired power plant (1,200MW) in Vietnam in September 2018. We also established a bridgehead to advance into the Malaysian market by winning a contract to construct and operate a gas-fired power plant (1,200MW) in Pulau Indah, Malaysia.

## Pushing ahead with Low-Carbon & High-Efficiency Clean Thermal Power Generation

KEPCO was selected as a first ranked bidder for the project ordered by GPA (Guam Power Authority) of the USA to construct and operate a gas-fired power plant (200MW) in Ukudu, Guam in June, 2019. For the first time in Korea, we won the project contract to construct a thermal power plant in the USA after passing through an international competitive bidding process by making a consortium with KEPCO (60% Share) that has an experience in winning a contract on a solar power plant project in Guam, and Korea East-West Power Co., Ltd. (40%) with experience in operating a diesel power plant. In addition, the project is expected to create an economic effect worth around KRW 200 billion as Hyundai Engineering, a general engineering solution provider, is participating as an EPC provider and a number of domestic SMEs are scheduled to supply peripheral equipment needed for construction. Furthermore, the project is regarded as a successful win-win business model as KEPCO has created a synergy effect with its Group Companies and the public sector has advanced into a foreign market together with the private sector. We will continue to work hard to jointly explore overseas markets and enhance the global competitiveness of overall energy industries.

## Exploring Overseas New & Renewable Energy Markets

In 2013, KEPCO was selected as the final winner, holding 100% of the shares of the project to construct and operate a wind power plant with the capacity of 89.1MW in Fujeij, Jordan. We completed the construction in June 2019, three years and seven months after breaking the ground in December 2016. In addition, we won the tender for a 60MW photovoltaic power project in Guam, USA, in 2017 and then signed a long-term power purchase agreement in August 2018.

Moreover, KEPCO finished acquiring 50% of the shares of three 235MW solar power plants located in California, US in March, 2018. The project is the one we won after passing through an international competitive bidding in June 2017. And, we signed a transfer agreement in September of the same year. It is KEPCO's largest overseas new & renewable energy power generation project and the electric power produced from the project will be all supplied to the public and private power licensees based on a long-term power sale agreement.

We also acquired 38% of the shares of a 50MW solar power plant in Calatagan, the Philippines in December, 2018. This project is the first photovoltaic power generation business ever since we moved in the Philippine power market and the electricity produced from the plant will be all supplied to the Philippine National Transmission Corp. based on a long-term power sale agreement.

## Creating Stable Profits by Expediting the Export of Nuclear Plants

KEPCO is constructing one of the world's best nuclear plants that satisfy safety and quality ever since it won a contract to construct and operate a nuclear power plant in UAE in December 2019. After having a grand groundbreaking ceremony in November 2011, we reached main milestones by first placing concrete onto the main building of NPP unit 1 in July 2017, installing the nuclear reactor for unit 1 in July 2014 and the nuclear reactor for unit 4 in August 2017. We completed constructing structures of all reactors after placing final concrete onto the reactor for unit 4 and moved to the commissioning in 2018. We are about to make initial fuel loadings to the reactor for unit 1 of the nuclear power plant in Barakah. And, we expect to create stable profits by completing the construction of the remaining reactors in a timely manner and operating them successfully in the future.

### Status of the UAE (Barakah) Nuclear Power Plant Construction

Schedules	Main Progresses
July 2012	Obtaining Construction Permit and Placing Concrete
July 2014	Installation of Reactor for Unit 1
April 2015	Initial Pressurization for Unit 1
Oct. 2017	Completion of Construction Service for Unit 1
Early 2020 (Provisional)	Fuel Loading for Unit 1

In addition, we were shortlisted (June 2018) for the Saudi Arabian new nuclear plant project bidding (2 APR-1400 units/2,800MW) after carrying out private & public joint activities to win the bidding and are waiting for the final selection. We are planning to form strategic partnerships with advanced global companies and build close-knit networks with local companies in target markets under the goal of signing for six more units by 2025.



The UAE (Barakah) Nuclear Power Plant Construction Site

### Expanding the Export of Transmission & Distribution and New Business based on Core Capabilities

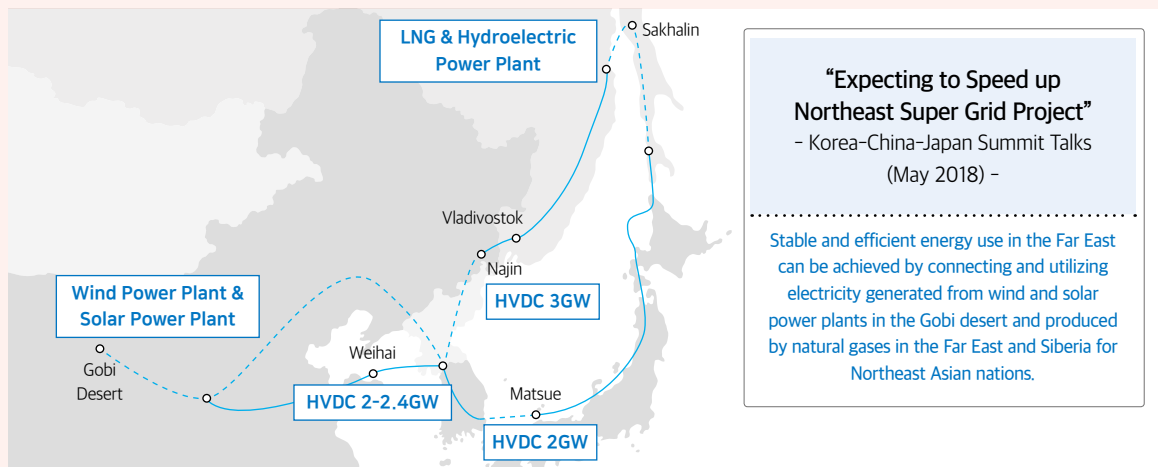
KEPCO is successfully implementing overseas projects in the Engineering, Procurement and Construction sector (EPC) and consulting based on our transmission & distribution business experiences we have built up in Korea for some 120 years. In the Dominican Republic, we were well recognized for our outstanding technologies and project management capabilities after winning a contract on the project of conducting distribution EPC in 2016 and then another contract on the project of improving smart distribution lines, worth USD 38 million in 2018. Based on our core capabilities in such transmission & distribution projects, we are planning to expand our business areas into M&A of overseas transmission & distribution companies and ODA projects in the future.

As the era of the 4<sup>th</sup> Industrial Revolution has emerged, it is expected that overseas markets for EV charging infrastructures, energy management systems, energy storage systems and other new businesses will expand. Thus, we will strive to advance into overseas markets for new businesses in the energy sector by suggesting business models, implementing pilot projects and conducting other activities to win contracts especially in those emerging nations where the demand for ESS, AML, etc., is on the rise.

#### BUSINESS CASE

#### Pushing ahead with the Northeast Asian Super Grid among Korea-China-Japan and Korea-Russia

By pushing ahead with the North Asia Super Grid, which is the government's national political agenda and a super-scale project for the energy cooperation among Northeast Asian nations, KEPCO is striving to overcome the restrictions of the isolated grid and help address electric power shortage issues of North Korea in the long term. We are carrying out joint researches after signing a joint project development MOA with China in December 2017 and an MOU on cooperation in power system connections with Russia in June 2018. We are also conducting a project to create a cooperative channel with the Korean and Japanese governments, power producers and private organizations. Based on such endeavors, we will define specific implementation methods following the application of national policies related with power system connections and the agreement to carry out projects and will overcome the issue of the isolated system, expand the use of new & renewable energy and secure stable and efficient national energy supply systems.



**“Expecting to Speed up Northeast Super Grid Project”**  
- Korea-China-Japan Summit Talks (May 2018) -

Stable and efficient energy use in the Far East can be achieved by connecting and utilizing electricity generated from wind and solar power plants in the Gobi desert and produced by natural gases in the Far East and Siberia for Northeast Asian nations.

#### 2017

Creating Business Environment

Korea	China	Japan
KEPCO	SGCC	Soft Bank
Reviewing Connecting Technologies		



#### 2018

Defining Implementation Methods

- Starting Kor.-Chi. Project Development
- Conducting Kor.-Jap. and Kor.-Rus. Joint Researches



#### 2019

Conducting Project Development

- Signing Kor.-Chi. JDA
- Conducting a Feasibility Study on Marine Routes



Issue

4

# Achieving Social Values

## Issue Background

The demand for companies to realize social values is increasing. And the government has set 'The Government Working for the People' as its national political goal. To this end, it has chosen realization of social values as its core task. KEPCO will also strive to become a beloved public corporation model by actively achieving social values in all of its businesses. We will continue to endeavor making a better future by improving the public's quality of life.

## Management Approach

System of Pushing forward with Social Values

Creating Employee-Oriented Corporate Culture

Vitalizing Regional Economy and Expanding Shared Growth

Carrying out Strategic Activities for Social Contributions

## 2018 Key Performance

Creating the Largest No. of Quality Jobs among Public Corporations



**61,466** Jobs

Rate of Purchasing Products Made by SMEs



**73.3%**

International Standard for Safety & Health Management System

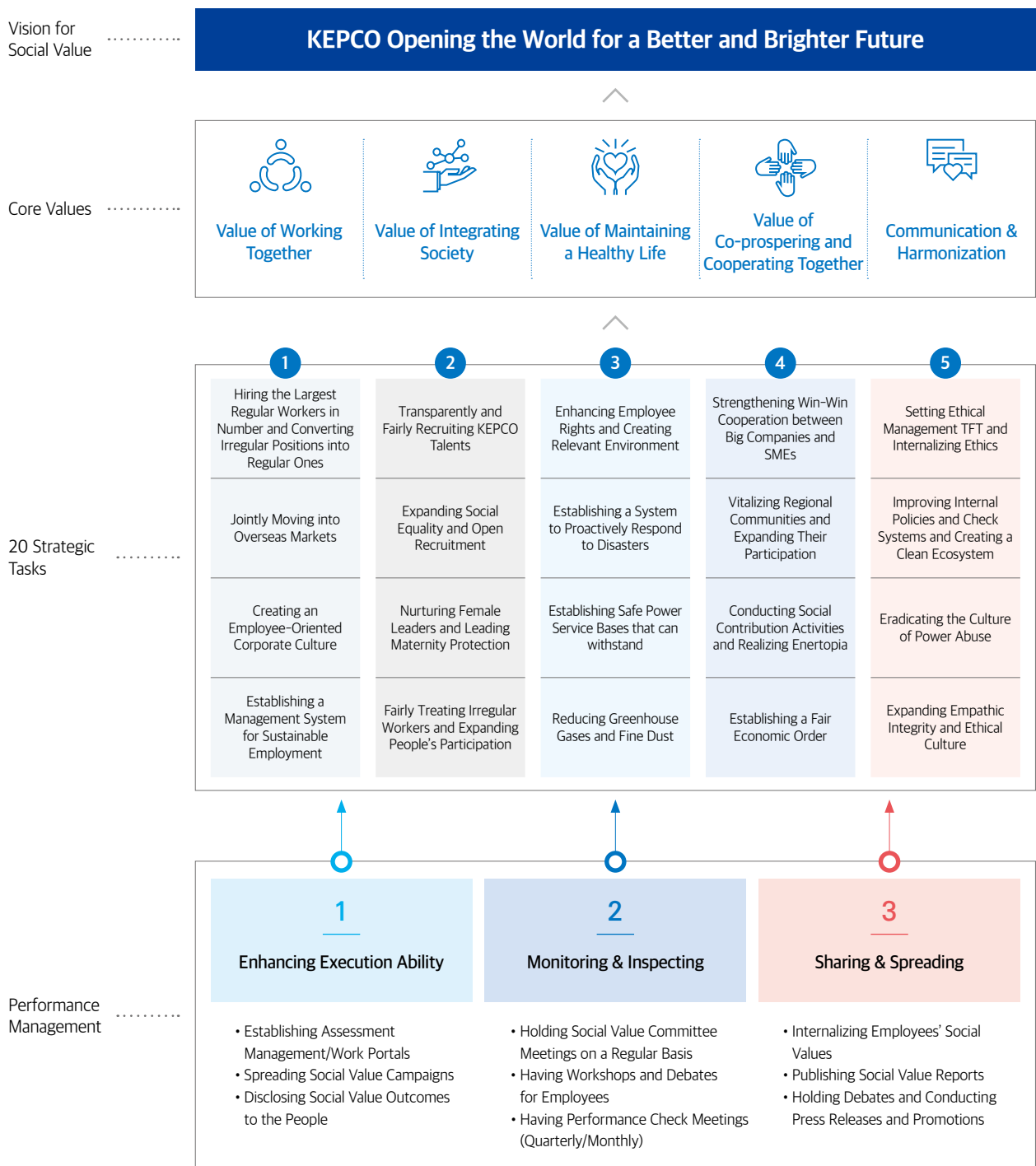


**ISO 45001**  
Certification

## System for Stimulation of Social Values

“Social Values” are “those values that can contribute to the improvement of public benefits and the development of communities in all areas including society, economy, environment, culture, etc.” KEPCO, as the largest domestic energy public corporation for the entire nation, is contributing to the improvement of people’s quality of life and the development of the national economy by achieving social values in all of its Value Chains including transmission & substation, distribution, sales and others.

### System of Pursuing Social Values



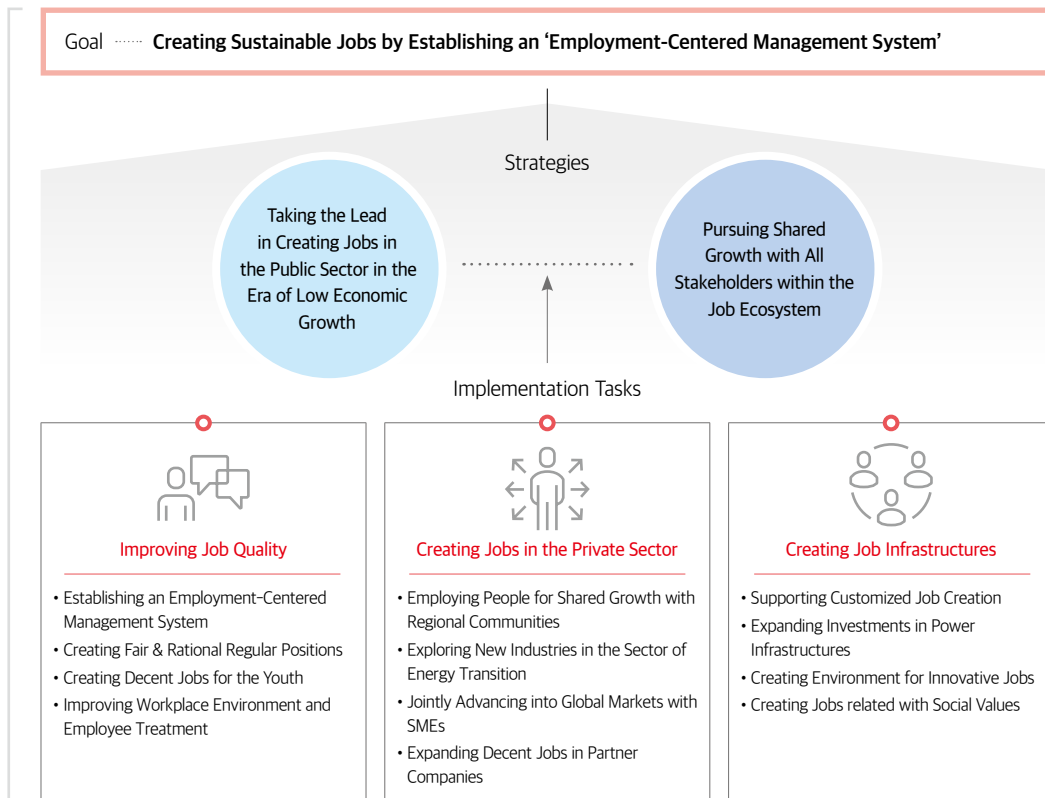
## Creating an Employee-Oriented Corporate Culture

### Establishing a Management System for Sustainable Employment

#### Strategic Systems for Job Creation

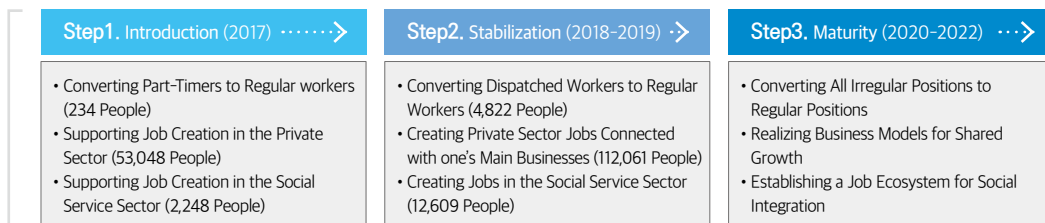
KEPCO is creating sustainable and decent jobs by establishing and operating an employment-centered management system. In order to strengthen our execution capabilities, we have expanded and reformed the KEPCO Job Creation Committee directly under the President and encouraged middle management to participate in the Committee. And, we have also enlarged the size of 'Employment Policy Office' in charge of policies on job creation, playing a control tower role in creating jobs. In addition, we have enhanced our ability to implement employment-related policies by establishing a cycle of PDCA (Plan-Do-Check-Action) that encompasses the overall management activities ranging from technology development, to commercialization and to follow-up management. We, as a leading public corporation, will continue to make multilateral endeavors to create decent jobs.

Strategic Systems for Job Creation



Establishing a Roadmap (December, 2017)

Rolling (June, 2018)



#### Creating Decent Jobs to Address Youth Unemployment

As a leading public corporation, KEPCO created 1,786 regular jobs in 2018, the largest ever, through a timely recruitment process after considering the number of expected substitutes for retirees and those who want to take time off from work. In addition, we have recruited 1,354 young interns through the young internship program and provided them with opportunities to enhance their employment competitiveness by sharing employment knowhow and training contents through meetings with previously-hired colleagues.

### Creating Jobs in the Private Sector

KEPCO is directly creating private sector jobs connected with one's main businesses and is indirectly supporting the establishment of job infrastructure. In 2018, we created 58,041 jobs in the private sector by establishing a job ecosystem that vitalizes the Energy Valley, discovering startups that allow shared growth with local communities.

Creating Jobs in the Private Sector	Establishing Job Infrastructures
Creating Regional Jobs within Energy Valley <b>9,012</b> People	Establishing Transmission & Distribution Power Infrastructures by Investing KRW 6.6 Trillion for Job Creation Effect <b>22,172</b> People
Creating Jobs by Vitalizing Startups and SPC and Jointly Moving into Overseas Markets <b>3,541</b> People	Exploring Future Job Opportunities by Pushing forward with Northeast Super Grid and Other New Projects <b>11,663</b> People
Supporting Suppliers, Consignees and Partners to Create Decent Jobs <b>10,129</b> People	Raising Win-Win Solidarity Funds and Supporting Job Creation for the Underprivileged <b>998</b> People

### Converting into Regular Positions

KEPCO has conducted various activities to secure procedural legitimacy for converting irregular positions to regular positions and to actively pursue the temp-to-perm conversion. We have secured procedural legitimacy and fairness of the conversion process by establishing a system to push forward with the temp-to-perm conversion with all stakeholders participating. At the same time, we have become the first public corporation to set up our own 'Temp-to-Perm Conversion Corruption Reporting Center' to continue to proceed with the conversion policy and address any corruptions related with employment. In addition, we have largely increased the number of those to be converted to regular positions (2,183→5,295 people) by actively striving to develop alternative positions for meter men excluded from the temp-to-perm conversion. As such, we have changed the largest number of irregular workers to regular workers in the history of public corporations by establishing subsidiaries based on general consent of all stakeholders.

All Temporary Workers Hired as Regular Workers not as Non-Fixed-Term Contract Workers  <b>234</b> People	Expanded No. of Those to Be Converted to Regular workers by Developing Alternative Positions  <b>5,295</b> People
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### BUSINESS CASE

#### Best Practices in Creating Jobs

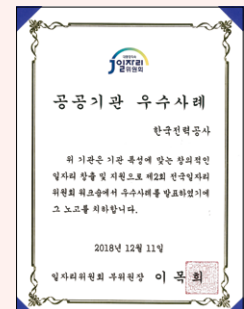
#### 1 Job Creation Sector for Shared Growth with Local Communities Being Honored as 'Winner of 2018, for Job Creation'

KEPCO was honored as the winner in the sector of job creation for shared growth with local communities in recognition of its project to make an impact on the employment of some 9,000 people in the private sector by establishing the Energy Valley and to establish a sustainable job ecosystem for win-win and co-prosperity with local communities at the '2018 Job Creation Award,' co-sponsored by the Ministry of Employment and Labor, the Ministry of Trade, Industry and Energy and the Ministry of SMEs and Startups.



#### 2 Presenting Best Practices in Creating Jobs at the National Job Workshop Organized by the Presidential Committee on Jobs

On behalf of all public organizations, KEPCO gave a presentation on best practices including customized support (marketability/finance and others) for companies placed in the Energy Valley and startups at the 'National Job Workshop' held in December of 2018 by the Presidential Committee on Jobs, which was attended by some 200 municipal governments and public organizations nationwide.



### Fair Recruitment

KEPCO provides fair opportunities for all applicants by defining transparent and fair recruitment processes. In order to secure skilled and competent employees suitable for positions, we are following KEPCO's NCS in each of the recruitment processes. In addition, applicants are never discriminated against due to their education backgrounds, genders, age, etc., in all recruitment processes from receiving their applications to having interviews by utilizing a blind recruitment system. As a result of pushing forward with institutional improvements to establish fair employment processes, we received not a single complaint in terms of employment corruption and transparency hindrances from a complete enumerated survey of recruitment conditions, jointly conducted by government bodies on public organizations.

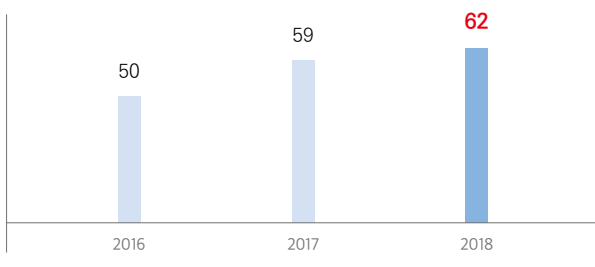
\* NCS (National Competency Standards) : It shows the state-defined details on knowledge, technology, attitude, etc., required to carry out jobs at industrial sites.

### Recruitment Based on Social Equality

KEPCO is leading a socially-fair and open recruitment culture. We have expanded preferential employment for the disabled and men of national merit. We are also continuously hiring outstanding high school graduates through the recruitment program for high school graduates in line with the young internship program. By introducing a recruitment model that does not require high-school-graduate applicants to submit three documents (qualification, principal's recommendation letter and report card), we are striving to increase job opportunities for excellent high school graduates and take the lead in establishing a competence-centered employment culture.

Furthermore, KEPCO has expanded the employment of local talents and those in relocation areas for balanced regional development and shared growth with local communities. We have carried out a regionalized open competitive recruitment through a region-based employee program that restricts the applicable sphere only to the region where the applicant's school is located. We have also supported employment opportunities for local talents by holding regionally-customized job fairs, conducting training for regional job applicants and providing mentoring services. Thanks to our endeavors in hiring local talents\*, the rate of recruiting local talents accounted for 62% of the total hired in 2018.

Rate of Recruiting Local Talents [Unit : %]



\* Employees hired after graduating from schools not in Seoul, Gyeonggi, Incheon and foreign countries.

### Nurturing Optimal Talents

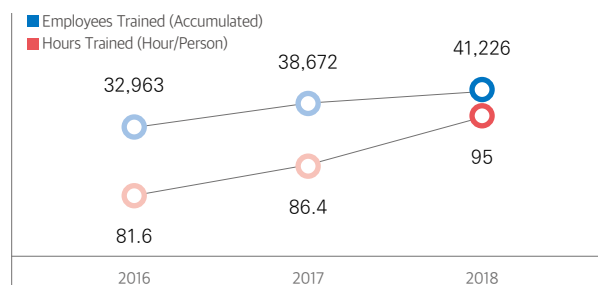
#### Developing Strategic Human Resources

In response to the energy transition, the proliferation of the 4<sup>th</sup> Industrial Revolution and other enormous changes in the electric power industry, KEPCO is working hard to continuously nurture creative future talents to secure a competitive edge and is striving to develop strategic human resources that could take the lead in achieving its vision and medium/long-term strategic goals.

