

CLEAN ENERGY  
SMART KEEPCO



## CLEAN ENERGY SMART KEPCO

### Sustainability Report 2020

#### Report Overview

Korea Electric Power Corporation (KEPCO) has been publishing its Sustainability Report every year since 2005 to review its sustainability management activities and achievements, and to transparently provide relevant information to various stakeholders. We have integrated our Sustainability Report and Annual Report since 2019, and the Sustainability Report 2020 (hereafter the "Report") is characterized by its configuration of contents based on ESG issues in order to actively respond to social concerns about the environment, society, and corporate governance. In the process of publishing the Report, a materiality test was conducted to measure stakeholders' interests and business impacts, and we report in detail on material issues that have been selected as key topics derived from the materiality test.

#### Reporting Guidelines

This Report follows the Core Option of the Global Reporting Initiative (GRI) Standards. We have also referred to ISO 26000, the principles of the 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 Standards (K-IFRS). In addition, this Report includes recommendations of the Task-force on Climate-related Financial Disclosures (TCFD), and the industry standards of the Sustainability Accounting Standards Board (SASB) were referenced to reflect material issues of the electric power industry.

#### Reporting Period

This Report is based on activities and achievements from January 1, 2019 to December 31, 2019. As for qualitative activities related to several major topics, we have included data up to the first half of 2020, and this Report shows data for the past three years (2017-2019) to identify trends in the case of major quantitative achievements. Both financial and non-financial information is presented based on the fiscal year according to the company's disclosure system, and information that does not meet the above standards is marked with a separate comment.

#### Scope of the Report

This Report has been prepared based on KEPCO's domestic and international sustainability achievements. Some of the economic and environmental data include that 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. The financial information is based on the K-IFRS's independent financial statements, and the contents of the consolidated standards are marked with separate comments.

#### Independent Assurance

This Report has been verified for its reliability through an independent assurance process conducted by a professional verification organization, the Korea Sustainability Investing Forum (KoSIF). A detailed assurance statement can be found on pages 114-115 of this Report.

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## CEO Message



Dear customers and the general public, shareholders, partners, and all of our stakeholders, I would like to express deepest appreciation to all of you for keen interest and continual support toward KEPCO.

It is my great privilege to publish our 16th Sustainability Report through communication and cooperation with our stakeholders.



We extend our gratitude to respected shareholders, our customers and the general public who have been with us, to our partners for their warm-hearted interest in and support for KEPCO, and to all of our stakeholders.

The year 2020 will be remembered as a year when safety around the world was seriously threatened. With COVID-19, uncertainty and volatility has increased explosively. As non-face-to-face transactions and online demand expanded, the importance of digitalization has become more important than ever. It was a time to ponder on how to prepare for the company's sustainable development.

Going forth, KEPCO will continue to make efforts to become the first mover that leads the global trend in "energy transition" and "digital transformation". In addition to enhancing financial performance, we will do our best to gain the trust of our customers and shareholders in the areas of ESG (Environmental, Social and Governance).

### **First, we will lay the foundation for sustainable growth.**

KEPCO will lead the rapidly growing new energy industry by securing future technologies such as artificial intelligence, big data, and the Internet of Things, etc. In addition, we will further enhance our competitiveness in the new & renewable energy sector to generate stable profits in domestic and foreign markets. Furthermore, we will continue to increase our financial soundness by rationally changing the electricity tariff system and improving synergies among power group companies.

### **Second, we will improve the efficiency of power supply and the quality of customer service.**

We will improve the efficiency of power supply by speeding up the digital transformation and take a leap forward from being an energy provider to being an energy platform operator. In addition, we will provide more convenient and diverse services by reforming existing policies and systems to customers.

### **Third, we will increase our capability to respond to climate crisis.**

We will continue to work to reduce the emissions of fine dust and carbon dioxide by bringing together the power of group companies. We plan to focus more on the R&D of environment-friendly technology and steadily expand our investment in renewable energy generation projects. Furthermore, we will strengthen our efforts to promote the energy transition.

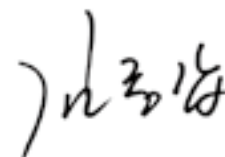
### **Fourth, we will keep upholding the values of safety and integrity.**

In order for a company to grow steadily, above all else, it must uphold the values of safety and integrity. Based on the mindset of respect for humanity, KEPCO will create a good company to work for, a transparent and ethical company and a company you can trust. We will faithfully fulfill our social responsibilities, such as job creation, shared growth, and consideration for the underprivileged.

KEPCO intends to continue to develop into a competitive global company while maintaining the balance between profitability and public interest. We will listen to various opinions from all the stakeholders including shareholders and customers while more actively communicating with them. We ask for your continued trust and support for KEPCO. Thank you.

September 2020

**JongKap Kim**  
President & CEO of KEPCO





# OVERVIEW

KEPCO creates clean and safe energy.



08

KEPCO  
ESG Highlights

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KEPCO  
Profile

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Status of  
KEPCO Group Companies

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Value Chain of the  
Electric Power Industry

## KEPCO ESG Highlights

## E

## ENVIRONMENTAL

1

### Being Selected by CDP as an Outstanding Company in Responding to Climate Change for Four Consecutive Years

KEPCO was listed in the 'Carbon Management Sector Honors' in the energy & utility sector for the fourth consecutive year at '2019 CDP Korea Climate Change Awards' in April 2020. Over 8,000 companies around the world participated and disclosed their carbon management information in 2019. KEPCO also transparently disclosed strategies to respond to climate crisis, greenhouse gas emission data and endeavors to reduce greenhouse gas emissions. By doing this, KEPCO proved its status as an outstanding company in carbon management as it received the award for four consecutive years from 2016 to 2019. KEPCO will continue to strive to improve the corporate value and lead responding to global climate crisis by actively disclosing carbon-related information to global investors.



## S

## SOCIAL

3

### Energy Valley Agreement Concluded with More than 430 Companies

KEPCO has been working with local governments to promote the energy valley project to create a growth pole for the future energy industry by attracting companies and research institutes in the energy sector. This not only contributes to the national economic development and job creation but also boosts the local economy. As of the first half of 2020, the number of companies that KEPCO has attracted for investment in the energy valley is a total of 465, which is 93% of the initial goal of 500. Alongside creating 10,628 new jobs, it is estimated that the amount of cumulative investment has reached KRW 2.63 trillion. KEPCO will make its utmost effort to reach its target of 500 companies by 2020 and will support them for stable settlement in diverse ways such as providing excellent personnel through customized training courses and optimizing financial support system.



## G

## GOVERNANCE

5

### Established the Ethics & Compliance Committee

With the aim to strengthen the driving force for ethical and law-abiding management, KEPCO newly established the Ethics & Compliance Committee chaired by the CEO, consisting of five standing directors and three external members in 2019. The Ethics & Compliance Committee deliberates on the ethical and law-abiding management plan, checks and evaluates the performance, and proposes and supports for further development. With the aim of improving KEPCO's ethical management, the Committee was held three times in the first half of 2020, and is obligated by rule to meet once each in the first and second halves of the year. KEPCO recognizes ethical management as an important issue that's directly related to the organization's existence and will meet the demand for improving transparency and fairness from external stakeholders.







### The Issuance of Global Green Bonds and Korean Won-Denominated ESG Bonds for Two Consecutive Years.

In June 2020, KEPCO became the first Korean company to issue USD 500 million worth of green bonds for two consecutive years. Based on oversubscription that was more than 10 times higher than initially offered, KEPCO's green bonds achieved a record-low interest rate among five-year maturity global US dollar bonds in Korea. Funds raised through these green bonds will be used for investment in the domestic and overseas new and renewable business, the construction of electric vehicle charging infrastructure, the expansion of new and renewable-linked facilities, and energy efficiency projects aimed at the reduction of national GHG emissions. In addition, KEPCO was the first energy company in Korea to successfully issue KRW 200 billion worth of Korean won-denominated ESG bonds for two consecutive years in October 2019 and November 2020, which will be used for socially responsible investments such as eco-friendly projects, job creation, and investment in SMEs. In the future as well, KEPCO will take the lead in responding to climate crisis and creating social value through the active issuance of ESG (Environmental, Social, Governance) bonds.

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### Launched the Social Value Committee

KEPCO defines "Social Values" as 'values that can contribute to the public interest and community development in all areas of society, economy, and environment, etc.' and further established the 'Social Value Comprehensive Plan' consisting of five core values and twenty strategic tasks to realize social values at all stages of the value chain. The Social Value Committee, launched in 2019, consists of eight executives and five external members, and has Chief Business Management Officer as the chairperson. The committee periodically assesses the direction of social value realization through examining its policies and performance of implementation tasks, as well as by proposing development plans. As a representative public corporation, KEPCO will communicate with a wide range of various stakeholders based on the harmonization of public interest and profitability, and will actively strive to fulfill corporate social responsibility.

4



### Being Selected as the Best Organization for Self-Audit Evaluation by the Board of Audit and Inspection

KEPCO was selected as the best organization in the public sector in recognition of its achievements in the self-audit activity at the '2019 Self-Audit Awards Ceremony' conducted by the Korea Board of Audit and Inspection. Auditors carried out an in-depth examination of audit activities on 624 organizations, including public corporations and quasi-governmental organizations. KEPCO was recognized as the organization performing the best self-audit activities, and has achieved the highest grade for four consecutive years. In addition, the 'Audit for SPCs performing new energy business' practice presented by KEPCO at the 'Self-Audit Contest' received the Grand Prize, ranking first among the 624 organizations participating in the evaluation. By sharing audit resources with other institutions and strengthening the system for collaboration, KEPCO will take the lead in building a society of integrity so that all public institutions can be trusted by the public.

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# KEPCO Profile

## KEPCO Overview

KEPCO is a market-based public corporation established to promote the development of electric power sources, to stabilize the electricity supply and demand, and to contribute to the development of the national economy. KEPCO is leading the energy industry in and out of Korea through ceaseless innovation and challenges in order to stably supply high-quality electric power and strengthen global competitiveness. As of 2019, we stably supplied power to 23 million households nationwide. The annual accumulative power sales volume stood at 520,499GWh, of which 56% was used for the industrial sector, 22% for the general sector, 14% for the residential sector and 8% for other sectors.

## Corporate Profile

	<div>Total Assets (Consolidated)</div> <div>KRW 197.6 trillion</div>	<div>Sales Amount (Consolidated)</div> <div>KRW 59.2 trillion</div>	<div>Number of Employees (Full-Time Positions)</div> <div>22,979 persons</div>	<div>Power Sales Volume</div> <div>520,499 GWh</div>	
Company Name	Korea Electric Power Corporation (KEPCO)				
Date of Establishment	January 26, 1898				
Address	55, Jeollyeok-ro (120, Bitgaram-dong) Naju-si, Jeollanam-do, Republic of Korea				
CEO	JongKap Kim				
Areas of Business	Power Resource Development, R&D, Electric Power Generation-Transmission-Substation-Distribution and Sale, Overseas Business, etc.				
Form of Business	Government-Invested Institution				
	Paid-in Capital KRW 4.1 trillion (US \$3.4 billion)				
Shareholder Structure and Stock Listing (As of Dec 31, 2019)	<div><div><div>Shares Outstanding</div><div>641,964,077</div></div><div><div><div><div></div><div>Korea Development Bank</div><div>32.9%</div></div><div><div></div><div>Government</div><div>18.2%</div></div><div><div></div><div>National Pension Fund</div><div>7.9%</div></div><div><div></div><div>Foreigners</div><div>24.1%</div></div><div><div></div><div>Corporations and Individuals</div><div>16.9%</div></div></div></div></div>		<div>Underlying Shares Listing</div> <div><div>KRX (Korea Exchange)</div><div><div>Date of listing</div><div>Aug. 1989</div></div><div><div>Securities Code</div><div>015760 KS</div></div></div>		<div>American Depositary Receipts (ADR) Listing</div> <div><div>NYSE (New York Stock Exchange)</div><div><div>Date of listing</div><div>Oct. 1994</div></div><div><div>Securities Code</div><div>KEP US</div></div></div>
Credit Rating (As of Dec 31, 2019)	<div>Domestic</div> <div><div><div>NICE</div><div>A1 / AAA</div></div><div><div>KIS</div><div>A1</div></div><div><div>KR</div><div>AAA</div></div></div>		<div>Overseas</div> <div><div><div>Moody's</div><div>Aa2</div></div><div><div>S&amp;P</div><div>AA</div></div><div><div>Fitch</div><div>AA-</div></div></div>		

## KEPCO History

~ 1980's

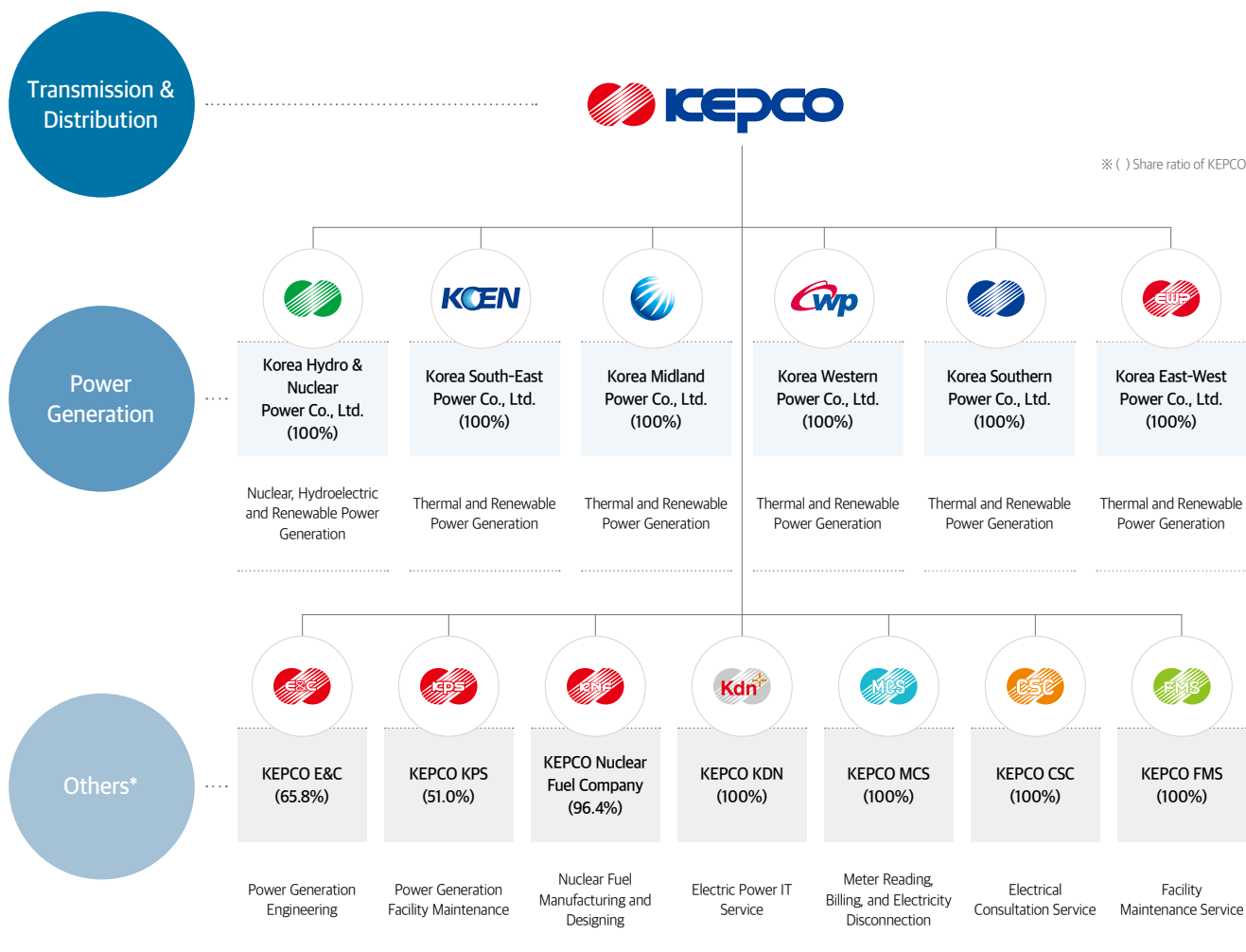
1990's

- 1898. 1 Founding of the Hansung Electric Company
- 1978. 4 Completed Kori Nuclear Power Plant
- 1982. 1 Establishment of Korea Electric Power Corporation
- 1983. 4 Capacity of domestic power generation facilities exceeds 10 million kW
- 1983. 5 Completed the first domestic LNG generator (Pyeongtaek Thermal Power Plant Unit 3)
- 1986. 11 Completed construction of company headquarters in Samseong-dong
- 1987. 4 Celebrated the 100th anniversary of electricity
- 1987. 6 Peak demand for electric power exceeds 10 million kW
- 1989. 8 Listed on the Korea Stock Exchange

- 1994. 10 Listed on the New York Stock Exchange
- 1995. 2 Won bid to operate the Malaya Power Plant in the Philippines
- 1997. 6 Won the Edison Award (1997, 2006)
- 1997. 10 Completed HVDC connection between Jeju Island and the mainland
- 1997. 11 Won bid to construct and operate the Ilijan Power Plant in the Philippines
- 1998. 3 Celebrated the 100th anniversary of electric power business
- 1998. 12 Launched KEPCO Cyber Branch
- 1999. 5 Enacted and promulgated the Charter of electric power service
- 1999. 7 Began installing underground distribution lines as requested by local governments



## KEPCO Group Companies



\* Others : Major subsidiaries and affiliates excluding power generation companies

※ Listed on the stock market of KEPCO group companies : KEPCO, KEPCO E&C, KEPCO KPS (There are eight listed public institutions out of total 340)

### 2000's

- 2001. 4 Spun off six generation subsidiaries
- 2002. 1 Started remote meter-reading for all high-voltage customers
- 2002. 5 Independently developed a new light-water reactor, APR1400
- 2002. 6 Completed the Ilijan Power Plant, the largest combined-cycle in the Philippines
- 2004. 5 Created KEPCO Social Service Team
- 2005. 3 Started power supply to the Kaesong Industrial Complex
- 2005. 11 Completed voltage upgrade to 220V for distribution
- 2008. 2 Awarded the grand prize at the Korea Ethical Management Awards
- 2009. 12 Exported nuclear power plant overseas for the first time (UAE)

### 2010's

- 2010. 5 Achieved S-grade in public institution performance evaluation for the first time
- 2013. 10 Hosted the World Energy Congress 2013 in Daegu
- 2014. 10 Hosted the 20th Conference on Electric Power Supply Industry (CEPSI)
- 2014. 12 Moved headquarters to Naju Innovation City
- 2015. 10 Held Bitgaram International Exposition of Electric Power Technology (BIXPO 2015)
- 2016. 5 Ranked first in the electric utility sector in Forbes Global 2000
- 2018. 2 Achieved uninterrupted electric power supply for the Pyeongchang Winter Olympics
- 2019. 4 Established the Data Science Lab
- 2019. 5 Won the CIO 100 Award for four consecutive years

# Status of KEPCO Group Companies

(As of Dec 31, 2019)

## Power Generation Companies

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

Address	1655, Bulguk-ro, Yangbuk-myeon, Gyeongju-si, Gyeongsangbuk-do, Korea
Number of Employees	12,584
Website	www.khnp.co.kr
Share Ratio	100%
Total Installed Capacity	28,584MW (22.8% of the Total Domestic Power Generation Facilities)
Generation Capacity	150,277GWh (26.7% of the Gross Domestic Power Generation)
Revenue	KRW 8.982627 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	2,545
Website	www.koenergy.kr
Share Ratio	100%
Total Installed Capacity	10,377MW (8.3% of the Total Domestic Power Generation Facilities)
Generation Capacity	64,046GWh (11.4% of the Gross Domestic Power Generation)
Revenue	KRW 5.420488 trillion

Korea South-East Power Co., Ltd. is operating five power plants including Samcheonpo Power Generation Division, Yeongheung 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	2,774
Website	www.komipo.co.kr
Share Ratio	100%
Total Installed Capacity	10,690MW (8.5% of the Total Domestic Power-Generation Facilities)
Generation Capacity	45,715GWh (8.1% of the Gross Domestic Power Generation)
Revenue	KRW 4.547414 trillion

Korea Midland Power Co., Ltd. is operating five 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, Taean-eup, Taean-gun, Chungcheongnam-do, Korea
Number of Employees	2,545
Website	www.westernpower.co.kr
Share Ratio	100%
Total Installed Capacity	11,338MW (9.0% of the Total Domestic Power Generation Facilities)
Generation Capacity	46,502GWh (8.3% of the Gross Domestic Power Generation)
Revenue	KRW 4.468579 trillion

Korea Western Power Co., Ltd. is operating four power plants including Taean 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	2,470
Website	www.kospo.co.kr
Share Ratio	100%
Total Installed Capacity	11,283MW (9% of the Total Number of Power-Generation Facilities)
Generation Capacity	51,331GWh (9.1% of the Gross Domestic Power Generation)
Revenue	KRW 5.439314 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	2,576
Website	www.ewp.co.kr
Share Ratio	100%
Total Installed Capacity	11,193MW (8.9% of the Total Number of Power-Generation Facilities)
Generation Capacity	50,913GWh (9.0% of the Gross Domestic Power Generation)
Revenue	KRW 4.896033 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 Donghae Bio Thermal Power Generation Division.

## Major Invested Companies

## KEPCO E&amp;C

Address	Hyeoksin-ro, Gimcheon-si, Gyeongsangbuk-do, Korea
Number of Employees	2,371
Website	www.kepc0-enc.com
Share Ratio	65.8%
Revenue	KRW 448.635 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.

## KEPCO KPS

Address	211, Munhwa-ro, Naju-si, Jeollanam-do, Korea
Number of Employees	6,601
Website	www.kps.co.kr
Share Ratio	51.0%
Revenue	KRW 1,246.950 billion

KEPCO KPS is a comprehensive power plant servicing company that conducts high-quality maintenance of power-generation facilities, transmission and substation facilities and industrial facilities. By implementing test-operating maintenance in the process of constructing power plants, along with routine operational maintenance, planned outage maintenance, renovations, etc., KEPCO KPS is contributing to the prevention of sudden failures and an increase in the usage rates of facilities.

## KEPCO Nuclear Fuel

Address	242, Daedeok-daero 989-gil, Daejeon, Korea
Number of Employees	1,189
Website	www.knfc.co.kr
Share Ratio	96.4%
Revenue	KRW 309.055 billion

KEPCO Nuclear Fuel is a nuclear fuel design and manufacturing company established for the localization of nuclear fuel and for technological independence. It produces and supplies nuclear fuel for domestic light-water reactors and heavy-water reactors.

## KEPCO KDN

Address	661, Bitgaram-ro, Naju-si, Jeollanam-do, Korea
Number of Employees	2,829
Website	www.kdn.com
Share Ratio	100%
Revenue	KRW 625.567 billion

KEPCO KDN is in charge of IT works for KEPCO and provides total IT services related to all power systems, including information system establishment and operation, electric power IT service, information communication infrastructure establishment and maintenance, information security, etc.

## KEPCO MCS

Address	7, Sangya 1-gil, Naju-si, Jeollanam-do, Korea
Number of Employees	4,567
Website	www.kepc0mcs.co.kr
Share Ratio	100%
Revenue	KRW 129.393 billion

Established in March 2019, KEPCO MCS provides total metering and customer services throughout the entire process of business, including meter-reading, billing and electricity disconnection, etc.

## KEPCO CSC

Address	685, Bitgaram-ro, Naju-si, Jeollanam-do, Korea
Number of Employees	921
Website	www.kepc0csc.co.kr
Share Ratio	100%
Revenue	- (Established on December 5, 2019)

Established in December 2019, KEPCO CSC has efficiently improved its consulting operations and communication system so that customers experience no inconvenience in using electricity. It also offers an artificial intelligence-based interactive consultation channel for customers.

## KEPCO FMS

Address	7, Sangya 1-gil, Naju-si, Jeollanam-do, Korea
Number of Employees	1,852
Website	www.kepc0fms.co.kr
Share Ratio	100%
Revenue	KRW 37.627 billion

Established in March 2019, KEPCO FMS provides maintenance services for KEPCO's facilities, such as branch offices and substations.

## Power Generation Companies

6 companies

## Major Invested Companies

7 companies

# Value Chain of the Electric Power Industry

(As of Dec 31, 2019)

## INPUT

## BUSINESS

### Financial Capital

#### Total capital and assets available for production

Total assets (consolidated)	KRW <b>197,597,792</b> million
Total capital (consolidated)	KRW <b>68,889,649</b> million

### Human Capital

#### Capability, experience, and commitment level of human resources

Total number of employees	<b>22,979</b> persons
Training hours per employee	<b>95.9</b> hours

### Intellectual Capital

#### Intangible assets such as brand, patents, expertise

R&D costs	KRW <b>363,028</b> million
Joint R&D project in collaboration with SMEs	KRW <b>4,015</b> million

### Manufactured Capital

#### Tangible assets for production such as building, facilities

Purchase of electric power	<b>540,520</b> GWh
Establishment and expansion of electric power facilities	KRW <b>379,736</b> million

### Social Capital

#### Relationship with stakeholders such as customers, local community, partners, etc.

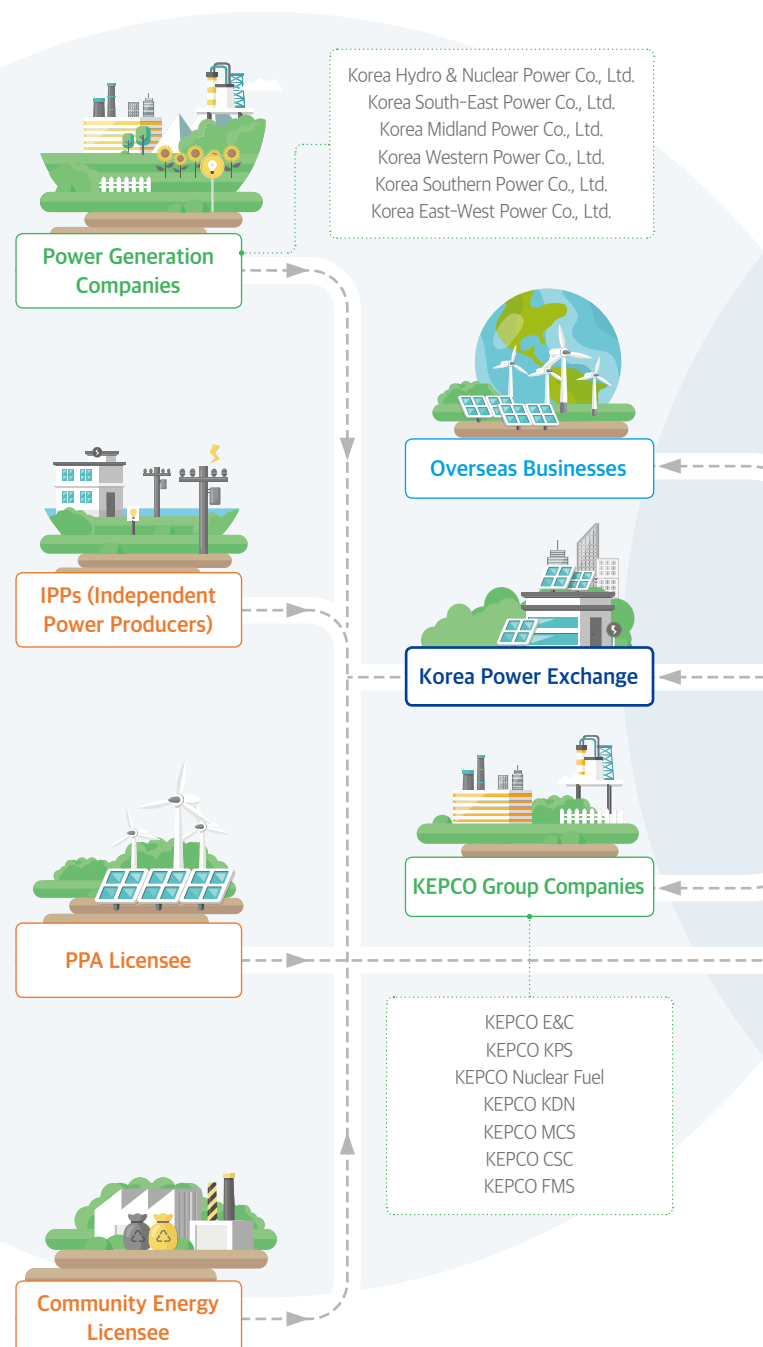
Donation	KRW <b>12,251</b> million
Purchase from SMEs	KRW <b>5,406,576</b> million

### Natural Capital

#### Resource environment, resource, ecosystem, etc.

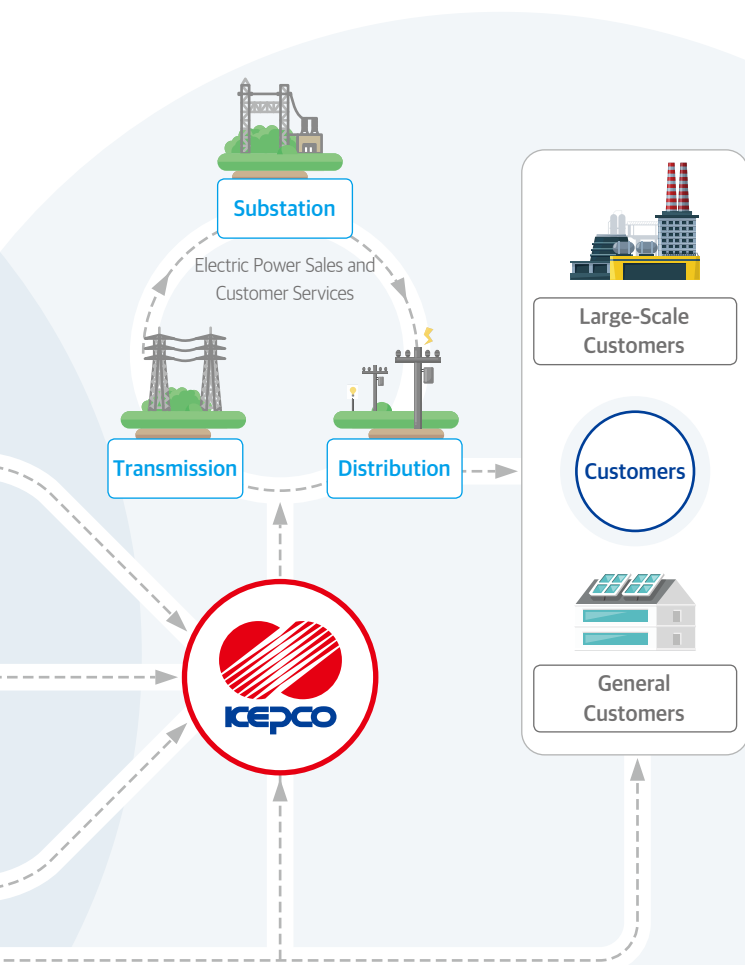
Energy usage	<b>6,936</b> TJ
Water usage	<b>3,765,707</b> m <sup>3</sup>

### Value Chain of Electric Power Industry



## ACTIVITIES

## OUTPUT



## Financial Capital

Sales (consolidated) KRW **59,172,890** millionMarket capitalization (closing price) KRW **17,846,601** million

## Human Capital

Creation of new jobs (permanent positions) **1,773** personsFostering human resources for future growth **1,283** persons

## Intellectual Capital

Intellectual property rights registered locally and overseas **2,987** casesSecuring core strategic technologies (cumulative) **103** cases

## Manufactured Capital

Electric power sold **520,499** GWhAnnual power outage time per unit **8.61** (min / unit)

## Social Capital

Hours spent on volunteer activities by employees **143,890** hoursLocal jobs creation in the Energy Valley **10,091** persons

## Natural Capital

GHG emissions **1,101,428** tCO<sub>2</sub>eqAmount of recycled waste **26,511** ton





# SUSTAINABILITY

KEPCO walks together toward a brighter future for everyone.





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COVID-19 Response

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KEPCO Strategy

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Stakeholder Engagement

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Materiality Assessment

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Impact Valuation Management

## COVID-19 Response

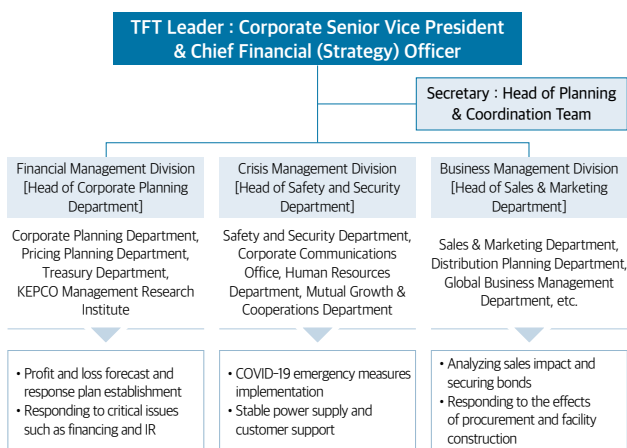
The World Health Organization (WHO) declared the COVID-19 outbreak as a pandemic on March 11, 2020, indicating the worst prevalence of an infectious disease worldwide. The economic and social impact of COVID-19 has had a ripple effect on companies in every country, and the crisis will likely continue for some time. KEPCO is committed to responding to this global crisis, protecting the safety of its employees, suppliers, customers and communities to overcome the COVID-19 together.

### Crisis Response System

#### Organization of COVID-19 Response TF

KEPCO has been operating a COVID-19 Response TF since April 2020, considering the necessity of a comprehensive response to increased uncertainty in management conditions following the prolongation of the pandemic. Centered on the senior vice president of planning, the head of the TF, the division of financial management, risk management and business management are organized to analyze the pandemic's impact on the company in general.

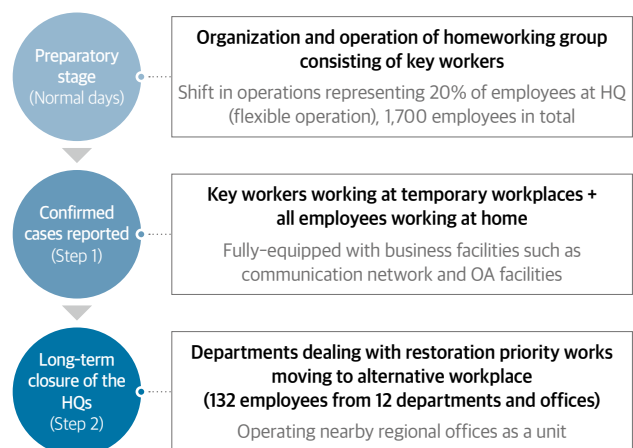
#### Company-wide COVID-19 Response TF Organization



#### Crisis Response by Stage

As of January 20, 2020 when the first confirmed case was reported in Korea, KEPCO announced company-wide warnings against COVID-19. As the government's crisis alerts were upgraded to "serious", KEPCO established comprehensive crisis response measures. Accordingly, emergency actions were taken in response to the nationwide spread by establishing countermeasures for each confirmed and quarantined case, and controlling unnecessary entry and exit of office buildings, etc.

#### Countermeasures in Case of Patients Confirmed with COVID-19



### Securing Employee Safety

To minimize the possibility of the infection among employees, KEPCO has been operating the Emergency Response Headquarters and Situation Room. In response to the actual situation of the site, the company is flexibly responding according to the response system for each scenario, from quarantine measures to emergency operation and business resumption. In addition, the company carries out quarantine once a week and is allowing business trips only in exceptional cases, such as attendance of urgent meetings and provision of essential customer services. Meanwhile, we provided supplies such as masks, oxygen respirators, and dustproof clothing to employees working in overseas branches and their families for their health and safety.

Support for employees working in overseas branches and accompanying families	Beneficiaries	Masks	Diagnosis kit
	 <b>534</b> persons from <b>13</b> countries	 <b>19,224</b> masks in total (36 per person)	 Support to enable purchasing through local distribution networks in consideration of the export licensing procedure of strategic goods



## Support for Customers and Stakeholders

### Customers

KEPCO extended its tariff payment date from April to December of 2020 by three months to alleviate tariff burdens on small businesses and vulnerable groups nationwide suffering from the COVID-19 pandemic. In addition, the tariff for April to September of 2020 was reduced by 50% for small businesses in Daegu, which was designated as Special Disaster Zone, and three other regions in Gyeongbuk province: Gyeongsan, Bonghwa, and Cheongdo. Small businesses in the Special Disaster Zone were entitled to both electric charge reductions and payment extension. In addition, KEPCO is providing diverse customer services, such as lowering its late charge from 1.5% to 1.2% and expanding the credit card payment option to 95% of all customers.

### Partner Companies

The economic impact of COVID-19 is also directly affecting partner companies. KEPCO is providing various contractual benefits for the partners who are having difficulties in operating their businesses due to COVID-19. By temporarily applying a contractual exception, the prepayment limit was increased from 70% to 80% for early execution of finance, and in order to alleviate partner's burdens and secure their safety, liquidated damages were exempted and contract period was extended in case of a work stoppage caused by patients confirmed with COVID-19. In addition, in order to support partners who are having difficulties in developing overseas markets due to cancellation of exhibitions and export conferences, we are holding non-face-to-face video export consultations to help partners explore overseas markets.

### Local Communities

KEPCO, together with KEPCO group companies, has donated KRW 3.2 billion to efforts for overcoming COVID-19, 50% of which went to Daegu and Gyeongbuk, the most affected areas. In addition, KEPCO also donated 100,000 bottles of hand sanitizers across 1,694 traditional markets nationwide in cooperation with the Korea Merchant Association to support traditional markets, which are facing a crisis due to COVID-19. We are also buying farm produce from the affected farmers and donating it to social welfare organizations. Finally, our employees working at regional divisions across the nation are voluntarily participating in various social contribution activities, such as mask sharing campaigns, in order to support vulnerable groups suffering from COVID-19.

### International Communities

Recognizing that COVID-19 is a global crisis and participating in the efforts to overcome the crisis, KEPCO has replaced its existing CSR activities overseas, such as volunteer work, with support for quarantine and health screening supplies for COVID-19. In addition, considering the rapid spread of COVID-19 in countries where overseas branches and operations are located, such as Saudi Arabia, Jordan and Mexico, we have sent funds and relief supplies worth KRW 1.56 billion abroad.



'Love Sharing Blood Donation Campaign' to help resolve the blood supply shortage caused by the prolonged COVID-19 pandemic



'Mask Sharing Campaign' through the support of employees and the voluntary participation in the production of cotton masks by citizens and socio-economic organizations



Non-face-to-face video consultations on exporting to help partner companies develop overseas export channels in Southeast Asia

# KEPCO Strategy

## KEPCO 2030 Strategy

KEPCO established a 2030 mid-to long-term strategy that aims to take a new leap forward in responding to the shift in the energy industry paradigm caused by the 'Energy Transition', which is represented by the spread of eco-friendly energy, and the 'Digital Transformation', which is based on new technologies such as big data and artificial intelligence. In particular, in order to realize the world's highest level of sustainability management, the company newly established social value focused goals to reinforce the link between mid-to long-term strategies and sustainability management, and built sustainable social value implementation system by discovering social value tasks and reflecting them in the company-wide work.

### 2030 Mid-to long-term strategy

Purpose

Stabilize electricity supply & demand and contribute to national economic development

Vision

KEPCO - A Smart Energy Creator

Core Values



Future



Innovation



Respect

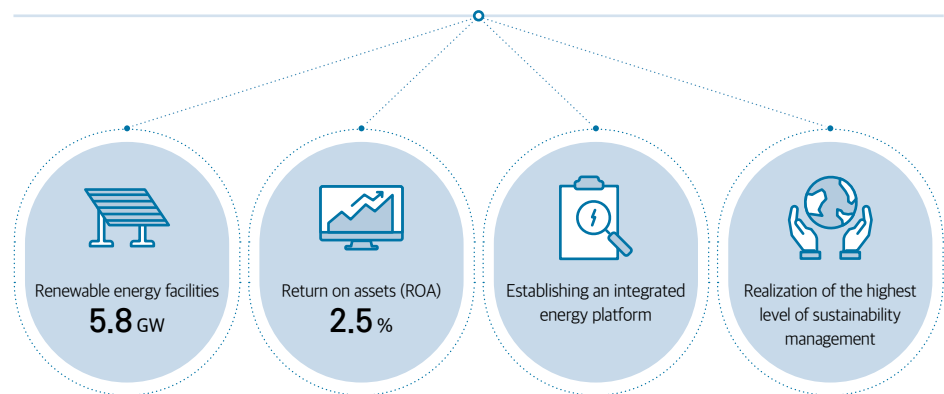


Social Value



Trust

Mid-to long-term Management Goals



Mid-to long-term Strategic Direction



Mid-to long-Term Strategic Tasks

<ul style="list-style-type: none"> <li>Innovating wholesale market system</li> <li>Developing renewables</li> <li>Responding to supply and demand volatility</li> <li>Enhancing grid efficiency</li> </ul>	<ul style="list-style-type: none"> <li>Strengthening sales leadership</li> <li>Provision of new services</li> <li>Settlement of cost-based rates</li> <li>Improving energy efficiency</li> </ul>	<ul style="list-style-type: none"> <li>Creating new business achievements - EVC, EMS, etc.</li> <li>Expanding sales of overseas business - Nuclear power generation, renewable energy, etc.</li> </ul>	<ul style="list-style-type: none"> <li>Developing core strategic technologies</li> <li>Laying the foundation for technology management</li> <li>Establishing an energy platform</li> <li>Innovating work process</li> </ul>	<ul style="list-style-type: none"> <li>Worth working together</li> <li>Social integration and healthy life</li> <li>Win-win cooperation, integrity &amp; ethics</li> <li>Improving management system efficiency</li> </ul>
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## KEPCO ESG Strategy

KEPCO is making its best efforts to create environmental and social value for sustainable growth in addition to financial results, and is communicating transparently with shareholders on major ESG (Environmental, Social, and Governance) issues. As part of these efforts, we have established an ESG strategic system by consolidating and systemizing the improvement activities for each ESG sector that have been dispersed and decentralized, and are faithfully implementing ESG tasks based on our strategic system to keep pace with global trends. KEPCO will continue to take responsible actions to meet the demands of global investors and other stakeholders in improving ESG issues, and strive to fulfill its responsibilities and obligations as a corporate citizen.

### ESG Strategic System

Vision

Achieving the Global Top-Level of Sustainability Management by Expanding Cooperation and Communication with Stakeholders

Goal

Opening a **Warm Energy World** by **Creating Future Value** with **Clean Energy**

Social Value

Economic Value

Environmental Value

E

S

G

Implementation Strategy

#### Environmental

Establishing a foundation for the expansion of eco-friendly energy

Building systems to actively respond to climate crisis

Leading the transition to a high-efficiency and low consumption energy structure

#### Social

Contributing to the development of local communities and participating in efforts to resolve social issues

Creating an environment for shared growth with SMEs

Improving disaster and safety controls and information security systems

Establishing an employee-oriented corporate culture

#### Governance

Strengthening ESG management

Conducting ethical management and strengthening anti-corruption systems

Creating an environment for shared growth based on fair transactions

Core Tasks

Increasing renewable energy supply and expanding connection to the grid

Strengthening progress management for GHG reduction

Gradually reducing coal-fired power generation at home and abroad

Expanding information disclosure on response to climate crisis

Implementing energy efficiency improvement projects

Expanding the participation of local communities and seeking shared growth

Strengthening shared growth support system with SMEs

Conducting various social contribution activities

Improving safety, health and security management capabilities

Developing human resources and improving corporate culture

Operating an ESG council with the participation of the BOD and management

Reinforcing the ethics and law-abiding management system


Spreading the culture of integrity and ethics both inside and outside of the organization

Correcting unfair practices in all work processes

Establishing fair transaction ordering with partner companies

## Implementation Status of ESG Tasks

KEPCO is striving to establish a strategic ESG response system within the larger framework of sustainability management. We manage our mid-to long-term goals and performances by linking the ten strategies of our ESG strategic system with the UN SDGs (Sustainable Development Goals). By achieving goals linked to the UN SDGs, we expect to reduce the company's ESG risk and create achievements in each ESG sector, eventually contributing to the sustainable development of the international community.

Implementation Strategy		Implementation Task
 Environmental	Establishing a foundation for expansion of eco-friendly energy	<ul style="list-style-type: none"> <li>• Implementing large-scale new and renewable energy power plant projects for the shift to clean energy</li> <li>• Expanding infrastructure for connecting new &amp; renewable energy to the grid</li> <li>• Expanding charging infrastructure for the proliferation of EVs</li> </ul>
	Building systems to actively respond to the climate crisis	<ul style="list-style-type: none"> <li>• Reducing GHG emissions in preparation for the new climate regime</li> <li>• Establishing a sustainable portfolio for overseas projects</li> <li>• Achieving stakeholders' trust in activities to respond to climate crisis</li> </ul>
	Leading the transition to a high-efficiency and low consumption energy structure	<ul style="list-style-type: none"> <li>• Implementing EERS (Energy Efficiency Resource Standards) project</li> <li>• Expanding energy efficiency project based on K-BEMS (KEPCO Building Energy Management System)</li> </ul>
 Social	Contributing to the development of local communities and participating in efforts to resolve social issues	<ul style="list-style-type: none"> <li>• Increasing the participation of local communities and promoting regional economies</li> <li>• Creating quality jobs</li> <li>• Conducting social contributions associated with core businesses</li> <li>• Providing customized support for social-economy organizations at each business stage</li> </ul>
	Creating an environment for shared growth with SMEs	<ul style="list-style-type: none"> <li>• Expanding cooperation to improve the technical competitiveness of SMEs</li> <li>• Supporting SMEs seeking export channels</li> <li>• Strategically fostering energy start-ups</li> </ul>
	Improving disaster and safety controls and information security systems	<ul style="list-style-type: none"> <li>• Creating a "Life &amp; Safety First Workplace"</li> <li>• Improving disaster response capabilities</li> <li>• Strengthening personal information protection and cyber security management systems</li> </ul>
	Establishing an employee-oriented corporate culture	<ul style="list-style-type: none"> <li>• Establishing corporate culture where work and life are well balanced</li> <li>• Creating family-friendly corporate culture and realizing gender equality</li> <li>• Realizing win-win labor &amp; management culture</li> </ul>
 Governance	Strengthening ESG management	<ul style="list-style-type: none"> <li>• Establishing a management and supervision system for ESG from BOD and management</li> <li>• Enhancing ability to address risks related to ESG</li> </ul>
	Conducting ethical management and strengthening anti-corruption systems	<ul style="list-style-type: none"> <li>• Establishing ethical and law-abiding management</li> <li>• Internalizing the ethical awareness and spreading the integrity culture</li> <li>• Enhancing autonomous internal control processes</li> </ul>
	Creating an environment for shared growth based on fair transactions	<ul style="list-style-type: none"> <li>• Eradicating unfair practices in all work processes</li> <li>• Building fair and cooperative relationships and improving transparency</li> </ul>





The UN SDGs are goals jointly adopted by the UN and international communities to be implemented from 2016 to 2030, after the MDGs came to their conclusion in 2015. The SDGs aim to address universal social, environmental and economic issues and promote shared growth and development for all mankind. They consist of 17 goals and 169 targets.

