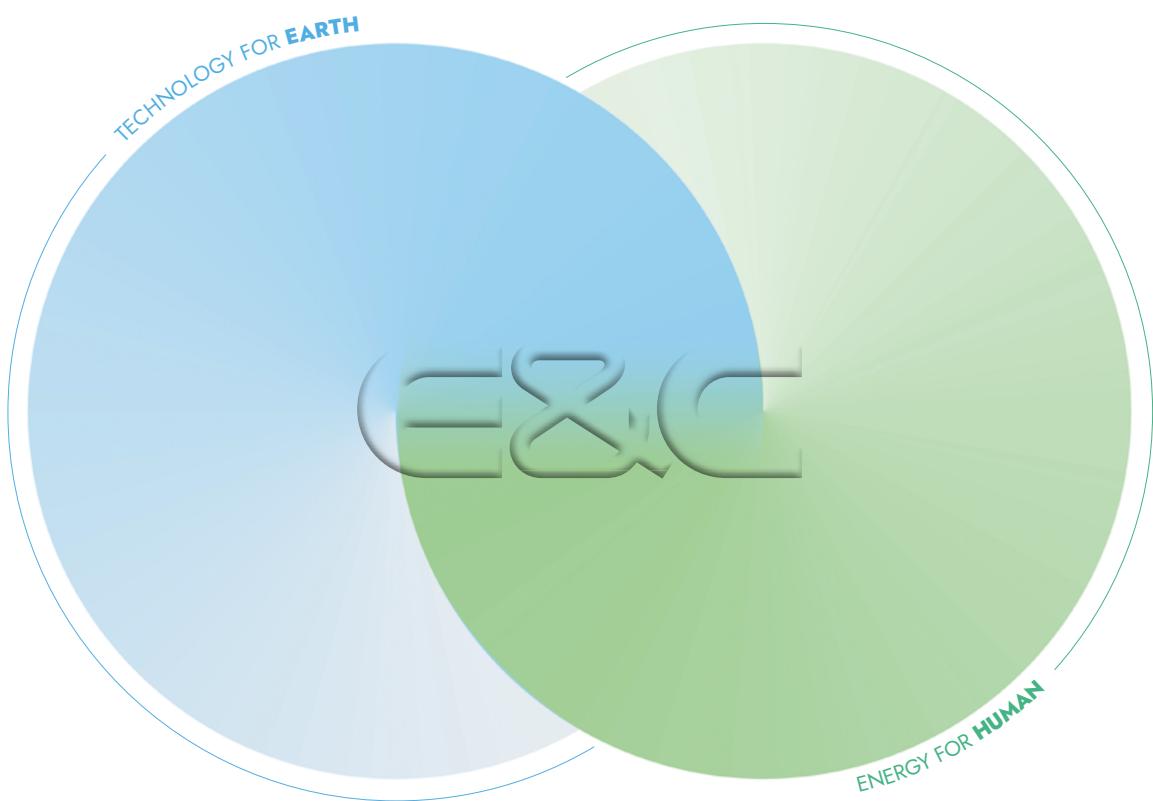


TECHNOLOGY FOR EARTH, ENERGY FOR HUMAN

2021 Sustainability Report by KEPCO E&C



Contents

Introduction

CEO's Message	04
KEPCO E&C Profile	06
Business Overview	10
KEPCO E&C ESG Highlight	14
KEPCO E&C ESG Management	15
Stakeholder Engagement	17
Materiality Assessment	18

About this Report

KEPCO E&C aims to create a sustainable future by faithfully fulfilling its social responsibilities as Korea's leading energy technology enterprise. The efforts and achievements of KEPCO E&C are included in the sustainability report, which is published every two years and shared with all of KEPCO's stakeholders.

Reporting Standards

This report has been prepared based on the core conformance method of the GRI Standards, and reflects the ISO26000, UN SDGs, and Ten Principles of the UN Global Compact.

Scope of the Report

KEPCO E&C's head office and Daejeon site

Reporting Period

January 1, 2020 ~ December 31, 2021

Reporting Cycle

Biennial

Independent Assurance

Independent assurance by a third party

Report Information

This report has been published in Korean and English and can be downloaded from the KEPCO E&C website (www.kepcoco-enc.com).

KEPCO E&C Contact Info

Address : 269 (Yulgok-dong), Hyuksin-ro, Gimcheon-si, Gyeongsangbuk-do
Dept : Performance Evaluation Team, Management Planning Department
Tel : +82-54-421-3114
Website : www.kepcoco-enc.com

Sustainable Future with KEPCO E&C

ENVIRONMENT Sustainable Environment

Managing Carbon Neutrality	24
Developing Eco-friendly Energy Technology	26
Practicing Environmental Social Responsibility	27

SOCIETY Inclusive Growth

Safe Energy Diffusion	30
Creating an Ecosystem for Shared Growth	34
An Enterprise with Happy Employees	41

GOVERNANCE Ethical/Compliance Management

Governance	50
Ethical Management	52
Risk Management	54

Appendix

Data Center	58
SASB	65
GRI Content Index	67
United Nations Global Compact(UNGC)	69
Third Party Assurance Statement	70
Awards and Membership in Association	73

CEO's Message



Greetings to our esteemed stakeholders,

We would like to express our gratitude for your constant support and interest in KEPCO E&C and in our journey to create a better future through harmonization of Human and Technology–Humaneering.

Greetings to our esteemed stakeholders,

We would like to express our gratitude for your constant support and interest in KEPCO E&C and in our journey to create a better future through harmonization of Human and Technology–Humaneering.

Since its establishment in 1975, KEPCO E&C has contributed to the society as an engineering company with the belief to develop energy technologies that will enrich lives. Now, we are committed to innovating energy technology for the transition to a carbon-neutral society. Through the technological innovation of KEPCO E&C, our partners are making a smooth transition to safe and clean low-carbon energy supply. KEPCO E&C will continue to strengthen its role as a technical center to support energy conversion and create new values for life.

In 2021, KEPCO E&C has analyzed the achievements of the first phase (2017–2020) of the energy conversion project and earnestly considered the reason for its existence, core values, and strategic direction. As a result, we established a new mission, vision and strategic system symbolized by Vision 2034. The ultimate goal of our new mission is to improve the quality of life for all stakeholders through eco-friendly technology and have set “Technology for Earth and Energy for Human” as a vision to open the doors for environmental and human-centered energy technology. We have also established an ESG management system that aims to strategically achieve ‘Sustainable Environment’, ‘Inclusive Growth’, and ‘Ethical Management’.

Going forward, KEPCO E&C will earnestly fulfill Vision 2034 to create a sustainable future, and our practical efforts will be embodied through our ESG management. In order to share this journey with all our stakeholders, we make the following three promises:

Firstly, we will continue to promote the advancement of eco-friendly and safe energy technology. We will advance the safety of the world’s most specialized nuclear design technology to contribute to achieving the energy mix in which nuclear and renewable energy are appropriately harmonized. In addition, we will strengthen the environmental characteristics of coal-fired power plants which is expected to operate for a considerable time, and actively promote technological advancement to ensure a smooth transition to low-carbon power generation such as LNG.

Secondly, we will strengthen the value of symbiotic cooperation for the health of the energy industry ecosystem. We will strengthen the competitiveness of SMEs through active R&D cooperation and expand energy care projects for the population that do not have stable access to energy.

Thirdly, we plan to transparently disclose our efforts and achievements in environmental, social, and ethical management to our stakeholders every year. By doing so, we aim to build strong trust with our stakeholders and achieve a healthy culture of ethical compliance.

KEPCO E&C has faced rough seas since its foundation, but it has overcome them with unyielding courage and belief. In midst of all the challenges and growth process, our stakeholders have been our strongest source of support and encouragement. We will continue to do our best to create new values together as a dignified member of our society. Together with our society, we sincerely ask for your continued interest and encouragement in our challenge towards achieving a more prosperous life than today.

2022.05
KEPCO E&C
CEO Sung-arm Kim

김상현

KEPCO E&C Profile

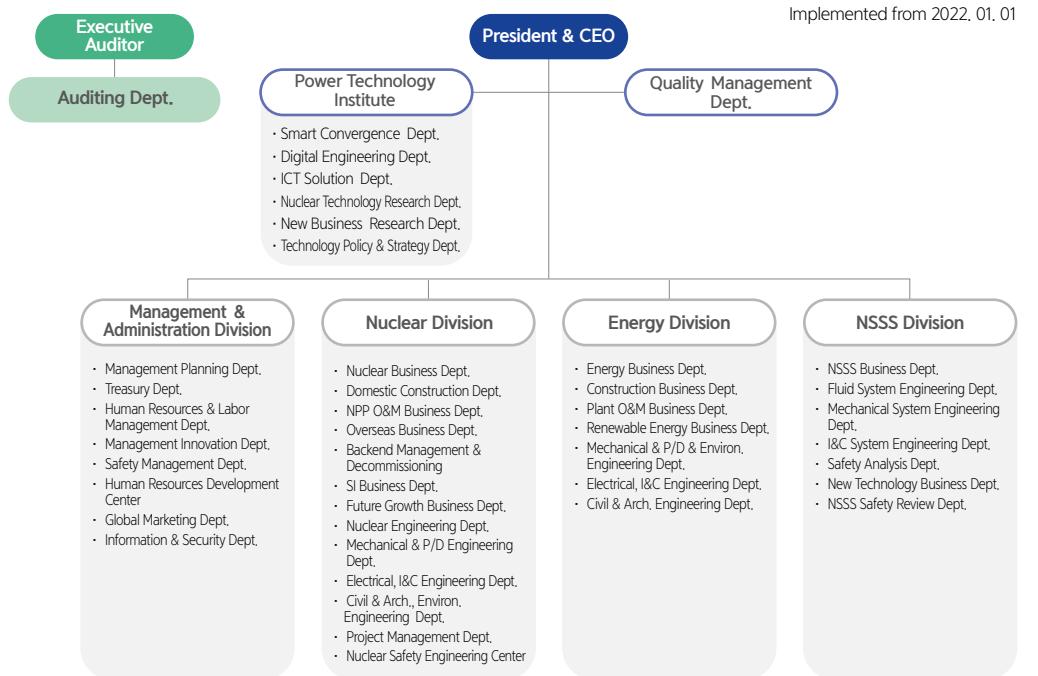
Overview of KEPCO E&C

Since its establishment in 1975 to secure Korea's independence in the field of energy technology, KEPCO E&C has made a significant contribution to the Korean economy in its role as a technological hub for power plant construction. As an organization directly connected to energy, which is a fundamental driver of the national economy, the company is committed to developing safe and eco-friendly energy sources. Its technologies are widely recognized in overseas markets for their accumulated know-how, excellent human resources, stability, and economic efficiency. KEPCO E&C will continue to pay back the public's support with technology for Earth and energy for people by pursuing continuous challenges with unlimited passion.

Current Status

As of December 31, 2021			
Date of Establishment	October 1, 1975	Guardian Agency	Ministry of Trade, Industry and Energy
Address	269, Hyekshin-ro, Gimcheon-si, Gyeongsangbuk-do	President & CEO	Kim Sung-arm
Business Sites	Head office (Gimcheon) and NSSS Division (Daejeon)	Legal basis	Incorporated under Article 317 of the Commercial Act,
No. of Employees	2,356	Organization	4 divisions and the Power Technology Institute 43 departments

Organizational Chart



KEPCO E&C GLOBAL NETWORK

 Nuclear  Energy  Renewable/Eco-friendly

Europe

 NSSS and architecture design of APR1000 for EUR Rev. E certification.

Canada

 Darlington Refurbishment Retube and Feeder Replacement Project.

United Kingdom

 APR1400 license conformity analysis for a nuclear power plant project.

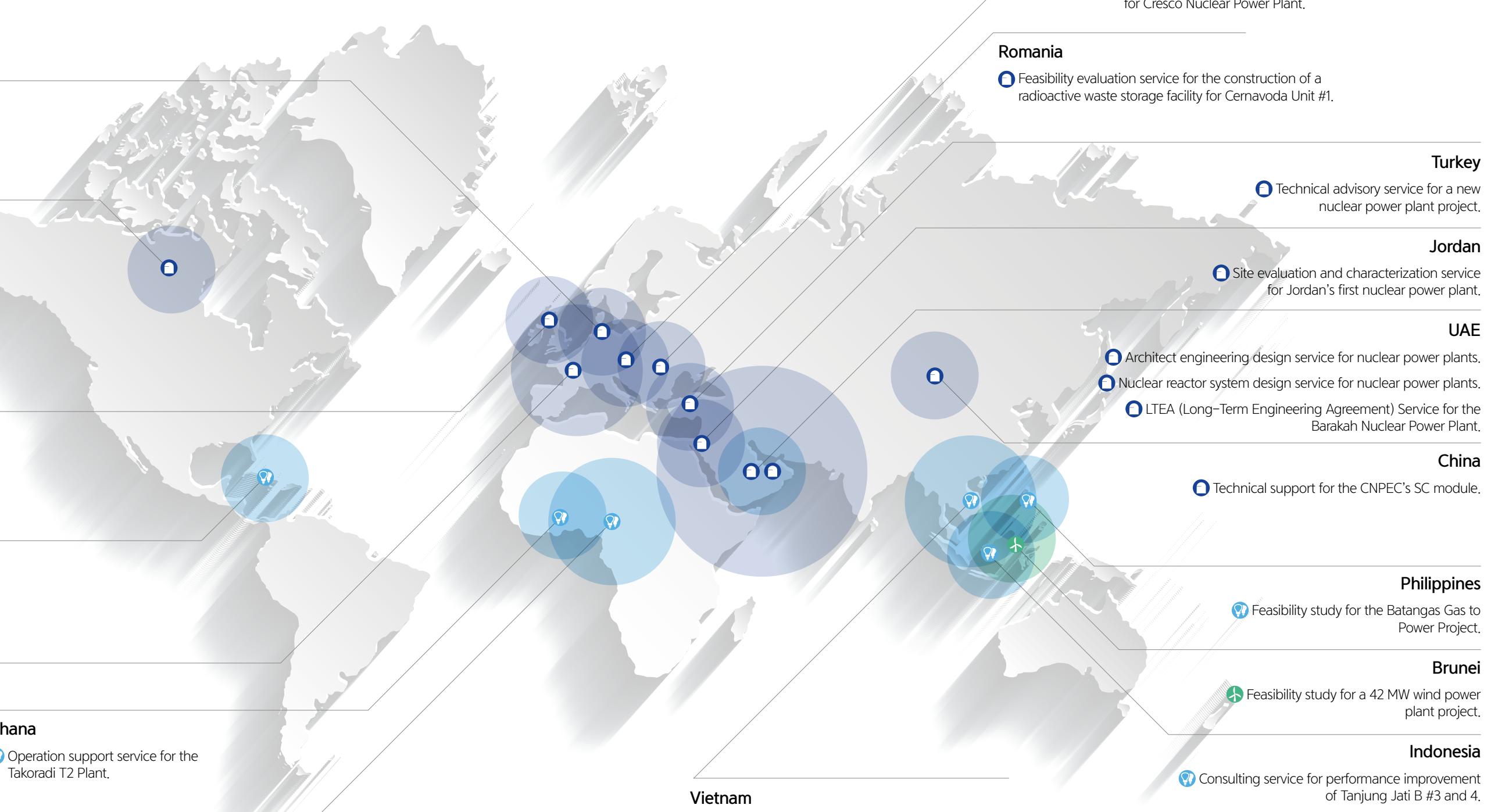
Jamaica

 Consulting service for a new 171.5MW thermal power plant construction project.

France

 ITER cable engineering support service.

 ITER CMA (Construction Management Association) service.

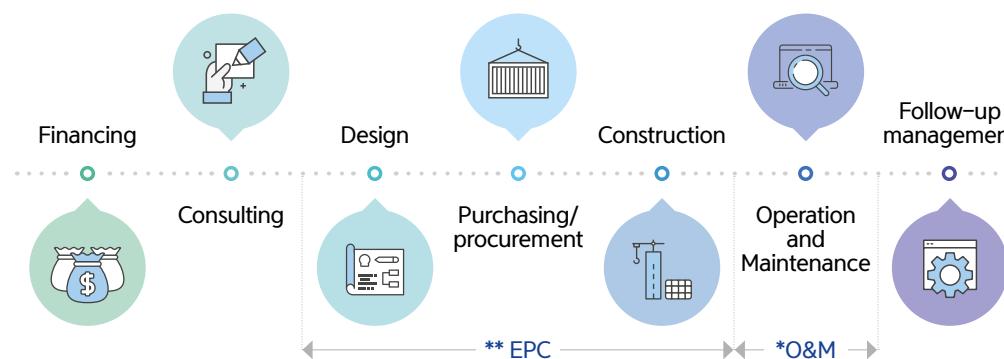


Business Overview

KEPCO E&C is an engineering firm that creates and applies effective solutions to identified problems by integrating its scientific and technological expertise. Based on the human and technical capabilities of its 1,800 engineering professionals, the company has designed new nuclear and power plants both in Korea and overseas and has steadily expanded its business domain to encompass the O&M* of existing power plants, engineering, consulting, and EPC**. Furthermore, KEPCO E&C is growing into a reliable energy solution partner for its customers by performing pre- and post-plant management of power plants based on its extensive design experience and know-how. The company has secured outstanding competitiveness in the overall energy industry by performing environmental and renewable energy projects, power transmission and transformation projects, and environmental impact assessment services.

- * O&M (Operation and Maintenance): Engineering services for power plant operation and maintenance.
- ** EPC (Engineering, Procurement, Construction): A turnkey project comprising design, equipment purchase, and construction.

Engineering Value Chain



Nuclear Energy/Nuclear Reactor

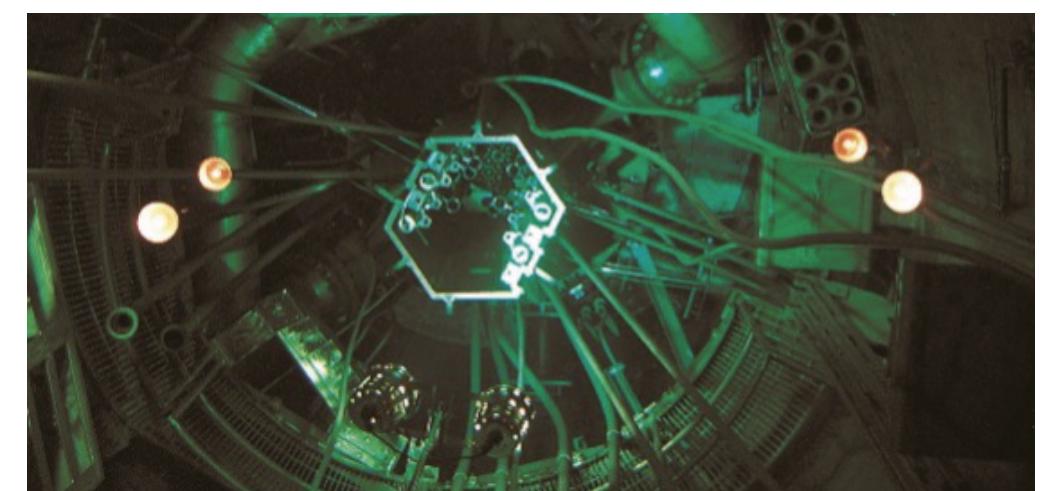
Architecture Engineering

KEPCO E&C has continued to improve its technology over the past forty years, starting with the architectural engineering of Hanbit Units 3 and 4 in 1987, followed by the development of Korea's first-ever standard nuclear power plant. Owing to its outstanding technical capability, it won the architecture engineering service for the UAE's mega-sized nuclear power plant worth KRW 40 trillion in 2009. KEPCO E&C has developed into a specialized architecture engineering company that provides a wide range of services such as nuclear power plant design, maintenance, project management, and technical support for licensing. It has acquired the design know-how for various types of nuclear reactors including the OPR1000 Korean standard nuclear reactor, the internationally competitive APR1400 next-generation nuclear reactor, and the small- to medium-sized SMART nuclear reactor.



Nuclear Steam Supply System Design

A nuclear reactor generates a nuclear reaction and then maintains it in a stable state, while integrating the most advanced technologies which are paramount to safety. Having initially secured the technology for nuclear reactor design with the design of Hanbit Unit 3 and 4, KEPCO E&C has gone on to demonstrate its capabilities based on its ceaseless R&D of nuclear reactors with enhanced stability and economic efficiency. KEPCO E&C being the only company in the world that is capable of performing both architect engineering and nuclear steam supply system (NSSS) design will not remain complacent but promises to upgrade its technology on an ongoing basis with an aim to provide safe and efficient energy to the public.



Characteristics of Each Nuclear Power Plant Model Developed by KEPCO E&C

Type	OPR1000	APR1400	APR+	iPOWER
Period	1990s	2000 – 2010s	2020s	After 2030
Capacity	700 ~ 1,000MWe	1,400MWe	1,500MWe	1,000 ~ 1,500MWe
Features	<ul style="list-style-type: none"> • Technology independence of 95% secured through technology transfer according to a technology procurement contract. • Construction of Korean standard nuclear power plants. 	<ul style="list-style-type: none"> • 3rd-generation new nuclear reactor. • Safety system redundancy. • Core technology independence. • Market-specific design. 	<ul style="list-style-type: none"> • Hybrid safety design. • Strengthened passive safety. • Development of equipment for handling serious accidents. • Convergence and modularization. • Automatic load-following operation. • Reinforcement of economic efficiency (36 months of construction). 	<ul style="list-style-type: none"> • Completely passive safety system. • Dramatic improvement of equipment for handling serious accidents. • Intelligent digital measurement technology for extended fuel cycle, High-combustion nuclear fuel.

