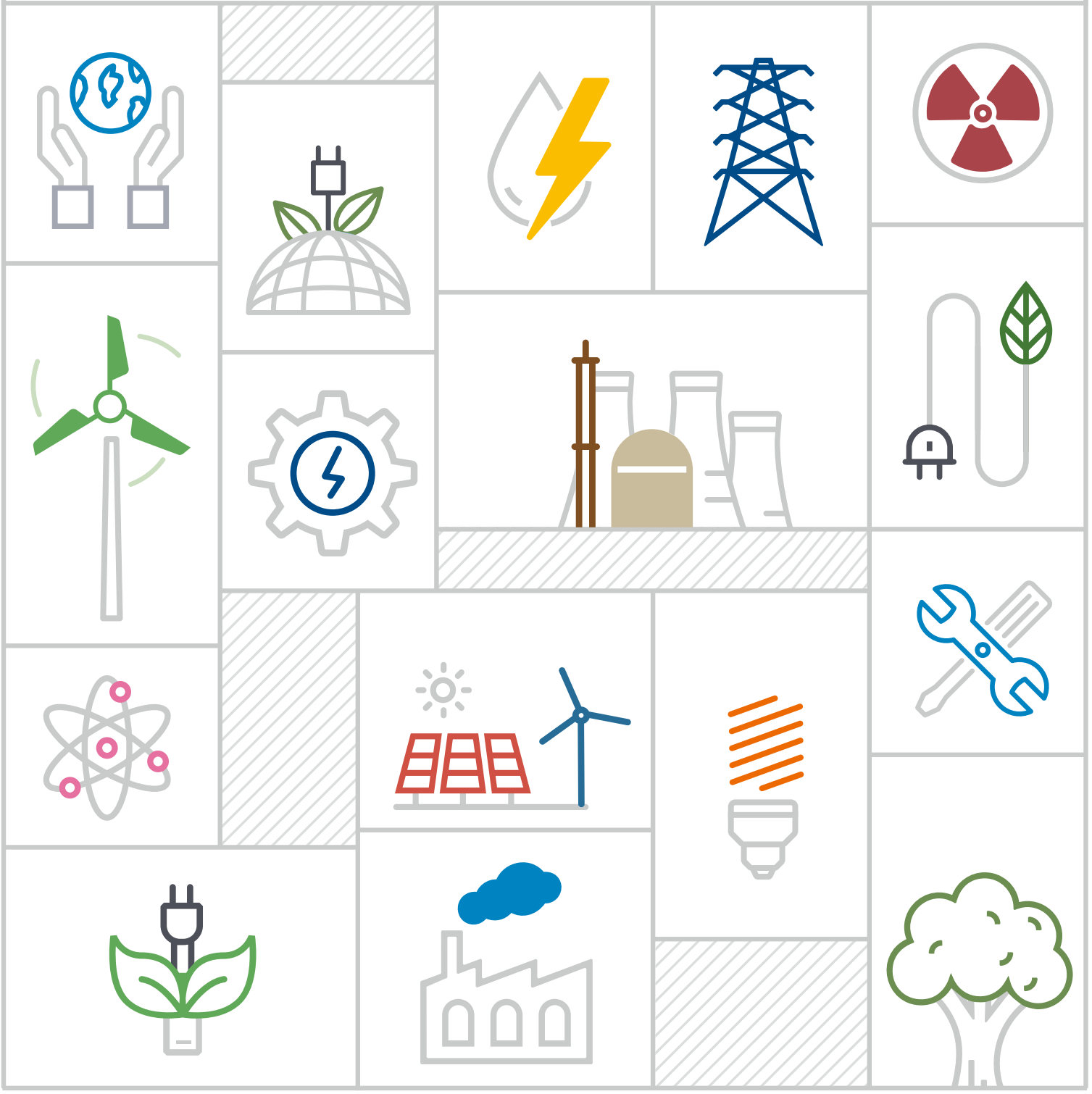
Global Leading Energy Solution Partner

2018 KEPCO E&C Sustainability Report



KEPCO E&C

About This Report

KEPCO Engineering & Construction Company, Inc. (hereinafter 'KEPCO E&C') makes various efforts to attain customer values with the best technologies in the energy industry. It enhances sustainable corporate values by constantly creating outstanding outcomes and fulfilling social responsibility from economic, social and environmental perspectives. KEPCO E&C publishes Sustainability Reports every two years to report its sustainability management performance and activities in a transparent manner.

Reporting Principles	Prepared in accordance with the Global Reporting Initiative (GRI) Standards to fulfill the requirements of the core option(in accordance with) regarding the 'Principles for Defining Report Content' and the 'Principles for Defining Report Quality'
Reporting Scope	Domestic business sites (headquarter and the NSSS Division in Daejeon, etc.), including overseas business sites within a limited scope
Reporting Period	Jan. 1, 2017 ~ Dec. 31, 2018 (including important data for the first half of 2019)
Reporting Guidelines	For performance requiring an annual trend analysis, presentation of time series data covering three years (2016 ~ 2018)
Independent Assurance	Third-Party Assurance Statement
Reporting Frequency	Biennial reporting
Disclosing Principles	Disclosed at all times via the website (www.kepco-enc.com)
Inquiries	Refer to the following contact information for inquiries about the report.

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Letter from CEO

KEPCO E&C will always increase corporate values and sustainability as a leading energy solution company

Dear esteemed stakeholders,
I would like to express my sincere appreciation of your continued support and encouragement. Korea Electric Power Corporation Engineering & Construction (KEPCO E&C) has produced fruitful results thanks to the efforts of all its executives and employees in last year. In response to the energy transition, we have established and implemented business transition strategies actively, and continued to promote technological advances with the aims of focusing on our own business areas such as new nuclear power plants and thermal power plants and making inroads into overseas markets. Furthermore, we have promoted O&M for operating power plants, refurbishment, and environmental projects for growth, while expanding our nuclear power plant backend management, renewable energy and new energy businesses as mid- to long-term growth engines. In addition, by establishing a new business department system focusing on growth and future projects, we established an effective response system for business development and execution, and expanded and reorganized the functions of the research center to develop ICT fusion and the fourth industrial revolution technologies, and to strengthen business capability.

However, KEPCO E&C which has been focusing on engineering of large-scale nuclear and thermal power plants, now faces a new challenge due to the rapidly changing business environment caused by climate change and the energy transition policy. Accordingly, KEPCO E&C strives to turn the crisis into an opportunity for innovative growth by reviewing its mid- to long-term business strategies to respond to the shifting energy paradigm and lead the future market. Also, KEPCO E&C will lead the changes and innovation of the future energy market concentrating on the following four strategic initiatives.

First, KEPCO E&C will lead the ‘Energy Transition’ policy and create new growth engine.

KEPCO E&C will make an effort to develop ‘Safer Nuclear Power Plant’ and ‘Cleaner Thermal Power Plant’ engineering technologies using its world-class technologies. At the same time, KEPCO E&C will pioneer the future market by making investment in renewable energy business and strengthening its business capability.