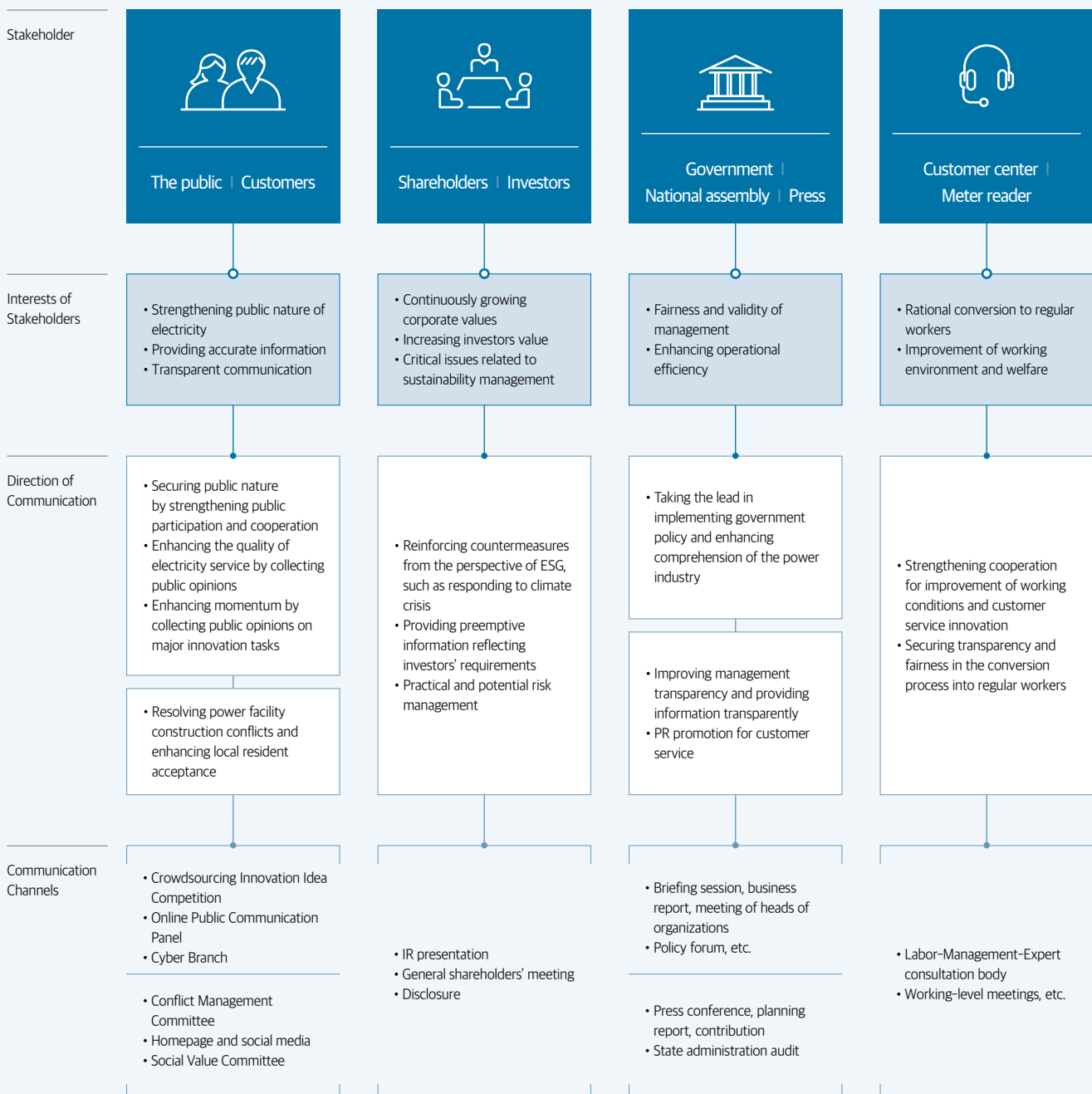
	Main Goal	Key Achievement in 2019	UN SDGs
	<ul style="list-style-type: none"> <li>• KEPCO group companies to develop 41.2GW of new and renewable energy by 2030</li> <li>• Addressing access delays by increasing usage of existing transmission and distribution facilities and adding new facilities</li> <li>• Installing 3,000 units of high-speed EV chargers for public use (30% of government target) by 2022</li> </ul>	<ul style="list-style-type: none"> <li>• Completed the Southwest Sea offshore wind power test complex and launched the New &amp; Renewable Energy Council for KEPCO group companies</li> <li>• Reduced new and renewable energy access delays by 11%p (6,452MW→5,854MW)</li> <li>• Installed 8,612 units of EV charger (1,382 high-speed chargers for public use)</li> </ul>	<ul style="list-style-type: none"> <li>7 Affordable and clean energy</li> <li>9 Industry, innovation and infrastructure</li> </ul>
	<ul style="list-style-type: none"> <li>• Reducing GHG emissions by 47 million tons compared to KEPCO group companies' BAU by 2030</li> <li>• Expanding business scope as a global new and renewable power generation company</li> <li>• Strengthening climate crisis information disclosures in line with global standards</li> </ul>	<ul style="list-style-type: none"> <li>• 6.3% year-on-year reduction in GHG emissions by KEPCO group companies (13.8 million tons reduced)</li> <li>• Began construction of a solar power plant (294 MW) in Mexico and completed a wind power plant (89.1 MW) in Fujiej, Jordan</li> <li>• Introduced TCFD recommendations</li> </ul>	<ul style="list-style-type: none"> <li>11 Sustainable cities and communities</li> <li>13 Climate action</li> </ul>
	<ul style="list-style-type: none"> <li>• Reducing energy consumption by 1% of annual electric power sales volume by 2031</li> <li>• Providing 4,000 K-BEMS by 2030, reducing peak by 135 MW</li> </ul>	<ul style="list-style-type: none"> <li>• Reduced energy consumption by 1,019 GWh through supply of high-efficiency equipment, etc.</li> <li>• Provided 196 K-BEMS and reduced peak by 14.1 MW</li> </ul>	<ul style="list-style-type: none"> <li>14 Life Below Water</li> <li>15 Life on land</li> </ul>
	<ul style="list-style-type: none"> <li>• Attracting 500 companies to the Energy Valley by 2020</li> <li>• Improving job quality, creating jobs in the private sector, building job infrastructure</li> <li>• Providing energy welfare reflecting the nature of the power industry</li> <li>• Identifying and fostering competitive social-economy organizations</li> </ul>	<ul style="list-style-type: none"> <li>• Attracted 430 companies (cumulative) to the Energy Valley</li> <li>• Created 3,373 jobs for youth, 61,522 jobs in the private sector</li> <li>• Provided power-rate discounts of KRW 571.2 billion for the underprivileged, built 466 Sunny Happy Power Facilities (cumulative)</li> <li>• Supported 189 companies (cumulative) find markets at home and abroad</li> </ul>	<ul style="list-style-type: none"> <li>1 No poverty</li> <li>2 Zero hunger</li> <li>3 Good health and well-being</li> <li>4 Quality education</li> <li>5 Gender equality</li> <li>8 Decent work and economic growth</li> </ul>
	<ul style="list-style-type: none"> <li>• Increasing R&amp;D projects in collaboration with SMEs</li> <li>• Attracting 200 SMEs to participate in overseas marketing promotion by 2030</li> <li>• Fostering 300 energy start-ups by 2020</li> </ul>	<ul style="list-style-type: none"> <li>• Executed R&amp;D projects in collaboration with 84 SMEs (cumulative)</li> <li>• Signed USD 12 million in export contracts with 147 SMEs participating in the Market Explorer Group</li> <li>• Fostered 246 energy start-ups (cumulative)</li> </ul>	<ul style="list-style-type: none"> <li>9 Industry, innovation and infrastructure</li> <li>10 Reduced inequalities</li> <li>11 Sustainable cities and communities</li> </ul>
	<ul style="list-style-type: none"> <li>• Improving safety management systems</li> <li>• Establishing a preemptive disaster and crisis response system</li> <li>• Achieving 'zero' personal information leakage and 'zero' cases of cyber infringement</li> </ul>	<ul style="list-style-type: none"> <li>• Acquired International Standards for Safety &amp; Health Management System (ISO 45001) and Business Continuity Management System (ISO 22301)</li> <li>• Selected as an Excellent Public Organization in the Personal Information Control Assessment for five consecutive years</li> </ul>	<ul style="list-style-type: none"> <li>12 Responsible consumption and production</li> <li>16 Peace, justice and strong institutions</li> </ul>
	<ul style="list-style-type: none"> <li>• Improving ways of working and shortening work hours</li> <li>• Increasing work-hour options, including a flexible working hour system</li> <li>• Operating communication channels to facilitate company-labor communications</li> </ul>	<ul style="list-style-type: none"> <li>• Established a permanent corporate-wide workplace innovation committee</li> <li>• Introduced 63 flexible working hour systems and increased the number of users</li> <li>• Jointly executed 'Ten Main Tasks to Improve Corporate Culture' with the labor union</li> <li>• Held the 'Corporate Culture Convergence Workshop' 16 times</li> </ul>	
	<ul style="list-style-type: none"> <li>• Operating an ESG council with the participation of the BOD and management</li> </ul>	<ul style="list-style-type: none"> <li>• Newly established a council for each ESG field, such as the Social Value Committee, with the participation of management</li> <li>• Reviewed the establishment of an ESG committee led by the management</li> </ul>	<ul style="list-style-type: none"> <li>10 Reduced inequalities</li> <li>16 Peace, justice and strong institutions</li> <li>17 Partnerships for the goals</li> </ul>
	<ul style="list-style-type: none"> <li>• Strengthening driving force for ethics and law-abiding management</li> <li>• Discovering and improving anti-corruption improvement tasks which meet international standards</li> </ul>	<ul style="list-style-type: none"> <li>• Newly established the Ethics &amp; Compliance Committee directly under the CEO</li> <li>• Acquired Anti-Corruption Management System Certification (ISO 37001)</li> </ul>	
	<ul style="list-style-type: none"> <li>• Spreading a culture of fairness and setting exemplary models</li> <li>• Establishing fair transaction order with partner companies</li> </ul>	<ul style="list-style-type: none"> <li>• Checked unfair practices and identified tasks the stakeholders empathized with</li> <li>• Upgraded the 'System to Detect Bid Rigging in Auction' using AI</li> </ul>	

# Stakeholder Engagement

## Classification of Stakeholders

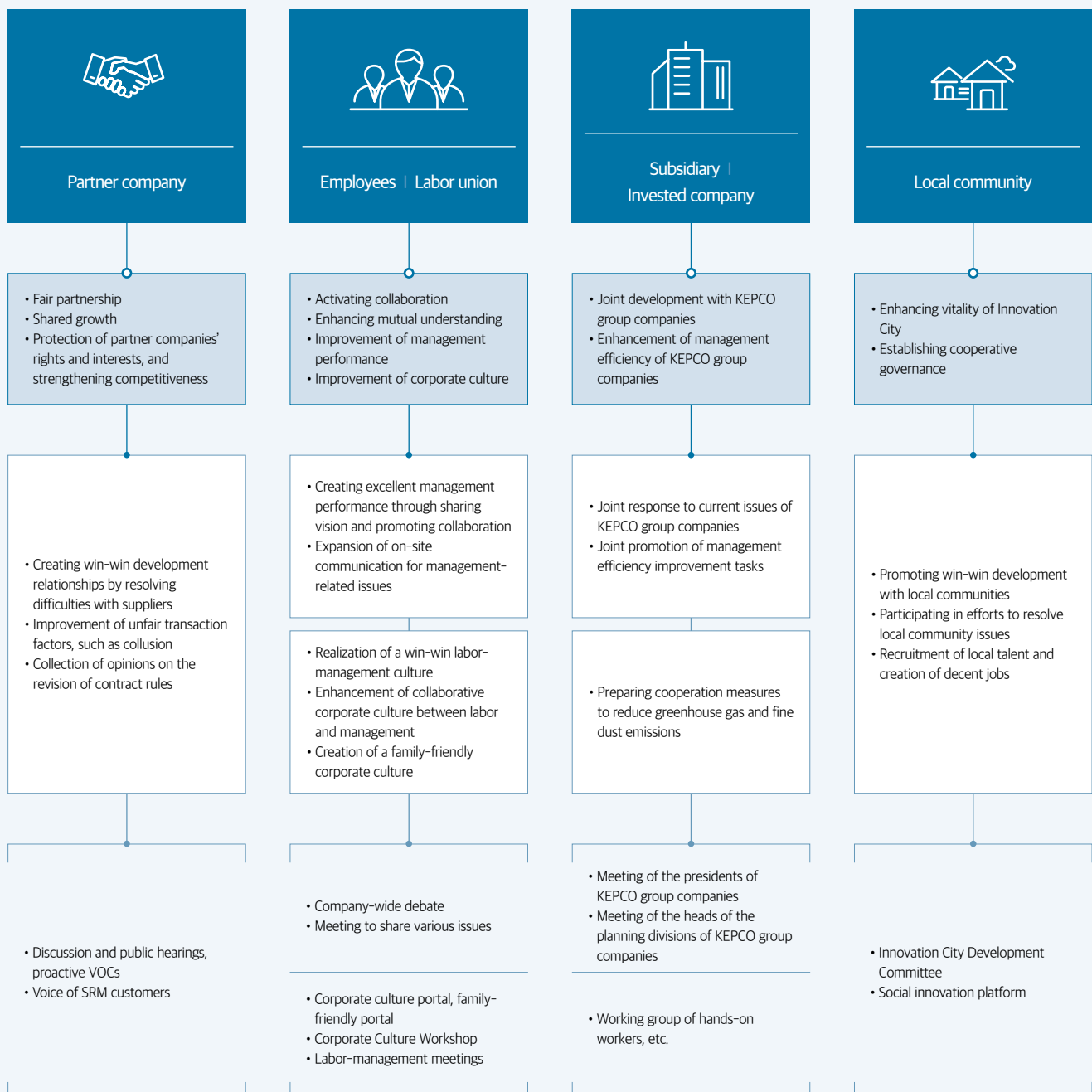
KEPCO continues to communicate about the implementation of sustainable development and growth with key stakeholders such as the public, customers, investors, partner companies, local communities, and employees, etc. To this end, we have reorganized the stakeholder classification system in consideration of the characteristics and current issues of the electric power industry. In addition, various communication channels are operated in accordance with the major interests of each stakeholder. KEPCO will continue to strengthen exchanges with stakeholders to provide correct information about the company and to reflect stakeholders' opinions in major policy decisions.

## Laying the Foundation for Communications with Stakeholders



## Communicating with Stakeholders

KEPCO systematically establishes and operates various communication channels to enhance stakeholder participation. Major opinions of stakeholders identified through communication channels are shared with the management and the Board of Directors, reinforcing linkage with management activities. Also, consistent monitoring and feedback on activities are conducted. In addition, during the publication of the sustainability report, a stakeholder survey was conducted to identify issues of interest in sustainability management, and KEPCO has faithfully applied the issues on the report.



# Materiality Assessment

## Materiality Assessment Process

KEPCO conducts a materiality test in accordance with the principles of the Global Reporting Initiative (GRI), which is a guideline for global sustainability reporting, and reports on the topics identified as material issues. "Material Topic" reflects the impact on KEPCO's business and the interests of its stakeholders. KEPCO strives to provide more detailed information on the management system, major activities, goals and achievements concerning the material topics.

01

Composition of  
issue pool

This reflects industry issues such as global sustainability management guidelines and trends in sustainability management with in the same industry, and synthesizes internal issues related to KEPCO to identify a pool of 39\* sustainability management issues.

\* Issues related to general management, the economy, environment, and social sector

02

Material topics  
(21 units)

### Social Interests Measurement

#### Analysis of global guidelines

GRI Standards, UN SDGs, TCFD, DJSI and other global standards and evaluation items related to sustainability management were reviewed.

#### Domestic media analysis

Media coverage of KEPCO from January 1, 2019 to December 31, 2019 was investigated and analyzed based on valid articles.

#### External stakeholder survey

(from May 25, 2020 to May 29, 2020)

We conducted a survey on the importance and impact of its sustainability management responsibilities and activities to external stakeholders such as customers, suppliers, local communities, shareholders / investment organizations, and sustainability management experts.

### Business Impact Assessment

#### Reflection of industrial issues

We reviewed the sustainability reports of 7 companies in the same industry with excellent sustainability management, as well as reviewing industry standards related to sustainability management, such as SASB.

#### Reflection of internal issues

We incorporated internal data such as management strategies and reflected the instructions and interests of management

#### Employee survey

(from May 25, 2020 to May 29, 2020)

Through employee surveys, the importance and impact of sustainability management responsibilities and activities were identified in terms of profitability / cost, market position, and risk management.

03

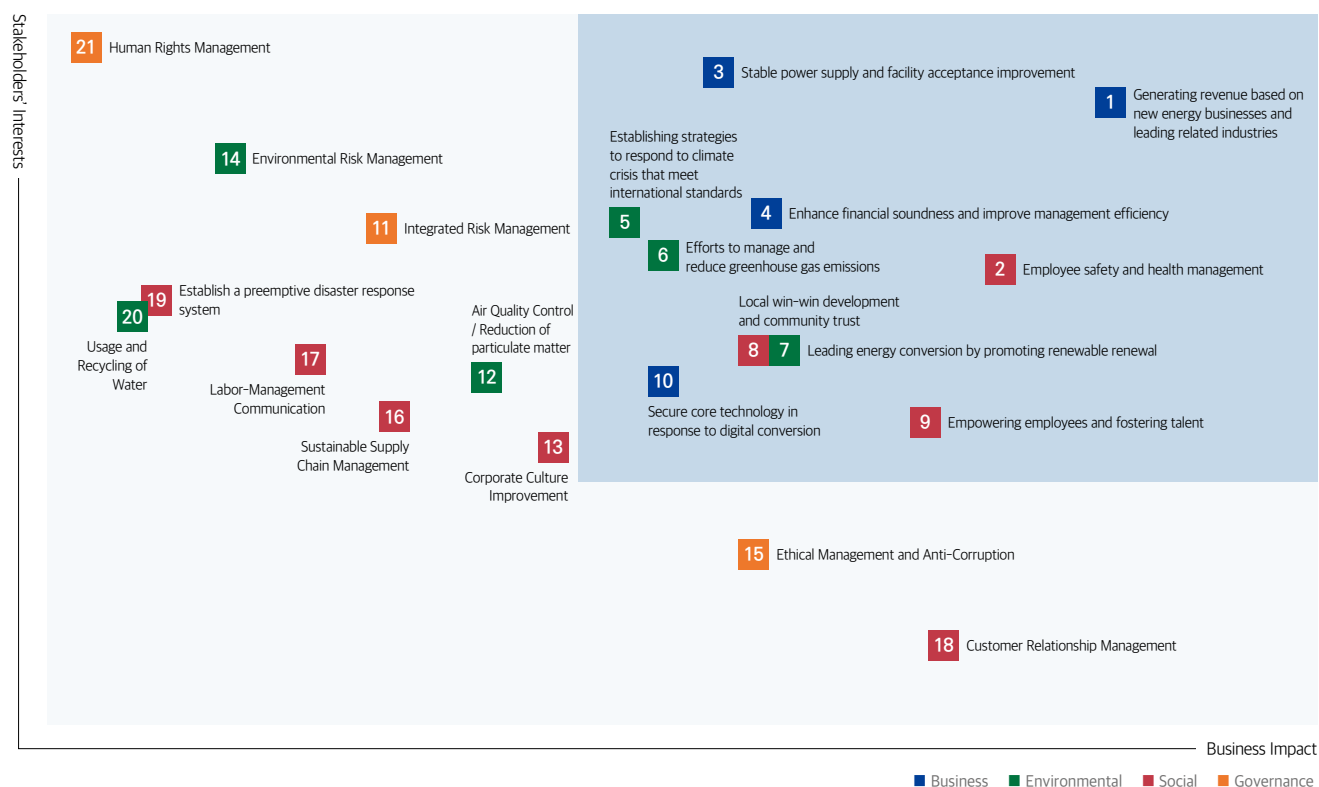
Selection of key  
reporting topics

By analyzing the results of social interest and business impact analysis, 21 material topics were drawn as priorities, and 10 key reporting topics were selected according to internal review of KEPCO.

## Results of Materiality Assessment

KEPCO reports major activities and achievements regarding issues identified through the materiality test throughout the report, and KEPCO continues to monitor and manage the material topics as well as core issues that could potentially affect the management activities.

### Materiality Matrix



### Selection of Material Topics

	Material topics	Target of impact-occurred	GRI Index	Impact of issues*	Reporting subject / Pages
1	Generating revenue based on new energy businesses and leading related industries	Customers, government, shareholders-investors	201-1 Economic achievement	Profitability / cost	Creating Future Growth Engines • 33p
2	Employee safety and health management	Employees, suppliers	403-9 Industry safety health	Risk management	Safety and Health Management • 72p
3	Stable power supply and facility acceptance improvement	Customers, government, shareholders-investors	203-1 Indirect economic effect	Profitability / cost	Electrical Infrastructure and Service Innovation • 44p
4	Enhancing financial soundness and improving management efficiency	Customers, government, shareholders-investors	201-1 Economic achievement	Profitability / cost	Creating Future Growth Engines • 33p
5	Establishing strategies to respond to climate crisis that meet international standards	Customers, government, shareholders-investors	201-2 Economic achievement	Market position	Responding to Climate Crisis • 51p
6	Efforts to manage and reduce greenhouse gas emissions	Customers, government, shareholders-investors	305-1, 2 Emissions	Risk management	Responding to Climate Crisis • 51p
7	Leading energy conversion by promoting new & renewable energy	Customers, government, shareholders-investors	201-2 Economic achievement	Profitability / cost	Expanding the Supply of New & Renewable Energy • 56p
8	Win-win development and establishing trust with local communities	Suppliers, local communities, government	413-1 Local communities	Market position	Social Value Realization • 63p
9	Empowering employees and fostering talent	Employees	404-1 Training and education	Market position	Human Resource Cultivation • 74p
10	Securing core technologies in response to digital transformation	Customers, government, shareholders-investors	203-2 Indirect economic effect	Profitability / cost	Development of Core Strategic Technologies • 40p

\* Impact of issue

1) Profitability / cost : Effects that are linked to financial gains/losses (policy regulations, environmental changes, etc.)

2) Market position : Impact on business activities / processes that create value (exploring new markets, etc.)

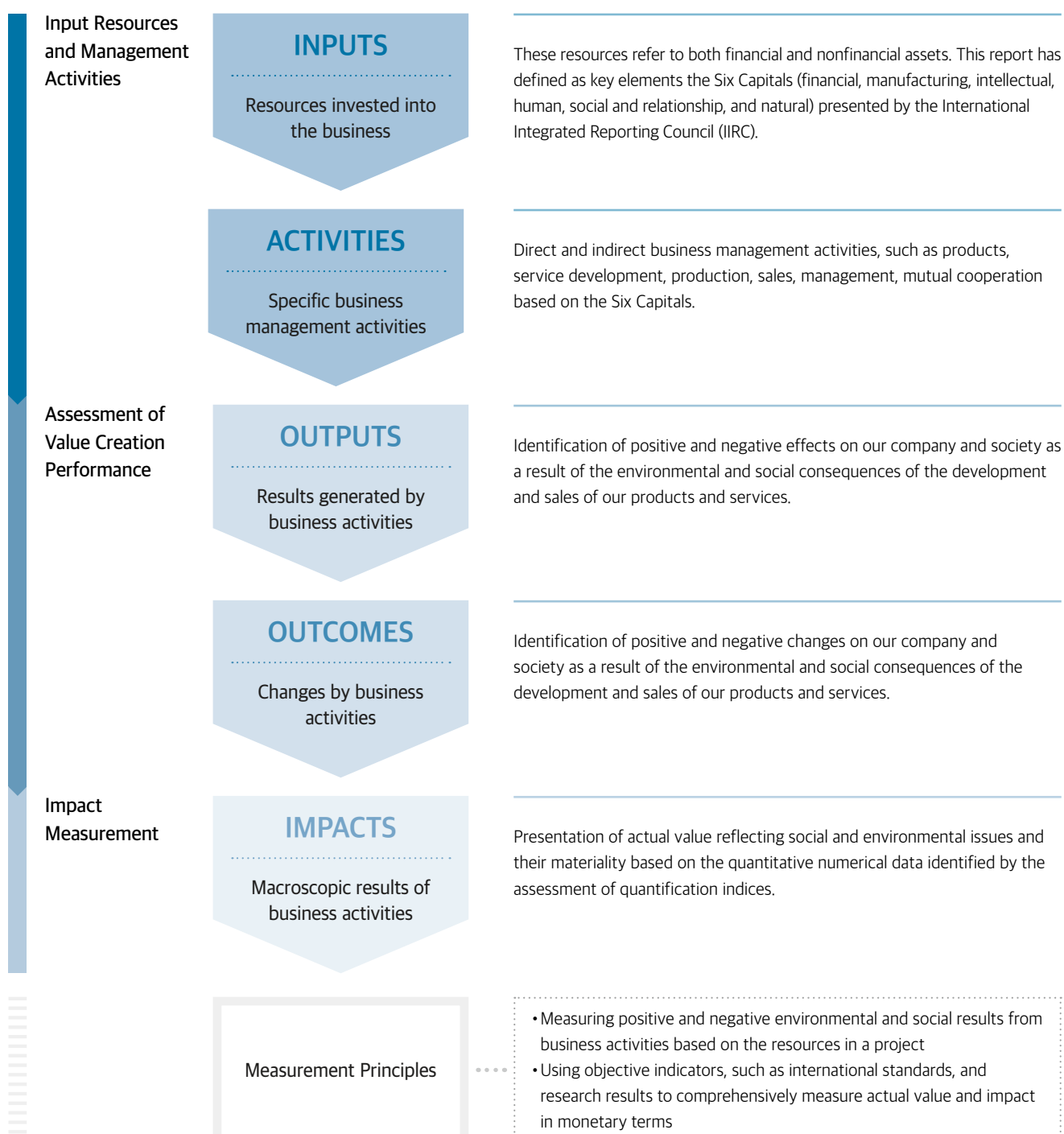
3) Risk Management : Impacts related to potential non-financial risks (media, public opinion, reputation, etc.)

# Impact Valuation Management

## Measurement Principles for Impact Valuation

KEPCO comprehensively analyzes the practical impact of value creation activities of sustainability management by measuring, in monetary terms, both the positive and negative results generated on the side of society and the environment as well as the economic value created by management activities. In the future, we plan to continuously improve our principles and standards for measuring the economic value of environmental and social activities to produce more accurate calculations, and we will share the results with our stakeholders through our annual sustainability report.

### Impact Measurement Framework





## Performance of Impact Valuation Management

In order to convert the activities of Impact Valuation Management into monetary terms, KEPCO first looked at official data published by government and industry associations and reviewed the results of research that analyzed the economic value of environmental and social activities. As a result, KEPCO's value creation from sustainability management in 2019 was equivalent to about KRW 1.2 trillion. KEPCO will continue to monitor research on the value and impact of sustainability management activities, and make efforts to disclose areas that cannot be converted due to social consensus and technical limitations in more accurate and objective figures.

## Performance of Sustainability Management Value Creation

Indicators		Measuring Indicators	0	(Unit : KRW 100 million)
Financial aspects	Net income (loss)	Profits generated from the current period (loss)		(25,950)
Environmental aspects	GHG emission impact	Social costs incurred by GHG emission	(317.8)	
	Waste emission impact	Social costs incurred by waste emission	(139.9)	
	Water utilization and wastewater impact	Social cost of wastewater treatment	(46.3)	
	Reduction of GHG emissions	Efforts to reduce GHG emissions by building electric vehicle charging infrastructure, supplying K-BEMS to the private sector, and implementing the EERS (Energy Efficiency Resource Standards) project.	140.3	
Socio-economic aspects	Investor value	Dividends and payment of interest	7,771.0	
	Government	Tax payment	361.0	
	Employees	Effect on increasing employee income		14,109.7
	Partner companies	Overseas marketing support, cooperative R&D product purchasing, support for low-interest loans		2,980.2
	Local community	Donation support and job creation effectiveness		13,377.1
Performance of Sustainability Management Value Creation				12,285



# PERFORMANCE

KEPCO connects power services as one.



32

## Business

Creating Future Growth Engines  
Electrical Infrastructure and  
Service Innovation

50

## Environmental

Responding to Climate Crisis  
Environmental Management

62

## Social

Social Value Realization   Safety and Health Management  
Job Creation   Human Resource Cultivation  
Pursuing Shared Growth   Corporate Culture Innovation  
Supply Chain Management   Social Contribution Activities

82

## Governance

BOD and Decision-making  
Ethical Management  
Human Rights Management  
Risk Management

# BUSINESS

01

## Management Approach

To secure a sustainable future growth engine, KEPCO is expanding its new energy business through high-tech convergence, focusing on the development and commercialization of next-generation technologies and diversifying overseas projects based on its experiences in domestic and overseas power industries and the competitiveness of its primary business. In addition, we are implementing a next-generation facility management system based on ICT technology and maintaining a thorough disaster response system in order to reinforce our primary competitiveness in stable power supply and to achieve efficient and optimized power grid construction and operation. Furthermore, we are harnessing our capabilities in the power industry ecosystem to bring about customer value creation through power service innovation.



## 2019 Key Performance

### EV Charging Infrastructure

**8,612** chargers

\* As of June 2020



### Cumulative capacity of overseas power generation facilities

**28,430** MW

(9,381 MW based on the share ratio)

\* As of September 2020



### Securing Core Strategic Technologies

**103** technologies

(2010 ~ 2019 Cumulative)



### Outage time per household

**8.61** minutes





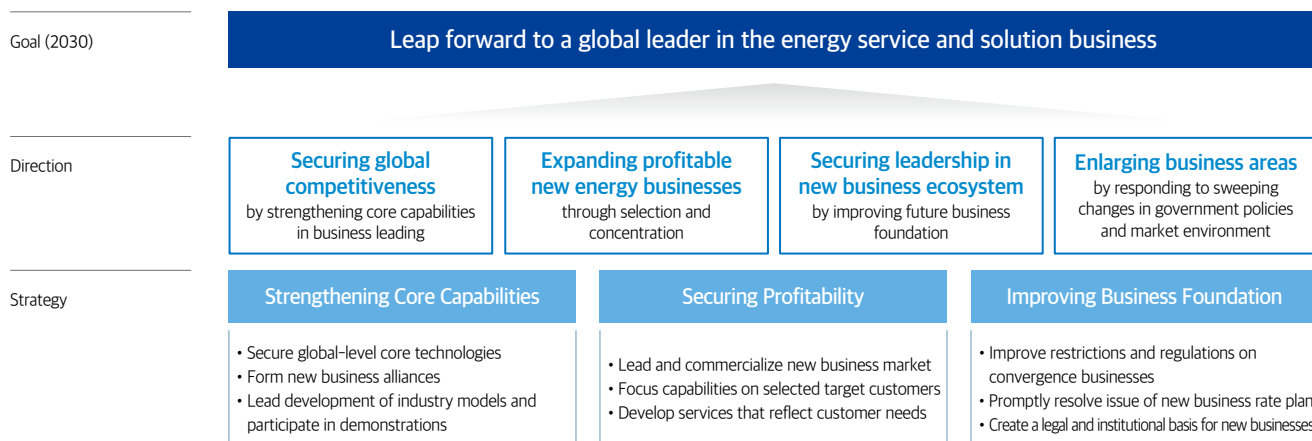
# Creating Future Growth Engines

## Leading New Businesses in the Energy Sector

### Expanding Profitable New Businesses in the Energy Sector

New energy business refers to new businesses that provides and commercializes efficient energy services based on the convergence of new and renewable energy and digital technology to solve major energy issues, such as climate crisis responses, energy security, and demand management. KEPCO is concentrating its capabilities on expanding its business models based on R&D demonstrations while securing global-level core technologies with the goal of securing leadership in the new energy business ecosystem and creating sustainable profits by preemptively moving into the future market.

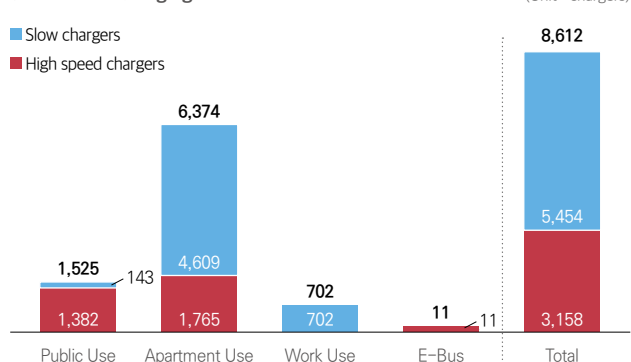
#### Direction of New Businesses in the Energy Sector



### Establishing EV Charging Infrastructure

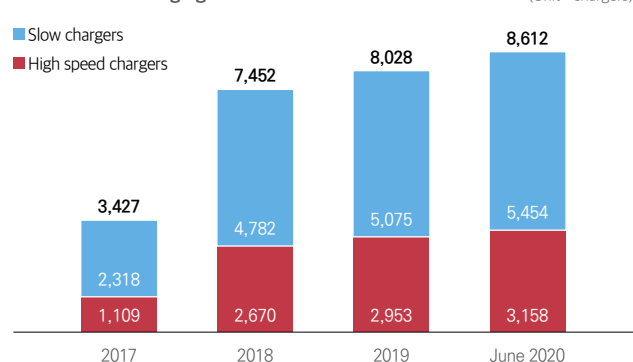
KEPCO has been building various charging models since 2016, including public charging infrastructure and units that are installed in apartments and other residential areas, in order to vitalize the proliferation of EVs and create new power demand. In 2017, we laid a foundation for nurturing private charging infrastructure providers by launching paid charging services and providing access to charging infrastructure. In 2019, as part of our efforts to remove charging blind spots, we continued to expand the establishment of charging infrastructure, while developing charging stations to support the socially disadvantaged, for E-buses only and for those attached to electric poles that can be used on the roadside. KEPCO is striving to develop convergence services to lay the groundwork for the dissemination and proliferation of EVs with the goal of installing a total of 3,000 high-speed chargers for public use, and we aim to expand our business scope to become an 'EVC platform operator' that comprehensively manages a stable charging power supply through control and real-time data gathering about all the EV chargers in Korea.

#### Status of EV Charging Infrastructure



\* As of June 2020

#### Growth of EV Charging Infrastructure



## K-BEMS Supply Business

KEPCO's self-developed K-BEMS (KEPCO Building Energy Management System) is a system that collects and analyzes customer energy use information in real time to control the operation of building facilities. Through successful establishment within 120 company buildings, we have presented a standard model for energy efficiency and usage reduction. We have also promoted K-BEMS-based energy efficiency projects for 79 energy-consuming buildings, universities, factories, etc. In particular, KEPCO has successfully carried out a pilot project for overseas export to the Dominican Republic by forming a consortium with KEPCO Energy Solutions Co., Ltd., and is progressing with a KEPCO smart building project that combines energy efficiency and renewable energy to demonstrate the smart building business in KEPCO Yeongjong Branch. Not only will KEPCO continue the business for multi-use facilities, such as companies occupying national industrial complexes, large retailers, but we will also expand overseas demonstration projects in Costa Rica and Vietnam. This will enable us to contribute to reducing GHG emissions through establishing profit models for new businesses in the energy sector and reducing energy usage.

K-BEMS Supply Status and Value Creation Performance

	Category	unit	2017	2018	2019	2020 (2Q)
Supply to private sector	Building	ea	5	1	5	-
	Campus	ea	4	1	3	-
	Factory	ea	12	13	8	1
	Distributed power*	ea	-	10	14	2
	<b>Total</b>	<b>ea</b>	<b>21</b>	<b>25</b>	<b>30</b>	<b>3</b>
Value creation	Energy consumption savings	GWh	2.9	3.9	6.5	3.0
	CO <sub>2</sub> reduction	tCO <sub>2</sub>	1,373	1,832	2,985	1,385

\* Distributed power : A power generation method that supplies the necessary power to consumers by using renewable energy resources such as solar power in the vicinity of consumers.

Total energy consumption savings of K-BEMS

**16.3<sub>GWh</sub>**

Total CO<sub>2</sub> reduction from K-BEMS

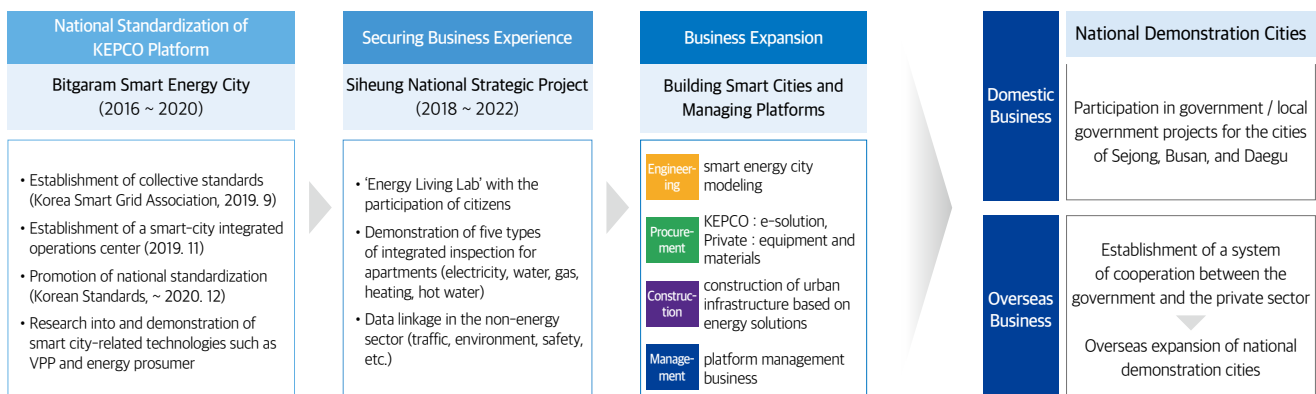
**7,575<sub>tCO<sub>2</sub></sub>**

\* Accumulated performance from 2017 to first half of 2020

## Smart Energy City Development Project

'Smart energy city' refers to a low-carbon, future city that provides improved services, such as energy efficiency, safety, and convenience, through integrated management of urban energy resources based on new and renewable energy, smart-grid and ICT technologies. In order to create a KEPCO-style smart energy city in Naju Innovation City, in November 2019, we established an integrated operation center and monitored the supply and consumption of city energy (electricity, water, gas, heating, and hot water). In addition, acting as the organizing institution in a national strategic project for Siheung Smart City and an energy platform demonstration research project for Sejong Smart City, we are actively participating with the government in creating smart cities. We will continue to participate in city energy demonstration projects tailored to the characteristics of different regions and based on the technology and experience accumulated through the development of our integrated energy operation platform, and we will lead the expansion of smart-energy cities to domestic and overseas sites in the future.

Status and Implementation Plan of Smart Energy City Projects





## Green Hydrogen Project based on P2G

To escape from the global industrial structure centered on fossil fuels that is responsible for global warming, many countries are looking to hydrogen as a next-generation energy source. Green hydrogen refers to hydrogen (H<sub>2</sub>), which is a carbon-neutral fuel. KEPCO was selected as a government project supervisor in May 2019 and is promoting a P2G (power to gas) MG (micro grid) project in Ulsan and Naju that produces, stores, and utilizes green hydrogen. P2G refers to a power gasification technology that utilizes surplus renewable energy to produce and store hydrogen through the electrolysis of water, or to convert it into methane (CH<sub>4</sub>), the main component of natural gas, by combining the hydrogen produced with carbon dioxide (CO<sub>2</sub>). Meanwhile, KEPCO signed a 'Green Hydrogen Technology Development and Cooperation MOU' with local governments, such as those of Jeollanam-do and Naju City, along with Korea East-West Power and the Korea Advanced Institute of Science and Technology (KAIST) in September 2019, thereby strengthening cooperation in vitalizing the hydrogen economy. In the future, KEPCO will lead green hydrogen technology development and demonstration projects, and will intensively nurture a new business model based on hydrogen as a next-generation energy by securing the four core green hydrogen technologies: water electrolysis, fuel cells, hydrogen turbines and methanation.

### Green Hydrogen Project

Project Name	Verification study of a P2G-based multi-MG operation and distribution system	Development of MW-class water electrolysis and methanation technology for renewable energy storage
Period / Location	2019.5 ~ 2022.4 / Ulsan Techno Industrial Complex	2019.5 ~ 2022.4 / Naju Innovation Industrial Complex
Participating Institutions	KEPCO, Ulsan TP, etc. (6 in total)	KEPCO, Korea East-West Power, etc. (18 in total)
Details of Implementation	P2G-based multi-MG operation technology secured and MW-class hydrogen production demonstrated	P2G core technology (water electrolysis, LOHC, methanation) development and demonstration

## New Energy Industry Fund Investment Project

In 2011, KEPCO established a New Energy Industry Fund worth KRW 500 billion for the purpose of creating a virtuous-cycle ecosystem in the new energy industry by supporting new electric power ventures, fostering small and medium-sized enterprises and expanding new and renewable energy projects at home and abroad. The fund plays the role of providing customized funding for ventures and SMEs in the new energy industry as well as large-scale renewable power projects, and as of the end of June 2020, KRW 64.4 billion was provided to 27 ventures and SMEs, and KRW 135.8 billion was invested in six large-scale new and renewable energy projects. In the future, we will continue to provide funding to reduce investment risks and enhance competitiveness in the new energy industry through precise project due diligence.

### Investment Details of the New Energy Industry Fund

	Investment Area	Investment Results
Establishment of venture companies	AI, IoT, PLC chip, etc.	16 companies KRW 33.4 billion
Fostering of SMEs	Secondary batteries, EV SW, etc.	11 companies KRW 31 billion
New and renewable energy projects	Solar, wind, fuel cells	6 projects KRW 135.8 billion

## Completion of Solaseado Solar Power Plant in Haenam

## BUSINESS CASE 1

The Solaseado Solar Power Plant, located in Haenam-gun, Jeollanam-do, is an ultra-large new and renewable energy complex with 98 MW-class solar power generation facilities, the largest in Korea, and a 306 MWh ESS (Energy Storage System), the largest in the world by capacity. It produces about 129 GWh of electricity per year, which is enough to power 27,000 households, and KEPCO made a huge investment on the project through the New Energy Industry Fund to support successful business promotion. Going forward, KEPCO will continue to discover high-quality investment targets and play an active role in supplying the necessary business funds to revitalize the new energy industry.



Solaseado Solar Power Plant

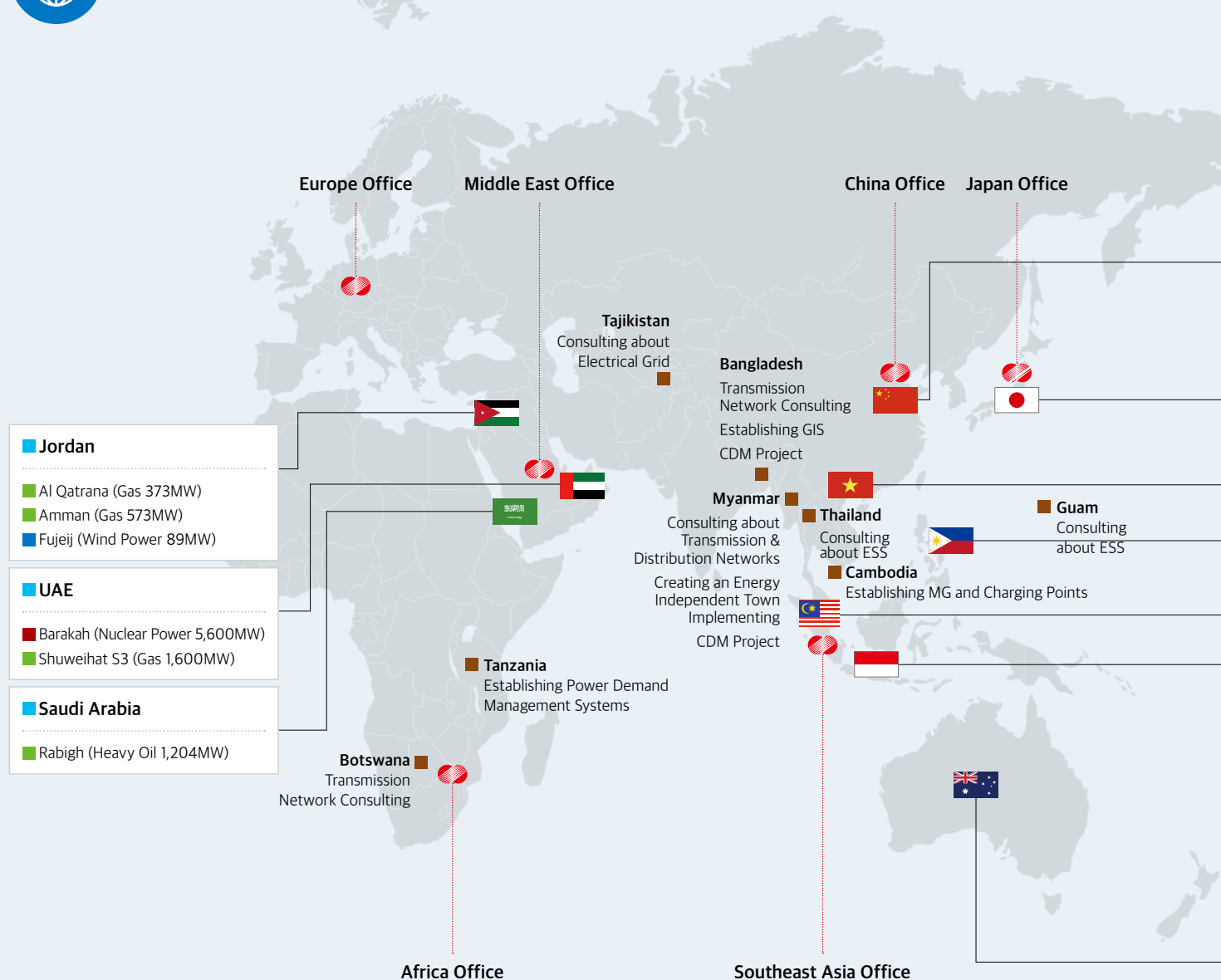
## Creation of Future Growth Engines through the Diversification of Overseas Business

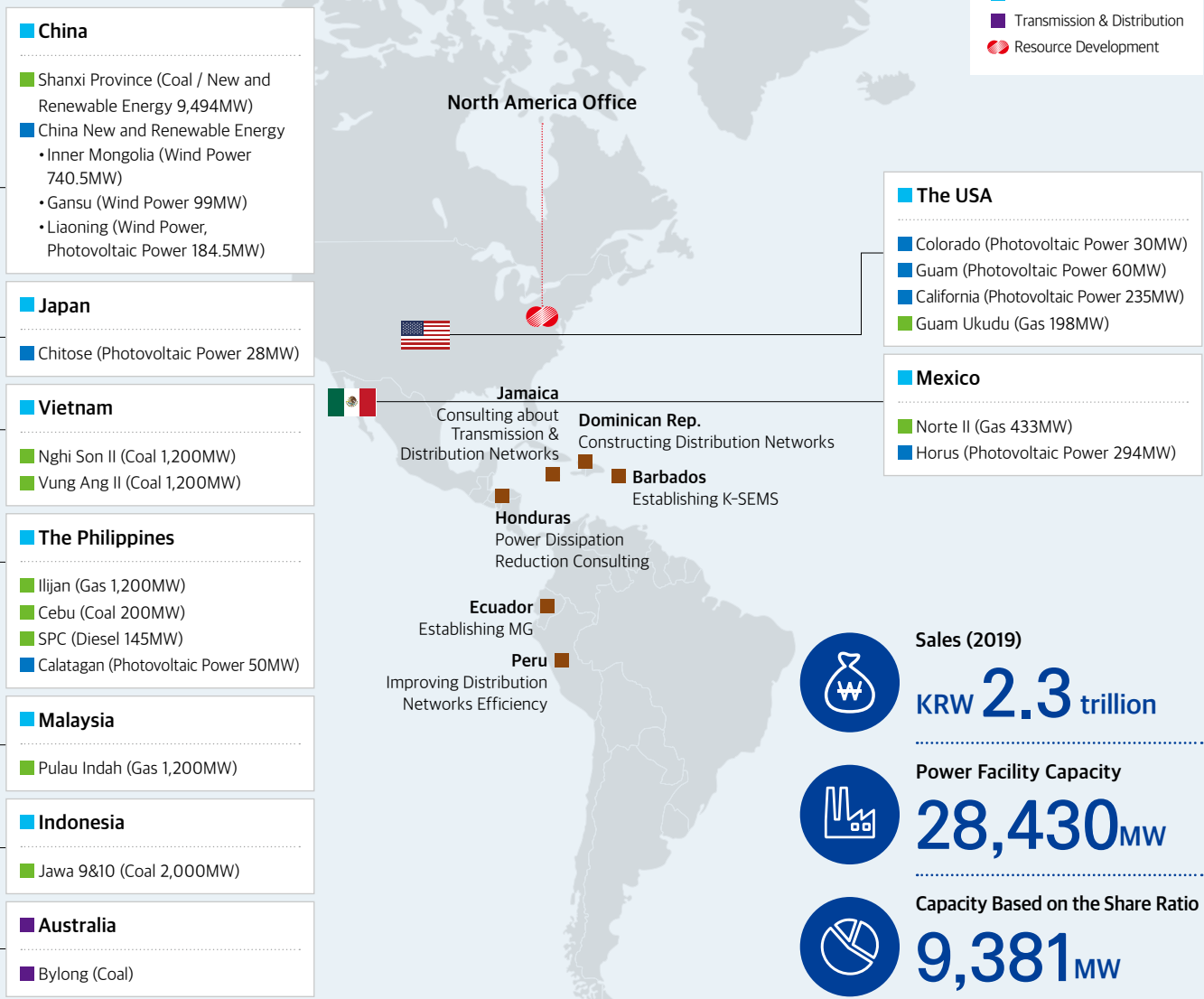
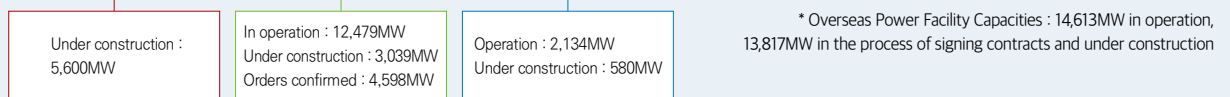
As of the end of September 2020, KEPCO is carrying out 46 projects in 25 countries around the world, covering thermal power, nuclear power, new and renewable energy, and transmission and distribution business. Based on our ability to win orders and operational competencies for overseas businesses, with consideration for mid-to long-term profitability, we plan to further expand into new businesses with a focus on low-carbon and high-efficiency, such as clean thermal power and new and renewable energy. Going forward, we hope to establish a foundation for sustainable growth and strengthen our position as an eco-friendly utility company by promoting new businesses utilizing the competitiveness of our transmission and distribution technology.