#### Strategies and Main Tasks to Nurture Talents

Strategies	Main Tasks
Securing Sustainable Growth Engines	<ul style="list-style-type: none"> <li>Nurturing Talents Suitable for Digital Transformation and New Industries in the Energy Sector</li> <li>Strengthening Basic Capabilities for Overseas Markets and Nurturing Talents</li> </ul>
Enhancing Core Capabilities for Main Businesses	<ul style="list-style-type: none"> <li>Developing Newcomers' Competence and Strategically Utilizing them at an Early Stage</li> <li>Strengthening Existing Employees' Job Competence and Convergence Capabilities</li> </ul>
Creating All-Time Learning Atmospheres	<ul style="list-style-type: none"> <li>Vitalizing On-Site Education through Field-based Management</li> <li>Supporting Constant Education by Diversifying Methods</li> </ul>
Establishing the Groundwork for Digital HRD and Win-Win Cooperation	<ul style="list-style-type: none"> <li>Improving Efficiency of Investing in Education and Managing Data</li> <li>Vitalizing External Networks and Leading Social Values</li> </ul>

#### Education Performance of All Employees (2018)



We are intensively nurturing future talents through gradual training courses in order to lead digital transformation, energy transition and other mega trends. To be prepared for digital transformation, we are operating e-learning courses that all employees must take to cultivate their digital mindset, intermediate courses including 'statistical analysis and data utilization' practices and then advanced courses including data science and other education programs commissioned for degree acquisition to foster professionals.

**Level 1**

**Providing Digital Mind for All Employees**  
e-Learning for All Employees

- Understanding Digital Transformation and Others
- 2 Courses / Completed by 18,461 People

**Level 2**

**Providing Statistical Analysis and Data Utilization Practices**  
Self and Professional Commissioned Education

- Digital Core Professional Courses and Others
- 62 Courses / Completed by 656 People

**Level 3**

**Discovering Big-Data-Based Insights**  
Commissioned Courses for Degree at Home and Abroad

- Big Data, Data Science and Others
- 8 Courses / Completed by 14 People



As for new industries in the energy sector, we are training professionals equipped with capabilities for new industries by providing basic courses including AI, big data and other ICT convergence technologies, field application courses and Master's, Doctorate and professional programs.

#### Status of Providing Education on New Industries in the Energy Sector

Level 1 Basic Understanding	
New & Renewable Energy	• Basic Superconductivity, HVDC Conversion System
ICT Convergence	• IoT, Big Data Analysis, Understanding AI
Response to Policies	• Green Management, Power Market Management Regulations
Performance	17 Courses, Completed by 423 People
Level 2 Field Application	
New & Renewable Energy	• New & Renewable Business Development, Energy Diagnosis Technology
ICT Convergence	• AR/VR Power Facility Utilization, Deep Learning
Response to Policies	• Demand Resource Market, Greenhouse Gas Reduction Experts
Performance	34 Courses, Completed by 588 People
Level 3 Master's & Doctorate/Professional	
New & Renewable Energy	• New & Renewable PF Experts, Wind Direction Analysis and Design
ICT Convergence	• Data Science, AI Algorithm (Master's & Doctorate)
Response to Policies	• Emissions Trading Experts, Finance and Climate (Master's & Doctorate)
Performance	78 Courses, Completed by 176 People

### Realizing Gender Equality and Nurturing Female Leaders

KEPCO is expanding the employment of women on their career breaks to realize gender equality within the workplace and is supporting them to balance work and family. After becoming the first public corporation to introduce a screening process to hire women on their career breaks in 2018, seven of them have been hired. And, we are also operating a number of maternity protection programs by improving a parental leave system, enacting a provision to prohibit any unfavorable treatment due to a parental leave and newly establishing a child-caring leave.

At the same time, we are helping female workers to beef up their capabilities through a number of internal and external education programs. By providing Ewha Woman's University's leadership education, other external training courses, internal education & workshops and other female leadership programs, we have supported some 130 women to secure their leadership capabilities. In addition, we have trained 22 female masters and doctors as of 2018.

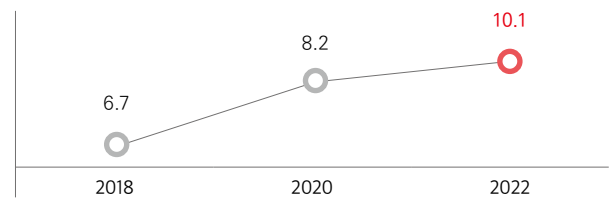
KEPCO will secure human resources for sustainable growth by fostering competitive female leaders based on the realization of gender equality.

#### Status of Female Managers

Classification		2016	2017	2018
Managers (People)		4,730	4,908	5,129
Female (People)	1 <sup>st</sup> and 2 <sup>nd</sup> Tier Positions	4	8	20
	3 <sup>rd</sup> Tier Positions	260	303	363
	Total	264(5.6%)	311(6.4%)	383(7.5%)

Drastic Increase in the number of Female Managers (Above Intermediate Managerial Level)  
- 8 (2017) → 20 (2018, Up by Two and a Half Times Compared with the Previous Year)

#### Goal of Expanding the Number of Female Managers [Unit : %]



Exceeding the Goal in 2018 (Goal at 6.70% → Outcome at 7.50%)

### Balancing Work and Life

#### Pushing forward with Corporate-Wide Workplace Innovation

KEPCO is encouraging corporate-wide workplace innovation to proactively respond to a 52-hour-per-week working system implemented since July of 2018, which addresses overtime work issues and establishes a corporate culture where work and life are well balanced. By establishing the 'Corporate-Wide Workplace Innovation Committee' as a permanent body and strengthening its role as a control tower, we have conducted various activities to improve systems to reduce working hours and enhance the way of doing businesses as well as establish a relevant corporate culture.

#### Eliminating Redundant Work Practices

1

- Discovering and Implementing Ideas for Improvement of Work Efficiency
- Upgrading the Meeting and Reporting Culture, Reducing Unnecessary Stages in Transactions, etc.

#### Leaving Work on Time

2

- Implementing a Policy of PC-On/Off : Turning All PCs On/Off on Time to Create Punctual Work Culture
- Implementing Focused Work System : Refraining from Having Phone Chats, Meetings, etc., during the Time of High Work Efficiency

#### Encouraging Employees to Take Annual Leave

3

- Encouraging Employees to Take Leave to Get Refreshed on a Quarterly Basis and Regularly Checking their Performance

### Reinforcing Flexible Working System

KEPCO is creating better working conditions for its employees to enjoy their lives and balance work and family life. We have created voluntarily-working conditions by introducing 63 flexible working programs that reflect employee’s individual life styles such as staggered office hours, the programs of selecting working hours and intensive working hours, etc., in June 2019. And the number of those who used such programs increased by 46% to 10,454 in 2018 compared to the previous year.

### Improving Working Systems to Help Balance Work and Childbirth & Child-Rearing

KEPCO is improving and expanding childcare systems to spread a family-friendly culture. We have expanded the scope of the eligibility and the period of parental leaves and shortened working hours for pregnant women. We have also improved the shortened working system during the child-rearing period for any employee to use regardless of gender. In addition, we have abolished the existing policy of dividing the parental leave period into three and expanded the number of day-offs (from five to ten days) for spouses at the time of childbirth to help our employees balance work and childbirth & child-rearing.

#### Performance of Utilizing the System to Balance Work and Family

No. of Employees Who Took Parental Leaves [in number of persons]



No. of Employees Who Used Flexible Working Programs [In number of persons]



Per-Capita Annual Leaves [Unit : Days/Year]



### Realizing Win-Win Labor & Management Culture

#### Expanding Communications between Labor and Management

KEPCO is expanding labor-management communications to address current issues arising from their relations. We have conducted interviews and surveys of all employees on the diagnosis of the corporate culture to improve the corporate culture and vitalize communication. By prioritizing action plans jointly by the labor and the management to improve corporate culture, we are conducting monthly intensive campaigns for the HQs and regional divisions every year. Besides, we are also operating programs such as meetings with the CEO, female leader workshops, Lunch Meeting Day, Happy Family Day, etc., to improve the corporate culture and to inspire pride in our employees.

#### Labor Union and Management Working Together to Improve Corporate Culture

KEPCO is aiming to establish flexible corporate culture based on respect, appreciation and sharing among its employees. By selecting ten main issues such as company get-togethers, excessive protocols, etc., that are thought to be most relevant to employees, the labor and the management are jointly carrying out activities to address such issues and improve the corporate culture. We are not doing one-time or pop-up showoffs but are planning and conducting annual campaigns to practically improve the corporate culture.

#### Prioritized Main Tasks to Innovate on the Corporate Culture

<p><b>Realizing One KEPCO</b> based on Communication, Considerations and Corporate Culture</p>	<ul style="list-style-type: none"> <li>• Holding Workshops on the Corporate Culture into which Different Generations and Classes are Converged</li> <li>• Conducting Job Integration Training to Enhance Understanding and Empathy among Other Job Groups</li> <li>• Jointly Launching and Operating 'Open Communication Venue' together with the Labor and the Management (App-based/Anonymity)</li> <li>• Conducting Training for Newcomers to Adapt to the Corporation at an Early Stage and to Enhance Their Job Competence</li> </ul>
<p><b>Implementing Smart Working System</b> by Improving the Ways of Doing Businesses</p>	<ul style="list-style-type: none"> <li>• Removing Redundant Working processes</li> <li>• Defining Working Standard Procedures, Specifying Job Assignments and Improving Fairness</li> <li>• Operating 'Knowledge Information Systems' by Sharing Information</li> <li>• Implementing a Program of Giving Points to Vitalize Cooperation</li> </ul>
<p><b>Balancing Work and Family Life</b> by Improving Working Conditions</p>	<ul style="list-style-type: none"> <li>• Encouraging Voluntary Leaves and Implementing 'Seasonal Vacation Programs'</li> <li>• Leaving Work on Time - Actively Implementing 'Love Your Family (on Wednesdays)'</li> <li>• Encouraging Use of Family-Friendly Service Programs - 'Comfortable Vacation'</li> <li>• Establishing a Sound Get-Together Culture</li> </ul>
<p><b>Establishing Fair Culture</b> by Eradicating Outdated Practices</p>	<ul style="list-style-type: none"> <li>• Refraining from Having Excessive Protocols for Officials</li> <li>• Creating a Fair Culture by Improving Unfair Practices and Eradicating Power Abuse</li> </ul>

### KEPCO Thank U 123 Campaign

KEPCO is conducting 'KEPCO Thank U 123' to help its employees to change their attitudes toward their own lives and improve the corporate culture by living a life of 'Appreciation and Sharing' and spreading 'the Power of Positive Thinking' since 2019. The campaign of 'Appreciation and Sharing' is to help employees to convey their own thoughts or feelings regarding appreciation, compliment, congratulation and consolation with each other. This is done through a voluntary-participation-based message-sharing platform to increase empathy among them and to establish a reliable and communicative corporate culture based on such a virtuous cycle. 'KEPCO Thank U 123' is made up of activities of doing 1 good deed per day, reading 1 book and recommending 1 book per month and appreciating 3 times per day. Through the campaign of 'Appreciation and Sharing' for all of the individual employees, we are seeking happiness both at home and work and striving to create a pleasant workplace in order for the corporation to bear fruitful results.

### Strengthening Safety & Health Management

#### Coming up with Management Policies on EHS (Environment, Health and Safety)

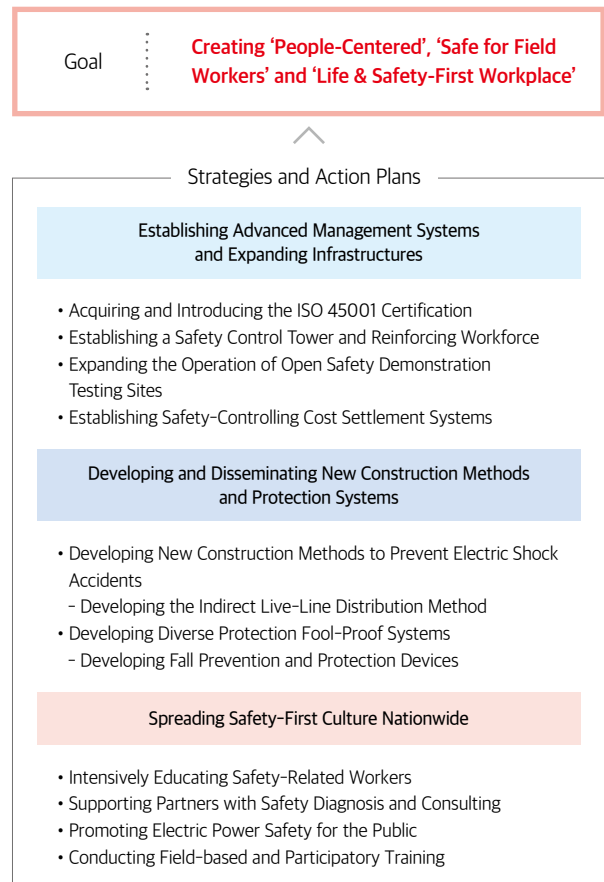
KEPCO has put top priority on EHS matters when doing its businesses. And, we came up with EHS-based management policies in accordance with the international standards in May 2018 in order to share detailed policies on EHS-based management with all members of the corporation. We held a workshop for corporate-wide safety managers in June 2018 to share and encourage them to carry out EHS-based management policies and to spread a culture of safety.

#### Details of EHS-based Management Policies

	<b>Business Values</b>	Putting Top Priority on EHS When Doing Businesses and Encouraging All Employees to Join
	<b>EHS Standard Management</b>	Introducing and Operating EHS Standard Management System for All Workplaces Home and Abroad
	<b>Compliance with the Law</b>	Complying with Overall Laws and Regulations related with EHS
	<b>Risk Management</b>	Removing Risks Threatening Eco-Friendly Management and Business Activities and Guaranteeing Safe and Healthy Working Conditions
	<b>Communication &amp; Cooperation</b>	Spreading EHS-based management to Stakeholders and Strengthening EHS Partnership
	<b>Innovation &amp; Improvement</b>	Continuously Improving EHS by Sharing Ideas and New Technologies and Conducting Education and Training

### Establishing Voluntary Safety Management Systems

As the social demand related to national policies on prevention of industrial disasters and safety accidents is on the rise, KEPCO has established voluntary safety management systems that put top priority on life & safety to protect safety and health of employees and people. In any circumstances, we always put safety of workers first. To this end, we have introduced the indirect live-line distribution method to lead safety management.



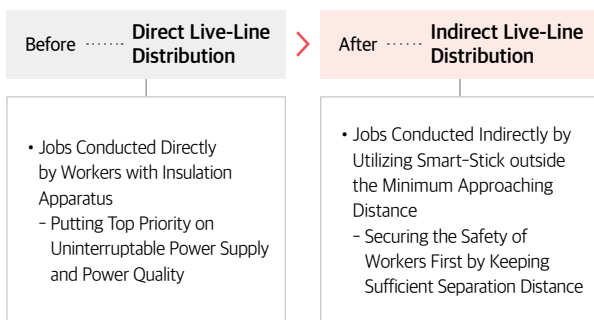
### Acquiring ISO 45001 Certification

KEPCO has put top priority on the safety of its employees in line with the government's policy to strengthen safety. To this end, we have introduced advanced safety-controlling systems and established relevant infrastructures to minimize industrial disasters. After acquiring ISO 45001 certification, an international standard for safety & health management system, we have enhanced our reliability in establishing global-level advanced safety management systems home and abroad for the first time as a public corporation in Group I. In particular, we have nurtured people in charge of safety and health matters and expanded safety infrastructures in the electric power sector in order to secure safety-related expertise. We will continue striving to internalize advanced safety management systems.

### Developing New Construction Methods to Prevent Electric Shock Accidents

KEPCO applied the live-line electricity distribution\* to meet the demand for uninterruptible power supply in the past. However, we faced 103 safety accidents for the past three years (2015-2017) on a yearly basis, and the number of electric shock accidents accounted for 31% of the total, urging us to pursue the development of a new method to fundamentally prevent electric shocks and other safety accidents. In the past, workers with insulation apparatus directly conducted jobs on the power line. Today, we have created safer working conditions for them by introducing the indirect live-line distribution method that utilizes Smart-Stick outside the minimum approaching distance.

\* Live-Line Electricity Distribution : A method of repairing and relocating distribution lines while electricity is being supplied.



### Developing Diverse Protection Fool-Proof Systems

As much as 19% of the total safety accidents in the recent three years were related to falls, most of which led to serious injuries. To prevent such accidents and secure the safety of workers, we have applied Fool-Proof safety protection systems. Fool-Proof is a system with diverse protection functions to prevent safety accidents even when the relevant apparatus is unstable. We have introduced vertical & horizontal fall-preventing equipment, wearable multifunctional safety belts, etc., and installed fall-preventing nets and mats and other safety devices to protect workers from unexpected fall accidents.

Fall Prevention Devices	Devices to Protect Workers from Falls
<ul style="list-style-type: none"> <li>• Vertical &amp; Horizontal Fall-Preventing Equipment : Rail or Wire Fall-Preventing Equipment</li> <li>• Fall-Preventing Key-Lock : Possible to Move on only when the Rope is hooked up with a Key-Lock</li> <li>• Wearable Multifunctional Safety Bel : Working Clothes Embedded with Multifunctional Safety Belt</li> </ul>	<ul style="list-style-type: none"> <li>• Fall-Preventing Nets : Installing Nets at Towers</li> <li>• Fall-Preventing Mats : Installing Safety Mats on the Ground</li> </ul>

### Educating and Promoting Safety Accident Prevention

To create a 'people-centered', 'safe' and 'life & safety-first' workplace, KEPCO is conducting training and promotional campaigns on safety accident prevention for its employees and partners. In particular, we have expanded support for small-sized partners that are weak in terms of safety management capabilities and training infrastructures. We have continued to conduct field-based training and consulting services for each of the target groups and job positions of our partners for the internalization of safety culture, strengthened public relations on the safe use of electricity at large-scale construction sites and carried out promotional campaigns on theme-based electricity safety in ordinary lives for children and the people in general.

### Operating Health Management Programs

KEPCO is operating various health & welfare programs to provide its employees with healthy working conditions. By conducting general medical checkups (every year) and special medical checkups (every second year), we are checking the health status of our employees. We are also managing both physical and mental health of our employees by providing corporate-wide psychological counseling services and diagnosing job stress levels. The psychological counseling services are given to those who face conflicts, depressions or anxieties with colleagues or bosses by professional organizations. In 2018, there were 309 employees who received psychological consultations. By diagnosing job-related stress levels for all employees, we have provided feedback to high-stressed groups and individuals. We have supported those workers exposed to stress to improve their quality of life and cure emotional stress by conducting the 'KEPCO Healing Camp' for the 120 field workers handling civil complaints.

## Vitalizing Regional Economy and Expanding Shared Growth

### Vitalizing Regional Economy

#### Creating Energy Valley Ecosystem

KEPCO is creating the Energy Valley, which is an industrial cluster specialized in next-generation power businesses, around its HQ relocation site. Energy Valley acts as a global smart energy hub in vitalizing the regional economy, creating decent jobs and leading rapidly changing energy markets around the world by inviting a great number of energy-related companies and research institutes. We are conducting a wide range of activities to support funds, nurture talents, find markets and invite companies under the goal of having 500 companies by 2020. As a result, we have invited 396 companies as of June 2019, expecting investment effects worth KRW 1.6019 trillion and job creation for 9,580 persons.

Invited Companies	Investment Effect	Job Creation Effect
396 Companies	KRW 1.6019 Trillion	9,580 People

(As of June, 2019)

#### Operating Programs to Nurture Future Energy Leaders

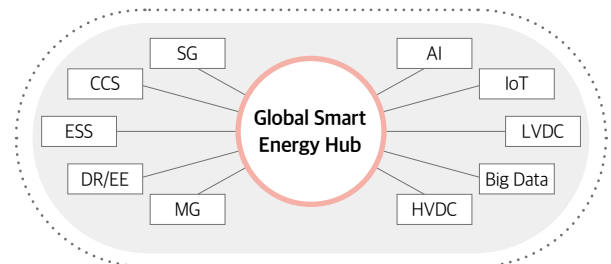
We have provided training on ten main energy areas including Smart Grid, ESS and other new power technologies for some 150 local college students every year since 2015 by introducing programs to lead new markets in the energy sector, nurture outstanding local talents and train experts in new industries in the energy sector. As the trend of digital transformation has emerged as a main topic of the 4th Industrial Revolution, we opened and are operating an SW academy to train experts in areas of big data, IoT, AR/VR, etc., since 2017.

In addition, we have been running the New Wind Energy School linked with the Free School-Year System since 2016, having the total of some 55,000 students attending to learn about renewable energy.

#### Definition and Roadmap of Energy Valley

##### Definition

It is a global smart energy hub built around the Joint Innovation City in Gwangju, Jeonnam, under the goal of developing the national economy and creating jobs by establishing a future growth industrial ecosystem especially for new industries in the energy sector.



##### Roadmap

Introduction	Stabilization	Maturity
<ul style="list-style-type: none"> <li>• 2015-2016</li> <li>• Invited Companies : 100 Companies</li> </ul>	<ul style="list-style-type: none"> <li>• 2017-2018</li> <li>• Invited Companies : 300 Companies</li> </ul>	<ul style="list-style-type: none"> <li>• 2019-2020</li> <li>• Invited Companies : 500 Companies</li> </ul>

### BUSINESS CASE

#### Youth Startup Platform 'Maker Naju'

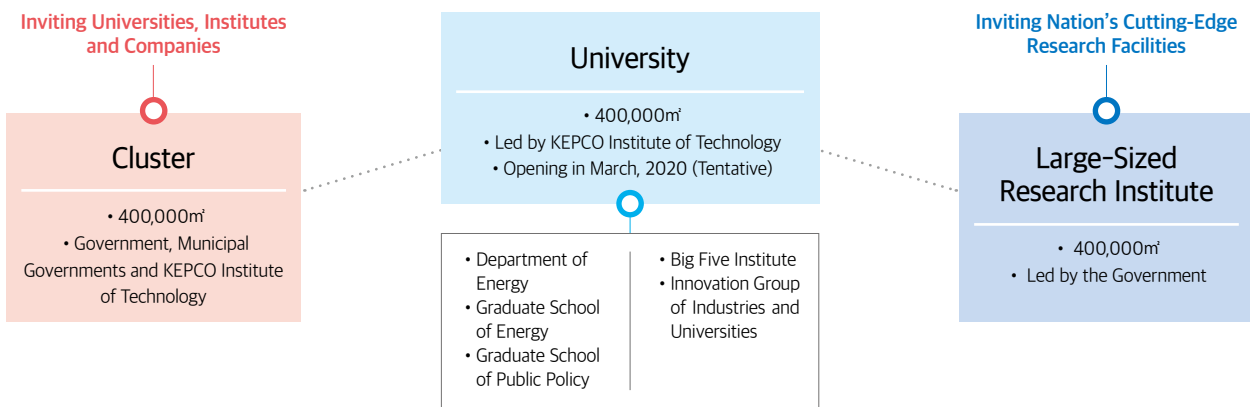
KEPCO is pushing ahead with 'Make Naju', a youth startup program, to contribute to vitalizing the regional economy by encouraging young creators to start their businesses in run-down city centers, increasing the flow of young population in such areas and regenerating sluggish old towns. By utilizing empty shops in the old downtown of Naju, we provide stable and continuous support for young entrepreneurs to voluntarily plan and do their own businesses. In 2018, we chose and supported five teams, and three of them were successful and are still running their businesses at the sites. In 2019, we expanded our support to eight teams, built platforms (handicraft shops) and provided startup training and business management consulting services in order to turn the old city into a young and energetic town to which young people are coming back to.



**Establishing KEPCO Institute of Technology** (Tentative name)

KEPCO is striving to establish 'KEPCO Institute of Technology (Tentative name)' as a cluster of industries, universities and institutes under the goal of creating a global-level university specialized in researching the energy sector. To this end, we voted for 'the basic plan on the establishment of KEPCO Institute of Technology (Tentative name)' in August, 2019. We are currently making close cooperative relations with the government and municipal governments under the goal of opening the Institute in March 2022. KEPCO Institute of Technology (Tentative name), as the world's first and only university that specializes in the power (energy) sector and comprehensively conducts researches on the convergence energy and power sector, will enhance its capabilities, build a cluster into which universities, institutes and companies home and abroad are invited and establish a large-sized research institute in order to grown into an open platform for energy researches and to differentiate itself from other universities in terms of innovation.

The KEPCO Institute of Technology (Tentative name) is expected to contribute to the vitalization of the regional economy by growing into a cradle of nurturing global energy talents and playing a role as an energy cluster in the medium to long term.