Second, KEPCO E&C will prepare the groundwork for sustainable growth by concentrating on core capabilities and expand into the global market.

Energy transition and slowdown of the domestic energy market are increasing the necessity of overseas expansion. KEPCO E&C will expand its nuclear power plant engineering businesses to overseas markets through public-private cooperation and key technologies. Furthermore, we will enhance business portfolio with core competencies as nuclear and themal power plant engineering and we plan to spread up personnel exchange with several global leading companies, including Sargent & Lundy in the United States, and expand the scale of dispatch.

Third, KEPCO E&C will secure the power for innovative growth by reorganizing the management system.

KEPCO E&C will secure core technologies in the backend management such as nuclear decommissioning in the early stage, pioneering new markets like small and medium capacity nuclear reactors and developing convergent energy technologies of the fourth industrial revolution. We will enhance the capability of engineers by strengthening relationships with global companies.

Lastly, KEPCO E&C will fulfill social responsibilities as a public enterprise.

KEPCO E&C will take the lead in practicing social values such as job creation, shared growth, social contribution and ethical management. As a local-based public enterprise we will persue global innovation and growth with the local community.

KEPCO E&C has grown into a global energy company on a wasteland of technology. Crises were turned into opportunities to grow competitiveness and increase corporate values. KEPCO E&C is prepared to become a sustainable energy technology company by enhancing corporate values. Please continue to show your encouragement and support so that KEPCO E&C can overcome challenges and achieve sustained growth.

Thank you.

KEPCO E&C President & CEO
Bae-Soo Lee

Company Profile

Introduction

KEPCO E&C was founded in 1975 with the goal of achieving technology self-reliance in the engineering of power plants. It has been the foundation for energy independence and economic growth of South Korea based on its technological capacity to design nuclear, thermal and renewable energy power plants. In particular, KEPCO E&C is one of the world's best power plant design companies that can conduct both architect engineering and nuclear steam supply system design. We have been fulfilling the demand for thermal power plants of varying sizes and uses, and we are pioneering the development of clean thermal power plant design technologies by developing eco-friendly facilities through desulfurization and denitrification to resolve the problem of air pollutant emission. Moreover, KEPCO E&C is also securing competitiveness throughout the energy industry with its eco-friendly and renewable energy projects, transmission and distribution/substation projects, and PM/CM projects based on rich experiences in power plant design and technologies.

Overview

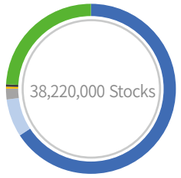
As of December 31, 2018

Company Name	KEPCO Engineering & Construction Company, Inc.
Foundation	01-Oct-75
Purpose	To pursue customer satisfaction and prosperity of humankind by leading the energy industry based on advanced power plant design technology
Grounds	Commercial Act, Article 317: Incorporated company under the Commercial Act
Guardian Agency	Ministry of Trade, Industry and Energy
President & CEO	Bae-Soo Lee
Total Asset	KRW 771,479 million
No. of Employees	2,252 (current)
Business Sites	Head office (Gimcheon), NSSS Division (Daejeon)
Head Office	269 Hyeoksin-ro, Gimcheon-si, Gyeongsangbuk-do

Shareholder Composition

KEPCO E&C was listed on the Korea Exchange in December 2009 with a total of 38,220,000 listed stocks. As of December 31, 2018, Korea Electric Power Corporation (KEPCO) owns 65.77% of stocks.

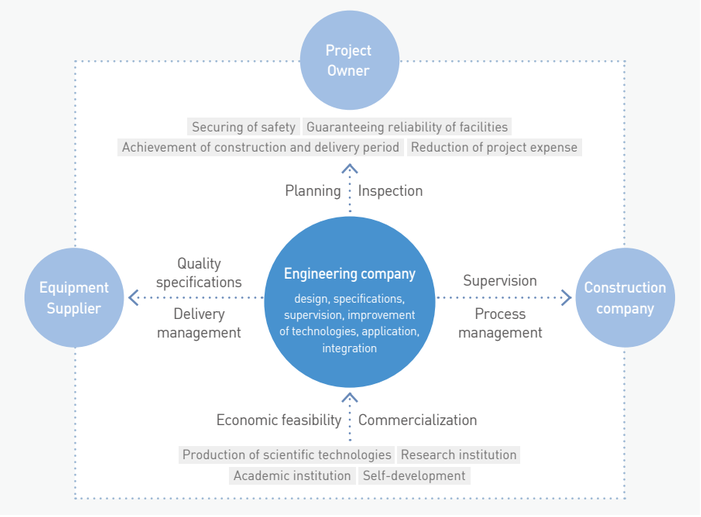
As of December 31, 2018



65.77%	Korea Electric Power Corporation	25,138,694
7.21%	National Pension Service	2,756,081
2.06%	Korea Atomic Energy Research Institute	787,500
0.35%	Employee stock ownership association	135,152
0.46%	Treasury Stock	176,495
24.15%	Others	9,226,078

Roles of KEPCO E&C

Constructing a power plant needs the involvement of various entities such as a power generation company, an equipment supplier, a construction company and an engineering company. KEPCO E&C is an engineering company that produces the information necessary for engineering, procurement, construction management and trial operation during construction of power plants. We play the role of a technological center that takes care of specifications and quality assurance for equipment suppliers, construction supervision and management for construction companies, and planning and inspection of design, specifications and supervision for power generation companies.



Business Areas

In March 2017, KEPCO E&C added nuclear power plant decommissioning to its existing businesses of design and engineering, operations and maintenance (O&M), eco-friendly business, and project management and construction management (PM/CM) under its articles of association. By doing so, KEPCO E&C is thereby preparing for new paradigms in the energy industry with these five business areas.

Type	Design & Engineering	O&M (Operations & Maintenance)	Eco-Friendly	PM/CM (Project Managements & Construction Management)	Decommissioning
Areas	• Nuclear power plants • Thermal power plants • Combined cycle and cogeneration power plants	• Performance improvement and continued operation • Performance restoration, life cycle extension and fuel switching, etc.	• Flue gas desulfurization / denitrification facilities • ESCO, new and renewable energy projects • Water pollution prevention • Waste disposal facilities	• Public projects • Private SOC projects • Power generation projects • Overseas projects	• Decommissioning engineering / decontamination / dismantling of the main equipment • Site restoration
Competitiveness	Has its own independent technology for architect engineering nuclear/thermal power plants	Enhances operability and maintainability by offering technological support to power plants in operation	Active development and cultivation of eco-friendly technologies	Has reference performance in areas such as public projects	Has human resources and performance in technology development and decommissioning

Vision & Strategy

Mid- to Long-Term Management Strategy

KEPCO E&C faithfully fulfills the purpose of its foundation, which is to pursue customer satisfaction and prosperity of humankind by leading the energy industry based on advanced power plant design technology. It has established Vision 2025 to accomplish the vision of 'Global Leading Energy Solution Partner' in response to changing paradigms of the energy industry. KEPCO E&C has identified four strategic directions and 12 strategic tasks in line with Vision 2025 based on the core values.