### Status of KEPCO Overseas Projects



Implementing **46** Projects in **25** Countries Worldwide





## Establishing a Sustainable Overseas Project Portfolio

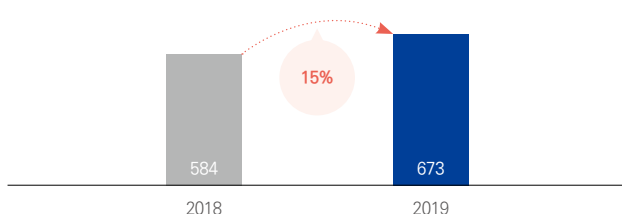
### Creating Profits by Expanding Overseas Power Generation Markets

KEPCO is expanding into overseas power markets to respond to the slow growth of domestic power demand and secure new future growth engines. Since first entering the overseas power generation market in 1995 with a project to restore and operate the Philippines' Malaya Thermal Power Plant, we have been building a global network to solidify our position as a leading independent power producer by leveraging our abundant experiences in project execution and our strong competitiveness in overseas projects. In addition, we are expanding our arena, which was once concentrated in Southeast Asia, to the Middle East, Latin America, and North America, and diversifying our order intake structure by establishing customized strategies for each region and business type. As of 2019, the annual sales of our overseas projects amounted to KRW 2.3 trillion, and profits generated through overseas projects have helped improve our financial position. In addition, we are supporting the revitalization of the domestic economy and the exploration of overseas markets by competitive domestic companies by engaging private construction companies, equipment manufacturers, and domestic financial institutions when conducting overseas projects. Meanwhile, in 2019, KEPCO enhanced its status as a global power generation company by winning orders for the largest new business in our history through strategic cooperation and proactive order intake activities despite intensifying competition for orders.

### Exploring Overseas New & Renewable Energy Markets

KEPCO is expanding its new and renewable power generation business for the sustainable growth of overseas projects in response to changes in the business environment, such as a decrease in order quantities for thermal power plants and the acceleration of energy transition. In 2019, with the completion of the 89.1 MW wind power plant in Fujeij, Jordan, our new and renewable power generation capacity in overseas markets increased to 673 MW (based on the share ratio), and 294 MW and 60 MW solar power plants are currently being built in Mexico and Guam, respectively. Going forward, KEPCO will focus on promoting regionally-customized solar power projects in its base regions, while using its offshore wind power generation know-how gained from domestic businesses to make a full-fledged entry into overseas wind power markets with strong growth potential through strategic alliances with leading companies.

Overseas New & Renewable Energy Generation Capacity (Unit : MW)  
(Based on the share ratio)



### Expanding the Export of Transmission & Distribution and New Businesses Based on Core Capabilities

KEPCO has been successfully implementing overseas projects in the EPC sector and performing consulting based on the transmission and distribution business experiences we have built up in Korea over the past 120 years. In particular, we have been well recognized for our outstanding technologies and project management capabilities in winning contracts for EPC projects. In the future, we plan to move away from small-scale consulting and EPC businesses and begin investing in transmission, distribution and facility operation businesses, including BOT and O&M, and focus on fostering these as long-term, profitable new growth engines utilizing KEPCO's core capabilities. In addition, KEPCO is planning to expand its entry into overseas new businesses in the energy sector by utilizing its technology development and demonstration experience in new businesses such as smart grid, AMI, and ESS.

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

KEPCO reorganized its overseas business portfolio in the mid-to long-term to come up with strategies for the advent of the era of energy transition and sustainability management. Hence, KEPCO will mainly focus on developing low-carbon and eco-friendly overseas businesses such as new and renewable and combined-cycle gas turbine power plants. In particular, for overseas coal-fired power plant projects, we have no plan to develop a new project in the future. Among the four overseas coal-fired power projects currently planned, the Jawa 9&10 coal-fired power plant (2,000MW) in Indonesia and the Vung Ang 2 coal-fired power plant (1,200MW) in Vietnam are scheduled to be carried out with comprehensive consideration of relationship with the government of the partner country, business partners, and joint advance with domestic companies. However, we are currently reviewing two remaining coal-fired power projects for the cancellation or conversion to LNG, which includes the Thabametsi power plant in South Africa and the Pangasinan power plant in the Philippines. Moreover, we are striving to operate overseas coal-fired power plants in a more eco-friendly manner by applying more stringent environmental standards than international standards. Through these efforts for environment, the overseas coal-fired power plants operated by KEPCO are expected to completely terminated by 2050. Meanwhile, KEPCO signed a long-term Power Purchase Agreements (PPA) concerning the Ukudu (200MW) and Pulau Indah (1,200MW) gas-fired projects. In both projects, domestic companies will participate in power plant design, purchase, and construction, while a number of domestic SMEs will supply auxiliary equipment. Through the joint participation of domestic companies, this hence will have a considerable and positive effect on Korean economy. Moving forward, we will continue to focus on low-carbon and high-efficiency clean thermal power, such as combined-cycle gas turbine power plants, and create a win-win business model in which both the public and private sectors may jointly advance into overseas markets.



Direction  
of overseas  
business

Focusing on developing low-carbon and eco-friendly businesses such as new and renewable, and combined-cycle gas turbine power plants.  
(For overseas coal-fired power plant projects, we have no plan to develop a new project in the future)

## Ensuring Stability & Enhancing Risk Management of Overseas Business

KEPCO strives to improve its operational efficiency through facility improvement to enhance the profitability of its overseas business, while also searching for new sources of revenue. Taking advantage of changes in the global financial environment, which continues to see low interest rates, in December 2019, KEPCO's Mexican subsidiary successfully issued a fixed-rate project bond in the US stock market, thereby successfully re-financing the Norte II project operating in Mexico. Accordingly, we recovered all our original investment early and reduced financial costs by lowering the funding rate, creating an additional income of KRW 33.3 billion.

Meanwhile, in order to improve our risk management system at each business stage for overseas business, we expanded our scope of risk management, which had previously been implemented only for existing projects in operation to projects under construction. In addition, by quantifying levels of risk, we have upgraded our process of risk diagnosis, analysis, and evaluation, and a review procedure of the working-level committee under the Risk Review Committee was established to reinforce risk assessment. In addition, we are striving to secure fairness and transparency when making investment decisions for new business by expanding the ratio of external committee members to more than 50%.

## Setting the Groundwork for a Second Export of Nuclear Power Plants

KEPCO has been building one of the world's best nuclear plants in terms of safety and quality since winning a contract for the construction and operation of a nuclear power plant in the UAE in December 2009. In March 2020, the first critical threshold was passed when fuel loading into the Unit 1 reactor of the Barakah Nuclear Power Plant was completed, and the reactor was safely controlled and operated for the first time. Currently, Unit 1 of the nuclear plant is increasing its power output, and commercial operation is scheduled to commence next year after the completion of a power plant system performance evaluation. KEPCO, the main contractor for the UAE nuclear power plant is concentrating on the timely completion of the remaining units, and is expecting stable operations and stable profits in the future. Meanwhile, KEPCO is carrying out a wide-range of bidding activities to win a second overseas nuclear power plant contract by combining the competitiveness of Korean nuclear power technology, its experience winning the UAE contract, and the capabilities of the Korean government and the domestic nuclear power plant industry. In August 2019, KEPCO was the first company in the world to acquire a standard design certificate from a U.S. regulatory agency for a type of reactor not originating in the U.S., and was recognized internationally for the safety and excellence of Korean nuclear power plants. Based on this top-tier technology, we have been strengthening strategic alliances with global companies to win additional contracts for nuclear power plants, including a new project in Saudi Arabia. In September 2019, the company signed an MOU with the UAE Nuclear Power Plant Corporation (BOC) for joint entry into third-country nuclear power plants projects, and through this, we have come up with plans for practical cooperation in a wide range of fields, such as financing, licensing, human resource training, and localization, and worked on strengthening our competitiveness in order to win additional contracts for overseas nuclear power plants.

## Expanding Business Area as a Global New & Renewable Power Generation Company

## BUSINESS CASE 2

KEPCO held a groundbreaking ceremony for a 294 MW PV power plant in Mexico in November 2019. This was of great significance for KEPCO, representing our first PV power project and also the largest new and renewable development project in Central and South America. With this power plant, KEPCO plans to produce electricity for about 150,000 households in three regions, including Sonora, Mexico, and expects to generate a total of KRW 280 billion in profits over 35 years. Meanwhile, KEPCO completed the construction of an 89.1 MW wind power plant in Fujiej, Jordan, in July 2019, the company's first renewable project in the Middle East. After it was selected as a preferred bidder in 2013, KEPCO signed a power sales contract in 2015 and successfully commenced commercial operations in 2019. With the completion of the Fujiej Wind Power Plant, KEPCO secured its status as a pivotal power generation business operator, responsible for about 20% of Jordan's total power generation capacity. In the future, KEPCO will continue to expand its business area as a global renewable power generator and actively respond to policies for the expansion of new and renewable energy, which is emerging as a global task following the establishment of a new climate regime.



Groundbreaking Ceremony for Photovoltaic Power Plant in Mexico



Completion Ceremony for the Wind Power Plant in Fujiej, Jordan



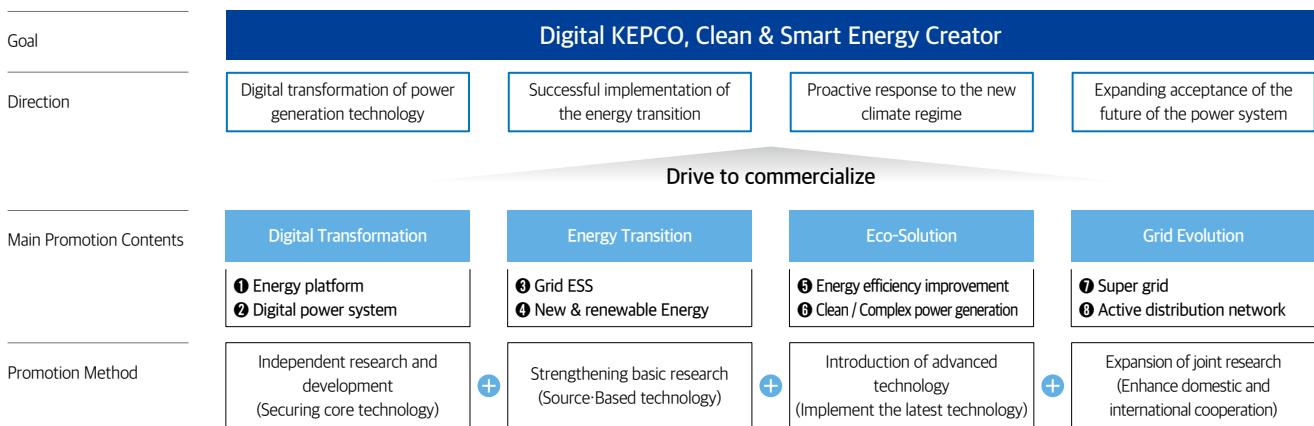
## Development of Core Strategic Technologies

### Building Strategies to Secure Future Core Technologies

As the technological environment of the power industry is rapidly changing (such as energy transition and digital transformation), the importance of technological development to secure sustainable growth engines has been increasing. KEPCO established the 'KEPCO 2030 -Technology Strategy' to reinforce the technical capabilities of our main business, to respond to climate change and digital transformation, and to secure leadership in the future power industry, and have selected core strategic technologies in eight major areas. The company has been concentrating on the development of future core technologies by maximizing synergy through cooperation with external partners, as well as strengthening its internal technical capabilities by continuing to expand the R&D budget and manpower, and performance-oriented R&D process innovation. As a result, the company secured 14 core strategic technologies\* in related fields such as digital power systems and new and renewable energy in 2019.

\* Current status of securing core strategic technologies (2019) : 14 cases including artificial intelligence-based fault recovery system, MW-class ESS performance and stability evaluation technology, offshore wind environment monitoring technology, etc.

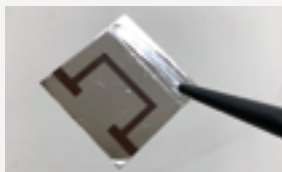
#### KEPCO 2030 -Technology Development Strategic System



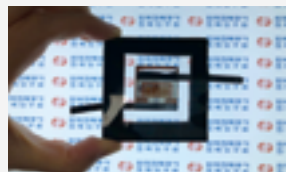
#### Major Achievements in Technological Development

##### Development of the World's Most Efficient Flat-type Perovskite Solar Cell

KEPCO developed a flat-type perovskite solar cell with a photoelectric conversion efficiency of 20.4%, the world's highest level. Unlike silicon solar cells that require a high-temperature production process of 1,000 °C or higher, perovskite solar cells can be produced through a process of 400 °C or lower. Therefore, the production cost is low while the photoelectric conversion efficiency of converting light into electricity is similar to that of silicon solar cells. This is technology that is gaining much attention as the solar cell of the next-generation.

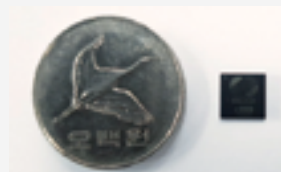


■ Opaque / Semi-transparent Solar Cell



##### Development of Wireless Communication Chip for Power and its Demonstration as Communication Service

In June 2019, KEPCO developed a wireless communication chip used to build an intelligent power grid. The wireless communication chip designed and developed by KEPCO is characterized by a high-order modulation method with high frequency efficiency, which is about 15 times faster than the existing method and is 1/20 of the original price. The stability was verified by on-site demonstration that targeted distribution automation facilities in Cheongju, North Chungcheong Province and distributed power facilities in Jeongeup, North Jeolla Province, Korea.



■ Wireless Communication Chip for Power



##### 20kW-class Hydrogen Energy System Demonstration

KEPCO has succeeded in demonstrating a large-capacity hydrogen storage system using liquid organic hydrogen carrier technology (LOHC) for the first time in Korea. The LOHC technology has five times the storage capacity of the existing ones, and is a technology that can be safe and stored long-term. KEPCO is the first to have facilities that use the LOHC technology certified by the Gas Safety Corporation's high-pressure facility technology review and be granted its license.



■ 20kW-class Hydrogen Production and Storage System

## Expansion of Utilization and Commercialization of R&D Results

KEPCO has been striving to create business outcomes through commercializing its excellent technologies. The company has contributed to sharing growth in the power industry as well as generating profits by unearthing high-value excellent patents, innovating technology commercialization systems, and transferring technologies through various collaborative marketing. KEPCO is concentrating on developing capabilities at leading innovative growth and building an environment to create R&D-based jobs by establishing a research institute for direct commercialization of its own technology and designating 'R&D special zones' with small but strong R&Ds. After establishing three research institute companies for the first time as a public corporation in 2018, KEPCO expanded this endeavor by diversifying establishment sites and establishing five additional companies in 2019. KEPCO's small but strong R&D special zones is a new model that aims to become a base for commercializing small-scale and high-density public technology centered on technology core institutions with excellent innovation capabilities. KEPCO established a cooperation system with local governments (Naju City in South Jeolla Province), which was designated as a special zone with a public corporation as a key technology institution for the first time in the country. By designating a special zone, it is expected to contribute to forming Naju Energy Valley as a mecca of the new energy industry, which will promote R&D companies and institutions in the Energy Valley and provide intensive support for the establishment of research institutes and high-tech companies.

### Status of Research Institute Establishment in 2019

Company	Description	Established area
SureDataLab	Commercialization of power user behavior and life pattern analysis technology using power data	Daejeon
Hankook Electric Power Information	Commercialization of diagnosis, prediction, and transaction services using power information digital conversion platform	Daejeon
SEP	Commercialization of charging service and additional service technology based on electric vehicle charging infrastructure platform	Gwangju
Tronics	Commercialization of integrated public lighting control system using e-IoT technology	Gwangju
O2&B Global	Commercialization of electric adsorption water treatment system	Jeonju

\* Research Institute Company : A company established in a special R&D zone by investing more than 10% of the capital for direct commercialization of public research institute technology (KEPCO) technology + (corporate) management resources + (government) support ⇒ Creating quality jobs, promoting innovative growth in the power industry

## Revitalization of Open Innovation

KEPCO has been enhancing its technological competitiveness to nimbly respond to the trend of technological change by advancing the R&D cooperation system. KEPCO has established an integrated R&D operation process with power generation companies to improve efficiency and expand on convergence, complex and open R&D utilizing the collective intelligence of industry-academia-research groups while increasing joint research among companies and universities by expanding its cooperation with building a cluster of point universities for energy. In addition, we are making efforts to expand our global network by conducting international joint research and promoting technology exchanges with advanced institutions such as Fraunhofer in Germany, EPRI in the US, and ARM in the UK.

### R&D Manpower and Investment

Category	Unit	2017	2018	2019
R&D cost	KRW 100 million	4,340	3,994	3,630
Ratio of current sales	%	0.72	0.66	0.62
R&D personnel	No. of persons	605	604	689

### Technology Transfer Outcome

Category	Unit	2017	2018	2019
Agreement	No. of cases	119	119	176
Transferred to (company)	No. of companies	98	96	156
KEPCO Profit	KRW 100 million	20.7	20.2	32.3
Sales of Commercializing Technologies	KRW 100 million	1,200	1,327	1,538

### Patent Application / Registration Status

Category	Unit	2017	2018	2019
Patent application	No. of cases	513	639	815
Patent registration	No. of cases	168	241	357
<b>Total</b>	<b>No. of accumulated</b>	<b>681</b>	<b>880</b>	<b>1,172</b>

### Technology Support Outcome

Category	Unit	2017	2018	2019
In-house (domestic / overseas)	KRW 100 million	59	48	38
Overseas	KRW 100 million	22	20	25
Power generation subsidiaries	KRW 100 million	94	109	90
Private companies	KRW 100 million	13	13	9
<b>Total</b>	<b>KRW 100 million</b>	<b>166</b>	<b>170</b>	<b>137</b>

## Leading Digital Transformation in the Power Industry

### Establishing a Mid-term Strategy for Digital Transformation

Digital transformation is an activity that creates new value by analyzing and combining various data to discover new data and improve management activities. KEPCO established a 'KEPCO Digital Transformation Mid-term Strategy' consisting of four implementation strategies and 16 strategic tasks to create a data-driven business environment using ICT-based infrastructure, in order to leap forward as an energy platform provider. The company will take the lead in revitalizing the data industry by developing various solutions that combine private and power big data and utilizing the power big data convergence center.

#### KEPCO Digital Transformation Strategic System

Implementation Strategy	Digital Infrastructure	Digital Asset Management	Digital Work Intelligence	Digital Business Model
	Internalizing the digital transformation	OPEX <sup>1)</sup> / CAPEX <sup>2)</sup> reduction	Increasing work efficiency	Creating future businesses
Strategic Tasks	<ul style="list-style-type: none"> <li>Data platform enhancement</li> <li>Enterprise data management</li> <li>Digital organization and culture</li> <li>ICT infrastructure advancement</li> </ul>	<ul style="list-style-type: none"> <li>Asset management optimization</li> <li>Advancement of facility diagnosis technology</li> <li>Development of equipment failure prediction models</li> <li>Creation of a safety evaluation model</li> </ul>	<ul style="list-style-type: none"> <li>Mobile application for field work</li> <li>Intelligent work using AI</li> <li>Work simplification with RPA<sup>3)</sup></li> <li>Next-generation operating system</li> </ul>	<ul style="list-style-type: none"> <li>Collaboration in digital transformation competitions</li> <li>Data-driven services</li> <li>New energy business services</li> <li>Establishing the environment for EN:TER</li> </ul>

1) OPEX : Operating Expenditure 2) CAPEX : Capital Expenditure 3) RPA : Robotic Process Automation

### Advancing Data Integration Platform

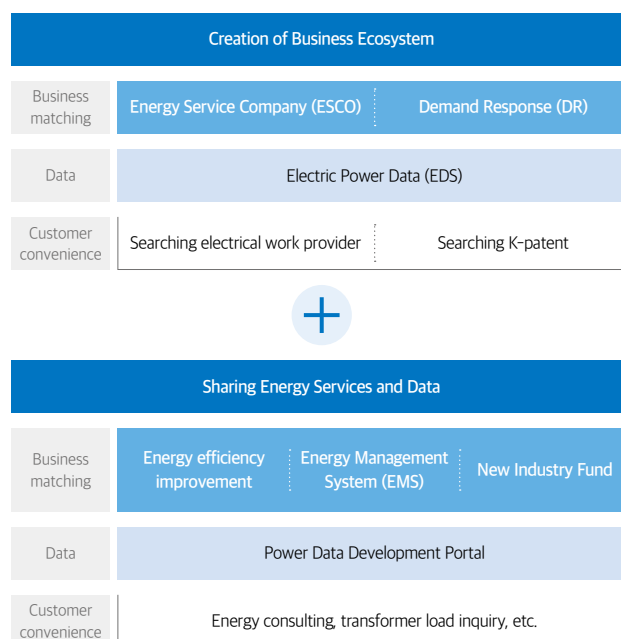
KEPCO was the first public corporation to build a data integration platform consisting of a big data platform and an artificial intelligence (AI) analysis platform for company-wide data-based digital transformation. In order to secure high-quality big data, various business system data and public data scattered by the working department have been collected and stored in an integrated manner. BI tools are introduced to create an interactive work environment for data search and pre-processing. The AI analysis platform provides basic functions necessary for data analysis, such as an AI analysis engine, AI algorithm, and AI analysis tools as a one-stop service so that the field staff can easily focus on AI development.

### Laying Foundation for Data Quality Control

KEPCO has also established a company-wide data management system to improve the data life cycle (creation-storage-use) and laid the foundation for data quality control. We have created and applied company-wide data standards to improve data generation and storage, and improved data utilization by providing meaningful information. In order to keep improving the data life cycle, it established a management system including data management principles, R&R, process and work guidelines for each organization. Based on this system, the company has been striving to secure the first grade in public data quality management evaluation. In addition, equipped with company-wide data governance that ensures high-quality power data, we have enhanced data reliability in terms of openness and distribution, and are hence faithfully implementing efforts to boost the revitalization of the electric power data.

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

KEPCO has built and operated EN:TER, a comprehensive energy business platform that can share energy services and data in order to solve difficulties experienced by energy operators and service users, hence creating new values in the energy sector. EN:TER consists of a service matching market, a power big data market, and customer convenience services, as well as providing consulting services for energy efficiency improvement.



## Data Discovery Innovation Activities

KEPCO has established a data standard management system and integrated platform infrastructure, and is utilizing this to develop solutions to improve work efficiency and reduce facility operation costs with respect to our headquarters and regional divisions. In 2019, 14 projects were carried out, including a fair trade AI model based on big data of meter reading, of which nine are in the process of going through a company-wide expansion, and is expected to generate a profit of KRW 343.7 billion in the future.

## Improving Public Service Quality through Public Data Convergence

KEPCO provides a “safety care service for single-person household” that can strengthen the social safety networks of people who are vulnerable by providing an alarm to social workers when it detects an abnormal power use in single-person households through integrated analysis of power consumption and communication data. In addition, the company is supporting people’s safety and life-oriented services such as crime prevention and urban regeneration by providing an analysis service based on power data such as power consumption and floating population.

## Establishment of the Power Big Data Convergence Center

KEPCO opened a “Power Big Data Convergence Center” in April 2019 to establish a new industrial ecosystem by promoting the external use of power big data. The Power Big Data Convergence Center consists of a Data Science Lab that analyzes power big data, a Data Sharing Center that opens up to use data, and an Energy Marketplace (EN:TER) portal that distributes data services. We are taking the lead in creating new services through the analysis and utilization of power big data, and by building up a digital data sharing ecosystem in line with shifting energy paradigms.

### Power Data Utilization Outcomes

Open	➤	Portal service to open power data	Providing major electricity statistics and customized statistics for consumers (for special purposes such as academic research)	171,796 visitors, Provided 376 customized statistics * As of January 2017 ~ June 2020
Sharing	➤	Data Sharing Center	Providing space for power data analysis, service and analysis model verification to private companies (opened in April 2019)	12 completed, 7 pending (1,427 of cumulative use days) * As of April 2019 ~ June 2020
Distribution	➤	Data service market	An online marketplace where companies can trade new services through the distribution of power consumption data	About 89.2 million data distribution cases (31 companies participated) * As of August 2019 ~ June 2020

## Promoting the Development of Intelligent Digital Power Plant (IDPP)

## BUSINESS CASE 3

A digital power plant uses technology that maximizes operational efficiency by combining the entire cycle of design, operation, and prevention of boilers, turbines, generators, and auxiliary devices, which are the main equipment of a power plant, with Internet of Things (IoT) and Big Data platform technologies and configuring them in a digital space. By applying artificial intelligence (AI) and big data technology to power plants through digital power plant development projects, it is possible to identify optimal operating conditions and maintenance points, thereby improving power generation efficiency and preventing accidents. KEPCO established the concept of a digital power plant and embarked on an intelligent digital power plant development project in April 2017. From May 2019, KEPCO group companies participated in this project to promote a joint research and development for digital power plant demonstration and commercialization. Accordingly, based on the self-developed digital platform technology, we have been building a standard platform for power generation that can be used jointly by KEPCO group companies, and developing power plant diagnosis and prediction programs using big data and AI technologies. In May 2020, the “Digital Power Plant Construction Center” was established at the Korea Electric Power Research Institute (KEPRI) and a joint research and development team was formed to promote digital power plant technology development. As of June 2020, four types of diagnostic programs have been developed, and development of 12 different programs is underway. From the end of 2020, we plan to install the IDPP platform and development app at the power plant site in order to proceed with our demonstration.

# Electrical Infrastructure and Service Innovation

## Operating a Highly Reliable Power System

### Achieving a Stable, High-Quality Power Supply

In addition to the timely expansion of transmission and substation facilities, KEPCO is striving to operate systematic distribution facilities based on new technology, build next-generation power infrastructure, and improve the reliability of existing power facilities by predicting equipment failures in advance through the digitization of monitoring and real-time detection of faulty insulators using artificial intelligence. As a result of these efforts, KEPCO recorded the world's best power outage time per unit (8.61 minutes), regulated voltage maintenance rate (99.99%) and transmission and distribution loss factor (3.54%), and ranked in the world's top three for the 8th consecutive year in the field of electricity supply in the 2019 corporate environment assessment hosted by the World Bank.

Also, KEPCO has improved demand forecasting by using artificial intelligence to establish an optimal system plan based on accurate predictions of future power demand, and is managing its power supply and demand emergency response period to quickly respond to emergency situations, such as reduced power reserves. Meanwhile, we have established a system that can respond quickly to emergency situations by implementing a period of emergency measures for the power supply, and are also monitoring phased corrective measures. In addition, we are contributing to the calculation of rational and economical demand management targets by proactively operating a working group to calculate the demand management targets of the "Basic Plan for Electricity Supply and Demand."

Outage Time (SAIDI)	(Unit : Minutes)	Outage Frequency (SAIFI)	(Unit : Times)	Transmission and Distribution Loss Factor	(Unit : %)
2017	9.08	0.150	0.150	3.57	3.57
2018	8.59	0.105	0.105	3.56	3.56
2019	8.61	0.113	0.113	3.54	3.54

\* Seoul area (2019) : SAIDI (5.89 minutes) SAIFI (0.083 times)

## Innovating Facility Management Technology

KEPCO is implementing optimal facility management using ICT convergence technology in response to the growing complexity and diversification of power facilities. Through ultrasonic image diagnosis of electric power facilities, diagnosis deviations for each case have been resolved to improve accuracy, while automatic tracking diagnosis has been implemented to shorten the diagnosis time and internal diagnostic equipment has been developed to significantly reduce the cost of electric pole replacement. Furthermore, we are dramatically expanding our power facility management through innovations based on ICT technology - such as 360° 3D scanners for manholes.

## Enhancing the Intelligent Power Grid System

KEPCO has constructed a next-generation intelligent SCADA\* system capable of real-time power system monitoring, control, and analysis at 82 company locations. The establishment of this system enables real-time power analysis by integrating and operating the entire power supply value chain, including power generation, transmission, and distribution, and the application of international standard protocols ensures its connection and universality with other systems. In addition, a comprehensive preventive diagnosis system using IoT sensors was established to implement 24/7 facility condition monitoring. An automatic fault recovery system was also introduced to collectively control the operation of devices based on artificial intelligence judgments.

\* SCADA (Supervisory Control and Data Acquisition) : A power facility monitoring and data acquisition system

## AMI Distribution and Service Demonstration Project

## BUSINESS CASE 4

KEPCO provides a variety of services using AMI (Advanced Metering Infrastructure), which facilitates voluntary energy savings and demand response by providing customers with useful information, such as electricity usage and hourly tariffs, using a two-way communication network. In 2019, we are proceeding with the distribution of AMI to all customers in Jeju Island (a total of 430,000 households), a first for a local government. Additionally, we have been developing a diverse array of AMI-based services to demonstrate our comprehensive capabilities in this area. We will continue to expand our AMI to build a future distribution operating system that can provide additional services, whilst also developing a new profit model through overseas exports of our operating system.

### Major Services Using Real-Time AMI Information

	Existing	Improvement	Effect
Real-time power outage management system	Previously, relying on customers report low voltage and power outage information	Automatic identification of power outages in the system	Quick recovery from power outages
Constant voltage management system	Previously, managing voltage manually once a year	Continuous monitoring of sample voltage	Maintaining high quality voltage at all times
Comprehensive new and renewable energy information system	Previously, providing limited information such as linked capacity	Expanding the provision of information, such as the amount of power generation, in real time	Securing power system flexibility



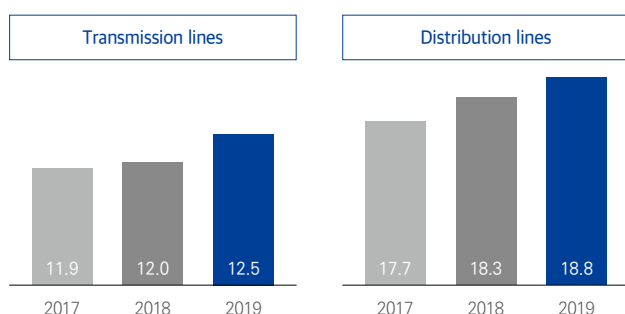
## Securing Next-Generation Power Transmission Technology

KEPCO is striving to secure next-generation power technology to reinforce the competitiveness of its main business, and has succeeded in commercializing a superconducting power transmission technology called 'Dream Transmission Network.' Superconducting cables, which replaces existing copper conductors with a superconductor whose resistance becomes zero below a certain temperature, reduce transmission loss to 1/10 compared to existing cables, and can increase transmission capacity by more than five times. They are a next-generation power transmission technology capable of low-voltage and high-capacity transmission. KEPCO achieved 100% localization for its superconducting material technology with government support and academic-industrial cooperation in research, and began commercial operation in November 2019 by installing superconducting cables in a 1 km section between the Singal and Heungdeok substations. Through this superconducting commercialization project, Korea has been internationally recognized for its achievements, such as by being listed as the 'world's first country to commercialize superconducting' in a white paper published by the IEA (International Energy Agency), and has come to hold the best technology and know-how in all areas of superconducting, including design, testing, production, installation and operation. In the future, KEPCO will lead the vitalization of the domestic industrial ecosystem in the superconducting field through continuous technological development, while creating new sustainable growth engines by penetrating overseas markets.

## Expanding Underground Transmission & Distribution Work

KEPCO recognizes that the construction of power facilities is an important issue directly impacting the residential environment of citizens. Accordingly, in order to increase social acceptance, we are striving to build eco-friendly and resident-friendly power facilities while also expanding our underground power facilities. When constructing a transmission network, areas close to living environments such as villages and schools are selected as priority targets for undergrounding. Separately, in order to strengthen safety in the case of a disaster, the company has identified vulnerable facilities and has been continually conducting undergrounding work on its own. Looking forward, KEPCO plans to continue to develop new advanced underground facility models to minimize ground equipment for the construction of power facilities that coexist with local residents.

Status of Underground Transmission / Distribution Work Rate (Unit : %)



## Strengthening the Power Grid Security System

KEPCO has been reinforcing its information security management system to protect the national power grid from more intelligent and targeted cyber threats. The company has been developing a security control system equipped with AI-based detection and analysis technology to actively respond to security risks for all information assets as power grid security threats increase along with the rapid increase in IoT devices scattered nationwide, such as smart grids, EV chargers, and meters that can be read remotely. In addition, in preparation for an expansion in facilities subject to security control due to the growth of the new energy business, a new function to automatically analyze harmful traffic has been added to reinforce detection capabilities. At the same time, we have expanded information security for major information and communication infrastructure, including the introduction of a security operating system for the transmission and substation SCADA system operation server, and are continuously conducting various security diagnoses, taking appropriate measures and improving identified vulnerabilities through the diagnoses. As a result of these efforts, no damage to power facilities or information leakage caused by cyber-attacks occurred in 2019. As a result, the company was selected as an excellent organization for three consecutive years in the annual vulnerability analysis and evaluation of major information and communication infrastructure performed by the Ministry of Industry.

## BUSINESS CASE 5

### Exporting Power Grid Security Inspection Technology

In October 2019, KEPCO exported power grid security inspection automation technology to the US EPRI (Electric Power Research Institute). With the ever increasing importance of power grid security, KEPCO has gained international recognition over its power grid security technology through this export. This technology, developed by KEPRI (Korea Electric Power Research Institute) in 2017, is an integrated security management system that identifies transmission and distribution security vulnerabilities in intelligent systems, and automatically verifies security updates and applies them to the entire power distribution system to protect the operating system, thereby keeping its security up to date. As the power grid, in which various operating systems are organically connected to one another, plays an important role in constantly and stably supplying electricity, complex and high-level security measures are required. Our power grid security inspection automation technology is being used to automate security vulnerability checks and actions, which had previously been done manually by workers, so that they can be completed in five minutes by an operator. KEPCO plans to localize its integrated security management system according to the configuration and operating conditions of the North American power grid, and to conduct a technology demonstration for North American power utilities in 2021.

## Strengthening Disaster Response System

### Establishing People-oriented Safety & Disaster Management System

KEPCO reinforced the safety and disaster management system by establishing a department in charge of safety and disaster at the regional divisions in May 2019. In June 2019, for a quick response and recovery in the event of a crisis that causes power supply interruption due to a disaster, the company-wide expansion of Business Continuity Management was completed and ISO 22301 certification was obtained. Through this, it has proved that KEPCO's crisis management system is at an international level, and the company has secured operational capabilities to quickly normalize power supply according to pre-prepared strategies and plans when transmission and substation, distribution, and related operations are interrupted due to reasons such as earthquake, tsunami, fire, cyber terror, or surge in power demand.

### Building Integrated Smart Disaster Management System

In February 2019, KEPCO established an integrated disaster management system based on big data that the people can trust to complete a real-time monitoring and response system of disasters. The Disaster Management Integrated System is to visualize disaster information graphically based on location information, and integrate and operate the disaster-related information provided by various internal and external systems such as national disaster information, the Meteorological Administration, and the transmission operation system. Through this, it is possible to monitor 13 different types of disaster information such as power failure, typhoon, earthquake based on location information in real time, and conduct disaster response tasks such as spreading the information and issuing an emergency when a disaster occurs. In addition, we support disaster training based on the disaster response process for the HQs, regional divisions and branches, and helps to allow a comprehensive view of the disaster that has occurred at a glance. According to these functions, KEPCO completed a preemptive prevention, real-time damage statistics, and immediate recovery system. It implemented a thorough disaster response even in the largest number of typhoon invasions in 60 years in Korea last year (seven including Typhoon Lingling), and within 24 hours after the typhoon caused damage, 99.8 % of power transmission was completed.

## Safety Management of Power Facilities

As social interests of regulations on the safety management in important national facilities are growing stronger, KEPCO is enhancing the effectiveness of the diagnosis and inspection system and reinforcing the practice of autonomous safety inspections for the safety management on power facilities as highest priority in public safety. It has been carrying out regular safety inspections and precise safety inspections by expanding the range of facilities to be inspected, shifting from focusing on power facilities to expanding to multi-use facilities, and upgrading the seismic standards of power facilities to establish a foundation for preemptive earthquake disaster response. In addition, seismic design has been expanded and reinforced for transmission and substation facilities, substation buildings, and transmission and distribution power ducts located nationwide, and new seismic construction methods such as the seismic base isolation\* systems have been introduced. KEPCO has maintained a stable power supply system by reinforcing the safety management system for power facilities and improving disaster response capabilities.

\* Seismic base isolation : protecting (isolating) a structure from earthquake forces

### Efforts of Reinforcing Facility Safety Management

#### Facility Safety Inspection

- Regular safety inspection : 41 places of 1, 2, 3 types
- Precision safety inspection : 16 places of 2 types
- Completed 22 cases of facilities repair and reinforcement
- Nurturing and retaining 132 professional technical manpower



#### Establishing Earthquake Disaster Prevention & Response System

- Upgrading seismic standards for power facilities : scale 6.3 → 6.6 (7.0 for important facilities)
- Achieved 100% seismic reinforcement for all power facilities

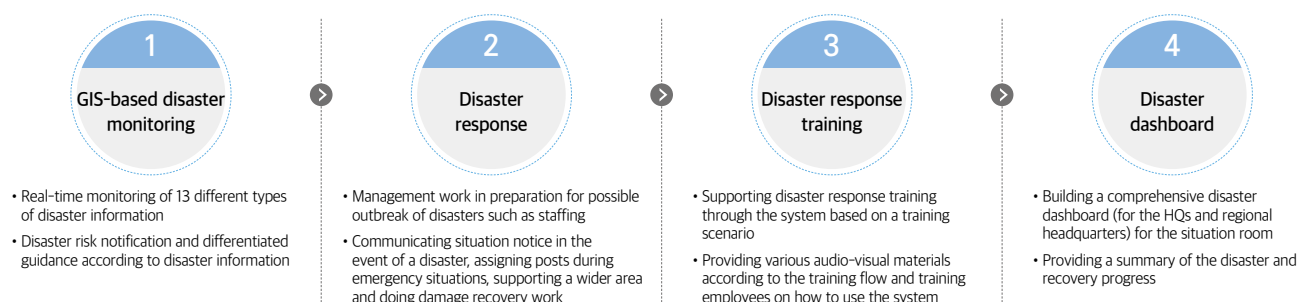


#### Introduction of New Construction Methods & Standards

- Introducing a seismic base isolation system for communication facilities
- Expanding seismic design (wall, glass, etc.)
- Absorbing seismic force and maintaining functions
- Arranging inhouse seismic standards for non-structures



### Main Functions of Disaster Management Integrated System



## Education & Training for Disaster Response

KEPCO conducts a variety of disaster-related education and training programs to check our disaster response system and to improve actual response capabilities. In 2019, KEPCO's HQ and all regional divisions participated in 516 sessions of SKX (Safe Korea Exercise), which was carried out to ensure comprehensive inspection of the disaster response system across all parts of the government. For four consecutive years, KEPCO has been selected by SKX as an excellent institution in this respect. Moreover, in June 2019, we expanded our Business Continuity Management System (BCM) company-wide and conducted annual mock training to check our core business recovery system in case of a disaster. Self-training for different types of disaster, such as electricity supply and demand, natural disasters, cyber terrorism, and power system breakdowns, is also carried out from time to time. Further, in order to enhance the expertise of our disaster and safety management personnel, we have been making efforts to reinforce professional competencies by providing training for 103 managers and working level staff members.

## Power Facility Inspection Activity

KEPCO has formed a special inspection team including those from the management to conduct a thorough investigation of power facilities in areas concerned about possible damage in the event of a natural disaster, and to manage and address risk factors. In particular, the company has been intensively inspecting the supply lines of rainwater pumping stations and drainage stations in preparation for typhoons and torrential rains. KEPCO does its best to provide stable power by reinforcing power outage prevention activities through continuous facility inspection and establishing a rapid power facility recovery system.



Disaster-Safe Korea Exercise (SKX) in 2019

## Concentrating Damage Recovery Capability against Gangwon Forest Fire & Improving Facility Management System

### BUSINESS CASE 6

In April 2019, as the generation of embers caused by the Yanggangjipung\* spread to large-scale forest fires in the Gangwon area of Korea, KEPCO mobilized all company-wide capabilities to stabilize the forest fire area, and established fundamental measures for the distribution facility management system in preparation for national disasters.

\* Yanggangjipung : Strong and dry local wind blowing in the Yeongdong region, Korea during the spring

<b>Initial response</b>	Activating the disaster management integrated system immediately upon recognition of crisis (a warning of dry and strong wind)	KEPCO established an emergency disaster situation room in the HQ and Sokcho division as soon as a forest fire occurred in order for facilities to be rapidly recovered. KEPCO focused its company-wide capabilities on stabilizing the situation. In addition, the company provided temporary accommodation to 101 affected residents and provided electricity bill reductions to about 2,000 households after the declaration of the disaster area. KEPCO also donated KRW 1.27 billion as the win-win cooperation fund created through fundraising activities of all employees along with medical support.
<b>Follow up measures</b>	Emergency inspections and on-site measures implementation for safety enhancement of power facilities	From April to July 2019, KEPCO conducted optical and thermal image inspections on 2,010,000 railroad tracks in the mountain areas, completing measures for 9,933 defective facilities. In addition, fire monitoring near power facilities has been strengthened in cooperation with related organizations such as the fire department.
<b>Preventive measures</b>	Operating TFT made up of internal and external experts and preparing step-by-step countermeasures by benchmarking other power utilities	By preparing step-by-step measures for how to construct and operate power facilities, we converted power facilities in areas vulnerable to forest fires, such as in mountainous areas, to a "fire prevention power supply method". In addition, we developed and applied the "Spark Free Distribution Equipment" that does not allow even small embers to spread in the facilities, which includes the ultra-high speed power circuit breakers, fully insulated wires for processing, and spark-blocking fuses. Furthermore, KEPCO installed sensors that can measure wind speed and direction to operate facilities suitable for the climate.

Phase	Standards & Institutions	Technology Development	Facility Operation
Emergency (2019)	Converting supply method in mountain regions	Developing Spark Free equipment	Wind speed and wind direction observation system
Short-term (2021)	Power cutoff system in case of disaster risk	Commercialization of low voltage DC distribution technology	Hazardous area rating system
Mid-to long-term (2025)	Underground work for disaster-prone areas	AI-based failure prediction	Equipment life prediction and management

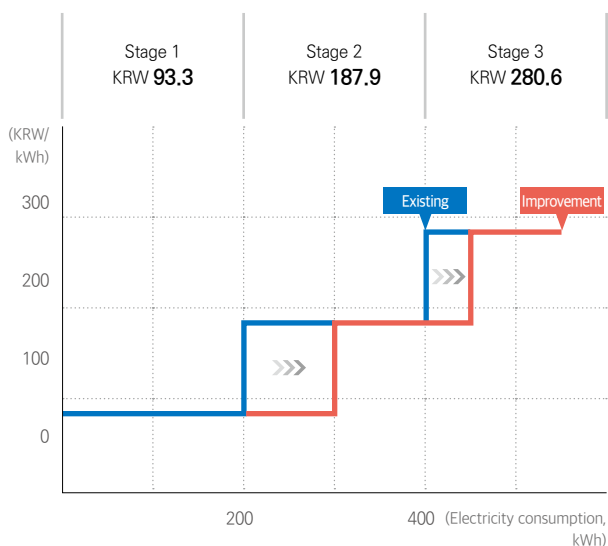
## Enhancing Customer Services

### Introduction of a New Rate System for Residential Power Use During the Summer

To reduce the burden of high electricity bills on customers during the summer, when usage increases significantly, KEPCO introduced a residential-only progressive electricity bill system. To this end, we operated the 'Electricity Rate Progressive system TF' from December 2018 to June 2019, and prepared three reforms. Subsequently, the improvement plan was finalized by collecting public opinions through discussion meetings consisting of expert panels, public hearings, and online bulletin boards. Previously, progressive billing was applied equally to all seasons, but with these reforms, it has expanded the first two ceilings to apply to every summer only (from July to August). As a result, over the summer of 2019, each household is expected to see KRW 10,980 discounts on their monthly bills under the revised system.