**BUSINESS CASE**

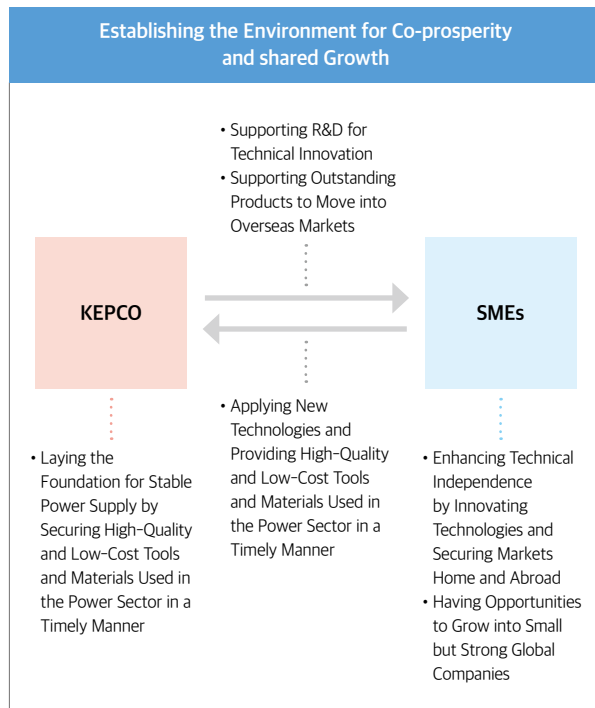
**Successful Hosting of 2018 BIXPO**

KEPCO held '2018 BIXPO (Bitgaram International Exposition of Electric Power Technology)' at Kim Dae Jung Convention Center for three days starting on October 31<sup>st</sup>, 2018. BIXPO has been held annually from 2015 in order to lead new technical trends in the energy sector and lay the groundwork for the establishment of the Energy Valley Hub. In 2018, we invited 282 companies from 61 nations to the exposition held under the subject of energy transition and digital transformation. At BIXPO, we held a number of events including new technology exhibition, international conference with 48 sessions and international invention and patent contest where 162 inventions were presented. Facing a grand paradigm shift due to eco-friendly energy transition and digital transformation in the electric power industry, we successfully held the international event as a venue to examine the current development status of the power sector and exchange technologies and information on policies. Thanks to the successful hosting of BIXPO, we have signed 21 MOUs with companies at home and abroad, invited 27 cases of investments and had export consultations worth USD 1.58 billion, which are expected to lead to the development of the regional economy worth KRW 157.8 billion.



### Creating Environment for Shared Growth with SMEs

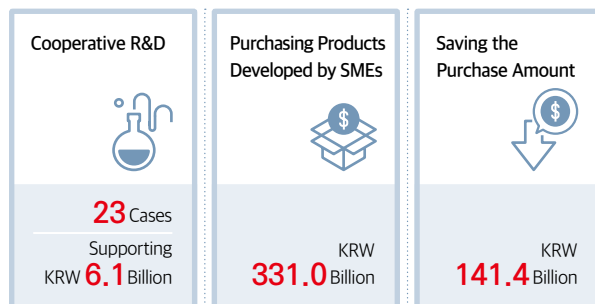
KEPCO is actively supporting SMEs to innovate their technologies and to move into overseas markets. By doing so, we believe SMEs could improve their own technical independence and grow into small but strong global companies. We could also secure high-quality and low-cost tools and materials used in the power sector to stably supply high-quality electricity. We will continue to make multilateral efforts to create an environment for co-prosperity and shared growth.



### Supporting Cooperative R&D for SMEs

KEPCO is supporting 85% of the research cost or up to KRW 1.5 billion for SMEs to conduct their R&D on new products and technologies in areas of transmission & substation, distribution and IT. By doing so, we believe SMEs could innovate their technologies at an early stage thereby securing a stable procurement of high-quality apparatus and leading co-prosperity and shared growth.

(As of 2018)



### Expanding the Purchase of SMEs' Products

We are contributing to securing initial markets and increasing sales for SMEs by first purchasing products developed through cooperative R&D with them. We have spent KRW 16.6 billion on first purchasing products developed through cooperative R&D with SMEs. In addition, we have also made a pilot procurement worth about KRW 4 billion in order to help new SMEs and their first-certified new technical products to find markets at an initial stage. And, we have also spent KRW 121.9 billion on products manufactured by 41 companies including transformer producers to support companies placed in the Energy Valley to explore markets.

### Supporting SMEs to Explore Overseas Markets by Utilizing KEPCO Brand

KTP (KEPCO Trusted Partner) selects outstanding small-sized partners with competence in overseas exports in the electric power sector, grants them rights to use the KEPCO brand to promote their exports, and helps them enhance their overseas marketing competence. In 2018, we selected 24 outstanding SMEs in the sector of new energy industry. Today, 123 companies in total are using KEPCO-certified brand to explore overseas markets. For KTP-certified companies, we are providing priority rights when having export promotion fairs, exhibitions and other export-supporting projects and chances to exhibit their products by utilizing KEPCO's overseas permanent exhibition halls.



### Expanding KTP-Certified SMEs and Strengthening Marketing Activities

<p><b>Expanding the No. of SMEs Certified by KTP</b></p> <ul style="list-style-type: none"> <li>Selecting 244 Outstanding SMEs in the Sector of New Energy Industry</li> <li>- 99 SMEs in 2017→123 SMEs in 2018</li> </ul>
<p><b>Supporting SMEs for Overseas Marketing at All Times</b></p> <ul style="list-style-type: none"> <li>Granting Rights to Use KTP Brand</li> <li>Giving Priority Rights to Participate in Promotional Fairs and Exhibitions</li> <li>Exhibiting Products at Overseas Permanent Exhibition Halls</li> </ul>
<p><b>Holding Export Consultation for the Japanese Market</b></p> <ul style="list-style-type: none"> <li>Apparatus Export Consultation for the Japanese Market (September, 2018)</li> <li>- Seminars, Biz Meetings and Exhibitions</li> <li>- Achieving Export Consultation Performance Worth USD 68 Million</li> </ul>

### Providing SMEs with Overseas Marketing Opportunities

KEPCO has been holding export promotion fairs to provide opportunities to SMEs for promoting products optimized for the demand of target markets by dispatching a group of market explorers comprising of companies manufacturing promising export goods to target markets. And we are also supporting SMEs to participate in renowned overseas exhibitions at which we can promote our overseas projects and where SMEs can promote their products at the same time by setting up promotion booths. In 2018, we helped SMEs to sign export contracts worth USD 5.22 million and USD 6.31 million at an export promotion fair and an overseas exhibition respectively. The number of export contracts won by 772 SMEs for five years from 2014 amounts to USD 127 million in total, creating fruitful results.

In addition, we have established 'KEPCO Export Support Portal' to efficiently help SMEs to move into overseas markets by providing information on foreign buyers and markets, information on biddings and other statistics.



Export Support Portal

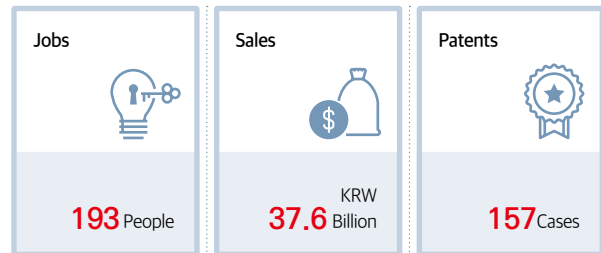


Promoting Products to Foreign Buyers at Export Promotion Fairs

### Discovering and Nurturing Energy Startups

Through various startup nurturing programs, KEPCO is establishing an ecosystem for new startups in the energy sector and creating relevant jobs. With a goal to identify and nurture 300 startups by 2020, we have discovered and developed 246 businesses and created 442 new jobs as of August 2019. We are contributing about 200 million KRW for each company for two years through a total package that includes establishing business models and supporting export consultations. We are also promoting the launch of regional startups through an aid program for young adults and the middle-aged. In addition, we have planted and are developing 19 startups at the Bitgaram Creative Economy Innovation Center (Naju) and the KEPCO Startup Support Center for New Industries in the Energy Sector (Gwangju) and are operating numerous programs such as providing test labs for manufacturing trial products and allowing the use of KEPCO's experiment and demonstration facilities. These programs for the discovery and development of startups was named as a best practice case in innovation at the Presidential Workshop for CEOs of Public Organizations

(As of the End of 2018)



### Project of Supporting In-House Venture Businesses

KEPCO is actively nurturing and supporting in-house venture businesses in order to lead innovation and to follow the government's policy on job creation. In the incubating stage, we support KRW 200 million and in-house test facilities for them to use for their assignment development and provide mentoring services for one-year working period at KEPCO. In the next stage of nurturing startups, we provide rooms at the Startup Center and support them in developing their ideas by connecting with R&D assignments for a three-year period of time-off from work due to their own startups. And then, we make a preferential purchase of products developed by them to help them stand on their own feet and support them to participate in overseas export exhibitions and promotion fairs. As such, we are actively supporting our employees to participate in in-house venture businesses.



## Shared Growth with Partners

### Establishing Fair Trade Order

#### Distributing Suppliers' Code of Conduct

KEPCO became the first public corporation to enact a 'Suppliers' Code of Conduct' in 2012 in accordance with the UN Global Compact's CSR 10 Principles, labor & environment guidelines set by the OECD and the ILO. By stipulating ethical, environmental and social standards in the Code of Conduct, we are guiding bidders to comply with the Suppliers' Code of Conduct for all contracts.

#### Lowering Entry Barriers for New Companies

KEPCO is regularly carrying out 'information sessions on registration' and 'proactive mentoring programs'. By doing so, we are improving convenience for new companies that want to be registered and are actively encouraging others to join. We provide those SMEs that want to be registered as new suppliers with information on estimated purchases, registration procedures and technology & quality examination guidelines. As of 2018, we secured nine products manufactured by 45 newly-registered companies. In addition, we have lowered entry barriers for new companies and SMEs by easing preliminary qualifications for procurement.

#### Introducing Electronic Systems for Entire Processes of 'Negotiation-Based Contracts'

KEPCO established online proposal evaluation systems for 'Negotiation-Based Contracts' in 2018. By changing handwritten evaluation of proposals in the past into electronic bidding systems, we have introduced online-based proposal evaluation methods. And, we have prevented data leaks by encrypting electronic proposals and have blocked any of the causal factors of distorting evaluations from the beginning by giving different levels of rights to read proposals to each of the evaluators. In addition, we have also enhanced the transparency of evaluation by increasing the number of evaluators and improving the method of calculating evaluation points.

#### Eradicating Unfair Trading Practices

KEPCO is working hard to improve relevant systems and processes in order to eradicate unfair trading practices and help create a fair economic order.

When making a collusive tender or submitting forged or false documents related to any of the proposers, we strip them of their qualifications as suppliers of the relevant products. We have also improved 'a system to detect price-fixing attempts' by utilizing AI. Through the system improvement, we could change the post-detecting simple method by calculating the scorings of bidding results including winning rates, the number of miscarried tenders and others to check whether or not the relevant bidding was made at a pre-concerted price into a new way of detecting any rigged bidding attempts by analyzing abnormal transactions, collusive tender patterns, etc., in advance.

Moreover, we have strived to prevent price-fixing attempts and make efficient responses by extending the number of tenders that can be applied to the system from around 1,100 limited to the material procurement in the past to about 20,000 including tenders on construction and services and increasing the reward for reporting collusive tenders from KRW 100 million to KRW 2 billion. In recognition of such endeavors, the case of improving 'the system to detect price-fixing attempts' was selected as the best practice at a conference of authorities organized by the Korea Fair Trade Commission in 2018.

### Supporting Partners for Sustainable Management

#### Improving the System of Paying Security Money for a Tender

Since 98% of the partners sanctioned due to wrongdoings for the past five years are SMEs and micro enterprises, KEPCO has mitigated excessive restrictions imposed on small-sized partners' bidding activities to the extent that the relevant laws allow. As many of them give up tenders due to their economic burdens under the existing system in which they have to pay bid bonds for two years even after their sanctions have expired, we have improved the bid bond payment system to give such SMEs equal chances to participate in tenders as long as they were involved in minor wrongdoings in the past and their subsequent sanctions have been lifted.

#### Establishing Horizontal Foundation for Shared Growth

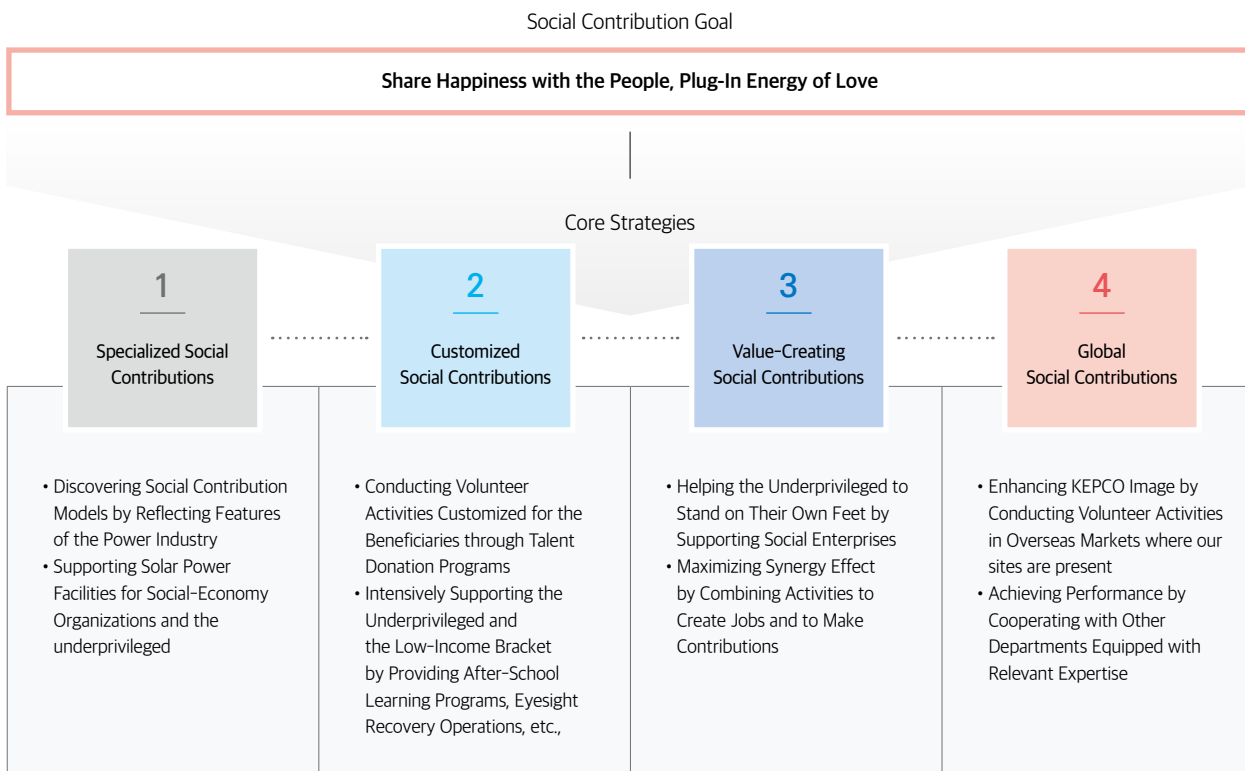
KEPCO is laying the horizontal foundation for shared growth based on active communication with its partners. In 2018, we reviewed 44 trading conditions including contracts and construction regulations, guidelines, standards and special terms to enhance fairness by improving conventional and unfair trading conditions. By doing so, we have improved 18 unfair trading terms such as unfair exclusion of rivals, excessive responsibilities and others. In addition, we have launched the 'KEPCO Procurement and Win-Win Development Academy' for working-level employees of small-sized partners. After successfully conducting the 1st training sessions to explain KEPCO tender systems to companies in the Energy Valley in August 2019, we are planning to conduct training for other partners in other regions.

## Conducting Strategic Social Contributions

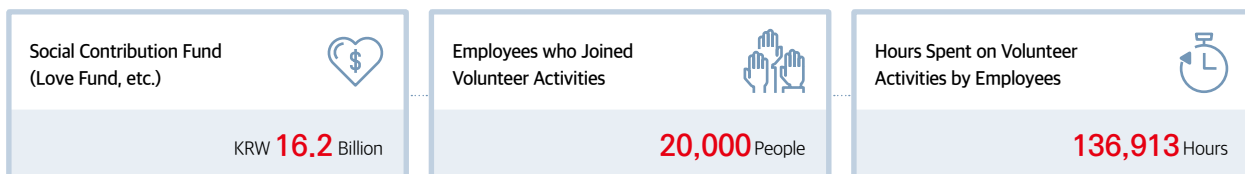
### Conducting Social Contributions Associated with Core Businesses

#### Achieving Corporate Social Responsibility (CSR)

KEPCO has set a vision for socially responsible management and come up with a system to implement it in order to assume social responsibilities as a global corporation and grow together with the people for a sustainable future. By doing so, we could continuously carry out social contribution activities that were temporarily and sporadically conducted in the past. We will continue to carry out practical activities to contribute to the society and establish a virtuous cycle of CSR for shared growth with the underprivileged and local communities.



#### Outcomes of Social Contributions Activities in 2018



## Strengthening Social Contribution Activities at Home

### KEPCO Volunteers

KEPCO founded the 'KEPCO Volunteering Group' by organizing volunteers that were conducting social contribution activities on an individual or a regional division basis in May 2004. Our Volunteering Group (some 20,000 of all employees from 311 regional divisions nationwide) is the largest in size compared with those of other public organizations and is operated by the Love Fund raised by monthly donations from employees and social contribution funds raised by the corporation's donations. Volunteers are continuously carrying out volunteer activities to realize energy welfare under the slogan of 'Light to the World, Love to the Neighborhood'.

### KEPCO 119 Disaster Rescuers

KEPCO is running 'KEPCO 119 Disaster Rescuers', an only and first public professional group of disaster rescuers, to make our society safer from 2010. KEPCO 119 Disaster Rescuers comprising of three teams for saving human lives, providing medical aid and supporting on-site accidents in six regions, has improved its expertise through regular specialized training to be prepared for major disasters at home and abroad. In 2018, it supported emergency medical services during the Pyeongchang Winter Olympics.

### Vitalizing Social-Economy Organizations

KEPCO is contributing to the vitalization of social enterprises by providing them with customized support at each of the business stages of foundation, stabilization and maturity. In 2018, we and 11 of our group companies jointly supported 150 social enterprises at their stabilization stages to secure markets by holding an agro-livestock and fishery product fair in the relocation region. In addition, we have made impact investments\* in social enterprises in their maturity stages, expecting them to achieve social values and profits at the same time.

\* Impact Investment : It is an investment made to achieve financial income and social & environmental outcomes at the same time.



### Supporting to Establish SunnyHappy Power Facilities

'SunnyHappy Power Plant' is a project through which KEPCO conducts to construct solar power plants for social enterprises, cooperatives and town-based enterprises at no cost and subsequently those benefited social-economy organizations make social contributions, create jobs and sustainably stand on their own feet by using the income received from selling electricity. We have so far invested the budget of KRW 10.5 billion and constructed 79 plants. In addition, we are also carrying out a project of 'SunnyHappy Panel' to install free solar panels in social welfare centers and houses of the socially vulnerable bracket and to help them reduce electric charges and improve their energy use conditions.



1. KEPCO Social Volunteers
2. KEPCO 119 Disaster Rescuers
3. SunnyHappy Power Facilities



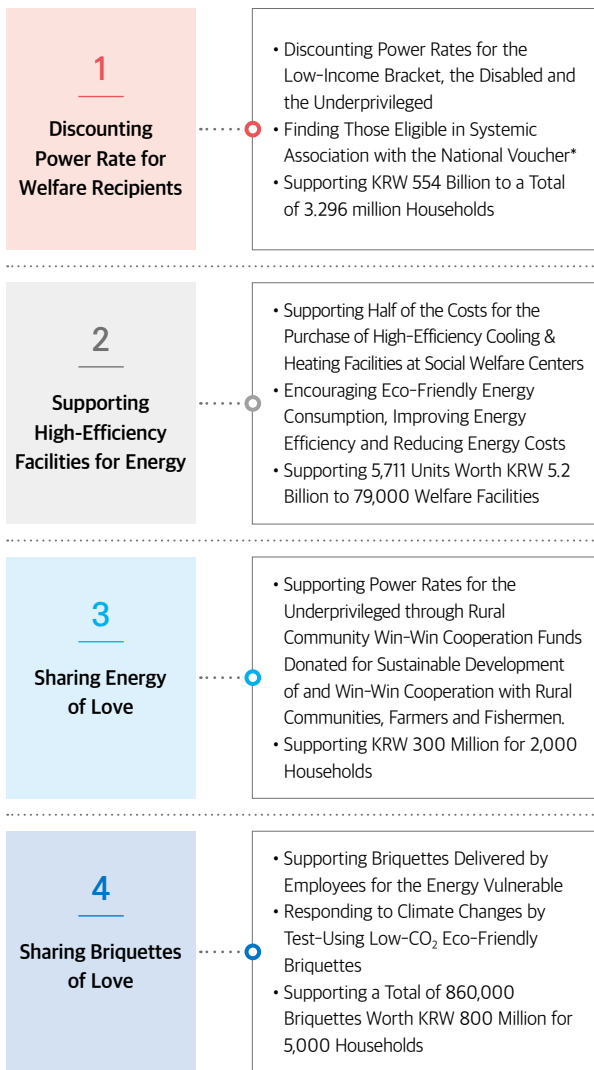
### Building Trust with Local Communities

KEPCO is doing various activities to build trust with local communities. Each of KEPCO's departments is carrying out a sister-town project together with every one of the 37 towns around the region where the HQs are relocated to help farmers in busy farming seasons and invite locals to cultural events. And, we are running our cafeterias seven days a week in order to vitalize regional commercial markets. By opening our libraries, sports facilities and other convenient facilities and showing free movies at 'Bitgaram Theater' for locals to enjoy their cultural lives and leisure activities. Especially, we are running a project of 'Counter of Love' in association with 'Bitgaram Theater' to save KWR 3,000 per filmgoer, raising a total of KRW 33.04 million for the use of 'Region-Oriented Fund'.

### Supporting with a Comprehensive Energy Welfare

KEPCO is operating energy welfare support programs with the belief that any of the people should be entitled to the fundamental rights of energy regardless of their income levels. By supporting electric rate discounts with funds raised by donations from all employees, we have alleviated electricity bill burdens placed on the energy vulnerable group. In addition, we are guaranteeing the fundamental rights of energy for those households that have defaulted on their power rates by postponing the cut-off of the power supply and conducting various support programs for them.

#### Comprehensive Energy Welfare Support Programs



\* National Voucher : A program that grants various state subsidies in the form of Samsung Card for those specific target groups, who have passed their eligibility examination processes, to use for welfare services including medical care, child-rearing, education, culture, etc.

### Social Contributions at Each of the Life-Cycle Stages

By dividing those eligible to receive social contributions into children & teenagers, undergraduates & newcomers and the old & the underprivileged based on each of the life-cycle stages, we are carrying out customized social contribution activities. For children & teenagers, we are conducting campaigns to prevent and find missing children and running 'Birgaram Electricity School' to support teenagers in juvenile reformatories to acquire electricity-related certificates. For undergraduates & newcomers, we are running 'Power Class' to support learning programs and award scholarships to middle school students from low-income families. For the elderly, we are providing positioning services for those with dementia and health-keeping services for those living alone by utilizing wearable devices.

#### Social Contributions Citizens Can Experience

KEPCO is carrying out social contribution programs, which the public can actually feel, to get one step closer to the people by taking care of the socially vulnerable. Since 2004, we have continued to conduct campaigns to prevent children going missing. In 2018, we gave bracelet-type nametags and bracelets embedded with NFC chips to children who went out for the Cherry Blossom Festival at Incheon Grand Park to prevent them from getting lost and delivered leaflets on missing children to parents. The bracelet embedded with an NFC chip, which shows pre-entered parents' phone numbers through the NFC function of a smart phone even without installing a relevant application, is a wristlet used semi-permanently to prevent a kid from getting lost. At the same time, we also conducted a campaign of 'Love Customers' to enhance customer convenience by setting up an electricity consultation program for the purpose of information on power rate discount systems at the festival.



## Continuously Expanding Social Contributions on a Global Level

### Global Volunteers Made up of KEPCO Employees

KEPCO is taking social responsibilities as a global corporation by conducting volunteer activities in those markets it has advanced into. In 2018, we conducted volunteer activities together with our employees by dispatching our global volunteers made up of 135 employees to three nations — Cambodia, Vietnam and Thailand. Those global volunteers constructed sports facilities, painted murals, repaired schools and libraries and supported Korean culture classes, kids' classes and sports days.

### Global Volunteers Made up of University Students

KEPCO has dispatched undergraduate global volunteers to strengthen relations with locals and provide colleges students with chances of learning how to live life with others. In 2018, we dispatched three 30-college-student teams, totaling 90 to the Philippines, Cambodia and Sri Lanka to repair schools and town facilities and help construct local solar power plants at the sites.

### Eye Love Project

KEPCO is carrying out 'Eye Love Project' to shed light on those low-income patients with dangers of going blind home and abroad by performing eyesight recovery operations on them. In 2018, we gave 'the light of dream and hope' to the world by treating 1,476 patients and performing eyesight recovery operations on 229 patients in three overseas nations including South Africa.

### Supporting Multicultural Families to Visit Their Home Countries

KEPCO is conducting an event of 'Home Country Visit' for children from multicultural families and foreign women married to Koreans in Gwangju, Jeonnam from 2015. In 2018, we supported them in visiting two of the home countries including the Philippines and China and provided kids from multicultural families with opportunities to grow and develop into 'Glocal' talents by visiting renowned universities and conducting volunteer activities with them in those nations.