Vision 2025 Structure

Corporate Philosophy	Humaneering (Harmonizes human, environment and technology)				
Vision 2025	Global Leading Energy Solution Partner				
Core Values	Challenge	Communication	Expertise	Reliability	Safety
Manage-ment Goals	Business Value: Attain 35% in future business ratio	Business Value: Attain KRW 1.5 trillion sales and 8% operating profit	Social Value: Secure 12 core technologies	Social Value: Attain integrity grade 1 and S grade for social value index[1]	
Strategic Directions	Secure future business	Strengthen the core business	Advance energy technology	Manage social values	
Strategic Tasks	Drive back-end management Expand new and renewable energy businesses Promote new energy businesses	Advance original businesses Create growth engines for core businesses Expand global businesses	Advance safety-oriented nuclear technology Advance eco-friendly and renewable technology Secure national energy infrastructures	Attain community sharing values Innovate management system for sustainable growth Reinforce the human-centered risk management system	

[1] Comprehensive level of realization of 11 social values including safety, environment, job, etc.

Direction of Sustainable Management

The purpose of sustainable management of KEPCO E&C is to create sustainable economic, social and environmental performance, to ultimately secure competitive advantage, and to enhance sustainable corporate values.

Sustainable Management Pursued by KEPCO E&C

Economic responsibilities	Social responsibilities	Environmental responsibilities
Growth of sales	Design of safe power plants	Development of eco-friendly technologies
Acceleration of market pioneering	Ethical management	Reduction of pollutants
Development of future technologies	Pursuit of shared growth with stakeholders	Reduction of greenhouse gases

Energy Solution Partner

Energy solution refers to a service that expands the scope of businesses from the core engineering and EPC areas to value chain including pre and backend management and energy areas other than power generation.

Global Leading Energy Solution Partner

1 Engineering to Solution

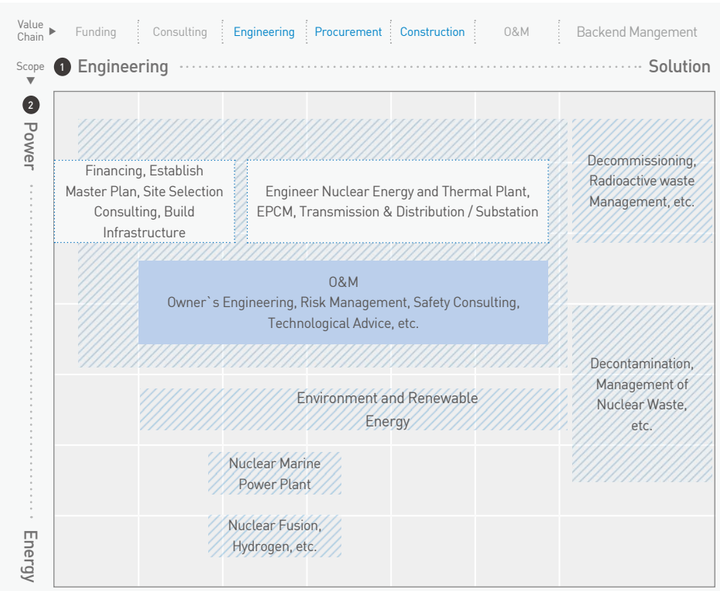
Pursue Customer-Oriented Comprehensive Consulting

- Financing, Establish Master Plan, Site Selection Consulting, Build Infrastructure including a System, etc.
- Owner's engineering, technical consulting, Risk Management, Safety Consulting
- Expansion of Nuclear power back-end Management Business like Decommissioning, Reprocessing, etc.

2 Power to Energy

Advance into Next Generation Energy Business

- Renewable Energy
- Marine Plants
- Expand into Other Energy Field such as Nuclear Fusion, Hydrogen, etc.



Transition to Clean and Safe Energy Businesses

KEPCO E&C is promoting transition of traditional power generation businesses like nuclear power and thermal power to businesses for enhancing safety, environment of operating power plants energy transition businesses like decommissioning, and future energy businesses like renewable energy, hydrogen and nuclear fusion. This is to guarantee safety and health of the people and to contribute to the common global tasks such as response to climate change. KEPCO E&C plans to attain sustainable growth and social values by following the shift of energy paradigms.

Core businesses	Engineering (design) of new nuclear and thermal power plants	Architect engineering /NSSS design of new nuclear power plants
		Design of new thermal power plants
Growth businesses	Safety and environmental strengthening and consulting for power plants in operation	O&M businesses (seismic structure, fine dust reduction, etc.) for power plants in operation
		Consulting businesses (OE, PM/CM, pilot operation, etc.)
Future businesses	Energy transition business, future energy business	Backend management of power plants (decommissioning, nuclear fuel and radioactive wastes after use)
		Renewable energy
		New energy businesses (Industry 4.0, convergence business/ nuclear fusion, etc.)