#### Improvement Plan of The Progress Billing System for Households

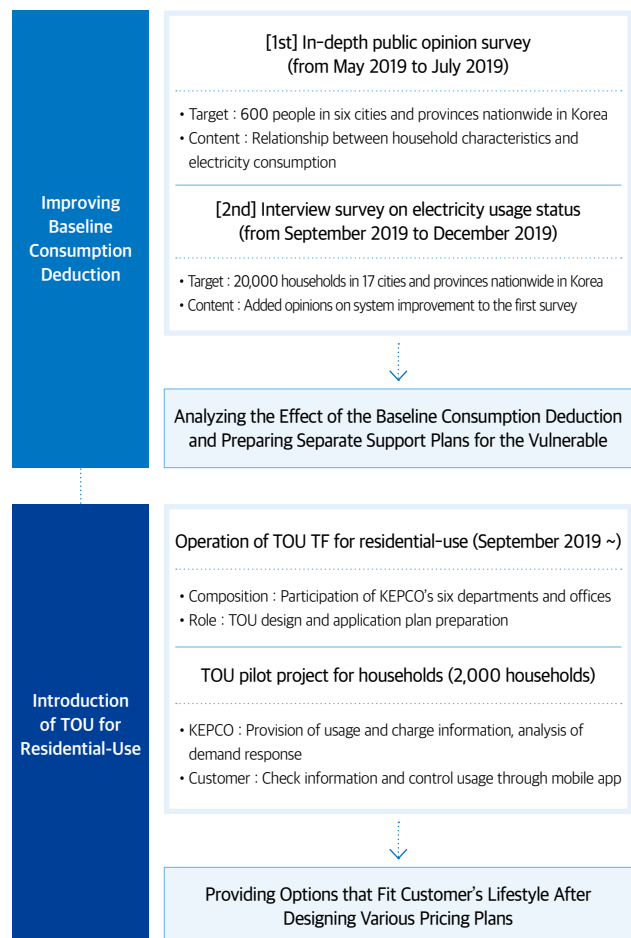
Existing		Improvement	
Progressive stage is same for all seasons		Expansion of progressive stage during the summer (July to August)	
stage	consumed amount	stage	consumed amount
1	200 kWh or less	1	300 kWh or less
2	201 ~ 400 kWh or less	2	301 ~ 450 kWh or less
3	Over 400 kWh	3	Over 450 kWh



## Promoting the Reorganization of Sustainable Tariff System

KEPCO is making constant efforts to introduce sustainable tariff systems including improvement of baseline consumption deductions and adoption of residential-use seasonal and time-specific tariffs. For household customers that use less than 200kWh per month, the discount-providing baseline consumption deduction system is being reviewed by analyzing and enhancing its effectiveness, as benefits currently are focused on one or two-person households earning above median income rather than low income households. Further, in our drive to operate customer-focused electricity tariff systems and increase tariff options for our customers, we are researching ways to introduce residential-only time of use (TOU) tariffs that provide differential pricing based on the season and time of usage. Through reforms that bring about reasonable tariff systems, KEPCO endeavors to encourage responsible energy consumption and prevent the distortion of relative prices for different energy sources. Concurrently, we are meeting citizens' demands for clean and safe energy production, and striving to improve the sustainability of our power generation business.

#### Activities for Reorganization of Tariff System



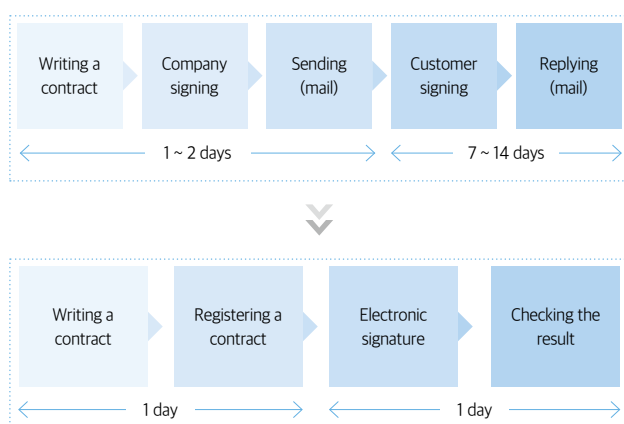
## Expanding Customer Services for Social Welfare

Since November 2019, KEPCO has been conducting a “safety care service for single-person household” demonstration project in cooperation with telecommunications companies and local governments. This service is a type of social safety networks that prevents emergencies in which abnormal conditions are detected based on an analysis of electricity usage patterns when people are at home or out. It uses single-household electricity consumption, smartphone calls, and location data, and provides emergency alarms to public officials in charge of administrative and welfare centers. In addition, KEPCO has expanded its mobile voice billing service nationwide, and has been making continuous efforts to expand inclusive customer service by improving services for the socially underprivileged, such as its automatic discount application service through linkages of information on welfare discount customers, and the operation of electric vehicle charging stations for those with reduced mobility.

## Innovating Customer Services through Digitalization

With the development of new digital technologies and the rise of customer service expectations in the era of the fourth industrial revolution, KEPCO is taking the lead in enhancing customer value by providing digital-based customized services. Moving away from the traditional method of sending, receiving and processing written electricity contracts via mail, KEPCO has switched to a method of electronic contracts using our Cyber Branch and electronic signatures, simplifying the application process and document submissions for electricity use, and greatly improving customer convenience. In addition, we have improved the speed and transparency of electricity supply by utilizing RPAs (Robotic Process Automation), such as our reception system for massive applications and guidance system for customers experiencing schedule delays. We are also making continuous efforts to improve customer satisfaction by expanding connectivity between customers and energy companies through the advancement of the Energy Marketplace (EN:TER), a comprehensive business platform for sharing energy services and data.

### Online Electricity Contract Procedure



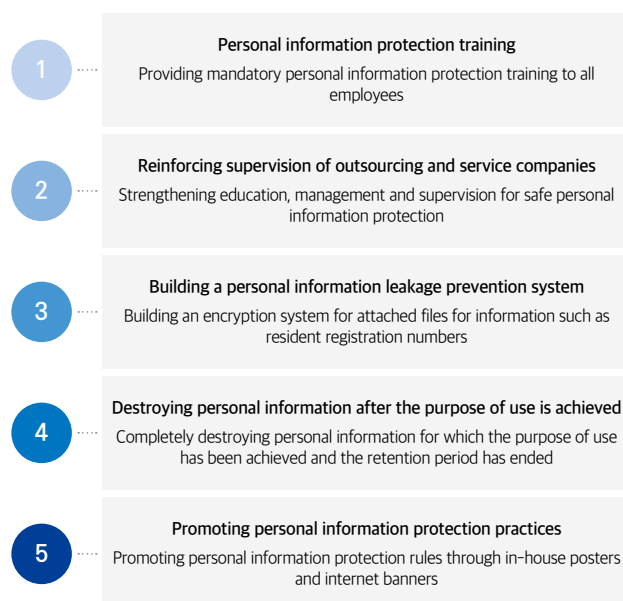
## Strengthening Customer Information Protection

### Reinforcing the Management System for Personal Information Protection

KEPCO has reinforced its personal information protection management system to proactively respond to amendments to Korea's three major data privacy laws, including the Personal Information Protection Act. In order to prevent the leakage of personal information in accordance with the expected expansion of power data sharing, the company revised related manuals while completing building automatic encryption (DRM)\* technology for personal information files on PCs, such as documents and images. In addition, in cooperation with the Korea Internet & Security Agency, we have provided professional training to our pool of data security experts. In accordance with our in-house personal information protection guidelines, we conduct annual personal information guidance checks from the HQs to the primary and secondary regional divisions and outsourcing companies, and reflect the results in our evaluations of those regional divisions when management deficiencies are found. Furthermore, we are spreading a culture of practicing personal information protection among our employees by promoting seven life rules for personal information protection through posters and internet banners. As a result of these personal information protection activities, the Ministry of Public Administration and Security has selected KEPCO as an excellent institution for five consecutive years in its diagnosis and evaluation of the personal information management status of public institutions.

\* DRM (Digital Right Management) : An access rights control solution for document encryption and reading, editing, printing, and copy protection

### Personal Information Protection Activities in 2019





# ENVIRONMENTAL

02

## Management Approach

Since the official adoption of the Paris Agreement in 2015, and with the aim of responding to the global climate crisis, KEPCO has established a greenhouse gas (GHG) reduction strategy and is promoting a range of GHG reduction activities in collaboration with our group companies. In doing so, we have set up a proactive response system under this new climate framework convention. We are also contributing to the supply of eco-friendly energy by stepping up the development of renewable energy on a large-scale, as well as expanding grid infrastructure for renewable energy interconnection systems to help realize the transition to clean, safe energy. Through investments in improving energy efficiency and the application of eco-friendly technology throughout the value chain, KEPCO is leading the formation of a sustainable power generation industry ecosystem.



## 2019 Key Performance

Reducing Greenhouse Gas Emissions

**260,000** tCO<sub>2</sub>

\* KEPCO excluding power generation subsidiaries



Expanding Infrastructure for Connecting New & Renewable Energy to the Grid

**1,235** MW



Improving Energy Efficiency

**1,019** GWh reduction



CDP Carbon Management Energy & Utility Sector Honors

Selected as an Outstanding Company for **4** Consecutive Years



# Responding to Climate Crisis

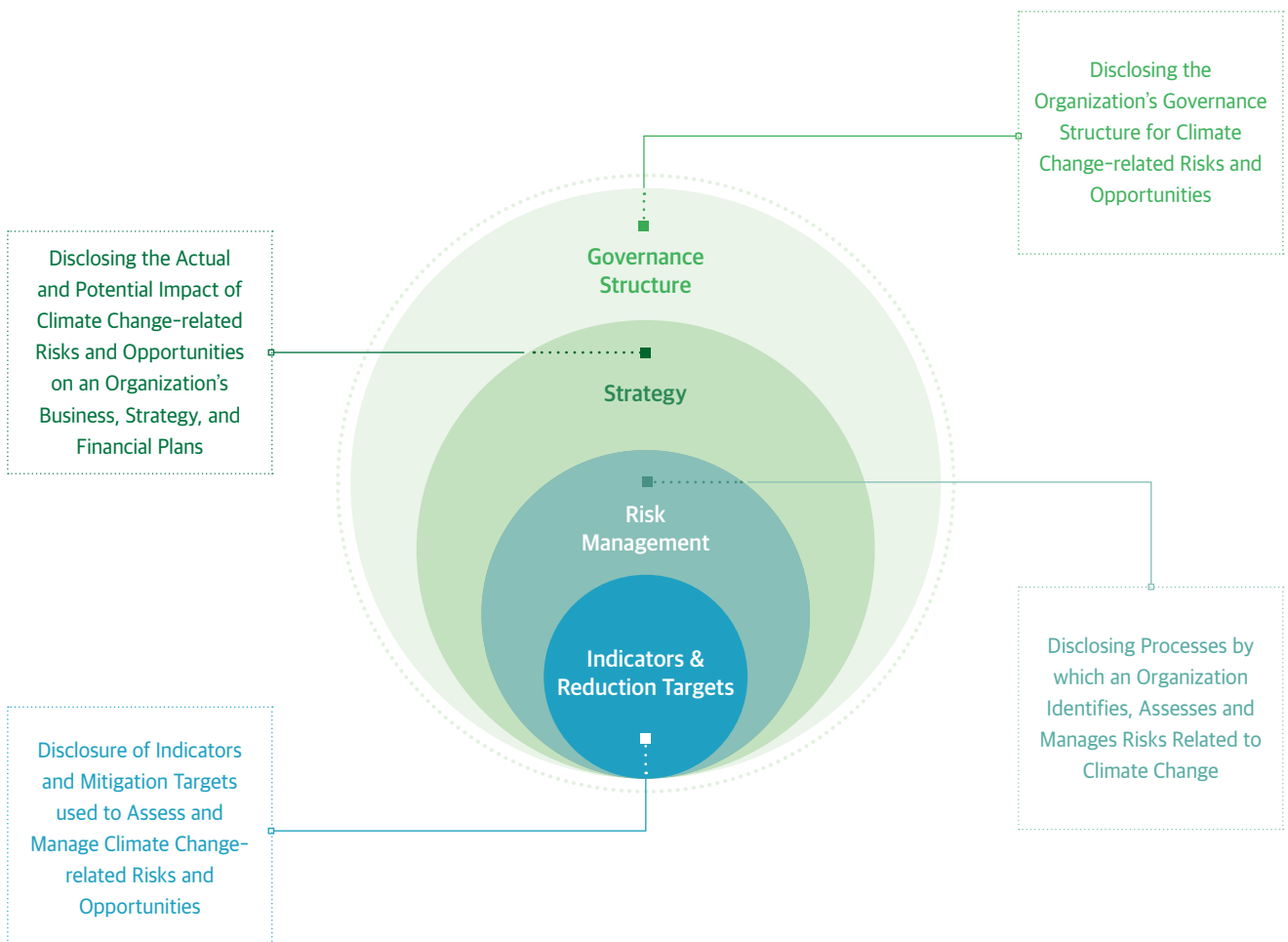
## KEPCO TCFD



In response to the global climate crisis, the international community adopted the United Nations Framework Convention on Climate Change (UNFCCC) in 1992 and is strengthening cooperation with the aim of reducing greenhouse gases and realizing a decarbonized society. To ensure sustainable development, KEPCO participates in this cooperation and has accordingly established an active climate change response system, setting the goal of reducing greenhouse gas emissions by 2030 and promoting various reduction activities. Moreover, we have participated in the CDP (Carbon Disclosure Project) since 2008 in order to meet the needs of stakeholders who demand corporate leadership in transitioning to a low-carbon economy. As such, we are externally disclosing our efforts to respond to the climate change. We have been selected as an outstanding company in the energy and utility sector for 4 consecutive years since 2016, in recognition of our efforts to increase the transparency of greenhouse gas emission information and improve emissions reductions. Furthermore, the Financial Stability Board (FSB), an international financial organization, established the Task-force on Climate-related Financial Disclosures (TCFD) in 2015 and presented recommendations on the disclosure of financial information related to the climate change. In this regard, KEPCO plans to continuously disclose climate change-related information from 2020 in accordance with these TCFD recommendations, reflecting the needs of global investors.

\* KEPCO discloses in detail the indicators and information related to climate change through the CDP, and the CDP report can be found on KEPCO's official website.

## TCFD Recommendation



## Governance Structure

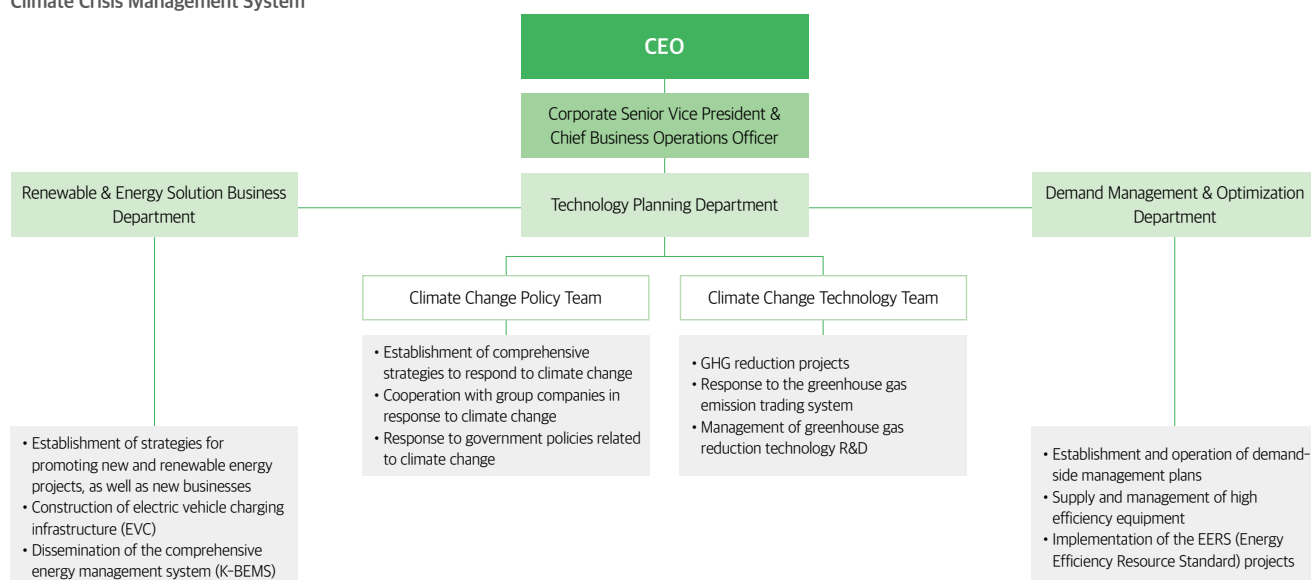
### Oversight by the Board of Directors in Response to Climate Change

KEPCO's new and renewable energy development goals related to the climate change response, infrastructure expansion to link renewable energy to the grid, and GHG reduction activities, are included in our 'mid-to long-term management target' and 'mid-to long-term financial management plan'. In 2018, KEPCO appointed two new, non-standing directors with expertise in environmental fields, such as renewable energy, in order to enhance our climate change response activities at the board level. The Chairperson of the Board of Directors, Kim Jwa-Kwan, serves as a professor in the Department of Environmental Engineering at the Catholic University of Busan, while Director Choi Seung-kook served as the Secretary General of the Green Korea United, and currently serves as the Chairperson of the environmental organization 'Solar and Wind Energy Cooperative Association'. In 2019, a total of 13 board meetings were held to deliberate on 36 resolution agendas and 8 reporting agenda items, and from among these those decisions with financial impact on important issues concerning KEPCO's response to the climate change were made including the approval of amendments to the construction plans for our flagship electric vehicles charging station and the approval of contributions to a solar power project in Mexico. In addition, the establishment of the "ESG Committee" is currently under review to strengthen ESG management and supervision by the BOD and executives.

### The Role of Management in Response to Climate Change

Below the level of the Board of Directors, the role of managing risk and opportunity factors relating to climate change is assigned to the Chief Business Operations Officer (CBO). Both the Climate Change Policy Team and the Climate Change Technology Team, which are climate change response organizations, operate in the Technology Planning Department under the CBO. The CBO is responsible for managing government policies concerning GHG emissions and executing investment projects necessary for reduction. The CBO constantly monitors the GHG emission trading system response and the status of GHG reduction projects, reporting them to the BOD if necessary. Meanwhile, KEPCO's response to climate change is directly linked to new and renewable energy development, new businesses in the energy sector, and energy demand management plans. Accordingly, under the CBO, the Renewable & Energy Solution Business Department, in charge of development strategies for new energy industry such as the domestic renewable energy generation projects, electric vehicle charging infrastructure (EVC), and the comprehensive energy management system (K-BEMS), as well as the Demand Management & Optimization Department, which is responsible for energy efficiency improvement projects and demand-side management plans, were established. In addition, we regularly hold meetings of the CEOs of our group companies in order to prepare joint cooperation plans for the reduction of GHG emissions. In December 2019, we discussed the direction of our overseas coal-fired power projects and conversion to a sustainable overseas project portfolio. Accordingly, KEPCO will focus on developing low-carbon and eco-friendly projects such as new and renewable and combined-cycle gas turbine power plants, and in particular, for overseas coal-fired power plant projects, we have no plan to develop a new project in the future.

#### Climate Crisis Management System



## Strategy

### Climate Change Response Activities

KEPCO has set up an integrated response system for our group companies to respond to climate change. We have established the 'Basic Plan for GHG Reduction of KEPCO Group Companies 2030' and the 'RE3020 Basic Plan for KEPCO Group Companies' to take the lead in reducing GHG emissions and promoting new and renewable energy. In order to achieve our GHG reduction target (a reduction of 47 million tons compared to BAU by 2030), construction of new coal-fired power plants has been prohibited in principle, a decision was made to decommission 10 old, coal-fired power plants with a total capacity of 3,345 MW, and a plan to convert four coal-fired power plants to LNG was confirmed. Furthermore, in September 2019, we submitted an additional LNG conversion plan for fourteen 7GW coal-fired power plants to the government. In addition, KEPCO is promoting large-scale new and renewable energy business development, and is expanding research and development in the field of new and renewable energy with the aim of achieving a clean and safe energy mix. We are also striving to make the entire power supply value chain eco-friendly, from production to sales, by reducing coal-fired power generation, collecting and purifying SF<sub>6</sub> gas, and improving energy consumption efficiency. Further details can be found on pages 56 ~ 59 of this report.

#### Early Decommissioning of Coal-fired Power Plants

Generator Unit	Installed Capacity (MW)	Subsidiary	Decommissioning Schedule
Seochon Unit 1, 2	400	KOMIPO (Korea Midland Power Co.)	Complete (2017. 7)
Yeongdong Unit 1, 2	325	KOEN (Korea South-East Power Co.)	Fuel transition (2017. 7, 2019. 1)
Samcheonpo Unit 1, 2	1,120	KOEN (Korea South-East Power Co.)	2020. 12 (Anticipated Date)
Honam Unit 1, 2	500	EWP (Korea East-West Power Co.)	2021. 1 (Anticipated Date)
Boryeong Unit 1, 2	1,000	KOMIPO (Korea Midland Power Co.)	2020. 12 (Anticipated Date)

#### Converting Coal-fired Power Plants to LNG-fired Plants

Generator Unit	Installed Capacity (MW)	Subsidiary	Conversion Schedule (Anticipated Date)
Samcheonpo Unit 3, 4	1,120	KOEN (Korea South-East Power Co.)	2024. 3
Taeon Unit 1, 2	1,000	KOWEPO (Korea Western Power Co.)	2025. 12
Samcheonpo Unit 5, 6	1,000	KOEN (Korea South-East Power Co.)	2027 ~ 2028
Boryeong Unit 5, 6	1,000	KOMIPO (Korea Midland Power Co.)	2023 ~ 2024
Taeon Unit 3, 4	1,000	KOWEPO (Korea Western Power Co.)	2027
Hadong Unit 1 ~ 4	2,000	KOEN (Korea South-East Power Co.)	2027 ~ 2028
Dangjin Unit 1 ~ 4	2,000	EWP (Korea East-West Power Co.)	2029 ~ 2031

### Key Risk and Opportunity Factors

As companies eligible for the GHG emission trading scheme, KEPCO and the six power generation subsidiaries are fulfilling our obligations during the second phase (2018-2020). During this period, 3% of the paid allocation was implemented, with the paid allocation ratio expected to increase to more than 10% from 2021. The cost of purchasing emission permits is expected to continue to increase in the future. In addition, following the implementation of the RPS (Renewable Portfolio Standards), the cost of purchasing external RECs (Renewable Energy Certificates) is expected to rise due to an expansion of the mandatory quota of new and renewable power generation, and the increase in our environmental R&D budget may create a burden on operating expenses. Further, if greater demand for social responsibility creates a situation damaging to our corporate reputation, such as in the disclosure of climate change response activities, this may negatively affect our corporate value. Technical risks related to power facility operations and stemming from changes in the physical environment, such as heatwaves and extreme cold, may also be caused by the climate crisis.

However, in the process of transitioning to a low-carbon economy, the climate crisis may be an opportunity to create new business. By 2030, an annual average of 3,012 MW of demand resources will be reduced, resulting in a decrease in the System Marginal Price (SMP) and an expected saving of KRW 54.4 billion in the annual electricity purchase cost. Additionally, in a first for Korea, KEPCO issued a Green Bond worth USD 500 million for two consecutive years to diversify borrowing resources and raise investment funds for eco-friendly energy. Through this, we saved KRW 33.6 billion in interest expenses compared to Electricity Bonds, and we plan to use the funds raised by the Green Bond for domestic and overseas new and renewable power generation projects, building electric vehicle charging infrastructure, and expanding new and renewable energy facilities. Moreover, KEPCO is taking this opportunity to increase sales by expanding our participation in new and renewable energy generation projects, such as offshore wind power and solar power, in accordance with the implementation of RE3020.

Due to the impact of climate change, KEPCO has also established 'Climate Change Adaptation Measures' through scenario analysis (using RCP 8.5\*) of damage to company power facilities, and we reflect these measures in our management strategy. Results of inspections on whether the adaptation measures have been implemented are submitted to the Ministry of Environment for verification. Details on the RCP 8.5 scenario analysis and climate change adaptation measures are disclosed in detail through the CDP report.

\* The Green Bond Report can be found on KEPCO's official website.

\* RCP 8.5 : A hypothetical scenario in which GHG emissions are not reduced and instead continue in line with current trends (i.e. BAU scenario)

## Risk Management

KEPCO identifies and evaluates climate change-related risks through a phased committee deliberation process, and makes efficient investment decisions for major projects related to the climate change response. For projects involving large-scale investments, including climate change response activities, the feasibility of a project is deliberated through procedures involving the Project Selection Committee, Risk Deliberation Committee, Investment Deliberation Committee, and the Board of Directors. In this process, we analyze the risk factors related to climate change, such as enhanced environmental regulations, energy tax reforms, and responses to the GHG emission trading scheme, and develop countermeasures to mitigate these risks.

The Project Selection Committee deliberates, in detail, the obstacles facing project implementation, analyzes expected risks and returns, and considers the structure of the project, the possibility of financing (bankability), methods to secure executive personnel, the project promotion plan and required budget, and the implementation schedule. The Risk Deliberation Committee deliberates on the adequacy of risk management strategies and business risk premium calculations, including major risk analysis and countermeasures. The Investment Deliberation Committee finalizes the investment portfolio for projects that have passed examination by the Project Selection Committee and the Risk Deliberation Committee, as well as other investment projects. Final approval for a project is then made by the Board of Directors.

KEPCO recognizes, from a financial perspective, the risks and opportunities of climate change and carbon management activities, and is monitoring risks related to carbon emissions through the establishment of the 'Basic Plan for GHG Reduction of KEPCO Group Companies 2030', and has developed a systematic response plan linked to company-wide risk management. Climate change response activities are reflected in our short- to mid-to long-term investment plan, taking into account the impact of risks and the possibility of new project implementation, and periodic analyses of performance against budget and performance management indicators are conducted. Based on these analysis results, the impact of climate crisis-related risks on our operating profit is managed on a step-by-step basis. Through mid-to long-term business environment analyses, a 'mid- and long-term financial management plan' is produced yearly and reported to the Board of Directors. The 'mid-to long-term financial management plan' established in 2019 includes investment directions for climate change-related business environment changes and investment plans for each business, such as 'the government's policy to restrict coal-fired power generation and expand renewable power to reduce greenhouse gas and fine dust', 'environmental cost increases from the reorganization of RPS, emission rights, and the energy tax system', 'increasing investment costs related to new and renewable energy and grid connection', 'increasing investment costs related to power generation business and grid connection', and 'expanding the power and ICT convergence business, such as electric vehicle charging and smart cities'.

### Major Risk Management Factors by Committee

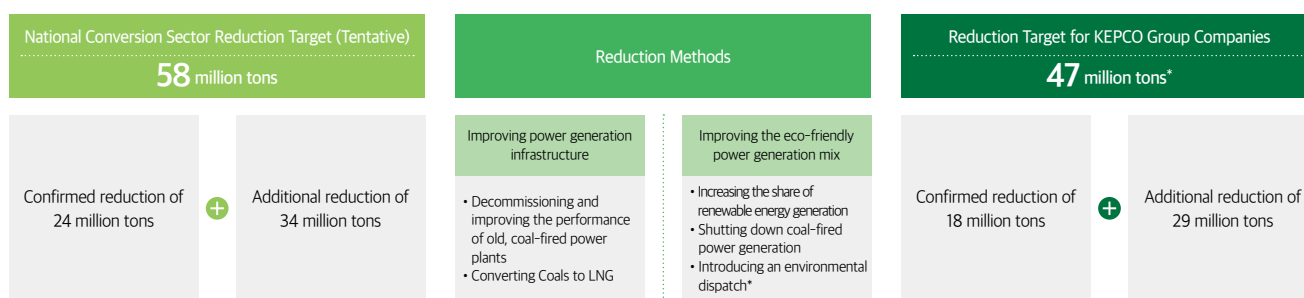
	Domestic Business (new energy business, new and renewable power generation projects, etc.)	Overseas Business
Project Selection Committee	Analyzes obstacles in advancing the business, expected risks and returns, the possibility of financing, the budget for project promotion, etc.	
Risk Deliberation Committee	<ul style="list-style-type: none"> <li>• Matters concerning basic policies and plans</li> <li>• Matters concerning contract signing</li> <li>• Matters concerning the establishment of a corporation (SPC) and investment</li> <li>• Matters concerning financing</li> <li>• Basic plan concerning investment risk management in accordance with investment feasibility, etc. (verification of business environment and key assumptions, sensitivity analysis by situation, risk management strategy, etc.)</li> </ul>	<ul style="list-style-type: none"> <li>• Risk management strategies, such as major risk analysis and countermeasures</li> <li>• Matters concerning the key contents of various contracts and guarantees</li> <li>• Approval of the verification results of the Standard Rate of Return Verification Committee, such as the compatibility of business risk premium calculations</li> </ul> <p>※ For overseas projects, the Standard Rate of Return Verification Committee is separately nominated before the Risk Deliberation Committee</p>
Investment Deliberation Committee	Review of the necessity of the business, the appropriateness of the implementation time, scale and profitability (economy), and risks and countermeasures	
Board Resolution	Final approval after deliberation on the feasibility of the business investment	



## Indicators and Reduction Targets

### Greenhouse Gas Reduction Target

KEPCO group companies have established the “Basic Plan for GHG Reduction of KEPCO Group Companies 2030” in an effort to contribute to the national target of 58 million tons of GHG reductions. Accordingly, we have set a goal of reducing greenhouse gas emissions by 47 million tons compared to BAU by 2030, with 18 million tons of reductions expected through the realization of an improved eco-friendly power generation mix - via the early decommissioning of coal-fired power plants and LNG conversion, improvement of power generation infrastructure, an increase in the proportion of renewable energy generation, and suspension of operations of coal-fired power plants in the spring. A further reduction of 29 million tons is planned through the expansion of self-reduction measures, such as the additional decommissioning of old, coal-fired power plants (to reflect the 9th Basic Power Supply and Demand Plan), domestic external projects, and overseas CDM (Clean Development Mechanism) projects. Meanwhile, we are expanding investment in large-scale offshore wind power and solar power projects, with the goal of developing 41.2GW of renewable energy by 2030. By recognizing climate change as a new business opportunity, we are advancing new businesses including establishment of electric vehicle charging infrastructure (EVC) and supply of comprehensive energy management system (K-BEMS). Further details can be found on p.33 ~ 35 of this report.



\* Out of the 58 million tons of reduction targets in the conversion sector, 34 million tons are additional potential reductions, and will be confirmed before the Nationally Determined Contributions (NDC) is submitted by 2020.

\* A purchase order determined under the merit order system that includes environmental costs

### Status of Greenhouse Gas Emissions

KEPCO closely monitors and gathers data on scope 1, 2 and 3 GHG emissions across our corporate activities, and we systematically manage all direct and indirect emissions. KEPCO's GHG emissions in 2019 amounted to approximately 1.1 million tons, down 260,000 tons from 2018. It is expected that future emissions will see further, significant reductions through the collection, refinement and recycling of the SF<sub>6</sub> gas generated during switch removal. Meanwhile, in accordance with the policy of converting to eco-friendly energy sources such as reducing coal-fired power generation and expanding the use of renewable energy, the GHG emissions of KEPCO group companies including 6 power generation subsidiaries are expected to decrease to 202.2 million tons in 2019, representing a 13.8 million ton decrease compared to 2018.

#### Greenhouse Gas Emissions of KEPCO Group Companies

(Unit : million tCO<sub>2</sub>)

Category		2017	2018	2019
KEPCO	Scope 1	1.3	1.2	0.9
	Scope 2	0.2	0.2	0.2
	<b>Total</b>	<b>1.5</b>	<b>1.4</b>	<b>1.1</b>
Power generation subsidiaries	Scope 1	210.3	210.9	197.6
	Scope 2	3.9	3.7	3.5
	<b>Total</b>	<b>214.2</b>	<b>214.6</b>	<b>201.1</b>
<b>Total</b>		<b>215.7</b>	<b>216.0</b>	<b>202.2</b>

(Unit : tCO<sub>2</sub>)

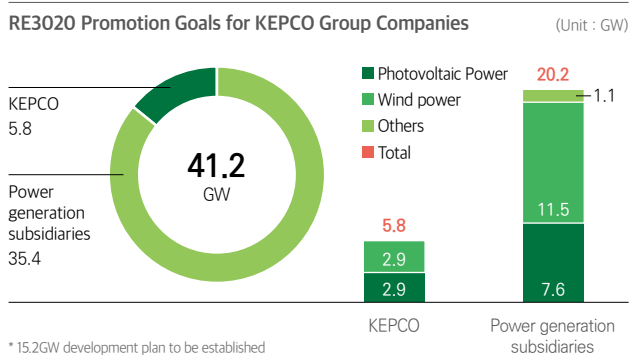
Category	2019				
Scope 3	Fuel Production Process	Fuel Combustion to Generate Power	Discarding Generated Waste	Domestic and Overseas Business Trips	Commute
	45,439,968	219,614,860	765	9,104	483

• Based on the National Greenhouse Gas Comprehensive Management System (NGMS), emissions in 2019 may change according to the results of government verification.  
 • Calculation range : Domestic business sites  
 • Power generation subsidiaries : Korea Hydro & Nuclear Power, Korea South-East Power, Korea East-West Power, Korea Western Power, Korea Midland Power, Korea Southern Power  
 • Scope 1 : Direct emissions generated from emission sources directly owned and controlled by business operators  
 • Scope 2 : Indirect emissions generated from the production of electricity, steam, etc.  
 • Scope 3 : External emissions from power generation fuel production, domestic and overseas business trips, product use, etc.

## Expanding the Supply of New & Renewable Energy

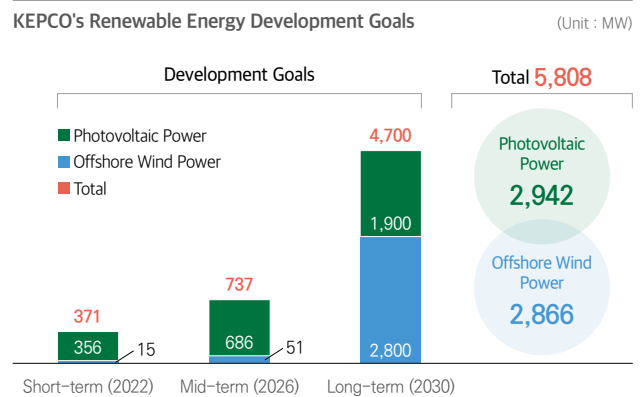
### Establishing RE3020 Basic Plan for KEPCO Group Companies

With the recent tightening of environmental regulations on coal-fired power generation, KEPCO and generation subsidiaries have established the 'RE3020 Basic Plan for KEPCO Group Companies' to reduce greenhouse gas emissions and facilitate the conversion to clean energy. Accordingly, we are promoting the development of large-scale offshore wind and solar power projects, with the goal of achieving 41.2GW of renewable energy by 2030. We will contribute to the achievement of national policy goals by promoting economical and efficient business through using our own technologies, as well as take the lead in overcoming the climate crisis by reducing carbon in the electric power industry.



### Operating the New & Renewable Energy Council for KEPCO Group Companies

KEPCO, along with power generation subsidiaries, operates the 'New & Renewable Energy Council' to efficiently promote the domestic new and renewable power generation projects. Accordingly, we are sharing the progress status of projects for each organization and identifying methods of joint cooperation. In addition, we are striving to create synergy at the group level by introducing reform measures for expansion of new and renewable energy. Based on a system of close collaboration, KEPCO group companies will lead the clean energy transition, revitalize the domestic renewable energy industry, and drive the growth of related industries.



### Promoting Large-scale New & Renewable Energy Project Development

KEPCO is actively promoting a range of renewable energy generation projects, such as the Southwest Sea offshore wind power, Jeju Hallim offshore wind power, Miryang Heemang Sunlight Power, and photovoltaic power in schools. The Southwest Sea offshore wind power demonstration project (60MW), a large-scale offshore wind power project, saw commercial operations starting in earnest following successful implementation, and the Jeju Hallim offshore wind power project (100MW) is undergoing the process of signing a main contract, such as one for turbine supply. Miryang Heemang Sunlight Power, a resident participation initiative, resulted in the completion of 25 power plants. In addition, KEPCO has been pursuing a photovoltaic project for schools with the goal of constructing solar power generation facilities with a total capacity of 110MW in schools and public sites nationwide. Aside from this, we are promoting the development of a 1.5GW offshore wind farm in Shinan, Jeollanam-do, where KEPCO group companies, local governments, and local residents work together to participate in the development process, while the development plan for the Southwest Sea offshore wind power pilot project (400MW) is under discussion with local governments.

Category	Offshore Wind Power		Photovoltaic Power	
	Southwest Sea Offshore Wind Power	Jeju Hallim Offshore Wind Power	School Photovoltaic Power	Miryang Photovoltaic Power
<b>Establishment date of SPC</b>	2012. 12. 7	2017. 12. 19	2016. 6. 21	2015. 6. 11
<b>Project description</b>	Development of Southwest Sea offshore wind power demonstration complex (60MW)	Construction and operation of offshore wind power in Hallim-eup, Jeju (100MW)	Development of photovoltaic power in schools nationwide and local government (110MW)	Development of photovoltaic power around surrounding areas of transmission lines in Miryang (2.5MW)
<b>Share ratio</b> (Unit : %)	<div> <div>KEPCO 25</div> <div>Power generation subsidiaries 75</div> </div>	<div> <div>KEPCO 29</div> <div>Midland Power 23</div> <div>Other 43</div> </div>	<div> <div>KEPCO 50</div> <div>Power generation subsidiaries 50</div> </div>	<div> <div>KEPCO 50</div> <div>Power generation subsidiaries 50</div> </div>
<b>Progress status</b>	Completion (Jan. 2020) and in operation	Preparing for construction (Completion of approval for development)	Completion and in operation (11MW)	Completion (June 2019) and in operation (25 units, 2.5MW)

## BUSINESS CASE 7

Southwest Sea Offshore  
Wind Power Demonstration Project

The Southwest Sea offshore wind power demonstration complex is a 60MW offshore wind farm consisting of 20 3MW wind power generators and offshore substations on the coast of Buan-gun, Jeollabuk-do and Gochang-gun. With the completion of the demonstration complex, KEPCO will produce and supply 155GWh of electricity every year, equivalent to the amount of electricity that can be used by about 50,000 households. The Southwest Sea offshore wind power demonstration complex is of great significance as the first offshore substation in Asia, and is expected to contribute to the advancement of offshore wind power in the global market based on KEPCO's expertise in the production, installation, and operation of offshore wind power generation and offshore substations. Moreover, KEPCO plans to develop 2.9GW of large-scale offshore wind power projects that are difficult for private companies to participate in by 2030, including the Southwest Sea offshore wind power pilot project and the Jeju Hallim offshore wind power project.



Southwest Sea Offshore Substation

## Expansion of R&amp;D in the Field of New and Renewable Energy

In accordance with the RE3020 basic plan, KEPCO is concentrating on the research and development of new technologies to promote new and renewable energy. In addition to research on new and renewable energy sources, such as solar and wind power, we are managing the entire value chain from energy production and consumption, taking into account the deterioration of power quality caused by the expansion of new and renewable energy. In addition, in order to minimize the effect of the nature of renewable energy in regard of the intermittent power output on the power grid, research on resources that can provide flexibility to the power grid is being conducted such as AI-based real-time operation systems and Energy Storage System (ESS). The construction of large-capacity ESS is essential due to the weather-sensitive nature of new and renewable energy such as solar and wind power. In response to the expansion of renewable energy, KEPCO is promoting the construction of ESS to ensure the stable operation of the power grid.

## Establishing a Renewable Energy Integrated Monitoring and Control System

KEPCO has built a central control system that can monitor the operation status of renewable energy power plants nationwide in real time and send output control signals, considering the current state of demand concentration of renewable energy generation in a specific region. It is nationwide hierarchical system that exchanges information with the central control center of the Korea Power Exchange, and with this we are preparing for volatility in power supply and demand which caused by the increase in renewable energy. Moving forward, we will strive to improve the reliability of the power operation platform of the power grid.

## Expanding New &amp; Renewable Energy Grid Connection Infrastructure

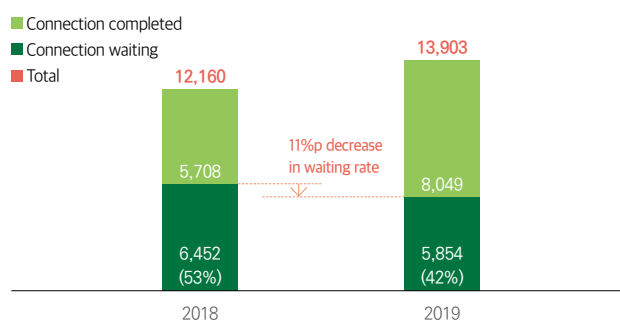
Since the government's policy to guarantee access to new and renewable energy, the capacity of distribution lines has been limited due to the rapid increase in grid accesses of power producers, resulting in the increase of grid connection delays of new and renewable energy. Accordingly, KEPCO has established and implemented short-to long-term plans concerning grid infrastructure, such as improving the utilization rate of existing facilities, reinforcing new distribution lines and transformer facilities, and secured 8,094MW of grid connection facilities to resolve the grid connection waiting time issue. Through these efforts, the connection waiting rate in 2019 has decreased by 11%p compared to the previous year.

## Establishment of Facility Plan to Reduce Connection Waiting (2019 ~ 2024)

Short term	Upgrading the possible capacity of renewable energy connected to the grid	2,200MW
	Altering the use of West Gochang Substation (Research facility → Power supply facility)	260MW
Mid-to long term	Constructing 52 transformers, 25 substations (Shortening construction period, 6 → 3 years)	5,100MW
	Increasing transmission line capacity	534MW

## Connection Waiting Reduction Performance

(Unit : MW)



## Achieving Eco-friendly Value Chains of the Entire Power Supply



### Power Generation

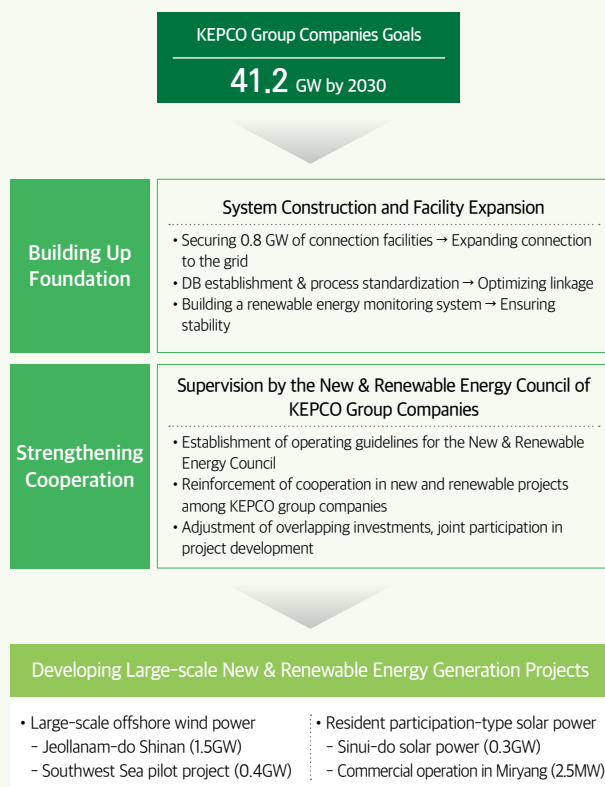
#### Enhancing the Basis for the Reduction of Greenhouse Gases and Fine Dust

##### Leading the Expansion of New & Renewable Energy

In accordance with the RE3020 Basic Plan, KEPCO and the six power generation subsidiaries have set the basic direction for new and renewable energy development and are promoting systematic, large-scale renewable energy generation projects, such as the development of offshore wind power plants, through close collaboration. By 2030, we will lead the expansion of clean energy for the future by developing 41.2GW of new and renewable energy, and by strengthening the stability of the power grid through enhancing the infrastructure connected to the new and renewable energy. Through these efforts, we intend to contribute to the achievement of the national RE3020 goal, and play a leading role in pioneering domestic renewable energy infrastructure, technological development, and industrial ecosystem.

\* RE3020 : By 2030, the share of new and renewable energy generation should reach 20% of total national power generation.

##### RE3020 Basic Plan for KEPCO Group Companies



##### Reduction of Coal-fired Power Generation During the Season with High Concentrations of Fine Dust (December to March)

In order to solve the fine dust issue, which is approaching a social crisis, the government launched the 'National Climate Environment Conference', an organization directly under the presidential office, in April 2019. The power generation sector accounts for 12% of domestic fine dust emissions, and coal-fired power generation accounts for a high proportion of these emissions. Accordingly, KEPCO group companies are participating in the National Climate Environment Conference, contributing to efforts to find the optimal plan for reducing coal-fired power generation and actively implementing measures to reduce coal-fired power generation. From December 2019 to February 2020, the operation of 8 to 15 domestic coal-fired power plants in winter was suspended, and the remaining coal-fired power plants also implemented a regulation to lower the output to a maximum of 80% of their capacity. In particular, in March during the spring season, we expanded our shutdown of coal-fired power plants by up to 28 units. As a result of these efforts, the fine dust was reduced by 2,530 tons, approximately 39% decrease compared to the same period last year.

##### Development of Core Technologies to Reduce Greenhouse Gases and Fine Dust

KEPCO is focusing its capabilities on capturing carbon dioxide (CO<sub>2</sub>) to reduce greenhouse gases, and is developing technologies in line with its goal of becoming an environmental technology leader in the power sector. We are conducting empirical research through the construction of 10MW-class CO<sub>2</sub> capture plants at the Boryeong and Hadong coal-fired power plants, and are promoting the commercialization of mineral resources technology that converts greenhouse gases emitted from power plants into high value-added useful compounds, such as sodium bicarbonate. In addition, we have built and are operating a 5kW-class facility that produces methane from CO<sub>2</sub> as a raw material, using our own, independently developed microorganisms. Further, KEPCO has established a 'fine dust reduction technology development roadmap' to reduce the fine dust generated from power plants. Accordingly, in the short term, we are conducting 5 co-operative R&D initiatives, including technology for reducing fugitive dust from indoor low coal depot, and in the mid to long term, planning to develop 5 technologies such as integrated control technology to mitigate secondary fine dust generating substances.



## Transmission and Distribution

### Constructing and Operating Eco-friendly Facilities

#### Development of SF<sub>6</sub> Refining and Reduction Technology and Alternative Insulating Gases

KEPCO is striving to reduce greenhouse gases generated in the power transportation process. SF<sub>6</sub> gas is one of the six major greenhouse gases and has a Global Warming Potential (GWP) 23,900 times that of carbon dioxide (CO<sub>2</sub>). KEPCO uses SF<sub>6</sub> gas as an insulating material for transmission and distribution power facilities, and our SF<sub>6</sub> gas consumption accounts for about 80% of domestic SF<sub>6</sub> emissions. Accordingly, we established an SF<sub>6</sub> gas recovery and refinery center in the Sinokcheon substation in 2019, and are recycling SF<sub>6</sub> gas emitted from distribution switchgear in the substation area, thus acquiring the capacity to reduce approximately 200,000 tons of greenhouse gases per year. Meanwhile, we also plan to promote the application of eco-friendly switchgear to fundamentally suppress the use of SF<sub>6</sub> gas in the transmission and distribution sector. In 2016, a 170kV SF<sub>6</sub> Free GIS development and introduction plan was prepared to complete the research and development of an insulating gas that can replace SF<sub>6</sub> gas, and this new gas is expected to be introduced in new facilities from 2021 after a period of demonstration and pilot use. Moreover, with the rollout of SF<sub>6</sub> Free GIS in the future, more than 66 tons of waste SF<sub>6</sub> is expected to be generated annually from existing facilities, so we are promoting the development of high-concentration SF<sub>6</sub> decomposition and detoxification technology.