1. Installing Solar-Powered Street Lamps

2. Constructing Solar-E Schools

3. Establishing Electric Science Classes

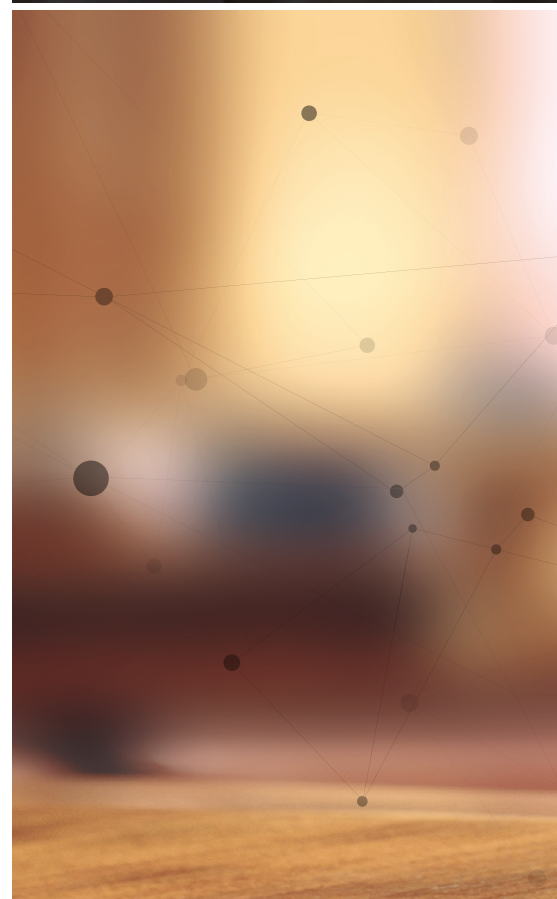
4. Renovating Buildings

5. Providing Education Services

6. Cultural Exchange

# SUSTAINABILITY MANAGEMENT

KEPCO will establish responsible management systems based on trust and communication with its stakeholders.



- 64 Governance
- 68 Ethical Management
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## Governance

### Board of Directors

KEPCO's BOD is comprised of seven standing directors including the President and eight non-standing directors. In order to secure fairness and transparency of the BOD operation, one of the non-executive directors is elected as the chairperson of the BOD.

(As of August, 2019)

	Classification	Name	Gender	Tenure	Expertise & Experience
Standing Directors (Executive Directors)	President & CEO	JongKap KIM	M	Apr., 2018–Apr., 2021 (Three Years)	Energy and Electricity
	Controller & Auditor General	JungHee LEE	M	Aug., 2018–Aug., 2020 (Two Years)	Law
	Executive Vice President of Management Support	HoeChen KIM	M	July, 2018–July, 2020 (Two Years)	Energy and Electricity
	Executive Vice President of Business	DongSub KIM	M	July, 2018–July, 2020 (Two Years)	Energy and Electricity
	Executive Vice President & Chief Strategy Officer	HyungDuck PARK	M	July, 2018–July, 2020 (Two Years)	Energy and Electricity
	General Manager of Power Grid	SungAm KIM	M	Mar., 2019–Mar., 2021 (Two Years)	Energy and Electricity
	General Manager of Nuclear Power Business	HyunSeung LIM	M	July, 2018–July, 2020 (Two Years)	Energy and Electricity
Non-Standing Directors (Non-Executive Directors)	Chairperson (Vacant)	-	-	-	-
		ChangJun KIM	M	Mar., 2018–Mar., 2020 (Two Years)	Energy and Electricity (Current Chair of Living Sports Committee, Korean Sport & Olympic Committee, Former Chairman of Korea Electrical Contractors Association and Electrical Committee Member of the Ministry of Trade, Industry and Energy)
		BongRyeol YANG	M	Apr., 2018–Apr., 2020 (Two Years)	Energy and Public (Former Vice Foreign Minister of Kwangju Institute of Science and Technology, Ambassador of Malaysia, and Consul General of Houston)
		JwaGwan KIM	M	Apr., 2018–Apr., 2020 (Two Years)	Energy and Environment (Current Professor, Department of Environmental Engineering, Busan Catholic University and Director of Busan Gyeongnam Eco-city Research Institute)
		YeonGil JEONG	M	Apr., 2018–Apr., 2020 (Two Years)	Energy and New Materials (Current Professor of Department of New Material Engineering, Changwon University and Energy Policy Advisor of the Ministry of Trade, Industry and Energy)
		GeumSeon NOH	F	June, 2018–June, 2020 (Two Years)	Finance and Accounting (Current CPA of Samil PwC, Former Standing Auditor, National Pension Service)
		SeungGuk CHOI	M	June, 2018–June, 2020 (Two Years)	Energy and New & Renewable (Current Director, Solar and Wind Energy Cooperative Former Secretary General, Green Korea and Co-president, Korea NGO's Energy Network)
		CheolSu PARK	M	June, 2018–June, 2020 (Two Years)	Win-win Cooperation (Current Director, Naju Social Economic Network Former Director, Gwangju Jeonnam Happiness Center)

\* The chairperson of the board remains vacant since TaeYoo Kim (Oct., 2018–July, 2019) and will be appointed in due course.

### Appointment of Directors

Our directors are appointed in accordance with the 'Act on the Operation of Public Organizations' and 'KEPCO Articles of Association'. When appointing the CEO, we nominate candidates through an open nomination process followed by a recommendation by the Executive Nomination Committee, Public Institution Operation Committee, and an annual general meeting (AGM), a request made by the Minister of Trade, Industry and Energy, and appointment by the President for a three-year term. Executive directors are appointed by the CEO after a resolution at an AGM for a two-year term. The Standing Commissioner is recommended by the Executive Nomination Committee, approved by the Public Institution Operation Committee, requested by the Minister of Strategy and Finance, and appointed by the President. Non-Executive directors are nominated by the Executive Nomination Committee, approved by the Public Institution Operation Committee, and appointed by the Minister of Strategy and Finance, and serve a two-year term.

### Independence of the BOD

KEPCO is striving to keep its governance transparent and sound by strengthening the independence of the BOD. We are independently and separately operating the BOD chairperson and the president. In order to reflect varied opinions of our stakeholders onto decision-making processes, we make sure that the percentage of Non-Executive directors stands at more than 50% of the total. Furthermore, when assigning directors, we conduct a strict review to see if they are qualified as stipulated in the internal independence regulations and have special relations with the corporation.



### Expertise of the BOD

KEPCO is striving to secure expertise of the BOD to make rational decisions in diversified business environments. To this end, we are examining 'expertise of his/her own unique job position', when screening the documentation of a candidate and are very active in assigning an expert from the energy sector as our director. Besides, we are regularly inspecting power facilities home and abroad, conducting training for directors, providing reports on industrial trends and main management issues on a regular basis and holding intensified debates for directors to enhance their own expertise.

### Diversity of the BOD

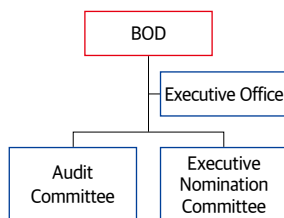
When appointing directors, we don't discriminate against any of them based on gender, race, ethnicity, nation or cultural background. In order to maintain diversity and balance in the BOD structure, we have diversified the scope of organizations that nominate candidates. And, we are working hard to invite and nominate more female candidates by managing the pool of female executives through the Executive Nomination Committee. In addition, we have formed the BOD made up of experts with experience and knowledge in various fields including law, economy, academy and labor. We have appointed a female non-standing director for the first time in 10 years since 2008.

### Preventing Conflict of Interest

In accordance with Articles 397 and 398 of the Commercial Act, KEPCO directors are not allowed to use the corporation's business opportunities for their personal or third-party interests without the approval of the board to prevent conflict of interests of directors. In addition, any director having special interests with a certain agenda is not allowed to cast a vote on the matter.

## BOD Operation

Meeting minutes of the BOD are all transparently disclosed to stakeholders through KEPCO's website except for confidential matters and other special issues related with the business management. We are providing multilateral support for the vigorous operation of the BOD. We have placed people in charge by designating the Planning Department as the Executive Office of the BOD in order to support Non-Executive directors in making decisions. We have also set up video conference systems and introduced other advanced conference systems to increase the attendance. In addition, we have provided a number of institutional strategies including the introduction of a system to evaluate the BOD performance, the holding of workshops for newly-appointed Non-Executive directors to enhance their expertise and support for the actual business management.



### Operating the Professional Committee

KEPCO is supporting the BOD in making rational decisions by vitalizing the Professional Committee. The Audit Committee has enhanced the checking function based on its own expertise by essentially appointing account & finance professionals. And, the Executive Nomination Committee has blocked internal influences and secured transparency of the executive appointment procedures by nominating candidates for only non-executive positions, while excluding anyone for standing positions.

#### Professional Committee

Name	Roles	Composition	2018 Performance and Outcomes
Audit Committee	<ul style="list-style-type: none"> <li>Conducting Audit on Work and Accounting and Reporting the Results to the BOD</li> <li>Approving the Appointment of Independent Auditors and Conducting Audits as Stipulated by Relevant Laws and the Articles of Incorporation</li> </ul>	Two Non-Executive Directors & One Standing Director	<ul style="list-style-type: none"> <li>Held 13 Meetings</li> <li>Deliberated on 33 Agendas (20 Agendas agreed and 13 Agendas reported)</li> </ul>
Executive Nomination Committee	<ul style="list-style-type: none"> <li>Deciding the Nomination Processes for President or Executive Audit Committee Members</li> <li>Reviewing and Recommending Candidates for Executives</li> </ul>	Non-Executive Directors & External Committee Members Appointed by the BOD	<ul style="list-style-type: none"> <li>Held Six Meetings</li> <li>Appointed the President, Executive Audit Committee Members and Eight of All Non-Executive Directors</li> </ul>

# Governance

## Major Resolutions of the BOD for 2018

<p>1<sup>st</sup> Meeting on Feb. 8, 2018                  2<sup>nd</sup> Meeting on Feb. 23, 2018                  3<sup>rd</sup> Meeting on Feb. 27, 2018</p>	<ul style="list-style-type: none"> <li>Amending the Implementation Rules of the General Supply Terms (Draft)</li> <li>Deciding the Limit on the Compensation of Directors in 2018 (Draft)</li> <li>Closing the Shareholder List for Special Meeting of Shareholders</li> </ul>
<p>4<sup>th</sup> Meeting on Mar. 15, 2018                  5<sup>th</sup> Meeting on Mar. 26, 2018</p>	<ul style="list-style-type: none"> <li>Changing Investment Structures and Security Deposits for Vietnam Nghi Son II Coal-Fired Thermal Power Project (Draft)</li> <li>Convening the 58th Special Meeting of Shareholders (Draft)</li> </ul>
<p>6<sup>th</sup> Meeting on Apr. 20, 2018</p>	<ul style="list-style-type: none"> <li>Amending the Salary and Welfare Management Regulations (Draft)</li> <li>Composing the Executive Nomination Committee and Reviewing Guidelines for the Nomination of Non-Standing Directors (Draft)</li> </ul>
<p>7<sup>th</sup> Meeting on May 18, 2018</p>	<ul style="list-style-type: none"> <li>Composing the Executive Nomination Committee and Reviewing Guidelines for the Nomination of Executive Audit Committee Members (Draft)</li> <li>Amending the Employment Rules (Draft)</li> </ul>
<p>8<sup>th</sup> Meeting on June 15, 2018                  9<sup>th</sup> Meeting on June 29, 2018</p>	<ul style="list-style-type: none"> <li>Financing 2018 Rural Community Win-Win Cooperation (Draft)</li> <li>Making Management Performance Agreements with Heads of Organizations (Draft)</li> <li>Planning Medium/Long-Term Financial Management for 2018-2022 (Draft)</li> </ul>
<p>10<sup>th</sup> Meeting on July 12, 2018</p>	<ul style="list-style-type: none"> <li>Convening the 58th Special Meeting of Shareholders (Draft)</li> </ul>
<p>11<sup>th</sup> Meeting on Aug. 7, 2018                  12<sup>th</sup> Meeting on Aug. 17, 2018</p>	<ul style="list-style-type: none"> <li>Amending the Implementation Rules of the General Supply Terms (Draft)</li> <li>Investing in the Project of Taking Over Shares of the Solar Power Plant in Calatagan, the Philippines (Draft)</li> <li>Setting Medium/Long-Term Management Goals (2019-2023) (Draft)</li> </ul>
<p>13<sup>th</sup> Meeting on Sept. 20, 2018</p>	<ul style="list-style-type: none"> <li>Amending the Employment Rules (Draft)</li> <li>Reporting on the Result of Signing a Collective Agreement</li> <li>Reporting on the Result of Audits Conducted by the Audit Office and Independent Auditors for the 2<sup>nd</sup> Quarter of 2018</li> </ul>
<p>14<sup>th</sup> Meeting on Oct. 25, 2018</p>	<ul style="list-style-type: none"> <li>Approving the Project Financing for Korea Offshore Wind Power Co., Ltd. (Draft)</li> </ul>
<p>15<sup>th</sup> Meeting on Nov. 16, 2018</p>	<ul style="list-style-type: none"> <li>Amending the Salary and Welfare Management Regulations (Draft)</li> <li>Guaranteeing the Payment of the Foreign Currency Loan for the Mine Project in Bylong, Australia</li> <li>Amending the Basic Agreement on Investment in the Fund for New Industries in the Energy Sector (Draft)</li> </ul>
<p>16<sup>th</sup> Meeting on Dec. 20, 2018</p>	<ul style="list-style-type: none"> <li>Planning 2019 Budget (Draft)</li> <li>Establishing KEPCO 'INNOPOLIS Research Institute Spin-off Company' (Draft)</li> <li>Investing in the Fund for the Operation of KEPCO International Nuclear Graduate School (Draft)</li> </ul>

## Performance of the BOD Operation

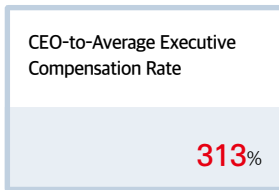


### Evaluation and Compensation of the BOD

KEPCO has prepared performance evaluation systems and compensation programs to efficiently compensate its BOD members during their tenure of office through fair independent evaluation processes. The president establishes a business performance plan based on the management policies and mid-to-long-term business goals after signing an agreement with the government (the Ministry of Trade, Industry and Energy) on the management goals to be achieved during his or her tenure. And, his/her implementation progress is reviewed by the Performance Appraisal Board for Public Corporations. Executive directors including the President are remunerated under the remuneration limit approved at the general meetings of shareholders and receive incentives based on their performances. The reappointment of on-executive directors is determined based on their performance assessment results. They are also provided with a service allowance based on internal regulations. The details of compensations for executive and non-executive directors are made public through our business reports and ALIO (All Public Information In-One) website.

Status of the BOD Compensation [Unit : KRW 1,000]

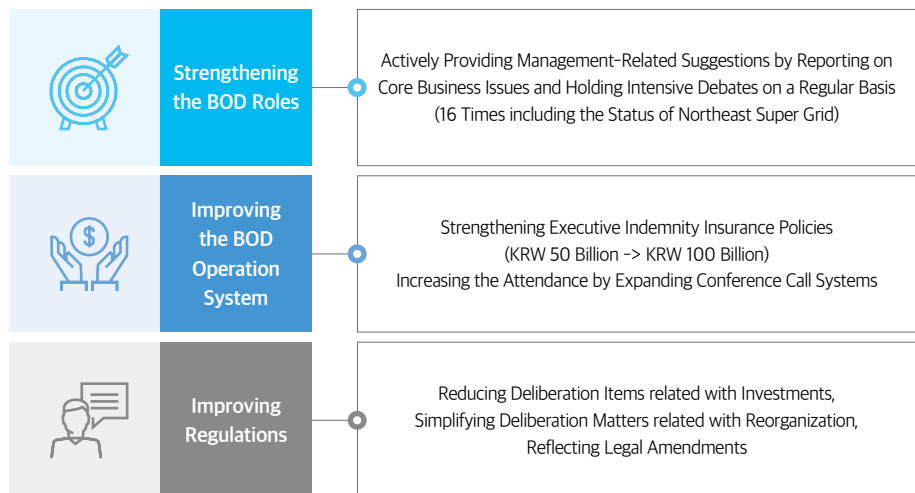
(As of the End of June 2019)



	Standing Directors (Excluding Non-Executive Directors and Audit Committee Members)	Non-Executive Directors (Excluding Audit Committee Members)	Audit Committee Members (Non-Executive)	Executive Audit Committee Members
No. of People	6	6	2	1
Total Compensation	668,715	90,000	30,000	94,714
Avg. Compensation per Person	111,452	15,000	15,000	94,714

### Improving the System to Rationally Operate the BOD

KEPCO has provided efficient resources to strengthen the BOC roles and vitalize the BOD operation by improving the BOD operation systems and amending relevant regulations.



# Ethical Management

## Establishing Ethical Management Systems

### Conducting Ethical Management

KEPCO is actively conducting ethical management for the 'Realization of Upright KEPCO Trusted by the People'. To this end, we have reformed ethical management systems to be led by the head of the corporation and strengthened institutional grounds by newly establishing an placing the Ethics & Law Department in charge of ethical management right under the head of the corporation. Besides, we have also introduced a number of institutions in order to create preventive ethical management and improve the effectiveness of ethical management policies. In addition, we have enhanced social values by spreading the integrity culture to our partners and even to local communities.

#### Ethical Management System



### Newly Establishing the Ethics & Compliance Committee

KEPCO newly launched the Ethics & Compliance Committee in early 2019 to actively conduct its ethical and law-abiding management and held the '1<sup>st</sup> Ethics & Compliance Committee' in April 2019. The Committee is chaired by the president of KEPCO and consists of five standing directors and three external members. The Committee is expected to improve KEPCO's ethical management to the next level by deliberating on plans conducting KEPCO's ethical and law-abiding management, inspecting and evaluating the relevant performance and suggesting and supporting development methods.

## Putting Ethical Management into Practice

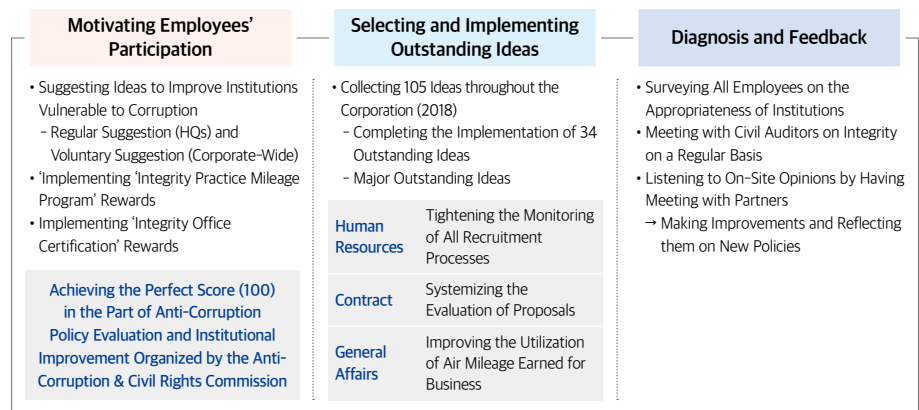
### Creating Preventive Ethical Environment

KEPCO is conducting training for employees and partners to build a clean corporate culture and internalize an ethical corporate culture and is striving to create a preventive ethical environment through self-diagnosis systems. Furthermore, we are tightening discipline among our employees through all-time monitoring systems.



### Improving Implementation of Integrity Policies

KEPCO is working hard to internalize ethical management. Through integrity policies suggested by employees, we are encouraging them to follow the policies and improving the implementation of such policies by continuously conducting relevant activities while collecting feedbacks from them.



#### BUSINESS CASE

#### International Certification Standard for Anti-Bribery Management System (ISO 37001)

KEPCO acquired the certification of ISO 37001 from the Korea Knowledge Standards Registrar (KSR) in January, 2019 for the first time as the first-string public corporation. ISO 37001 is an international standard for anti-bribery management system established by the International Organization for Standardization (ISO) in 2016 to prevent the chances of corruption within our organizations. We have formed a task force team for ISO 37001, into which all divisions of 33 departments of the HQs have participated, to build the anti-bribery management system. We have improved relevant institutions based the result of analyzing corruption issues. After passing through a two-stage strict screening process including documentation examination and site evaluation, we could obtain the certification of ISO 37001. The certification represents our strong will to go against corrupt practices. We will continue to expand our activities to spread the anti-corruption & integrity culture.



# Ethical Management

## Spreading the Integrity Culture

KEPCO, as the leading public corporation, is taking the initiative in spreading integrity to its partner and local communities to improve social values.

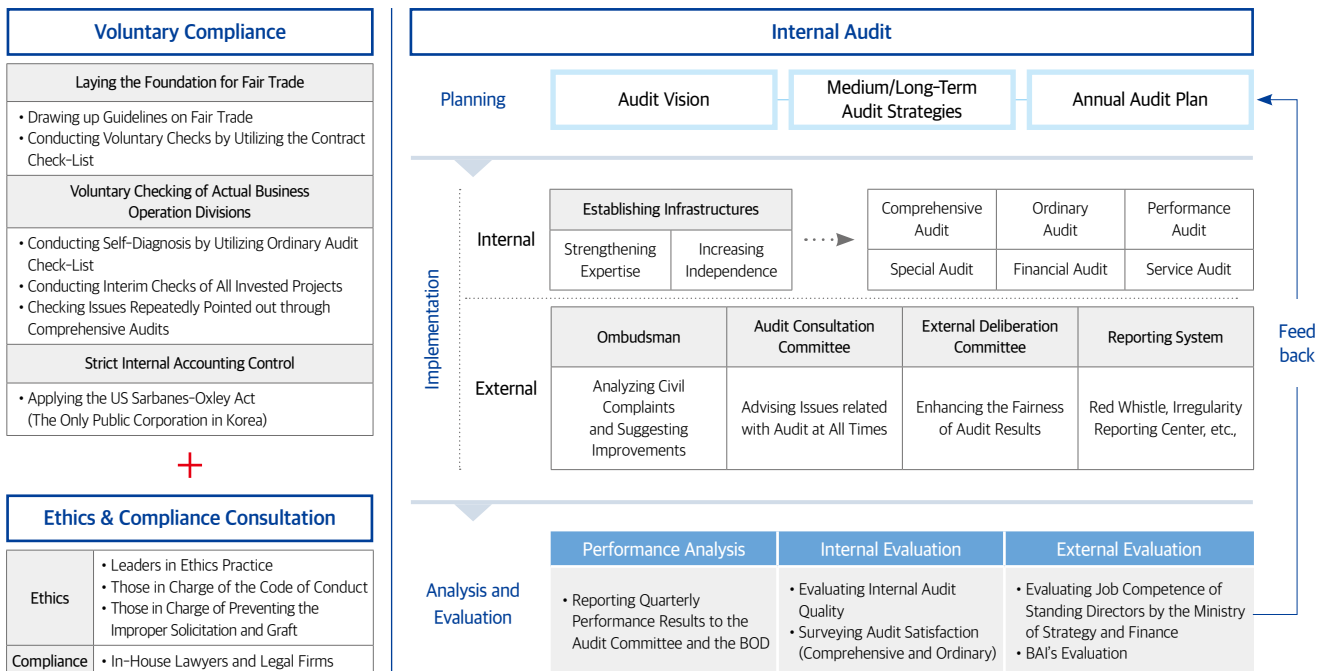
Classification	Performance
Following the Government's Policies	<ul style="list-style-type: none"> <li>Actively Attending the Government's Meetings on Anti-Corruption Policies and Making Suggestions</li> <li>- Attending Five Public Meeting including the Presidential 'Anti-Corruption Policy Council', 'Integrity Society Private &amp; Public Council' Organized by the Anti-Corruption &amp; Civil Rights Commission, etc.,</li> </ul>
Spreading Integrity Culture to Local Communities	<ul style="list-style-type: none"> <li>Successfully Holding the Largest "Bitgaram Integrity Culture Festival" (July, 2018) by Building an Integrity Cluster in Gwangju, Jeonnam</li> <li>- Attended by some 30,000 Visitors from 25 Organizations including Gwangju Municipal Government and Jeonnam Provincial Government and Reported by the Media 'Spreading Integrity Culture to Local Communities'</li> </ul>
Leading Public Organizations	<ul style="list-style-type: none"> <li>Leading the Establishment of the Nation's First 'Public Organization Integrity Society Council' and Serving as the First Chairperson (November, 2018)</li> <li>- Attended by 35 Public Organizations including KEPCO, KORAIL, Korea Expressway Corporation, etc., to Jointly Find Ways of Responding to Corruptions</li> </ul>
Encouraging Partners to Join	<ul style="list-style-type: none"> <li>Encouraging Partners to Join and Evaluating Integrity When Selecting Outstanding Partners (2018. 2)</li> </ul>

## Operating Internal Check Systems

KEPCO is operating its own internal check systems in order to maximize the effectiveness of supporting ethical management. Our internal check systems are divided mainly into a preventive 'voluntary compliance' system and a follow-up 'internal audit' system, all of which are structured in detail to make actual internal checks possible.