Thermal Power

KEPCO E&C has developed design technologies for coal-fired power plants and combined-cycle power plants with excellent usability, economic efficiency, and technology in order to ensure the energy independence of South Korea, which was the purpose of the company's establishment. Furthermore, by utilizing its design technology expertise, the company provides technical services across the full life cycle of thermal power plants, ranging from the improvement of performance and environmental facility of old power plants to the design for the decommissioning and closure of thermal power plants. In particular, KEPCO E&C minimizes pollutant emissions such as fine dust during the operation period by improving the environmental facilities of operating thermal power plants in line with the global effort to reduce greenhouse gas emissions. The company is also active in transforming old coal-fired thermal power plants into LNG combined-cycle thermal power plants by applying a design that minimizes their carbon footprint.



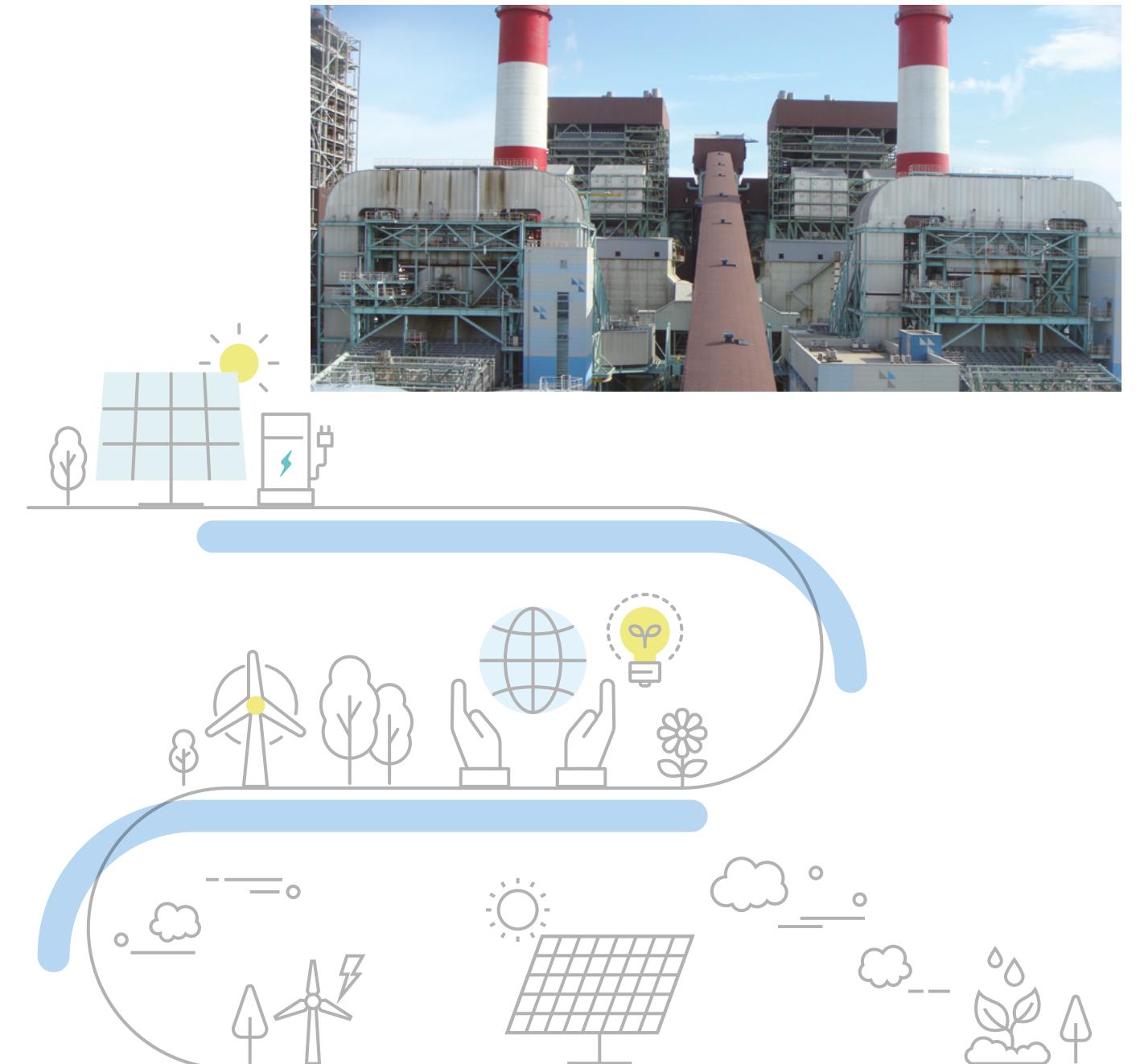
New & Renewable Energy

KEPCO E&C is carrying out an extensive restructuring of its business by cultivating its new and renewable energy businesses as an alternative to the existing thermal power generation business in a bid to cope with climate change flexibly. The company recently began construction of the Jeju Hallim Offshore Wind Farm, the largest offshore wind power complex in Korea with a capacity of 100 MW, to enter the new and renewable energy sector. During this process, it is contributing to the expansion of offshore wind power industry ecosystem by achieving the localization rate of 82.4% of its core offshore wind power equipment. KEPCO E&C is committed to strengthening its competitiveness as a public enterprise in the energy sector while also fulfilling environmental values by training professionals and strengthening dedicated groups, with the aim of expanding its business domain to include renewable energy sources such as solar power, hydrogen, fuel cells, biogas, as well as its offshore wind power business.



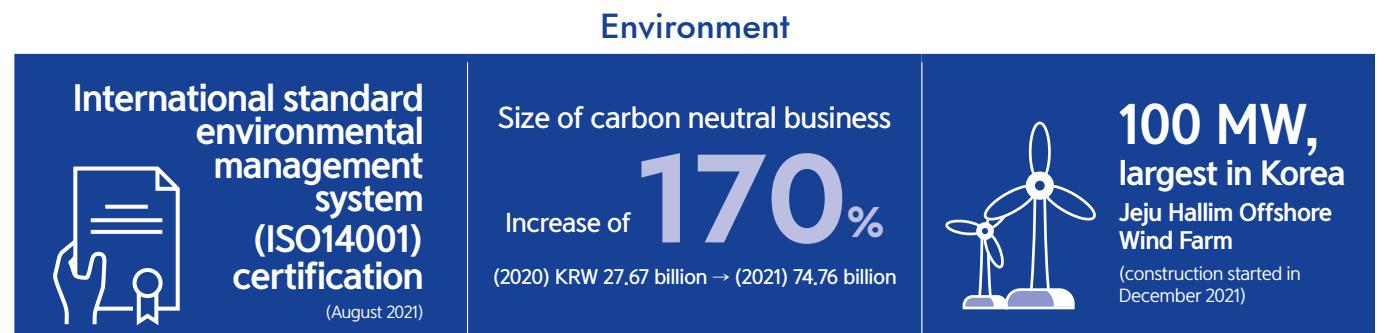
Eco-friendliness

When designing power plants, KEPCO E&C identifies factors that affect the environment and seeks ways to minimize or eradicate them. As a result of its relentless R&D, the company has developed state-of-the-art facilities for removing sulfur and nitrogen oxides, which are the main causes of acid rain and respiratory diseases and has installed them in numerous power plants across Korea, thereby contributing to the reduction of fine dust and greenhouse gas levels in the earth's atmosphere. Furthermore, it has installed water pollution prevention facilities designed for power plants at public sewage treatment facilities to minimize the pollution of natural water supplies in Korea. KEPCO E&C will also develop eco-friendly technologies on a continuous basis in order to provide more responsible and eco-friendly sources of energy to industry and the general public.



KEPCO E&C ESG Highlight

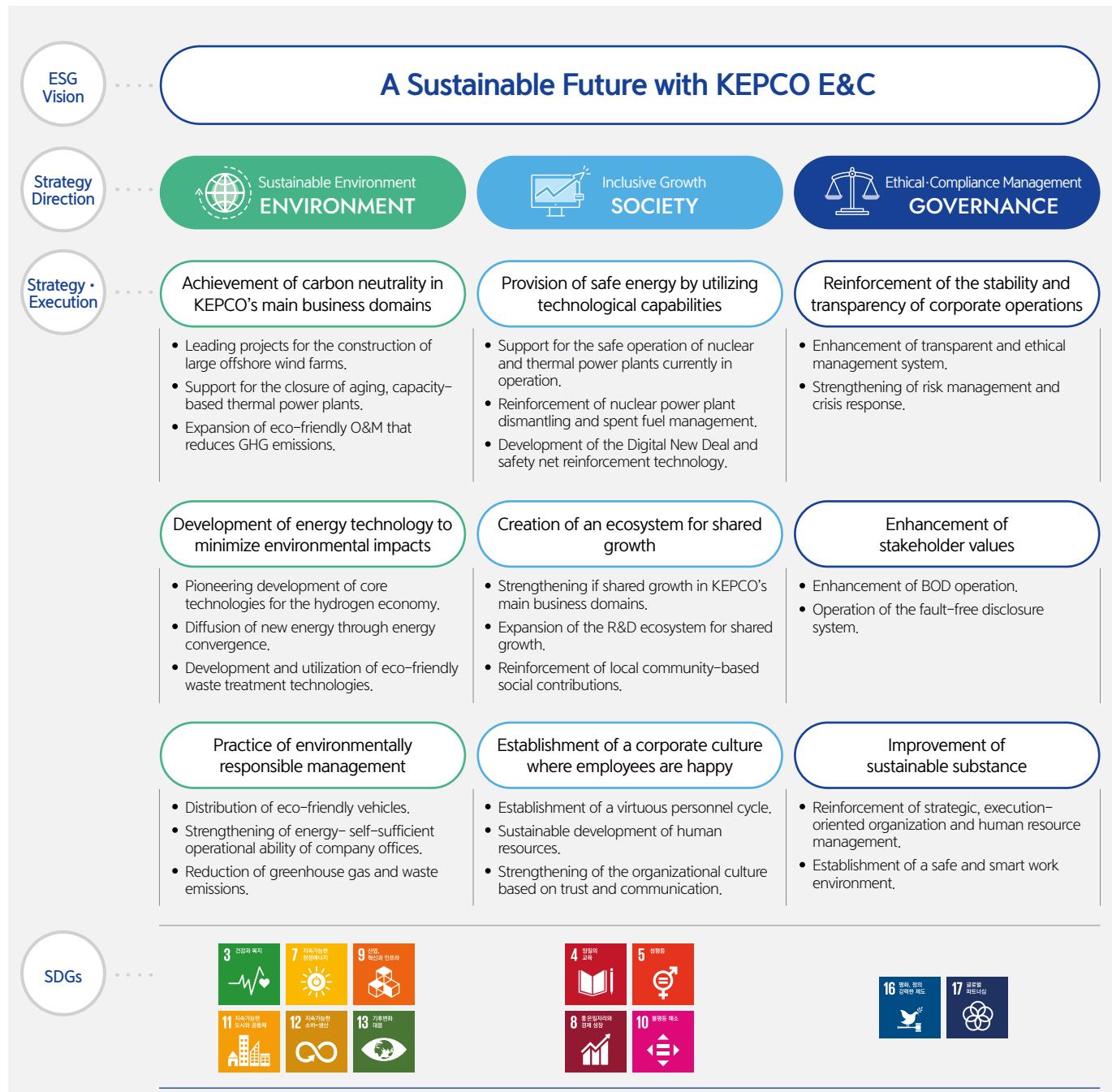
E.S.G



KEPCO E&C's ESG Management

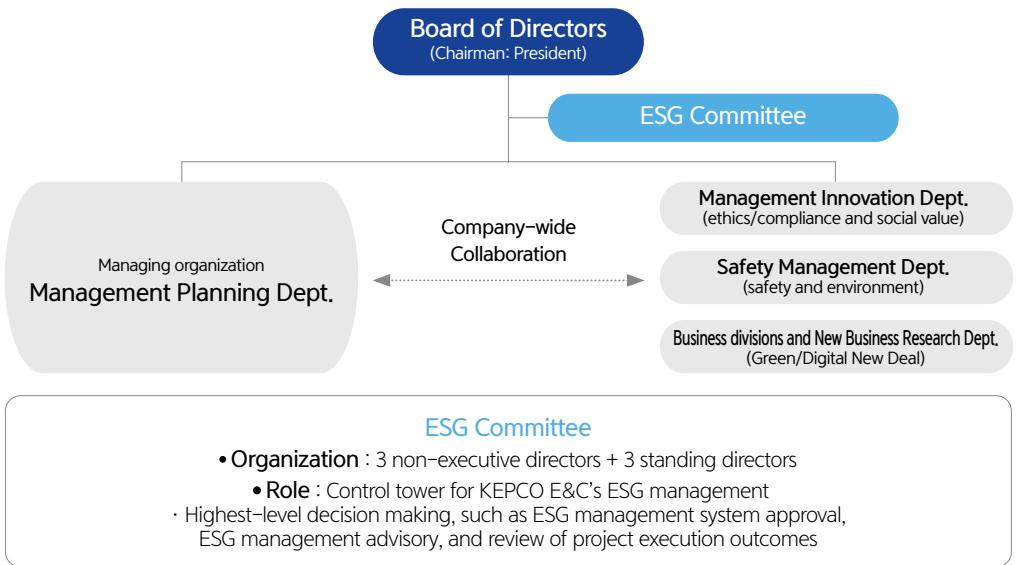
ESG Management Strategy

KEPCO E&C has established and faithfully implemented its ESG management strategy for a sustainable future. The company has established 9 strategy assignments and 24 action tasks that aligns to the 3 ESG strategic directions and linked them with the UN Sustainable Development Goals (SDGs) in order to establish itself as a global energy company that contributes to the development of humankind. Furthermore, KEPCO E&C will spearhead ESG management more responsibly by linking ESG management philosophy to company-wide management system to carry out social responsibility preemptively.



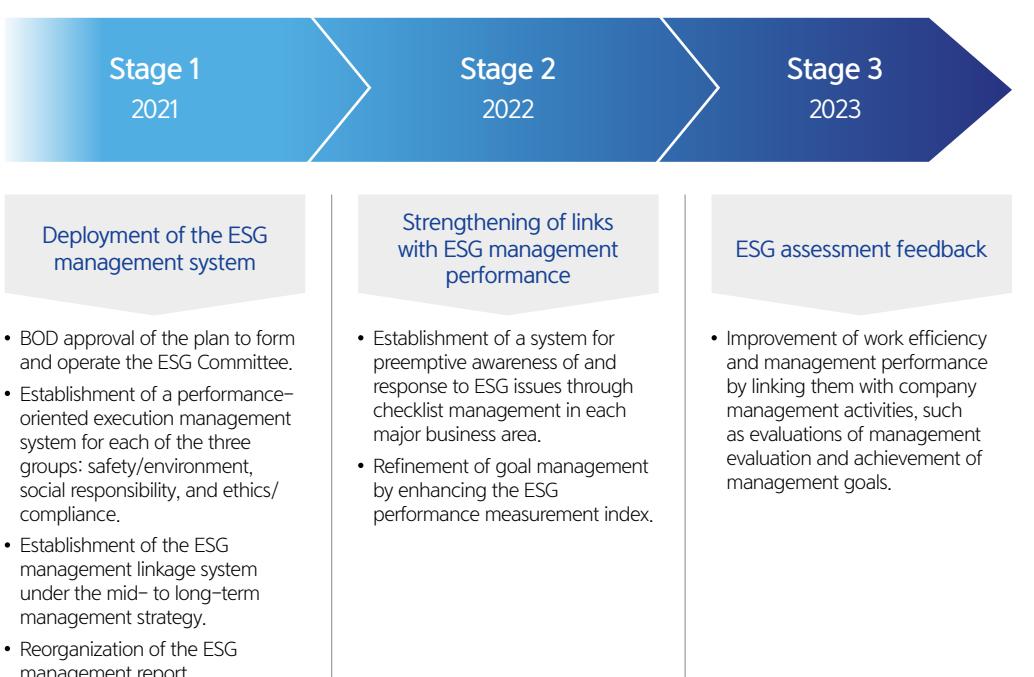
ESG Management Organization

KEPCO E&C has formed an organization playing a key role to put ESG management into practice in accordance with its tagline “Technology for Earth, Energy for People.” The ESG Committee prepares the action plan and functions as a control tower for ESG management by reviewing performance and risks, KEPCO E&C is committed to growing into a highly trusted energy company by incorporating ESG into its overall business management.



ESG Management Implementation Plan

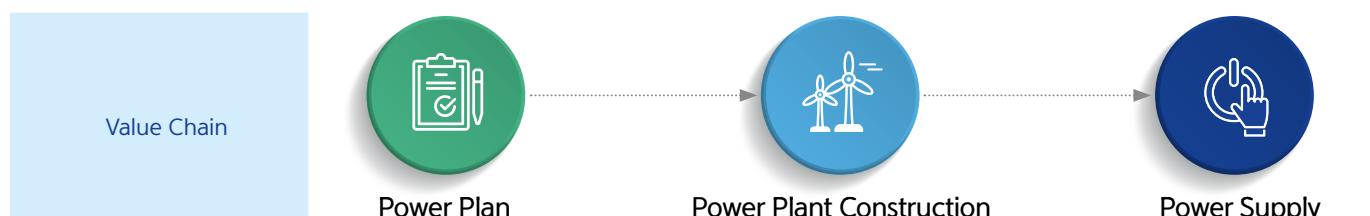
KEPCO E&C aims to improve its competitiveness in the changing energy industry by establishing a comprehensive ESG management system and implementing it in phases.



Stakeholder Engagement

Communication with Stakeholders

The sustainable management practice begins by communicating with one's stakeholders. To ensure active and open communication, KEPCO E&C has classified the various types of stakeholders based on the company's value chain and has established a customized communication strategy. It also operates communication channels that enable the company to focus on each stakeholders' opinions and monitors and reflects them throughout its management. KEPCO E&C will continue to lead the way in the pursuit of sustainable management through close communication with its stakeholders.