\* GIS : Gas Insulated Switchgear

#### Construction of Eco-friendly Power Facility

KEPCO strives to minimize environmental damage that may occur during the construction of power facilities. Prior to construction, habitats for each species are investigated through environmental impact assessment procedures and measures to minimize environmental impact are prepared and externally disclosed. In the construction or restoration stages, retroactive environmental impact surveys are conducted. Additionally, we promote the construction of power facilities in harmony with the environment by developing landscape-improving power transmission facilities and mountain-specific prefabricated steel towers that do not harm the surrounding landscape. Further, the offshore wind power public-private council is operated to help reduce marine damage and facilitate coexistence with the environment. On top of this, with the aim of eradicating the use of PCBs (Poly Chlorinated Biphenyls) when constructing and operating distribution facilities, a management system has been established to help protect the environment.



## Sales and Consumption

### Improving Energy Consumption Efficiency

#### Expansion of EERS\* Implementation

In order to reduce energy consumption, EERS is a system that assigns energy saving targets proportional to the amount of electricity sold to power providers, and allows them to achieve these targets through various energy efficiency improvement investments. As the representative power supplier in Korea, KEPCO implemented the EERS pilot project for the first time in Korea in May 2018, taking the lead in reducing GHG emissions by improving energy efficiency. We operate dedicated departments such as the EERS Planning and Operation Team at the KEPCO Headquarters and the Energy Management Team at 15 regional headquarters nationwide, and directly support the supply of high-efficiency equipment such as heat pump boilers, LED lighting, and inverters. In 2019, we supplied high-efficiency equipment for the first time in the field of agricultural use, and the scope of EERS recognition was expanded from the performance measurement method focusing on equipment supply to K-BEMS and ESCO\* agency projects. Consequently, a total of 1,019 GWh of energy was saved as of 2019, resulting in a reduction of 470,000 tons of greenhouse gases. In addition, we have established a long-term roadmap with the aim of reducing energy consumption by 1% of annual electricity sales and achieving 40,381GWh of reductions by 2031, through an investment of KRW 3.6 trillion. We are committed to research, analysis and system development to achieve successful EERS reduction goals. Moving forwards into a low-carbon era, KEPCO will continue to lead innovation towards a highly efficient energy consumption structure and strive to promote the sustainable development of the power industry.

\* EERS (Energy Efficiency Resource Standard) : Mandatory policy to improve energy efficiency

\* ESCO (Energy Service Company) : An energy-saving company that invests in energy-saving facilities on behalf of energy users and recovers investment costs with energy savings.

#### Status of Major High-efficiency Equipment Supply (2019) (Unit : units)

Heat pump boiler	2,307
Regenerative braking system	4,672
Premium electric motor	45
Thermo-hygrostat	7
Transformers	462
LED	571,686
Inverter	1,571



# Environmental Management

## Environmental Management System

### Environmental Management Strategy

In order to establish a sustainable environmental management system, KEPCO produces an annual “Environmental Management Promotion Plan” that includes goals and implementation tasks concerning company-wide environmental management, with comprehensive consideration of government policies and environmental regulations. Major business plans related to environmental management and the performance of our environmental management system are reported to our senior leadership, and we have been reducing environmental risks by reviewing and evaluating environmental impacts when making investment decisions. In addition, we conduct regular internal inspections at our workplaces, and any nonconformities identified during this process are corrected and improved to minimize environmental impacts.

### Environmental Organization

At KEPCO, the EHS Team of the Safety and Security Department has established a company-wide “Environmental Management Promotion Plan” to help realize environmental management goals and manage ongoing performance. In addition, to enhance our integrated environmental management system, we have established environmental management guidelines and are thus implementing, maintaining and continuously improving our environmental management system.

### Environmental Management System

In order to conduct environmental management in a more systematic manner, KEPCO has maintained ISO 14001 certification, an international environmental management system standard, since first acquiring it in 2007. We have hence established a company-wide environmental management system and are efficiently managing all related activities, such as complying with environmental laws and regulations, managing environmental performance, and reducing environmental pollution, to ensure that the basic requirements of international standards are fulfilled. KEPCO will continue to maintain ISO 14001 certification and promote environmental management in accordance with international standards.

#### Status of Environmental Management System Certification

Certification standard	<ul style="list-style-type: none"> <li>• ISO 14001:2015</li> <li>• KS I ISO 14001:2015</li> </ul>
Certification scope	<ul style="list-style-type: none"> <li>• KEPCO Headquarters and 19 Regional Headquarters</li> </ul>
Certification work	<ul style="list-style-type: none"> <li>• Construction, operation, sales of domestic and overseas electricity projects (power generation, electric power transmission and transformation, distribution) and all related tasks, overseas nuclear power plant project development and operations management</li> </ul>
Validity	<ul style="list-style-type: none"> <li>• October 22, 2019 – October 22, 2022</li> </ul>
Certification agency	<ul style="list-style-type: none"> <li>• Korea Knowledge Standard Registrar</li> </ul>

## Environmental Impact Management

### Water Risk Management

KEPCO recognizes that water resources are at risk globally, and is striving to prevent environmental risks that arise from water use. In the case of our domestic power transportation and sales businesses, there is no exposure to water risks such as water shortage and water pollution. However, we recognize water risk as a potential risk factor and therefore strive to reduce consumption across the company. Meanwhile, in the case of overseas projects conducted by KEPCO, Saudi Arabia, the UAE (United Arab Emirates), and Jordan are considered to experience water stress according to classification standards.\* In order to minimize exposure to water risks in power generation projects situated in countries such as Saudi Arabia (Rabigh), the UAE (Shuweihat), and the Philippines (Cebu, Ilijan), we use seawater, not groundwater. In China (Gemeng International, Shanxi Province), heavy water recycled from domestic sewage is used as cooling water, whereas in Jordan (Al Qatrana), we are striving to manage and protect water by using air for cooling.

\* Criteria for classification of countries experiencing water stress are from the World Resource Institute (WRI), World Wildlife Fund (WWF) and Population Action International (PAI)

### Water Management

In managing performances and targets every year, KEPCO selects “amount of water used” as one of its specific performance indicators when implementing environmental management. To this end, we have established an energy portal system to report and verify company-wide water consumption by regional division, month, and year, and the Environmental Information Disclosure System (<https://www.env-info.kr>) transparently discloses water consumption, energy consumption, and major waste generation.

### Waste Management

KEPCO has improved its recycling rate by discovering new recycling locations for waste and by-products generated in our business processes, and by consigning waste that is difficult to recycle to a licensed, specialized treatment company. In particular, for the safe treatment of PCBs, which are classified as hazardous waste, our waste compressors are strictly controlled in accordance with PCB management procedures. Waste with a PCB concentration of 2 ppm or higher is thoroughly managed from discharge to disposal through one of the PCB analysis and treatment companies certified by the Ministry of Environment every year.

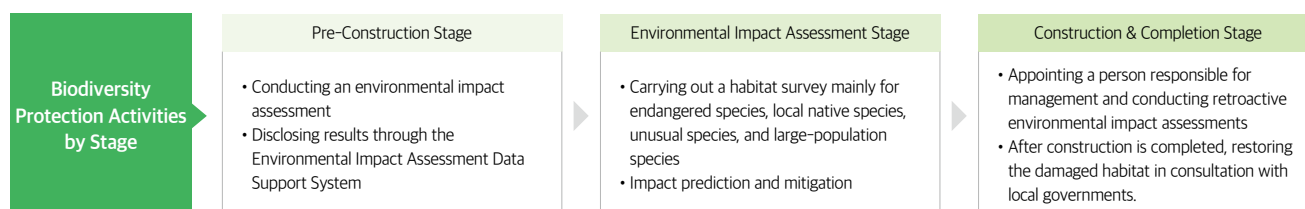
## Air Pollutant Emissions Management

The power generation subsidiaries of KEPCO have installed a Smokestack Remote Monitoring System (CleanSYS) and measure air pollutants in real-time with smokestack Tele-Monitoring System (TMS) such as Nitrogen Oxides (NOx), Sulfur Oxides and dust (TSP) which are emitted from smokestacks at our workplaces. In addition, we are expanding the use of clean energy sources to minimize the emission of air pollutants, while also striving to reduce emissions by introducing world-class environmental technology such as flue gas desulfurization, selective catalytic reduction, and electrostatic precipitators.

## Protecting Biodiversity

When selecting construction sites for transmission and substation facilities, KEPCO refrains from proceeding with projects in biodiversity protected areas, such as wetland protected areas, wildlife protected areas, forest genetic resource reserves, the Baekdudaegan Mountains Reserve, and others. We exclude biodiversity protected areas from project candidate sites by appointing a professional company to conduct power impact assessments prior to starting a project. In the environmental impact assessment stage, we analyze the environmental risks to both animals and plants and, by conducting documentary surveys, inquiries, on-site investigations, etc., produce an impact reduction plan incorporating protective measures, to double check if the site is a biodiversity protected area. In addition, both the power impact assessments and environmental impact assessments contain items related to the protection of animals, plants and ecosystems.

Concurrently, when modifying or expanding a planned site for transmission or substation facilities, we evaluate risks by conducting environmental impact surveys in accordance with the Environmental Impact Assessments Act. In doing so, we devise measures to minimize relevant environmental impacts and conduct discussions with the relevant authorities and regional stakeholders, including local environmental offices. Meanwhile, in order to implement the resolutions determined in the consultation process, we appoint a person to manage the implementation and contract an expert company to conduct retroactive environmental surveys for monitoring the environmental impact caused by construction. Finally, we submit the results to the responsible authorities and local environmental offices. These offices disclose the results of environmental impact assessments through the Environmental Impact Assessment Data Support System (<http://www.eiass.go.kr>), along with issues related to biodiversity that were not identified during the environmental impact assessment process.



## Protection Activities for Storks, a Natural Heritage Species

## BUSINESS CASE 8

A pair of storks, a natural heritage and endangered species, nested in a pylon along the 154 kV Tae-an-Anmyeon transmission line in Nam-myoon, Tae-an-gun, and hatched 4 baby storks in May 2020. Since the reintroduction of storks into the wild began in 2015, this was the first time that a nest was built on a general structure (transmission tower) rather than an artificial nest tower. In cooperation with local governments and the Cultural Heritage Administration, safety facilities were installed, such as devices to prevent the birds from landing, with the goal of protecting the storks from electric shocks and preventing power transmission line breakdowns caused by stork excrement. Moreover, to attach tracking identification tags and collect blood for tests, a stork was captured in a sealed box and moved from the nest to the ground. KEPCO plans to induce storks to settle in artificial nest towers rather than transmission towers by strengthening the inspections of transmission lines in the future. So that we may coexist with diverse animals and plants, we will continue to carry out activities to protect biodiversity during the construction and operation of our transmission and substation facilities.



Protection Activities for Storks, a Natural Heritage Species

# SOCIAL

03

## Management Approach

As the recognition that a corporation is a individual member and also a citizen of the community is growing, the responsibilities and duties required of a corporation as corporate citizens are increasingly emphasized. Accordingly, KEPCO has defined social value as “value that can contribute to the public interest and community development,” and continues to strive to achieve social value in all areas of businesses. Through this, we are leading the creation of sustainable social value based on the “realization of an inclusive society” and “participation and cooperation” with the mindset of respect for humanity. Also, we will strive to become a beloved public corporation model by improving the public’s quality of life.

### KEPCO Social Value Committee



## 2019 Key Performance

### Survey on Contributions to Social Value

**Ranked 1st** for two consecutive years  
(Public Corporation Group I)



### Job Creation in the Private Sector

**61,522** persons



### No. of Companies Attracted into the Energy Valley

**430** companies  
(KRW 1.67 trillion worth of investment agreement)



### Safe Korea Exercise

Selected as an excellent institution for  
**four** consecutive years



# Social Value Realization

## System of Pursuing Social Value

“Social Value” refers to value that can contribute to improved public benefits and the development of communities in all areas, including society, the economy, the environment, culture, and so on. KEPCO has established a sustainable social value promotion system by reflecting social value in company-wide work in a balanced manner, and in order to create social value in all of its value chains, including transmission and substations, distribution, sales and others, it has identified social value strategies with the help of external experts. In addition, to internalize social value creation, the company came up with the ‘10 Codes of Conduct for Social Value Realization,’ which is the basic principles of value judgment that all executives and employees must follow. Also, KEPCO is striving to make social value take root and spread by launching its ‘Social Value Committee,’ which consists of eight executives and five external members.

### Strategic System for Social Value Realization



### 10 Code of Conduct for Social Value Realization

<p>We strive to <b>create quality jobs</b> that meet the standards of the public.</p> <p>1</p>	<p>We respect each individual's personality and create a <b>good corporate culture for work</b>.</p> <p>2</p>	<p>We create a fair company with righteous faith by eliminating preferential treatment and discrimination, and by <b>guaranteeing equal opportunities</b>.</p> <p>3</p>	<p>We respect the diversity of society, communicate with the people through participation, and strive for <b>social integration</b>.</p> <p>4</p>	<p>We strive to facilitate a workplace where people-centered <b>life and safety are the top priority</b>, and to <b>create a safe society protected against disaster</b>.</p> <p>5</p>
<p>We create the <b>clean world</b> that the people want in order to improve the health and quality of life for all.</p> <p>6</p>	<p>We endeavor to establish a fair economic order where all people can live well together through win-win cooperation between large and medium-sized enterprises and to <b>improve the people's basic energy rights and energy welfare</b>.</p> <p>7</p>	<p>We constantly create new value to contribute to <b>the public interest and the development of local communities</b>.</p> <p>8</p>	<p>We make integrity a part of daily life and <b>comply with social norms and all laws</b>.</p> <p>9</p>	<p>We endeavor to earn <b>people's faith and trust</b> through fair and transparent ethical management.</p> <p>10</p>

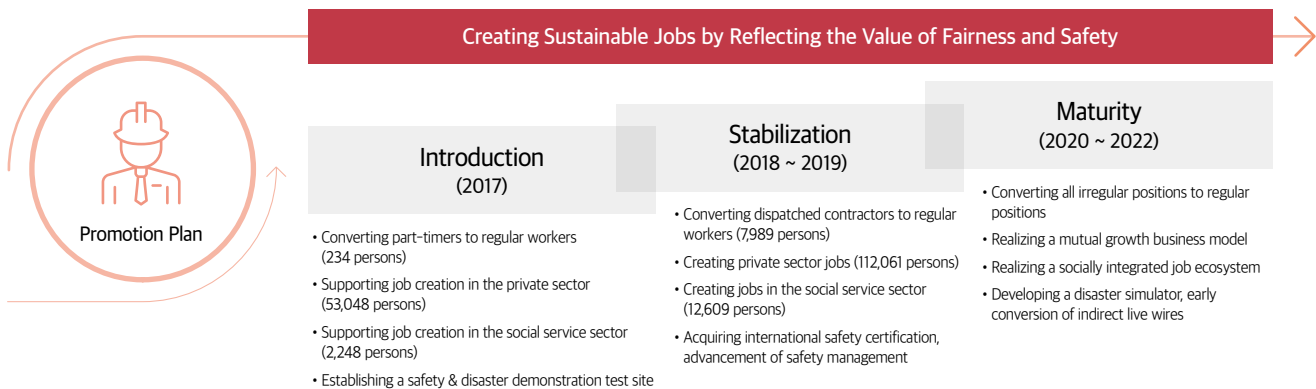
# Job Creation

## Creating High Quality Jobs

### Strategic Systems for Job Creation

As a leading public enterprise, and with the aim of creating sustainable jobs, KEPCO is promoting the provision of quality employment, including the establishment of job infrastructure and the creation of jobs in the private sector. In 2019, we incorporated fairness, as well as safety values, in our roadmap for job creation, and established both the Social Value Committee and the KEPCO Job Committee - the highest decision-making body responsible for jobs. In doing so, we have realized a system for promoting job creation that facilitates enhanced diversity and expertise in the field of social value. Moreover, we are also driving improvements in job quality through a comprehensive monitoring system for job creation.

Roadmap for Job Creation (Established in Dec 2017, updated in June 2018, December 2019)



## Creating Jobs for the Young to Alleviate Youth Unemployment

In 2019, KEPCO recruited 1,773 new, permanent employees. Youth accounted for 1,699 of these new hires, representing 96% of the total intake. Furthermore, through the operation of internship program, we provided work experience opportunities to 1,674 young job seekers, enhancing their competitiveness by sharing employment knowhow and strengthening mentoring system to proactively support them in developing their capabilities. Through these efforts, a total of 202 experienced interns were hired as full-time employees in 2019.

### Youth Employment through Job Creation

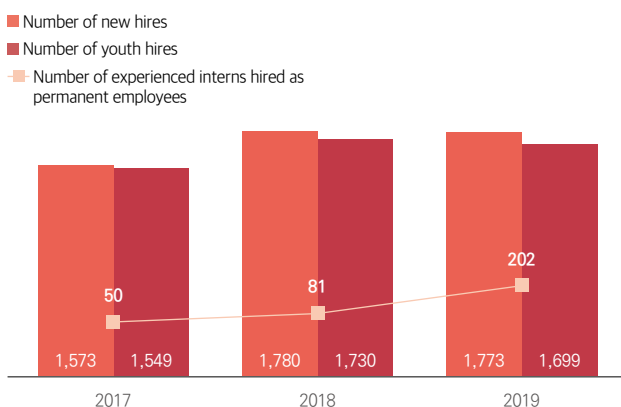
**3,373** persons

Number of Experienced Interns Hired as Permanent Employees

**202** persons

Performance of Job Creation for the Young by Year

(Unit : persons)



Introductory Training for New Employees



## Expansion of Recruitment Based on Social Equality

KEPCO is proactively striving to create jobs centered on social values that reflect the needs of vulnerable groups. For example, 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, and supported employment opportunities for local talents. In addition, a consultative body for the recruitment of local talent was formed to support local governments' joint consulting and job fairs. Aside from this, KEPCO is striving to increase job opportunities for high school graduates and take the lead in establishing a competence-centered employment culture.

### Rate of Recruiting Local Talents in 2019

**21.9%**

(Expected to reach 30% by 2022)

### Recruitment Based on Social Equality

(Unit : persons)

Category	2017	2018	2019
Local talents outside of the capital area	927	1,091	1,102
Local talents from Jeollanam-do and Gwangju	245	223	244
High school graduates	229	220	281

## Supporting Employees of Newly-established Subsidiaries for Stable Settlement

In 2019, to achieve the conversion of irregular positions of contractors to regular positions, KEPCO established three subsidiaries, KEPCO MCS, KEPCO FMS, and KEPCO CSC, in the fields of meter reading, facility management, customer service, respectively. We also conducted a preliminary review of investment adequacy. During this conversion process, which was carried out in accordance with the government's "Guidelines for Converting Non-Permanent Workers to Permanent Workers," a consultative body composed of labor and management experts held talks with all stakeholders, and a fair process was ensured through compliance with guidelines on preventing corruption in recruitment, as well as through the operation of our own 'Temp-to-Perm Conversion Corruption Reporting Center'. Furthermore, we have introduced a reasonable, job-oriented remuneration system and are operating a 'Workplace Improvement TF' in our efforts to improve working conditions for our employees, such as by expanding our rest area. Through an integrated parent-subsidiary consultative body, we are identifying management issues, exploring reasonable support methods, and supporting the stable management of the three subsidiaries with a view to achieving sustainable growth.

### Number of Converted Permanent Employees (cumulative)

**8,237** persons

## Job Creation in the Private Sector

KEPCO is concurrently promoting job creation and job creation support activities based on three major, private sector employment creation strategies: new business, core business, and social contribution. In 2019, we created 715 jobs by pioneering new energy markets, such as by establishing our SPC performing new businesses, fostering startups, and starting in-house ventures. Moreover, we attracted companies to the Energy Valley and created 10,000, regional jobs related to our core businesses - such as the construction of infrastructure for power transmission and distribution, as well as the maintenance of power facilities - leading job creation on a large scale. At the "2019 Korea Management Awards", KEPCO was selected as the best company in the field of social value, in recognition of our efforts to support fair business activities, such as improving contract systems and collecting opinions from our suppliers, as well as our transfer of technology to partner companies, commitment to enhancing quality, and our collaborative research and development activities.

### Job Creation in the Private Sector (2019)

**49,271** persons

#### Impact on the Employment in the Private Sector

Expanding establishment of research institute enterprises  
Additional exploration of in-house ventures  
Promotion of new businesses in the energy sector

**253** persons

Regional job creation through expansion of the Energy Valley

**10,091** persons

Private sector partnerships  
Fostering startup exploration  
Socioeconomic organization

**595** persons

Construction of power transmission and distribution infrastructure  
"Smart" conversion of power facilities  
Joint expansion of overseas projects

**38,332** persons

### Employment Induction Effect in the Private Sector (2019)

**12,251** persons

## Pursuing Shared Growth

### Vitalizing Regional Economy

#### Creating the Energy Valley Ecosystem

In order to establish an industry, academia, and research cluster specialized in the next-generation power industry, KEPCO has been promoting the creation of an Energy Valley based on mutual growth with the local community. The Energy Valley acts as a global smart energy hub that revitalizes the local economy, thereby creating quality jobs, and leads rapidly changing global energy markets around the world by inviting a significant number of energy-related companies and research institutes. By establishing an investment attraction master plan and carrying out a wide range of investment attraction activities, the Energy Valley has seen an influx of 430 companies as of 2019 and is expected to have an investment effect of KRW 1.6721 trillion, creating jobs for 10,091 people. In particular, with efforts to attract investment focused on the energy sector, 99% of investment companies are composed of energy related companies, such as new energy industry (208), power information technology (ICT : 122), and power equipment (97). For the soft landing of energy valley investment companies, we are enhancing long-term customized support by utilizing KEPCO's core capabilities such as funding, securing sales channels, and R&D, and this effort led to a sales increase of KRW 226.1 billion to 80 companies in 2019.

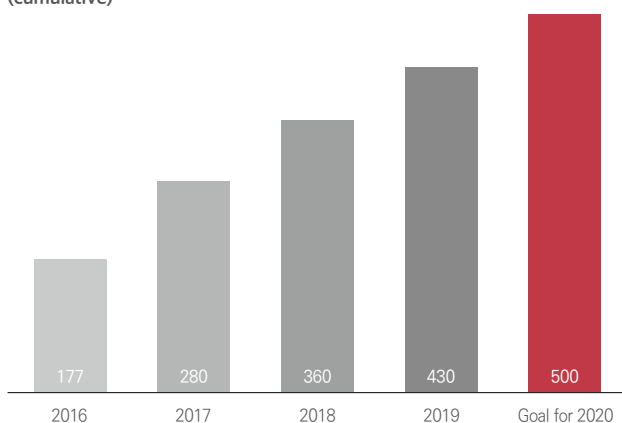
#### Energy Valley Roadmap



\* After 2021, the mid- to long-term roadmap will be re-established on the basis of investment execution.

#### Energy Valley Business Attraction Performance (cumulative)

(Unit : company)



### Enhancing Competitiveness of Companies in the Energy Valley

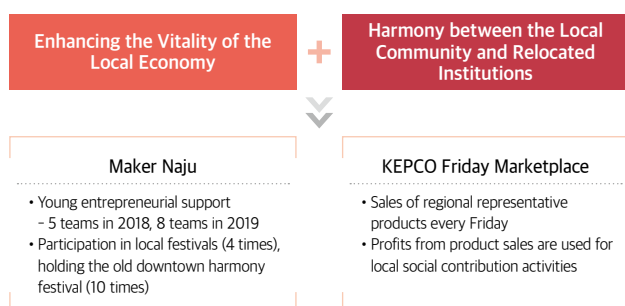
In May 2019, KEPCO completed the construction of the Energy Valley Enterprise Development Institute, in which the local government, KEPCO KPS, and KEPCO KDN jointly contributed for the successful implementation of the Energy Valley Project. The Energy Valley Enterprise Development Institute provides all necessary support from business establishment to commercialization, such as discovering and nurturing startups, fostering energy experts, supporting energy valley settlement, and providing joint test facilities for companies in the Energy Valley and their investors. In particular it has been focusing on consulting for company investment that focus on nurturing excellent human resources and creating jobs. The Institute will play a central role in connecting all walks of life in the energy sector, serving as a core base of the Energy Valley in the future and leading the development of the Energy Valley.

#### Energy Valley Business Support System

<b>Deposit-type interest support system : KRW 200 billion</b> <ul style="list-style-type: none"> <li>• 2.5% ~ 2.6% reduction in interest</li> </ul> <b>Energy Valley Investment Fund : KRW 88 billion</b> <ul style="list-style-type: none"> <li>• Funding for small and medium-sized venture companies in the electric power and ICT fields</li> </ul> <b>Technical guarantee insurance premium support</b> <ul style="list-style-type: none"> <li>• 50% support for SMEs' share</li> </ul>	<b>Funding</b>
<b>Nurturing professional and skilled workers in the new energy industry</b> <ul style="list-style-type: none"> <li>• 150 professional and skilled workers annually</li> <li>• 120 students from Bitgaram ICT Open Campus annually</li> </ul> <b>Education for employees in the new energy industry</b> <ul style="list-style-type: none"> <li>• 500 people annually in five courses, including photovoltaic and ESS</li> </ul> <b>Utilizing the Energy Valley Enterprise Development Institute</b> <ul style="list-style-type: none"> <li>• Entrepreneurship, incubation, technology and support for training of specialized personnel</li> </ul>	<b>Manpower training support</b>
<b>Preferential purchase of products produced by tenant companies</b> <ul style="list-style-type: none"> <li>• Companies in 13 industrial complexes nationwide including Naju Innovation Industrial Complex</li> <li>• Volume allocation : Up to 20% of the annual purchase volume of KEPCO</li> </ul> <b>Export promotion meeting and exhibition</b> <ul style="list-style-type: none"> <li>• Arrange business meetings with overseas buyers</li> <li>• Support for export promotion activities such as joint participation in overseas exhibitions</li> </ul> <b>KTP</b> <ul style="list-style-type: none"> <li>• Granting the right to use KEPCO brand, strengthening export competitiveness</li> </ul>	<b>Support for securing sales channels</b>
<b>SME Cooperative R&amp;D</b> <ul style="list-style-type: none"> <li>• Development of core technology in the field of new transmission and distribution energy industry, up to KRW 1.5 billion (52% in research expenses)</li> </ul> <b>KEPCO-Start up</b> <ul style="list-style-type: none"> <li>• Grand prize for preliminary and start-up SMEs in the power and energy sector (up to KRW 200 million)</li> </ul> <b>Establishment of new energy technology research center</b> <ul style="list-style-type: none"> <li>• Integrated management of demonstration tests in the new energy industry</li> <li>• Strengthen cooperation with investment companies and support commercialization</li> </ul>	<b>R&amp;D support</b>

## Implementing a Model for Solving Regional Issues

KEPCO has established a public-private cooperative governance structure consisting of local governments, public institutions, research institutions, NGOs, etc., and we have asked citizens and institutions for suggestions to be made. Through this, we confirmed that the local community is highly interested in reconciling with a relocated institution and enhancing the vitality of the local economy. Accordingly, KEPCO is taking the lead in resolving local issues by selecting and directly participating in core tasks for revitalizing the local economy in order to realize the value of co-prosperity and effective communication between the company and the local community. Firstly, KEPCO is pushing ahead with 'Maker Naju', a youth startup program, to contribute to revitalizing the regional economy by encouraging young creators to start their businesses in run-down city centers. This will help increase the flow of young people in such areas and regenerate 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 addition, since October 2019, KEPCO's Friday Marketplace, which sells regional products in the lobby of our headquarters every Friday, has been operated to support the market development of small and medium-sized businesses, and the profits generated through this are used for local social contribution activities.



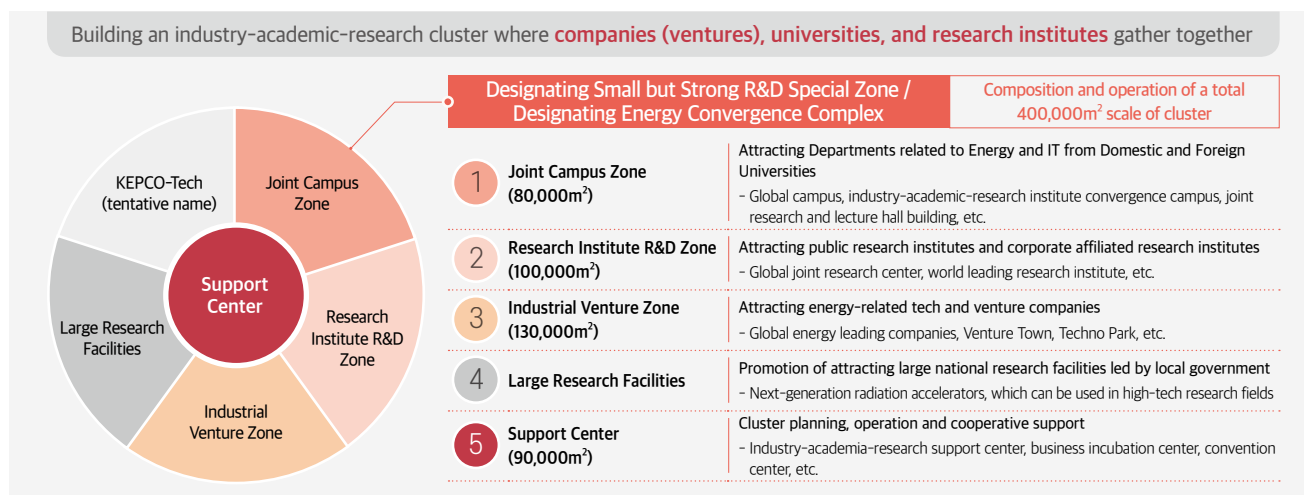
## Fostering Specialized Personnel in the New Energy Industry

Since 2015, KEPCO has introduced a training course for experts in the new energy industry to lead the new energy market and foster outstanding local employees. We conduct annual training in power fields such as smart grids and energy storage devices, targeting 150 local college students. In 2019, we also established a training course for incumbent workers and expanded collaborative training with specialized institutions such as Polytechnics. Through this, we cultivated 1,910 professionals in the energy field, including incumbents and job seekers. In addition, we held five joint job fairs with local governments to support the recruitment of trained human resources, while also contributing to solving the problem of supply and demand for corporate human resources.

### Building Industry-Academia-Research Cluster through Establishing KEPCO-Tech (tentative name)

KEPCO is promoting the establishment of the "KEPCO-Tech (tentative name)" based on close cooperation with related organizations such as the government and local government bodies, with the aim of fostering the world's best energy-specialized talents. To this end, in August 2019, we voted for the 'Basic Plan on the Establishment of KEPCO-Tech (tentative name)', and in April 2020, obtained permission to establish an education foundation from the Ministry of Education. In addition, in the first half of 2020, KEPCO plans to start designing a campus in Naju Innovation City, which has been confirmed as a university location, with the goal of opening the school in March 2022. Thereafter, we will sequentially build an industry-academia-research cluster and large research facilities. In the cluster, industry-academia-research facilities such as partner universities, public research institutes, and research institutes affiliated with companies will be built, and KEPCO plans to equip itself with the highest level of research infrastructure in this large research facility. The KEPCO-Tech (tentative name) is expected to contribute directly and indirectly to vitalize the local economy by playing a central role in the energy cluster while growing as a cradle for fostering global energy-specialized talent in the mid to long term.

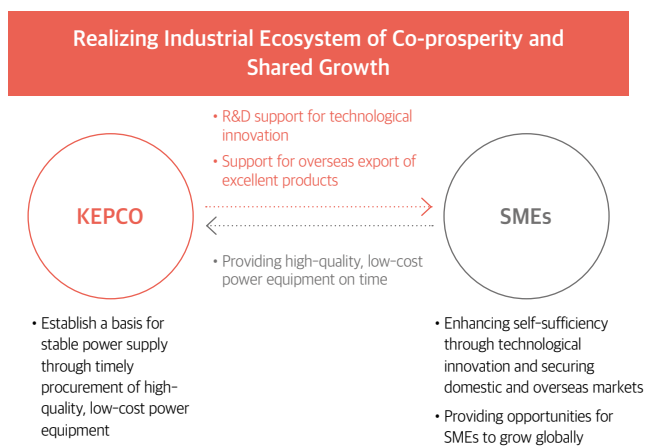
### Plan to Establish KEPCO-Tech (tentative name)



## Shared Growth with SMEs

### Creating Ecosystem for Shared Growth with SMEs

KEPCO is actively supporting SMEs' technological innovation and overseas exports. Through this, SMEs are cultivating self-sufficiency in technology so as to grow into small but strong global companies. KEPCO is laying the foundation for supplying stable and high-quality electric power by securing excellent electric power equipment characterized by high quality and low cost.



### Strengthening Cooperative R&D with SMEs

KEPCO is supporting the highest level of cooperative R&D with public institutions to strengthen the technological competitiveness of SMEs, allocating up to 85% of R&D expenses, approximately KRW 1.5 billion, for R&D projects concerning new products and new technologies by SMEs in the transmission, distribution, and information communication fields. In addition, we are striving to strengthen the innovation capabilities of SMEs by reinforcing the foundation for technological cooperation. In particular, in 2019, we conducted a special R&D open contest to promote research project proposals for in-house employees and SMEs, and 17 outstanding projects were selected after an expert joint review of 218 projects.

Meanwhile, KEPCO's excellent technologies are being transferred to SMEs, and technology transfer marketing is continuously being promoted so that many successful commercialization models can be released. In October 2019, we changed the name of the 'Patent Platform', an intellectual property technology transfer platform in operation, to the 'Patent Exchanges,' and expanded the scope of information disclosure on more than 3,000 technologies and intellectual property rights of KEPCO. In addition, the "KEPCO Technical Partner" was introduced, granting the right to use this brand to SMEs that have received technology transferred from KEPCO for direct use in product sales.

### Expanding Purchase of SMEs' products

KEPCO has been assisting SMEs by contributing to the creation of initial sales channels and increasing sales revenue by prioritizing the purchase of cooperative R&D products and technology development products. In 2019, we carried out preferential purchases of KRW 245.5 billion for products developed through cooperative R&D with SMEs. In addition, to support the initial market development of new SMEs such as start-ups and companies at the beginning stage, a trial purchase of KRW 14.2 billion was made, and a purchase of KRW 9.3 billion for preferential purchases of SME R&D products was carried out to expand the market for SMEs.

#### SMEs' Product Purchase Performance (2019)

##### Cooperative R&D products

KRW **245.5** billion

##### Technology development products

**7** companies | KRW **14.2** billion

##### Products selected for development

KRW **9.3** billion

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

KTP (KEPCO Trusted Partner) is an export promotion brand, certified by KEPCO, that involves the selection of excellent SME suppliers in the power business field with overseas export capabilities, and is supporting the enhancement of their overseas marketing capabilities by granting them the rights to use the brand. As of 2019, 119 companies are pioneering overseas markets using KEPCO-certified brands, and KTP certified companies are given priority when implementing various export support projects, such as export promotion meetings and exhibitions. They are also offered opportunities to display products using KEPCO's permanent overseas PR centers. In particular, in 2019, by signing a business agreement with Shinhan Bank, KEPCO contributed to SMEs' financial cost reduction by providing export financing preferential services to KTP certified companies, such as discounts on guarantee fees by the Korea Trade Insurance Corporation and guaranteeing the risk of non-recovery of export payments within USD 20,000.

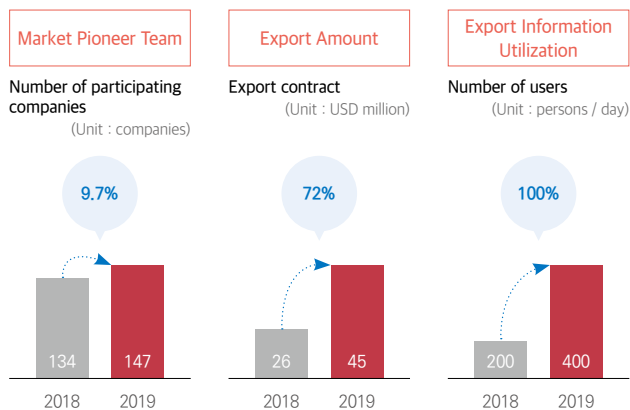
#### KTP Certification Emblem



## Providing SEMs with Overseas Marketing Opportunities

KEPCO has dispatched a market pioneer team, composed of promising overseas export companies, to target countries in order to provide opportunities for product promotion optimized for local demand. We have also held export consultation meetings for overseas buyers to support the conclusion of export contracts for SME products. In 2019, in order to actively support the advancement of SMEs into promising markets in major countries following the promotion of the New Southern Policy, a market pioneering team with 147 companies was dispatched to 10 countries, including Vietnam and Indonesia, to conclude an export contract of USD 12 million. In addition, during BIXPO 2019, an export consultation meeting was held. Overseas buyers were invited and 425 export consultations were conducted, of which 18 cases were worth USD 33 million in export contracts. On the other hand, KEPCO has been operating the 'KEPCO Export Support Portal', which provides information on overseas power equipment market trends and bidding information, to support SMEs in the domestic power sector that are having difficulty entering overseas markets. Further, in September 2019, our mobile website and social media services were launched for the convenience of all users.

### SME Overseas Export Support Performance



## Discovering and Fostering Energy Startups

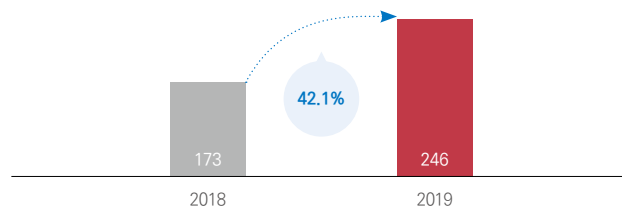
KEPCO is contributing to building a startup ecosystem in the energy sector and spreading our passion for innovative startups through various customized startup development projects. In 2019, 69 companies were discovered and fostered, creating 124 jobs and securing 110 patents as accomplishments. 'KEPCO Energy Startup' is a total package that includes business model establishments and export consulting support, in which energy start-ups are selected and supported with up to KRW 100 million per company. The launch of regional start-ups has also been promoted through an aid program for young adults and the middle-aged. In addition, we have introduced and are developing 23 start-ups 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 a variety of programs - such as providing test-lab for manufacturing trial products and support for expert mentor groups. In 2019, 73 companies were discovered and nurtured, creating 124 jobs and securing 381 patents.



BIXPO 2019 'KEPCO Startup Festival'

### Startup Nurturing Performance

(Unit : companies)



## Successful Hosting of BIXPO 2019

KEPCO has been holding the "Bitgaram International Exposition of Electric Power Technology (BIXPO)" every year since 2015 to lead new technology trends in the energy field and establish the foundation for the Energy Valley. In 2019, various events were held under the theme of 'Digital Platform (Hyper-Connectivity & Mega Shift)', including a new technology exhibition with the participation of 299 companies from 77 different countries, 51 international conferences and an international invention patent exhibition with 160 inventions. In addition, we have been successfully hosting BIXPO to assess the huge changes in the global energy industry that are taking place in a hyper-connected society, such as IoT, big data, artificial intelligence, etc. Through this efforts, we can explore the direction of the power industry together and exchange crucial technology and policy information.



BIXPO 2019 Opening Ceremony

## BUSINESS CASE 9



# Supply Chain Management

## Sustainable Supply Chain Management

### Distribution of Code of Conduct for Suppliers

In 2012, KEPCO enacted its 'Code of Conduct for Suppliers,' the first for a public institution, in order to create a transparent and fair transaction environment and manage its sustainable supply chain. The Code of Conduct for Suppliers stipulates ethical, social and environmental standards, and all domestic and overseas suppliers who do business with KEPCO must faithfully comply with the 10 principles of the UN Global Compact (UNGC), as well as the OECD and ILO labor and environmental guidelines, in accordance with the Code of Conduct. In addition, when implementing a contract, KEPCO's additional requirements for ethics, society, and the environment must be fulfilled, and subcontractors dealing with suppliers are also advised to be aware of, and comply with, the principles of the Code of Conduct. Moreover, even after the start of a business relationship, we conduct regular risk assessment and monitoring for major suppliers, and take corrective actions in accordance with sanctions standards.

### Elimination of Unfair Transactions

KEPCO is striving to improve systems and processes to protect the rights and interests of suppliers and to establish fair transaction ordering. In the event that bid rigging, forgery or falsified documents are discovered in relation to a registrant, the qualification of equipment supplier for the item in question is canceled, while a bid-rigging capture system using artificial intelligence has also been established. Based on this, we are preemptively detecting signs of collusion using complex analysis indicators, for all bidding, purchasing, construction, and services. In addition, in order to improve the unfairness factor of our overall business relationships with business partners and to spread a culture of fairness, we are pursuing revision work on contract-related regulations, such as our terms and conditions and guidelines.

## Status of Major Suppliers

KEPCO has a major impact on power quality and supply stability, and categorizes companies that produce and supply major power equipment as "trusted-items" companies when taking into account purchase standards and importance. Trusted-items companies are registered and managed as major suppliers after a preliminary examination of quality and processes, including standards, and major suppliers are classified into the transmission and substation, distribution, and information and communication sectors. In addition, KEPCO manages suppliers of core parts for each item by registering them as "core-parts" companies, and is expanding the scope of its core-parts suppliers to conduct technology and quality evaluation while applying relevant safety, ethics and environmental guidelines. By doing so, we are supporting the sustainability management of our business partners. In addition, KEPCO is promoting joint technology development with major suppliers to develop core technologies for power energy, and is working together with suppliers to strengthen their capabilities.

### Status of Major Suppliers

Supplier Type	Number of Suppliers
Core primary supplier	253 Trusted-items companies
Core secondary supplier or above	1,040 Core-parts companies

### Total Purchases

**KRW 2,381.8 billion**

\* Purchases from core primary suppliers totaled KRW 1,533.7 billion (about 64%)

### Selection and Management Process of Supply Chain



## Supply Chain Risk Prevention and Follow-up Management

### Supply Chain Risk Management

KEPCO is creating a sound industrial ecosystem through supply chain management that takes into account both quality risks and the sustainability of partner companies. In order to secure excellent equipment, the company conducts technical and quality screening and performance verification tests, while providing training and consulting to its partners to enhance quality competitiveness and quality management. In addition, we guide all companies that participate in the bidding to comply with our 'Code of Conduct for Suppliers,' which covers human rights, labor, the environment, and anti-corruption, as well as applicable environmental laws and regulations for all contracts. Companies participating in all KEPCO bids are required to sign and attach a "Memorandum of Implementation of Integrity Contract" pledge to prohibit unfair acts such as bid rigging, and receiving money, goods, or entertainment. For systematic supply chain management, KEPCO is operating a system (<https://srm.kepcos.com>) for conducting business electronically between partners, purchasing departments, and testing institutions, and through which regulations and detailed guidelines related to supply chain management are disclosed in detail.

#### Detailed Code of Conduct Guidelines for Suppliers



### Regular Evaluation and Monitoring

Every year, KEPCO conducts technology and quality evaluations of its core suppliers, trusted-items companies and core-parts companies, in accordance with quality rating system evaluation criteria for each piece of equipment. In managing suppliers, we reflect ESG (Environmental, Social, Governance) factors such as legal compliance and worker safety management in evaluation items. Consequently, we have managed to secure an additional 79 new suppliers for 150 items in 2019 and conducted supplier evaluations on 215 trusted-items companies, which are our most important primary suppliers.

#### Factors for Evaluating the Sustainability Management of Partner Companies

Category	Evaluation item
Economic risk	<ul style="list-style-type: none"> <li>• Credit rating</li> <li>• Equipment quality grade</li> </ul>
Social risk	<ul style="list-style-type: none"> <li>• Legal violations (corruption, illegal subcontracting, etc.)</li> <li>• Safety violations (accidents, lack of safety equipment, etc.)</li> </ul>
Environmental risk	<ul style="list-style-type: none"> <li>• Violation of laws and regulations (environmental impact)</li> <li>• Eco-friendly product certification</li> </ul>

### Compensation and Improvement Measures

KEPCO operates a computerized system that manages equipment and material suppliers to evaluate their level of sustainability with respect to economic, social and environmental fields. For high-risk suppliers, on-site inspections are conducted to request the establishment and implementation of corrective action plans, and follow-up management is periodically conducted. In addition, benefits are provided to companies that have received excellent reviews, whereas sanctions are imposed on those that have violated laws or regulations. Disciplinary measures include warnings, suspension of transactions, and limitations on bidding for a certain period of time, depending on the degree of negligence and following a resolution by the Reward and Penalty Committee.

#### Convened the Reward and Punishment Committee for Suppliers (2019)

Sanctions for unfair acts such as illegal subcontracting, bid rigging, and the submission of false documents

**48** cases

# Safety and Health Management

## Strengthening Safety & Health Management

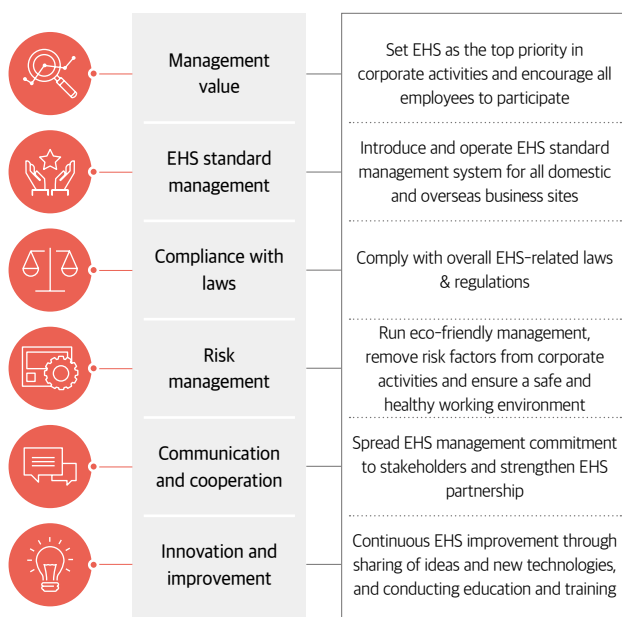
### Establishing a Safety & Health Management System

To practice efficient workplace safety and health management by establishing a safety and health management system in line with international standards, KEPCO obtained the ISO 45001 safety and health management system certification – the latest international standard in the field of safety and health – for the first time as a public corporation in 2019. Through this, we have enhanced our reliability in global-level and advanced safety management systems both at home and abroad, and internal regulations and work procedures related to safety and health management have been established in accordance with ISO 45001 requirements. These are continuously being improved and managed to enhance the level of our safety and health activities. Meanwhile, KEPCO also organized the “Safety Council for Management of KEPCO Group Companies,” in which 11 KEPCO group companies participated to share safety and health-related activities and measures with the goal of resolving common issues. In 2019, the council standardized different special conditions for safety contracts for each group, revised safety reinforcement standards for suppliers and accident sanctions, and eased the burden on suppliers.

### Environment, Health and Safety (EHS) Management Policy Implementation

KEPCO sets the environment, health, and safety as the top priority values for management activities, and established the EHS management policy in order to share the specific policies of EHS management throughout the company when employees comply with this while performing their duties.

#### Details of EHS Management Policies



## Developing and Amending Safety & Health Regulations

As the revised Occupational Safety and Health Act came into effect in January 2020, which reinforces the responsibility and role of an ordering body and expands the scope of protection, KEPCO preemptively reformed the safety and health system. Prior to the enforcement of the revised Occupational Safety and Health Act, 376 standards related to the in-house safety system were enacted and revised early, and the ‘Service Safety and Health Management Guidelines’ was established for the first time as a public corporation, and detailed management guidelines have been prepared by service such as contract management, accident response, risk assessment, and safety work rules. In addition, the standards related to risk assessment were enacted and revised, and 241 safe work rules were revised to reflect the industrial safety laws and notices.