The voluntary compliance system is made up of an institutional section for fair trading, voluntary checking of actual business operation divisions and internal accounting control and a support section for ethics & compliance consultation. The internal audit system conducts comprehensive audit, ordinary audit, performance audit, etc., in all business processes based on expertise and independence. At the same time, external audit programs including the ombudsman system, the audit consultation committee and external reporting system are also covered by the internal audit system. The performance of the internal audit system is reflected in the planning stage after being regularly analyzed, evaluated and given feedback so as to continuously improve the internal audit system.

### Internal Check Systems



### Multi-Channel Reporting Systems

KEPCO is backing up the internal audit system through voluntary reporting, irregularity reporting center and other various corruption reporting programs. For our employees' active participation, we have increased the accessibility by newly setting a reporting menu in the corporate application and conducted internal and external promotion campaigns. The reporting results are transparently disclosed through the corporate website.

#### Irregularity Reporting Channels and Outcomes

Classification	No. of Cases Reported			Identification	Reporting Method	Note
	2016	2017	2018			
Internal/Voluntary Report	-	-	-	Identified/ Anonymous	Online	Intranet
Irregularity Reporting Center	37	56	87	Anonymous	Online	External Website
On-site Reporting Center	-	1	-	Anonymous	Reporting Postcard	
Anonymous Report System (Red Whistle)	82	52	131	Anonymous	Online	External Consignment
Total	119	109	218			

### Red Whistle

KEPCO has been operating an anonymous reporting system of Red Whistle since 2014 in order to encourage employees to report on corrupt practices and irregularities by fully guaranteeing their anonymity. In 2018, we added a report menu for Red Whistle in the corporate mobile office application to activate reporting on potential irregularities including sexual harassment, power abuse, etc., based on such a convenient mobile-based reporting means.

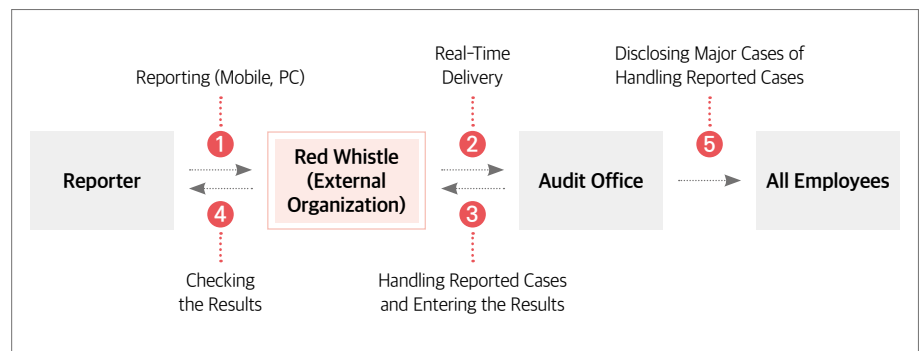
Menu for Red Whistle Reporting



Anonymous Report on Corruption and Irregularities



#### Procedure for Handling Reported Cases



#### What to Report

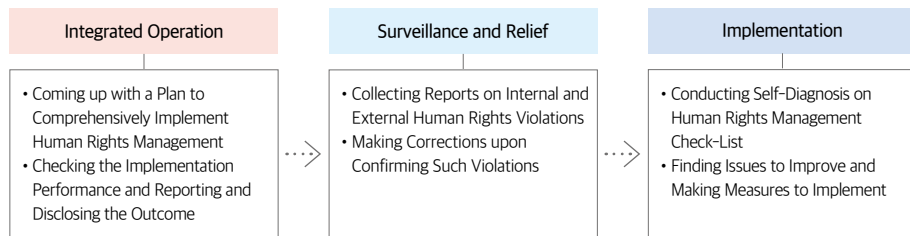
Behaviors to Hinder Fair Work Implementations	Behaviors to Damage Sound Organizational Culture	Behaviors to Violate Information & Security Regulations	Other Unethical Behaviors
Conciliation & Solicitation, Favoritism, Bribery, etc.	Sexual Harassment & Assaults, Power Abuse Practices, etc. in the Workplace	Personal Information Leakage, Job-Related Information Leakage, etc.	Violation of Prohibition of Outside Work, Injuries to Dignity, etc.

# Human Rights Management

## Human Rights Management System

KEPCO respects human rights of the stakeholders including its employees throughout the whole process of operation. We are complying with the Labor Standard Act and International Labor Organization (ILO) regulations such as ‘the convention on the prohibition of child labor’ and ‘the convention on the eradication of forced labor’ and are not discriminating against anyone in regards to gender, race, age, social status, etc. In 2005, we joined the UN Global Compact for the first time among Korean companies. In 2015, we established and announced the Declaration of Human Rights Management in order to be at the forefront of human rights management. In 2018, we systemized human rights management for the expansion and the integrated control and operation of human rights management. To this end, we came up with a plan on the implementation of human rights management to realize social values. In 2019, we plan to implement the integrated operation of human rights management for the internalization of human rights management.

### Human Rights Implementation System



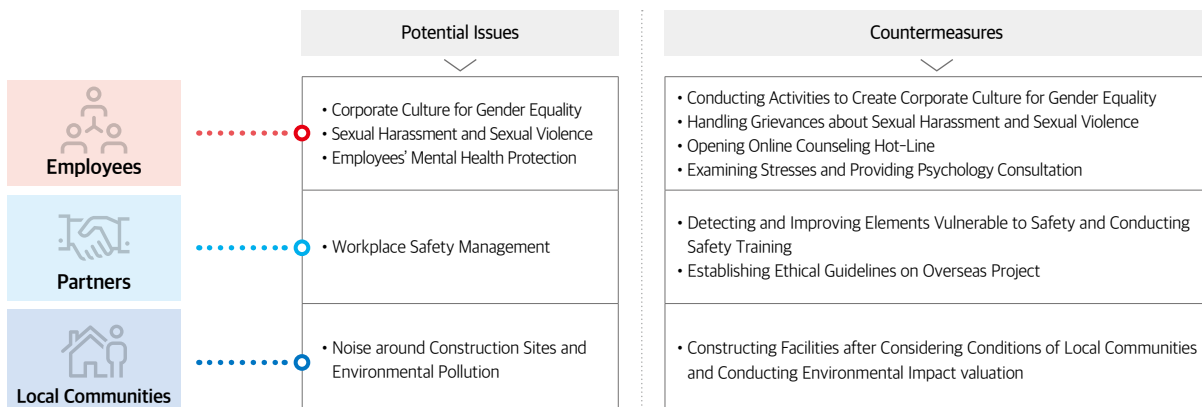
## Creating Environment for Human Rights Protection

### Checking Human Rights Risks by Conducting Self-Diagnosis

KEPCO has self-diagnosed factors that could violate human rights in accordance with human rights management guidelines set by the Anti-Corruption & Civil Rights Commission to prevent human rights risks. By breaking the check-list down to 10 sections and to 33 sub-subsections, we have conducted self-diagnosis based on the check-list, not having a single issue that would infringe human rights. We will continue to conduct self-diagnosis on a regular basis in order to detect human rights risks and make proper countermeasures in advance.

### Detecting and Responding to Human Rights Issues

KEPCO is striving to detect potential issues related to human rights of each of the stakeholders and make proper countermeasures in advance. By looking into issues related with gender equality and safety & health of all employees, human rights violation issues of workers closely interacted with customers and factors that could lead to human rights violations from partners and local communities, we are conducting activities to prevent and alleviate issues related with human rights.





## Handling Grievances about Sexual Harassment and Sexual Violence

KEPCO has a process of handling grievances about sexual harassment and sexual violence. The process of handling issues related with sexual harassment and sexual violence goes through several stages ranging from counseling, to investigation, to deliberation of the Grievance Committee\* and finally to closure.

Training on the  
Prevention of Sexual  
Harassment and  
Sexual Violence



**21,673** People  
**130,038** Hours

### \* Composition and Roles of the Grievance Committee

- Made up of Six Members Including the Chairperson (HQs : HR Head, Divisions : Division Heads)
- Possible to Appoint External Experts on the Prevent of Sexual Harassment and Sexual Violence if Necessary
- Ruling Sexual Harassment and Sexual Violence, Supporting and Protecting Victims and Coming up with Countermeasures

Guidelines to Eradicate Power Abuse  
Practices



## Pushing ahead with Comprehensive Measures to Eradicate Power Abuse Practices

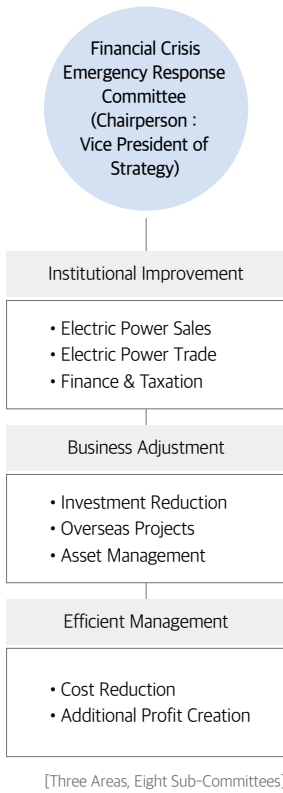
'Power Abuse Practice' is an unfair request or treatment made by a person holding a superior position to the other party by abusing his/her authority or exercising his/her actual influence arising from the superior position in social & economic relations (Power Abuse Eradication Guideline II. Concept and Criteria of Power Abuse). The government announced comprehensive measures to eradicate power abuse practices in the public sector in October, 2018, amended and declared the Labor Standards Act related with the prohibition of bullying at work (Implemented in Jan., 2019/July, 2019) and came up with other policies to get rid of power abuse practices throughout the society. In line with the government's movement, we established 'our own comprehensive measures to eradicate power abuse practices' in cooperation with relevant departments and divisions (Nov., 2018), started to run power abuse reporting centers based on the measures (Oct., 2018), revised the employment rule related with the prohibition of bullying at work (Apr., 2019), set and distributed guidelines on the eradication of power abuse practices (May, 2019) and had each of the departments and divisions of the HQs come up with countermeasure against power abuse practices.

## Operating Report and Support Centers against Power Abuse Practices

We are running the 'Power Abuse Report & Support Center' in order for such victims to report on their cases. These victims of power abuse practices can report to the Center. When their cases are confirmed as true, the corporation can take disciplinary or other proper actions against the victimizers. Furthermore, such victims can ask the corporation for psychology consultation and legal advice or to change workplace to be apart from the victimizers. As of August, 2019, we have not had any of such cases proven true. We will create a culture where employees are mutually respected by conducting education to prevent power abuse practices more than once a year, surveys to find out the actual status of power abuse on a regular basis, and other continuous activities to prevent such practices.

# Risk Management

## Risk Management System



KEPCO has set up risk response systems in order to detect potential risks that could occur in the process of doing business in advance and to make countermeasures. We are proactively managing risks by detecting not only financial & non-financial risks but also potential risks that could have negative effects on business activities.

### Financial Risk Management

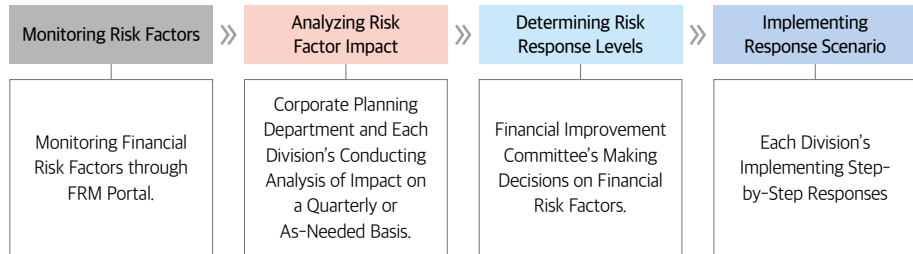
KEPCO secures financial stability by proactively responding to financial risks. We continue to improve financial risk monitoring and managing systems throughout the corporation. In particular, we have expanded and reorganized the existing Financial Improvement Committee into the Financial Crisis Emergency Response Committee chaired by the vice president of the Strategy Department. In 2018, the Committee, with 28 members working in its eight subcommittees, played a role as a control tower of financial risk management.

**Roles and Main Activities of the Financial Crisis Emergency Response Committee**

**Building Plans on Each of the Areas (Efficient Management, Institutional Improvement and Business Adjustment) and Periodically Checking the Implementation**

- Operating a Task Force to Unify Corporate-Wide Capabilities
  - Made up of Eight Subcommittees in Three Areas of Institutional Improvement, Business Adjustment and Efficient Management
- Establishing Swift Response Systems by Building Contingency Plans on Each of the Crisis Circumstances

### Risk Factor Monitoring Process



### Responses to Each Risks

Classification	Risk Analysis	Responding and Improving Activities
Market Risk	Purchase cost increasing due to changing market conditions (e.g. rising fuel price and policy cost).	<ul style="list-style-type: none"> <li>Improving Market System in Relation to Environmental Cost : RPS<sup>1)</sup>, Stabilizing Emission Cost</li> <li>Improving Power Generation Cost Estimation Standards : Estimation Adjustment Coefficient, VC<sup>2)</sup>, etc</li> </ul>
Rate Risk	Rate system needing to be adjusted in response to the government's energy policy.	<ul style="list-style-type: none"> <li>Stabilizing Industrial Rates : Take into Account Supply Cost and Demand Management</li> <li>Building a Foundation for Introducing Purchase Cost Coordination : Analyze Overseas Operations, Consulting, etc</li> </ul>
Financial Risk	Volatility of financial market increasing due to rising interest rate in the U.S. and strong KRW.	<ul style="list-style-type: none"> <li>Strengthening Financial Management : Customizing New Financial Resources, Procuring at a Fixed Rate</li> <li>Responding to Foreign Exchange Risk : Establishing Proactive Response Systems, Adjusting Foreign Currency Finance Limits, etc</li> </ul>
Profit & Loss Risk	Profit and loss fluctuating due to oil price and exchange rate.	<ul style="list-style-type: none"> <li>Tightening Consolidated Profit &amp; Loss Prospect                             <ul style="list-style-type: none"> <li>Implementing Actions to Improve Consolidated Financial Risks including Those of Subsidiaries</li> </ul> </li> </ul>
Investment Risk	Overseas investment environment continuing to change.	<ul style="list-style-type: none"> <li>Modifying Investment Strategies : Minimizing Investments in Facility Reinforcement. Reviewing Facility, etc</li> </ul>

1) RPS : Renewable Portfolio Standard  
 2) VC : Vesting Contract

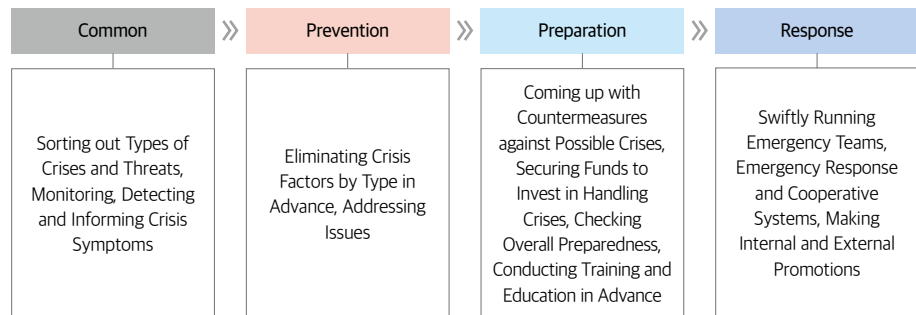
### Non-Financial Risk Management

KEPCO has established management systems not only for financial risks but also non-financial risks arising from environment, safety, disaster and conflict in order to take preemptive and active countermeasures against any possible major issues. By establishing our own guidelines on risk management, we are managing risks from four main areas through the task force under the Safety & Security Department. In addition, we have built and are operating 'Risk Management Portal' to take efficient actions for managing risks. We have also secured the business continuity and capabilities to swiftly respond to any possible major issues by drawing up practical manuals on risk management.

#### Areas of Risk Management

Areas	>	Climate Change	Disaster	Promotion	Conflict
Risk Types	>	<ul style="list-style-type: none"> <li>Accelerated Climate Changes</li> <li>Environment-Related Risks including Greenhouse Gas Reduction, Carbon Management, Water, Green Management, etc.,</li> </ul>	<ul style="list-style-type: none"> <li>Interruption of Power Supply due to Power Grid Failures</li> <li>Interruption of Power Supply due to Cyber Attacks</li> <li>Interruption of Power Supply due to Disasters and Earthquakes</li> <li>Outbreak of Infectious Diseases</li> </ul>	<ul style="list-style-type: none"> <li>PR Activities in Response to Power Crisis</li> <li>Damages to Corporate Reputation due to Corruptions related to Employees</li> </ul>	<ul style="list-style-type: none"> <li>Civil Complaints on Transmission &amp; Distribution Facilities</li> <li>Interruption of Power Supply due to Social Issues</li> </ul>

#### Risk Management Process



### Potential Risk Management

KEPCO defines risks that could have negative effects on the business management in the long term as potential risks, analyzes their impact on the business management and carries out activities to alleviate such risks.

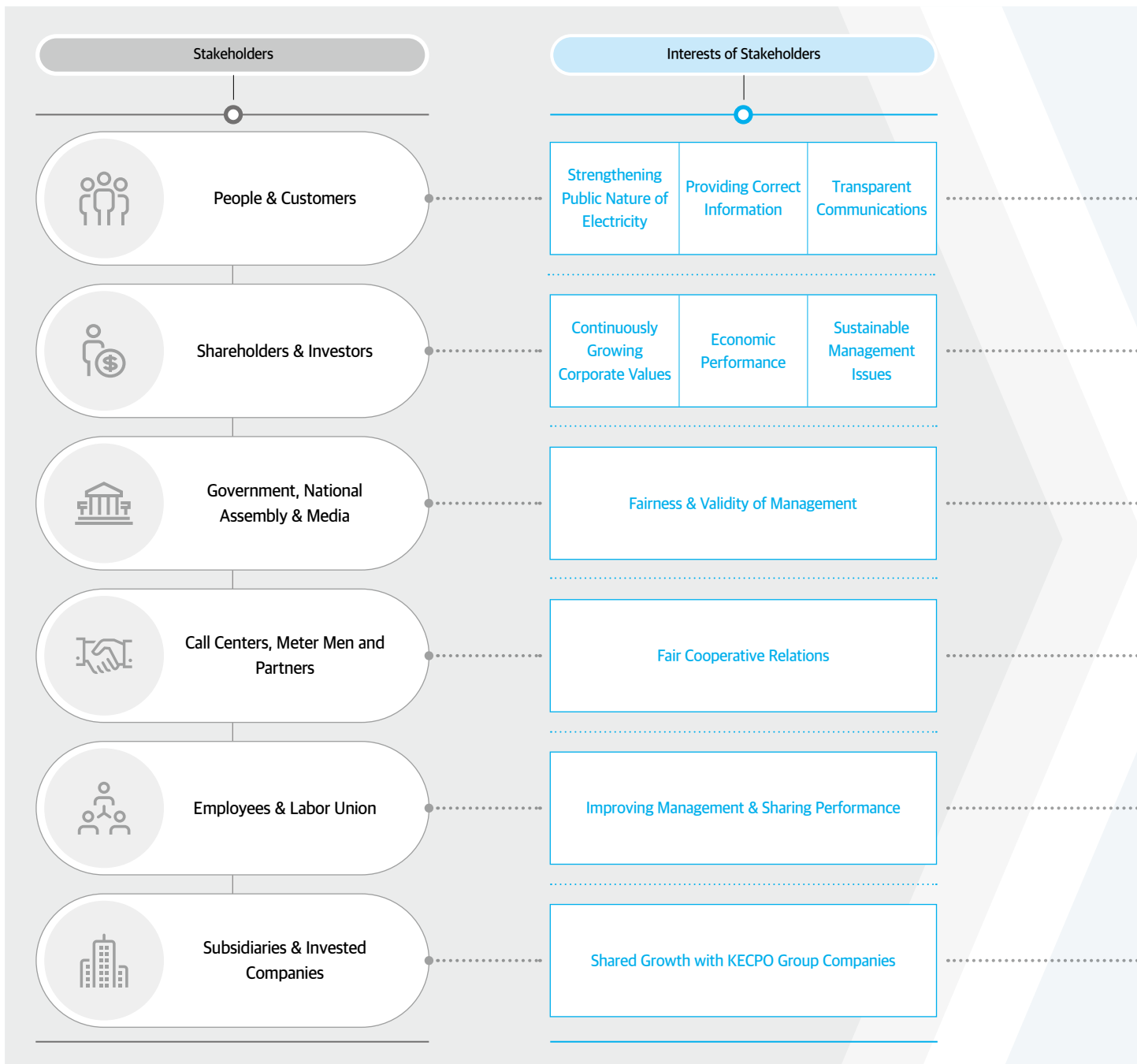
Potential Risks	Effect Risks would Have on the Business Management	Ways of Alleviating Risks
Financial and Market Risks due to Climate Change Responses, Various Environmental Regulations and Policy Changes	<ul style="list-style-type: none"> <li>Incurring Policy Implementation Costs and Financial Burdens due to the Increase in New &amp; Renewable Power Generation</li> <li>Affecting the Market Status due to the Advancement into New Energy Markets</li> </ul>	<ul style="list-style-type: none"> <li>Building a Task Force (Climate Change Response Department) in Responding to Climate Changes</li> <li>Establishing Cooperative Response Systems among KEPCO Group Companies</li> <li>Responding to Emissions Trading, Reducing Energy and Greenhouse Gases</li> <li>Commercializing CCUS, Securing SF<sub>6</sub> Reduction Technologies, Developing Eco-Friendly Technologies</li> </ul>
Risks due to the Increase in Cyber Attacks	<ul style="list-style-type: none"> <li>Weakening Power ICT Facilities and Power Supply System Stability due to Cyber Attacks</li> </ul>	<ul style="list-style-type: none"> <li>Drawing up and Conducting Manuals in Response to Power Supply Errors due to Cyber Attacks (Describing Detailed Countermeasures for Each Level of the Cyber Attacks)</li> </ul>

# Stakeholder Engagement

## Classification of Stakeholders

In 2019, KEPCO reformed the classification of its stakeholders to increase their understandings of the electric power industry and lay the groundwork for sustainable innovation based on expanded communications with them. By reflecting conditions of the electric power industry and changes in communication circumstances, we have restructured the classification of our stakeholders. And, we are running communication channels corresponding to features and concerns of each of the stakeholder groups in order to listen to various opinions of our stakeholders.

### Laying the Foundation for Communications with Stakeholders



## Communicating with Stakeholders

KEPCO is sharing issues confirmed through various communication channels and opinions of stakeholders with the management and the BOD in conducting business management activities. We are continuously monitoring issues and giving relevant feedbacks by having meetings with the management to share information on current issues on a weekly basis and reporting to the BOD when facing major issues. When having major issues in relation to construction of transmission & distribution facilities, power supply crises in summer and winter and so forth, the CEO makes visits and communicates with concerned parties.