Global Network

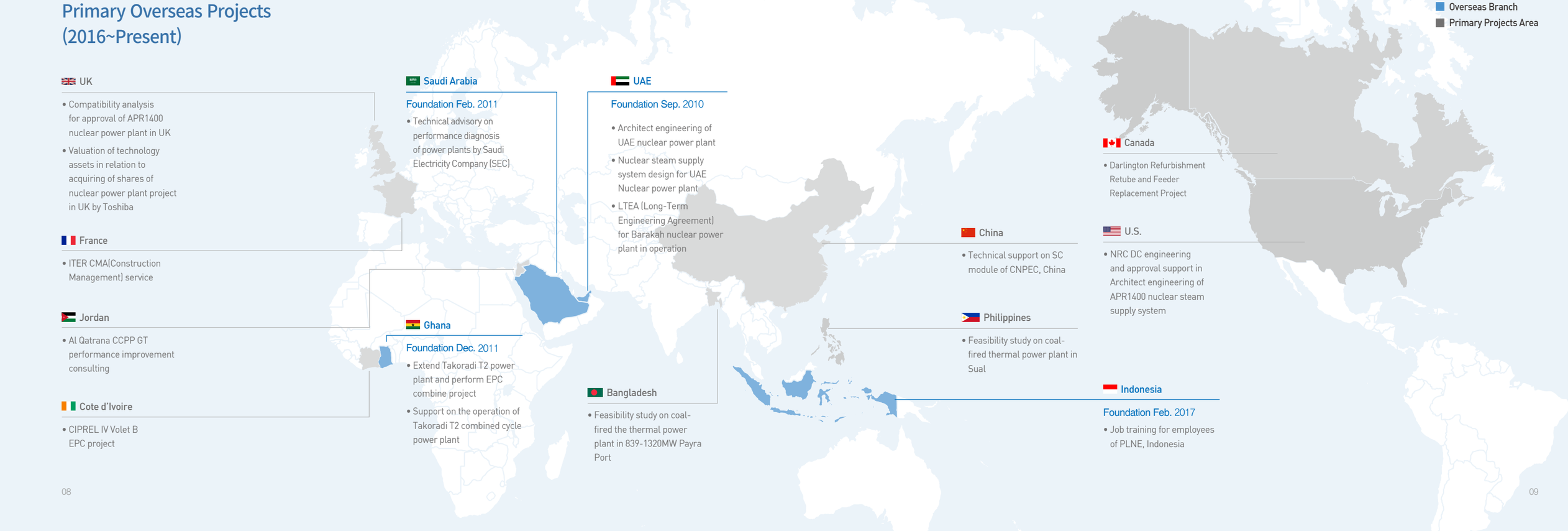
Overseas Business Status

KEPCO E&C has begun overseas businesses based on its experiences and technologies accumulated through domestic power plant projects. In 2009, South Korea became the sixth nuclear power plant exporing nation in the world after the United States, France, Russia, Japan, etc. by winning a contract for the UAE Barakah nuclear power plant construction project. Accordingly, KEPCO E&C participated in the UAE Barakah nuclear power plant construction project and is conducting architect engineering and nuclear steam supply design. We have been carrying out the designing work for the SMART (midium-sized System-Integrated Modular Reactor) nuclear power plants for Saudi Arabia since 2016. KEPCO E&C has become a global power plant engineering company by expanding its businesses field into the overseas plant EPC (Engineering, Procurement and Construction) market and successfully completing the 'Ghana and Cote d'Ivoire power plant EPC projects in Africa.

Ratio of Overseas Businesses

	Divisions	Unit	2016	2017	2018	Target for 2019
No. of overseas business orders	Nuclear	Case	9	6	5	15
	Energy		6	6	1	7
	NSSS		4	5	6	11
	Total		19	17	12	33
Amount of overseas orders	Nuclear	KRW 100 million	1,984	154	4,193	1,543
	Energy		24	23	1	928
	NSSS		132	63	973	109
	Total		2,140	240	5,167	2,580
Overseas sales		KRW 100 million	1,329	1,636	1,019	2,811
Ratio of overseas sales		%	26.26	33.37	23.49	35.81

Primary Overseas Projects (2016~Present)



UK

- Compatibility analysis for approval of APR1400 nuclear power plant in UK
- Valuation of technology assets in relation to acquiring of shares of nuclear power plant project in UK by Toshiba

France

- ITER CMA(Construction Management) service

Jordan

- Al Qatrana CCPP GT performance improvement consulting

Cote d'Ivoire

- CIPREL IV Volet B EPC project

Saudi Arabia

Foundation Feb. 2011

- Technical advisory on performance diagnosis of power plants by Saudi Electricity Company (SEC)

Ghana

Foundation Dec. 2011

- Extend Takoradi T2 power plant and perform EPC combine project
- Support on the operation of Takoradi T2 combined cycle power plant

UAE

Foundation Sep. 2010

- Architect engineering of UAE nuclear power plant
- Nuclear steam supply system design for UAE Nuclear power plant
- LTEA (Long-Term Engineering Agreement) for Barakah nuclear power plant in operation

Bangladesh

- Feasibility study on coal-fired the thermal power plant in 839-1320MW Payra Port

China

- Technical support on SC module of CNPEC, China

Philippines

- Feasibility study on coal-fired thermal power plant in Sual

Canada

- Darlington Refurbishment Retube and Feeder Replacement Project

U.S.

- NRC DC engineering and approval support in Architect engineering of APR1400 nuclear steam supply system

Indonesia

Foundation Feb. 2017

- Job training for employees of PLNE, Indonesia

2017/2018 Sustainability Highlights

KEPCO E&C Acquires 'ISO 37001' Certification for Anti-Corruption Management System

KEPCO E&C acquired 'ISO 37001,' an international standard for the anti-corruption management system, on October 27, 2017. ISO 37001 is an international standard for anti-corruption management system enacted in October, 2016 by the International Organization for Standardization (ISO) that has 162 member countries around the world. This standard was introduced to South Korea in April 2017, and many companies are obtaining the certification to settle down with integrity and ethical management. KEPCO E&C demonstrated its efforts to improve the system for integrity culture by acquiring the international certification for anti-corruption management system. It has always strived to practice follow-up measures and ethical culture based on ISO 37001.

Awarded by the Minister of SMEs and Startups for Excellent Shared Growth in Public Institution in 2017

At the '2017 Shared Growth Week Ceremony' held in Grand Hall of Korea Federation of Small and Medium Business in Yeouido on November 1, 2017, KEPCO E&C received an award from the Minister of SMEs and Startups. KEPCO E&C promotes systematic and strategic shared growth activities with its internal shared growth task group and has implemented a shared growth road map that reflects its characteristics. We will make constant efforts to fulfill our social responsibilities and lead shared growth.

KEPCO E&C Wins the Medal of Honor from the Republic of Korea National Red Cross

KEPCO E&C won the Medal of Honor for Red Cross Members at the '112th Anniversary Meeting of the Republic of Korea National Red Cross' on November 8, 2017. The Medal of Honor for Red Cross Members is a medal award to exemplary institutions that contribute to activities and businesses of the Red Cross. KEPCO E&C is actively engaged in social contribution activities such as voluntary blood donation of employees, and we will continue to form a win-win relationship with the community.

KEPCO E&C Holds Labor-Management Human Rights Management Proclamation Ceremony

Celebrating the 70th anniversary of the Universal Declaration of Human Rights, KEPCO E&C held the 'KEPCO E&C Human Rights Management Proclamation Ceremony' at its headquater in Gimcheon, Gyeongsangbuk-do on November 1, 2018. This proclamation ceremony included CEO's declaration of human rights, recital of the Charter of Human Rights by the employee representative, and pledge of human rights practice by participants. KEPCO E&C will strive to protect and enhance human rights of its employees and stakeholders.

KEPCO E&C Is Awarded IR 52 Jang Young Shil Award for Technical Innovation

KEPCO E&C was awarded the '87th IR 52 Jang Young Shil Award' for technical innovation hosted by Korea Industrial Technology Association and Maeil Business Newspaper and sponsored by the Ministry of Science and ICT on November 22, 2018. Mechanical System Engineering Department of KEPCO E&C successfully completed the 'nuclear reactor In-Vessel CEDM(Control Element Drive Mechanism)' project in five years through efficient operation of the matrix organization among technology and business departments and promotion of shared growth with SMEs based on innovative ideas presented by outstanding researchers. KEPCO E&C received the award for its contribution to research with such innovative ideas and activities.

KEPCO E&C Is Selected as a Public Institution with Excellent Integrity in 2018

KEPCO E&C was selected as an 'excellent institution (grade 2)' during the '2018 Public Institution Integrity Measurement' hosted by the Anti-Corruption & Civil Rights Commission, announced on December 5, 2018. KEPCO E&C prepared the basis to become an exemplary public enterprise for integrity and ethics by receiving the highest grade (grade 2) within the integrity evaluation. This is the highest grade ever KEPCO E&C has ever received from the Anti-Corruption & Civil Rights Commission. Belonging to type II of public service-related organizations, KEPCO E&C has consistently improved the result of integrity evaluation for the last three years. In this evaluation, KEPCO E&C attained grade 2 for overall integrity by receiving grade 2 for external integrity and policy customer evaluation.