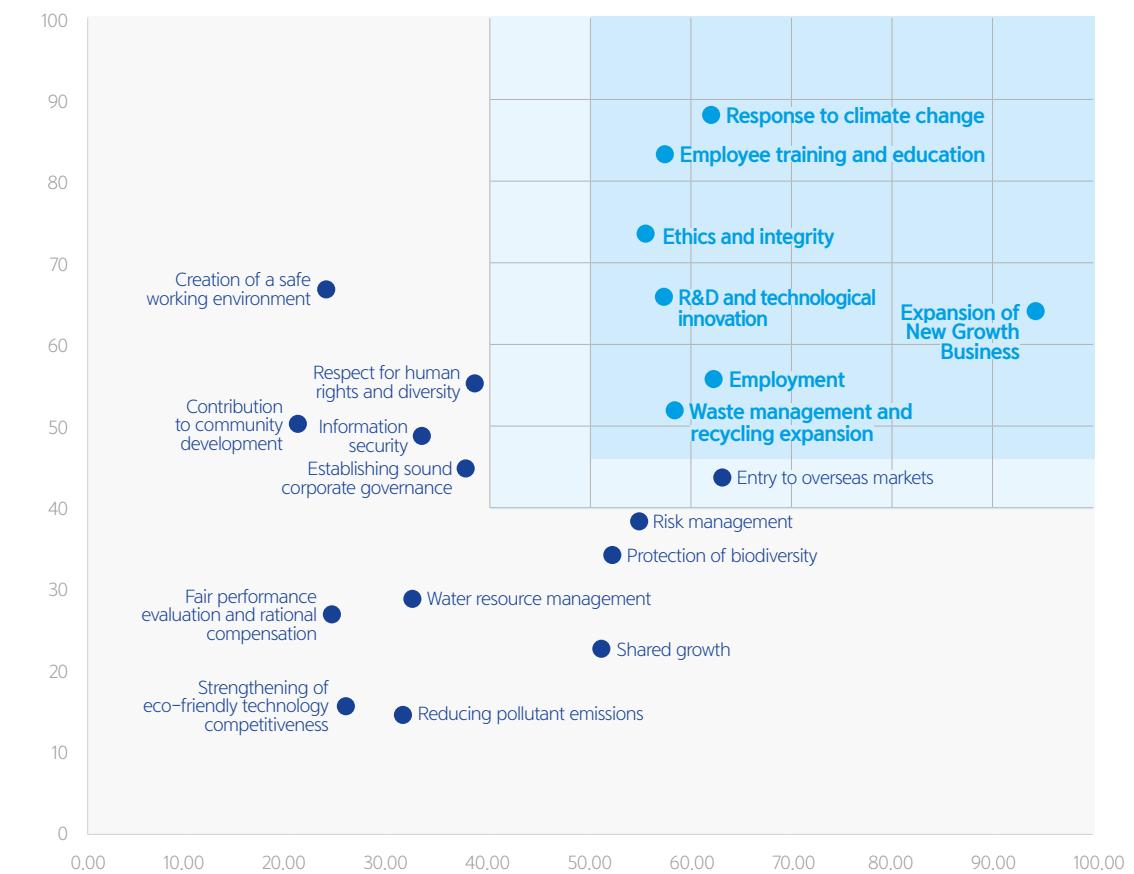
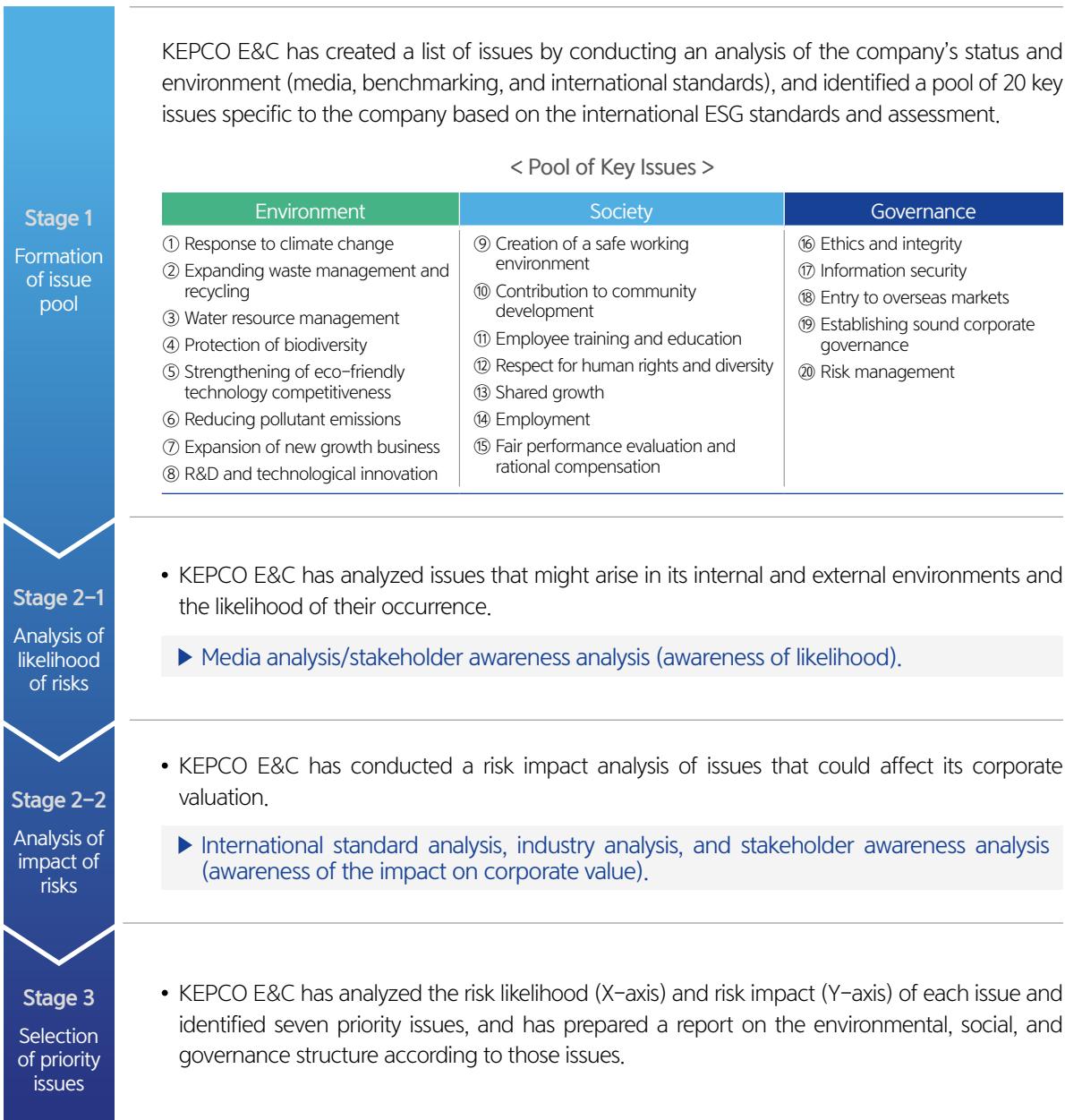


Value Classification	Type	Value impact	Value production	Value cooperation	Power supply
		Subject affecting value creation	Participation of internal employees in the creation of value	Participation of external employees in the creation of value	Sharing value with external customers
Stakeholder setting	Entities concerned	Governmental and municipal project owners	Employees and labor unions	Vendors and local companies	Public/local residents and shareholders
		<ul style="list-style-type: none"> Securing competitiveness in the new energy industry Revitalizing the local economy and environment 	<ul style="list-style-type: none"> Expanding business and enhancement of competitive edge Establishing mutual trust and a culture of communication 	<ul style="list-style-type: none"> Securing jobs and shared growth Opportunities to participate in energy-related businesses 	<ul style="list-style-type: none"> Safety, eco-friendliness and job creation Communication with the public through information disclosure
Areas of interest	Communication Strategy	<ul style="list-style-type: none"> Implementing government policy Response to the energy transition policy Revitalizing the local community 	<ul style="list-style-type: none"> Strengthening of corporate competitiveness Clarification of vision and management goals Labor relations based on trust and cooperation 	<ul style="list-style-type: none"> Shared growth Contribution to the revitalization of the local economy 	<ul style="list-style-type: none"> Awareness of nuclear plant safety and strengthening of eco-friendly technology Implementing participatory innovation through public communication
		<ul style="list-style-type: none"> Inspection of government offices and business contact network Nuclear Public Institutions Council Council for Relocating Public Institutions 	<ul style="list-style-type: none"> Open management briefing CEO communication programs Extended executive meeting Bulletin board in the portal. Management-Labor Council 	<ul style="list-style-type: none"> Shared Growth Academy Gimcheon Shared Growth Dream Valley Council 	<ul style="list-style-type: none"> Public suggestions box Citizen Participation Innovation Committee Public data and information disclosure
Main communication methods	Monitoring	<ul style="list-style-type: none"> External customer satisfaction Job creation performance 	<ul style="list-style-type: none"> Value system awareness Internal customer satisfaction 	<ul style="list-style-type: none"> Evaluation grade for shared growth Assessment of integrity 	<ul style="list-style-type: none"> Integrated disclosure inspection of public institutions by the Ministry of Strategy and Finance

Materiality Assessment

KEPCO E&C has conducted analysis of its internal and external environments and identified twenty key issues that are deemed to be important to KEPCO E&C in each ESG area. Furthermore, top seven priority issues that need to be considerably addressed were derived by further analyzing the key issues based on the likelihood of their occurrence and impact. The top seven priority issues are: Expansion of new growth businesses; Response to climate change; Employee training and Education; Ethics and Integrity; R&D and Technology innovation; Employment; Expansion of Waste management and Recycling. This report explains KEPCO E&C's response to the twenty key issues and the outcomes, including the seven priority issues.

Materiality Assessment Process



* Criteria for selecting Materiality Issues:
The order is based on the total average score among the items that satisfy the average of x-axis and the average of y-axis respectively.

Type	Priority Issues	Report Subject	Page	SDGs
Environmental	Response to climate change	- Leading projects for the construction of large offshore wind farms - Reducing environmental impact of thermal power plants	24-25	3 GOALS FOR CLIMATE ACTION 7 SUSTAINABLE INDUSTRIES 11 SUSTAINABLE CITIES AND COMMUNITIES 12 RESPONSIBLE CONSUMPTION AND PRODUCTION 13 CLIMATE ACTION
	Waste management and recycling expansion	- Developing eco-friendly waste treatment technologies	27	
	Expansion of New Growth Business	- Leading projects for the construction of large offshore wind farms	24	
	R&D and technological innovation	- Developing core technologies for the hydrogen economy - Developing eco-friendly waste treatment technologies	26-27	
Society	Employee training and education	- Recruiting future talents - Creating an organizational culture based on trust and communication	41-43	4 QUALITY EDUCATION 5 GENDER EQUALITY 8 Decent WORK AND ECONOMIC GROWTH 10 REDUCE INEQUALITIES 16 PEACE, JUSTICE AND STRONG INSTITUTIONS
	Employment		41	
Governance	Ethics and integrity	- Ethical Management	52-54	

Sustainable Future with KEPCO E&C

22 ENVIRONMENT Sustainable Environment

28 SOCIETY Inclusive Growth

48 GOVERNANCE Ethical/Compliance



01

Sustainable Environment

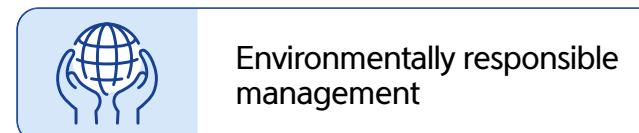
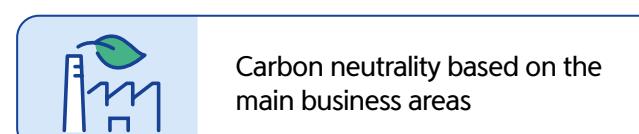
KEPCO E&C is committed to environmentally responsible management combined with eco-friendly engineering.



Materiality Assessment



Management Approach



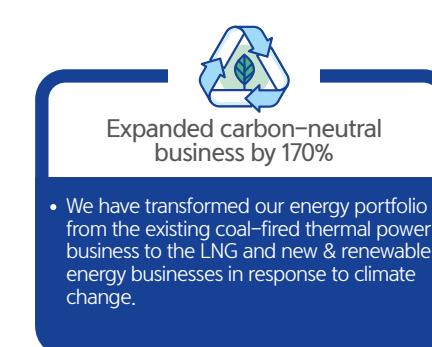
SDGs



Why is it important?

Power, the driving force of all economic development, is crucial for industrial activities and our daily life. With the climate crisis only worsening, international communities are now facing a situation in which they need to minimize the environmental impact of their power consumption. As a public energy enterprise responsible for electricity in Korea, KEPCO E&C is striving to solve these challenges technically. Based on our proven and long-run engineering experience, we will further enhance our environmental and economic sustainability by reducing the environmental impacts caused by power generation.

Best Practice



Our Approach

Based on its goal of minimizing environmental impact, KEPCO E&C is in the process of transforming itself into a leading corporation in the fields of new businesses such as LNG combined cycle power plant design, renewable energy, etc. We are pursuing continuous technological innovation, such as expanding offshore wind power generation and reducing the environmental impact of thermal power plants, identifying the global trend of decarbonization as a new opportunity of further development. Also, KEPCO E&C is accelerating its environmental management through the ESG Committee and plans to further strengthen its execution capabilities by continuously expanding its budget and the relevant education.

Achievement of Carbon Neutrality

Leading the construction of large offshore wind farms

Timeline of the Jeju Hallim Offshore Wind Farm Project

• Dec, 2017	Established an SPC
• Nov, 2019	Selected the main equipment
• Aug, 2020	Received a license
• Mar, 2021	Signed the EPC contract
• Dec, 2021	Started construction work
• 2024 ~	Start of commercial operation



Electric Power Group Revitalization Council



Workshop on Technology Development and Product Development for Ocean Wind Power Transformation Equipment.



NEWS 2021. 11. 15. (Monday)

Wind energy is eco-friendly as it produces electricity using wind's kinetic energy, requires no fuel to generate power and generates no waste. KEPCO E&C established a special purpose corporation (SPC) with related organizations such as KEPCO and Korea Midland Power in 2018 and is currently carrying out Korea's largest -scale EPC project offshore in Suwon-ri, Hallim-eup in Jeju Island. In particular, the 100MW Jeju Offshore Wind Power project, which commenced in 2021, recorded a localization rate of 82.45% for five core parts (turbines, blades, towers, etc.) and created 1,746 jobs for domestic manufacturers of relevant equipment and materials. KEPCO E&C aims to contribute to the production of eco-friendly energy by continuing to strengthen its capabilities in offshore wind power construction projects.

Investment in the development of offshore wind power projects

KEPCO E&C is constructing an offshore wind farm complex by collaborating with various SPCs concurrently with the Jeju Hallim offshore wind power project. We signed the agreement for EPC business to construct the Arial Offshore Wind Farm Complex (100 MW) in May 2021 and the MOU for business development cooperation linked with the offshore wind power cooperation system of power group affiliates in July 2021. Based on this experience, KEPCO E&C is carrying out projects from the initial project stage, such as project planning and a feasibility study, to construction (EPC) and investment. KEPCO E&C is also working hard to exploit this experience to win additional projects.

Strengthening the foundation for the developing and implementing offshore wind power projects

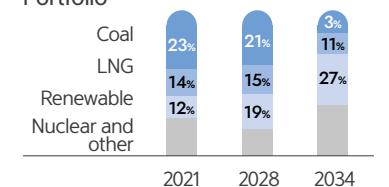
To expand its business stably, KEPCO E&C has secured original technologies capable of verifying performance in actual environments and obtaining standardization and licenses. We have reinforced our specialists in wind power to continuously strengthen offshore wind power and secured global competency by conducting specialized education in each area and holding technical seminars with various European countries that are well-advanced in the field of offshore wind power. KEPCO E&C has also started to develop high-capacity offshore substation design technology in line with the trend of large capacity offshore wind power plants. Based on our small-capacity substation technology, we are implementing model development by running a dedicated R&D organization and cooperating with Daewoo Shipbuilding Marine Engineering. KEPCO E&C aims to complete the technology development by 2024 and apply it to the construction of various offshore wind power complexes such as in Ulsan and Sinan.

"Multi-platform for upgrading offshore wind power complexes, Winner of the Gold and Special Awards at the BIXPO International Invention Patent Competition"

KEPCO E&C received the Gold and Special Awards at the BIXPO International Invention Patent Competition held to create a forum for information exchange on the future of electric power technology. Although renewable energy has the disadvantages of being volatile and limited in terms of output, the multi-platform for upgrading offshore wind power complexes developed by KEPCO E&C uses abandoned ships to improve the economic and environmental factors by compensating for these disadvantages. KEPCO E&C has also secured peak-load power generation technology using abandoned ships and applied for a patent.

Reducing the environmental impact of thermal power plants

Change of Thermal Power Business Portfolio



Improvement of Environmental System Efficiency

Type	Before Improvement	After Improvement
Desulfurization facility	95%	98.5%
Denitrification facility	67%	94%
Dust collection facility	99.77%	99.95%

Improvement of Air Pollutant Emissions

Type	Before Improvement	After Improvement
Sulfur oxide (SOx)	150 ppm	15ppm
Nitrogen oxide (NOx)	50ppm	10ppm
PM	40mg/Sm ³	3mg/Sm ³

90%

reduction of air pollutant emissions

Combined Cycle Power Plant



Winning orders for constructing LNG power plants to replace coal-fired thermal power plants

KEPCO E&C is changing its business portfolio by expanding the design of a LNG combined cycle power project in order to replace coal-fired thermal power plants to reduce air pollutant and fine dust. Though active business development such as diversifying business participation by design and EPC and expanding investment, the amount of orders for LNG combined cycle power projects, increased by 238338% from KRW 31.1 billion in 2020 to KRW 105.2 billion in 2021. In addition, KEPCO E&C plans to establish a Korean standard combined cycle design technology and convert old thermal power plants to LNG to respond to the 9th Power Supply Plan and to enhance its business stability.

Improvement of environmental equipment for coal-fired thermal power

Old coal-fired thermal power plants not only reduce the safety of facilities but also eco-friendliness. Utilizing our wealth of experience and specialist competence in thermal power plant design, KEPCO E&C provides technical consulting and strives to reduce sulfur oxides, nitrogen oxides, and fine dust generated by thermal power plants. The related outcomes include a dramatic improvement in efficiency of environmental equipment in reducing air pollutants and emissions including fine dust by more than 90%.

Furthermore, KEPCO E&C has developed a capture technology that selectively separates and collects the carbon dioxide component of exhaust gas generated by power plants. The captured carbon dioxide is safely stored in a liquid state to reduce the level of greenhouse gas emissions and respond to climate change. KEPCO E&C began developing the basic design of the capture equipment in 2016 and has succeeded in advancing the technology to enable its application to 150 MW coal-fired power plants. With the help of the capture technology, it is possible to reduce CO₂ emissions by 50 tons daily, and 70,000 tons per year. KEPCO E&C is in the process of developing and commercializing the carbon capture equipment for utilization in combined cycle power plants by 2025.



Development of Eco-friendly Energy Technology

Developing core technologies for the hydrogen economy



Signing of the MOU for clean hydrogen using biogas.

Hydrogen production using biogas

KEPCO E&C is seeking ways to produce hydrogen using biogas to achieve the RE100 program, which aims to convert 100% of the electric energy used by companies to renewable energy. Biogas is generated by the decay or decomposition of wastewater, food, and livestock manure, of which 20% of the annual production is unused. Accordingly, KEPCO E&C has signed a business agreement with other institutions such as Korea Western Power and is running a business in which biogas is injected into hydrogen fuel cells after removing its impurities.

Moreover, we signed a business agreement with Gumi City in June 2021 to utilize biogas generated by the sewage treatment plant at the Gumi Industrial Complex adjacent to KEPCO E&C's head office and completed the basic design and feasibility study for biogas power generation. We plan to carry out the agreement in association with the Bioenergy Center to be completed in 2027, and to propose a business model in which some of the profits accruing from the power generation revenues will be reinvested in companies based at the Industrial Complex in a bid to revitalize the local economy.

Hydrogen energy business in response to fluctuations in new & renewable output

Although new & renewable energy has less environmental impact, almost no environmental impact it may be difficult to supply the electricity needed by the public with renewable energy alone since output fluctuates considerably depending on climate and wind conditions. Therefore, KEPCO E&C aims to secure and commercialize a green hydrogen production technology that can be linked to renewable energy. KEPCO E&C is carrying forward the production of green hydrogen in connection with nuclear power generation, its specialty. KEPCO E&C has also proposed the production of green hydrogen using nuclear power to Ulsan Metropolitan City and aims to construct and operate green hydrogen production facilities in cooperation with municipal governments and Korea Hydro & Nuclear Power in order to establish a long-term profit creation model and contribute to preserving the environment. Furthermore, we intend to identify future revenue sources by securing technologies for mixing hydrogen and ammonia or completely consuming hydrogen to ensure carbon-free power generation.

Transformation of the energy portfolio to the Gas to Power (GtP) business

In addition to producing and storing fuel gas using spare electricity (PtG), KEPCO E&C is strengthening its GtP capability to convert fuel gas into energy. It executed three GtP projects in 2020. The new projects currently underway in the Philippines and Vietnam are expected to contribute to improving the eco-friendliness of the local power infrastructures. KEPCO E&C intends to secure eco-friendly PtG and GtP systems to transform its business portfolio step by step, and to strengthen its global orders to secure greater competitiveness.



Plant Arrangement Drawing

Development of eco-friendly waste treatment technology



Site of power generation utilizing remaining heat of incinerators after use.

Orders for New & Renewable Energy Projects Including offshore wind power, biomass



Practicing Environmentally Responsible Management

Operation of an energy self-sufficient head office building

Outcomes of Environmental Management (Unit: %)

Type	2019	2020	2021
GHG Reduction rate*	40	43	45
Energy saving	12	14	17

*GHG reduction rate compared to the GHG emission

Energization of Energy (Waste to Energy, WtE)

The waste management problem is becoming increasingly serious as ever greater quantities of waste are generated. Accordingly, KEPCO E&C is expanding the WtE business that converts waste into eco-friendly energy. The prime example is 'Energy Efficiency EPC project for Resource Recovery Facilities in Suwon City' which is a power generation project that recycles the remaining heat of waste incinerators after use. This project, which began in 2020, utilizes KEPCO E&C's design technology that recycles energy without affecting the incineration process, the main function of incineration facility has been installed in 2021, and the trial operation is successfully in progress.

Expansion of biomass business

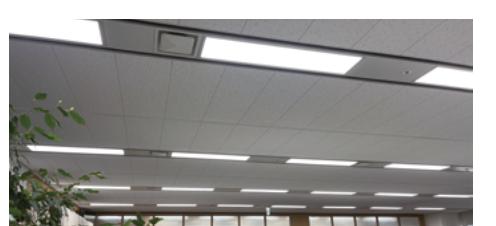
KEPCO E&C is expanding its biomass projects as part of its WtE business. We executed Korea's first EPC project to operate an engine to generate power with syngas extracted by the pyrolysis of wood, which is a carbon-neutral fuel. Based on this experience, we received orders for a biomass EPC project in Nonsan and a support service for Gwangyang Biomass and secured preferred bidder status for the Jincheon Biomass EPC project. KEPCO E&C intends to further accelerate its environmentally responsible management by implementing full-blown biomass power generation.

Expansion of the green infrastructure

KEPCO E&C has achieved its target of 100% green transformation by actively utilizing green infrastructures such as lighting and vehicles. We have improved energy efficiency by preferentially using new & renewable energy, such as geothermal and solar power, and by the timely repair of facilities. Moreover, we have actively utilized equipment such as low-NOx burners with a high combustion efficiency and a high rate of nitrogen oxide reduction. We have also minimized greenhouse gas emissions by first replacing old company vehicles and dispatching electric vehicles. Furthermore, the head office building is equipped with LED lighting and complies with indoor temperature regulation, thereby reducing its GHG emissions by 45%.