Direction of Communication	Communication Channels
<ul style="list-style-type: none"> <li>Strengthening Public Nature through People's Participation and Cooperation in the Innovation Process</li> <li>Enhancing Power Service Quality by Listening to People's Opinions</li> <li>Enhancing the Implementation of Main Innovation Issues by Listening to People's Opinions</li> </ul>	<ul style="list-style-type: none"> <li>Asking for Ideas on the Innovation of Cloud Sourcing</li> <li>Cyber Branch (Smart KEPCO), Online Public Communication Panels</li> <li>Gathering Ideas from the People</li> </ul>
<ul style="list-style-type: none"> <li>Rationally Addressing Conflicts through Participation of Various Stakeholders</li> </ul>	<ul style="list-style-type: none"> <li>Conflict Management Committee</li> <li>Electricity Civil Complaint Deliberation Committee</li> </ul>
<ul style="list-style-type: none"> <li>Proactively providing Information</li> <li>Managing Risks</li> </ul>	<ul style="list-style-type: none"> <li>IR Presentation</li> <li>General Meetings of Shareholders</li> <li>Disclosure</li> </ul>
<ul style="list-style-type: none"> <li>Proactively Implementing Government's Policies and Enhancing the Comprehension of the Power Industry</li> </ul>	<ul style="list-style-type: none"> <li>Holding Presentations on Current Issues, Reporting Businesses, Having Meetings with Heads of Org</li> <li>Policy Forums, etc.,</li> </ul>
<ul style="list-style-type: none"> <li>Providing Transparent &amp; Accurate Information and Conducting Promotional Campaigns on Customer Services for the Public</li> </ul>	<ul style="list-style-type: none"> <li>Press Conferences, Special Features, Contributions</li> </ul>
<ul style="list-style-type: none"> <li>Improving Working Conditions, Strengthening Cooperation for Customer Service Innovation</li> <li>Securing Transparency and Fairness for Temp-to-Perm Conversion System</li> </ul>	<ul style="list-style-type: none"> <li>Meeting with Working-Level Employees</li> <li>Council made up of the Corporation, Labor Union and Experts</li> </ul>
<ul style="list-style-type: none"> <li>Creating Win-Win Relations with Partners by Addressing Their Grievances</li> </ul>	<ul style="list-style-type: none"> <li>Debates, Hearings and On-Site VOC</li> </ul>
<ul style="list-style-type: none"> <li>Creating Outstanding Business Outcomes by Sharing Visions and Fostering Cooperation</li> </ul>	<ul style="list-style-type: none"> <li>Corporate-Wide Debates</li> <li>Reporting Systems</li> </ul>
<ul style="list-style-type: none"> <li>Enhancing Mutual Understanding by Strengthening On-site Communications on Current Business Issues</li> </ul>	<ul style="list-style-type: none"> <li>Presentation on Various Current Issues and Talk Concerts</li> </ul>
<ul style="list-style-type: none"> <li>Improving Business Performance by Jointly Responding to and Cooperating for Current Issues of KEPCO Group Companies</li> </ul>	<ul style="list-style-type: none"> <li>Meetings with the Heads of KEPCO Group Companies and Meeting with Chief Officers of Business Planning Departments</li> </ul>
<ul style="list-style-type: none"> <li>Establishing Cooperative Measures to Reduce Greenhouse Gases and Find Dust</li> </ul>	<ul style="list-style-type: none"> <li>Working-Level Working Groups</li> </ul>

# Materiality Assessment

## Materiality Assessment Process

KEPCO has analyzed international standards, benchmarked sustainable management practices of advanced companies, researched the media and conducted surveys of stakeholders in order to find out major topics related with its sustainable management. And then, we have comprehensively analyzed areas in which stakeholders are interested and business impact through materiality evaluation in order to reason out major topics.



### Forming a Pool of Issues

We have formed a pool of issues by considering the economic, environmental and social impacts on the overall business activities or stakeholders' evaluation and their impact on making decisions as well as analyzing international standards, benchmarking global companies and researching the media.



### Reasoning out Major Topics

In order to find out the priority of major topic pools that were reasoned out, we have conducted surveys of our customers, employees, partners and other stakeholders. Based on the results, we have figured out the company's current status of sustainable management. Through materiality evaluation, we have analyzed impacts on stakeholders' decision-making and business relevance to select 10 major topics that should be continuously managed.

<p><b>Summary of Surveys Conducted by Stakeholders</b></p>	<table border="1"> <tr> <td>Period</td> <td>July 09, 2019-July 15, 2019</td> </tr> <tr> <td>Targets</td> <td>Customers, Employees, Partners, Local Communities, Experts on Sustainable Management, etc.</td> </tr> <tr> <td>Results</td> <td>1,576 Respondents</td> </tr> </table>	Period	July 09, 2019-July 15, 2019	Targets	Customers, Employees, Partners, Local Communities, Experts on Sustainable Management, etc.	Results	1,576 Respondents
Period	July 09, 2019-July 15, 2019						
Targets	Customers, Employees, Partners, Local Communities, Experts on Sustainable Management, etc.						
Results	1,576 Respondents						



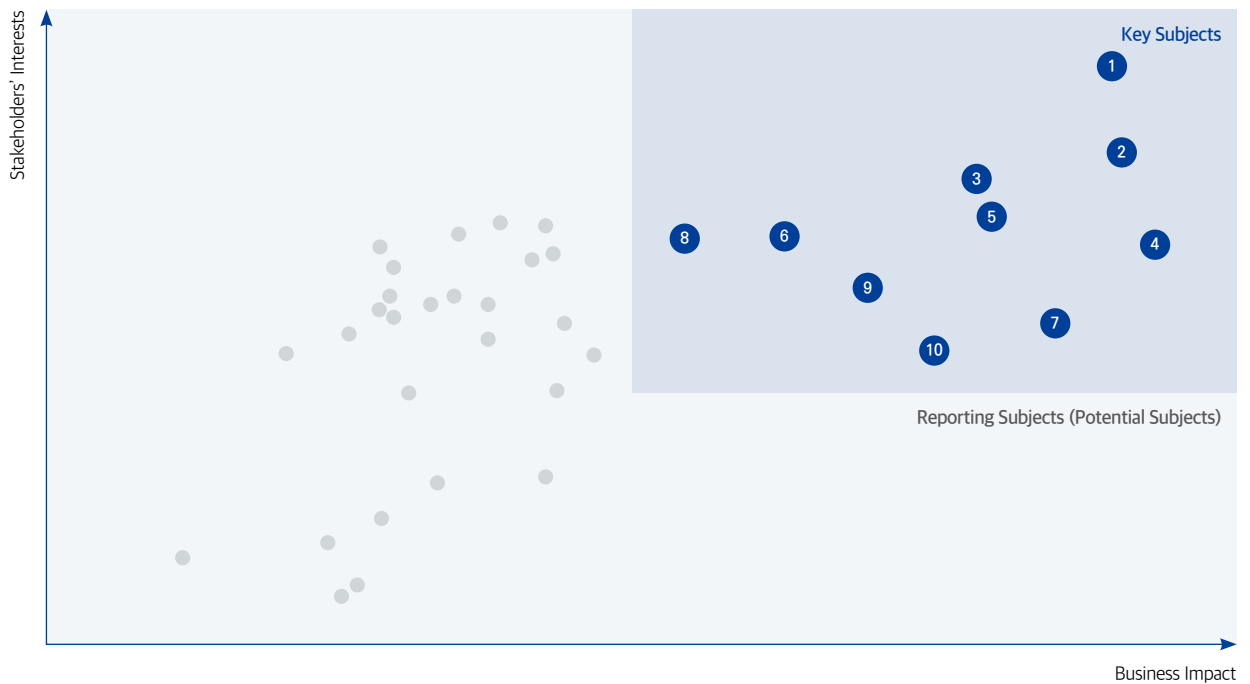
### Deciding the Table of Contents of Major Topic Report

By taking into consideration significance, scope, lateral boundaries, reporting periods, reporting limits, etc. of those 10 topics selected through materiality evaluation, we have drafted the table of contents of this report. At the same time, we have also decided the topic boundary after considering the corporate impacts, business Value Chains, etc.

## Results of Materiality Assessment

We have selected a total of 10 topics after based on our stakeholders' interests and business relevance. The finally-selected major issues are divided into four main sections of the TOC to transparently disclose our activities and outcomes in relation to sustainable management.

Materiality Map



No	Major Topics	GRI Topic	Evaluating Impact of Issues			Table of Contents	Pages
			Profitability/ Cost	Market Status	Risk Management		
1	Making Social Contributions based on the Power Industry	Local Communities	□	■	□	Achieving Social Values	p.44-61
2	Building Trust Relationship with Local Communities	Local Communities	□	■	□	Achieving Social Values	p.44-61
3	Conducting Ethical Management and Strengthening Anti-Corruption Systems	Anti-Corruption	□	■	■	Achieving Social Values	p.44-61
4	Enhancing the Efficiency of Energy Consumption	Energy	■	□	□	Responding to Climate Changes	p.16-23
5	Stably Supplying Power and Increasing Acceptability of Facilities	Economic Performance	□	□	■	Innovating on Power Supply Infrastructures and Services	p.24-31
6	Systematically Managing and Reducing Greenhouse Gas Emissions	Emission	□	■	□	Responding to Climate Changes	p.16-23
7	Making Countermeasures against Climate Changes in Accordance with International Standards	Emission	□	■	□	Responding to Climate Changes	p.16-23
8	Enhancing Financial Stability by Improving Financial Status	Economic Performance	■	□	□	Creating Future Growth Engines	p.32-43
9	Creating Profits from New Industries in the Energy Sector and Leading Relevant Industries	Economic Performance	■	□	□	Creating Future Growth Engines	p.32-43
10	Balancing Work and Life	Employment	□	■	□	Achieving Social Values	p.44-61

# APPENDIX



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101	Memberships and Awards
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# Sustainability Data

## Economy

The 58<sup>th</sup> : As of Dec. 31, 2018The 57<sup>th</sup> : As of Dec. 31, 2017The 56<sup>th</sup> : As of Dec. 31, 2016

### Consolidated Statement of Financial Position

(Unit : KRW 1 Million)

	The 58 <sup>th</sup>	The 57 <sup>th</sup>	The 56 <sup>th</sup>
<b>Assets</b>			
<b>Current assets</b>	19,745,068	19,141,707	19,708,526
Cash and cash equivalents	1,358,345	2,369,739	3,051,353
Current financial assets	2,359,895	1,958,357	2,671,989
Trade receivables and other receivables	7,793,592	7,928,972	7,788,876
Inventory assets	7,188,253	6,002,086	5,479,443
Current corporate tax assets	143,214	100,590	19,163
Current non-financial assets	878,888	753,992	631,860
Estimated selling assets	22,881	27,971	65,842
<b>Non-current assets</b>	165,503,993	162,647,208	158,128,516
Non-current financial assets	2,113,613	2,038,913	2,657,494
Long-term trade receivables and other receivables	1,819,845	1,754,797	1,903,515
Tangible assets	152,743,194	150,882,414	145,743,056
Invested properties	159,559	284,714	353,680
Goodwill	2,582	2,582	2,582
Intangible assets except goodwill	1,225,942	1,187,121	980,821
Invested shares of associates	4,064,820	3,837,421	4,092,252
Invested shares of joint ventures	1,813,525	1,493,275	1,418,196
Deferred corporate tax assets	1,233,761	919,153	795,131
Non-current non-financial assets	327,152	246,818	181,789
<b>Total assets</b>	185,249,061	181,788,915	177,837,042
<b>Liabilities</b>			
<b>Current liabilities</b>	21,841,533	23,424,281	24,739,226
Trade payables and other payables	6,405,395	5,999,521	5,585,411
Current financial liabilities	7,981,879	9,194,552	8,942,329
Current corporate tax liabilities	285,420	508,402	1,843,288
Current non-financial liabilities	5,574,041	5,584,308	6,368,210
Current provisions	1,594,798	2,137,498	1,999,988
<b>Non-current liabilities</b>	92,314,766	85,399,993	80,047,271
Long-term trade payables and other payables	2,941,696	3,223,480	3,558,175
Non-current financial liabilities	53,364,911	45,980,899	44,835,562
Non-current non-financial liabilities	8,160,033	8,072,434	7,591,605
Employee benefits liabilities	1,645,069	1,483,069	1,686,258
Deferred corporate tax liabilities	9,617,309	10,415,397	8,948,520
Non-current provisions	16,585,748	16,224,714	13,427,151
<b>Total liabilities</b>	114,156,299	108,824,274	104,786,497
<b>Equity</b>			
<b>Equity attributable to the owner of the parent</b>	69,743,925	71,681,445	71,723,693
<b>Paid-in capital</b>	4,053,578	4,053,578	4,053,578
Capital share	3,209,820	3,209,820	3,209,820
Capital in excess of par value	843,758	843,758	843,758
<b>Retained earnings</b>	51,519,119	53,370,558	53,173,871
Legal reserve	1,604,910	1,604,910	1,604,910
Free reserve	35,906,267	34,833,844	31,847,275
Unappropriated retained earnings	14,007,942	16,931,804	19,721,686
<b>Other components of equity</b>	14,171,228	14,257,309	14,496,244
Other capital surpluses	1,234,825	1,233,793	1,235,146
Accumulated other comprehensive income	-358,570	-271,457	-33,875
Other equity	13,294,973	13,294,973	13,294,973
<b>Non-controlling interest</b>	1,348,837	1,283,196	1,326,852
<b>Total equity</b>	71,092,762	72,964,641	73,050,545
<b>Total equity and liabilities</b>	185,249,061	181,788,915	177,837,042

The 58<sup>th</sup> : Jan. 01, 2018 - Dec. 31, 2018The 57<sup>th</sup> : Jan. 01, 2017 - Dec. 31, 2017The 56<sup>th</sup> : Jan. 01, 2016 - Dec. 31, 2016

## Consolidated Comprehensive Statements of Income

(Unit : KRW 1 Million)

	The 58 <sup>th</sup>	The 57 <sup>th</sup>	The 56 <sup>th</sup>
<b>Earnings (Sales proceeds)</b>	<b>60,627,610</b>	<b>59,814,862</b>	<b>60,190,384</b>
Sales proceeds from selling goods	57,897,804	55,772,548	55,379,487
Sales proceeds from providing services	392,867	351,157	356,743
Sales proceeds from construction contracts	1,742,391	3,212,184	4,026,857
Sales proceeds from customers' contribution to construction costs	594,548	478,973	427,297
<b>Cost of sales</b>	<b>58,207,721</b>	<b>52,098,855</b>	<b>45,549,553</b>
Cost of sales from selling goods	55,976,628	48,454,036	41,237,372
Cost of sales from providing services	592,224	597,423	557,037
Cost of sales from construction contracts	1,638,869	3,047,396	3,755,144
<b>Gross profit</b>	<b>2,419,889</b>	<b>7,716,007</b>	<b>14,640,831</b>
<b>Selling and administrative expenses</b>	<b>2,627,890</b>	<b>2,762,855</b>	<b>2,639,232</b>
<b>Operating income (loss)</b>	<b>-208,001</b>	<b>4,953,152</b>	<b>12,001,599</b>
<b>Other earnings</b>	<b>375,346</b>	<b>390,145</b>	<b>412,887</b>
<b>Other expenses</b>	<b>231,330</b>	<b>180,055</b>	<b>188,624</b>
<b>Other income (loss)</b>	<b>-621,124</b>	<b>156,627</b>	<b>70,498</b>
<b>Financial income</b>	<b>796,870</b>	<b>1,530,618</b>	<b>791,543</b>
<b>Financial cost</b>	<b>2,470,743</b>	<b>3,127,952</b>	<b>2,437,087</b>
<b>Income (loss) in relation to associates, joint ventures and subsidiaries</b>	<b>358,163</b>	<b>-108,317</b>	<b>-137,348</b>
Profits on valuation of invested shares of associates and joint ventures	473,269	241,537	224,435
Profits on disposition of invested shares of associates and joint ventures	5,079	609	52
Profits on disposition of invested shares of subsidiaries	73	0	0
Loss on valuation of invested shares of associates and joint ventures	-110,168	-323,225	-243,361
Loss on disposition of invested shares of associates and joint ventures	-2,183	0	-2,935
Impairment loss on invested shares of associates and joint ventures	-7,907	-27,238	-115,539
<b>Net income (loss) before income tax</b>	<b>-2,000,819</b>	<b>3,614,218</b>	<b>10,513,468</b>
<b>Income tax expense</b>	<b>-826,321</b>	<b>2,172,824</b>	<b>3,365,141</b>
<b>Profit (loss) for the year</b>	<b>-1,174,498</b>	<b>1,441,394</b>	<b>7,148,327</b>
<b>Other comprehensive income (loss)</b>	<b>-106,925</b>	<b>-94,716</b>	<b>-2,302</b>
Items that will not be reclassified subsequent to income (loss)	-143,507	180,404	-78,441
Re-measurements of defined benefit plans	-108,169	170,337	-75,926
Shares of other comprehensive income (loss) of associates and joint ventures subjected to equity method	-1,153	10,067	-2,515
Other comprehensive income (loss)-valuation loss (gain) of financial asset at fair value	-34,185	0	0
Items that will be reclassified subsequent to income (loss)	36,582	-275,120	76,139
Valuation loss (gain) of available-for-sale financial assets (other comprehensive income (loss) after tax)	0	-7,098	61,279
Cash flow hedges (other comprehensive income (loss) after tax)	211	20,868	28,414
Difference in overseas business transaction exchanges	-20,717	-134,196	41,360
Shares of other comprehensive income (loss) of associates and joint ventures subjected to equity method (other comprehensive income (loss) after tax)	57,088	-154,694	-54,914
<b>Total comprehensive income</b>	<b>-1,281,423</b>	<b>1,346,678</b>	<b>7,146,025</b>
<b>Net income (loss) attributable to:</b>			
Current income (loss) attributable to the owner of the parent	-1,314,567	1,298,720	7,048,581
Current income attributable to non-controlling interest	140,069	142,674	99,746
<b>Comprehensive income (loss) attributable to:</b>			
Comprehensive income attributable to the owner of the parent	-1,426,477	1,230,194	7,041,557
Comprehensive income attributable to non-controlling interest	145,054	116,484	104,468
<b>Earnings per share</b>			
Basic earnings (loss) per share (unit : KRW)	-2,048	2,023	10,980
Diluted earnings (loss) per share (unit : KRW)	-2,048	2,023	10,980

# Sustainability Data

## Economy

The 58<sup>th</sup>: Jan. 01, 2018 - Dec. 31, 2018The 57<sup>th</sup>: Jan. 01, 2017 - Dec. 31, 2017The 56<sup>th</sup>: Jan. 01, 2016 - Dec. 31, 2016

### Consolidated Statement of Changes in Equity

(Unit : KRW 1 Million)

	Equity					Total equity
	Equity attributable to the owner of the parent				Non-controlling interests	
	Paid-in capital	Earned surplus	Other equity	Total equity attributable to the owner of the parent		
<b>Jan. 01, 2016 (Beginning capital)</b>	4,053,578	48,187,241	14,393,648	66,634,467	1,308,008	67,942,475
Current net income		7,048,581		7,048,581	99,746	7,148,327
Other comprehensive income that will not be reclassified subsequent to income						
Re-measurements of defined benefit plans		-69,330		-69,330	-6,596	-75,926
Shares of other comprehensive income of associates and joint ventures subjected to equity method		-2,532		-2,532	17	-2,515
Other comprehensive income that will be reclassified subsequent to income						
Valuation loss (gain) of available-for-sale financial assets			61,275	61,275	4	61,279
Valuation loss (gain) of derivatives for cash flow hedges			27,075	27,075	1,339	28,414
Difference in overseas business transaction exchanges			31,406	31,406	9,954	41,360
Shares of other comprehensive income of associates and joint ventures subjected to equity method			-54,918	-54,918	4	-54,914
Transaction with shareholders						
Dividends paid		-1,990,089		-1,990,089	-99,982	-2,090,071
Paid-in capital increase, etc			1,750	1,750	14,809	16,559
Changes in consolidated entities other than paid-in capital increase and			36,008	36,008	12,299	48,307
Changes in consolidated entities					3,705	3,705
Dividends of hybrid securities					-16,455	-16,455
<b>Dec. 31, 2016 (Ending capital)</b>	4,053,578	53,173,871	14,496,244	71,723,693	1,326,852	73,050,545
<b>Jan. 1, 2017 (Beginning capital)</b>	4,053,578	53,173,871	14,496,244	71,723,693	1,326,852	73,050,545
Current net income		1,298,720		1,298,720	142,674	1,441,394
Other comprehensive income that will not be reclassified subsequent to income						
Re-measurements of defined benefit plans		158,991		158,991	11,346	170,337
Shares of other comprehensive income of associates and joint ventures subjected to equity method		10,065		10,065	2	10,067
Other comprehensive income that will be reclassified subsequent to income						
Valuation loss (gain) of available-for-sale financial assets			-7,102	-7,102	4	-7,098
Valuation loss (gain) of derivatives for cash flow hedges			19,614	19,614	1,254	20,868
Difference in overseas business transaction exchanges			-95,103	-95,103	-39,093	-134,196
Shares of other comprehensive income of associates and joint ventures subjected to equity method			-154,991	-154,991	297	-154,694
Transaction with shareholders						
Dividends paid		-1,271,089		-1,271,089	-70,252	-1,341,341
Paid-in capital increase, etc			-1,378	-1,378	18,381	17,003
Changes in consolidated entities					7,337	7,337
Dividends of hybrid securities					-15,856	-15,856
Repayments of hybrid securities					-99,750	-99,750
Other transactions			25	25		25
<b>Dec. 31, 2017 (Ending capital)</b>	4,053,578	53,370,558	14,257,309	71,681,445	1,283,196	72,964,641

(Unit : KRW 1 Million)

	Equity					Total equity
	Equity attributable to the owner of the parent				Non-controlling interests	
	Paid-in capital	Earned surplus	Other equity	Total equity attributable to the owner of the parent		
Jan. 1, 2018 (Beginning capital)	4,053,578	53,370,558	14,257,309	71,681,445	1,283,196	72,964,641
Increase (decrease) due to changes in accounting policies		71,928	(76,851)	(4,923)		(4,923)
Beginning capital (after changes)	4,053,578	53,442,486	14,180,458	71,676,522	1,283,196	72,959,718
Current net income (loss)		-1,314,567		-1,314,567	140,069	-1,174,498
Other comprehensive income that will not be reclassified subsequent to income						
Re-measurements of defined benefit plans		-100,495		-100,495	-7,674	-108,169
Shares of other comprehensive income of associates and joint ventures subjected to equity method		-1,153		-1,153		-1,153
Other comprehensive income (loss)-valuation loss (gain) of financial asset at fair value			(34,125)	(34,125)	(60)	(34,185)
Other comprehensive income that will be reclassified subsequent to income						
Valuation loss (gain) of derivatives for cash flow hedges			-1,140	-1,140	1,351	211
Overseas business transaction exchange difference			-32,086	-32,086	11,369	-20,717
Shares of other comprehensive income of associates and joint ventures subjected to equity method			57,089	57,089	-1	57,088
Transaction with shareholders						
Dividends paid		-507,152		-507,152	-92,741	-599,893
Paid-in capital increase, etc			1,032	1,032	17,183	18,215
Changes in consolidated entities					9,530	9,530
Dividends of hybrid securities					-13,385	-13,385
Dec. 31, 2018 (Ending capital)	4,053,578	51,519,119	14,171,228	69,743,925	1,348,837	71,092,762

# Sustainability Data

## Economy

The 58<sup>th</sup>: Jan. 01, 2018 - Dec. 31, 2018  
 The 57<sup>th</sup>: Jan. 01, 2017 - Dec. 31, 2017  
 The 56<sup>th</sup>: Jan. 01, 2016 - Dec. 31, 2016

### Consolidated Statement of Cash Flows

(Unit : KRW 1 Million)

	The 58 <sup>th</sup>	The 57 <sup>th</sup>	The 56 <sup>th</sup>
<b>Cash flows from operating activities</b>	<b>6,680,132</b>	<b>11,249,894</b>	<b>16,520,552</b>
Current net income (loss)	-1,174,498	1,441,394	7,148,327
<b>Total adjustment to reconcile income (loss)</b>	<b>13,129,849</b>	<b>16,492,940</b>	<b>16,694,332</b>
Corporate tax expenses	-826,321	2,172,824	3,365,141
Depreciation	9,905,856	9,660,039	8,881,273
Amortization on intangible assets	118,938	113,672	79,715
Retirement allowance	360,575	391,360	373,753
Bad debt expenses	57,468	126,326	37,815
Interest expenses	1,868,458	1,789,552	1,752,868
Loss on disposition of financial assets	1	2,343	9
Loss on disposition of tangible assets	60,704	70,514	4,996
Loss on destruction of tangible assets	481,176	424,091	426,519
Impairment loss on tangible assets	710,162	51,067	0
Impairment loss on intangible assets	8,112	20	3,945
Impairment loss on intangible assets	43	183	158
Loss on disposition of intangible assets	1,056,994	1,690,120	1,782,732
Provision for allowances	243,378	-902,878	253,468
Current gains (losses)-valuation gains of financial asset at fair value	-8,495	0	0
Current gains (losses)-valuation losses of financial asset at fair value	6,616	0	0
Gains (losses) on derivatives	-300,500	1,043,628	-231,630
Profits on valuation of invested shares of associates and joint ventures	-363,101	81,688	18,926
Profits on disposition of financial assets	-1,838	-1,130	-1,482
Profits on disposition of tangible assets	-98,077	-48,316	-74,035
Profits on disposition of intangible assets	-12	-564	0
Profits on disposition of invested shares of associates and joint ventures	-5,079	-609	-52
Loss on disposition of invested shares of associates and joint ventures	2,183	0	2,935
Impairment loss on invested shares of associates and joint ventures	7,907	27,238	115,539
Profits on disposition of invested shares of subsidiaries	-72	0	0
Interest revenues	-223,767	-206,143	-241,778
Dividends income	-12,777	-11,477	-9,446
Impairment loss on available-for-sale financial assets	0	2,713	86,703
Others	81,317	16,679	66,260
<b>Changes in assets and liabilities due to operating activities</b>	<b>-3,134,434</b>	<b>-2,683,657</b>	<b>-2,233,143</b>
Decrease (increase) of trade receivables	246,755	-218,328	200,529
Decrease (increase) of other trade receivables	154,580	-31,807	-68,322
Decrease (increase) of uncollected income	-484,718	577,838	69,151
Decrease (increase) of other securities	-61,961	-1,271	10,093
Decrease (increase) of other current assets	-148,509	37,576	-259,492
Decrease (increase) of inventory assets	-1,771,550	-1,373,438	-1,439,545
Increase of other non-current assets	-54,148	-46,079	-2,792
Increase (decrease) of trade payables	478,744	342,126	141,994
Increase (decrease) of payables	-292,912	-214,704	-8,379
Increase (decrease) of accrued expenses	-361,204	-715,305	-153,172
Increase (decrease) of other payables	0	292	0
Increase (decrease) of other current liabilities	250,112	-126,323	284,417
Increase (decrease) of other non-current liabilities	287,488	763,958	809,699
Decrease of invested shares of associates and joint ventures	175,175	106,983	75,407
Increase (decrease) of provisions	-1,132,969	-1,390,606	-1,527,129
Payment of retiring benefit	-89,253	-69,489	-53,477
Paid-in plan assets	-330,064	-325,080	-312,125