As a leading public enterprise located in Gimcheon, Gyeongsangbuk-do, KEPCO E&C is actively engaged in anti-corruption, integrity and ethical activities with the local community. We are cooperating with other public institutions and private companies to exchange integrity and ethical activities.

KEPCO E&C Is the First Public Enterprise to Acquire Fair Employment Certification

KEPCO E&C acquired fair employment certification supervised by Korea Management Registrar on December 20, 2018. Fair employment certification is a system in which a third party evaluates fair employment of public institutions and companies based on job competency. Through this certification, KEPCO E&C was acknowledged to have a fair employment system. We will strive to settle down with the fair employment culture by providing equal opportunity and fair competition.

KEPCO E&C Is Selected as Best Institution for Anti-Corruption Policy Evaluation in 2018

KEPCO E&C was selected as the best institution (grade 1) during the '2018 Anti-Corruption Policy Evaluation on Public Institutions' announced by the Anti-Corruption & Civil Rights Commission on January 31, 2019. KEPCO E&C received grade 4 in 2016, grade 2 in 2017 and grade 1 (best institution) in 2018. Grade 1 was received for the first time ever since KEPCO E&C started to be evaluated on anti-corruption policy. In particular, 'operation of integrity cluster cultural festival in Gimcheon, Gyeongsangbuk-do' and 'excellence of comprehensive anti-corruption plan in connection with government projects' were chosen as best anti-corruption practices. KEPCO E&C received a high overall score.

27th October 2017

1st November

8th November

1st November 2018

22nd November

5th December

20th December

31st January 2019

Social Value Creation

Past and Future of KEPCO E&C

KEPCO E&C WAY

In the past, KEPCO E&C was founded on a energy-impoverished country to develop our own energy technologies. KEPCO E&C has led to energy independence and economic development of South Korea by overcoming constant challenges and achieving innovations over the last 44 years.

In the present, a small company of South Korea without technology, capital and experience has grown into a global energy technology company acknowledged having the world's best technologies.

In the future, KEPCO E&C will present advanced indigenous energy technologies to the world.

1975 ~ 1986

1975~1986

Forming the basis of the electric power industry

1975.10.01 Signboard hanging ceremony and launching of Korea Atomic Burns & Roe (KABAR)

1980.02.08 ~ 1985.03.09 Direct participation in overseas service of Yeonggwang Plant Units 1, 2 executed by Bechtel

1982.07.06 Reorganized into KEPCO Engineering & Construction Company, Inc.

1987 ~ 1996

1987~1996

Reinforcing competitiveness based on technologies

1987.04.09 Signing of an Architect engineering contract for 1,000MW pressurized water reactor for Yeonggwang Plant Units 3, 4 (Hanbit) with KEPCO
* first domestic company to lead nuclear power plant engineering service

1992.02.26 Increase of work efficiency and productivity by expanding CAD equipment and operating LAN

1994.06.22 Completion of the first Korean standard coal-fired thermal power plant (Boryeong Thermal Power Plant Units 3, 4)

1995.11.09 Completion of Yongin Office Building due to increased number of workers caused by continuous large-scale project orders

2019 ~ 2007

2007~2019

Turning into a global plant engineering company

2009.10.01 2020 New Vision: Declaration of Global Power EPC company that attains customer values with best technologies

2010.03.25 Signing of a service contract for architect engineering and nuclear steam supply system design of UAE Nuclear power plants (KRW 646.6 billion) with KEPCO

2011.12.28 EPC construction for Takoradi T2 Power Plant in Ghana

2018.02.20 Architect engineering service order for decommission project of Kori Power Plant Unit 1

2006 ~ 1997

1997~2006

Overcoming hardships and preparing for tomorrow

1998.01.19 Formation of the labor-management emergency planning committee and commencement of business innovation facing the financial crisis

1999.10.19 Commencement of 800MW Yeongheung Thermal Power Plant Units 1, 2
* opening of the era of large capacity coal-fired thermal power

2005.08.12 Inauguration ceremony of 'Chamsarang' Volunteer Group

2006.08.28 Signing of a service contract for architect engineering and nuclear steam supply system design of Shinkori Units 3, 4

2018 Social Value Index

KEPCO E&C's Social Value

Social values refer to 'social, economic, environmental and cultural values that can contribute to the public interest and community development.'

Whereas only economic values were regarded as important in the past, social values are recognized as important factors affecting the sustainability of a company nowadays. KEPCO E&C is aware of the fact that creating social values is important in securing sustainability. We try to create social values in various areas to resolve common social issues through our management activities.

Domain and Definition of KEPCO E&C's Social Values

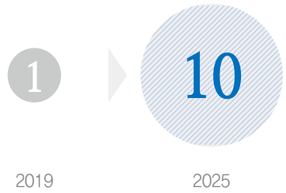
Type	Definition for KEPCO E&C	Targets
Environment	Development of healthy environment by responding to hazardous substances such as fine dust	People
Human rights	Securing stable electric power technology to attain energy rights of people and realization of human rights management	Internal members, people
Safety	Safety of members through prevention of accidents and calamities, formation of a safe society for people	Internal members, people
Win-win cooperation	Revitalization of shared growth and securing of a win-win cooperation platform with small and medium enterprises	Partners, small and medium enterprises
Community restoration	Mutual participation of community and institution, protection of neglected groups	Residents, local governments
Contribution to regional economy	Participation in regional projects, support of small regional businesses	Residents, local governments, small regional businesses
Publicness	Expansion of publicness of core businesses and management	People
Health and welfare	Universal energy welfare to guarantee basic livelihood of people	People
Labor	Stabilization of employment and guarantee of labor rights	Employees, preliminary workers, etc.
Support of socially disadvantaged	Protection of socially disadvantaged groups and removal of workplace discriminations	Socially disadvantaged groups such as women, disabled, etc.
Job creation	Creation of sustainable jobs using businesses and core capacities	Youths, residents, etc.
Ethics & responsibility	Trusted public institution of integrity, settlement of ethical management	Internal members
Decision making and involvement	Increase of people's involvement in management, labor-management relationship based on communication and cooperation	People

KEPCO E&C Social Value Performance Index

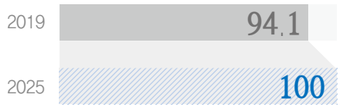
KEPCO E&C has developed and is operating 'KEPCO E&C Social Value Index' as a means to account for its unique functions (roles) and capacities, set the directions to attain social values, and secure the ability to practice them.