Renewable power generation facilities (Solar)



Installation of LED lights in the office

02

Inclusive growth

KEPCO E&C creates social values that encompass for the industrial ecosystem and local community.



Materiality Assessment



Employee training and education

Likelihood



Impact



Employment

Likelihood



Impact



Management Approach

Implementation of safety management in connection with business

Shared growth with partners and communities

Creating a corporate culture where employees are happy

SDGs



Why is it important?

Collaborative cooperation is a means to promote national economic development through the growth of KEPCO E&C, its partners, and its communities. KEPCO E&C intends to fulfill its social responsibility as a public enterprise by continuously fostering the industrial ecosystem.

For us all to grow continuously, our valuable human resources must be able to grow together in safe workplaces. Since it is linked to our unique technology, we are striving to manage our human resources effectively to enable them to seek a sustainable future.

Our Approach

KEPCO E&C is striving to foster the industrial ecosystem through shared growth by reinforcing technical cooperation with SMEs and are helping them to develop sales channels to ensure a win-win situation for both KEPCO E&C and its stakeholders in collaboration with local communities. Furthermore, KEPCO E&C is continuously improving its recruitment system to secure human resources, which are its assets using fair and transparent processes centered on one's competency.

The fairness and results of our recruitment process are authorized by competent authorities such as the Ministry of Trade, Industry and Energy and the Board of Audit and Inspection. Moreover, we provide professional training to our workers to enhance their competitiveness in a rapidly changing energy environment.

Best Practice

Commendation for Shared Growth by the Minister of SMEs and Startups

- R&D cooperative projects with SMEs and support for overseas market entry.
- Business-based shared growth through cooperation, such as energy efficiency support projects for SMEs.

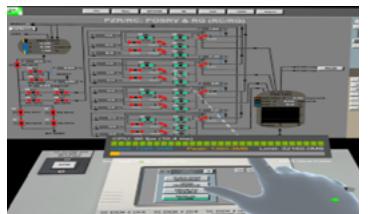
Commendation from the Minister of Health and Welfare

- Continuous expansion of community-based social responsibility after moving to a non-capital region in 2015.
- Intensive support to alleviate the hardships faced by local community due to COVID-19 crisis.

Expansion of jobs for disabled females

- Provision of nail care education and training, and workplaces for disabled females who experienced career interruption.
- Recruitment of 7 local disabled females.

Safe Energy Diffusion



AR/VR-based virtual model of the main control room

Nuclear power plant design with safety as a top priority

KEPCO E&C designs nuclear power plants by utilizing its wide range of technological capabilities to meet the increasingly stringent regulations on nuclear power plants and to satisfy the growing public interest in safety. In line with the Digital New Deal policy, we have implemented an AR/VR-based virtual model of the main control room in a nuclear power plant and developed a new technology to confirm the operational adequacy of the actual main control room through a field simulation at Shin-Gori Units 5 and 6. We expect that the developed technology will be used for operator training to further reinforce safety during the operation and maintenance of nuclear power plants.

Completion of design technology to cope with aircraft collision

KEPCO E&C has developed a technology that protects external shocks and applied it to nuclear power plants. We have incorporated actual domestic aviation data into the technology to secure the highest level of safety and developed guidelines for evaluating structural damage by analyzing frequency of aircraft operations. The developed design technology has since been applied to Shin-Gori Units 5 and 6 to increase safety.

Improved safety

Securing safety against extreme disasters through technology designed to cope with aircraft collision

Improved economic efficiency

Saving foreign currency by promoting reliance on domestic technology rather than imports (KRW 2.5 billion / unit)

Stronger Competitiveness

Gaining a competitive edge for exporting nuclear power plants with improved safety



Undiluted fire extinguisher

Expansion of safety engineering in operational nuclear power plants

KEPCO E&C is committed to improving the safety of active nuclear power plants to cope with the risks posed by earthquakes and fires, both of which have become more frequent in recent years. First, we conducted a precision stress test* at all nuclear plants in operation in Korea and established improvement action plans jointly with the plant operators. Based on the improvement plans, we plan to reinforce the safety of nuclear power plants by reviewing the adequacy sequentially from 2022 and inspecting the performance semiannually. Moreover, we have deployed an emergency response system to cope with unexpected multiple failures, reinforced and installed safety facilities to lower the frequency of damages to the reactor core by 50%, and for the first time in Korea, we have designed a facility, 'Nuclear Power Plant Emergency Response Base' that manages emergency responses in case of extreme disasters such as large earthquakes to apply the seismic isolation system to minimize the impacts of earthquakes.

In addition, we are in the process of introducing a fire extinguishing system that sprays very fine water particles in the event of a fire for the first time in Korea. Existing carbon dioxide equipment had a serious disadvantage in that it may have caused human casualties due to the characteristics of the fire extinguishing agents. Therefore, we have improved the fire extinguishing system to prevent human casualties by spraying fine water particles instead of carbon dioxide. The technology is expected to help secure order competitiveness by ensuring objective safety when its performance is certified.

* Stress test: A safety evaluation conducted to determine whether a nuclear power plant is capable of withstanding extreme disasters that exceed the design standards.



Design-based Accidents

- Prevention of damage to nuclear reactors.
- Control of accidents within the design limits.

Multiple Failures

- Mitigation of nuclear reactor transient state.
- Control of natural and man-made disasters.

Severe Accidents

- Mitigation of core damages and detention of radioactive materials.
- New installation of emergency response base facilities.

Maintaining the best nuclear power plant design

KEPCO E&C has improved design reliability and safety by enhancing its quality systems. Under the new quality policy for 2021, Growth into a Global Leader through High-Quality Technology & Innovation," we have created and revised our quality management manuals, quality management procedures, and quality assurance plans. After improving design quality by making continuous improvements of the quality system, we renewed the ISO 9001 international standard quality certification and the ASME (American Society of Mechanical Engineers) nuclear certification to confirm that we comply with the quality criteria of the international standards.

In 2021, KEPCO E&C conducted 36 internal and external quality audits to assess the effectiveness of its quality system. Moreover, we held the "Quality Day" to improve the design quality of our partners by disseminating professional knowledge on quality management and assurance and sharing the best practices of its partners.

KEPCO E&C pursues collaborative cooperation with its partners with the aim of improving design quality and plans to grant incentives to those partners with excellent quality capability in order to encourage them to supply items and services with better quality.



ISO 9001 Certificate



ASME Certificate



Quality Day

Expansion of nuclear plant decommissioning projects

Decommissioning a nuclear power plant is as important as its construction owing to intense public scrutiny. This is because decommissioning a nuclear power plant that has reached the end of its service life is integral to public safety. As post-management projects, such as nuclear power plant decommissioning, remain an emerging business area yet to reach market maturity, KEPCO E&C is solidifying a competitive edge to achieve its goals, ranging from the development of nuclear power plant decommissioning technology to establishment of an industrial ecosystem, through its extensive expertise and know-how in nuclear design.

Roadmap for Nuclear Plant Decommissioning



Complete decommissioning of Kori Unit 1

100%
achievement of the process target

Technological self-reliance
for each area of nuclear plant decommissioning

Type	2019	2020	2021
Decommissioning engineering	89.5%	92%	94.5%
Waste treatment	83.5%	86%	89.3%
Environment restoration	78%	81.7%	85.7%

Preemptive positioning of the nuclear power plant decommissioning business

KEPCO E&C has secured outstanding nuclear plant decommissioning capabilities owing to its extensive nuclear power plant design experience, developed standard documents that can be used in the nuclear plant decommissioning business, and established management plans for decommissioning waste. Furthermore, we have developed a safety evaluation system for recycling waste from nuclear power plant decommissioning, and are striving to secure value-added technologies, including some 90 decommissioning element technologies and a decommissioning engineering technology. As a result, we contribute to securing competitiveness in overseas markets, such as acquiring the American and Japanese patents, and to promoting the excellence of Korea's decommissioning technology.

As present, while KEPCO E&C has mainly conducted the preliminary steps of nuclear plant decommissioning, we are expanding the scope from the existing nuclear dismantling pre-stage project to carrying out the subsequent stages such as decontamination, waste disposal, and site restoration.

Global Trend		Technology Development
Safety Ensuring the safety of workers and the general public as a top priority		Development of a safety evaluation system for internal disposal and recycling of metal/concrete waste (2020 – 2022) <ul style="list-style-type: none"> Evaluation of efforts to minimize dismantlement workers' and residents' exposure to radiation
Efficiency Expansion of remoting and automation		Development of an integrated management solution for intelligent evaluation of characteristics of nuclear power plant dismantling sites (2021 – 2023) <ul style="list-style-type: none"> Standardization of technology and methodology for evaluating site characteristics for nuclear power plant decommissioning and computerization of evaluation technology
Environmental Factor Enhancing environmental restoration		Development of decontamination technology for incinerated ash contaminated with cesium (completed) <ul style="list-style-type: none"> Reduction of residents' exposure to radiation by securing technology for decontamination of incinerated ash generated at contaminated sites. Reinforcement of residents' acceptance by securing incineration ash treatment technology.



KEPCO E&C's unique cask model (OASIS)

Development of a Korean container model for management of spent fuel

The fuel used in nuclear power generation must be stored and transported in a safe container such as a cask. Therefore, it is necessary to strengthen the capacity of the container business to prepare for the decommissioning of nuclear power plants preemptively. KEPCO E&C has collaborated with the relevant companies in the development of unique cask models with maximum storage capacity according to the spent fuel characteristics. Such efforts resulted in two patents pending in the United States and four academic papers in 2020, proving yet again KEPCO E&C's excellent technological capabilities. Now, we intend to strengthen the foundations for exporting nuclear power plant backend management projects and manage the power plants through strategic partnerships that place an importance on maintaining public trust.

Building an ecosystem for the nuclear plant decommissioning business

In January 2020, KEPCO E&C formed Team Korea with Korea Hydro & Nuclear Power and construction firms to enter the overseas nuclear plant decommissioning business. We reviewed the strategic export materials for our overseas business and participated in bidding for tritium removal facilities in Romania in August 2021.

We have also signed MOUs with SMEs for the joint construction of a nuclear power plant decommissioning industry ecosystem and operation of the related services and held Korea's first international academic conference on nuclear plant decommissioning (DECON). Moreover, KEPCO E&C has laid solid foundations for future growth by winning a contract for the technical design service of a new radiation management facility of the Nuclear Decommissioning Research Institute established in 2020, and for fostering and leading the decommissioning industry.

***Strategic materials:** Products and technologies of which exports and imports are controlled by the government for security and foreign affairs purposes.



DECON 2021 (November 16 – 19) International conference on nuclear plant decommissioning and radioactive waste management.

Held by: KEPCO (Korea) and Actimondo (Germany)

Participants: More than 50 agencies, including BMWi (German Federal Ministry of Economy and Energy), GNS, and Korea Hydro & Nuclear Power

PR Operation of virtual exhibition	<ul style="list-style-type: none"> 4 agencies from Korea (including KEPCO E&C) and 7 from Germany. Posting the logos of the host agencies on the website. 	Technology Sharing Presentation of papers Panel discussion	<ul style="list-style-type: none"> Welcome address by the host agencies (pre-recorded). Presentation of 35 papers, 4 panel discussions (online live).
Business Interchange Online B2B meeting	<ul style="list-style-type: none"> 3 B2B meetings (online live). Global networking for presenters, panelists, etc. 	Future Talents Nuclear power sector Participation by college students	<ul style="list-style-type: none"> Selection of 3 out of 16 topic presenters for the award. Introduction of the organizations participating in the exhibition and distribution of recruitment information.

Securing spent fuel business capabilities

KEPCO E&C is preparing to construct a temporary storage facility to store spent fuel following the decommissioning of Kori Unit 1. We consulted the project owner- Korea Hydro & Nuclear Power, about the storage method and strengthened the order base by participating in the relevant committees. We are expanding the scope of backend management by carrying out a new 3rd-stage disposal facility project for the burial of low-level radioactive waste. We maximized the spatial efficiency and safety of the site layout and designed a system for constructing the third-stage disposal facility in connection with the 1st and 2nd stages. We further strengthened the safety of the existing disposal facility by proposing a design plan that conforms to the latest firefighting regulations.

Creation of an Ecosystem for Shared Growth

Strengthening shared growth

Shared growth based on the main business

As an engineering technology company, KEPCO E&C assists SMEs in their efforts to enhance their technological competitiveness by promoting and sharing their outstanding technological capabilities, intellectual property rights, and technology protection know-how. In particular, we focus on R&D in future growth business areas such as renewable energy and energy digital transformation. As a result of KEPCO E&C's efforts, the number of cooperative R&D cases and investment has increased, and technology transfers and deposits have increased markedly.

Project Identification

More Opportunities

- Expansion of industries targeted for cooperative R&D (regulation revision).
(Existing) Some fields such as new & renewable energy → (Expanded) All fields of energy.
- Easing of the criteria for accepting validity of proposals.



Simpler Procedures

- Deletion of duplications in, and simplification of, the Development Statement submitted at the time of agreement.
(Existing) 20 pages → (Improved) 9 pages
- Minimization of administrative burden on SMEs and easing of entry barriers.

Project Operation

Strengthening Investment Focused on Future Technology

- Expansion of investment in cooperative R&D on D.N.A. (Data/Network/AI) and safety.
- (2020) Investment of KRW 890 million in 4 projects.
- (2021) Investment of KRW 43.2 billion in 15 projects.

Expanding Technology Transfer

- Transfer of patents in new business areas such as new & renewable energy (2 cases).
- Transfer of non-exclusive licenses for patents (5 cases).
- Support provided to 6 SMEs.

Supporting Technology Protection

- Support for on-site consulting by technical protection experts.
- Preparation of technology protection roadmap, modification of the related regulations, and provision of education to prevent technology leakages.

Post Management

Commercialization Support

- Led commercialization through the establishment of a joint venture (convergence drone), project orders, etc.

Assumed the total cost of applying for intellectual property rights

- (Existing) Sharing of costs according to the proportion of R&D expenditure.
- (Improved) Total costs borne by KEPCO E&C.

Provision of technology escrow

- Active promotion of technology escrow.
- (2020) 9 cases
- (2021) 34 cases



External Customer Satisfaction in Shared Growth Sector

95.1 points in 2020

96.0 points in 2021

Expansion of management support for SMEs

KEPCO E&C actively supports the management of SMEs by collecting the suppliers' opinions on shared growth. First, we expanded and implemented smart factory construction projects that can reduce the energy consumption and increase the productivity of SMEs. As a result, all 24 companies participating in the project were able to achieve their energy efficiency and productivity improvement goals. Moreover, to strengthen the competitiveness of quality technology, we implemented the Win-Win Wage Sharing Program to evaluate SMEs' project quality management capability and shared the outcomes. As a result, the outcome of KRW 217 million were shared with 33 SMEs. We intend to continue with our efforts to develop steadily by sharing growth with SMEs, as we believe our support will enable us to build an industrial ecosystem and generate synergies.

Special Page

Promotion of innovative growth by increasing the sales channels for SMEs

Localization of equipment and parts in cooperation with SMEs

KEPCO E&C has made the supply chain safer by strategically expanding and applying Korean parts to large offshore wind power projects, achieving a localization rate of 82.4% for the 5 core parts of nuclear plants (turbine, blade, tower, substructure, etc.). The total purchase amount for Korean parts and equipment was KRW 191.9 billion, which indirectly created more than 1,746 jobs at SMEs.

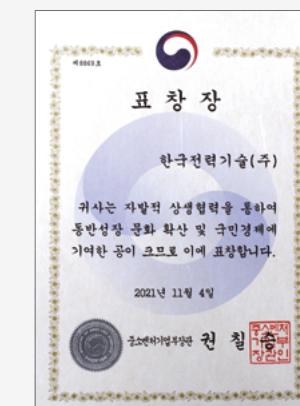
Creation of equipment exports in the nuclear fusion sector

As international interest in nuclear fusion, the energy of the future, deepens, KEPCO E&C has identified the difficulties in overseas expansion faced by the domestic nuclear power plant industry and provided customized support to strengthen its export competitiveness. As a result, we have succeeded in winning orders for special valves for the International Thermonuclear Experimental Reactor (ITER) jointly with a Korean company. By achieving KRW 530 billion in exports of SMEs devices and accumulated KRW 800 billion in 2021, we are contributing to securing track-records for SMEs in the future market of 'nuclear fusion'.

Expansion of cooperative research using the energy technology market

The SME Energy Technology Market is an integrated online platform jointly developed by 17 public energy enterprises, including KEPCO, to facilitate technology transfer, R&D project competition, public relations, and marketing. Through this market, KEPCO E&C has completed the development of two technologies, including a fire evacuation management system. We will provide strong support for SMEs with sufficient technological capabilities by sharing the intellectual property registration costs for projects for which the required technology development has been completed, or by promoting marketing support after product registration.

Received a Commendation for Merit in Shared Growth from the Minister of SMEs and Startups in 2021



Expansion of the R&D ecosystem

Expansion of seed type R&D for SMEs

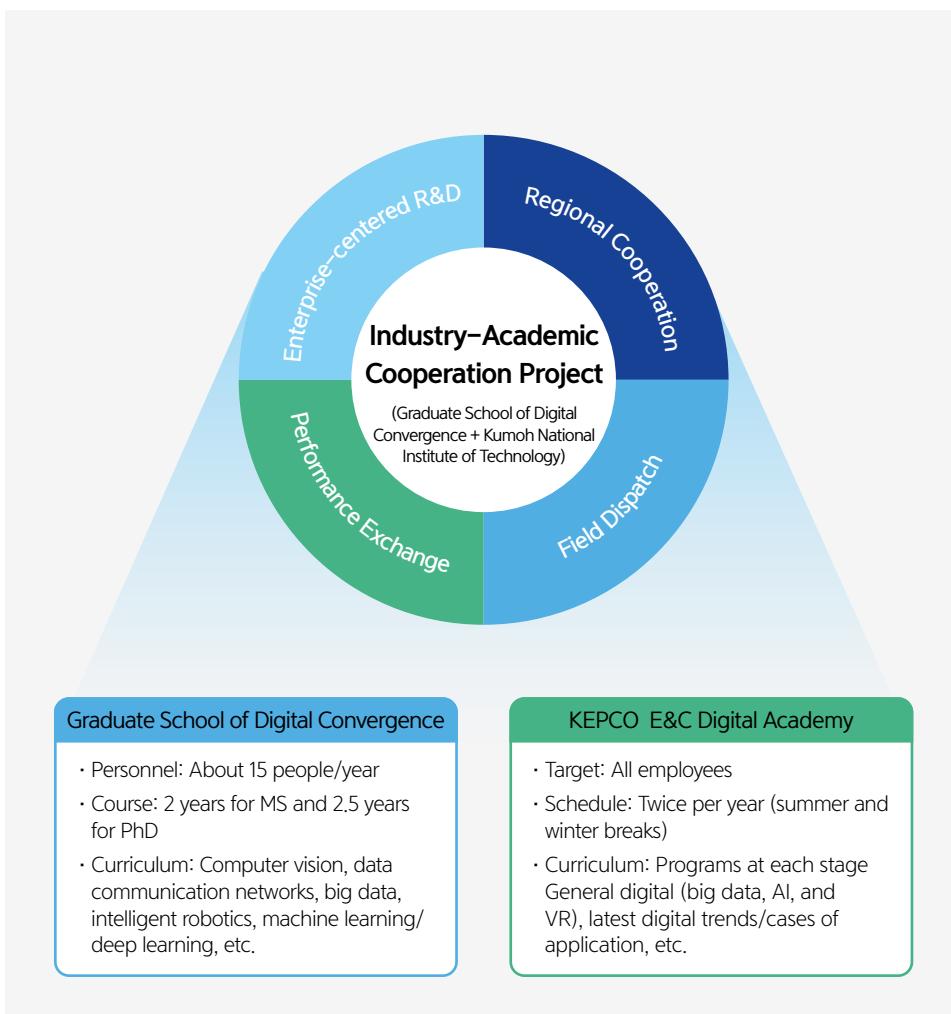
2020	2021
4 companies	6 companies
450 million won	600 million won

Establishment of the R&D model for collaborative cooperation with SMEs

KEPCO E&C identifies R&D projects and establishes R&D models jointly with SMEs by improving the existing process for establishing an R&D model at an SME's request. From 2020 to 2021, we signed agreements with 10 companies for 11 projects and carried out various seed-type R&D projects. These projects created 18 new jobs, and KEPCO E&C intends to support part of the research and personnel costs in order to encourage the growth of SMEs and secure new energy and digital innovation technologies that can lead future businesses.

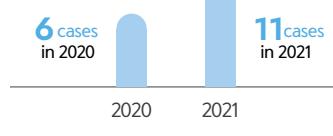
Developing manpower in tandem with local universities

Although the demand for specialists in Industry 4.0 technologies has increased significantly due to the ongoing energy transformation, etc., KEPCO E&C, as an engineering company, faces difficulties in securing excellent technical personnel in the digital field. Accordingly, we aim to nurture talents in digital convergence specific to KEPCO E&C by founding the Graduate School of Digital Convergence in tandem with the Kumoh National Institute of Technology, and by operating KEPCO E&C Digital Academy for all our employees. KEPCO E&C also plans to expand its excellent human competency to flexibly respond to the changing industrial structure through a special program focused on big data, deep learning, and other digital courses.