(Unit : KRW 1 Million)

	The 58 <sup>th</sup>	The 57 <sup>th</sup>	The 56 <sup>th</sup>
Reception of dividends	11,182	10,590	10,294
Payment of interest	-1,895,898	-1,886,303	-2,041,379
Reception of interest	194,221	173,226	240,878
Payment of corporate tax	-450,290	-2,298,296	-3,298,757
Cash flows from investing activities	-13,014,301	-12,606,699	-9,645,870
Disposition of invested assets of associates	1,617	10,542	46,644
Acquisition of invested assets of associates	-319,425	-206,753	-113,222
Disposition of tangible assets	234,138	85,801	207,960
Acquisition of tangible assets	-12,266,870	-12,535,958	-12,028,789
Dispositions of intangible assets	13	1,072	430
Acquisition of intangible assets	-110,587	-143,887	-124,422
Disposition of financial assets	2,419,259	5,296,680	10,876,017
Acquisition of financial assets	-2,841,651	-4,786,717	-8,130,621
Increase of loans	-188,675	-218,698	-206,092
Decrease of loans	100,010	120,967	117,561
Increase of guarantee money	-299,564	-397,078	-468,734
Decrease of guarantee money	259,930	110,383	161,166
Disposition of assets held- for- sale	18,716	0	0
Reception of government subsidies	30,416	55,533	32,878
Net cash flows (in and out) due to changes of the scope of consolidation	2,141	0	3,754
Net cash flows (in and out) due to other investing activities	-53,769	1,414	-20,400
Cash flows from financing activities	5,301,678	745,594	-7,637,476
Net borrowing short-term loans (repayment)	-183,660	370,328	-49,604
Bonds and borrowing long-term loans	14,251,586	10,098,067	2,302,060
Repayment of bonds and long-term loans	-8,095,590	-8,198,882	-7,750,047
Repayment of capital lease liabilities	-134,454	-122,919	-118,215
Net settlement of derivatives	60,907	33,434	73,246
Net cash inflows from consolidated capital transactions	20,113	23,582	10,538
Cash outflows due to repayment of hybrid securities	0	-99,750	0
Dividends paid for hybrid securities	-17,658	-15,856	-16,455
Dividends paid	-599,391	-1,340,387	-2,088,429
Net cash outflows from other financing activities	-175	-2,023	-570
Net increase (decrease) of cash and cash equivalents before reflecting the effects of changes in foreign exchange rates	-1,032,491	-611,211	-762,794
Effects of changes in foreign exchange rates on cash and cash equivalent inflows	21,097	-70,403	31,082
Net increase (decrease) of cash and cash equivalents	-1,011,394	-681,614	-731,712
Beginning cash and cash equivalents	2,369,739	3,051,353	3,783,065
Ending cash and cash equivalents	1,358,345	2,369,739	3,051,353

## Sustainability Data

### Economy

#### Creating Economic Values

(Separate Standard)

Classification	Unit	2016	2017	2018
Sales Volume	GWh	497,039	507,746	526,149
Sales Amount	KRW 100 Million	602,896	599,658	602,715
Operating Income (Loss)	KRW 100 Million	48,815	15,536	(21,933)
Current Net Income (Loss)	KRW 100 Million	42,620	15,068	(10,952)

#### Corporate Value

(Based on the Closing Price of the Year)

Classification	Unit	2016	2017	2018
Stock price	KRW	44,050	38,150	33,100
Market Capitalization	KRW 100 Million	282,785	244,909	212,490
Credit Rating	Moody's	Aa2 Stable	Aa2 stable	Aa2 stable

#### Distributing Economic Value

Classification	Unit	2016	2017	2018	
Shareholders (Dividends)	Total	KRW 100 Million	12,711	5,072	0
	Government	KRW 100 Million	2,313	923	0
	Ordinary	KRW 100 Million	6,491	2,615	0
	Foreigners	KRW 100 Million	3,907	1,533	0
	Dividend Rate	%	39.6	15.8	-
Creditors (Interest Expense)	KRW 100 Million	8,442	7,380	7,083	
Employees	Total	KRW 100 Million	21,388	21,529	20,032
	Salaries	KRW 100 Million	16,745	16,709	16,059
	Retirement Benefits	KRW 100 Million	1,809	1,787	1,638
	Welfare Benefits	KRW 100 Million	2,835	3,033	2,335

#### Goal for the Economic Sector

(Separate Standard)

Classification	Unit	2018 Goal	2018 Performance	2019 Goal	2022 Mid/Long-Term Goal
Outage Time	Minute/ Household	8.75	8.59	8.31	7.04
Capacity of Overseas New & Renewable Power facilities	MW	654	715	754	1,096
Secured Core Strategic Technologies	Case	89	89	121	175
Liabilities Rate	%	102	98.7	107.9	135.8

\* A goal index has been set to measure the economic feasibility of the corporation in the mid/long-term management goal for 2019-2023.



## Environment

### Total Amount of Materials Used

Classification	Unit	2016	2017	2018
Concrete	Ton	659,404	224,644	218,245
Metal	Ton	79,656	17,130	16,679
Ceramics	Ton	108	10	5
Power Cables	Ton	44,505	15,464	14,187
Others	Ton	14,956	5,594	4,529
Total	Ton	798,629	262,842	253,645

### Eco-Friendly Cars out of Business-Purpose Vehicles

Classification	Unit	2016	2017	2018
Cars for Business Purposes	No. of Cars	1,937	2,151	2,026
Eco-Friendly Cars (Total)	No. of Cars	1,700	1,936	1,812
Compact Cars	No. of Cars	1,243	1,130	974
Hybrid Cars	No. of Cars	142	142	151
EVs	No. of Cars	315	664	687
Percentage of Eco-Friendly Cars	%	87.8	90.0	89.4

### Hazardous Waste

Classification	Unit	2016	2017	2018
Volume of Hazardous Waste	Ton	31,147	18,541	15,835

### Amount and Percentage of Green Product Purchases

2016			2017			2018		
Total (KRW 1 Million)	Green (KRW 1 Million)	Percentage (%)	Total (KRW 1 Million)	Green (KRW 1 Million)	Percentage (%)	Total (KRW 1 Million)	Green (KRW 1 Million)	Percentage (%)
26,351	25,344	96.2	26,703	25,093	94	22,817	21,064	92.3

### Energy

Classification	Unit	2016	2017	2018
Consumption	TJ	6,309	6,569	6,978

## Sustainability Data

### Environment

#### Performance of Implementing the Emissions Trading Scheme\*

Classification	Unit	2016	2017	2018
Allocation	10,000 tCO <sub>2</sub> eq	231 <sup>1)</sup>	91	123 <sup>2)</sup>
Emissions <sup>3)</sup>	10,000 tCO <sub>2</sub> eq	139.8	147.5	92 <sup>4)</sup>

\* Emission Coefficient and Methodology : Based on "Guidelines on Emission Report and Certification for Greenhouse Gas Emission Trading System"

1) Additional quota of 1.43 million tons of eq was included as the reduction goal was achieved at an early stage for the period of 2011-2013.

2) The allocation for 2018 was excessively set compared with that of 2019-2020 due to the 2<sup>nd</sup> stage allocation.

3) Exceeded or reduced emissions are adjusted by purchasing emission permits or borrowing allocated quota from the following year or rolling reduced allocation to the following year.

4) As KEPCO's distribution sector is registered in CDM, relevant facilities are excluded from emission allocations. (Excluding Distribution SF<sub>6</sub> Emissions 44)

#### Greenhouse Gas Emissions and Intensity

Classification	2016		2017		2018	
	Emissions (10,000 tCO <sub>2</sub> eq)	Intensity (Ton/KRW 100 Million)	Emissions (10,000 tCO <sub>2</sub> eq)	Intensity (Ton/KRW 100 Million)	Emissions (10,000 tCO <sub>2</sub> eq)	Intensity (Ton/KRW 100 Million)
Scope 1	123	2.03	129	2.15	72 <sup>1)</sup>	1.18
Scope 2	17	0.29	18.4	0.3	20 <sup>2)</sup>	0.32

1) Fixed Combustion, Mobile Combustion, Transmission & Substation SF<sub>6</sub> (Excluding Distribution SF<sub>6</sub> Emissions 44)

2) Electricity, Thermal Use

Classification	Unit	2018				
		While Producing Fuels Used for Power Generation	While Combusting Fuels Used for Power Generation	While Disposing of Produced Waste	While Taking Business Trips (at Home)	While Commuting
Scope 3	Ton CO <sub>2</sub> eq	49,159,031	240,309,224	1,191	10,829	477

#### Air (Including The subsidiaries of KEPCO)

Classification	Unit	2016	2017	2018
SOx	g/MWh	156	138	120
NOx	g/MWh	246	177	146
Fine Particulates	g/MWh	7	7	7

#### Amount of Water Used\*

Classification	Unit	2016	2017	2018
Amount	Ton	2,521,025	2,154,314	2,036,740

\* Water Data : The Amount of Water Used at Buildings (Domestic Workplaces)

#### Goal for the Environmental Sector

Classification	Unit	2018 Goal	2018 Performance	2019 Goal	2022 Mid/Long-Term Goal
Transmission and Distribution Loss Factor	%	3.716	3.564	3.58	3.565
Accumulated Capacities of New & Renewable Power Generation	MW	4	4	22	372
Expanding Infrastructure for Renewable Energy Power System Connections	MW	960	1,275	1,070	1,240

\* A goal index has been set to measure the environmental feasibility of the corporation in the mid/long-term management goal for 2019-2023.

## Society

### Workforce

Classification		Unit	2016	2017	2018
Total No. of Employees		People	21,544	22,196	22,595
By Employment Type	Regular Employees	People	20,957	21,627	22,272
	Employees under Unlimited Contracts	People	1	0	0
	Irregular Employees	People	586	569	323
By Gender	Male	People	17,563	17,918	18,086
	Female	People	3,981	4,278	4,509
	Female Managers	People	242	286	351
	Female Executives	People	0	0	1
By Age	Aged under 30	People	3,369	4,203	4,920
	Aged 30-40	People	4,832	4,631	4,580
	Aged over 40	People	13,343	13,362	13,095
Newly Hired		People	1,433	1,574	1,649
Retirees		People	681	802	927
Total Turnover Rate		People	3.20%	3.70%	4.20%
No. of Those who Decided to Quit (Turnover Rate)		People(%)	143(0.7%)	127(0.6%)	149(0.7%)

### Achievements in Training (Overlapped Accumulation)

Classification	Unit	2016	2017	2018
Senior Executives	People	2,923	3,369	4,307
Junior Executives	People	9,059	9,253	10,061
Working-Level Employees	People	20,981	26,050	26,858

### Training Hours per Person

Classification	Unit	2016	2017	2018
Training Hours	Hour	81.6	86.4	94.7

### Maternity Protection System Operation Performance

Classification	Unit	2016	2017	2018
Parental Leave before or after Childbirth	People	139	114	107
Childcare Leave (Male)	People	310(41)	328(36)	392(55)
Infertility Leave	People	22	12	19
Reduced Working Hours for Childcare	People	22	10	285
Rate of Returning to Work after Parental Leave (Male)	%	100/96.8	90.9/98.2	96.2/100
Rate of Continuing Work for more than One Year after Parental Leave	%	97.3	97	99

# Sustainability Data

## Society

### Communication

Classification	Unit	2016	2017	2018
Employee Satisfaction	%	75.2	76.4	75

### Status of Labor Union Membership

Classification	Unit	2016	2017	2018
Membership Rate	%	72.66	71.8	74.5

### Status of Employee Accidents

Classification	Unit	2016	2017	2018
Accident Rate <sup>1)</sup>	%	0.029	0.018	0.022
Fatality Rate per 10,000 Persons <sup>2)</sup>	0/000	0	0	0
LTIFR (Lost Time Injuries Frequency Rate) <sup>3)</sup>	n/1 Million Working Hours	0.12	0.08	0.09

1) Accident Rate (%) = [(No. of Deaths + No. of the Injured)/No. of Regular Employees] x 100

2) Fatality Rate per 10,000 Persons (0/000) = (No. of Deaths /o. of Regular Employees) x 10,000

3) LTIFR (Lost-Time Injuries Frequency Rate) = No. of Lost-Time Cases/Annual Working Hours x 1,000,000

### Status of Accidents of Outsourced Construction Projects

Classification	Unit	2016	2017	2018
Accident Rate <sup>1)</sup>	%	0.24	0.28	0.35
Fatality Rate per 10,000 Persons <sup>2)</sup>	0/000	1.18	1.80	3.23
LTIFR (Lost Time Injuries Frequency Rate) <sup>3)</sup>	n/1 Million Working Hours	1.00	1.19	1.45

1) Accident Rate (%) = [(No. of Deaths + No. of the Injured)/No. of Regular Employees] x 100

2) Fatality Rate per 10,000 Persons (0/000) = (No. of Deaths /o. of Regular Employees) x 10,000

3) LTIFR (Lost-Time Injuries Frequency Rate) = No. of Lost-Time Cases/Annual Working Hours x 1,000,000

### 2018 Status of Suppliers

Classification	Unit	No. of Registered Products	No. of Registered Companies
Transmission & Substation	Product & Company	131	457
Distribution	Product & Company	71	821
Information and Communications	Product & Company	4	8
Total	Product & Company	206	1,286

\* Features of Suppliers : We manage and operate the registration of companies that produce and supply materials and equipment that have major impacts on the power quality and the stability of power supply after reviewing their qualities and processes.

- Status of Suppliers : 1<sup>st</sup>-Tier - 1,286 Companies, 2<sup>nd</sup>-Tier - 13,333 Companies

- Major Business Areas of Suppliers : Production of Materials and Equipment in the Electrical Power Sector (e.g. Cables, Switches, etc.)

## Expenses for the Social Sector

Classification	Unit	2016	2017	2018
Donation	KRW 100 Million	228	284	158
Amount Spent on Purchasing SME Products	KRW 100 Million	52,684	63,672	56,147

## Goal for the Social Sector

Classification	Unit	2018 Goal	2018 Performance	2019 Goal	2022 Mid/Long-Term Goal
Rate of Purchasing Products Manufactured by SMEs	%	70.8	73.3	73.3	73.4
Safety Accident Victims	People	72	59	59	58
Number of Companies Attracted into the Bitgaram Energy Valley	Company	300	360	430	500 or More

\* A goal index has been set to measure the achieving of social values in the mid/long-term management goal for 2019-2023.

# GRI Standards Index

## General Disclosures

Classification	Index	Content	Page	Note
GRI 102: Organizational Profile	102-1	Name of the organization	10	
	102-2	Activities, brands, products, and services	10	
	102-3	Location of headquarters	10	
	102-4	Location of operations	40–41, 103	
	102-5	Ownership and legal form	10	
	102-6	Markets served	40–41, 103	
	102-7	Scale of the organization	10, 82–88, 91	
	102-8	Information on employees and other workers	91–92	
	102-9	Supply chain	92	
	102-10	Significant changes to the organization and its supply chain	–	2018 Annual Report 547–549p
	102-11	Precautionary principle or approach	74–75	
	102-12	External initiatives	104	UN SDGs
	102-13	Membership of associations	101–102	
	102-14	Statement from senior decision-maker	4–5	
	102-16	Values, principles, standards and norms of behavior	11	
	102-17	Mechanisms for advice and concerns about ethics	68–73	
	102-18	Governance structure	64–65	
	102-22	Governance structure of the organization, including committees of the highest governance body	65	
	102-23	Chairman of highest governance body	64	Vacant as of August 2019
	102-25	Conflicts of interest are avoided and managed	65	
	102-35	Remuneration policies	67	
	102-40	List of stakeholder groups	76–77	
	102-41	Collective bargaining agreements	94	
	102-42	Identifying and selecting stakeholders	76–77	
	102-43	Approach to stakeholder engagement	76–77	
	102-44	Key topics and concerns raised	78–79	
	102-45	Entities included in the consolidated financial statements	–	2018 Annual Report 547–548p
	102-46	Defining report content and topic Boundaries	79	
	102-47	List of material topics	79	
	102-48	Restatements of information	–	Reported in each page
	102-49	Changes in reporting	2	
	102-50	Reporting period	2	
102-51	Date of most recent report	2		
102-52	Reporting cycle	2		
102-53	Contact point for questions regarding the report	105		
102-54	Claims of reporting in accordance with the GRI Standards	2		
102-55	GRI content index	94–97		
102-56	External assurance	98–99		
GRI 103: Management Approach	103-1	Material topic and its boundary	16, 24, 32, 44	
	103-2	Management approach and its components	16, 24, 32, 44	
	103-3	Evaluation of management method	16, 24, 32, 44	

## Material Topics

### Economic Disclosures

Classification	Index	Content	Page	Note
GRI 201: Economic Performance	103-1, 2, 3	Management Approach	16, 32	
	201-1	Direct economic value generated and distributed	82-88	
	201-2	Financial implications and other risks and opportunities due to climate change	17, 29	
GRI 203: Indirect Economic Impacts	103-1, 2, 3	Management approach	44	
	203-1	Infrastructure investments and services supported	45-61	
	203-2	Significant indirect economic impacts	45-61	
GRI 205: Anti-Corruption	103-1, 2, 3	Management approach	68	
	205-1	Operations assessed for risks related to corruption	68-71	
	205-2	Communication and training about anti-corruption policies and procedures	68-71	<ul style="list-style-type: none"> <li>We do not manage the number of ethics management committee members who communicate anti-corruption policies / procedures by region.</li> <li>Even if we do not manage all members of our partners, we are conducting ethics management training for their employees and are planning to implement data management in the future as well.</li> </ul>
	205-3	Confirmed incidents of corruption and actions taken	68-71	

### Environmental Disclosures

Classification	Index	Content	Page	Note
GRI 302: Energy	103-1, 2, 3	Management approach	16	
	302-1	Energy consumption within the organization	89	
	302-2	Energy consumption outside the organization	89	
	302-4	Reduction of energy consumption	17-23	
	302-5	Reductions in energy requirements of products and services	17-23	
GRI 304: Biodiversity	103-1, 2, 3	Management Approach	16	
	304-1	Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas	22	
	304-2	Significant impacts of activities, products, and services on biodiversity	22	
	304-3	Habitats protected or restored	22	
GRI 305: Emission	103-1, 2, 3	Management Approach	16	
	305-1	Direct (Scope 1) GHG emissions	90	
	305-2	Indirect (Scope 2) GHG emissions	90	
	305-3	Other indirect (Scope 3) GHG emissions	90	
	305-4	GHG emissions intensity	90	
	305-5	Reduction of greenhouse gas (GHG) emissions	18-19, 90	
	305-6	Emissions of ozone-depleting substances	90	
305-7	Nitrogen oxides (NOx), sulfur oxides (SOx), and other significant air emissions	90		

### Social Disclosures

Classification	Index	Content	Page	Note
GRI 401: Employment	103-1, 2, 3	Management approach	44	
	401-1	New employee hires and employee turnover	48-49, 91	
	401-3	Parental leave	91	
GRI 413: Local Community	103-1, 2, 3	Management approach	44	
	413-1	Percentage of operations with implemented local community engagement, impact assessments, and development programs	45-61	

## GRI Standards Index

### Electric Utilities Sector Disclosures

Classification	Index	Content	Page	Note
Organization profile	103-1, 2, 3	Management approach	16	
	EU5	Allocation of CO <sub>2</sub> e emissions allowances or equivalent, broken down by carbon trading framework	90	
R&D	103-1, 2, 3	Management approach	32	
	EU8	Research and development activity and expenditure aimed at providing reliable electricity and promoting sustainable development	38-39	
Employment	103-1, 2, 3	Management approach	44	
	EU16	Policies and requirements regarding health and safety of employees and employees of contractors and subcontractors	51-52	
Employment	103-1, 2, 3	Management approach	44	
	EU18	Percentage of contractor and subcontractor employees that have undergone relevant health and safety training	52	
Access	103-1, 2, 3	Management approach	24	
	EU23	Programs, including those in partnership with government, to improve or maintain access to electricity and customer support services	25-30	
Provision of Information	103-1, 2, 3	Management approach	44	
	EU24	Practices to address language, cultural, low literacy and disability related barriers to accessing and safely using electricity and customer support services	60	

## General Topics

### Economic Disclosures

Classification	Index	Content	Page	Note
GRI 206: Anti-competitive Behavior	206-1	Legal actions for anti-competitive behavior, anti-trust, and monopoly practices	57	No such cases

### Environmental Disclosures

Classification	Index	Content	Page	Note
GRI 301: Materials	301-1	Weight or volume of materials used	88-89	
GRI 306: Effluents and Waste	306-2	Waste by type and disposal method	22, 89	
	306-3	Significant spills	-	No such cases
GRI 307: Environmental Compliance	307-1	Non-compliance with environmental laws and regulations	-	No such cases



## Social Disclosures

Classification	Index	Content	Page	Note
GRI 403: Occupational Health and Safety	403-1	Workers representation in formal joint management-worker health and safety committees	51-52	
	403-2	Hazard identification, risk assessment, and incident investigation	51-52	
	403-3	Workers with high incidence or high risk of diseases related to their occupation	51-52	
	403-4	Occupational health services	51-52	
	403-5	Worker participation, consultation, and communication on occupational health and safety	51-52	
	403-6	Promotion of worker health	51-52	
	403-7	Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	51-52	
	403-8	Workers covered by an occupational health and safety management system	51-52	
	403-9	Work-related injuries	92	
	403-10	Work-related ill health	92	
GRI 404: Training and Education	404-1	Average hours of training per year per employee	91	
	404-2	Programs for upgrading employee skills and transition assistance programs	48	
GRI 405: Diversity and Equal Opportunity Non- discrimination	405-1	Diversity of governance bodies and employees	64	
	405-2	Female basic salary and compensation ratio compared to male	-	Both men and women are paid the same basic salaries.
GRI 406: Non- discrimination	406-1	Incidents of discrimination and corrective actions taken	-	No such cases
GRI 407: Freedom of Association and Collective Bargaining	407-1	Operations and suppliers in which the right to freedom of association and collective bargaining may be at risk	-	No such cases
GRI 408: Child Labor	408-1	Operations and suppliers at significant risk for incidents of child labor	-	No such cases
GRI 409: Forced or Compulsory Labor	409-1	Operations and suppliers at significant risk for incidents of forced or compulsory labor	-	No such cases
GRI 412: Human Rights Assessment	412-2	Employee training on human rights policies or procedures	72-73	
GRI 416: Customer Health and Safety	416-1	Safety and Health Impact Assessment of Products and Services	27	
	416-2	Incidents of non-compliance concerning the health and safety impacts of products and services	-	No such cases
GRI 417: Marketing and Labeling	417-2	Incidents of non-compliance concerning product and service information and labeling	-	No such cases
	417-3	Incidents of non-compliance concerning marketing communications	-	No such cases
GRI 418: Customer Privacy	418-1	Substantiated complaints concerning breaches of customer privacy and losses of customer data	-	No such cases
GRI 419: Socioeconomic Compliance	419-1	Non-compliance with laws and regulations in the social and economic area	-	No such cases

# Independent Assurance Statement

## Foreword

Korea Management Registrar Inc. (hereinafter “KMR”) has been requested by of KEPCO to verify the contents of its 2019 Sustainability Report (hereinafter “the Report”). KEPCO is responsible for the collection and presentation of information included in the Report. KMR’s responsibility is to carry out assurance engagement on specific data and information in the assurance scope stipulated below.

## Scope and standard

KEPCO describes its efforts and achievements of the corporate social responsibility activities in the Report. KMR performed a type2, moderate level of assurance using AA1000AS (2008) and SRV1000 from KMR Global Sustainability Committee as assurance standards. KMR’s assurance team (hereinafter “the team”) evaluated the adherence to Principles of Inclusivity, Materiality and Responsiveness, and the reliability of the selected GRI Standards indices as below, where professional judgment of the team was exercised as materiality criteria.

The team checked whether the Report has been prepared in accordance with the ‘Core Option’ of GRI Standards which covers the followings.