KEPCO E&C Social Value Index (2019 - 2025 Performance Goal)

Decommissioning of aged nuclear power plants and safe backend management business sales ratio(%) Safety



Achievement of employment targets for the social disadvantaged (disabled, local talents and women) (%) Support of socially disadvantaged



Shared growth grade of the Ministry of SMEs and Startups Win-win cooperation

(highest grade among four grades (excellent-good-average-inadequate) for shared growth)

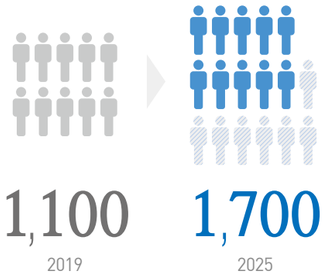
Result of complying with service worker protection guideline Labor

100%

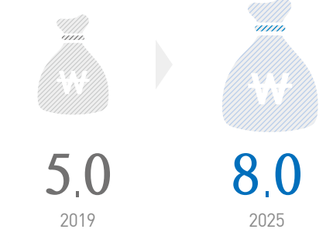
Comprehensive integrity evaluation grade by the Anti-Corruption and Civil Rights Commission (grade) Ethics & responsibility

1st Grade

Number of participants in social contribution activities (persons)
Community restoration



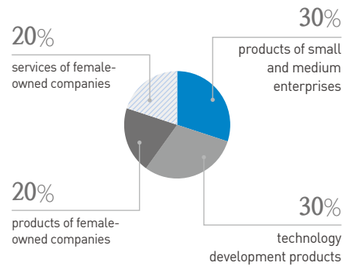
Amount of Onnuri gift certificates purchased (KRW 100 million)
Contribution to regional economy



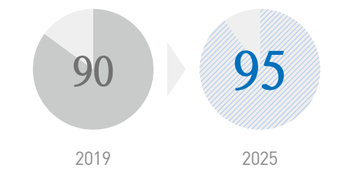
Sales ratio of eco-friendly businesses such as renewable energy and thermal power plant facility improvement (%) Environment

Achievement of legal obligation for public procurement Publicness

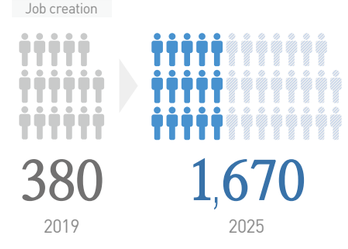
comprehensive evaluation based on weighted value of legal procurement rate



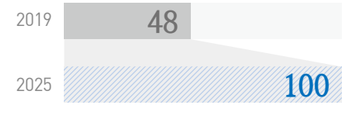
Satisfaction on human rights impact assessment (%) Human rights



Scale of public job creation (persons)
Job creation



Ratio of nuclear safety, renewable and eco-friendly power generation technologies (%) Safety & Environment



Efforts to Practice UN SDGs and Outcome

Introduction of UN SDGs

UN SDGs (Sustainable Development Goals) refer to 17 goals agreed by members of the United Nations in 2015 as an international promise for the 'sustainable development of the earth' to 'fulfill our present needs while making resources available to future generations.'

Practice of UN SDGs by KEPCO E&C

KEPCO E&C actively supports UN SDGs and strives to accomplish the common goals using its core capabilities and resources. We will continue to practice SDGs faithfully to increase the sustainability of our society.

SUSTAINABLE DEVELOPMENT GOALS

1 No Poverty

Potential Effect | Independence of socially vulnerable groups by supporting employment
Actions | Operation of licensing programs for socially vulnerable groups

2 Zero Hunger

Potential Effect | Support on dietary life of socially vulnerable groups through dietary life business
Actions | Provision of nutritional side dishes to seniors who live alone and disabled persons in the community

4 Quality Education

Potential Effect | Support on small and medium businesses through technology education
Actions | Operation of permanent technology education programs for small and medium enterprises

5 Gender Equality

Potential Effect | Expansion of human rights and capability of women through institutional support and education
Actions | Institutional support on gender equal employment system, maternity protection system, female talent training program, etc.

7 Affordable and Clean Energy

Potential Effect | Contribution to sustainable energy through the expansion of renewable energy
Actions | Promotion of renewable energy businesses including solar energy, wind power, tidal power, etc.

8 Decent Work and Economic Growth

Potential Effect | Creation of decent jobs
Actions | Provision of community job support programs, Constant job creation through businesses

9 Industrialization · Innovation and Infrastructure

Potential Effect | Construction of social infrastructures and support on sustainable industrialization
Actions | Provision of engineering services in power generation areas including nuclear power, thermal power, renewable energy, etc.

11 Sustainable Cities and Communities

Potential Effect | Contribution to stable public services through the advancement of services in connection with the fourth industry
Actions | Promotion of digitalization through smart plant construction, etc.

13 Climate Action

Potential Effect | Direct and indirect effects on climate change and air pollution
Actions | Securing renewable energy transition technologies, Promotion of eco-friendly design and reinforcement of eco-friendly design standards

16 Inclusive Society

Potential Effect | Contributing fair economic order through advancing win-win shared growth system
Actions | Improving unreasonable contract system with partners, Anti-Corruption Integrity Survey

17 Partnership for sustainable development

Potential Effect | Increasing capacity of power generation business by strengthening technological competitiveness with SMEs
Actions | Technology transfer and placement support for SMEs, Joint technology development, overseas expansion

Value Adding Activities

01

KEPCO E&C Creating New Opportunities for Growth

Early Securement of Future Businesses

The competitive landscape of the energy market is changing rapidly with the changes in the national energy policy, transition to a new climate system, and spreading of the fourth industrial revolution technologies. In particular, the domestic nuclear power plant market that had centered on new plant construction will be rearranged to focus on decommissioning in accordance with the energy transition policy of the government. As environmental issues are arising, the renewable energy market that only accounts for 7.5% (as of the first quarter of 2019) will be expanded to about 20% by 2030. In order to hold a dominant position and promote sustainable growth in the changing environment, it is essential to establish strategies for agile response to environmental changes and to secure future growth engines in the early stage.

Our Approach

KEPCO E&C is a company specialized in energy technologies that continues with challenges and innovations to secure an unrivaled position in the rapidly changing industrial ecosystem. In response to the downscaling nuclear power market of South Korea, we are expanding our business areas to the backend management market including nuclear decommissioning, spent fuel and radioactive waste management businesses. In addition to securing the unique renewable business model and capacity of KEPCO E&C for the expansion of the renewable business, we proactively respond to the changing market environment by constructing a cooperation network.