### Establishing a Dedicated Safety Management Organization

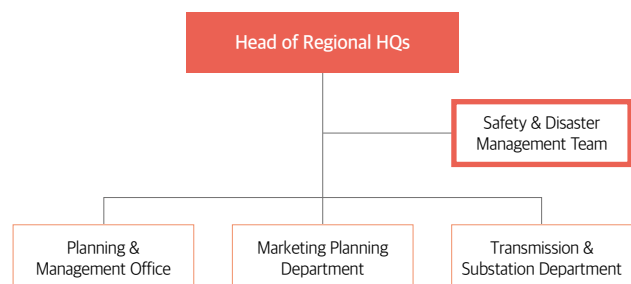
KEPCO designated the Chief Business Management Officer as a manager in charge of general safety and established the Safety and Security Department, an organization dedicated to safety management under his supervision, providing safety management diagnosis, system maintenance, and accident prevention consulting as a company-wide control tower. In addition, we have a safety and disaster department directly under the head of a regional division to establish a site-oriented safety accident prevention plan, while making efforts to improve the working environment and establish a culture of safety. To this end, in 2019, the number of personnel in charge of safety work was significantly increased from 80 to 156, and safety management for the outsourced construction and services was improved by strengthening the personnel in charge of other safety tasks – such as construction management supervision.

#### Organization Dedicated to Safety Management

##### Headquarters



##### Regional Divisions



## Reinforcing Integrated Industrial Accident Management with Partners

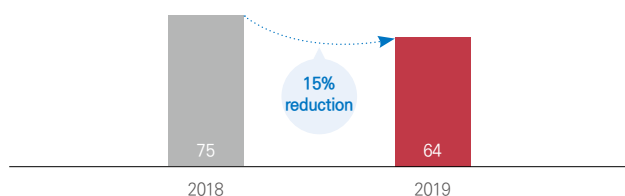
KEPCO is striving to enhance the management of industrial accidents and establish a safe working environment for business partners, with the aim of realizing a “safe workplace” where all employees can work with confidence. In particular, we are carrying out activities to enhance the effectiveness of contractor safety management in cooperation with our suppliers, such as conducting joint safety inspections at construction sites with our subcontractors.

### KEPCO-Partners Integrated Industrial Accident Management

Implementation	2018	2019
Construction site safety inspection by contractor and subcontractor	<ul style="list-style-type: none"> <li>Working-level staff-centered inspection</li> <li>602 corrective actions on site</li> </ul>	<ul style="list-style-type: none"> <li>Double inspection (working-level staff + supervisors)</li> <li>1,021 corrective actions on site</li> </ul>
Safety training for suppliers	<ul style="list-style-type: none"> <li>3,556 cases of training</li> <li>General education such as dissemination of accident cases and delivery of safe work rules</li> </ul>	<ul style="list-style-type: none"> <li>3,628 cases of training</li> <li>Focused on major industrial accidents (electric shock, falls)</li> </ul>
Preparation of response procedures in case of accident	<ul style="list-style-type: none"> <li>Ambiguity over whom to report incidents</li> <li>Lack of task processing procedures</li> </ul>	<ul style="list-style-type: none"> <li>Establishment of reporting system and division of roles by person in charge</li> <li>Establishment of task procedures in case of accident</li> </ul>
Improvement of internal evaluation of contractor safety accidents	<ul style="list-style-type: none"> <li>In the event of an accident, the 60% of point distribution standard applied to contractors compared to internal employees</li> </ul>	<ul style="list-style-type: none"> <li>Management of the same standards of point distribution for contractors compared to internal employees</li> </ul>

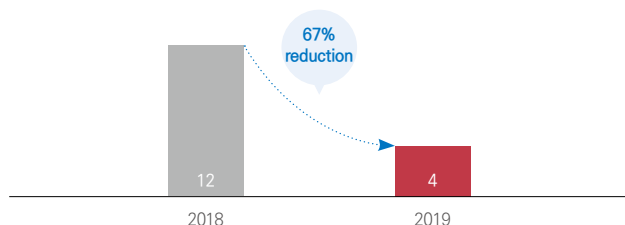
### Status of Industrial Accidents

(Unit : persons)



### Status of Severe Disaster Cases

(Unit : persons)



## Introduction of the KEPCO WAY Safety Culture System

In order to create a “life and safety-first workplace” where workers are safe, KEPCO has been striving to internalize a safety-first culture while advancing our safety management system. In particular, through the ‘KEPCO WAY Safety Culture System’ with partner companies, we have introduced and are operating our own ‘autonomous safety culture certification system.’ In 2019, we evaluated and rewarded 166 business sites and suppliers to build the foundation for practicing a safety-prioritizing culture. In addition, we have made efforts to spread a safety culture by creating a “Safety & Co-prosperity Fund” for the first time as a public corporation, and have provided rewards to 21 excellent suppliers.

In addition, KEPCO has signed an MOU with the Safety Association and is jointly promoting safety and health projects, while operating the ‘Safety Management Committee’ in which management, workers, and external experts participate to deliberate and consult on safety management to enhance our expertise in safety policy. In addition, the introduction of a penalty mileage system limits the bidding of industrial accident-causing companies, and safety training is provided for representatives and employees of partner companies to raise safety awareness of business owners and workers and induce voluntary establishment of a safety culture.

## Operating Employee Health Management Program

KEPCO detects symptoms of occupational illnesses in advance in order to take preventative action and improve the health of employees. General health check-ups are conducted annually and special check-ups are carried out every other year to more precisely check the health status of employees. In 2019, we introduced the ‘Life Cycle In-Depth Checkup,’ a detailed 10-year checkup aimed at prevent serious illness for employees aged 40 and above. In addition, we operate a job stress test and psychological counseling program to take care of not only the physical health of employees, but also their mental health. Furthermore, we have developed a mobile health analysis and prediction system for shift workers to detect abnormal signs in advance through heart-rate monitoring and electrocardiograms, and have introduced a musculoskeletal injury prevention program where we conduct physical adjustments and consultations with experts. In addition, a health management room and an exercise therapy room was installed in the headquarters building. A health manager and exercise therapist are present during working hours to provide medication and ultrasound treatment for minor symptoms, and in partnership with an external institution (Dongshin University), they provide oriental medical treatment and counseling.



Exercise Therapy Room at Headquarters

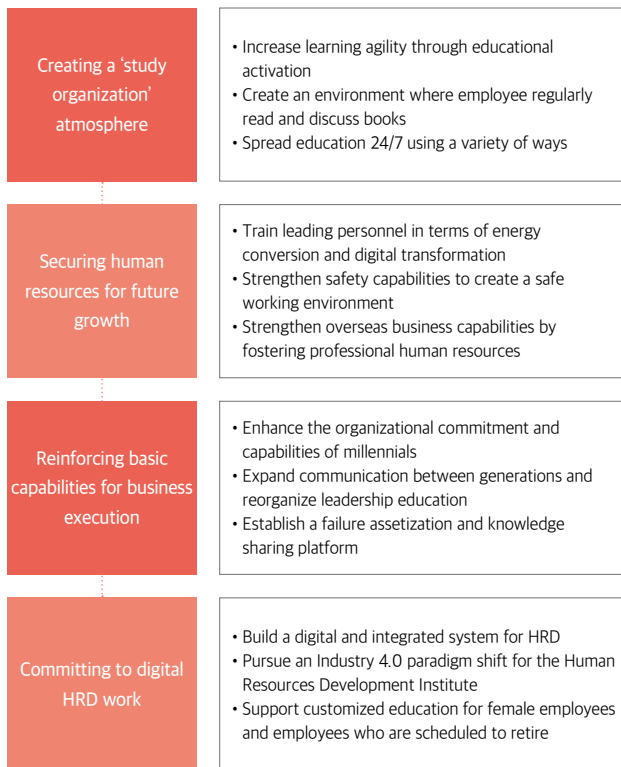
# Human Resource Cultivation

## Strategic Human Resources Development

### Strategies for the Human Resources Development

KEPCO provides customized training according to job position with the aim of fostering competitive future employees that can revitalize the electric power industry in terms of energy conversion and the expansion of Industry 4.0. In 2020, enhancement of employee competencies was set as a key promotion goal, and job training was expanded to strengthen expertise in each field. Through operating the 'Learning Day', we are striving to build an organizational atmosphere where employees can study through regular educational programs.

#### Promotion of Human Resource Development



#### Employee Training Results

Category	Unit	2017	2018	2019
Total cost of training	KRW billion	262	230	248
Training hour per person	hours	86.4	95.0	95.9
Training cost per person	KRW million	1.2	1.0	1.0

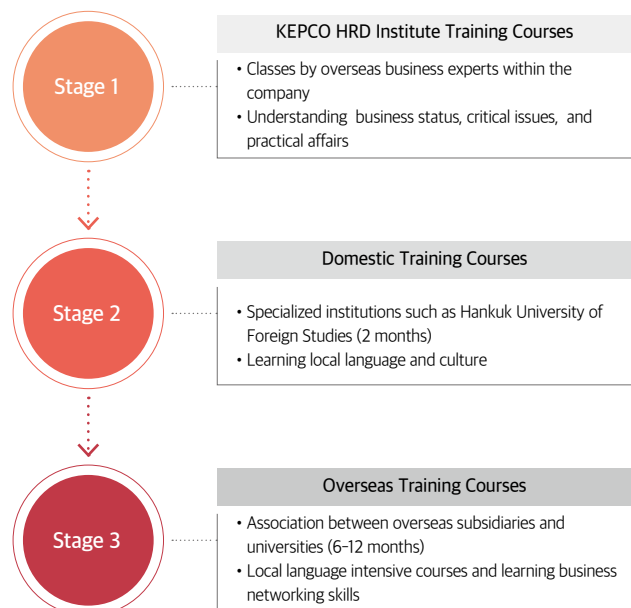
## Nurturing Talented Employees for the New Energy Industries

KEPCO is reinforcing its expertise in the commercialization of strategic technology to preemptively gain a competitive advantage in present during new energy businesses. We are operating 233 internal and external training programs related to the new energy business and its eight key strategic technologies, and we offer support for the acquisition of professional qualifications in future growth fields such as big data and blockchain. In addition, to enhance practical capabilities related to our ongoing digital transformation, we have launched an e-learning course for all employees, nurturing 41 experts in 2019.

### Fostering Global Professional Talents

KEPCO operates a global professional talent training system for all workers, from interns to top experts, in order to strengthen our ability to win overseas business orders. We operate a 1:1 apprenticeship job mentoring program to ensure that interns recruited acquire the proper know-how for each overseas business field, such as contract, finance, or technology, from current employees. In addition, we are striving to secure global top-level expertise by fostering local experts who are familiar with the language, culture, and customs of strategic overseas regions, such as the Middle East, Latin America, and Vietnam.

#### Global Professional Talent Training Course





## Nurturing Talented Female Employees

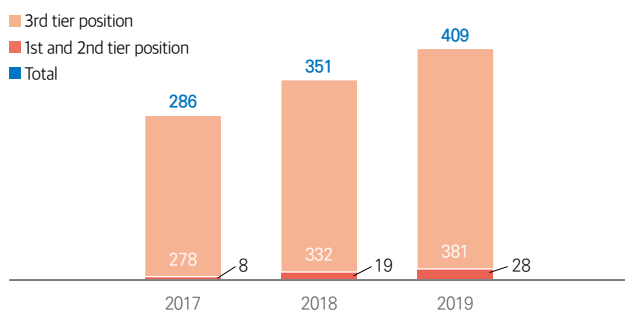
KEPCO is expanding systematic training and various support measures for female employees to foster female managers. We support the growth of female managers through human resource management that reflects the major life stages of our female employees, from employment to childbirth, childcare, and promotion. In addition, we provide our female employees with equal opportunities for promotion by recognizing maternity leave as working years, as well as through the establishment of a career management networking group. In particular, we support policy-making capabilities and operate high quality courses on topics such as management trends to cultivate senior managers at the 2nd tier positions or higher.

### Education Tailored to Women



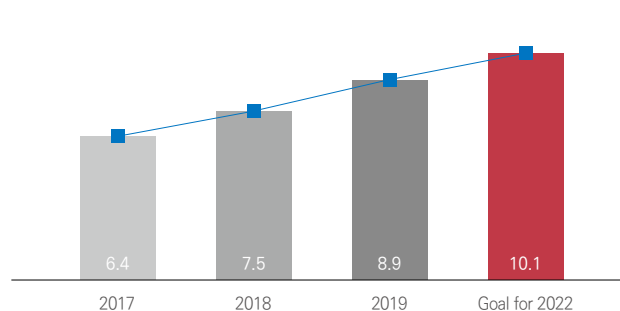
### Number of Female Managers

(Unit : persons)



### Trend in the Proportion of Female Managers

(Unit : %)



## Strengthening the Leadership Capabilities of Managers

KEPCO is striving to discover innovative value and strengthen new leadership capabilities that can embrace diversity. In particular, we implement training that is differentiated according to major roles and duties to reinforce practical leadership that can meet the requirements of each management position, with a focus on providing systematic education programs.

### Leadership Training Details by Position

Category	Compact	Intensive	Creative
	Intensive job competencies (3rd tier position)	Adaptation to environmental changes (2nd tier position)	Discovery of innovative value (1st tier position)
Role	• Expert knowledge + work performance	• Performance management + change execution	• Value creation + strategy execution
Operation	• Expansion of convergence (office + distribution) flipped learning • Expert competency reinforcement education	• Establishment of "Millennial Understanding" • Sharing cases of failure, case studies • Department leader role practice / discussion	• Organizational business leader role recognition and practice • Overall optimization (efficient resource allocation) • Organization and employee value connection

# Corporate Culture Innovation

## Balancing Work and Life

### Pushing Forward with Company-Wide Workplace Innovation

KEPCO has encouraged an innovative renovation of its corporate culture in line with enforcing the '52-hour-per-week' legislation that aims to address overtime work issues and promote a healthy work-life balance. To this end, the "Company-wide Workplace Innovation Committee" has been established as a permanent body to act as a control tower. We are constantly examining whether the goal to reduce work-load on employees is being well-enforced by taking various efforts to make systematic improvements, as well as reducing the work hours of our employees.

#### Highlights of Improving the Way of Working

1	<b>Eliminating Redundant Work Practices</b> <ul style="list-style-type: none"> <li>Discover tasks to improve work efficiency through regular operation of the Workplace Innovation Committee</li> <li>Simplify work processes, such as reduction of authorization steps and abolition of duplicate work</li> </ul>
2	<b>Enforcing Employees Leave Work on Time</b> <ul style="list-style-type: none"> <li>Implement a company-wide policy of PC-On/Off</li> <li>Develop and operate PC time-management system</li> <li>Introduce intensive working hours (10:00 ~ 11:00, 14:00 ~ 16:00)</li> </ul>
3	<b>Encouraging Employees to Take Annual Leave</b> <ul style="list-style-type: none"> <li>Implement campaign for both labor and management to comply with appropriate amount of working hours</li> <li>Encourage the use of annual leave, regularly check-up performance</li> </ul>

## Enhancing Employee Satisfaction

KEPCO conducts annual employee satisfaction surveys for all employees to measure whether the company's various efforts give them a real sense of satisfaction. Through this, we are identifying our overall level of employee satisfaction and complaints about the overall HR system, enabling us to develop devise improvement measures. In 2019, we added survey items such as the maternity protection system and ideas to improve our working culture. We shared the results of the survey across the company and promoted activities to improve employee satisfaction.

#### Employee Satisfaction Survey Results

Category	Unit	2017	2018	2019
Employee Satisfaction	Points	76.4	75.0	74.8

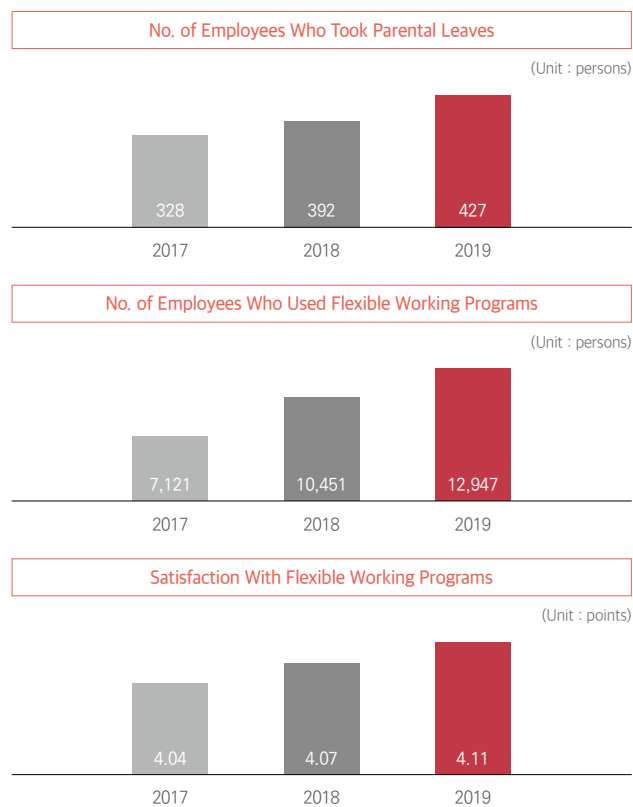
\* Converted from the basis of 5 points to that of 100 points

\* Composition : a total of six fields and 34 questions

## Creating a Family-friendly Corporate Culture for Work-Family Balance

KEPCO has extended the range of shortened working hours that employees raising toddlers can choose from in order to create a work environment where it is possible to manage both work and family life. In addition, we have made systematic improvements that allow employees to divide leave before and after childbirth (90 days, or 120 days for multiple births) and parental leave (three years per child). In addition, we have extended the request period for spousal maternity leave (10 days) from 30 days to 90 days, and support the use of the shortened working system for child-raising regardless of gender. Moreover, we are actively encouraging the use of the flexible working system so that individuals can choose various types of work according to their job characteristics. As of 2019, a total of 63 types of flexible working systems were introduced, including allowing employees to begin and leave work at different hours, to select their own working hours, or to work intensively for shorter hours more. KEPCO improved ease of use by improving the use cycle of the flexible working system from monthly to weekly. As a result of these efforts, KEPCO has maintained the 'Family-Friendly Certification System' for nine years in a row since 2011. The recognition is granted by the Ministry of Gender Equality and Family for companies that operate an exemplary family-friendly system such as childbirth and childrearing support, and flexible working system.

#### Results of Using the System for Work-Family Balance



## Realizing Mutually Beneficial Labor & Management Culture

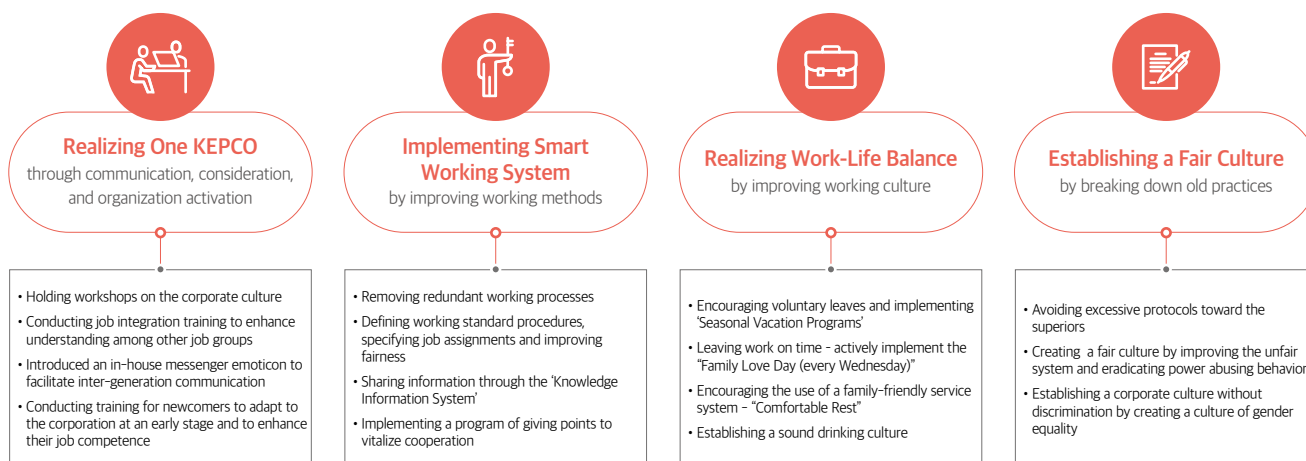
### Expanding Communications between Labor & Management

Under the vision of “building a value-creating labor-management relationship of mutual prosperity and responsibility,” KEPCO has maintained a rational labor-management relationship based on mutual cooperation and participation. Labor and management together promote the sustainable development of the company and improve the treatment of all employees by raising wages, improving work methods and working conditions. In addition, we have been promoting communication between labor and management by systematically establishing various communication channels to resolve current issues in labor-management relations. Considering the diversity of human resources and the fact that workplaces are scattered both at home and abroad, we are expanding the field-centered and participatory communication. In particular, in 2019, the ‘corporate culture convergence workshop’ was held to form a consensus between labor and management through open communication. Besides this, two-way communication channels between labor and management are being operated, such as “conversation with the CEO”, Lunch Meeting Day, and communication e-mail.

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

KEPCO has been working hard to create a flexible corporate culture based on stable labor-management relations. To this end, by discovering and sharing cases that undermine corporate culture, we selected ‘10 tasks for corporate culture improvement’, focusing on tasks that employees highly sympathize with such as company get-togethers, excessive protocols, using day-offs, and exercised corporate-wide action jointly by labor and management. In addition, we are striving to lead a substantial improvement of corporate culture by conducting annual campaigns so that these efforts are not limited to temporary activities. Furthermore, we are improving the corporate culture through joint labor-management efforts, such as responding to reduction of working hours and expanding the convenience of employee health check-ups by operating a joint labor-management workplace innovation TF, thereby inspiring the pride of employees. In addition, through joint efforts such as reduced working hours, labor and management are responding to key issues. A diversity of methods are being employed to establish horizontal communication and a friendly corporate culture in the workplace, including the implementation of the ‘Leadership-driven Corporate Culture Change Campaign’.

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



### CEO Emoji for In-house Messenger Emoticon

### BUSINESS CASE 10

As the number of new employees has been increased significantly over the past five years, the Millennial Generation (born from the early 1980s to the early 2000s) has been accounted for about 40% of the total members. KEPCO has been making the various efforts to transform itself into a horizontal corporate culture, which meets the eye level of the Millennial Generation. In a recent in-house messenger emoji contest for employees, an employee used the image of CEO to showcase emojis with familiar phrases, which have become one of the most commonly used emojis among the employees. KEPCO has been continuously promoting the activities to break away from rigid and authoritative culture through the activation of inter-generational communication and to create a corporate culture which conforms to the values pursued by millennial employees.



CEO emoji for in-house messenger emoticon

# Social Contribution Activities

## System to Promote Social Contribution

### Fulfillment of Corporate Social Responsibility

KEPCO considers sharing and performing volunteer service as a corporate social responsibility, and hence promotes various social contribution activities for shared growth with vulnerable and local communities. We are carrying out various programs to fulfill the social responsibilities befitting our status as a global company, as well as to support the underprivileged and local communities. Also, we strive to provide practically helpful services to beneficiaries.

#### Social Contribution Strategy

Goal

KEPCO, Opening the World for a Better and Brighter Future

Core Strategy

#### Specialized social contributions

Realizing energy welfare that reflects the characteristics of the power industry

Supporting PV power generation facilities for social-economy organizations and vulnerable groups

#### Value-creating social contributions

Creating social value through customized support for social-economy organizations

Strengthening relations by carrying out volunteer activities for vulnerable groups in countries which KEPCO advances into

#### Customized social contributions

Customized support for beneficiaries reflecting the life-cycle stages

Volunteer activities tailored to local communities, using the company's national business network

Intensive support to foster future talents in the power field

Promotion System

#### Social Contribution Fund

- Company donations (KRW 15.4 billion)
- "Love fund" raised by employees (KRW 1.5 billion)

#### KEPCO Volunteers

- 310 volunteer groups nationwide
- Over 20,000 employees participating in volunteer groups (the largest among public corporations)

#### Social Contribution Management System

- Creating a database on volunteer activity performances
- Sharing information related to social contributions

### Social Contribution Promotion System

KEPCO's social contribution fund is made up of the Love Fund which is raised through monthly donations from employees, and company donations raised through matching grants. Led by the KEPCO Volunteering Group (some 20,000 of all employees from 310 regional divisions nationwide), we are continuously carrying out volunteer activities to bring light to the world. In addition, our performance in this respect, and social contribution-related information is shared with all employees in real time.



Sharing Briquettes by the KEPCO Volunteering Group

#### Key Activities of the KEPCO Volunteering Group in 2019

##### Charitable Donations

- Disaster relief donations
- Helping underprivileged neighbors at year-end, donating to non-profit organizations

KRW **0.6** billion

##### Community Support

- Support for the underprivileged and volunteer activities

KRW **2.6** billion

##### Global Support

- Global volunteer activities

KRW **0.4** billion

##### Total participation

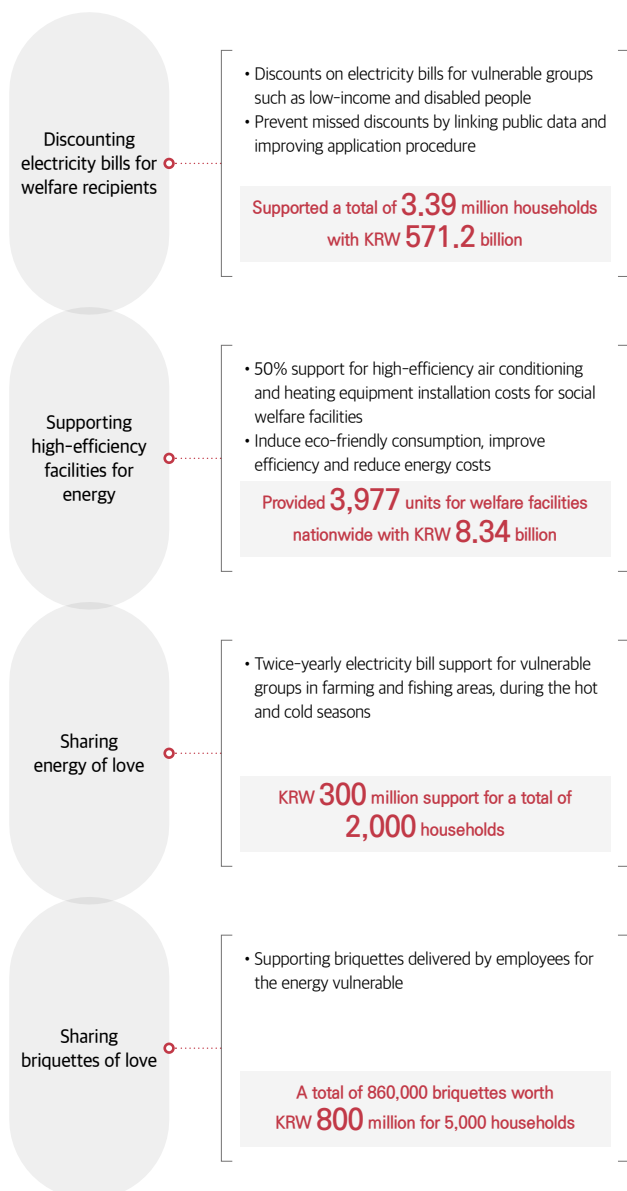
**20,000** people (all employees participated)  
**143,890** participation hours

## Specialized Social Contribution

### Comprehensive Energy Welfare Support

KEPCO has been doing its utmost to support the energy welfare of socially vulnerable groups under the belief that everyone should be able to enjoy the “right to basic energy”. We provided a discount on electricity bills through fundraising by all employees to ease the financial burden of those who are disadvantaged. In addition, we guarantee fundamental rights of energy through various support programs, such as providing electricity for basic livelihoods by postponing the disconnection of the power supply for households who have defaulted on their electricity bills.

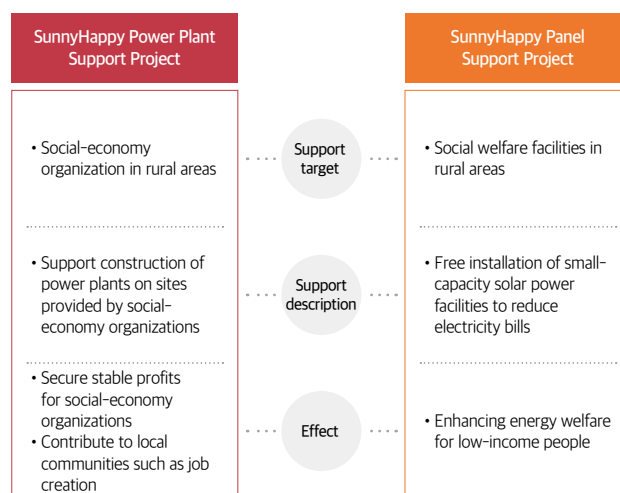
#### Comprehensive Energy Welfare Support Program



### Supporting to Establish SunnyHappy Power Facilities

KEPCO has been promoting specialized social contributions that utilize the characteristics of electric power industry to support the development of local communities. The ‘SunnyHappy Power Plant Support Project’ is a project through which KEPCO conducts to construct solar power plants at no cost for social-economy organizations in rural and fishing villages. This is to help relevant social-economy organizations to use the plant to sell electricity and make use of the profit by creating jobs and improving the welfare of local communities. In addition, KEPCO conducts energy-welfare activities by reducing electricity bills through projects like ‘SunnyHappy Panel Support Project’, which freely installs small-capacity PV facilities for social welfare facilities and vulnerable households. By 2019, we built PV facilities in a total of 466 locations, generating 5,612kW of power, and creating a virtuous cycle that contributes to the local economy through social contribution activities.

#### Overview of the SunnyHappy Power Facility Support Project



#### Support for SunnyHappy Power Generation Facility

##### Power Sales Revenue

KRW **1.17 billion** (250,000/KW)

##### Job Creation

**120 positions** (vitalizing the regional economy)

##### Social Contributions to the Community

KRW **480 million** (scholarship support)

\* Accumulated performance since 2017



## Value-Creating Social Contributions

### Revitalization of Social-Economy Organizations

Since 2012, KEPCO has been contributing to the revitalization of social-economy organizations. In 2017, we added customized support for each business stage during the start-up, growth, and maturity period as part of our efforts to create a better business environment for social-economy organizations. In particular, in 2019, we spearheaded an effort to increase sales by operating a product sales exhibition using an online platform to help develop the market for social-economy organizations. In addition, we were the first public institution to make impact investments in a mature social-economy organization. This was structured such that 100% of the investment came from KEPCO, which also provided management consulting, and then profits were reinvested and distributed at a set rate. Through this kind of support, it is expected that KEPCO will be able to achieve social value and profits at the same time while also cultivating excellent and competitive social enterprises.

\* Impact Investment : Investment to achieve social and environmental performance while creating financial returns

#### Customized Support for Social-Economy Organizations

Establishment	Crowd Funding
<ul style="list-style-type: none"> <li>Initial management fund support through public fundraising</li> </ul>	Supported with KRW 800 million for 69 companies
Growth Period	Support for sales channel at home and abroad
<ul style="list-style-type: none"> <li>Utilize mobile platforms, maximize publicity, and expand sales channels</li> <li>Global marketing support such as attending overseas fairs</li> </ul>	Supported with KRW 1.1 billion for 189 companies
Maturity Period	Impact Investment
<ul style="list-style-type: none"> <li>Investment and profit sharing for social projects in the energy sector</li> <li>Cultivating excellent and competitive social enterprises</li> </ul>	Supported with KRW 0.4 billion for four companies

\* Cumulative performance from 2017 to 2019

### Global Volunteers Made up of KEPCO Employees

KEPCO dispatched a total of 130 overseas volunteers to Vietnam, Uzbekistan, and Laos in 2019 to share compassion to the world with unison between labor and management. Overseas volunteer groups have practiced global sharing by creating sports facilities, painting murals, renovating and repairing schools and libraries, operating Korean culture classes, and holding sports events.

## Customized Social Contributions

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 'Bitgaram 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. In addition, we are conducting the 'Eye Love Angel Project,' which provides funding for eye surgery to low-income patients who are visually impaired.

### Lost Child Prevention Campaign

KEPCO has carried out a nationwide campaign to prevent disappearances, kidnapping and accidents involving children. From 2004 to 2019, about 2.78 million smart bands and name tags for the prevention of missing children were distributed at 310 offices nationwide, and photos of missing children are posted on electricity bills (mobile) every month to contribute to family reunions of missing children.



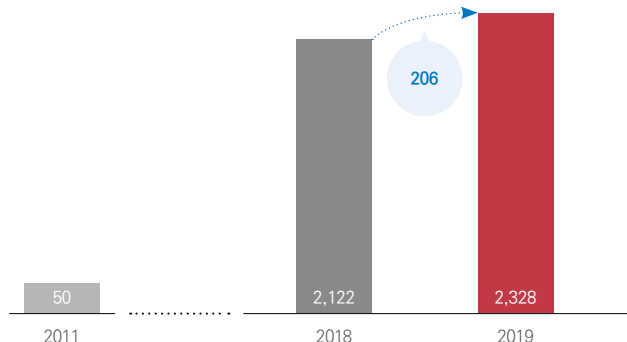
- 1 Attaching a smart bands to prevent missing children
- 2 School Classroom Repair Service
- 3 Mural Painting Volunteer Activity

### Eye Love Angel Project

Since 2011, KEPCO has been conducting the “Eye Love Project,” a project that provides eyesight recovery surgery for low-income patients who are suffering from blindness at home and abroad. Through this project, we hope to provide opportunities for the patients to be able to see again. We offered this surgery to 1,408 domestic and 920 overseas patients for free by 2019, providing the light of dreams and hopes to them.

Cumulative Benefits of the ‘Eye Love Angel Project’

(Unit : persons)



### New Wind Energy School

KEPCO has been offering a variety of experiences in the power industry to foster future power talent. ‘New Wind Energy School’ is an experiential education program prepared by KEPCO and its power generation subsidiaries to raise interest and understanding of new & renewable energy for future generations, and to provide them opportunities to explore career paths in the energy field. By 2019, 14,153 students from 189 institutions participated, and by expanding the scope of education beneficiaries, we supported education expenses for after-school programs for elementary school students and for elementary and middle school students who use community childcare center.



New Wind Energy School

### 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 expanding the purchase of local food materials in the cafeteria to participate in boosting the local economy. In addition, we have signed a sisterhood relationship with regional children’s centers nationwide to support after-school learning, and in 2019, we donated 392 air purifiers to 196 regional children’s centers so that children can live in a comfortable environment.



Volunteer activities sponsoring with air purifiers

### Support for Future Talents in the Power Sector

In order to discover talented people who will become leading players in new energy industries, and to support their growth, KEPCO has been providing scholarships to undergraduate and graduate students across the country who major in electrical engineering. In March 2019, we donated KRW one billion in scholarships to 121 outstanding students across 73 universities and 10 graduate schools nationwide. Furthermore, we provided scholarships worth KRW 5.3 billion to 825 students from 2005 to 2019, and provide practical knowledge and learning guidance through mentoring between scholarship students and KEPCO employees.



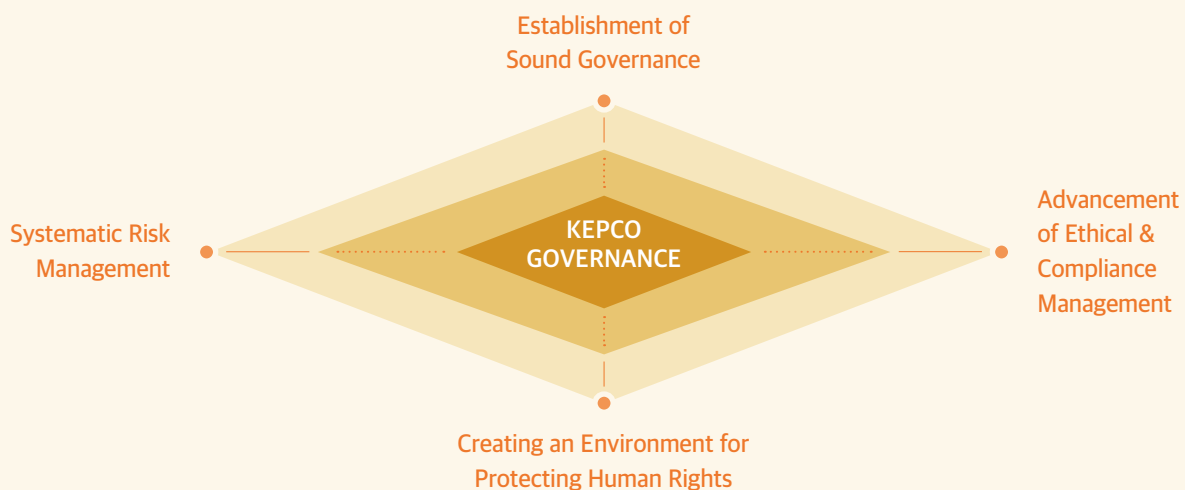
2019 Scholarship Award Ceremony for Scholarship Students of Electrical Engineering

# GOVERNANCE

04

## Management Approach

Establishing a sound governance structure is a critical factor for securing the trust of stakeholders, and for the management to carry out responsible management activities. KEPCO is striving to strengthen the expertise of the Board of Directors so that they can proactively respond to the shifting business environment and make rational decisions, and to enhance the fairness and transparency of the board's operations. Moreover, in order to meet the demands of external stakeholders to improve transparency and fairness, we have established an ethical compliance management system in addition to respecting the human rights of our employees and stakeholders in the entire management process. Furthermore, KEPCO is making a company-wide effort to preemptively identify and respond to risks by establishing a strong risk management system.



## 2019 Key Performance

Board Attendance Rate

**94%**



Anti-corruption Policy Evaluation by the  
Anti-corruption & Civil Rights Commission

Achieved recognition as an  
**excellent institution**  
for 3 consecutive years



Self-audit Activities Evaluation by the  
Board of Audit and Inspection

Achieved the **highest grade**  
for 4 consecutive years



Human Rights Education (cumulative)

**175,158** hours



# BOD and Decision-making

## Board of Directors

KEPCO's BOD is composed of seven executive (standing) directors, including the President, and eight non-executive (non-standing) directors. One of the non-executive directors is elected as the chairperson of the BOD and objectively supervises the activities of the management to enhance the fairness of company and BOD operations.

## Independence of the BOD

KEPCO has ensured the independence of the BOD so that it can faithfully perform its role of providing checks and balances. The roles of BOD chairperson and the president are separate and independent. In order to reflect the varied opinions of our stakeholders in decision-making processes, and to strengthen the decision-making authority of outside directors within the BOD, we ensure that the percentage of non-standing directors stands at more than 50% of the total. Furthermore, when appointing directors, we conduct a strict review ensuring that they are qualified as stipulated in the internal independence regulations and have no special relationship with the corporation.

## Expertise of the BOD

In order to secure the expertise of the BOD, KEPCO evaluates the expertise of each candidate as related to his or her unique job position in the document screening process, and actively promotes experts from the energy sector as a candidate. Moreover, the BOD regularly inspects domestic and overseas power facilities, conducts training for directors, provides reports on industrial trends and major management issues on a regular basis and hosts serious discussions between directors to enhance their understanding of the industry and improve their expertise.

## Diversity of the BOD

KEPCO does not discriminate against any candidates on the basis of gender, race, ethnicity, nationality or cultural background when appointing directors, and is diversifying the organizations that recommend candidates to ensure the diversity and balance of the Board of Directors. Directors with extensive knowledge and experience are elected from various fields, such as academia, economics, and labor. In particular, through the Executive Directors Nomination Committee, a pool of female executive directors is managed to actively recruit and recommend female candidates.

## Composition of the BOD

(As of September 2020)

	Classification	Name	Gender	Expertise & Experience	Tenure
Standing Directors	President & CEO	JongKap KIM	M	Energy / Electricity	Apr. 2018 ~ Apr. 2021
	Comptroller & Auditor General Audit Committee Member	(Vacant)	-	-	-
	Corporate Senior Vice President & Chief Financial (Strategy) Officer	HyungDuck PARK	M	Energy / Electricity	July. 2018 ~ Sep. 2021
	Corporate Senior Vice President & Chief Nuclear Business Officer	HyunSeung LIM	M	Energy / Electricity	July. 2018 ~ Sep. 2021
	Corporate Senior Vice President & Chief Business Management Officer	HeynBin Lee	M	Energy / Electricity	Sep. 2020 ~ Sep. 2022
	Corporate Senior Vice President & Chief Business Operations Officer	SungArm KIM (Concurrent position)	M	Energy / Electricity	Mar. 2019 ~ Mar. 2021
	Corporate Senior Vice President & Chief Power Grid Officer	Sung-Arm KIM	M	Energy / Electricity	Mar. 2019 ~ Mar. 2021
Non-Standing Directors	Chairperson	JwaGwan KIM	M	Energy / Environment Current) Member of the Presidential Water Commission Dean, College of Applied Science, Catholic University of Busan	Apr. 2018 ~ Apr. 2021
		BongRyull YANG	M	Energy / Public Former) External Director, Gwangju Institute of Science and Technology Korean Ambassador to Malaysia Korean Consul General in Houston, US	Apr. 2018 ~ Apr. 2021
	Audit Committee Member	YeonGil JEONG	M	Energy / New Materials Current) Professor of New Material Engineering, Changwon University Energy Policy Advisor for the Ministry of Trade, Industry and Energy	Apr. 2018 ~ Apr. 2021
	Chairperson of Audit Committee	GeumSun NOH	F	Finance / Accounting Former) Standing Auditor of National Pension Service Certified Public Accountant, Samil PricewaterhouseCoopers	Jun. 2018 ~ Jun. 2021
		SeungKook CHOI	M	Energy / New & Renewable Current) Chairman of the Solar and Wind Energy Cooperative Association Former) Secretary General of Green Korea United Joint Representative of Energy Citizens' Solidarity	Jun. 2018 ~ Jun. 2021
		JongBae PARK	M	Energy / Electricity Current) Professor of Electrical and Electronic Engineering, Konkuk University	Jan. 2020 ~ Jan. 2022
		SiHeon SEONG	M	Industry / Technology Former) Director General of Korea Evaluation Institute of Industrial Technology Director General of Korean Agency for Technology and Standards	Jun. 2020 ~ Jun. 2022
		SuRan BANG	F	Law Current) Senior Advisor, Seoul Energy Corporation Attorney-at-law/Partner at Law Firm S	Sep. 2020 ~ Aug. 2022

\* KEPCO discloses major governance-related information in detail through our Corporate Governance Report, which can be found on the official KEPCO website.

## Appointment of Directors

KEPCO appoints directors in accordance with the 'Act on the Management of Public Institutions' and the 'KEPCO Articles of Incorporation.' When appointing the CEO, we nominate candidates through an open nomination process followed by recommendations from Director Nomination Committee, the Public Agencies Operating Committee, and the AGM (Annual General Meeting). Finally, a request is made by the Minister of Trade, Industry and Energy, and the CEO is appointed by the President for a three-year term. Executive directors are appointed by the CEO for a two-year term following a resolution of the AGM. The Standing Director and Member of the Audit Committee is recommended by Director Nomination Committee, approved by the the Public Agencies Operating Committee, requested by the Minister of Economy and Finance, and appointed by the President. Non-executive directors are nominated by Director Nomination Committee, approved by the Public Agencies Operating Committee, and appointed by the Minister of Economy and Finance, and serve a two-year term.

## Evaluation and Compensation of the BOD

The president of KEPCO establishes a business performance plan (three-year performance goals and action plans for performance indicators) that reflects management policy and our mid-to long-term business goals during his or her term of office after signing an agreement with the government (the Minister of Trade, Industry and Energy) on the management goals to be achieved during his or her tenure. His/her implementation progress is reviewed by the Performance Appraisal Board for Public Corporations. Remuneration for executive directors, including the President, shall be under the remuneration limit approved by the AGM, and incentives are differentially determined based on performance. In addition, the reappointment of non-executive directors is determined based on their performance assessment results, and they are provided with a service allowance based on internal regulations. The details of compensation for executive and non-executive directors are made public through our business reports and via the ALIO (All Public Information In-One) website.

### BOD Compensation

(Unit : thousand won)

Classification	No. of Persons	Total Compensation	Avg. Compensation per Person
Standing Directors (Excluding Non-Executive Directors and Audit Committee Members)	6	1,049,058	174,843
Non-Executive Directors (Excluding Audit Committee Members)	6	168,225	29,513
Audit Committee Members	2	60,000	30,000
Standing Director and Member of the Audit Committee	1	163,387	163,387

\* This reflects compensation as of 2019 and differs from the list of directors newly appointed in 2020.

### CEO-to-Average Executive Compensation Rate

236 %

## Operation of the BOD

KEPCO's regular BOD meeting is held once a month, special director meetings are convened whenever necessary, and the minutes of board meetings are transparently disclosed to stakeholders through the ALIO (All Public Information In-One) website. In accordance with Articles 397 and 398 of the Commercial Act, KEPCO directors are not allowed to use company-related business opportunities for personal or third-party interests without the approval of the board in order to prevent conflicts of interest. In addition, any director having a special relation with a certain agenda is not allowed to cast a vote on the matter. KEPCO has purchased the highest-tier executive indemnity insurance policy (KRW 100 billion) available in Korea in order to support the independent decision-making process, and has introduced an advanced conference system, which includes video conferencing, to increase the attendance rate of the BOD. In addition, we allow management suggestions based on the professional capabilities of directors to be actively reflected in policy through discussions on management issues and the operation of specialized working groups.

### Performance of the BOD

#### BOD Meetings Held

13 times

#### Agendas Approved

36 cases

#### Agendas Reported

8 cases

#### BOD Attendance Rate

94 %

#### Non-Standing Directors Attendance Rate

96 %

## Committees under the BOD

KEPCO runs committees under the BOD to reinforce preliminary deliberations and support rational decision-making. The members of the Audit Committee are non-standing accounting and finance experts who are indispensable in reinforcing the BOD's check function based on their expertise, and the members of the Director Nomination Committee are selected only from external directors as a way of blocking internal influence and securing transparency in the executive director appointment process.