83%

increase in technology development compared to the previous year



Expansion of identifying R&D in tandem with industry, academia, and research institutes

KEPCO E&C has laid the foundations for cooperation between industry, academia, and research institutes to respond to the rapidly changing energy market. KEPCO E&C uses its limited R&D investment most effectively by exchanging and actively utilizing the specialized knowledge of each organization. As a result, we have successfully developed technologies in various fields such as hydrogen, digital, and eco-friendliness. In the future, KEPCO E&C will do its utmost to achieve a win-win situation for all its stakeholders based on continuous cooperation with diverse sectors.

Regeneration/Hydrogen	Two cases, including the development of an overseas hydrogen-based public transportation infrastructure.
Digital	Two cases, including the development of a damage monitoring/diagnosis technology based on the configuration management of buried pipes.
Nuclear Plant Safety	Three cases, including a plant-integrated risk management package for facility safety.
Eco-friendliness	Two cases, including the development of a wet CO2 capture technology after combustion of LNG power generation.
Post Management	Two cases, including the development of an integrated evaluation as to management of site characteristics for intelligent nuclear plant decommissioning.

S/W to inspect multiple defects of buried pipelines by 3D modeling



Joint Development of Integrated Safety Technology with AR (Augmented Reality)

As nuclear power plant operations have extended, cases of damage to pipelines buried underground have increased. Since accessing and inspecting buried pipelines is difficult due to their inherent design and installation characteristics, a technology capable of monitoring and diagnosing signs of deterioration without recourse to excavation is necessary, and there are limits to the application of foreign technology. Accordingly, KEPCO E&C, SMEs, and Andong National University's Industry-Academic Cooperation Foundation have successfully localized a technology for evaluating pipeline defects through joint R&D begun in 2018. This technology is the outcome of collaborative cooperation R&D for the creation of a new market related to the safety inspection of buried pipes, which is estimated to be worth around KRW 85.1 billion.

Current status of support for Shared Growth

Type	2020	2021
Early payment of external expenses	KRW 61.6 billion	KRW 90.1 billion
Interest rate support for win-win cooperation loans	1.0%p	1.64%p
Win-win wage sharing program	KRW 189 million	KRW 217 million

Support for collaborative cooperation to overcome COVID-19

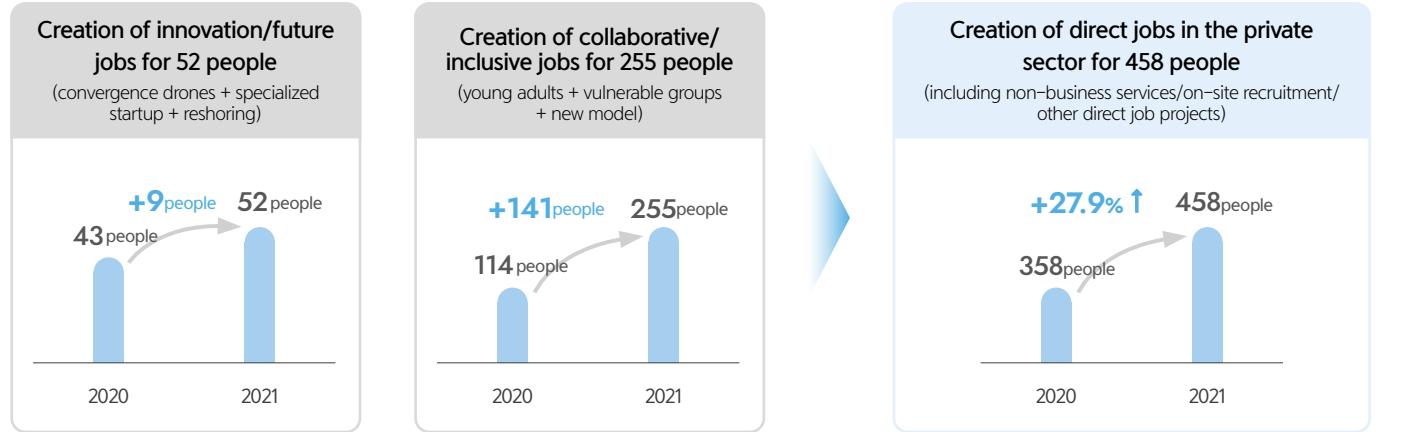
Amid the prolonged COVID-19 pandemic, KEPCO E&C conducted a survey of its suppliers to identify the most practical forms of essential support, and accordingly provided financial support to suppliers. Notably, we signed an agreement with Shinhan Bank to overcome COVID-19 by providing win-win loans, guarantee fees, and preferential interest rates to suppliers. Moreover, we reduced the deposit, such as the bid bond required for contracts, by 50% and eased the entry barriers to enable more suppliers to work with KEPCO E&C. KEPCO E&C aims to build an industrial ecosystem where partners can share growth by enhancing suppliers' sustainability through the various forms of support.

Description	Description
Easing the financial burden and lowering interest rates	<ul style="list-style-type: none"> • Reduction of loan interest rate and support for loan guarantee fee. • 50% reduction in bid bond, contract deposit, and performance bond. • 50% support of stamp duty.
Easing of entry barriers	<ul style="list-style-type: none"> • Abolition of the obligation to attend the proposal briefing session in the case of a purchase contract by negotiation. • Easing of the conditions for private contracts involving SMEs and entrepreneurs.
Prompt support for contract work	<ul style="list-style-type: none"> Tender notice: 7 days → 5 days / Inspection period: 14 days → 7 days / Payment: 5 days → 3 days

Reinforcement of community-based social responsibility



Received the 2021 Innovation Award at the Smart Construction Challenge



Socially Equitable Recruitment*

(Unit: Persons)

Recruitment of Persons with disabilities

2019	2020	2021
1	3	1

Recruitment of Local Manpower

2019	2020	2021
24	15	21

Recruitment of High School Graduates

2019	2020	2021
0	0	6

* Full-time employees + young interns

Improving the constitution of the local economy by revitalizing local industries

KEPCO E&C has made a significant contribution to reviving the local economy by attracting businesses to the region. We have trained specialized professional personnel and provided a supply program to help reshoring companies settle down in Gimcheon upon their return to Korea after operating manufacturing plants overseas. We plan to further revitalize the local economy by recruiting additional local personnel by 2023.

In addition, we have secured a future growth engine by developing an industrial drone business, one of the three major industries in Gimcheon. KEPCO E&C has established a joint venture with two local universities and five SMEs in the province and developed autonomous flight inspection drones and wired/wireless painting drones. In recognition of the excellence of this development, it won the Innovation Award at the Smart Construction Challenge and will be used to carry out the chimney painting work at headquarters of Korea Western Power Co., Ltd in Pyeongtaek. Furthermore, KEPCO E&C is dedicated to further revitalizing the local economy by actively supporting startups and initiating projects designed to foster young CEOs through regional specialties.



Open library

Operation of open libraries in conjunction with local educational institutions

KEPCO E&C operates an open library for local residents and recruits working scholarship students promoted by the Korea Scholarship Foundation in cooperation with local universities to take part in its operation. The recruits receive the scholarship while performing typical library tasks such as managing loaned books (check-in/out) and responding to the needs of library users. In 2021, we provided pleasant, high-quality jobs to six working scholarship students – an initiative that was well received by local universities and working scholarship students.

When the open library was selected as a leading private cloud use support project by the Ministry of the Interior and Security in 2021, KEPCO E&C reorganized the open library system for the cloud environment in the private sector, thereby enabling users to check out books using a mobile app and improving the convenience of local residents. It also introduced a non-face-to-face checkout system to operate a safer and more efficient open library in response to the COVID-19 pandemic. Thanks to these efforts, the open library operated by KEPCO E&C was selected as an excellent example of a private cloud program by the Ministry of the Interior and Security.

Strengthening the local community safety network

KEPCO E&C has gradually strengthened the local community safety network in a bid to raise the fire safety indicators index in Gimcheon, where the company's head office is located. Taking advantage of KEPCO E&C's business characteristics, we have been carrying out an energy welfare project to replace aging electrical equipment in underdeveloped rural households in the region since 2019. Although initially targeting only local households in Gimcheon City, the project has expanded to the entire Gyeongbuk Province in 2021 and since introduced smart lighting linked with innovative prototypes to save on energy and prevent fires.

To reinforce the medical systems of the base hospitals involved in the regional COVID-19 response, we preemptively inspected the operational status of aging medical emergency generators. In particular, our vibration specialists checked them for noise and vibration and submitted the inspection report to the hospital as part of the aging generator maintenance program to help the hospitals operate them safely.



Creation of Jobs

KEPCO E&C creates new jobs by actively participating in the government's employment policy. We have enabled disabled persons to better prepare for employment by running hands-on internships and have collaborated with the Korea Employment Agency for Persons with Disabilities to provide jobs for disabled nail artists through the Somseomoksu Project, a nail care service staffed by disabled workers. Moreover, to expand socially equitable recruitment, KEPCO E&C grants additional points to promote the employment of vulnerable groups, such as low-income families, North Korean defectors, and multicultural families, and implements a gender equality recruitment target scheme when recruiting new employees.

In 2020, KEPCO E&C established the subsidiary KEPCO Technical Service and converted 175 outsourced workers who provide facility management and environmental cleanup services to full-time status and recruited 19 people. We also promoted welfare and improved the working environment by establishing an in-house labor welfare fund. To support local vulnerable groups after the COVID-19 pandemic, KEPCO E&C carried out a series of programs including senior internships, quality management education for females with career interruptions, and vocational rehabilitation education for people with disabilities.



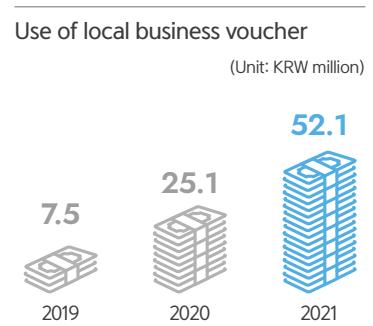
Life/Health Protection

- Provision of quarantine masks (15,600 sheets) and air sterilizers (KRW 17 million).
- Blood donations by employees for emergency blood transfusions (cumulative total: 830 donations).
- KRW 1 billion of support for the COVID-19 response



Living Protection

- Provision of emergency support including convenience food to 1,020 needy households.
- Donation of convenient food packages developed by a local market cooperative (KRW 16 million).
- Regular donations of refrigerators to traditional markets specializing in local agricultural products (KRW 4 million).
- Support for eliminating the gap in after-school care for vulnerable children (KRW 10 million).



Revitalization of local consumption

To expand the direct purchase of local products, KEPCO E&C provides in-house rewards in the form of a local business voucher, carries out a campaign to make a local business voucher card, and improves its operation with a self-monitoring group. Moreover, we have prioritized local agricultural products for the in-house daycare center and cafeteria, and support sales channels through online and offline marketplaces and promotional souvenirs. We also support the branding and market development of local products. As well as providing initial funding support to nurture local startups, KEPCO E&C has purchased a prototype of meal kit developed by a traditional market in Gimcheon and delivered it to underprivileged groups in the region. In the future, we will continue to listen to local communities and communicate with them in order to solve problems together.

The Chamsarang Volunteer Group carried out the Traditional Market Revitalization Campaign in 2020

To minimize the ripple effects of the COVID-19 crisis, KEPCO E&C carried out a campaign to revitalize traditional markets by communicating with local governments and market merchants' associations. A total of 2,096 employees participated in the campaign, while KEPCO E&C and 10 related organizations donated KRW 590 million to traditional markets in a bid to revitalize them and restore vitality to the shrinking local economy. In recognition of its diverse efforts to revitalize the local economy, including regional development, social contribution, and shared growth, KEPCO E&C was presented with the 2020 Korea Public Policy Award in the category of "regional development for collaborative cooperation".



Sisterhood photo

Regular Shopping Campaign Photos

Prioritizing Employees' Wellbeing

Securing future leaders



Reorganization and expansion of specialized job training for each stage: Basic, Maturity, Advanced



Certified as an Excellent Institution for Fair Recruitment for four consecutive years



Fair recruitment

KEPCO E&C practices sustainable management by recruiting talented people based on the aptitudes and competencies required for each job. In order to strengthen the fairness of recruitment, we have improved the step-by-step system by comparing the competencies of each talent effectively with the aim of providing more opportunities to jobseekers and securing an extensive talent pool.

Furthermore, we have expanded our communication channels by operating online job fairs, open chat rooms, and regional examination halls, and we disclose applicants' scores and cut lines of the written test to ensure their right to know and strengthen their employment capabilities. As a result, there were no recruitment-related disputes in 2020 and 2021, and we were able to obtain the certification as an excellent institution for fair recruitment for the fourth consecutive year.

Human resource management

KEPCO E&C assigns personnel and improves the organization to achieve results through future business. We intend to lay firm foundations for future growth by continuously strengthening our design business and our future growth businesses, such as renewable energy and nuclear decommissioning. In particular, we have established the Future Strategy Implementation Group directly under the CEO, which covers various organizations and jobs within KEPCO E&C, in order to identify future growth engines more quickly and efficiently and expand new growth businesses. Our strategic human resource management has increased sales and orders, resulting in resurging sales.

Rational performance management

To ensure a fair evaluation, KEPCO E&C has applied strengthened common indicators linked to company-wide goals to all departments and reflected the specialized functions of each department. Moreover, we have strengthened professionalism by expanding the specialized external evaluation group and lowered the closeness of internal evaluation through the MZ generation citizen screening group. Additionally, we have introduced cross-evaluation from other divisions and multifaceted peer evaluation and linked the evaluation results with promotions, rewards and coaching to support performance improvement.

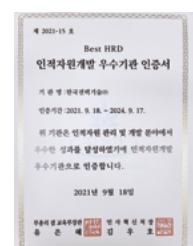
Creating a conductive win-win workplace

KEPCO E&C has eliminated unreasonable discrimination against minorities such as high school graduates, indefinite contract workers, employees in special positions, and women and improved their treatment. For high school graduates, we have established support measures for advanced education to improve their competency, while for employees in special positions, we offer the same welfare benefit system as regular employees. We ensure a competency-oriented human resource management through strict blind recruitment. At the same time, by providing a competency development program for female employees to prevent career interruptions as well as establishing a meritocratic culture in which positions are awarded on the basis of competence, the number of female managers has been increasing.



Percentage of female employees

2019		13.6%
2020		14.5%
2021		15.6%

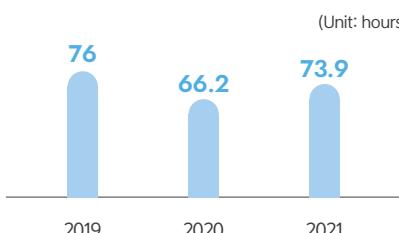


Acquisition of a new certification as an excellent institution for human resource development in the public sector (June 2021)

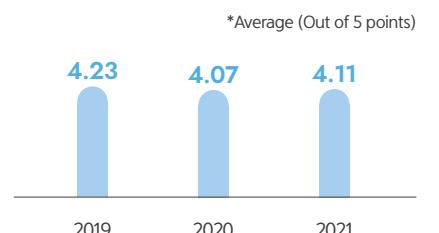
Expansion of the educational infrastructure

By utilizing EduTech Techniques, KEPCO E&C has developed and applied the KEPCO E&C Knowledge Power Plant, a company exclusive online training platform through which employees can receive education without constraints on place or time. We have curated a customized learning system for each employee using AI and through implementing IDP linked academic management, we are actively encouraging the competency improvement of employees. KEPCO E&C has conducted In-house contest to create and utilize capabilities and job knowledge as shared content and also created a video production studio for technical content and encouraged active dissemination of the company's unique know-how throughout the company.

Average No. of Training Hours per Person



Education Satisfaction*



An organizational culture based on trust and communication

Labor-Management Council Consultation Agenda

2019	2020	2021
26 cases	24 cases	18 cases

Labor-Management Partnership Index (Out of 5 points)

2019	2020	2021
3.0 points	3.4 points	3.8 points

Human Resources/Education

Improvement of HR/education system ↓ Spread of self-development culture

- Improvement of the personnel management system.
- Education/training and capacity development in preparation for disease and disaster.
- Professional development through participation in government-led projects.

3 cases

Childcare/Facilities

Work-life balance/Facility improvement ↓ Upgrading work-childrearing environment

- Support for a healthy work-family balance.
- Measures to strengthen maternal protection.
- Measures to improve convenience in the office environment.
- Improvement of power plant work sites, etc.

7 cases

Health & Safety

Enhanced safety-related support ↓ Securing the safety of KEPCO E&C employees

- Establishment of measures to protect employees from COVID-19.
- Preparation of measures to deal with COVID-19.
- Improvement of work environment efficiency in response to the prolonged COVID-19 pandemic.

3 cases

Other Improvements of Working Conditions

Improvement of other shortcomings ↓ Upgrade of working conditions

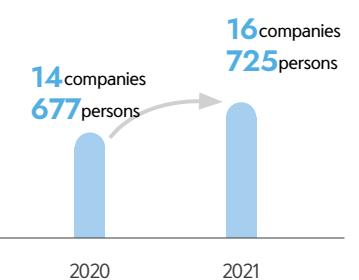
- Improvement/reinforcement of the employee welfare environment.
- Creation of communication channel between employees.
- Strengthened the public interest through efforts to establish an exemplary corporate culture, etc.

5 cases

Human rights management

Under the vision of "KEPCO E&C embodies human rights and values," we have actively implemented human rights management by establishing a human rights management strategy system and the Human Right Management Committee, which is led by the CEO and composed of outside advisors. KEPCO E&C has introduced the human rights management indicator based on the UNGP (UN Guiding Principles) model. We are making concerted efforts to prevent human rights violations by our employees, including a thorough revision of the Guidelines on Preventing Sexual Harassment and Violence in the Workplace and in-depth training for each target group to ensure that human rights are fully protected. Furthermore, we have introduced the KEPCO E&C C.S.I. (C.S.I. is the acronym for integrity, shared growth, and human rights in Korean) program to support the five statutory compulsory education programs and ESG education for our partners and subsidiaries. We are also stepping up our efforts to spread human rights management internally and externally through the Integrity Human Rights Plus Cultural Festival and the Human Rights campaign.

Increase in the Number of Companies Participating in the Program



Type

Partner companies

- [Revision of Supplier Code of Ethics] Mandatory submission of the Pledge for Human Rights Management when registering as a supplier.
- Implementation of the C.S.I. program.

Implementation

- Submission of pledge to implement human rights management by 100% of our subcontractors (79 companies).
- C.S.I. Program satisfaction score of 96% in 2021.

Affiliates

- [Establishment of the labor-management joint council of parent and subsidiary companies (held 3 times)]
- [Cooperation with Anti-Corruption and Civil Rights Commission] Corporate ethics education for subsidiaries and education on abuse cases.

Main Outcomes (Expected Benefits)

- Completed consultations on 7 agendas, including the realization of social value based on cooperation.
- Reinforcement of corporate ethics awareness of subsidiaries and abuse prevention.

Relevant Agencies Local Communities

- [Collaboration with 4 institutions including the Korea Employment Agency for Persons with Disabilities] Employment of women with disabilities and opening of the Gimcheon-Gumi Station Office.
- [Collaboration with the National Human Rights Commission and the Gyeongbuk Provincial Office] Human Rights Film Festival commemorating the 72nd anniversary of the Universal Declaration of Human Rights.
- Integrity and Human Rights PLUS Cultural Festival and Human Rights Exhibition.

Implementation

- Establishment of a workplace for women with disabilities and recruitment of 7 women with disabilities.
- Serves as a priming agent to spread the human rights culture in the local community.