Our Performance

- Obtained an order for architect engineering of Kori Unit 1 decommissioning
- Founded SPC to promote Jeju Hallim Offshore Wind Power EPC

Link to UN SDGs

- Goal 7. Ensure sustainable energy for everyone
- Goal 9. Industrialization · Innovation and Infrastructure
- Goal 11. Sustainable Cities and Communities
- Goal 13. Climate Action

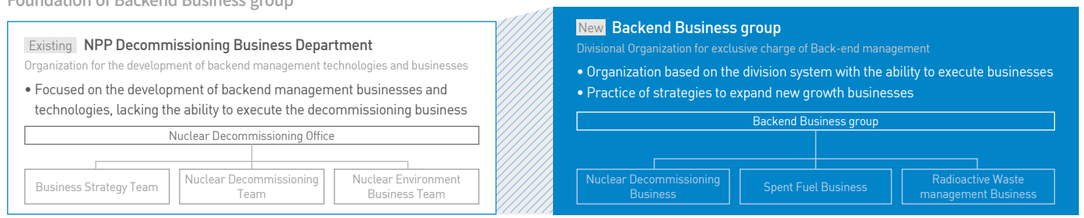
Driving Backend management of Nuclear Power Plants

KEPCO E&C is increasing its business competitiveness by expanding business areas to the backend management market including nuclear decommissioning, spent fuel and radioactive waste management businesses. This is an effort to prepare for the stepwise nuclear power plant reduction plan according to the energy transition policy of the Korean government.

Strengthening Backend management Organization

To respond promptly to the changing market environment and secure competitiveness in the nuclear backend management market, KEPCO E&C has maximized the efficiency of the backend management business by making a transition of the existing organization focused on technology and business development into a one-stop system for technology development, business development and business execution.

Foundation of Backend Business group



Expansion of Nuclear Backend management Business

Nuclear Decommissioning Business

The nuclear decommissioning business is a work to remove radioactive contamination, demolish buildings and structures, and restore site after permanent shutdown of the nuclear power plant. KEPCO E&C has demonstrated related technologies and accumulated data by participating in the nuclear decommissioning project such as TRIGA MARK II & III and Uranium Conversion Plant decommissioning project. In February 2018, KEPCO E&C received an order on architecture engineering for the decommissioning of Kori Unit 1, the first nuclear power plant which was permanently shutdown in South Korea, and started the decommissioning engineering. We have been gradually expanding the nuclear decommissioning business such as the decommissioning of Wolseong Unit 1.

Spent Fuel Business and Radioactive Waste Management Business

KEPCO E&C places efforts to secure an optimal solution for the safe management of spent nuclear fuels and radioactive wastes. First of all, KEPCO E&C provides a variety of high-level radioactive waste storage services such as changing of existing nuclear fuel storage racks into high-density storage racks, additional installation of racks in empty space, dry storage of spent nuclear fuels, and dry transport of spent nuclear fuels in order to manage spent fuels accumulating in nuclear power plants. We try to diversify the radioactive waste management business through the stepwise design of radioactive waste disposal sites. For reference, KEPCO E&C signed an 'MOU on cooperation for spent nuclear fuel cask and dry storage facility' with a French nuclear power plant company named ORANO in April 2018 for the successful promotion of the spent fuel business. In May 2018, we signed a 'multilateral MOU on cooperation for spent fuel management technology with Korea Atomic Energy Research Institute and Doosan Heavy Industries & Construction'. We are solidifying the system for technical cooperation with companies and institutions at home and abroad.

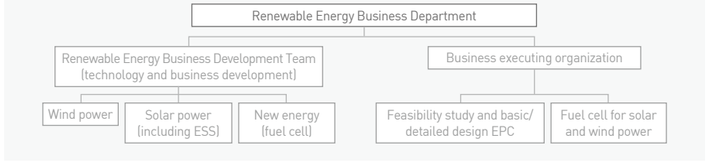
Expansion of Renewable energy Business

As the environmental regulations related to power generation are being reinforced in response to climate change, the necessity of eco-friendly energy technologies is increasing in terms of environment and business. Accordingly, KEPCO E&C strives to secure competitiveness for renewable energy by expanding the basis for the renewable energy business, business areas, and markets.

Expansion of Basis for Renewable energy Business

KEPCO E&C newly formed an exclusive organization for renewable energy and strengthened its organizational functions to secure smooth distribution and competitiveness of renewable energy. The renewable energy group is an integrated organization that can perform one-stop execution from technology development to business, increasing the efficiency of operation and maximizing the effect of combining capacities.

Formation of renewable energy business group



In addition, KEPCO E&C established a 'mid- to long-term road map for the creation of Korean renewable energy ecosystem' to secure new growth engines in the field of renewable energy technologies, actively promoting the renewable energy business.

Establishment of road map for the creation of Korean renewable energy ecosystem

2018	2019	2021	2023	2025
Preparation stage	**Introductory stage**	**Execution stage**	**Expansion stage**	**Settlement stage**
• Securement of the basis for business promotion • Establishment of a mid- to long-term road map for renewable energy	• Increased capacity for investment / project financing (P/F) • Promotion of large-scale businesses in the areas with competitive advantage • Construction of cooperation system with manufacturers	• Constant development of dependent technologies • Promotion of the overseas market entry • Promotion of solar power and wind power complex	• Inspection and advancement of the portfolio • Promotion of experience-based consulting business • Development and execution of demonstration business in Korea, construction of DB	• Constant development of core technologies like floating offshore wind power • Promotion of offshore wind power engineering and consulting businesses • Development and commercialization of the Korean renewable convergence model

Expansion of Business Areas and Creation of Cooperation Network

KEPCO E&C is reinforcing its cooperation network with SMEs, financial institutions and private power generation companies to seek for joint entry into the renewable energy market. For reference, KEPCO E&C signed 13 joint development agreements in the field of renewable energy in 2018. We have established the cooperation network by also signing 10 MOUs with SMEs.

Best Practice

KEPCO E&C promotes Korea's largest offshore wind power EPC project for Hallim, Jeju

A 100MW offshore wind power EPC project of KRW 530 billion

In 2018, KEPCO E&C promoted an offshore wind power EPC project of KRW 530 billion to construct a wind power plant complex with 28 wind power generators of 3.6MW capacity at a distance of 5.5km^2 off the shore in Suwon-ri, Hallim-eup, Jeju with related institutions including KEPCO, Korea Midland Power and Daelim Industrial. KEPCO E&C played a role in excavating business and initiating development. After the foundation of Jeju Hallim Offshore Wind Power Co., Ltd., a special-purpose company (SPC) for the offshore wind power generation project, KEPCO E&C transferred its development work and data to the SPC and has been in charge of presentations for residents workshops and technical assistance. This project is planned to complete the construction in June 2023, and the operation period of the power generation business is 20 years from July 2023 until June 2042. KEPCO E&C is responsible for the engineering and turbine supply of this project.

Promotion of Digitalization Business

KEPCO E&C has been laying the foundation for the energy-ICT convergence business in order to enhance the efficiency and productivity through an intelligent electrical power grid and to achieve optimization of energy demand management. We aim to lead digitalization of the power generation business by constructing convergent intelligent power plants combined with artificial intelligence.