## Committees Under the BOD

(As of December 2019)

Audit Committee		Director Nomination Committee	
<b>Roles</b>	<ul style="list-style-type: none"> <li>Conducting audits on work and accounting and reporting the results to the BOD</li> <li>Approving the appointment of independent auditors</li> <li>Conducting audits as stipulated by relevant laws and the Articles of Incorporation</li> </ul>	<b>Roles</b>	<ul style="list-style-type: none"> <li>Deciding the nomination process, reviewing and recommending candidates for CEO or Standing Director and Member of the Audit Committee</li> </ul>
<b>Composition</b>	<ul style="list-style-type: none"> <li>Two non-standing Directors and one standing director</li> </ul>	<b>Composition</b>	<ul style="list-style-type: none"> <li>Non-standing directors and external committee members appointed by the BOD</li> </ul>
<b>Performance and Outcomes in 2019</b>	<ul style="list-style-type: none"> <li>Nine meetings held</li> </ul>	<b>Performance and Outcomes in 2019</b>	<ul style="list-style-type: none"> <li>Two meetings held</li> <li>One non-standing director nominated.</li> </ul>

## Major Resolutions of the BOD in 2019

1st Meeting on Jan. 23, 2019	➤	<ul style="list-style-type: none"> <li>Approval to close the shareholders' registry for extraordinary general meeting of shareholders</li> <li>Convening the 59th EGM (Draft)</li> </ul>
2nd Meeting on Feb. 22, 2019	➤	<ul style="list-style-type: none"> <li>Approval to call for the annual general meeting of shareholders for the fiscal year 2018</li> <li>Approval of amendment to the regulations on internal control over financial reporting</li> <li>Approval of the maximum aggregate amount of remuneration for directors in 2019, etc.</li> </ul>
3rd Meeting on Mar. 15, 2019	➤	<ul style="list-style-type: none"> <li>Approval of establishment of, and contribution to, subsidiaries for meter-reading and security services to transition non-permanent workers to permanent positions</li> <li>Approval to consign contract administration regarding construction of distribution facilities to Public Procurement Service</li> </ul>
4th Meeting on Apr. 12, 2019	➤	<ul style="list-style-type: none"> <li>Approval of personnel increase</li> <li>Approval of amendment to the Rules on Employment</li> <li>Approval of amendment to the Regulations for Employee Remuneration and Welfare</li> </ul>
5th Meeting on May 17, 2019	➤	<ul style="list-style-type: none"> <li>Approval of amendment to the construction plan for the flagship electric vehicles charging station</li> <li>Approval of liquidation of Ulleungdo Natural Energy Co., Ltd.</li> <li>Report on audit results for the first quarter of 2019</li> </ul>
6th Meeting on Jun. 21, 2019 7th Meeting on Jun. 28, 2019	➤	<ul style="list-style-type: none"> <li>Approval of amendment to the Electricity Usage Agreement</li> <li>Approval of the mid-to long-term financial management plan (2019-2023)</li> <li>Approval of amendment to the electricity tariff system, etc.</li> </ul>
8th Meeting on July 19, 2019	➤	<ul style="list-style-type: none"> <li>Approval of donation of KEPCO Energy Park exhibition</li> <li>Approval of contribution to solar power project in Mexico</li> </ul>
9th Meeting on Aug. 8, 2019 10th Meeting on Aug. 22, 2019	➤	<ul style="list-style-type: none"> <li>Approval of establishment of, and contribution to, KEPCO-Tech (tentative name)</li> <li>Approval of deliberation on former executive's violation of job integrity agreement</li> <li>Report on audit results for the second quarter of 2019</li> </ul>
11th Meeting on Oct. 22, 2019	➤	<ul style="list-style-type: none"> <li>Approval of the mid-to long-term management target (2019-2024)</li> <li>Approval of the establishment of KEPCO laboratory company</li> <li>Approval of contribution to Ukudu gas-fired power project in Guam, United States</li> </ul>
12th Meeting on Nov. 28, 2019	➤	<ul style="list-style-type: none"> <li>Approval of establishment of, and contribution to, a subsidiary for inbound call services to convert subcontracted workers to permanent employee</li> <li>Approval of liquidation of Korea Electric Power Nigeria Ltd.</li> <li>Approval of amendments to the Regulation for Employee Remuneration and Welfare</li> </ul>
13th Meeting on Dec. 30, 2019	➤	<ul style="list-style-type: none"> <li>Approval of amendments to the Electricity Usage Agreement and Rules for Operation</li> </ul>

# Ethical Management

## Ethical Management Systems

### Establishing CEO-Led Ethical Management Systems

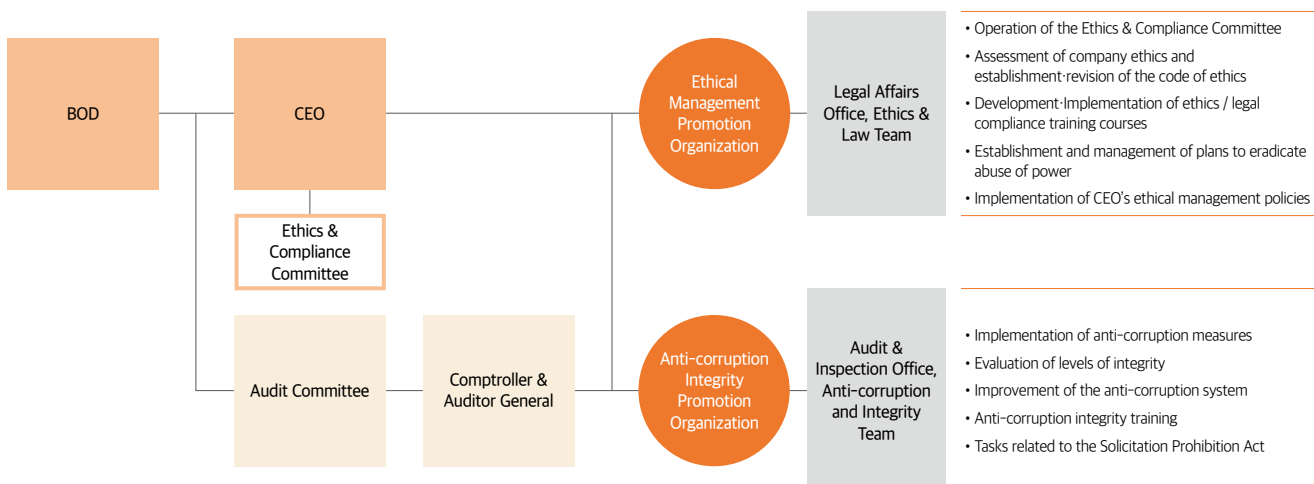
KEPCO established the Ethics & Compliance Committee in 2019 to redefine our ethical management implementation system to one that is led by the CEO. In doing so, we strengthened the institutional foundations for enhancing ethical management, while internalizing the level of ethical awareness of our employees and spreading an ethical corporate culture that stimulates a sound ethical environment. In addition, as we strive to meet social demands for transparency and fairness, we continue to inspect for unfair practices in all work areas and make improvements wherever necessary. KEPCO will continue to spread a culture of integrity to external stakeholders, such as local communities and business partners, to help create social value and contribute to the realization of an ethical society.

#### Basic Plan for Implementing Ethical Management

Vision	Securing the Trust of the People by Promoting a Law-Abiding Spirit and Ethical Awareness		
Goal	Enhancing the implementation of ethics & compliance management through participation and empathy		
Strategies and Core Tasks	Promoting Consensus on an Ethical Corporate Culture	Enhancing Transparency and Fairness in All Work	Enhancing Stakeholder Communication and Cooperation
	<ol style="list-style-type: none"> <li>1 Assessments and continuous education to internalize ethical awareness</li> <li>2 Spreading a corporate culture based on participation and communication with respect to ethical compliance</li> </ol>	<ol style="list-style-type: none"> <li>3 Promoting a fair culture by checking and improving overall work</li> <li>4 Improving the fairness of systems and procedures concerning our partners</li> <li>5 Preventing the possibility of corruption by improving work methods</li> <li>6 Reinforcing transparency by expanding public disclosure of information</li> </ol>	<ol style="list-style-type: none"> <li>7 Improving Communication with Stakeholders in Business Processes</li> <li>8 Promoting Ethics &amp; Compliance Management through Cooperation with Stakeholders</li> </ol>

### Dedicated Organization for Ethical Management

KEPCO's ethical management is overseen by the Legal Affairs Office, and ethics and compliance leaders, who help to establish an ethical culture, are selected to enhance its implementation. Further, anti-corruption activities are led by the Audit & Inspection Office and executed in practice by the company-wide officer responsible for the code of conduct. Meanwhile, major issues and activities concerning ethical management are reported to the Ethics & Compliance Committee, under the direct control of the CEO. This committee, as KEPCO's top ethical management organization, is responsible for deliberating on, and checking the effectiveness of, related policies.



## Implementation of Ethical Management

### Compliance with the Code of Ethics

The Code of Ethics is a standard for upright behavior and sound value judgment. Based on this Code of Ethics system, KEPCO stipulates that all employees and partners must comply with the right standards for judging ethical value.

#### Code of Ethics System

KEPCO's Charter of Ethics	Declared standards for ethical management practices (standards for upright behavior and sound value judgment) (Enacted in February 1996, 6th revision in December 2019)
Code of Conduct for Employees	Standards of conduct that all employees must follow (Enacted in May 2003, 23rd revision in May 2020)
Guidelines for employees	Specific practice standards for job-related persons, guidelines concerning contract work for foreign companies (Enacted in May 2003, 7th revision in May 2020)
Operating regulations for executive duty integrity contracts	Regulations on the duty of integrity for executives (executive directors and executive director-level department heads) (enacted in January 2007, 3rd revision in 2010)
Supplier Code of Conduct	Ethical guidelines to be followed by suppliers (ethical, social, environmental standards) (enacted in June 2012)

### Establishing the Ethics & Compliance Committee

In 2019, KEPCO strengthened the foundations for ethical management by establishing the Ethics & Compliance Committee, which consists of five standing directors and three external members, and is chaired by the CEO. The Committee is held once each in the first and second halves of the year. In 2019, a promotion plan for ethical and compliance management was deliberated, performance was assessed, and plans for development were discussed. In 2020, we plan to expand the scope of issues to include the establishment of a culture of fairness and safety, as well as inviting more advice and recommendations on pending ethical management issues. Through the operation of this committee, KEPCO intends to seize the opportunity to improve its ethical management.

#### Ethics & Compliance Committee - Meeting Outcomes

Classification	Main Agenda	Outcomes
1st meeting in 2019 (April 26, 2019)	(Reported) 1. Ethics & compliance management implementation status	
2nd meeting in 2019 (Nov 29, 2019)	(Reported) 1. Ethics & compliance management implementation outcome 2. Revision of the 'KEPCO Ethics Charter' (plan)	
1st meeting in 2020 (April 23, 2020)	(Decided) 1. 2020 Comprehensive Plan for Implementing Ethics & Compliance Management	Approved

### Ethics Pledge & Ethical Management Awareness Assessment

KEPCO requires that all employees pledge to comply with the Code of Ethics every year. We promote ethical management that responds to environmental changes by introducing improvement measures for vulnerable areas identified through ethical management awareness assessments.

### Conducting Integrity & Ethics Training

On a consistent and regular basis, KEPCO conducts quarterly integrity training for all employees under the supervision of department heads across our domestic sites. We provide customized training for each position and job, including for new hires, employees receiving promotions, and senior positions. In addition, we regularly invite well-known experts to hold special lectures on ethics and compliance aimed at our managers, in order to stimulate awareness and encourage them to lead by example. Moreover, we promote ethical awareness throughout the company via ethical compliance training for our regional offices. KEPCO has also established an evaluation and compensation system for the implementation of ethical management. This includes integrating self-integrity surveys and training performance in our internal workplace evaluations, as well as rewarding outstanding offices in accordance with evaluation outcomes. As such, all executives and employees can be motivated to implement the lessons learned from ethics training.

#### Integrity and Ethics Training Performance

Classification	Unit	2017	2018	2019
Group Training	persons	18,785	19,365	22,980
Online Training	persons	14,303	18,819	13,525
Integrity Training Fulfillment Rate	%	100	100	100

#### Integrity and Ethics Education Operation Status

Online	Offline
Ethics & Compliance Training, as well as Anti-corruption & Integrity Training, was provided for all employees.	Customized ethics training was provided in accordance with position and job characteristics.
Improvement in awareness of the disabled	Special Lecture on Integrity by the statutory auditor
Revised 'Occupational Safety and Health Act'	Itinerant training on anti-corruption-integrity
Prevention of sexual harassment	Integrity training for new hires and employees receiving promotion
Prevention of power abuse	Training to improve sensitivity to corporate human rights
Practical cases concerning the Fair Trade Act	Trainings to improve sensitivity to gender issues
Solicitation Prevention Act	Regional itinerant training by experts
	Special lectures on ethics & compliance for managers
	Special lectures by experts from the Ethics & Compliance Committee

## Internal Control and Reporting Channel

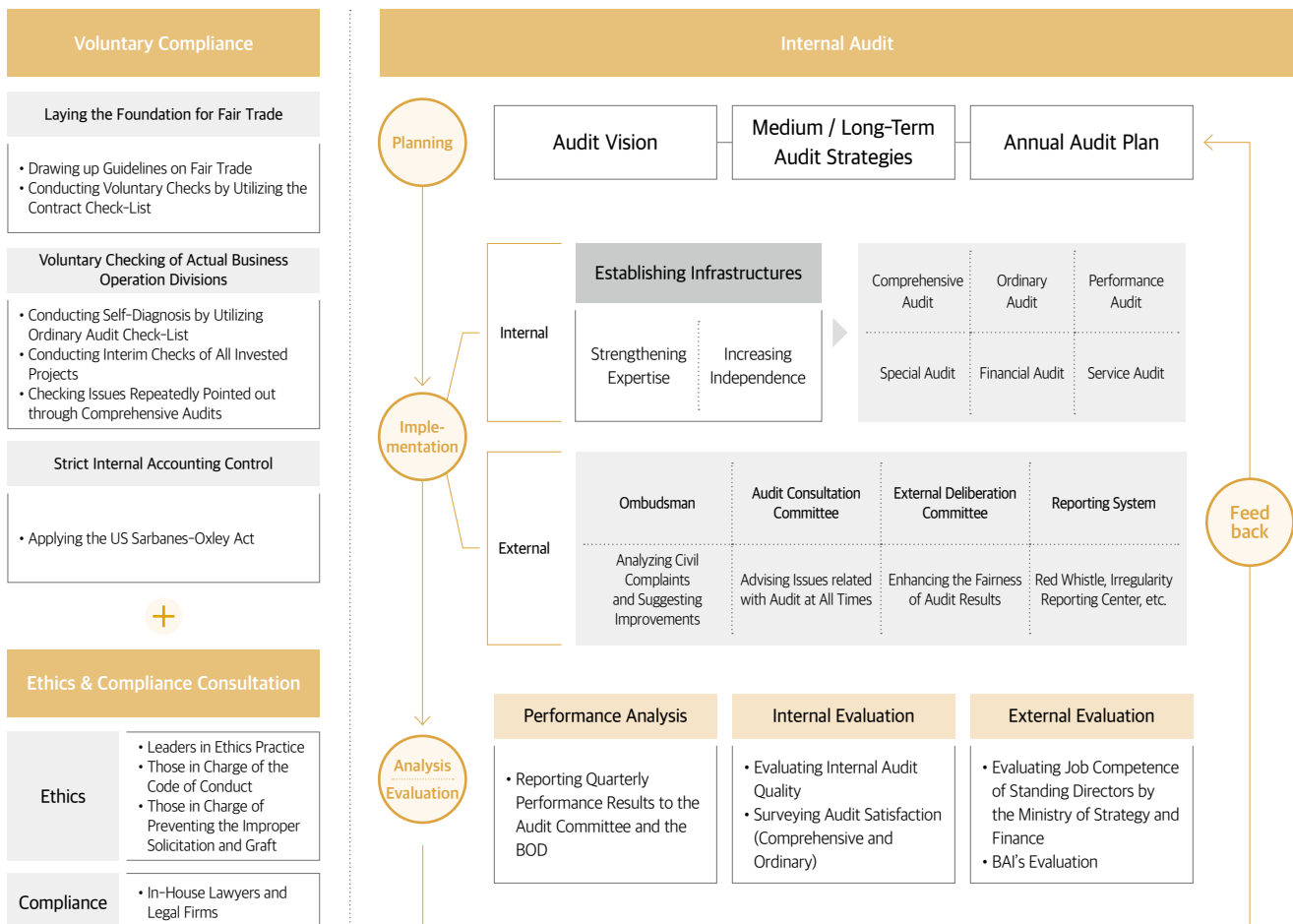
### Operating an Internal Check System

KEPCO has established an internal check system to support ethical management. This system, structured to enable efficient internal checks, is largely divided into 'self-compliance' activities for preemptive measures and 'internal audit' activities focused on retroactive audits. Self-compliance consists of institutional systems that lay the foundations for fair trade, departmental self-checks, and internal accounting control, as well as support systems such as counseling on ethics and compliance. Characterized by professionalism and independence, internal auditing covers comprehensive audits, daily audits and performance audits over all work stages. In addition, external audit systems, such as the ombudsman, audit advisory committee, and external reporting system, are also operated.

### Improving Voluntary Internal Control Processes

For the first among sector 1 public corporations in Korea, KEPCO acquired ISO 37001 certification, the international standard for anti-corruption management systems, in January 2019. By doing so, we have strengthened the effectiveness of our corruption prevention measures and are actively identifying and implementing tasks in this respect. We are also standardizing our internal accounting management system in tandem with our subsidiaries, in order to improve the reliability of our consolidated financial statements. In addition, we have enhanced our preventive audit functions and improved the effectiveness of internal audits by bolstering the personnel responsible for audits, such as financial experts, and by strengthening the expertise of these personnel by providing training programs for all levels and stages. Meanwhile, the internal audit system is constantly being improved. For example, a preliminary consulting system has been introduced for tasks that are difficult to actively administrate due to disagreements regarding the interpretation of laws and regulations, and the active work exemption system has been enhanced. Internal audit performance is periodically analyzed and evaluated, and the results are reflected in the planning stages.

#### Internal Check System



## Multi-Channel Reporting System

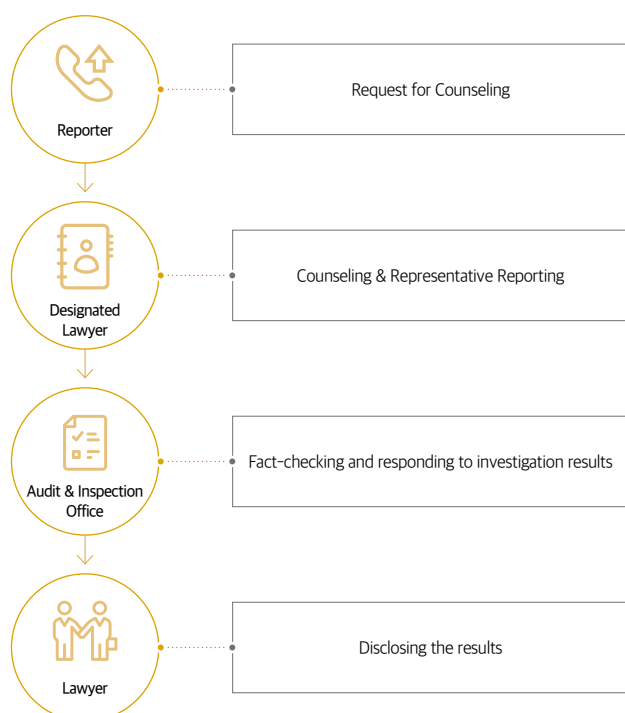
KEPCO strengthens the internal audit system through voluntary reporting, the irregularity reporting center, and other various corruption reporting systems. To encourage the active participation of our employees, we have increased accessibility by incorporating a reporting menu in our corporate software, and the results of reporting are transparently disclosed through our corporate website. In addition, Red Whistle, an anonymous reporting system, has been operated since 2014, and in 2018, a Red Whistle report menu was added to our work-use Mobile Office application to improve reporting convenience. In addition, KEPCO transparently discloses the results of internal audits, such as descriptions of irregularities, disciplinary measures, and comprehensive audits results, on our official website and via the ALIO (All Public Information In-One) website.

Cases of Irregularity Received, by Reporting Channel

Reporting Channel	Identification	Reporting Method	2017	2018	2019
Internal / Voluntary Report	Identified / Anonymous	Online (Intranet)	–	–	3
Irregularity Reporting Center	Anonymous	Online (External Website)	56	87	60
On-site Reporting Center	Anonymous	Reporting Postcard	1	–	–
Anonymous Report System (Red Whistle)	Anonymous	Online (External Consignment)	52	131	119
<b>Total</b>			<b>109</b>	<b>218</b>	<b>182</b>

## Legal Representative Reporting System

KEPCO has introduced a Legal Representative Reporting System that allows all employees and outsiders to report illegal acts and irregularities, aiming to prevent stakeholders, suppliers, etc. from committing such acts.



## Ethics & Compliance Management - Implementation Outcomes 2019

Improved overall integrity level  
by one grade (Grade 4 → 3)

Achieved 'excellence'  
in the Anti-Corruption Policy Evaluation  
for three consecutive years

Selected by the Fair Trade Commission as  
a best practice model of a 'public institution that  
spreads a fair trade culture'

Achieved the top grade for four consecutive years  
in BAI's (Board of Audit and Inspection of Korea)  
assessment of companies' self-audit activities

Received the Grand Prize among 624 institutions nationwide  
in the Best Audit Contest, hosted by BAI



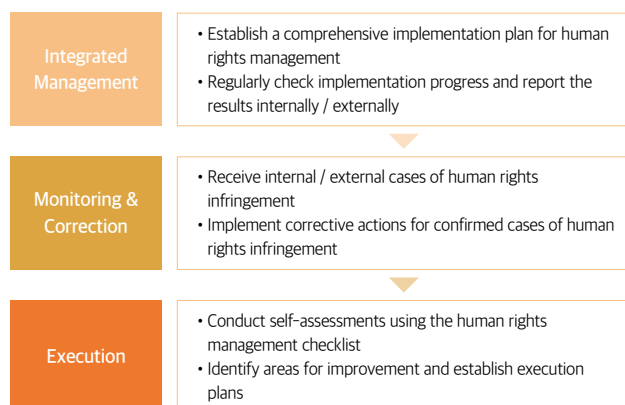
# Human Rights Management

## Human Rights Management Implementation System

### Global Human Rights Management

KEPCO actively operates a human rights management implementation system and has established the 'KEPCO Human Rights Management Implementation Plan' to create a work environment free from discrimination for all employees. We, as a global company, seek to actively respond to the international community's demand for activities that promote human rights protection. As the first Korean company to join the UN Global Compact in 2005, we respect and support international standards for human rights and labor, such as the Universal Declaration of Human Rights and the 'UN Guideline Principles on Business and Human Rights (Ruggie Framework)' by the United Nations Commission on Human Rights. KEPCO strives to protect the human rights of our employees and other stakeholders throughout the entirety of our business activities.

### Human Rights Management Implementation System



### Human Rights Management Guidelines

KEPCO complies with the Labor Standard Act and International Labor Organization (ILO) regulations, and prohibits discrimination on the basis of gender, race, age, social status, etc. To respect the human rights of our employees and stakeholders, we established the 'KEPCO Declaration of Human Rights Management', outlining ten practice guidelines for human rights protection. In addition, the 'Supplier Code of Conduct', which all suppliers and subcontractors who sign a contract with KEPCO must recognize and comply with, includes requirements for human rights protection such as the prohibition of child labor, prohibition of discrimination (against gender, religion, race, and physical ability), guarantee to the freedom of association and collective bargaining, provision of safety equipment, and the creation of a safe work environment. We are also striving to prevent human rights infringements through the publication of various codes of ethics, including an ethics charter, an employee code of conduct, and an employee action guide.

## Detecting and Responding to Human Rights Issues

KEPCO strives to identify potential issues related to the human rights of each stakeholder, and prepares proper countermeasures in advance. By examining issues concerning gender equality, the health and safety of all employees, and human rights violations concerning customer-facing workers, as well as factors that could lead to human rights violations regarding our partners and local communities, we are conducting activities to prevent and alleviate issues related to human rights.

### Major Potential Risks Related to Human Rights

Classification	Potential Risks	Countermeasures
Employees	<ul style="list-style-type: none"> <li>Workplace gender equality</li> <li>Grievances about sexual harassment and sexual violence</li> <li>Protecting employees' mental health</li> </ul>	<ul style="list-style-type: none"> <li>Organizational culture improvement activities to ensure gender equality</li> <li>Opening a hotline for online counselling</li> <li>Addressing grievances concerning sexual harassment: sexual violence</li> <li>Stress assessments, mental health consultations</li> </ul>
Partners	<ul style="list-style-type: none"> <li>Safety incidents regarding workers</li> <li>Discrimination against reporters of unfair transactions</li> </ul>	<ul style="list-style-type: none"> <li>Identify safety weaknesses, make improvements and provide safety training</li> <li>Establish a Civil Complaint Protection Charter and introduce a report system that guarantees reporters do not suffer disadvantages</li> </ul>
Local Community	<ul style="list-style-type: none"> <li>Noise and environmental pollution issues on construction sites</li> </ul>	<ul style="list-style-type: none"> <li>Construction of eco-friendly power facilities with consideration for the local community</li> <li>Conducting Environmental Impact Assessments</li> </ul>

## Checking Human Rights Risks

KEPCO self-assesses human rights infringement risk factors by utilizing a 'human rights management checklist' and classifying human rights risks into 10 sections and 33 sub-sections, in line with the 'UN Guiding Principles on Human Rights' and the 'Human Rights Management Guidelines' set by the National Human Rights Commission of Korea. In 2019, self-assessments did not reveal any issues that violate human rights. We will continue to conduct self-assessments on a regular basis in order to detect human rights risks and take proper countermeasures in advance.

### Checklist for Human Rights Management

1 Establishing a human rights management system	6 Ensuring industrial safety
2 Non-discrimination in employment	7 Supply chain management
3 Freedom of association: bargaining	8 Protecting local residents' human rights
4 Prohibiting forced labor	9 Guaranteeing environmental rights
5 Prohibiting child labor	10 Protecting customers' human rights

## Creating an Environment for Human Rights Protection

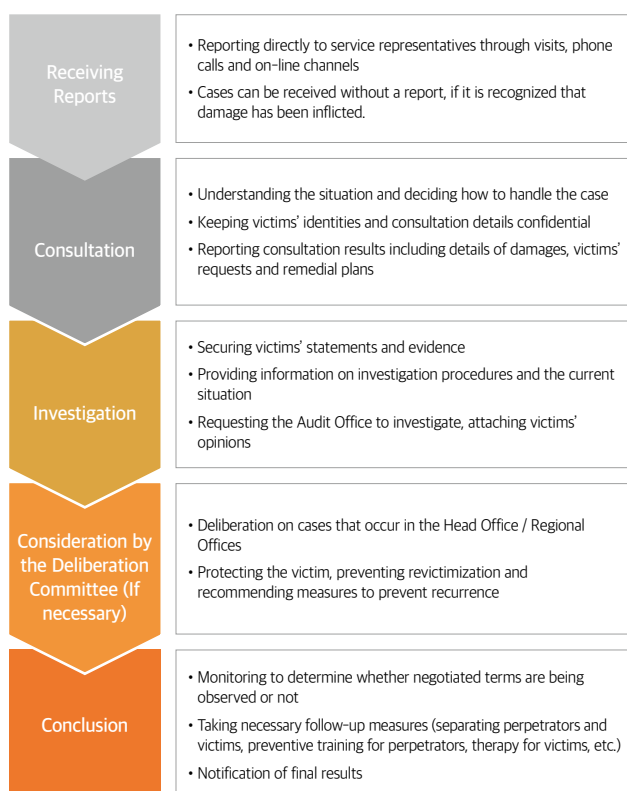
### Human Rights Training

In order to promote a culture of respect for human rights, KEPCO conducts online and offline human rights training, covering various topics such as the elimination of sexual harassment and sexual violence, and the prevention of abuses of power and harassment in the workplace. Particularly in 2019, we invited external experts to conduct education on improving corporate human rights sensitivity. Moreover, we are striving to create an environment that facilitates preventive human rights protection through campaigns that promote gender equality and self-inspection of the risks of abuse of power.

### Grievance Handling Channel and Process

KEPCO operates a grievance consultation and reporting center to respond to cases of human rights infringement, such as sexual harassment, sexual violence, and abuse of power. Reports received through the reporting center are handled in accordance with the relevant procedures, and in the event that the advice of an external expert, such as legal counseling, is required in the course of responding to a case, we provide professional consultation services in partnership with external institutions.

#### Grievance Handling Process

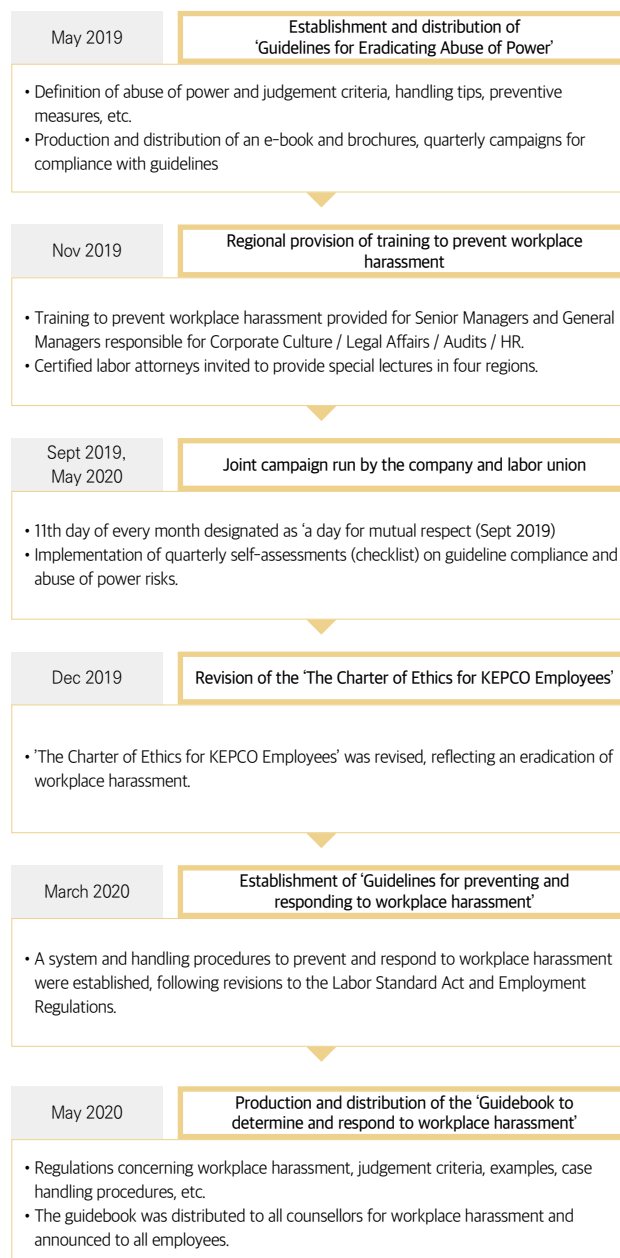


\* In cases of grievance handling for workplace harassment, the Deliberation Committee meets before the investigation

## Promoting Comprehensive Measures to Eradicate Abuse of Power and Workplace Harassment

Abuse of power is when a person in a position of seniority improperly uses his or her authority, e.g. unfair requests or treatment, or when a person with higher economic or social status exercises his or her influence. In order to eliminate abuses of power within our society, KEPCO has established comprehensive measures to preclude abuses of power and is striving to spread a culture of mutual trust through continuous activities in this respect.

#### Progress of Activities to Eradicate Abuse of Power and Workplace Harassment



# Risk Management

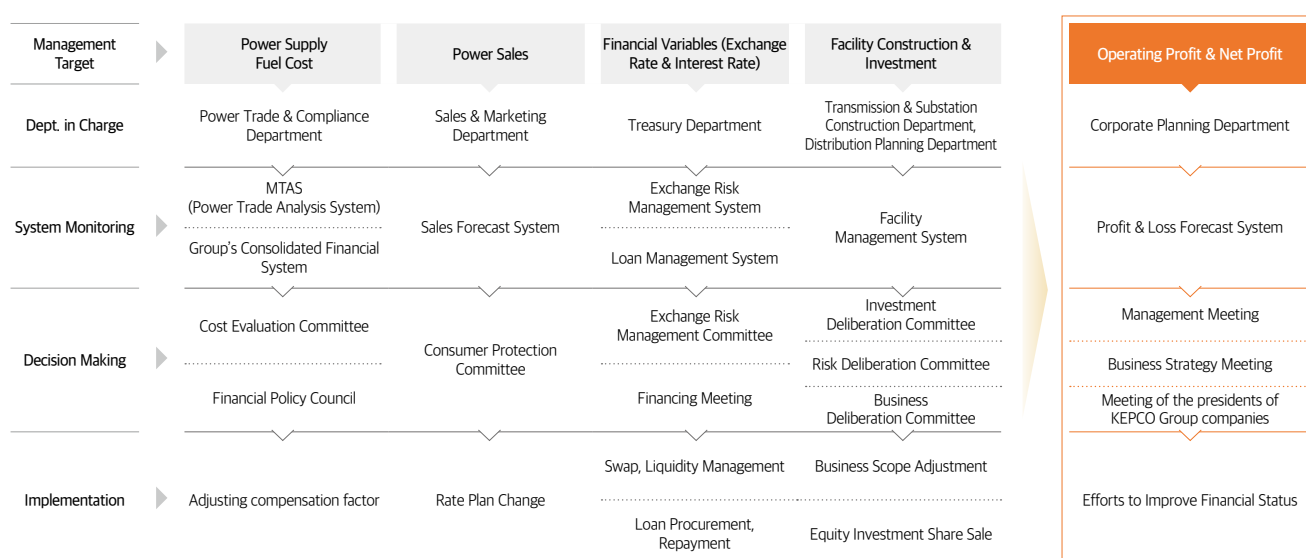
## Risk Management System

KEPCO operates a risk management system to proactively identify and respond to risks that may occur in the process of achieving our strategic objectives. In particular, we have strengthened the financial risk management process that can have a direct impact on our business activities, and designated responsible departments for each risk area. We continuously check risk factors and conduct practical risk reduction activities to improve our responsiveness to the rapidly changing business environment. In addition, management meetings and business strategy meetings are regularly held to share information about the internal and external business environment, as well as the results of risk checks in each sector. By doing so, we enable relevant departments to collaborate and seek collective countermeasures for major risks that are difficult for individual departments to resolve.

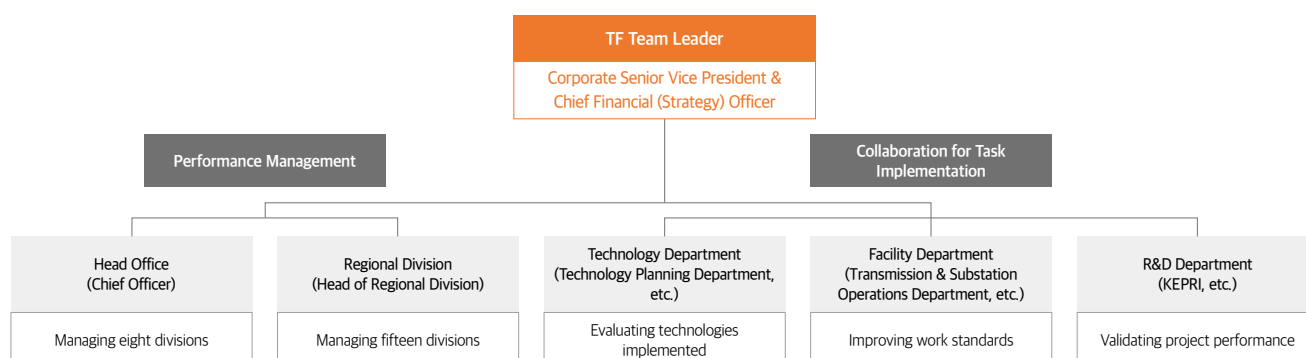
## Financial Risk Management

KEPCO has established a financial risk response system to preemptively respond to financial risks and secure financial stability. From power supply and demand, facility construction, to the impact on operating profit, we operate a monitoring system for each area and systematically manage financial risks by convening a deliberation committee for each stage. In addition, in order to respond to the financial crisis caused by an increase in purchased power costs and a decrease in volume of power sales, the “Financial Improvement Plan Management TF”, hosted by the Corporate Senior Vice President & Chief Financial (Strategy) Officer, and the “Financial Improvement Implementation Reinforcement TF”, consisting of the budget manager of each department, are operated in parallel. Through these efforts, we set cost-based, key performance indicators (KPIs) and apply them to internal evaluations. We also manage financial improvement performance based on tasks rather than monetary values, and are expanding rewards for outstanding savings performances in order to actively respond to the increasingly challenging financial conditions.

### Financial Risk Management System



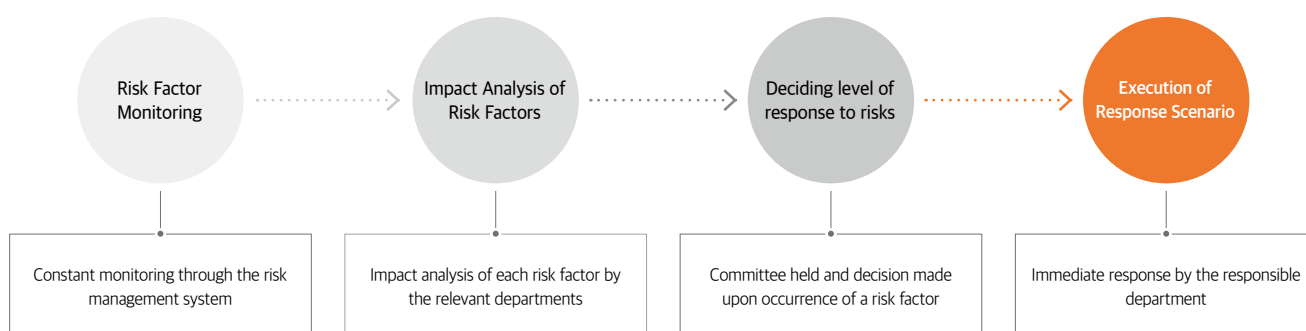
### Organizational Chart of the Financial Improvement Plan Management TF



## Non-Financial Risk Management

KEPCO is enhancing the effectiveness of non-financial risk management by establishing a risk management system for different sectors, such as climate change, disasters, public relations, and conflicts. We have produced our own risk management guidelines to categorize crises into four types (business risks, disasters, PR, and conflicts), managing risks through departments dedicated to each area. In addition, the Technology Planning Department takes responsibility for climate change risks, including the establishment of a GHG reduction roadmap, whereas the Audit & Inspection Office and Legal Affairs Office manage ethics and anti-corruption risks. The Technology Quality Department, together with the Procurement Department, manages equipment quality risks to mitigate risks in the supply chain. In addition, we have established a “Crisis Management Monitoring System” to efficiently execute crisis management tasks, thereby securing business continuity and building the capacity to quickly respond to potential major risks. In addition, KEPCO defines risk factors that may affect business activities in the long term as Emerging Risks, analyzing their impact on the business and conducting mitigation activities.

### Risk Factor Monitoring Process



### Types of Major Non-Financial Risks

Type	Major Risks	Dept. in Charge
Disaster Risks	<ul style="list-style-type: none"> <li>• Disruption to electrical power supply due to power system failure</li> <li>• Weakening of power supply system stability caused by cyberterrorism</li> <li>• Disruption to power supply caused by disaster and earthquakes</li> <li>• Risks of infection amongst employees during an epidemic</li> </ul>	Safety and Security Department
PR Risks	<ul style="list-style-type: none"> <li>• Damage to company reputation due to negative incidents related to employees</li> <li>• PR on power sector crises based on inaccurate information</li> </ul>	Corporate Communications Office
Conflict Risks	<ul style="list-style-type: none"> <li>• Civil complaints concerning transmission &amp; substation facilities</li> <li>• Disruption to power supply due to social factors</li> </ul>	Mutual Growth & Cooperation Department
Climate Crisis Risks	<ul style="list-style-type: none"> <li>• Energy saving and GHG reduction, including response to the Emission Trading Scheme</li> <li>• Changes in environmental policies, such as GHG reduction and carbon management</li> <li>• Increased costs of purchasing emission credits in related to climate change</li> </ul>	Technology Planning Department
Ethics / Anti-corruption Risks	<ul style="list-style-type: none"> <li>• Infringement of employees' human rights, such as abuse of power and workplace harassment</li> <li>• Decline in company reputation due to violation of laws and regulations</li> </ul>	Audit & Inspection Office / Legal Affairs Office
Equipment Quality Risks	<ul style="list-style-type: none"> <li>• Crisis in supply chain stability due to quality issues with equipment suppliers</li> <li>• Drop in customer satisfaction and management efficiency due to supply of low quality equipment</li> </ul>	Technology Quality Department



# APPENDIX

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## Sustainability Data

## Economic Performance

The 59th : As of Dec. 31, 2019  
The 58th : As of Dec. 31, 2018  
The 57th : As of Dec. 31, 2017

## Consolidated Statement of Financial Position

(Unit : KRW 1 Million)

	The 59th	The 58th	The 57th
<b>Assets</b>			
<b>Current assets</b>	19,483,001	19,745,068	19,141,707
Cash and cash equivalents	1,810,129	1,358,345	2,369,739
Current financial assets	1,586,509	2,359,895	1,958,357
Trade receivables and other receivables	7,701,452	7,793,592	7,928,972
Inventory assets	7,050,700	7,188,253	6,002,086
Current corporate tax assets	99,718	143,214	100,590
Current non-financial assets	1,206,377	878,888	753,992
Estimated selling assets	28,116	22,881	27,971
<b>Non-current assets</b>	178,114,791	165,503,993	162,647,208
Non-current financial assets	2,563,498	2,113,613	2,038,913
Long-term trade receivables and other receivables	2,002,297	1,819,845	1,754,797
Tangible assets	164,701,827	152,743,194	150,882,414
Invested properties	158,580	159,559	284,714
Goodwill	97,977	2,582	2,582
Intangible assets except goodwill	1,069,976	1,225,942	1,187,121
Invested shares of associates	4,251,802	4,064,820	3,837,421
Invested shares of joint ventures	1,663,029	1,813,525	1,493,275
Deferred corporate tax assets	1,047	0	0
Defined benefit assets	1,437,829	1,233,761	919,153
Non-current non-financial assets	166,929	327,152	246,818
<b>Total assets</b>	197,597,792	185,249,061	181,788,915
<b>Liabilities</b>			
<b>Current liabilities</b>	24,231,656	21,841,533	23,424,281
Trade payables and other payables	6,649,402	6,405,395	5,999,521
Current financial liabilities	8,930,903	7,981,879	9,194,552
Current corporate tax liabilities	358,277	285,420	508,402
Current non-financial liabilities	5,688,353	5,574,041	5,584,308
Current provisions	2,604,721	1,594,798	2,137,498
<b>Non-current liabilities</b>	104,476,487	92,314,766	85,399,993
Long-term trade payables and other payables	6,965,760	2,941,696	3,223,480
Non-current financial liabilities	59,115,598	53,364,911	45,980,899
Non-current non-financial liabilities	8,834,452	8,160,033	8,072,434
Employee benefits liabilities	1,929,854	1,645,069	1,483,069
Deferred corporate tax liabilities	8,564,775	9,617,309	10,415,397
Non-current provisions	19,066,048	16,585,748	16,224,714
<b>Total liabilities</b>	128,708,143	114,156,299	108,824,274
<b>Equity</b>			
<b>Equity attributable to the owner of the parent</b>	67,496,318	69,743,925	71,681,445
Paid-in capital	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
Retained earnings	49,202,133	51,519,119	53,370,558
Legal reserve	1,604,910	1,604,910	1,604,910
Free reserve	34,785,425	35,906,267	34,833,844
Unappropriated retained earnings	12,811,798	14,007,942	16,931,804
Other components of equity	14,240,607	14,171,228	14,257,309
Other capital surpluses	1,226,364	1,234,825	1,233,793
Accumulated other comprehensive income	-280,730	-358,570	-271,457
Other equity	13,294,973	13,294,973	13,294,973
<b>Non-controlling interest</b>	1,393,331	1,348,837	1,283,196
<b>Total equity</b>	68,889,649	71,092,762	72,964,641
<b>Total equity and liabilities</b>	197,597,792	185,249,061	181,788,915



## Economic Performance

The 59th : As of Dec. 31, 2019

The 58th : As of Dec. 31, 2018

The 57th : As of Dec. 31, 2017

## Consolidated Comprehensive Statements of Income

(Unit : KRW 1 Million)

	The 59th	The 58th	The 57th
<b>Earnings (Sales proceeds)</b>	59,172,890	60,627,610	59,814,862
Sales proceeds from selling goods	56,894,876	57,897,804	55,772,548
Sales proceeds from providing services	408,290	392,867	351,157
Sales proceeds from construction contracts	1,264,916	1,742,391	3,212,184
Sales proceeds from customer's contribution to construction costs	604,808	594,548	478,973
<b>Cost of sales</b>	57,779,835	58,207,721	52,098,855
Cost of sales from selling goods	55,750,468	55,976,628	48,454,036
Cost of sales from providing services	1,030,601	592,224	597,423
Cost of sales from construction contracts	998,766	1,638,869	3,047,396
<b>Gross profit</b>	1,393,055	2,419,889	7,716,007
<b>Selling and administrative expenses</b>	2,669,576	2,627,890	2,762,855
<b>Operating income (loss)</b>	-1,276,521	-208,001	4,953,152
<b>Other earnings</b>	393,165	375,346	390,145
<b>Other expenses</b>	241,913	231,330	180,055
<b>Other income (loss)</b>	-582,258	-621,124	156,627
<b>Financial income</b>	1,009,706	796,870	1,530,618
<b>Financial cost</b>	2,782,156	2,470,743	3,127,952
<b>Income (loss) in relation to associates, joint ventures and subsidiaries</b>	214,139	358,163	-108,317
Profits on valuation of invested shares of associates and joint ventures	257,673	473,269	241,537
Profits on disposition of invested shares of associates and joint ventures	70,094	5,079	609
Profits on disposition of invested shares of subsidiaries	0	73	0
Loss on valuation of invested shares of associates and joint ventures	-90,853	-110,168	-323,225
Loss on disposition of invested shares of associates and joint ventures	-2	-2,183	0
Impairment loss on invested shares of associates and joint ventures	-22,517	-7,907	-27,238
Loss on disposition of invested shares of subsidiaries	-256	0	0
<b>Net income (loss) before income tax</b>	-3,265,838	-2,000,819	3,614,218
<b>Income tax expense</b>	-1,002,303	-826,321	2,172,824
<b>Profit (loss) for the year</b>	-2,263,535	-1,174,498	1,441,394
<b>Other comprehensive income (loss)</b>	135,196	-106,925	-94,716
<b>Items that will not be reclassified subsequent to income (loss)</b>	23,794	-143,507	180,404
Re-measurements of defined benefit plans	42,315	-108,169	170,337
Shares of other comprehensive income (loss) of associates and joint ventures subjected to equity method	-6,789	-1,153	10,067
Other comprehensive income (loss)-valuation loss (gain) of financial asset at fair value	-11,732	-34,185	0
<b>Items that will be reclassified subsequent to income (loss)</b>	111,402	36,582	-275,120
Valuation loss (gain) of available-for-sale financial assets (other comprehensive income (loss) after tax)	0	0	-7,098
Cash flow hedges (other comprehensive income (loss) after tax)	19,242	211	20,868
Difference in overseas business transaction exchanges	72,816	-20,717	-134,196
Shares of other comprehensive income (loss) of associates and joint ventures subjected to equity method (other comprehensive income (loss) after tax)	19,344	57,088	-154,694
<b>Total comprehensive income</b>	-2,128,339	-1,281,423	1,346,678
<b>Net income (loss) attributable to :</b>			
Current income (loss) attributable to the owner of the parent	-2,345,517	-1,314,567	1,298,720
Current income attributable to non-controlling interest	81,982	140,069	142,674
<b>Comprehensive income (loss) attributable to :</b>			
Comprehensive income attributable to the owner of the parent	-2,239,147	-1,426,477	1,230,194
Comprehensive income attributable to non-controlling interest	110,808	145,054	116,484
<b>Earnings per share</b>			
Basic earnings (loss) per share (unit : KRW)	-3,654	-2,048	2,023
Diluted earnings (loss) per share (unit : KRW)	-3,654	-2,048	2,023

## Consolidated Statement of Changes in Equity

(Unit : KRW 1 Million)