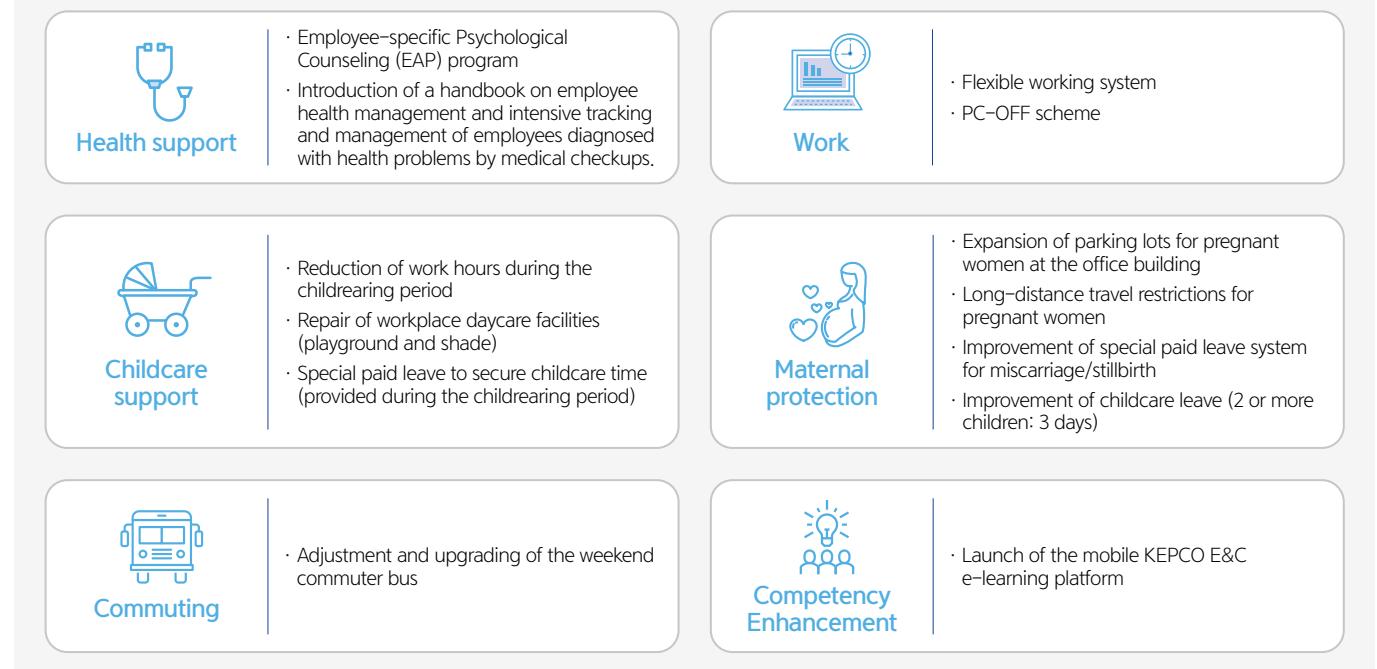
2020 Selected as the Excellent Family-friendly Enterprise



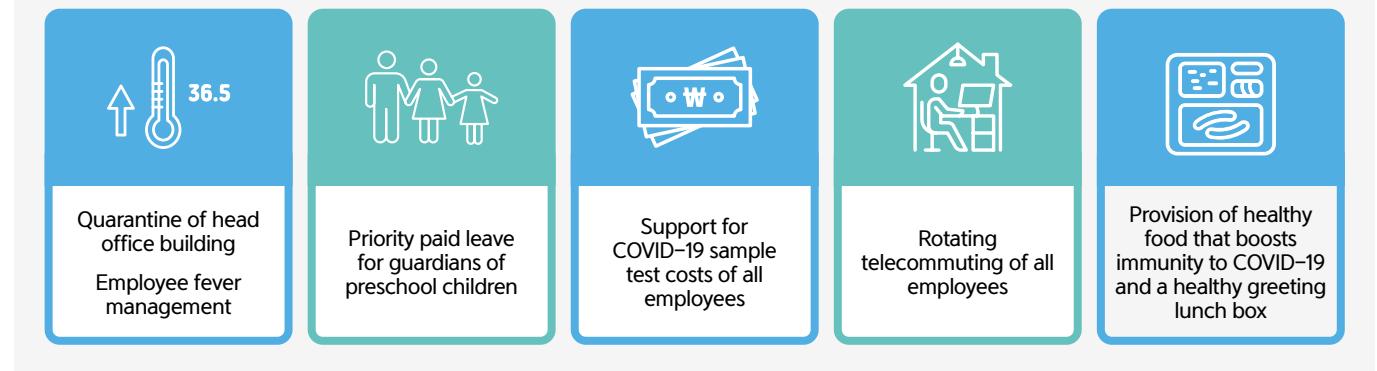
Work-family balance

To build a welfare system that makes everyone happy, KEPCO E&C has collected employees' opinions through various channels including employees' observation of BOD meetings, the labor union, and the requirement survey. We strive to continuously improve our welfare system by reflecting our employees' needs and the work environment. Furthermore, KEPCO E&C actively implements a system designed to allow employees to strike a healthy work-family balance and to help them become healthier and more satisfied both at work and at home. We aim to achieve a win-win situation for our employees and KEPCO E&C by realizing the welfare needed by beneficiaries from health management programs to childcare support and maternity protection.

Healthy work-life balance programs



Employee support system specifically for COVID-19



Safe workplace

Acquisition of ISO45001 certification for 12 consecutive years



Operation of an autonomous health and safety management system

KEPCO E&C has created safety management positions and increased the safety budget. Our safety management system includes the strengthening of executive responsibility for safety accidents. The company has confirmed its effective implementation of safety management by acquiring the international standard health and safety management system (ISO45001) certification for twelve consecutive years and certification of its excellent fire safety buildings. We are striving to internalize a safety culture by carrying out education, PR, and safety culture events for all our employees. As a result, we have achieved zero serious accidents at all our business sites, including subsidiaries in charge of facility management. We intend to identify factors that threaten our employees' safety and improve them immediately.

(Transportation facilities inside the head office building) Eliminate tangible risks by listening to opinions

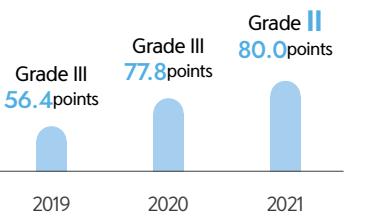
- [Issue identification] Increased business trip frequency and distance and in-house daycare near the parking lot.
- [Listening to opinions] Listening to employees' opinions on improving transportation and taking action (labor and management jointly).
- Dedicated parking spaces for the daycare center and installation of safety handrails (warning lights)
- Installation of speed bumps and warning of reverse driving in the parking lot.
- Replacement of old vehicles (8 units), reinforcement of pre-inspection of company vehicles, etc.



(Fire) Reinforcement of employee awareness and improvement of audit facilities

- Consideration of major fire vulnerabilities (negligence 57%, electrical/mechanical failure 38%)
- Raising awareness of fire prevention and eliminating fire monitoring blind spots.
- (Raising awareness) Reinforcement of publicity on fire prevention and linking of KPIs to the participation rate, etc.
- (Equipment supplementation) Installation of automatic fire extinguishing multi-taps (765 EA).
- (Stricter inspections) Introduction of safety inspection of the communication room (TPS) on premises (once a week).

Evaluation of safety culture level Entry to Stage II (Preemptive Stage)



Increasing the safety awareness of designers

Since the designers of nuclear power plant help produce the energy required by the general public, they must consider safety as the top priority. KEPCO E&C has carried out participatory events simultaneously with education and PR to further embed the safety culture within the company. As a result, the evaluation score of the level of the company's safety culture has continued to rise since 2019. In the future, we plan to assemble our know-how on safety design and publish it as a book of success cases for PR purposes. We also intend to develop rules on the implementation of safety design to strengthen the internalization of safety awareness.

Education Improvement	<ul style="list-style-type: none"> Improvement and supplementation of safety culture education contents (completion rate: 80%). Implementation of health and safety education via a dedicated platform (completion rate: 95.2%).
PR Strategy and Planning Functions	<ul style="list-style-type: none"> Production of brochures on safety accident cases and accident prevention for distribution to all employees. Implementation of the Safety Culture Promotion Day (safety culture seminar, pledge declaration ceremony, etc.).
Participation Activation	<ul style="list-style-type: none"> Holding of safety culture diffusion event for all employees. One-line review (definition) of safety culture, 761 reviews received and promoted with banners, etc.



Safety management of workers at construction/overseas sites

Since KEPCO E&C operates EPC projects in many regions, we are committed to ensuring the safety management of workers at our construction and overseas sites. We check employees' health and safety status at domestic nuclear power plants currently in operation and the on-site offices of nuclear power plants under construction. All identified harmful and risk factors are evaluated and improved. In the case of workers at overseas sites, we support medical transport in the local country, home country, or neighboring country according to the circumstances. We also provide remote video treatment and emergency rescue and evacuation services if necessary. KEPCO E&C will continue to make improvements and introduce innovations to create the safest possible workplace for employees and business partners at its construction and overseas sites.

Field application of the latest safety technology

KEPCO E&C has signed an agreement to develop a safety management system using augmented reality (AR) and virtual reality (VR) and apply it to the Hadong Power Plant. Since users can conduct a field test through the virtual system in advance and apply the results to the field, workers can be protected from hazards that compromise safety. As this system has helped us eradicate accidents at our construction sites, KEPCO E&C plans to continue applying cutting-edge technologies and solutions to its worksites to prevent industrial accidents and continuously strengthen workplace safety.

Location-based (GNSS) underground facility management system using AR

- Development and application of management and field response systems through underground facilities.
- Development of an AR-based underground facility management system.
- Enhancement of technology with 3D AR.

Multi-GNSS 기술을 적용한 증강현실(AR) 기반 발전소 지하시설물 관리시스템

VR-based construction site industrial safety management system

- Development of comprehensive safety contents and preparation of user manuals (on safety awareness, preventive management, response handling, etc.).
- Development of VR-based industrial safety management contents.

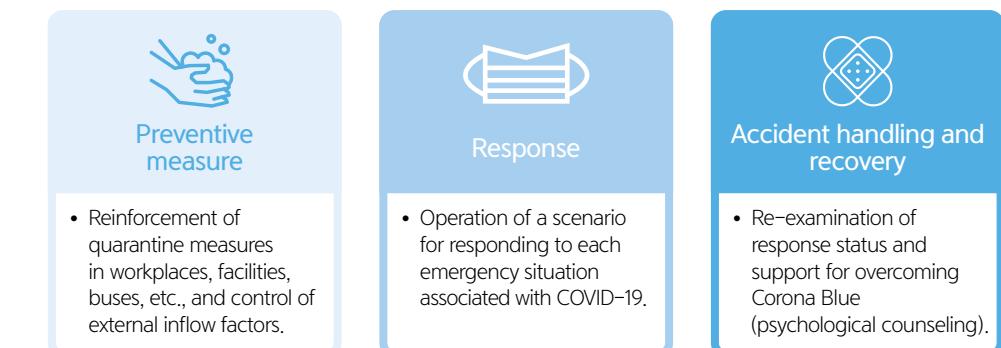
AR-enabled field supervisor work management system

- Development of AR video communication content between field workers and remote offices.
- Creation of environment for smart glass voice recognition and video conference and field worker database management.



Disaster and safety management

KEPCO E&C has achieved zero serious accidents for nine consecutive years by continuously improving its safety and crisis response manuals and conducting thorough facility inspections. In particular, we formed an emergency response team for the COVID-19 pandemic to preemptively respond with all-out efforts to prevent the spread of the virus. As a result, even though there were some confirmed cases in the Gimcheon head office building, we were able to prevent further infection and spread within the company. KEPCO E&C is committed to creating a workplace where our employees can work safely while continuously maintaining and developing their expertise, which is the core competency of KEPCO E&C.



Scenario for each situation

Lv.1 Occurrence of confirmed cases

- Examination of workers on the floor.
- Identification and inspection of close contacts.

Response to the first confirmed case (June 26, 2021)



Lv.3 Emergency work

- All employees in telecommuting mode.
- Performance of additional inspections.

Lv.4 Return to work

- Return to work after re-examination of all employees.
- Checking whether the response is appropriate.

03

Ethical/Compliance Management

KEPCO E&C increases sustainability through transparent and sound management.



Materiality Assessment



Ethics and integrity

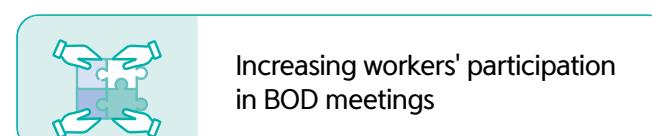
Likelihood



Impact



Management Approach



SDGs



16 PEACE, JUSTICE
AND STRONG INSTITUTIONS



17 PARTNERSHIPS
FOR THE GOALS

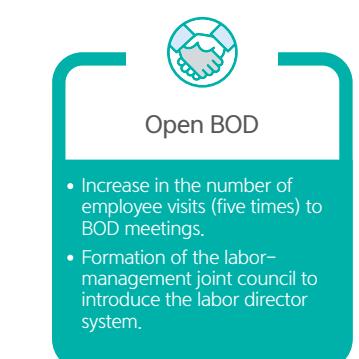
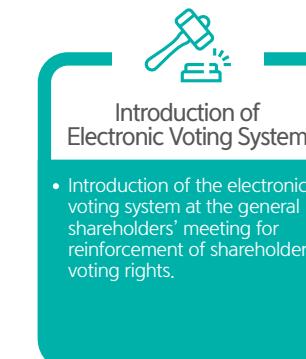
Why is it important?

Stability and transparency of corporate operation are important to stakeholders such as suppliers, employees, and shareholders since they are directly related to corporate sustainability. KEPCO E&C recognizes its impact on its stakeholders and thus conducts its business activities with greater integrity and responsibility by practicing ethical/compliance management. To ensure a more sustainable future, we intend to respond flexibly to the rapidly changing energy industry by continuously identifying new growth businesses and effectively managing business risks.

Our Approach

KEPCO E&C has established a system designed to periodically check and improve sustainability-related issues through its ESG Committee and its non-executive directors. In the process, we allow employees to observe BOD meetings to promote the rights and interests of more diverse stakeholders. Furthermore, we have strengthened our ethical/compliance management by conducting the in-house integrity survey and blocking factors that cause corruption in advance to ensure transparent management activities. As such, KEPCO E&C will lay more solid foundations for sustainable growth based on a system of checks and balances.

Best Practice



Governance

Composition of the Board of Directors

The Board of Directors (BOD), KEPCO E&C's highest-level decision-making body, manages the basic management policies and oversees and makes decisions on overall business operations. As of January 1, 2021, the BOD consists of ten directors. The president's term is 3 years, while that of the directors is 2 years, but they may serve consecutive terms of one year to ensure responsible decision-making. Considering the nature of KEPCO E&C's business, non-executive directors with expertise in diverse areas are appointed to strengthen the advisory and support activities for overall management.

BOD Status

(As of January 01, 2022)				
Type	Name	Gender	Term in office	Affiliation and position
Standing Directors	Kim Sung-am	Male	21.05.07 ~ 24.05.06	CEO
	Ham Ki-hwang	Male	20.08.14 ~ 22.08.13	Head of the Management & Administration Division
	Park Beom-seo	Male	21.09.16 ~ 23.09.15	Head of the Nuclear Division
	Kim Dong-gyu	Male	20.08.14 ~ 22.08.13	Head of the Energy Division
Non-executive Directors	Kim Min-ok	Female	22.03.01 ~ 24.02.29	Current) Accountant of Samduk Accounting Corporation (Nexia Samduk)
	Choi Jae-seok	Male	19.07.01 ~ 22.06.30	Current) Professor, Department of Electrical Engineering, Gyeongsang National University
	Kim Jin-woo	Male	20.08.19 ~ 22.08.18	Current) Professor of Industry-University Cooperation, Department of Electrical and Electronic Engineering, Konkuk University
	Park Se-mun	Female	20.08.19 ~ 22.08.18	Former) Chairwoman of the Korea Federation of Women's Science & Technology Associations
	Park Jong-gap	Male	20.08.19 ~ 22.08.18	Former) Director of the Korea Electrical Contractors Association
	Chu Yeon-chang	Male	21.03.05 ~ 23.03.04	Former) Co-chair, Citizens' Solidarity for Peace and Unification



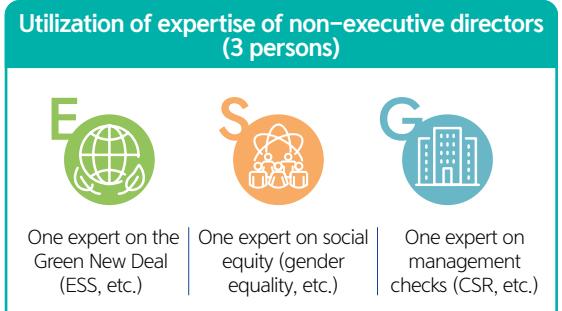
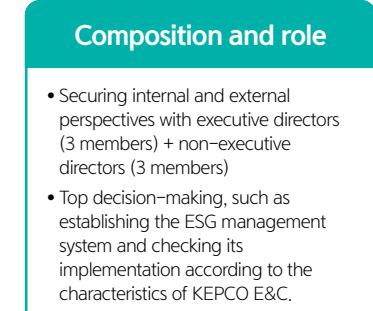
BOD Performance

KEPCO E&C operates an open BOD to realize win-win and transparent management, with one person recommended by the labor union present to observe, depends on the agenda.

Type	Unit	2019	2020	2021
Meetings	No. of meetings held	11	12	12
Resolution agendas	No. of items	28	41	40
Reporting agendas	No. of items	14	10	9
BOD meeting attendance rate	%	94.8	98.2	98.3
- Attendance rate of non-executive directors	%	94.2	98.2	98.6
- Attendance rate of standing directors	%	93.2	97.9	97.9
Management advice by non-executive directors	Cases	35	37	50
Employee observation	Cases	Not applicable	3	5

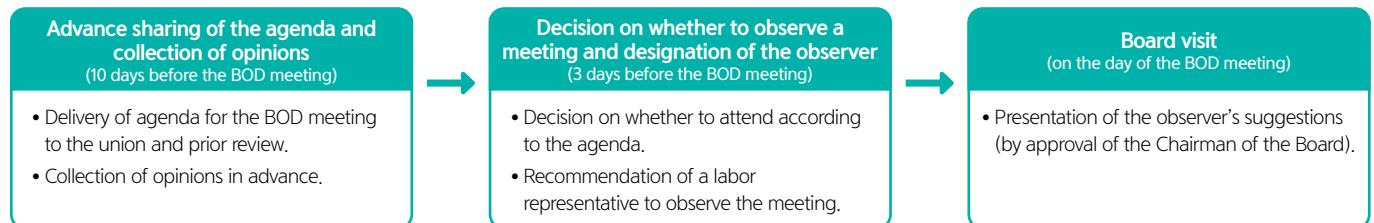
Subcommittees

KEPCO E&C revised its BOD regulations and added a provision to establish a committee within the BOD. We realize ESG management by establishing the ESG Subcommittee to expand management participation by utilizing the expertise of the BOD.



Open BOD with Employees

KEPCO E&C encourages employees' participation in the BOD meetings to create an open board that reflects their opinions. The labor union shares the agenda of the BOD meeting in advance and collects opinions internally. It then selects a representative employee to convey its opinions and observe the BOD meeting. This year, the union representative participated in the review of the revisions of the employment rules and executive salary regulations, and reflected employees' opinions on major wage and welfare issues.



Ethical Management

Ethical Management System

Anti-Corruption and Civil Rights Commission
Excellent Grade in overall Integrity

Grade **3** in 2020 Grade **2** in 2021

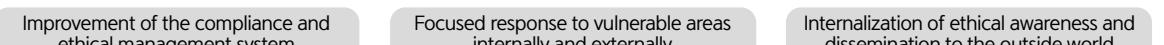
Vision on ethics

“Trusted KEPCO E&C through ethics and integrity”

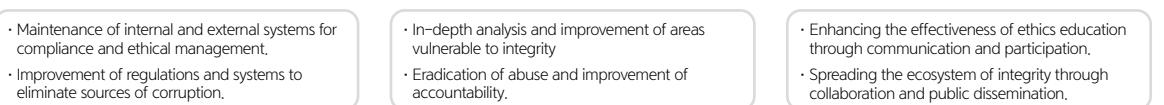
Roadmap



Implementation direction



Implementation programs



Implementation system



unfair trade

Zero

Instilling ethics and self-integrity

KEPCO E&C communicates continuously with both its internal and external stakeholders and raises ethical awareness by implementing various systems to strengthen integrity. We discuss ways to improve internal integrity through the Ethical Management Practice Council, our internal ethical organization, and internalize the integrity culture from a fair perspective by appointing Integrity Citizen Observers consisting of a lawyer and an anti-corruption policy expert. We are striving to strengthen the ethical competency of our employees by providing customized ethical management education for each field and continuously running related campaigns.



Education on Conflicts of Interest for Senior Executives/
Officials by Invited Specialized Lawyers



Campaign for Integrity and Ethics Emphasis Period

Grade of Excellence

in internal integrity score for three consecutive years

Areas of Improvement	Improvements
Protection of whistleblowers and improvement of effectiveness in detecting corruption and imposing punishments/penalties	<ul style="list-style-type: none"> Added the Corruption Claims Report Center to the Anonymous Reporting Center System. Reinforced reporting on passive administration and implemented reporting simulation training.
Blocking of improper budget execution	<ul style="list-style-type: none"> Announced the standard for the use of meeting expenses and precautions. Established a regular system for monitoring corporate card use.
Prevention of illegal work orders/abuse	<ul style="list-style-type: none"> Promoted information on unfair business instructions/abuse report handling center and carried out campaigns. Conducted self-inspection of unfair work orders.
Fair trade/contract CS improvement	<ul style="list-style-type: none"> Added the Pledge for Fair Contracting and distributed the design document at the time of bidding for construction projects. Reinforced integrity in signing private contracts (mandatory checking of whether a KEPCO E&C retiree is employed as an executive within two years).