- GRI Standards Reporting Principles
- Universal Standards
- Topic Specific Standards

- Management approach of Topic Specific Standards	- Employment : 401-1, 401-2, 401-3
- Economic Performance : 201-1, 201-2	- Occupational Health and Safety : 403-1, 403-2, 403-3, 403-4
- Indirect Economic Impacts : 203-1, 203-2	- Training and Education : 404-1, 404-2
- Anti-Corruption : 205-1, 205-2, 205-3	- Diversity and Equal Opportunity : 405-1, 405-2
- Anti-Competitive Behavior : 206-1	- Human Rights Assessment : 412-2
- Materials : 301-1, 301-2	- Local Communities : 413-1
- Energy : 302-1, 302-2, 302-4, 302-5	- Customer Health and Safety) : 416-1, 416-2
- Biodiversity : 304-1, 304-2, 304-3	- Marketing and Labeling : 417-1, 417-2, 417-3
- Emissions : 305-1, 305-2, 305-4, 305-5, 305-6	- Customer Privacy : 418-1
- Effluents and Waste : 306-1, 306-2, 306-3	- Socioeconomic Compliance : 419-1
- Environmental Compliance : 307-1	- Electric Utilities Sector Disclosure : EU5, EU8, EU16, EU18, EU23, EU24

This Report excludes data and information of joint corporate, contractor etc. which is outside of the organization, i.e. KEPCO, among report boundaries.

## Our approach

In order to verify the contents of the Report within an agreed scope of assurance in accordance with the assurance standard, the team has carried out an assurance engagement as follows :

- Reviewed overall report
- Reviewed materiality test process and methodology
- Reviewed sustainability management strategies and targets
- Reviewed stakeholder engagement activities
- Interviewed people in charge of preparing the Report

## Our conclusion

Based on the results we have obtained from material reviews and interviews, we had several discussions with KEPCO on the revision of the Report. We reviewed the Report's final version in order to confirm that our recommendations for improvement and our revisions have been reflected. When reviewing the results of the assurance, the assurance team could not find any inappropriate contents in the Report to the compliance with the principles stipulated below. Nothing has come to our attention that causes us to believe that the data included in the verification scope are not presented appropriately.

### • Inclusivity

Inclusivity is the participation of stakeholders in developing and achieving an accountable and strategic response to sustainability

- KEPCO is developing and maintaining stakeholder communication channels in various forms and levels in order to make a commitment to be responsible for the stakeholders. The assurance team could not find any critical stakeholder KEPCO left out during this procedure.

### • Materiality

Materiality is determining the relevance and significance of an issue to an organization and its stakeholders. A material issue is an issue that will influence the decisions, actions, and performance of an organization or its stakeholders.

- KEPCO is determining the materiality of issues found out through stakeholder communication channels through its own materiality evaluation process, and the assurance team could not find any critical issues left out in this process.

### • Responsiveness

Responsiveness is an organization's response to stakeholder issues that affect its sustainability performance and is realized through decisions, actions, and performance, as well as communication with stakeholders.

- The assurance team could not find any evidence that KEPCO's counter measures to critical stakeholder issues were inappropriately recorded in the Report.

We could not find any evidence the Report was not prepared in accordance with the 'Core Option' of GRI standards.

## Recommendation for improvement

We hope the Report is actively used as a communication tool with stakeholders and we recommend the following for continuous improvements.

- Since 2009, KEPCO has published a consolidated report providing both financial and non-financial information to stakeholders, ensuring an informed decision-making process. Such information includes biodiversity protection, internal accounting control, identification of potential human right issues and their countermeasures, and new indicators. In the future, the utility company is advised to establish such effort as part of a corporate culture along with its sustainability strategy.

## Our independence

With the exception of providing third party assurance services, KMR is not involved in any other KEPCO's business operations that are aimed at making profit in order to avoid any conflicts of interest and to maintain independence.

September, 11<sup>th</sup>, 2019

CEO



SRV1000  
Sustainability Committee Assurance



AA1000  
Licensed Assurance Provider  
000-129

E J Hwang

# Greenhouse Gas Assurance Statement

## Introduction

KEPCO implements annual MRV based on standards including ISO 14064 to comply with the GHG reduction target of Kyoto protocol. KMR confirms the verification results of 2018 as below.

## Scope

- Organizational boundary : the whole business under control of the organization
- Verification object workplaces : Naju headquarters and workplaces
- Reporting period : Calendar year of 2018
- Reporting greenhouse gas : CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, HFCs, PFCs, SF<sub>6</sub>
- Type of emission : Direct Emissions (Scope 1), Indirect Emissions (Scope 2)
- The level of assurance : Reasonable assurance (materiality threshold : ±5.0%)

## Standards

- ISO 14064-1 (2006), ISO 14064-3 (2006), WRI/WBCSD GHG Protocol (2004)
- Verification guidelines for GHG & energy Target Management Scheme (Notification No. 2016-104, MOE)
- KMR GHG & energy verification manual and procedure, IPCC Guidelines (2006)

## Results

GHGs Emission	Scope1	Scope2	Total (tCO <sub>2</sub> -eq)
2018	1,171,250	194,599	1,365,849

Energy Consumption	Fuel	Electricity	Steam	Total (TJ)
2018	3,086	4,021	4	6,978

1) Greenhouse Gases : CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, HFCs, PFCs, SF<sub>6</sub>

2) 1 tCO<sub>2</sub>-eq : It is the amount equivalent to 1 ton of CO<sub>2</sub> or the effect of other greenhouse gases on global warming equivalent to 1 ton of CO<sub>2</sub>.

※ Note : The energy consumption by fuel is different from the energy consumption by business place (facility). (NGMS adds up the rounded-off energy volume consumed by each of the business places.)

## Conclusion

KMR confirms that the calculation of the Greenhouse gas emissions and energy consumption of the organization are proper.

March 31<sup>st</sup>, 2019

Korea Management Registrar  
CEO Eun Ju Hwang



*E J Hwang*

# Memberships and Awards

## Status of Memberships in Associations and International Entities

Classification	Academic Societies/Associations	Purpose	Year
Domestic	Korean Institute of Electrical Engineers	Supporting the development of academics and technologies related to electrical engineering	1961
	Korea Standard Association	Exchanging information on technological standards and taking relevant training	1964
	Korea Electric Association	Promoting and developing the overall electric industry	1965
	Korea Atomic Industrial Forum	Promoting Korean nuclear power and strengthening network	1975
	International Construction Association	Sharing information on overseas construction trends	1976
	Korea Management Association	Consulting management issues and corporate culture	1981
	Korean Society of Public Enterprises	Set policy directions for research activities of public corporations	1987
	Korea Industrial Technology Association	Sharing information on technology and environment	1995
	Korean Institute of Electrical and Electronic Material Engineers	Supporting technical development for the sector of electrical and electronic Materials	1996
	Korea New & Renewable Energy	Creating amicable public sentiment for the renewable energy industry	2004
	Korea Project Management Association	Acquiring and disseminating advanced project management techniques	2004
	Korea Plant Industries Association	Sharing information on overseas plant industry trends	2005
	Korea Energy Foundation	Improving energy welfare systems for vulnerable populations	2006
	Korean Nuclear Society	Securing competitiveness of exporting global-level nuclear plants	2007
	Korean Association for Industrial Technology Security	Acquiring updated industrial security technologies	2009
	Korea Smart Grid Association	Securing cooperative systems and strengthening technical capabilities	2009
	Korea Invention Promotion Association	Securing information on patents home and abroad	2009
	KCCSA (Korea Carbon Capture and Storage Association)	Securing cooperative systems and leading CCS industry	2011
	Korea Nuclear Association for International Cooperation	Winning the 2 <sup>nd</sup> nuclear plant contract and supporting nuclear plant export	2011
	Korea Electric Engineers Association	Designing facilities and supporting employees to acquire certificates	2012
	Future Energy Forum	Collecting information on energy sector and networking	2013
	Korean Electrical Manufacturers Association	Strengthening cooperation with partners in the power equipment and material industry	2013
	Korea Valuation Association	Nurturing patent experts	2013
	National Assembly Forum of Climate Change	Participating in decision-making and accessing legal information	2013
	Korea Foundation for Environmental Movements	Establishing cooperative systems related to the power industry	2014
	Korea Wind Energy Association	Networking with those leading public sentiment in the renewable energy sector	2014
	Power Forum	Enhancing the networking with those leading public sentiment in the power industry	2015
	Korean Association for Conflict Studies	Establishing cooperative systems in response to public conflicts	2015
	KRS Emission Market	Trading emissions	2015
	Korea Enterprises Federation	Responding to labor laws and managing trends in the labor sector	2016
	Jeonnam Enterprises Federation	Managing trends in the regional labor sector and consulting labor-management relations	2016
	Energy Valley Forum	Networking among industries, universities and institutes and cooperating to invite companies	2016
	Energy Valley Committee	Consulting the Energy Valley and cooperating with the government	2016
	Korean Foundation for Quality	Sharing information on standards and conducting training	2016
	Korea International Trade Association	Sharing information on trade, commercial environment and overseas markets	2016
	Korean Society of Safety	Networking with opinion leaders in the safety sector	2017
	Hanbit Energy Policy Forum	Expanding amicable atmosphere for the establishment of the Energy Valley	2017
	Korean Association of Negotiation Studies	Establishing cooperative systems in response to public conflicts	2017
	Transparent Society Council for Private and Public Sector	Collecting ideas to prevent corruption	2018
	Transparent Society Council for Public Corporations	Carrying out integrity activities with public corporations	2018
Ethical Management SM Forum	Expanding ethical management and leading ethical corporate culture	2018	
Korean Resource Economics Association	Studying and sharing information on energy resources and environmental policies	2018	
Institute for Social Responsibility of Public Sector Institutions	Acquiring CSR-related information and taking proper actions	2018	
Korea Blockchain Industry Promotion Association	Exchanging information on the overall blockchain industry	2018	
Smart Energy Industry Forum	Acquitting legal information on power and ICT new technologies	2019	

## Memberships and Awards

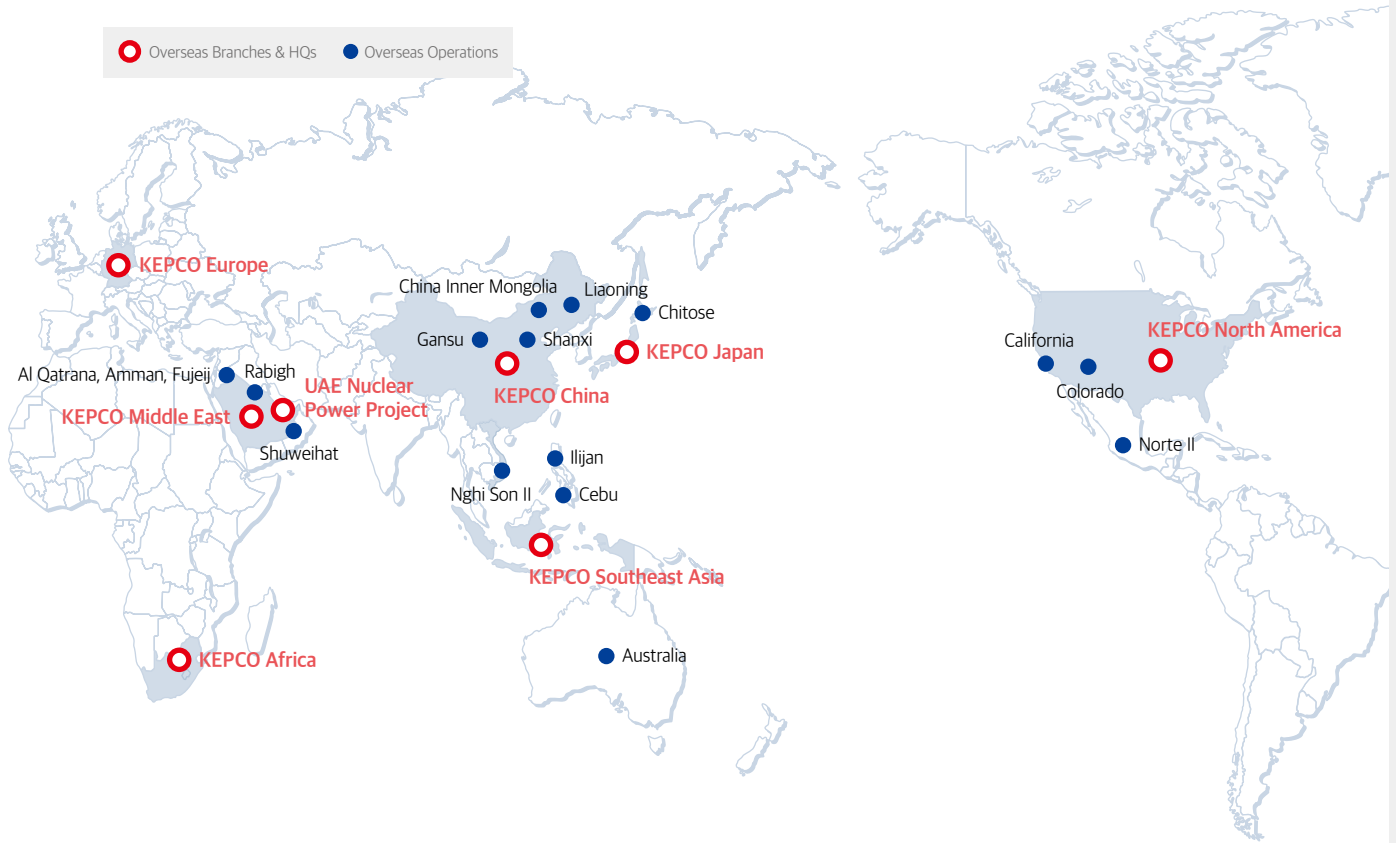
### Status of Memberships Home and Abroad

Classification	Academic Societies/Associations	Purpose	Year
International	WEC (World Energy Council)	Strengthening international cooperation and sharing expertise and technologies	1969
	AESIEAP (Association of the Electricity Supply Industry of East Asia and Western Pacific)	Promoting cooperation between electric power companies and experts of Asia and the Western Pacific	1998
	EI (Edison Electric Institute)	Exchanging information and technology in the U.S. market	2004
	CIREN (International Conference on Electricity Distribution)	Exchanging information with overseas power corporations and contributing to the technology development in Korea	2006
	CIGRE (International Council on Large Electric Systems)	Exchanging technological expertise among power system professionals around the world	2009
	WNA (World Nuclear Export Company Group)	Exchanging information and making cooperation with organizations related with nuclear power around the world	2011
	IFIA (International Federation of Inventors' Associations)	Establishing connections and a cooperation system with the International Business Association regarding R&D and new technology	2015
	IEEJ (Institute of Energy Economics, Japan)	Collecting information on power industry policies	2016
	GEIDCO (Global Energy Interconnection Development and Cooperation Organization)	Exchanging information and establishing cooperation on global power system connections	2017

### Major Awards (Since 2016)

Awards	Organization	Date
Presidential Committee for National Cohesion Award 'Outstanding Company for Managing Conflicts'	Presidential Committee for National Cohesion	2016. 02
2016 International Convention on Quality Control Circles Gold Award	ICQCC	2016. 08
2016 Presidential Award for Promoting Regional Industries	Ministry of the Interior (Current Ministry of the Interior and Safety)	2016. 09
2016 Korea Energy Efficiency Award Presidential Medal	Ministry of Industry	2016. 10
CSV (Creating Shared Value) Porter Award three consecutive years - Hall of Fame for the first time	Dong-A Ilbo, The Institute for Industrial Policy Studies	2016. 12
2016 Korea Management Award 'Top Social Value Company'	Korea Management Association	2016. 12
2016 Top Korean Local Economy Leader	The Seoul Economic Daily	2016. 12
The 29 <sup>th</sup> Korea Labor-Management Cooperation Award (first time for first-tier public corporation)	Korea Employers Federation	2017. 02
BCM (Business Continuity Management) ISO22031 International Certification	International Organization for Standardization	2017. 03
IJ Global Award 2016 MENA Deal of the Year in Renewable and Conversion Categories	IJ Global	2017. 03
2017 Corporate Management Award	Korean Corporation Management Association	2017. 04
Asia-Oceania Index Award-Platinum	U.S. EEI (The Edison Electric Institute)	2017. 04
2017 INPEX (Invention and New Product Exposition) Award	INPEX	2017. 06
CIO 100 Awards (Technological Innovation Category, two consecutive years)	U.S. IDG	2017. 08
2017 International Convention on Quality Control Circles Gold Award (four consecutive years)	ICQCC	2017. 11
The 43 <sup>rd</sup> National Quality Management Competition Public Sector Presidential Medal	Ministry of Trade, Industry and Energy	2017. 11
2017 Top 100 Great Places to Work in Public Sector 'Trust Management Award'	GPTW Institute	2017. 11
The 12 <sup>th</sup> Customer Satisfaction Management Award in Public Sector	The Korea Economic Daily	2018. 01
2018 Malaysia International Invention Exhibition Winning 2 Categories including Gold Award	ITEX	2018. 05
UK CDP Carbon Management Energy & Utility Sector Honors (three consecutive years)	UK CDP Worldwide	2018. 10
2018 Job Creation of the Year Award	The Josun Ilbo	2018. 12
The 32 <sup>nd</sup> CIO 100 Awards (four consecutive years)	US IDG	2019. 05
International Smart Grid Action Network Award of Excellence	ISGAN, GSGF	2019. 05

# Global Network



## Overseas Subsidiaries (Directly Invested)

(As of June, 2019)

Number	Company Name	Project Name
1	KEPCO Australia Pty. Ltd.	Australian Flaming Coal Development Project
2	KEPCO Shanxi International Ltd.	China, Shanxi Power Generation & Coal Mine Project
3	KEPCO Neimenggu International Ltd.	China, Neimenggu and Liaoning Wind Power & Solar Power Generation Project
4	KEPCO Gansu International Ltd.	China, Gansu Wind Power Generation Project
5	KEPCO International Hong Kong Ltd.	Philippine, Malaya Power Plant Performance Restoration & Operation Project
6	KEPCO International Philippines Inc.	Philippine, Ilijan Gas Co-Generation Project
7	KEPCO Philippines Holdings Inc.	Philippine, Cebu Coal-fired Thermal Power Generation & SPC Venture Project
8	KEPCO Singapore Holdings Pte. Ltd.	Vietnam, Nghi Son II Coal-fired Thermal Power Generation Project
9	Chitose Solar Power LLC	Japan, Chitose Solar Power Generation Project
10	KEPCO Netherlands S3 B.V.	UAE, Shuweihat S3 Gas Co-Generation Project
11	KEPCO Netherlands B.V.	Saudi, Rabigh Heavy-Oil Thermal Power Generation Project

Number	Company Name	Project Name
12	KEPCO Netherlands J3 B.V.	Jordan, Amman Diesel Combustion Power Generation Project
13	Middle East Holding Company	Jordan, Al Qatrana Gas Co-Generation Project
14	Fujiej Wind Power Company	Jordan, Fujiej Wind Power Generation Project
15	KEPCO Lebanon SARL	Lebanon Power Plant Operation & Management Project
16	KEPCO Holdings De Mexico	Mexico, Norte II Power Generation Project
17	KST Electric Power Company	
18	KEPCO U.S. Inc.	US, Colorado Solar Power Generation Project
19	KEPCO-LG CNS Mangilao Holdings LLC	US, Guam Mangilao Solar Power Generation Project
20	KEPCO California LLC	US, California Solar Power Generation Project
21	Korea Electric Power Nigeria Ltd.	Nigeria, Egbin Power Plant Operation & Management Project
22	Global One Pioneer B.V.	UAE Nuclear Plant Share Investment Project
23	Global Energy Pioneer B.V.	

# UN SDGs Activities

## UN SDGs

UN SDGs (UN Sustainability Development Goals) are the utmost goals jointly adopted by the UN and international communities to implement from 2016 to 2030 after the MDGs came to a conclusion in 2015. In order to address universal human issues including poverty, disease, etc. and environmental problems and establish inclusive economic growth, 17 global priorities were established at the UN General Assembly in September, 2015.



KEPCO, as a global energy company, is working hard to achieve UN SDGs. As the largest public corporation in Korea, we have selected our own sustainability development goals by connecting strategies of our core businesses and SDGs within our value chains and are implementing various detailed projects.

## Activities in Relation with UN SDGs

SDGs	KEPCO's Major Activities
<b>1</b> No Poverty	<ul style="list-style-type: none"> <li>• Sharing Love Energy (Supporting Power Rates for the Underprivileged)</li> <li>• Creating Shared Growth Models for Old Cities (Youth Job-Creating Cafes and Others)</li> </ul>
<b>2</b> Zero Hunger	<ul style="list-style-type: none"> <li>• Developing Energy Independence Business Models for the Agricultural Sector</li> <li>• Supporting the Agricultural Sector to Improve Energy Efficiency</li> <li>• Establishing Smart Farm Test-Bed Complex</li> </ul>
<b>3</b> Good Health and Well-Being	<ul style="list-style-type: none"> <li>• Monitoring Health Risks for Shift Workers</li> <li>• Implementing Special Medical Checks at Major Turning Points of Life</li> <li>• Implementing Psychology Consultation Services Throughout the Corporation</li> <li>• Diagnosing and Managing Job Stresses of All Employees</li> </ul>
<b>4</b> Quality Education	<ul style="list-style-type: none"> <li>• Supporting Employment and Startups of the Underprivileged and Nurturing Future Talents</li> <li>• Conducting Programs for the Young to Enhance their Capabilities for Their Startups and Employment</li> </ul>
<b>5</b> Gender Equality	<ul style="list-style-type: none"> <li>• Holding Conferences for Next Generation Female Leaders</li> <li>• Holding Academies for Female Talents</li> <li>• Systemizing Prevention of Sexual Harassment</li> <li>• Conducting Activities to Enhance Awareness of Gender Equality</li> </ul>
<b>6</b> Clean Water and Sanitation	<ul style="list-style-type: none"> <li>• Prioritizing Power Supply for the Development of Irrigation Systems for Drinking Water and Agricultural Water</li> </ul>
<b>7</b> Affordable and Clean Energy	<ul style="list-style-type: none"> <li>• Expanding Infrastructures to Connect New &amp; Renewable Energy to Power System</li> <li>• Establishing a System to Monitor and Control Renewable Energy</li> <li>• Implementing Large-Scale New &amp; Renewable Power Plant Projects</li> </ul>
<b>8</b> Decent Work and Economic Growth	<ul style="list-style-type: none"> <li>• Creating Jobs in the Sector of Energy industry</li> <li>• Creating Decent Jobs for the Young</li> <li>• Creating Jobs for the Private Sector</li> <li>• Vitalizing Flexible Working System</li> </ul>

SDGs	KEPCO's Major Activities
<b>9</b> Industry, Innovation and Infrastructure	<ul style="list-style-type: none"> <li>• Expanding Infrastructures to Connect Eco-Friendly Power Sources to Power System</li> <li>• Converting to Intelligent Power Infrastructures</li> <li>• Achieving Social Welfare Safety Net by Utilizing Power IoT Technologies</li> </ul>
<b>10</b> Reduced Inequalities	<ul style="list-style-type: none"> <li>• Strengthening Socially-Fair Recruitment (Increasing the No. of High School Graduates and Regional Talents)</li> <li>• Supporting Energy Welfare for the Underprivileged</li> </ul>
<b>11</b> Sustainable Cities and Communities	<ul style="list-style-type: none"> <li>• Creating Bitgaram Energy Valley</li> <li>• Participating in Urban Re-generation New Deal Projects of Municipal Governments</li> <li>• Achieving and Expanding Smart e-City Models</li> </ul>
<b>12</b> Responsible Consumption and Production	<ul style="list-style-type: none"> <li>• Creating Ecosystem for the Energy Valley</li> <li>• Conducting R&amp;D for Smart City</li> </ul>
<b>13</b> Climate Action	<ul style="list-style-type: none"> <li>• Increasing Investments in Technologies for Fine Dust Reduction</li> <li>• Achieving Eco-Friendly Power Supply Value Chains</li> <li>• Building Eco-Friendly Power Grid</li> <li>• Developing Technologies for CO<sub>2</sub> Reduction</li> </ul>
<b>14</b> Life Below Water	<ul style="list-style-type: none"> <li>• Operating Eco-Friendly Offshore Wind Power Generation</li> </ul>
<b>15</b> Life on Land	<ul style="list-style-type: none"> <li>• Protecting Biodiversity</li> <li>• Conducting Environmental Impact Assessment</li> </ul>
<b>16</b> Peace, Justice and Strong Institutions	<ul style="list-style-type: none"> <li>• Supporting the Establishment of Inclusive Economic Structure</li> <li>• Vitalizing Regional Economy and Supporting SMEs</li> </ul>
<b>17</b> Partnerships for the Goals	<ul style="list-style-type: none"> <li>• Implementing Development Projects by Establishing Strategic Partnerships</li> <li>• Expanding Social Values through Global Partnerships</li> </ul>



## Contact Information

This Report can be retrieved and downloaded from KEPCO's official website (<http://www.kepco.co.kr>). For more information, please contact the following.

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