	Equity					
	Equity attributable to the owner of the parent				Non-controlling interests	Total equity
	Paid-in capital	Earned surplus	Other equity	Total equity attributable to the owner of the parent		
<b>Jan. 01, 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 (loss)		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
Increase (decrease) due to changes in accounting policies	0	71,928	-76,851	-4,923	0	-4,923
<b>Jan. 01, 2018 (Beginning capital)</b>	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	0	0	-34,125	-34,125	-60	-34,185
Other comprehensive income that will be reclassified subsequent to income						
Valuation loss (gain) of available-for-sale financial assets						
Valuation loss (gain) of derivatives for cash flow hedges			-1,140	-1,140	1,351	211
Difference in overseas business transaction exchanges			-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
<b>Dec. 31, 2018 (Ending capital)</b>	4,053,578	51,519,119	14,171,228	69,743,925	1,348,837	71,092,762

## Economic Performance

### Consolidated Statement of Changes in Equity

(Unit : KRW 1 Million)

	Equity					
	Equity attributable to the owner of the parent				Non-controlling interests	Total equity
	Paid-in capital	Earned surplus	Other equity	Total equity attributable to the owner of the parent		
<b>Jan. 01, 2019 (Beginning capital)</b>	4,053,578	51,519,119	14,171,228	69,743,925	1,348,837	71,092,762
<b>Current net income (loss)</b>		-2,345,517		-2,345,517	81,982	-2,263,535
<b>Other comprehensive income that will not be reclassified subsequent to income</b>						
Re-measurements of defined benefit plans		36,160		36,160	6,155	42,315
Shares of other comprehensive income of associates and joint ventures subjected to equity method		-6,789		-6,789		-6,789
Other comprehensive income (loss)-valuation loss (gain) of financial asset at fair value	0	0	-11,732	-11,732	0	-11,732
<b>Other comprehensive income that will be reclassified subsequent to income</b>						
Valuation loss (gain) of derivatives for cash flow hedges			14,041	14,041	5,201	19,242
Difference in overseas business transaction exchanges			55,347	55,347	17,469	72,816
Shares of other comprehensive income of associates and joint ventures subjected to equity method			19,343	19,343	1	19,344
<b>Transaction with shareholders</b>						
Dividends paid					-99,255	-99,255
Paid-in capital increase, etc.					21,071	21,071
Transactions between consolidated entities	0	0	-8,460	-8,460	323	-8,137
Changes in consolidated entities					24,932	24,932
Dividends of hybrid securities					-13,385	-13,385
Other transactions		-840	840			
<b>Dec. 31, 2019 (Ending capital)</b>	4,053,578	49,202,133	14,240,607	67,496,318	1,393,331	68,889,649

The 59th : As of Dec. 31, 2019  
The 58th : As of Dec. 31, 2018  
The 57th : As of Dec. 31, 2017

## Consolidated Statement of Cash Flows

(Unit : KRW 1 Million)

	The 59th	The 58th	The 57th
<b>Cash flows from operating activities</b>	8,213,428	6,680,132	11,249,894
Current net income (loss)	-2,263,535	-1,174,498	1,441,394
Total adjustment to reconcile income (loss)	15,769,297	13,129,849	16,492,940
Corporate tax expenses	-1,002,303	-826,321	2,172,824
Depreciation	10,971,825	9,905,856	9,660,039
Amortization on intangible assets	156,915	118,938	113,672
Retirement allowance	725,120	360,575	391,360
Bad debt expenses	16,629	57,468	126,326
Interest expenses	2,046,811	1,868,458	1,789,552
Loss on disposition of financial assets	2,106	1	2,343
Loss on disposition of tangible assets	72,508	60,704	70,514
Loss on destruction of tangible assets	364,233	481,176	424,091
Impairment loss on tangible assets	50,034	710,162	51,067
Impairment loss on intangible assets	513,609	8,112	20
Loss on disposition of intangible assets	827	43	183
Provision for allowances	2,301,215	1,056,994	1,690,120
Foreign currency translation gain and loss	370,309	243,378	-902,878
Current gains (losses)-valuation gains of financial asset at fair value	-5,575	-8,495	0
Current gains (losses)-valuation losses of financial asset at fair value	4,513	6,616	0
Gains (losses) on derivatives	-403,765	-300,500	1,043,628
Profits on valuation of invested shares of associates and joint ventures	-166,820	-363,101	81,688
Profits on disposition of financial assets	-3,866	-1,838	-1,130
Profits on disposition of tangible assets	-43,784	-98,077	-48,316
Profits on disposition of intangible assets	-206	-12	-564
Profits on disposition of invested shares of associates and joint ventures	-70,094	-5,079	-609
Loss on disposition of invested shares of associates and joint ventures	2	2,183	0
Impairment loss on invested shares of associates and joint ventures	22,517	7,907	27,238
Profits on disposition of invested shares of subsidiaries	0	-72	0
Losses on disposition of invested shares of subsidiaries	256	0	0
Interest revenues	-268,118	-223,767	-206,143
Dividends income	-13,838	-12,777	-11,477
Impairment loss on available-for-sale financial assets	0	0	2,713
Others	128,237	81,317	16,679
<b>Changes in assets and liabilities due to operating activities</b>	-3,192,650	-3,134,434	-2,683,657
Increase (decrease) of trade receivables	95,345	246,755	-218,328
Increase (decrease) of other trade receivables	64,027	154,580	-31,807
Increase (decrease) of uncollected income	83,589	-484,718	577,838
Increase (decrease) of other securities	-116,583	-61,961	-1,271
Increase (decrease) of other current assets	-271,986	-148,509	37,576
Increase (decrease) of inventory assets	-980,216	-1,771,550	-1,373,438
Increase of other non-current assets	-611,066	-54,148	-46,079
Increase (decrease) of trade payables	-546,159	478,744	342,126
Increase (decrease) of payables	192,506	-292,912	-214,704
Increase (decrease) of accrued expenses	-454,501	-361,204	-715,305
Increase (decrease) of other payables	0	0	292
Increase (decrease) of other current liabilities	373,403	250,112	-126,323
Increase (decrease) of other non-current liabilities	650,468	287,488	763,958
Decrease of invested shares of associates and joint ventures	215,612	175,175	106,983
Increase (decrease) of provisions	-1,473,461	-1,132,969	-1,390,606
Payment of retiring benefit	-65,242	-89,253	-69,489
Paid-in plan assets	-348,386	-330,064	-325,080

## Economic Performance

### Consolidated Statement of Cash Flows

(Unit : KRW 1 Million)

	The 59th	The 58th	The 57th
Reception of dividends	24,255	11,182	10,590
Payment of interest	-2,027,850	-1,895,898	-1,886,303
Reception of interest	186,122	194,221	173,226
Payment of corporate tax	-282,211	-450,290	-2,298,296
<b>Cash flows from investing activities</b>	<b>-13,499,358</b>	<b>-13,014,301</b>	<b>-12,606,699</b>
Disposition of invested assets of associates	0	1,617	10,542
Acquisition of invested assets of associates	-107,821	-319,425	-206,753
Disposition of tangible assets	522,742	234,138	85,801
Acquisition of tangible assets	-14,000,359	-12,266,870	-12,535,958
Disposition of intangibles assets	7,702	13	1,072
Acquisition of intangible assets	-229,426	-110,587	-143,887
Disposition of financial assets	2,783,474	2,419,259	5,296,680
Acquisition of financial assets	-2,165,342	-2,841,651	-4,786,717
Increase of loans	-335,773	-188,675	-218,698
Decrease of loans	292,745	100,010	120,967
Increase of guarantee money	-280,637	-299,564	-397,078
Decrease of guarantee money	275,314	259,930	110,383
Disposition of assets held-for-sale	30,662	18,716	0
Reception of government subsidies	21,705	30,416	55,533
Cash outflows due to merger	-154,311	0	0
Net cash flows (in and out) due to changes of the scope of consolidation	-2,917	2,141	0
Net cash flows (in and out) due to other investing activities	-157,116	-53,769	1,414
<b>Cash flows from financing activities</b>	<b>5,775,407</b>	<b>5,301,678</b>	<b>745,594</b>
Net borrowing short-term loans (repayment)	188,957	-183,660	370,328
Bonds and borrowing long-term loans	13,221,407	14,251,586	10,098,067
Repayment of bonds and long-term loans	-7,068,290	-8,095,590	-8,198,882
Repayment of capital lease liabilities	-573,437	-134,454	-122,919
Net settlement of derivatives	102,146	60,907	33,434
Net cash inflows from consolidated capital transactions	17,365	20,113	23,582
Cash outflows due to repayment of hybrid securities	0	0	-99,750
Dividends paid for hybrid securities	-13,385	-17,658	-15,856
Dividends paid	-99,356	-599,391	-1,340,387
Net cash outflows from other financing activities	0	-175	-2,023
<b>Net increase (decrease) of cash and cash equivalents before reflecting the effects of changes in foreign exchange rates</b>	<b>489,477</b>	<b>-1,032,491</b>	<b>-611,211</b>
<b>Effects of changes in foreign exchange rates on cash and cash equivalent inflows</b>	<b>-37,693</b>	<b>21,097</b>	<b>-70,403</b>
<b>Net increase (decrease) of cash and cash equivalents</b>	<b>451,784</b>	<b>-1,011,394</b>	<b>-681,614</b>
<b>Beginning cash and cash equivalents</b>	<b>1,358,345</b>	<b>2,369,739</b>	<b>3,051,353</b>
<b>Ending cash and cash equivalents</b>	<b>1,810,129</b>	<b>1,358,345</b>	<b>2,369,739</b>

## Creating Economic Values

(Separate Standard)

Classification	Unit	2017	2018	2019
Sales Volume	GWh	507,746	526,149	520,499
Sales Amount	KRW 100 Million	599,658	602,715	589,332
Operating Income (Loss)	KRW 100 Million	15,536	(21,933)	(28,483)
Current Net Income (Loss)	KRW 100 Million	15,068	(10,952)	(25,950)

## Distributing Economic Values

(Separate Standard)

Classification		Unit	2017	2018	2019
Shareholders	Dividends	KRW 100 Million	5,072	0	0
Creditors	Interest costs	KRW 100 Million	7,380	7,083	7,771
Employees	<b>Total</b>	<b>KRW 100 Million</b>	<b>21,529</b>	<b>20,032</b>	<b>20,886</b>
	Salaries	KRW 100 Million	18,051	18,336	18,955
	Retirement benefits	KRW 100 Million	1,787	1,638	1,128
	Welfare benefits	KRW 100 Million	3,033	2,335	803
Partners	<b>Total</b>	<b>KRW 100 Million</b>	<b>88,310</b>	<b>76,591</b>	<b>70,906</b>
	Purchase	KRW 100 Million	35,160	27,275	23,818
	Construction	KRW 100 Million	41,152	39,334	36,825
	Service	KRW 100 Million	11,998	9,982	10,263
Local communities	<b>Total</b>	<b>KRW 100 Million</b>	<b>565</b>	<b>454</b>	<b>483</b>
	Taxes and dues	KRW 100 Million	281	296	361
	Contributions	KRW 100 Million	284	158	122

## R&amp;D

(Separate Standard)

Classification	Unit	2017	2018	2019
R&D staff	Persons	605	604	689
R&D costs	KRW 1 Million	433,994	399,377	363,028
Investment/revenue	%	0.72	0.66	0.62

## Corporate Value

(Based on the Closing Price of the Year)

Classification	Unit	2017	2018	2019
Stock price	KRW	38,150	33,100	27,800
Market capitalization	KRW 100 Million	244,909	212,490	178,466
Credit rating	Moody's	Aa2 stable	Aa2 stable	Aa2 stable



## Environmental Performance

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

Classification	Unit	2017	2018	2019
Allocation	10,000 tCO <sub>2</sub> eq	91	123 <sup>1)</sup>	47
Emissions <sup>2)</sup>	10,000 tCO <sub>2</sub> eq	147.7	136.6	110.1

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

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

2) 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.

### Greenhouse Gas Emissions and Intensity

	Classification	Unit	2017	2018	2019
Scope 1 <sup>1)</sup>	Emissions	10,000 tCO <sub>2</sub> eq	129	117	91
	Intensity	Ton / KRW 100 Million	2.15	1.94	1.54
Scope 2 <sup>2)</sup>	Emissions	10,000 tCO <sub>2</sub> eq	18	19	19
	Intensity	Ton / KRW 100 Million	0.30	0.32	0.33
Scope 3 <sup>3)</sup>	Fuel production process	tCO <sub>2</sub> eq	47,984,469	49,159,031	45,439,968
	Fuel combustion to generate power	tCO <sub>2</sub> eq	228,357,827	240,309,224	219,614,860
	Discarding generated waste	tCO <sub>2</sub> eq	1,099	1,191	765
	Domestic and overseas business trips	tCO <sub>2</sub> eq	14,333	10,829	9,104
	Commute	tCO <sub>2</sub> eq	464	477	483

\* Calculation range : Domestic business sites

1) Scope 1 : Direct emissions generated from emission sources directly owned and controlled by the business operators

2) Scope 2 : Indirect emissions generated from the production of electricity, steam, etc.

3) Scope 3 : External emissions from power generator fuel production, domestic and international business trips, product use, etc.

### SF<sub>6</sub> Emissions

Classification	Unit	2017	2018	2019
SF <sub>6</sub> emissions	tCO <sub>2</sub> eq	1,100,497	966,586	705,502

### Energy Consumption

Classification	Unit	2017	2018	2019
Energy consumption	TJ	6,569	6,978	6,936

## Total Amount of Materials Used

Classification	Unit	2017	2018	2019
Concrete	Ton	224,644	218,245	217,773
Metal	Ton	17,130	16,679	16,118
Ceramics	Ton	10	5	4
Power cables	Ton	15,464	14,187	14,148
Others	Ton	5,594	4,529	4,509
<b>Total</b>	<b>Ton</b>	<b>262,842</b>	<b>253,645</b>	<b>252,552</b>

## Water Use

Classification	Unit	2017	2018	2019
Amount of water used*	m <sup>3</sup>	2,154,314	2,036,740	3,765,707

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

## Waste Generation

Classification	Unit	2017	2018	2019		
		Waste	Waste	Waste	Recycled Waste	Recycling Rate
Concrete	Ton	18,867	25,533	22,560	17,664	78.3%
Metal	Ton	6,617	7,451	6,662	6,131	92.0%
Ceramics	Ton	7	4	4	2	50.0%
Power cables	Ton	2,343	2,516	2,510	2,209	88.0%
Others	Ton	876	726	719	505	70.2%
<b>Total</b>	<b>Ton</b>	<b>28,710</b>	<b>36,230</b>	<b>32,455</b>	<b>26,511</b>	<b>81.7%</b>

## Hazardous Waste

Classification	Unit	2017	2018	2019
PCBs	Ton	18,541	15,835	9,733

## Air Pollutant Emissions\*

Classification	Unit	2017	2018	2019
SOx	Ton	58,961	50,261	36,482
NOx	Ton	75,469	60,904	46,468
Fine particulates	Ton	2,879	2,725	2,238

\* Calculation range : Korea South-East Power Co., Ltd., Korea East-West Power Co., Ltd., Korea Western Power Co., Ltd., Korea Midland Power Co., Ltd., Korea Southern Power Co., Ltd.

## Environment

### Amount and Percentage of Green Product Purchases

Classification		Unit	2017	2018	2019
Total*	Purchase amount	KRW 1 Million	26,703	22,817	27,459
Green product	Purchase amount	KRW 1 Million	25,093	21,064	26,279
	Percentage	%	94.0	92.3	95.7

\* Purchase performance of items that can be purchased as green products

### Eco-Friendly Business-Purpose Vehicles

Classification		Unit	2017	2018	2019
Cars for business purposes		No. of Cars	2,151	2,026	2,013
Eco-friendly cars (Total)		No. of Cars	1,936	1,812	1,808
Compact cars		No. of Cars	1,130	974	963
Hybrid cars		No. of Cars	142	151	160
EVs		No. of Cars	664	687	685
Percentage of eco-friendly cars		%	90.0	89.4	89.8

## Social Performance

### Workforce

Classification		Unit	2017	2018	2019
Total no. of employees		Persons	22,196	22,595	23,137
By employment type	Regular employees	Persons	21,627	22,272	22,979
	Employees under unlimited contracts	Persons	0	0	0
	Irregular employees	Persons	569	323	158
By gender	Male	Persons	17,918	18,086	18,291
	Female	Persons	4,278	4,509	4,846
	Female managers*	Persons	286	351	409
	Female executives	Persons	0	1	1
By age	Aged under 30	Persons	4,203	4,920	5,509
	Aged 30–40	Persons	4,631	4,580	4,662
	Aged over 40	Persons	13,362	13,095	12,966
Newly hired		Persons	1,574	1,786	1,773
Retirees		Persons	802	927	877
Total turnover rate		%	3.7	4.2	3.8
No. of those who decided to quit (Turnover rate)		Persons (%)	127 (0.6%)	149 (0.7%)	123 (0.5%)

\* Managers : 3rd level employees and above

### Employee Diversity

Classification		Unit	2017	2018	2019
Disabled		Persons	655	735	710
		%	3.0	3.3	3.1
Locally recruited personnel		Persons	927	1,091	1,102
		%	58.9	61.1	62.2
Persons of national merit		Persons	93	91	87
		%	5.9	5.1	4.9

### Starting Salary of New Employees

Classification	Unit	2017	2018	2019
Ratio of starting wage* of new employee to minimum wage	%	210	200	185

\* College graduates, office workers, without work experience

## Social Performance

### Employee Training

Classification	Unit	2017	2018	2019
Total trainees (Overlapped accumulation)	Persons	26,050	26,858	28,875
Training hours per person	Hours / person	86.4	94.7	95.9
Training expenditure per person	KRW 1 Million / person	1.2	1.0	1.0

### Maternity Protection System Operation Performance

Classification	Unit	2017	2018	2019
Parental leave before or after childbirth	Persons	114	107	110
Childcare leave (Male)	Persons	328 (36)	392 (55)	427 (73)
Infertility leave	Persons	12	19	17
Reduced working hours for childcare	Persons	10	285	562
Rate of returning to work after parental leave (Male)	%	90.9 / 98.2	96.2 / 100	100 / 99.3
Rate of continuing work for more than one year after parental leave	%	97.0	99.0	98.9

### Communication

Classification	Unit	2017	2018	2019
Employee satisfaction	Point	76.4	75.0	74.8

\* Converted from a 5-point standard to a percentage

### Labor Union Membership

Classification	Unit	2017	2018	2019
Union members <sup>1)</sup>	Persons	15,876	16,592	17,491
Labor union enrollment rate <sup>2)</sup>	%	71.8	74.5	74.5

1) Employees at paygrade 4 or lower, excluding personnel, labor, audit managers, secretaries, the president's personal driver, and police officers

2) Matters discussed with the labor union apply to all employees (100%)

## Workplace Safety

	Classification	Unit	2017	2018	2019
Employees	Accident rate <sup>1)</sup>	%	0.018	0.022	0.026
	Fatality rate per 10,000 persons <sup>2)</sup>	0/000	0	0	0
	LTIFR (Lost Time Injuries Frequency Rate) <sup>3)</sup>	Case / 1 million Work Hours	0.08	0.09	0.11
Partners	Accident rate	%	0.28	0.35	0.32
	Fatality rate per 10,000 persons	0/000	1.80	3.23	0.96
	LTIFR (Lost Time Injuries Frequency Rate)	Case / 1 million Work Hours	1.19	1.45	1.33

1) Accident rate (%) = [(No. of deaths + No. of the injured)/No. of regular employees] × 100

2) Fatality rate per 10,000 Persons (0/000) = (No. of deaths/No. of regular employees) × 10,000

3) LTIFR (Lost-Time Injuries Frequency Rate) = No. of lost-time cases/Annual working hours × 1,000,000

## 2019 Status of Suppliers\*

Classification	Unit	No. of Registered Products	No. of Registered Companies
Transmission & Transformation	Product & Company	131	472
Distribution	Product & Company	77	866
Information and Communications	Product & Company	4	9
Total	Product & Company	212	1,347

\* After reviewing their qualities and processes, we manage and operate the registration of companies that produce and supply materials and equipment that have major impacts on power quality and the stability of the power supply

## Support for Mutually Beneficial Cooperation

Classification	Unit	2017	2018	2019
Amount spent on purchasing SME products	KRW 100 Million	63,672	56,147	54,066
Cooperative R&D	KRW 100 Million	42.8	44.5	40.2
Quality certification	KRW 100 Million	0.5	0.1	0.1
Marketing support	KRW 100 Million	19.8	24.1	23.6
Management support	KRW 100 Million	41.6	47.3	37.4
Heavy electric machine technology development fund (loan support)	KRW 100 Million	31.8	66.0	61.6
Total	KRW 100 Million	63,808	56,330	54,229

## Local Community Contributions

Classification	Unit	2017	2018	2019
Contributions	KRW 100 Million	284	158	122
Cash contributions	KRW 100 Million	229	114	97
Contributions in kind	KRW 100 Million	55	44	25



# GRI Standards Index

## Universal Standards (GRI 100)

Classification	Disclosure	Indicators	Page
Organizational Profile	102-1	Name of the organization	10
	102-2	Activities, brands, products, and services	10-11
	102-3	Location of headquarters	10
	102-4	Location of operations	10
	102-5	Ownership and legal form	10
	102-6	Markets served	36-37
	102-7	Scale of the organization	10-11, 95-101
	102-8	Information on employees and other workers	105
	102-9	Supply chain	70-71
	102-10	Significant changes to the organization and its supply chain	70-71
	102-11	Precautionary Principle or approach	92-93
	102-12	External initiatives	22-23
	102-13	Membership of associations	117-118
Strategy	102-14	Statement from senior decision-maker	4-5
	102-15	Key impacts, risks, and opportunities	4-5
Ethics and Integrity	102-16	Values, principles, standards, and norms of behavior	87
	102-17	Mechanisms for advice and concerns about ethics	86-89
Governance	102-18	Governance structure	83-85
	102-22	Composition of the highest governance body and its committees	83-85
	102-23	Chair of the highest governance body	83-85
	102-24	Nominating and selecting the highest governance body	83-85
	102-25	Conflicts of interest	83-85
	102-29	Identifying and managing economic, environmental, and social impacts	83-85
	102-35	Remuneration policies	84
	102-36	Process for determining remuneration	84
Stakeholder Engagement	102-38	Annual total compensation ratio	84
	102-40	List of stakeholder groups	24-25
	102-41	Collective bargaining agreements	106
	102-42	Identifying and selecting stakeholders	24-25
	102-43	Approach to stakeholder engagement	24-25
Reporting Practice	102-44	Key topics and concerns raised	24-25, 48-49, 67
	102-45	Entities included in the consolidated financial statements	11-13
	102-46	Defining report content and topic Boundaries	26-27
	102-47	List of material topics	26-27
	102-48	Restatements of information	Reported in each page
	102-49	Changes in reporting	2
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	102-53	Contact point for questions regarding the report	Contact Information
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	103-1	Explanation of the material topic and its Boundary	26-27
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	103-3	Evaluation of the management approach	22-23, 26-27

## Topic-specific Standards

### Economic Performance (GRI 200)

Classification	Disclosure	Indicators	Page
Economic Performance	201-1	Direct economic value generated and distributed	101
	201-2	Financial implications and other risks and opportunities due to climate change	51-55
Market Presence	202-1	Ratios of standard entry level wage by gender compared to local minimum wage	105
Indirect Economic Impacts	203-1	Infrastructure investments and services supported	78-81
	203-2	Significant indirect economic impacts	66-67, 78-79
Anti-corruption	205-1	Operations assessed for risks related to corruption	88-89
	205-2	Communication and training about anti-corruption policies and procedures	86-87
	205-3	Confirmed incidents of corruption and actions taken	88-89
Anti-competitive Behavior	206-1	Legal actions for anti-competitive behavior, anti-trust, and monopoly practices	70-71

### Environmental Performance (GRI 300)

Classification	Disclosure	Indicators	Page
Materials	301-1	Materials used by weight or volume	103
Energy	302-1	Energy consumption within the organization	102
	302-4	Reduction of energy consumption	59
	302-5	Reductions in energy requirements of products and services	59
Water	303-1	Interactions with water as a shared resource	60
	303-2	Management of water discharge-related impacts	60
	303-5	Water consumption	60, 103
Biodiversity	304-1	Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas	61
	304-2	Significant impacts of activities, products, and services on biodiversity	61
	304-3	Habitats protected or restored	61
Emissions	305-1	Direct (Scope 1) GHG emissions	55, 102
	305-2	Energy indirect (Scope 2) GHG emissions	55, 102
	305-3	Other indirect (Scope 3) GHG emissions	55, 102
	305-4	GHG emissions intensity	55, 102
	305-5	Reduction of GHG emissions	55, 102
	305-6	Emissions of ozone-depleting substances (ODS)	102-103
	305-7	Nitrogen oxides (NOx), sulfur oxides (SOx), and other significant air emissions	61, 102-103
Effluents and Waste	306-2	Waste by type and disposal method	60
	306-3	Significant spills	No significant spills during reporting period
	306-4	Transport of hazardous waste	60
Environmental Compliance	307-1	Non-compliance with environmental laws and regulations	No such cases
Supplier Environmental Assessment	308-1	New suppliers that were screened using environmental criteria	70-71
	308-2	Negative environmental impacts in the supply chain and actions taken	70-71

## Topic-specific Standards

### Social Performance (GRI 400)

Classification	Disclosure	Indicators	Page
Employment	401-1	New employee hires and employee turnover	105
	401-3	Parental leave	106
Occupational Health and Safety	403-1	Occupational health and safety management system	72-73
	403-2	Hazard identification, risk assessment, and incident investigation	72-73
	403-3	Occupational health services	72-73
	403-4	Worker participation, consultation, and communication on occupational health and safety	72-73
	403-5	Worker training on occupational health and safety	72-73
	403-6	Promotion of worker health	72-73, 76
	403-7	Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	72-73
	403-8	Workers covered by an occupational health and safety management system	72-73
	403-9	Work-related injuries	107
	403-10	Work-related ill health	107
Training and Education	404-1	Average hours of training per year per employee	74-75, 106
	404-2	Programs for upgrading employee skills and transition assistance programs	74-75
Diversity and Equal Opportunity	405-1	Diversity of governance bodies and employees	83, 105
	405-2	Ratio of basic salary and remuneration of women to men	Both men and women are paid the same basic salaries.
Non-discrimination	406-1	Incidents of discrimination and corrective actions taken	No incidents of discrimination
Child Labor	408-1	Operations and suppliers at significant risk for incidents of child labor	No such cases
Forced or Compulsory Labor	409-1	Operations and suppliers at significant risk for incidents of forced or compulsory labor	90
Human Rights Assessment	412-1	Operations that have been subject to human rights reviews or impact assessments	90
	412-2	Employee training on human rights policies or procedures	90-91
	412-3	Significant investment agreements and contracts that include human rights clauses or that underwent human rights screening	70-71, 90
Local Communities	413-1	Operations with local community engagement, impact assessments, and development programs	78-81
	413-2	Operations with significant actual and potential negative impacts on local communities	78-81
Supplier Social Assessment	414-1	New suppliers that were screened using social criteria	70-71
	414-2	Negative social impacts in the supply chain and actions taken	70-73, 90
Customer Health and Safety	416-1	Assessment of the health and safety impacts of product and service categories	72-73
	416-2	Incidents of non-compliance concerning the health and safety impacts of products and services	72-73
Marketing and Labeling	417-2	Incidents of non-compliance concerning product and service information and labeling	No such incidents
	417-3	Incidents of non-compliance concerning marketing communications	No such incidents
Customer Privacy	418-1	Substantiated complaints concerning breaches of customer privacy and losses of customer data	No such incidents
Socioeconomic Compliance	419-1	Non-compliance with laws and regulations in the social and economic area	No such incidents

## Electric Utilities Sector Disclosures

Classification	Disclosure	Indicators	Page
Organizational Profile (cont.)	EU 1	Installed capacity, broken down by primary energy source and by regulatory regime	11p, Statistics of Electric Power in KOREA (2019) 46–47p
	EU 2	Net energy output broken down by primary energy source and by regulatory regime	Statistics of Electric Power in KOREA (2019) 5p
	EU 3	Number of residential, industrial, institutional and commercial customer accounts	Statistics of Electric Power in KOREA (2019) 122p
	EU 4	Length of above and underground transmission and distribution lines by regulatory regime	Statistics of Electric Power in KOREA (2019) 7p, 96–99p
	EU 5	Allocation of CO <sub>2</sub> e emissions allowances or equivalent, broken down by carbon trading framework	102
Availability and Reliability	EU 10	Planned capacity against projected electricity demand over the Long term, broken down by energy source and regulatory regime	Monthly Report on Key Electric Power Statistics (No. 500) 9p
Research and Development	DMA	Research and development activity and expenditure aimed at providing reliable electricity and promoting sustainable development (former EU8)	40–41
System Efficiency	EU 11	Average generation efficiency of thermal plants by energy source and by regulatory regime	Statistics of Electric Power in KOREA (2019) 58–59p
	EU 12	Transmission and distribution losses as a percentage of total Energy	103, Statistics of Electric Power in KOREA (2019) 120–121p
Biodiversity	EU 13	Biodiversity of offset habitats compared to the biodiversity of the affected areas	61
Employment	DMA	Programs and processes to ensure the availability of a skilled workforce (former EU14)	74–75
	DMA	Policies and requirements regarding health and safety of employees and employees of contractors and subcontractors (former EU16)	72–73
	EU 18	Percentage of contractor and subcontractor employees that have undergone relevant health and safety training	73
Local Communities	DMA	Stakeholder participation in decision making processes related to energy planning and infrastructure development (former EU19)	22–23
Disaster/Emergency Planning and Response	DMA	Contingency planning measures, disaster/emergency management plan and training programs, and recovery/restoration plans (former EU21)	46–47
Customer Health and Safety	EU 25	Number of injuries and fatalities to the public involving company assets including legal judgments, settlements and pending legal cases of diseases	106
Access	DMA	Programs, including those in partnership with government, to improve or maintain access to electricity and customer support services (former EU23)	48–49
	EU 29	Average power outage duration	44
Provision of Information	DMA	Practices to address language, cultural, low literacy and disability related barriers to access and safely use electricity and customer support services (former EU24)	78–79

## TCFD Index

The FSB (Financial Stability Board) established the TCFD (Task-force on Climate-related Financial Disclosures) in 2015. TCFD developed an international framework for disclosing information related to climate change, and information disclosed based on the recommendations of the TCFD is used by stakeholders and investors for making decisions.

TCFD recommendation	Response of KEPCO	CDP Index
Governance : Disclose the organization's governance around climate-related risks and opportunities.		
a) Describe the board's oversight of climate-related risks and opportunities.	Sustainability Report 2020 p.52	CDP_C1.1b
b) Describe management's role in assessing and managing climate-related risks and opportunities.		CDP_C1.2, C1.2a
Strategy : Disclose the actual and potential impacts of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning where such information is material.		
a) Describe the climate-related risks and opportunities the organization has identified over the short, medium, and long term.	Sustainability Report 2020 p.53	CDP_C2.1, C2.2b, C2.3, C2.3a, C2.4, C2.4a
b) Describe the impact of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning.		CDP_C2.5, C2.6, C3.1, C3.1c
c) Describe the resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.		CDP_C3.1a, C3.1d
Risk Management : Disclose how the organization identifies, assesses, and manages climate-related risks.		
a) Describe the organization's processes for identifying and assessing climate-related risks.	Sustainability Report 2020 p.54	CDP_C2.2b, C2.2c
b) Describe the organization's processes for managing climate-related risks.		CDP_C2.2c, C2.2d
c) Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management.		CDP_C2.2
Metrics and Targets : Disclose the metrics and targets used to assess and manage relevant climate-related risks and opportunities where such information is material.		
a) Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process.	Sustainability Report 2020 p.55	CDP_C4.2
b) Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks.		CDP_C6.1, C6.3, C6.5
c) Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets.		CDP_C4.1, C4.1a, C4.1b

# SASB Index

The SASB (Sustainability Accounting Standards Board) Standard is an industry-specific sustainability accounting standard established by the US Sustainability Accounting Standards Boards in 2011. For the first time in the industry, the standard categorized sustainability information with a high level of importance into 77 industries in 11 areas.

Classification	Code	Category	Accounting metric	Unit of measure	Response of KEPCO
Greenhouse Gas Emissions	IF-EU-110a.1	Quantitative	(1) Gross global Scope 1 emissions, percentage covered under (2) emissions-limiting regulations, and (3) emissions-reporting regulations	Ton, %	(1) 909,965, (2) 100%, (3) 100% * Scope 1 calculation range : Domestic business sites
	IF-EU-110a.2	Quantitative	Greenhouse gas (GHG) emissions associated with power deliveries	Ton	219614,860
	IF-EU-110a.3	Discussion and Analysis	Discussion of long-term and short-term strategy or plan to manage Scope 1 emissions, emissions reduction targets, and an analysis of performance against those targets	n/a	Sustainability Report 2020 p. 52 ~ 55
	IF-EU-110a.4	Quantitative	(1) Number of customers served in markets subject to renewable portfolio standards (RPS) and (2) percentage fulfillment of RPS target by market	%	KEPCO's six power generation subsidiaries are responsible for supplying the RPS system. As of 2019, the supply obligation ratio was 6%, with a mandatory supply target of 21,642 GWh to be achieved through the construction of renewable energy generation facilities and the purchase of external supply certificates (REC).
Air Quality	IF-EU-120a.1	Quantitative	1) NOx, (2) SOx, (3) particulate matter (PM10)	Ton	Sustainability Report 2020 p.103
Water Management	IF-EU-140a.1	Quantitative	Total water used	m <sup>3</sup>	3,765,707
	IF-EU-140a.2	Quantitative	Number of incidents of non-compliance associated with water quantity and/or quality permits, standards, and regulations	Number	n/a
	IF-EU-140a.3	Discussion and Analysis	Description of water management risks and discussion of strategies and practices to mitigate those risks	-	Sustainability Report 2020 p.60
Coal Ash Management	IF-EU-150a.1	Quantitative	Amount of coal combustion residuals (CCR) generated, percentage recycled	Ton, %	8,572,517 (94%) * It is based on the amount of coal ash generation of the KEPCO's power generation subsidiaries, KOEN (Korea South-East Power Co.), EWP (Korea East-West Power Co.), KOWEPO (Korea Western Power Co.), KOMIPO (Korea Midland Power Co.), and KOSPO (Korea Southern Power Co.).
	IF-EU-150a.2	Quantitative	Total number of coal combustion residual (CCR) impoundments, broken down by hazard potential classification and structural integrity assessment	Number	Not aggregated according to the criteria recommended by SASB
Energy Affordability	IF-EU-240a.1	Quantitative	Average retail electric rate for (1) residential, (2) commercial, and (3) industrial customers	Won (KRW)	(1) 104.95, (2) 130.33, (3) 106.56
	IF-EU-240a.2	Quantitative	Typical monthly electric bill for residential customers for (1) 500 kWh and (2) 1,000 kWh of electricity delivered per month	Won (KRW)	(1) Residential Service (Low-voltage) : 101,468, Residential Service (High-voltage) : 80,743 (2) Residential Service (Low-voltage) : 214,995, Residential Service (High-voltage) : 202,547
	IF-EU-240a.3	Quantitative	Number of residential customer electric disconnections for non-payment, percentage reconnected within 30 days	Number, %	KEPCO installs current limiters instead of cutting power for residential customers who are subject to the termination of their electricity use contract due to being two months or more in arrears on their electricity bills. This limits their electricity supply to 660W, the minimum amount necessary for daily life.
	IF-EU-240a.4	Discussion and Analysis	Discussion of impact of external factors on customer affordability of electricity, including the economic conditions of the service territory	-	According to the Electric Utility Act, electricity sellers cannot refuse to supply electricity without justifiable grounds prescribed by presidential decree, and KEPCO does not infringe on customers' energy access due to external factors.
Workforce Health & Safety	IF-EU-320a.1	Quantitative	(1) Total Recordable Incident Rate (TRIR), (2) fatality rate, and (3) Near Miss Frequency Rate (NMFR)	%	Sustainability Report 2020 p.107 * KEPCO discloses information related to the workplace safety of employees and suppliers based on indicators such as accident rate, fatality rate, and LTIFR (Lost Time Injury Frequency Rate).
End-Use Efficiency & Demand	IF-EU-420a.1	Quantitative	Percentage of electric utility revenues from rate structures that (1) are decoupled and (2) contain a Lost Revenue Adjustment Mechanism (LRAM)	%	n/a
	IF-EU-420a.2	Quantitative	Percentage of electric load served by smart grid technology	%	As of 2019, KEPCO had completed the establishment of AMI (Advanced Metering Infrastructure) systems for 8.84 million units, accounting for about 38% of all customers.
	IF-EU-420a.3	Quantitative	Customer electricity savings from efficiency measures, by market	Megawatt hours (MWh)	KEPCO is implementing the mandatory EERS (Energy Efficiency Resource Standards) for energy provided through the supply of high-efficiency equipment, and has reduced energy consumption by a total of 1,019 GWh as of 2019.
Nuclear Safety & Emergency Management	IF-EU-540a.1	Quantitative	Total number of nuclear power units	Number	As of 2019, 24 nuclear power plants were being operated by Korea Hydro & Nuclear Power, a power generation subsidiary of KEPCO, with a total capacity of 23,250 MW - accounting for about 26% of total domestic power generation.
	IF-EU-540a.2	Discussion and Analysis	Description of efforts to manage nuclear safety and emergency preparedness	-	As of 2019, Korea Hydro & Nuclear Power's sudden shut-down rate for nuclear power plants, which is an indicator of the stability and operation management level, was only 0.08, indicating high reliability. Efforts to improve safety and plans to respond to serious accidents can be found on the website of the Korea Hydro & Nuclear Power Co. ( <a href="https://npp.khnp.co.kr">https://npp.khnp.co.kr</a> ).
Grid Resiliency	IF-EU-550a.1	Quantitative	Number of incidents of non-compliance with physical and/or cybersecurity standards or regulations	Number	n/a
	IF-EU-550a.2	Quantitative	(1) System Average Interruption Duration Index (SAIDI), (2) System Average Interruption Frequency Index (SAIFI)	Minutes / Number	(1) 8.61 (2) 0.113



# Independent Assurance Statement

## To the Management and Stakeholders of KEPCO,

The Korea Sustainability Investing Forum (hereinafter “KoSIF”) was commissioned by KEPCO to provide an independent assurance statement for its ‘Sustainability Report 2020’ (hereinafter “the report”) which is integrated with its Annual Report, and hereby presents the following third-party assurance statement.

## Independence and Responsibility

Other than providing this independent assurance statement, KoSIF does not hold any interest in KEPCO that may affect the independence and fairness of the verification. Although this assurance statement is written for the management and stakeholders of KEPCO, KoSIF expressly disclaims any liability or co-responsibility for any decision a person or an entity may make based on this Assurance Statement.

## Assurance Criteria and Principles

The verification procedure was in accordance with the below.

- Type I, Moderate Level used in AA1000AS (2008),
- The three accountability principles (inclusivity, materiality, responsiveness) in AA1000APS (2008), and
- Core option of GRI Standard Guideline.

## Assurance Process and Limitations

After KoSIF carried out an initial review based on publicly available IR materials and supporting data obtained directly from the company, an on-site audit was implemented and the scope of it was limited to the headquarters of KEPCO. KoSIF verified the basis of all claims related to the environmental, social, and economic data listed in the report by checking their consistency and conducting sampling inspections. KoSIF also carried out verification through face-to-face interviews with the personnel in charge of writing the report. KoSIF confirmed that the financial data were appropriately drawn and retrieved from financial statements verified in the Data Analysis, Retrieval and Transfer System (<http://dart.fss.or.kr/>), and also that GHG data was replaced by the ‘GHG Verification.’ Data and information stretching outside the reporting scope of the Company (e.g. suppliers) were excluded from the audit. The result of this assurance may differ if additional assessment is made.

## Assurance Results

KoSIF could not find anything indicating that the report was not prepared in accordance with the Core Option of the GRI Standard Guidelines. Also, nothing has come to KoSIF’s attention that causes KoSIF to believe the information and data provided were misplaced or misleading..

KoSIF’s opinion regarding the principles of AA1000 (2008) is as follows

**• Inclusivity**

KEPCO specifically defines nations/customers, shareholders/investors, governments/national assembly/media, customer center/metermen, business partners, employees/electrical union, subsidiaries/invested companies and local communities as major stakeholders. And, through customized communication channels, the company gathers stakeholders' opinions from each group. Also, the company determines stakeholder interests and expectations regarding sustainability management by conducting special questionnaire surveys for the publishing process. KoSIF confirmed that there is no any key stakeholder group that has been omitted.

**• Materiality**

KEPCO reflected industry issues, such as global sustainability guidelines and sustainability management trends in the power industry, and organized an issue pool of 39 sustainability topics by combining them with the internal sustainability-related issues of KEPCO. By measuring stakeholder interest (analyzing global guidelines and domestic media, conducting external stakeholder surveys) and evaluating business impact (reflecting industry issues and internal issues, employee surveys), the company's material issues were prioritized. Then, 10 main topics were selected through an internal review at KEPCO according to priority. KoSIF confirmed that KEPCO selected material issues and major topics as its in accordance with the GRI materiality assessment principles GRI and process, and could not find any material issue that has been omitted from the report.

**• Responsiveness**

KEPCO has reported activities and accomplishments regarding the selected 10 major topics through a materiality assessment. KoSIF could not find any evidence that the company's countermeasures to critical stakeholder issues were inappropriately recorded in the report. In addition, KoSIF also confirmed that KEPCO is monitoring and managing not only major topics but also some issues that may have a potential impact on the sustainability activities of KEPCO.

**Recommendations**

KoSIF recommends the following to advance sustainability management at KEPCO.

The world has been making efforts to limit the increase of global temperatures to less than 1.5°C to prevent a climate crisis. The goal is to reduce the world's CO<sub>2</sub> emissions to 45% by 2030 compared to 2010, and to achieve net-zero emissions by 2050, which means 'carbon neutral.' KEPCO has been facing this challenge as part of the power industry, which is directly involved in and affected by the climate crisis. It has proved that three of the 10 major topics which were selected in the materiality assessment are response issues for the climate crisis. In this regard, It seems necessary to approach global trends in terms of risk management and future growth engines in relation to climate crisis issues. KoSIF recommends increasing sustainability by collecting opinions from investors and civil society through building constant communication channels.

September 8th, 2020

# Greenhouse Gas Assurance Statement

## Introduction

Korea Electric Power Corporation 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 2019 as below.

## Scope

- Organizational boundary : The whole business under control of the organization
- Verification object workplaces : Naju Headquarter and every domestic workplace
- Reporting period : Calendar year of 2019
- 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	Scope 1	Scope 2	Total (tCO <sub>2</sub> -eq)
2019	909,965	191,586	<b>1,101,428</b>

Energy Consumption	Fuel	Electricity	Steam	Total (TJ)
2019	3,080	3,959	24	<b>6,936</b>

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

2) 1tCO<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>.

## Conclusion

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

April 29th, 2020

# Memberships and Awards

## Memberships in Associations and International Entities

Classification	Academic Societies/Associations	Purpose of Joining	Date
Domestic	Korean Red Cross	Providing support for the vulnerable at home and abroad	1949
	Korea Chamber of Commerce and Industry (KCCI)	Providing business information and participating in business	1961
	Korean Institute of Electrical Engineers	Engaging in academic exchanges related to electrical engineering	1961
	Korea Standard Association	Acquiring quality management information and education, and attending seminars	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 on management issues and corporate culture	1981
	Korea Listed Companies Association	Protecting investors and advocating listed companies	1989
	Korea Exchange (KRX)	Promoting fair price formation, trading, and transaction stability of securities	1989
	Korea Industrial Technology Association	Sharing information on technology and environment	1995
	Korean Society for Quality Management	Sharing information on domestic and overseas quality management trends	1995
	Korean Institute of Electrical and Electronic Material Engineers	Engaging in academic exchanges related to electronics and electrical materials	1996
	Korea New & Renewable Energy	Identifying trends in the domestic new and renewable energy sector and collecting opinions on system improvement	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
	Korean Nuclear Society	Increasing cooperation and technology exchanges with the international nuclear power industry	2007
	Korea International Trade Association	Sharing information on industrial market trends for each country	2008
	Korean Association for Industrial Technology Security	Acquiring updated industrial security technologies	2009
	Korea Smart Grid Association	Supporting smart grid projects, related field research and manpower training	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 2nd abroad 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 climate policy-related legislative discussions, policy seminars, and field studies	2013
	Korea Wind Energy Association	Networking with public opinion leaders in the new and renewable sector	2014
	KRX Emissions Trading Market	Emission Trading	2015
	Korea Enterprises Federation	Responding to labor laws and managing trends in the labor sector	2016
	Jeonnam Enterprises Federation	Managing regional labor community trends and advice on labor-management relations	2016
	Energy Valley Forum	Networking among industries, universities and institutes and cooperating to invite companies	2016
	Korean Foundation for Quality	Acquiring information such as the latest quality management techniques and attending related training and seminars	2016
	Power Forum	Participating in power forums and networking	2017
	Korean Society of Public Enterprise	Suggesting policy directions for public companies' research activities	2017
	Korean Society of Safety	Increasing exchanges with opinion leaders in the field of safety	2017
	Hanbit Energy Policy Forum	Expanding amicable atmosphere for the establishment of the Energy Valley	2017
	Ethical Management SM Forum	Expanding ethical management and leading ethical corporate culture	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
	Center for Creative Economy and Innovation	Participation in startup promotion policy	2018
	Energy Transition Forum	Participating in policy seminars, debates and academic presentations	2019
	Operating Committee of the Emissions Trading Market Council	Participating in government policy meetings, market research, joint business development	2019
	Korean Institute of Electromagnetic Engineering And Science	Participating in general academic conferences	2019

## Status of Memberships in Associations and International Entities

Classification	Academic Societies/Associations	Purpose of Joining	Date
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
	Nuclear Industry Association	Constructing a network with and collecting information from the UK nuclear industry	2014
	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

\* No political donations were made in accordance with Article 31 of the Political Fund Act.

## Major Awards (Since 2017)

Awards	Organization	Date
The 29th Korea Labor-Management Cooperation Award (first time for first-tier public corporation)	Korea Employers Federation	2017. 2
BCM (Business Continuity Management) ISO22031 International Certification	International Organization for Standardization	2017. 3
IJ Global Award 2016 MENA Deal of the Year in Renewable and Conversion Categories	IJ Global	2017. 3
2017 Corporate Management Award	Korean Corporation Management Association	2017. 4
Asia-Oceania Index Award-Platinum	U.S. EEI (The Edison Electric Institute)	2017. 4
2017 INPEX (Invention and New Product Exposition) Award	INPEX	2017. 6
2017 International Convention on Quality Control Circles Gold Award (four consecutive years)	ICQCC	2017. 11
The 43rd 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 12th Customer Satisfaction Management Award in Public Sector	The Korea Economic Daily	2018. 1
2018 Malaysia International Invention Exhibition Winning 2 Categories including Gold	Award ITEX	2018. 5
2018 Job Creation of the Year Award	The Josun Ilbo	2018. 12
International Smart Grid Action Network Award of Excellence	ISGAN, GSGF	2019. 5
2019 Silicon Valley International Invention Exhibition Gold Award	IFIA	2019. 6
UK CDP Carbon Management Energy & Utility Sector Honors (four consecutive years)	CDP Committee of Korea	2020. 4
The 33rd CIO 100 Awards (five consecutive years)	U.S. IDG	2020. 5

## Contact Information

This Report can be retrieved and downloaded from KEPCO's official website (<http://www.kepco.co.kr>).

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