Implementation of an internal checking system

Multifaceted internal control system

Key Controls	Control Activity		
	1st	2nd	3rd
Financial risk (Accounting fraud)	Internal examination of accounts settlement	Inspection of settlement details and report on the settlement of accounts	Accounting (financial) audit
Managing the response to COVID-19	Compliance with laws and government guidelines	Creation/revision of guidelines, compliance check, etc.	Specific audits and service audits
Reinforcement of nuclear power plant safety	Compliance with design procedures and the original inspection method	Equipment verification, safety design check, and quality audit	Specific audit by the responsible department

Operational system

Establishment of voluntary inspection of the internal control (CSA) system		
Audit Department	Field Department	Audit Department
<ul style="list-style-type: none"> Identifying risk factors Creating a checklist Supporting voluntary inspection 	<ul style="list-style-type: none"> Risk factors identification <ul style="list-style-type: none"> Checklist identification Voluntary inspection Submitting inspection results 	<ul style="list-style-type: none"> Result analysis Use of ideas Incentives, etc.

(2021) Derived the voluntary inspection checklist for internal control (CSA) (48 risk factors and 311 check items) and laid the foundation for system operation.

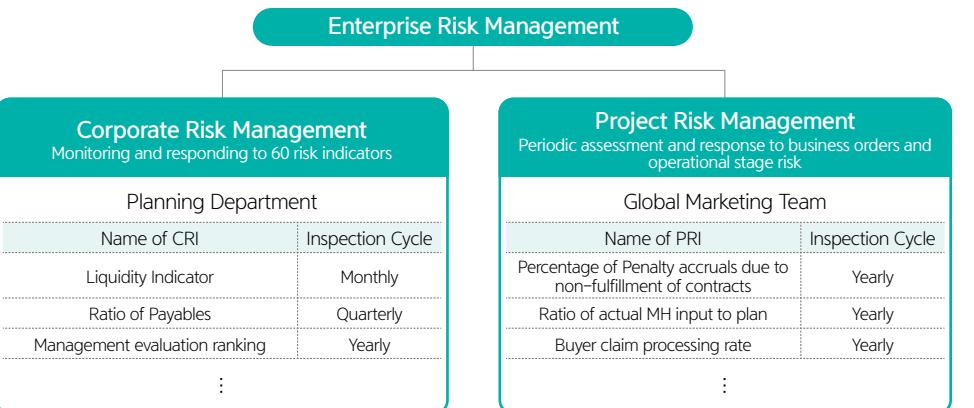
Advancement of ethical management

KEPCO E&C measures the integrity of a public institutions from stakeholders, conducts its own internal integrity survey to identify issues and causes requiring continuous improvement, and actively improves them. As a result, the company's external integrity index rose from 8.61 points in 2020 to 9.07 points in 2021, while its internal integrity level received a grade of excellence (2nd grade) for a third consecutive year.

Risk Management

Risk management system

Continuous risk management and preemptive responses are essential to minimize the possibility of business losses and ensure business stability. Accordingly, KEPCO E&C systematically manages risks through the risk management department according to company regulations. The department in charge collects 60 corporate risk indicators (CRI) and 36 project risk indicators (PRI) in order to detect risks in time, respond to them promptly, and inspect them according to the cycle of each indicator. In this way, we are improving the stability and soundness of our financial structure while doing our best to win business orders and manage our business operations.



Advancement of the foreign exchange risk management system

As exchange rate volatility is increasing due to rising international oil prices and concerns about inflation, KEPCO E&C, which operates various overseas businesses, is exposed to the risks associated with fluctuations in exchange rates. Accordingly, we have responded preemptively to exchange fluctuations by developing and operating the FX Index, which measures and manages foreign exchange risk on a regular basis.

Step-by-step response plan for each scenario

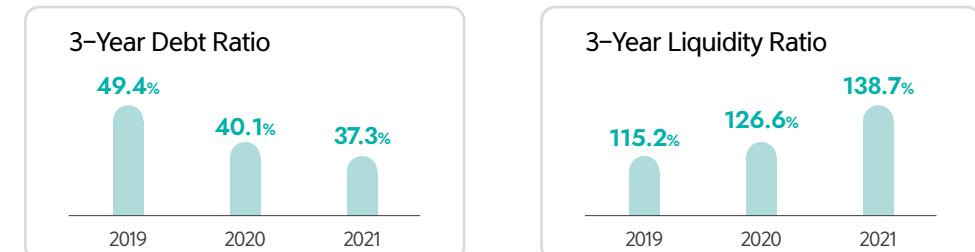
KEPCO E&C FX Index	
Index name (exchange rate change)	Abnormality criteria (%)
Won-dollar Implied volatility	>12
Dollar index	>4
JPM Index	>8
Won-dollar exchange rate	>1

Situation Level	GREEN (Stable)	AMBER (Caution)	RED (Warning)
Situational signs (Scenario)	<ul style="list-style-type: none"> General situation Tolerable range of risk 	<ul style="list-style-type: none"> Temporary crisis in real finance Emphasis on geopolitical risks, etc 	<ul style="list-style-type: none"> Increased instability of the financial system Proliferation of a macroeconomic crisis
Situation evaluation criteria (Indicator)	<ul style="list-style-type: none"> $VaR < 0.5\%$ of 3-year average sales Fewer than 2 FX Index anomalies 	<ul style="list-style-type: none"> $VaR \geq 0.5\%$ of 3-year average sales 2 or more FX Index anomalies 	<ul style="list-style-type: none"> $VaR \geq 1.0\%$ of 3-year average sales 3 or more FX Index anomalies
Scenario Countermeasures	<ul style="list-style-type: none"> Continuous monitoring of the foreign exchange market Quarterly VaR measurement anomalies 	<ul style="list-style-type: none"> Action plan based on the foreign currency inflow and outflow plan of each division 	<ul style="list-style-type: none"> Use of currency risk management techniques Convocation of an emergency exchange risk management committee, if necessary

*VaR (Value at Risk): The maximum amount of loss that can occur; refers to a market risk prediction indicator.

Systematic liquidity and soundness management

Due to the prolonged COVID-19 outbreak, KEPCO E&C is striving to secure liquidity more stably. As a result, the debt and liquidity ratio has improved for three consecutive years. By acquiring an international credit rating (Moody's) A2 (investment grade), KEPCO E&C was able to publicly reaffirm its sound financial position.



Improvement of the financial structure through asset management

As the number of investment development projects continues to increase, KEPCO E&C has tried to manage existing risks by improving its financial structure. Accordingly, in December 2021, the BOD officially approved the decision to sell the old office building in Yongin, which has an appraised value of KRW 75.32 billion, and plans to use it for investment projects that suit KEPCO E&C's long-term development direction of strengthening its future growth engines. We will continue to lay secure foundations for stable management by stably and efficiently managing our financial assets and tangible/intangible assets.

Strategic budgeting

KEPCO E&C has organized its budget rationally and strategically in connection with its mid-to long-term management strategy. The main purpose of the budget is to allocate KEPCO E&C's resources optimally so as to be able to carry out future projects successfully in line with the paradigm shift in the energy industry. By strengthening budget review and cost management, we have also been able to monitor the feasibility of budget formation and execution more thoroughly, and we have made efforts to reduce unnecessary expenses throughout the company. As a result, we have achieved our goal of reducing ordinary expenses by more than 200% for two consecutive years and maintained a high level of business productivity (net sales per capita).

Technical information management

As technology is a unique core competency of KEPCO E&C, we make sure to manage it in advance so as to prevent leakage accidents. By developing an integrated inquiry system for technical information usage records, we have strengthened the monitoring of special users and prospective retirees. Moreover, we have reclassified the technical data grades more adequately, and strengthened the technical information inspection system and restructure it to be governed by information security department, which was previously governed by each department. Due to our strengthened internal control system, we are maintaining zero technical information leakage accidents.



Appendix

- 58 Data Center
- 65 SASB
- 67 GRI Content Index
- 69 United Nations Global Compact(UNGC)
- 70 Third Party Assurance Statement
- 73 Awards and Association Membership



Data Center

Economic

Consolidated Statement of Financial Position

Category	Unit	45th Period(2019)	46th Period(2020)	47th Period(2021)
Assets				
Current assets		257,592,435,097	237,874,869,211	256,440,278,104
Cash and cash equivalents		69,303,590,544	39,077,073,089	30,204,436,969
Current financial assets		1,110,981,120	28,681,380,954	3,808,363,053
Trade and other receivables		52,275,893,301	48,168,503,968	37,500,797,968
Due from customer for contract work		125,924,583,725	109,623,398,354	160,431,317,707
Income tax assets		-	64,068,870	65,864,280
Current non-financial asset		8,977,386,407	12,260,443,976	7,649,790,120
Non-current assets held for sale		-	-	16,779,708,007
Non-current assets		477,614,435,523	462,416,532,904	449,069,012,882
Non-current financial assets		36,570,374,734	36,325,052,709	35,112,643,123
Long-term trade and other receivables		10,967,646,923	16,244,044,731	28,416,827,374
Property, plant, and equipment		290,322,842,980	281,886,884,506	270,392,159,033
Intangible assets		46,384,643,714	40,787,291,721	33,288,544,319
Investment property		18,725,619,128	17,710,361,152	-
Investments in associate and joint venture		3,840,612,292	3,580,674,287	4,272,079,398
Deferred income tax assets		67,922,552,814	62,575,658,446	55,895,982,468
Non-current non-financial assets		1,833,781,372	1,321,776,427	2,941,210,850
Net defined benefit assets		1,046,361,566	1,984,788,925	18,749,566,317
Total assets		735,206,870,620	700,291,402,115	705,509,290,986
Liabilities				
Current liabilities		223,522,061,943	187,343,864,831	183,566,381,261
Trade and other payables		103,339,871,232	83,600,382,878	98,271,737,555
Due to customers for contract work		60,507,738,736	55,311,106,307	38,716,094,847
Current financial liabilities		-	-	10,000,000
Income tax liabilities		13,764,842,213	179,270,121	226,852,663
Current non-financial liabilities		1,551,553,324	4,625,917,357	7,413,698,746
Current provisions		44,358,056,438	43,627,188,168	38,027,997,450
Liabilities held for sale		-	-	900,000,000
Non-current liabilities		19,472,049,245	13,873,024,662	8,491,982,844
Non-current trade and other payables		949,904,000	1,525,526,138	1,485,735,686
Non-current financial liabilities		10,000,000	10,000,000	-
Non-current non-financial liabilities		10,150,053,731	7,404,475,898	4,445,059,144
Provisions		8,362,091,514	4,933,022,626	2,561,188,014
Total liabilities		242,994,111,188	201,216,889,493	192,058,364,105
Equity				
Paid-in capital		492,212,759,432	499,074,512,622	513,450,926,881
Share capital		7,644,000,000	7,644,000,000	7,644,000,000
Retained earnings		495,248,674,555	502,096,768,135	516,484,265,624
Legal reserve		3,822,000,000	3,822,000,000	3,822,000,000
Voluntary reserve		455,269,466,924	479,633,188,005	487,546,499,725

Category	Unit	45th Period(2019)	46th Period(2020)	47th Period(2021)
Unappropriated retained earnings		36,157,207,631	18,641,580,130	25,115,765,899
Other equity components		(10,300,328,600)	(10,300,328,600)	(10,300,328,600)
Treasury shares		(10,300,328,600)	(10,300,328,600)	(10,300,328,600)
Accumulated other comprehensive income		(379,586,523)	(365,926,913)	(377,010,143)
Total equity		492,212,759,432	499,074,512,622	513,450,926,881
Total liabilities and equity		735,206,870,620	700,291,402,115	705,509,290,986

Consolidated Statement of Comprehensive Income

Category	Unit	45th Period(2019)	46th Period(2020)	47th Period(2021)
Sales		448,634,709,421	431,722,625,741	433,126,639,421
Service		433,076,652,296	422,177,490,839	378,910,476,739
Construction		15,558,057,125	9,545,134,902	54,216,162,682
Cost of Sales		324,495,588,444	309,712,482,898	326,176,966,955
Service		308,954,413,726	299,937,693,584	276,139,521,419
Construction		15,541,174,718	9,774,789,314	50,037,445,536
Gross profit		124,139,120,977	122,010,142,843	106,949,672,466
Selling, general and administrative expenses		80,070,192,182	92,438,755,692	96,821,949,794
Operating profit		44,068,928,795	29,571,387,151	10,127,722,672
Finance income		2,639,113,356	2,012,516,807	1,958,469,981
Finance costs		93,290,915	95,785,244	48,094,201
Other income		15,097,672,327	3,263,059,367	7,596,268,653
Other expenses		17,867,604,810	8,293,834,555	2,511,599,446
Other income (loss), net		(9,455,925,761)	(46,188,901)	129,982,323
Gain (loss) from appreciation of investment assets accounted in equity method		(118,318,054)	126,066,401	474,778,260
Profit before income tax		34,270,574,938	26,537,221,026	17,727,528,242
Income tax expense		7,872,727,809	6,377,137,669	1,275,066,222
Profit for the year		26,397,847,129	20,160,083,357	16,452,462,020
Other comprehensive income for the year, net of tax		9,760,895,087	(1,504,843,617)	8,652,220,649
Items that are or may be reclassified subsequently		1,534,585	13,659,610	(11,083,230)
Share of comprehensive income of joint venture		1,534,585	13,659,610	(11,083,230)
Items that will never be reclassified to profit or loss		9,759,360,502	(1,518,503,227)	8,663,303,879
Remeasurements of the defined benefit liability, net of tax		9,759,360,502	(1,518,503,227)	8,704,697,321
Share of remeasurements of the defined benefit liability of associate		-	-	(41,393,442)
Other comprehensive income (loss) for the period, net of tax		-	(1,504,843,617)	8,652,220,649
Total comprehensive income for the year		36,158,742,216	18,655,239,740	25,104,682,669
Earnings per share	KRW	694	530	432
Basic and diluted	KRW			

Environment

	Type	Unit	2019	2020	2021
Consumption of each energy source	Fuel	TJ	14.08	11.24	10.13
	Electricity	TJ	119.89	117.63	113.88
	Total Amount	TJ	133.97	128.87	123.58
Direct/indirect greenhouse gas emissions	Scope 1	tCO2eq	961.25	726.59	724.01
	Scope 2	tCO2eq	5,822.67	5,713.04	5,449.76
	Total emissions	tCO2eq	6,783.92	6,439.63	6,173.76
Water Usage	Phases	Ton	90,293.00	75,386.00	70,921.00
	Heavy water	Ton	2615.00	3,241.00	2,608.00
	Excellent	Ton	262.00	371.00	301.00
	Total water usage	Ton	93,170.00	78,998.00	73,830.00
Atmospheric pollutant emissions	Total atmospheric pollutant emissions*	m3	-**	48,230,163	47,072,540
General waste treatment	Recycling	Ton	156.00	111.00	94.00
	Municipal waste	Ton	95.00	184.00	184.00
	Total waste	Ton	251.00	295.00	278.00
Eco-friendly technology development	Eco-friendly R&D personnel	M/M	160.3	193.2	301.2
	Eco-friendly R&D expenses	KRW million	2,990	3,657	5,504
Environmental law and regulation violations	Number of violations	Case	0	0	0
	Monetary penalty	KRW million	0	0	0
	Environmental debt	KRW million	0	0	0
Purchase of green products	Total purchase amount	KRW million	86,622	125,948	115,059
	Green product purchase amount	KRW million	1,223	2,300	1,005
	Green product purchasing ratio	%	1.41	1.83	0.87

* Integrated management of NOx, SOx, and dust.

** Measurement will be implemented from 2020.

Society

	Type	Unit	2019	2020	2021
Manpower status	Total	—	persons	2,332	2,347
	Gender				
	Male	—	persons	2,016	2,007
	Female	—	persons	316	340
	Percentage of female employees	—	%	13.6%	14.5%
	By age group				
	Younger than 30 years	—	persons	287	303
	30s	—	persons	669	658
	40s	—	persons	406	380
	50 years or older	—	persons	970	1,006
by region	by region				
	Domestic	—	persons	2,332	2,347
	Direct Overseas	—	persons	—	—
	By rank				
	Executive	Total	persons	5	5
		Male	persons	5	5
		Female	persons	—	—
Principal level	Principal level	Total	persons	96	98
		Male	persons	94	95
		Female	persons	2	3
	Chief level	Total	persons	263	254
		Male	persons	259	250
		Female	persons	4	4
	Lead level	Total	persons	1,238	1,241
		Male	persons	1,125	1,118
		Female	persons	113	123
Senior level	Senior level	Total	persons	262	275
		Male	persons	205	219
		Female	persons	57	56
	Junior level	Total	persons	316	319
		Male	persons	231	220
		Female	persons	85	99
	Contract employees	Total	persons	152	155
		Male	persons	97	100
		Female	persons	55	55
By employment type	By employment type				
	Regular full-time	Total	persons	2,142	2,156
	Indefinite contract	Total		21	20
	Contract	Total		169	171
	Status of female personnel status				
	Female managers	—	persons	14	21
	Ratio of female employees	—	%	316	340

	Type		Unit	2019	2020	2021
Manpower status	Ratio of female managers	-	%	4%	6%	7%
	Status of socially vulnerable employees					
	Disabled persons	-	persons	60	92	72
	Percentage of people with disabilities	-	%	2.64%	4.01%	3.02%
	National veterans and patriots	-	persons	91	92	93
	Percentage of national veterans and patriots	-	%	3.90%	3.92%	3.95%
Recruitment and retirement status	Status of recruitment of new regular employees					
	New employees (by gender)	Total	persons	83	81	88
		Male	persons	64	55	60
		Female	persons	19	26	28
	Disabled persons	-	persons	1	3	1
	Local talents in non-metropolitan regions	-	persons	37	38	44
	Local talents in relocated regions	-	persons	24	15	21
	High school graduates	-	persons	0	0	6
	Recruitment of young interns					
	New employees (by gender)	Total	persons	182	198	109
		남성	persons	84	90	48
		여성	persons	98	108	61
	Disabled persons	-	persons	10	26	5
	Local talents in non-metropolitan regions	-	persons	102	148	41
	Local talents in relocated regions	-	persons	55	66	21
	High school graduates	-	persons	3	0	0
Flexible working system	Retirement status					
	Regular retirement	Total	persons	54	56	63
	Honorary retirement	Total	persons	0	6	2
	Voluntary turnover	Total	persons	45	30	41
		Turnover rate	%	2%	1%	2%
	Time selection scheme	-	persons	18	13	162
	Staggered commuting	-	persons	476	528	429
	Flexible work	Selective working hours	persons	1,514	1,551	1,407
		Focused work type	persons	9	5	2
	Total	-	persons	2,017	2,097	2,000
Parental Leave	Parental leave	Total	persons	28	37	43
		Male	persons	10	15	23
		Female	persons	18	22	20
	Employees returning from parental leave	Total	persons	28	35	41
		Male	persons	10	14	22
		Female	persons	18	21	19
	Employees who have worked for 12 months after returning from parental leave	Total	persons	28	33	-
		Male	persons	10	13	-
		Female	persons	18	20	-

	Type		Unit	2019	2020	2021
Parental Leave	Rate of return from parental leave	Total	%	100	95	95
		Male	%	100	93	96
		Female	%	100	95	95
	Employees who complete 12 months or longer service	Total	%	100	94	-
		Male	%	100	93	-
		Female	%	100	95	-
Employee education	Total attendance	Total	persons	1,785	1,771	1,758
	Total education time	Total	Hours	117,266	117,209	130,000
	Total education cost (distributed by the ratio of males to females)	Total	KRW million	5,821	5,801	5,465
	Average cost of education per person	-	KRW million	3.3	3.3	3.1
	Average no. of hours of education per person	Total	Hours	65.7	66.2	73.9
	Education satisfaction	Total	Score	4.23	4.07	4.11
	Labor union enrollment	Employees enrolled in the labor union	-	persons	1,516	1,448
		Labor union enrollment rate	-	%	99.1%	99.2%
	Shared growth status	Purchases from SMEs	-	KRW 100 million	77,038	100,838
		Purchases from social enterprises	-	KRW 100 million	4.4	3.8
		Purchases of technology development products	-	KRW 100 million	13.5	7.9
		Purchases of Onnuri gift certificate	-	KRW 100 million	7.5	8.6
		Evaluation of shared growth of public institutions	-	Grade	Average (84.5)	Good (88.0)
Accidents	Technical education of supplier personnel	-	persons	51	39	109
	Amount of donations for social contribution activities	Donation amount*	-	KRW million	371	365
		Voluntary service time per employee	-	Hours	1,81	0.22
	Social volunteering service by employees	Total voluntary service time by employees	-	Hours	4,225	522
		Number of employees participating in community voluntary service	-	persons	1,648	379
Health and safety education	Industrial Accident Rate	KEPCO E&C	%	0.04	0.00	0.09
			Hours per persons	1	1	3
		Partner companies	%	0.00	0.41	0.41
	Number of deaths	KEPCO E&C	persons	0	0	0
		Partner companies	persons	0	0	0
		KEPCO E&C	persons	1	0	2
	Number of injured	Partner companies	persons	0	1	1
		KEPCO E&C	persons	1	0	2

*The donation information is available in Disclosure – Prior Information Disclosure on KEPCO E&C's website.

SASB

Governance

	Type	Unit	2019	2020	2021
BOD status	Total number of executives	- persons	10	10	10
	Gender	Male persons	9	8	8
		Female persons	1	2	2
	By age group	Younger than 30 Years persons	0	0	0
		30~50 years old persons	1	1	0
		50 years or older persons	9	9	10
	Number of BOD meetings	- times	11	12	12
	Number of agenda items	All items of agenda Case	42	51	49
		Resolution/report agenda Case	42	51	49
		Special report agenda Case	-	-	-
BOD operational status	BOD meeting attendance rate (%)	- %	94.8%	98.2%	98.3%
	Attendance rate of non-executive directors	- %	94.2%	98.2%	98.6%
	Number of internal violations of ethical management	- Case	-	-	-
	Number of response actions	- Case	-	-	-
	Anti-corruption prevention education	Executives Persons (%)	5(100%)	5(100%)	5(100%)
Ethics education	Employees	Persons (%)	2,243(93.2%)	2,224(94.8%)	2,197(93.2%)
		Suppliers Persons (%)	380 persons	677 persons	725 persons
	Education on human rights	Education on sexual harassment Persons (%)	2,310(96%)	2,333(96%)	2,310(95.9%)
Education on human rights	Number and percentage of employees completing human rights education	Education on the disabled Persons (%)	2,305(96%)	2,335(96%)	2,306(95.8%)
		Education on prostitution Persons (%)	2,290(95%)	2,339(96%)	2,306(95.8%)
		Education on domestic violence Persons (%)	2,279(95%)	2,334(96%)	2,310(95.9%)
		Education on improving awareness of the disabled Persons (%)	2,170 persons (99.3%)	2,123 persons (99.8%)	2114 persons (99.1%)
	Comprehensive Integrity (Anti-Corruption and Civil Rights Commission)	- Grade (Points)	Grade 3 (8.61)	Grade 3 (8.51)	Grade 2 (8.83)
Anti-corruption Policy Assessment	Anti-corruption Policy Assessment	- Grade (Points)	Grade 2 (89.59)	Grade 3 (90.57)	Grade 3 (86.74)
Internal customer satisfaction	Internal customer satisfaction	- points			
Society law and regulation violation	Number of violations	- Case	-	-	1
	Monetary penalty	- KRW 10 thousand	-	-	-

Subject	Code	Measurement Indicator	Response by KEPCO E&C
Environmental Impact of Project Development	IF-EN-160a.1	Number of incidents of non-compliance with environmental permits, standards, and regulations.	KEPCO E&C is trying to prevent the risks of violating environmental laws and regulations in advance through systematic project risk management. As a result, we recorded '0' incidents of non-compliance with environmental permits, standards, and regulations in 2020 and 2021.
	IF-EN-160a.2	Discussion of processes to assess and manage environmental risks associated with project design, siting, and construction.	KEPCO E&C has established and operated the [Project Risk Management (PRM)] to proactively respond to various risks that may occur during the project. We have also set 9 safety, health, and environmental indicators to evaluate and manage environmental risks that may arise during the design process. Furthermore, we apply risk countermeasures at each stage of the project by identifying potential environmental risks. Periodic monitoring of index is also conducted to minimize the environmental impacts of our projects.
Structural Stability and Safety	IF-EN-250a.1	Amount of defect-and safety-related rework costs.	In 2020, the total cost of repairing defects was KRW 1.22 billion. In 2021, the total cost of repairing defects was KRW 0.85 billion.
	IF-EN-250a.2	Total amount of monetary losses as a result of legal proceedings associated with defect-and safety-related incidents.	There were no costs incurred due to defects or safety-related lawsuits in 2020 and 2021.
Workforce Health & Safety	IF-EN-320a.1	Total recordable incident rate (TRIR) and fatality rate for direct employees and contract employees.	KEPCO E&C has achieved '0 cases' of fatalities and serious accidents for 9 consecutive years.
Lifecycle Impacts of Buildings & Infrastructure	IF-EN-410a.1	Number of projects that received or are pending third party sustainability management certificate.	N/A
	IF-EN-410a.2	Process to incorporate energy and water efficiency considerations into project planning and design.	KEPCO E&C aims to minimize environmental impacts by improving fuel efficiency of energy generation facilities. To do so, we are continuously upgrading our plant design technology and improving the plant management process.
Business Impact from Climate Change	IF-EN-410b.1	Amount of backlog for hydrocarbon related projects and renewable energy projects.	As of 2021, the amount of backlog for hydrocarbon related projects and renewable energy projects are as follows: - Hydrocarbon: KRW 54.3 billion - Renewable energy: KRW 2,447 billion
	IF-EN-410b.2	Amount of backlog cancellations associated with hydrocarbon-related projects.	N/A
	IF-EN-410b.3	Amount of backlog for non-energy projects associated with climate change mitigation.	N/A

GRI Content Index

General Standard Disclosure

Subject	Code	Measurement Indicator	Response by KEPCO E&C
Business Ethics	IF-EN-510a.1	Number of active projects and backlog in countries that have the 20 lowest rankings in Transparency International's Corruption Perception Index (CPI).	In 2020 and 2021, there were no projects and backlogs in countries that have the 20 lowest rankings in Transparency International's Corruption Perception Index (CPI).
	IF-EN-510a.2	Total amount of monetary losses as a result of legal proceedings associated with charges of bribery or corruption and anticompetitive practices.	In 2020 and 2021, there were no fines, or settlements for bribery, corruption, and anticompetitive practices.
	IF-EN-510a.3	Policies and practices for prevention of bribery and corruption, and anti-competitive behavior in the project bidding processes.	To eradicate various forms of corruption and create an ethical organizational culture company-wide, KEPCO E&C developed a code of ethics for executives and employees to comply with. In particular, we are striving to comply with fair trade and eliminate anti-competitive behavior by separately enacting the code of ethics for professional engineers and specifying provisions such as "no acceptance of business commission", and "no acceptance of bribes".
Activity Metrics	IF-EN-000.A	Number of active projects	As of the end of 2021, we are in the process of conducting 257 projects.
	IF-EN-000.B	Number of commissioned projects	As of the end of 2020, 81 projects were completed, and as of the end of 2021, a total of 67 projects were completed.
	IF-EN-000.C	Total backlog	As of the end of 2020, the total backlog was KRW 1.3898 trillion, and as of the end of 2021, the total backlog was KRW 1.2556 trillion.

Core Option	Topic	Disclosure	Page	UN SDGs
Universal Standards				
GRI 102: General Disclosure				
Organizational profile	102-1	Name of the organization	6	
	102-2	Activities, brands, products, and services	10~13	
	102-3	Location of headquarters	6	
	102-4	Location of operations	8~9	
	102-5	Ownership and legal entity form	6	
	102-6	Markets served	10	
	102-7	Scale of the organization	6	
	102-8	Information on employees and other workers	6, 61~62	
	102-9	Supply chain	34~36, 63	
	102-10	Significant changes to the organization and its supply chain	7	
	102-11	Precautionary Principle or approach	15~16	
	102-12	Externally initiatives	73	
Strategy	102-13	Membership of associations	73~74	
	102-14	Statement from senior decision-maker	4~5	
Ethics and integrity	102-16	Values, principles, standards, and norms of behavior	52~53	
Governance	102-18	Governance structure	50	
	102-40	List of stakeholder groups	17	
	102-41	Collective bargaining agreements	63	
	102-42	Identifying and selecting stakeholders	17	
	102-43	Approach to stakeholder engagement	17	
Stakeholder Engagement	102-44	Key topics and concerns raised	18~19	
	102-45	Entities included in the consolidated financial statements	6	
	102-46	Defining report content and topic Boundaries	About this Report	
	102-47	List of material topics	18~19, 67	
	102-48	Restatements of information	Not applicable	
	102-49	Changes in reporting	18~19	
	102-50	Reporting period	About this Report	
	102-51	Date of most recent report	*2021. 05	
	102-52	Reporting cycle	About this Report	
	102-53	Contact point for questions regarding the report	About this Report	
	102-54	Claims of reporting in accordance with the GRI Standards	About this Report	
	102-55	GRI content index	67~68	
Reporting Practice	102-56	External assurance	70~72	

* KEPCO E&C reported its sustainability management performance for 2019~2020 in the Report on KEPCO E&C's Implementation of the UNGCs.

Disclosure of Specific Standards

Core Option	Topic	Disclosure	Page	UN SDGs
Topic-specific standards				
Material Issue 1. Expansion of New Growth Business				
Management Approach	103-1,2,3		22~23	
Indirect Economic Impacts	203-2	Significant indirect economic impacts	10~13, 24~25	
Material Issue 2. Response to Climate Change				
Management Approach	103-1,2,3		22~23	
Emissions	305-1	Direct (Scope 1) GHG emissions	60	
	305-2	Energy indirect (Scope 2) GHG emissions	60	
	305-5	Reduction of GHG emissions	27	
Material Issue 3. Employee Training and Education				
Management Approach	103-1,2,3		28~29	
Training and Education	404-1	Average hours of training per year per employee	63	
	404-2	Programs for upgrading employee skills and transition assistance programs	41	
Material Issue 4. Ethics and Integrity				
Management Approach	103-1,2,3		48~49	
Socioeconomic Compliance	419-1	Non-compliance with laws and regulations in the social and economic area	64	
-	-	Comprehensive Integrity (Anti-Corruption and Civil Rights Commission)	64	
-	-	Anti-corruption Policy Assessment	64	
-	-	Employee ethics/human rights training status	64	
Material Issue 5. R&D and Technological Innovation				
Management Approach	103-1,2,3		22~23	
-	-	Development of eco-friendly energy technology	26~27	
Material Issue 6. Employment				
Management Approach	103-1,2,3		28~29	
Employment	401-1	New employee hires and employee turnover	62	
	401-2	Benefits provided to full-time employees that are not provided to temporary or part-time employees	42	
	401-3	Parental leave	62	
Material Issue 7. Expansion of Waste Management and Recycling				
Management Approach	103-1,2,3		22~23	
Waste	306-2	Waste by type and disposal method	60	
-	-	Development of eco-friendly waste treatment technology	27	

UN Global Compact

The UN Global Compact (UNGC) presents ten principles in the four principal areas of human rights, labor, environment, and anti-corruption to promote sustainable development to companies. Since 2007, KEPCO E&C has been striving to fulfill its corporate social responsibility by complying with the ten principles of UNGC.



COMMUNICATION ON PROGRESS

Type	Principles	Page
Human Rights	1. Businesses should support and respect the protection of internationally proclaimed human rights.	43
	2. make sure that they are not complicit in human rights abuses.	43
	3. Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining.	43
	4. Elimination of all forms of forced and compulsory labour.	43
	5. Effective abolition of child labour.	43
	6. Elimination of discrimination in respect of employment and occupation.	43
Labour	7. Businesses should support a precautionary approach to environmental challenges.	22~27
	8. Undertake initiatives to promote greater environmental responsibility.	22~27
	9. Encourage the development and diffusion of environmentally friendly technologies.	22~27
Anti-corruption	10. Businesses should work against corruption in all its forms, including extortion and bribery.	52~53

Independent Assurance Statement

Control Union Certifications was commissioned by KEPCO Engineering & Construction Co., Ltd. (hereafter KEPCO E&C) to conduct an independent assurance of 2021 KEPCO E&C Sustainability Report.

The information in the Sustainability Report is the exclusive responsibility of KEPCO E&C. Control Union Certifications was not involved in the preparation of any material included in this document.

The responsibility of Control Union is to express an opinion concerning the information including graphs, tables and statements included in the Report, within the assurance scope mentioned below, with the purpose to inform all the Interested Parties.

Assurance Scope

The assurance engagement has been planned and performed in accordance with AA1000AS v3 and the assurance criteria below to a “Moderate level of assurance” where the scope was a Type 2 engagement. The sustainability report is developed using the Global Reporting Initiative (GRI) standards. The assurance process involves evaluation of adherence to the AA1000 AccountAbility Principles of Inclusivity, Materiality, Responsiveness and Impact. Confirming that the report is in accordance with GRI Standards and evaluating the accuracy and reliability of data and information for only the selected indicators listed below:

- GRI 102: General Disclosures
- Material Topic 1, Expanding the new growing business: GRI 103-1~3, GRI 203-2
- Material Topic 2, Responding to climate change: GRI 103-1~3, GRI 305-1~2, 5
- Material Topic 3, Training and Education: GRI 103-1~3, GRI 302-1, GRI 404-1~2
- Material Topic 4, Ethics and anti-corruption: GRI 103-1~3, 419-1
- Material Topic 5, R&D and technological innovation: GRI 103-1~3
- Material Topic 6, Employment: GRI 103-1~3, GRI 404-1~3
- Material Topic 7, Waste management and Expanding recycling: GRI 103-1~3, GRI 306-2

Inclusivity

Engagement with stakeholders in the report development process and their involvement in organizational decision making.

KEPCO E&C has defined the stakeholders by dividing them into executives and employees, labor unions, partner companies, shareholders, local society, ordering parties, citizens, government, and reflects their opinions in decision-making. The verification team did not find any important stakeholder groups excluded from the process of communicating with stakeholders through state audit/business liaison room, nuclear public institutions council, relocated public institutions council, open management briefing, CEO communication program, expansion executive meeting, portal bulletin board, labor-management council, win-win growth academy, Gimcheon win-win dream valley council, public proposal, citizen participation innovation committee, public data openness and information disclosure.

Materiality

Identification of issues in the report that are relevant and significant to the organization's stakeholders, the presence of and the extent to which these material issues are disclosed in the report.

KEPCO E&C identified the material issues using the stakeholder communication channel and their own materiality assessment process. The outcome is a materiality matrix which shows personal information protection for customers' privacy as the most prioritized topic by the stakeholders KEPCO E&C. KEPCO E&C has documented their approach for protecting customer's privacy and tracing the records which related to customer information.

Responsiveness

Acting on stakeholder issues and provision of feedback through decisions, actions, performance and communication.

In order to establish an ESG-friendly management system, KEPCO E&C has established a system that allows transparent communication with stakeholders by connecting and expanding the distributed activity values of each ESG field to the ESG management platform. It was also confirmed that they were communicating with various stakeholders through corporate value reflecting non-financial performance.

Impact

Monitoring, measurement and providing accountability for how the actions of the organization affect the economy, the environment, society, stakeholders or the organization itself.

KEPCO E&C is making every effort to convert into eco-friendly projects such as LNG combined cycle power plant, thermal power plant environment improvement project, new and renewable energy business, and digital engineering expansion based on its experience in various power plant design projects such as coal-fired power plants for the goal of minimizing environmental impact. In particular, KEPCO E&C is pursuing continuous R&D and technological innovation, such as expanding offshore wind power generation and reducing the environmental impact of thermal power plants, for the transition to a carbon-neutral society based on its unique technology. In addition, it was confirmed that KEPCO E&C is striving to develop the local economy through activation of local industries, creating job opportunities, operating open libraries in cooperation with local educational institutions, strengthen the community safety net, and revitalize local consumption. As a result, it was confirmed that KEPCO E&C is making effort to a positive impact on the local community.

Methodology

- Review of internal and external documentary evidence presented by KEPCO E&C
- Review of approach to data collection at company level
- Audit of data presented in the Report including a detailed review of a sample of data
- Review of a selection of internal performance documents

Independence and quality control

Control Union Certifications is accredited according to ISO 17021-1:2015/ISO 17065:2012 covering our global scope and operations. This includes the need to maintain a comprehensive system of quality control including documented policies and procedures on compliance to ethical and legal requirements as well as objectivity throughout our operations. The auditors were selected appropriately based on our internal qualifications, training and experience. It is also reviewed by management to ensure that the applied approach and assurance are strictly followed and operated transparently.

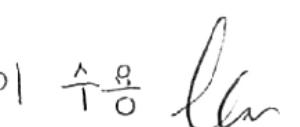
Conclusions

Based on our moderate assurance process, nothing has come to our attention that causes us to believe that the scope (subject matter) as detailed above and presented in the report is not presented fairly in accordance with the criteria. Hence, our work confirms that the information included in the sustainability report is reliable and objective and is presented clearly and understandably. We provide the following recommendations to the extent that it does not affect the results of the assurance:

KEPCO E&C is a company that possesses comprehensive nuclear power plant design and reactor system design technology.

- KEPCO E&C is the largest company in Korea, which has architect engineering, nuclear steam supply system design, and various latest technologies of nuclear power plant with international competitiveness. In the process of verifying this report, it was confirmed that issues such as expanding the new growing business, responding to climate change, training and education, ethics and anticorruption, R&D and technological innovation, employment, and waste management/expanding recycling are sufficiently important. It was also confirmed that as a state-run company related to power plant construction in Korea, it is strengthening community-based social contribution activities. However, it is necessary to accumulate, manage, and report related data to respond to impact measurement, internalization of ESG management, and ESG-related performance reporting issues that will be more emphasized in the future. In addition, it is necessary to steadily publish sustainability reports to track and manage KEPCO Engineering & Construction's ESG performance.

Martin (Sooyong) Lee
Managing Director of
Control Union Korea Co., Ltd

01 ^{수정} 

On behalf of Program manager
Jon Heinrichs
1 April, 2022





Awards and Association Memberships

Awards

Award Name	Managed by	Year of Award
Overseas Development Award	The Korea Engineering and Consulting Association	2020
Prime Minister's Commendation as an Excellent Family-Friendly Company	The Ministry of Gender Equality and Family	2020
Shared Growth Achievement Award	The Ministry of SMEs and Startups	2021
Gold Award and Special Award for International Invention Patent Competition	KEPCO	2021
Upstanding Auditor Grand Prize for Korea Auditor Contest	The Institute of Internal Auditors	2021
Smart Construction Challenge Innovation Award	The Ministry of Land, Infrastructure and Transport	2021
Hope Award at the 8th Fruit of Love Grand Prize	Community Chest of Korea	2021
Excellence Award for Best Participation in the Happy Together Movement	Gimcheon City Hall	2021
Commendation from the Electricity Industry Promotion Contest on Electricity Day	The Korea Electric Association	2021
Commendation from the Power Technology R&D Performance Conference	KEPRI	2021

Membership to Organizations

(As of January 01, 2022)

Daedeok Innopolis	Korea Electrical Contractors Association	Korea Productivity Center
Korea Fire Safety Institute	Korea Electric Engineers Association	Korean Society of Public Enterprise
Seoul Office of Korea Exchange	Korea Information & Communication Contractors Association	CFO Academy
Korea Listed Companies Association	Korea Software Industry Association	The Korea Academy of Business Ethics
Korea Chamber of Commerce and Industry	International Contractors Association of Korea	Korea Management Association
Korea Architects Registration Board	Environmental Impact Assessment Association	UN Global Compact Network Korea
Construction Association of Korea	Association of Lawyers for Seoul	Korea Plant Industries Association
Korean Association of Spatial Information, Surveying& Mapping (Former Korea Association of Surveying and Mapping)	NYS Office of Court Administration	Professional Infrastructure developers association
Korea association of ESCCO	Emergency Planning Council, Ministry of Trade, Industry and Energy	Institute of Korea Energy Policy for the Future (Power Forum)
Korea Association of Construction Consulting Engineering & Management	Korea Nuclear Association for International Cooperation	Public Corporation Audit Forum
Korea Construction Engineers Association	Council of Daedeok Innopolis chiefs	Korea Special Library Association
Korea International Trade Association	Institute of Internal Auditors Korea	Korea Construction Safety Asosiation
Korea Fire Facility Association	Korea Listed Companies Association (Auditor)	Korea Industrial Safety Association
Korea Fire Safety Association	Korea Council of Chief Information Officers	Human Resource Education Center
Korea Engineering & Consulting Association	Korea Personal Improvement Association	

Membership to Technology-related Organization

(As of January 01, 2022)

Institute of Internal Auditors Korea	Korea Software Industry Association	Daedeok Innopolis
Public Corporation Audit Forum	Korea Engineering & Consulting Association	Institute of Korea Energy Policy for the Future (Power Forum)
Korea Anti-Corruption Law Association	Korea Electrical Contractors Association	Professional Infrastructure developers association
UN Global Compact Network Korea	Korea Information & Communication Contractors Association	Korea Plant Industries Association
Korea Management Association	International Contractors Association of Korea	Korea Nuclear Association for International Cooperation
Korea Architects Registration Board	Environmental Impact Assessment Association	Council of Daedeok Innopolis chiefs
Korean Association of Spatial Information, Surveying & Mapping (Former Korea Association of Surveying and Mapping)	Korea Special Library Association	Korea Chamber of Commerce and Industry
Construction Association of Korea	Korean Society of Public Enterprise	CFO Academy
Korea association of ESCCO	Association of Lawyers for Seoul	Korea Productivity Center
Korea Association of Construction Consulting Engineering & Management	NYS Office of Court Administration	Korea Personal Improvement Association
International	Korea Construction Safety Association	Seoul Office of Korea Exchange
Korea Fire Facility Association	Korea Industrial Safety Association	Korea Listed Companies Association
Korea Fire Safety Association	Daedeok Innopolis	Korea Fire Safety Association
Korea Software Industry Association	Emergency Safety Planner, Ministry of Trade, Industry and Energy	Korea Council of Chief Information Officers



This report has refrained from using different colors during the design process and is printed using soy ink to minimize the environmental impact and the waste of resources.