Construction of Digital Smart Plants

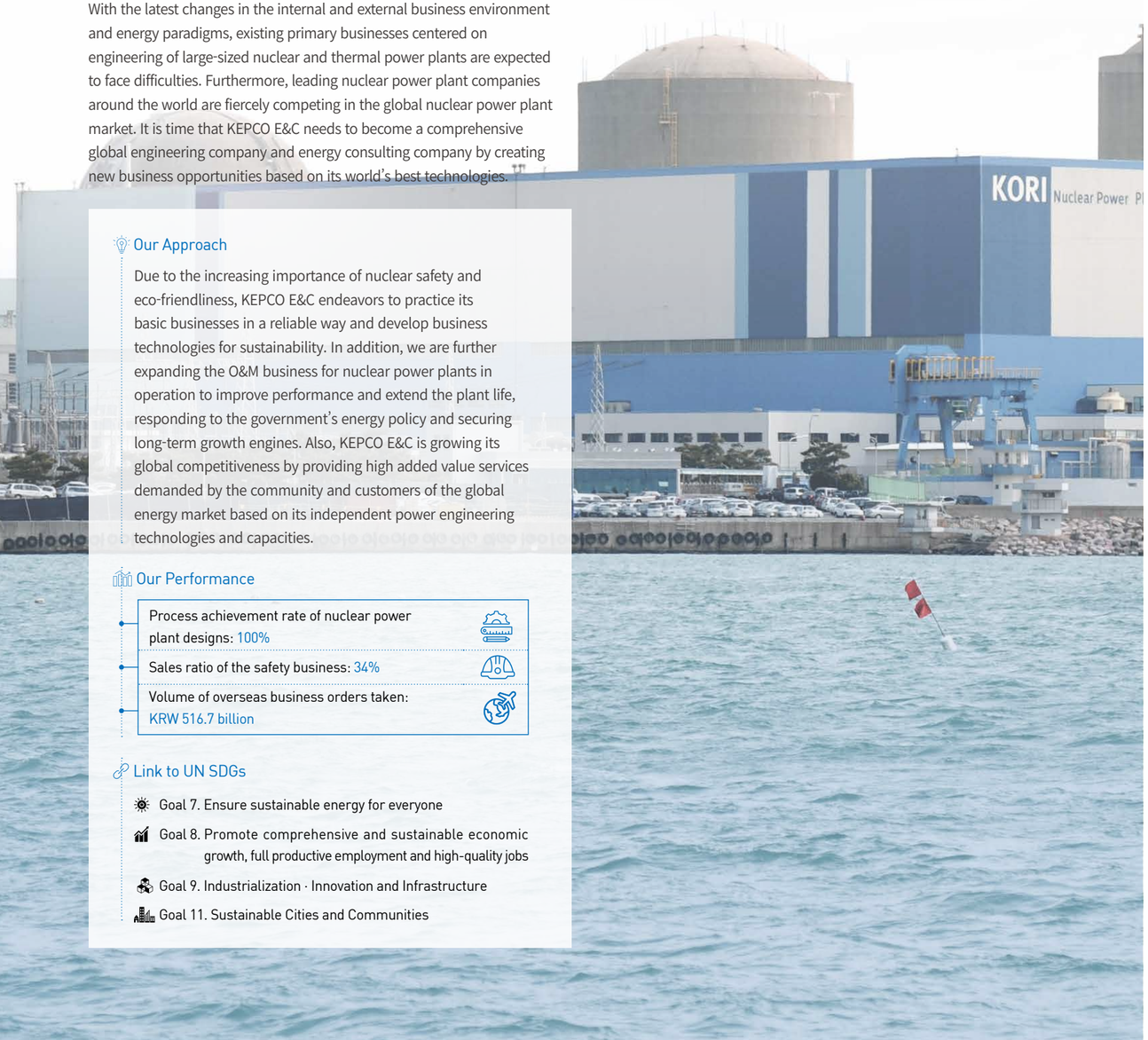
The digital power plant was selected by the government as a large-scale cooperation task for innovative growth. With the technical innovation of the fourth industrial revolution, there is an increasing interest and importance of digital smart plants. Accordingly, KEPCO E&C newly formed an exclusive organization for the development of smart power plants in August 2018. This organization promotes various digitalization businesses such as the construction and commercialization of the nuclear power plant configuration management system, digitalization of operating nuclear and thermal power plants, etc. Moreover in 2018, KEPCO E&C pioneered a convergent energy business model and developed a big data platform in collaboration with KT, KEPCO and power generation companies to lead the advanced ICT-based energy convergence business.

02

Increasing Competitiveness Based on Best Technologies

Reinforcement of Core Businesses

With the latest changes in the internal and external business environment and energy paradigms, existing primary businesses centered on engineering of large-sized nuclear and thermal power plants are expected to face difficulties. Furthermore, leading nuclear power plant companies around the world are fiercely competing in the global nuclear power plant market. It is time that KEPCO E&C needs to become a comprehensive global engineering company and energy consulting company by creating new business opportunities based on its world's best technologies.



Our Approach

Due to the increasing importance of nuclear safety and eco-friendliness, KEPCO E&C endeavors to practice its basic businesses in a reliable way and develop business technologies for sustainability. In addition, we are further expanding the O&M business for nuclear power plants in operation to improve performance and extend the plant life, responding to the government's energy policy and securing long-term growth engines. Also, KEPCO E&C is growing its global competitiveness by providing high added value services demanded by the community and customers of the global energy market based on its independent power engineering technologies and capacities.

Our Performance

- Process achievement rate of nuclear power plant designs: 100%
- Sales ratio of the safety business: 34%
- Volume of overseas business orders taken: KRW 516.7 billion

Link to UN SDGs

- Goal 7. Ensure sustainable energy for everyone
- Goal 8. Promote comprehensive and sustainable economic growth, full productive employment and high-quality jobs
- Goal 9. Industrialization · Innovation and Infrastructure
- Goal 11. Sustainable Cities and Communities

Advancement of Core Businesses in the Era of Energy transition

As energy transition is unfolding in full scale, energy paradigms are shifting to the fourth industrial revolution and convergence. KEPCO E&C plans to lead the energy transition policy and create new business opportunities in response to such changes in the energy market.

Compliance with Nuclear Power Plant Construction Safety Engineering and Process

KEPCO E&C prioritizes safety in engineering and operating nuclear power plants. People are paying growing attention to nuclear power plants after resuming the construction of Shinkori Units 5, 6 and efforts are required to gain the trust of people by improving the safety of nuclear power plant. KEPCO E&C has once again verified the safety of nuclear power plants through safety reevaluation of nuclear power plant sites. We have also reinforced the crisis management system by developing new cyber security programs, methodologies and human engineering management systems.

Setting Up Foundation for Cyber Power Plants

In the energy industry, there are increasing attempts to pioneer new business areas using advanced technologies of the fourth industrial revolution. KEPCO E&C tries to enhance the quality and stability of nuclear power plants by constructing cyber power plants. Cyber power plants are power plants that apply virtual reality to 3D models of actual nuclear power plants. Cyber power plants are used to help optimal engineering, construction and efficient and safe operation of real power plants by reviewing position interference of structures and devices and simulating the installation of instruments.

Digitalization based on nuclear power plant configuration management

	Existing configuration management system	Data-based configuration management	Cyber power plants
Directions	Independent data Massive data Worker-oriented Human errors	DB of related laws, Higher requirements, Lower requirements Documents, Drawings, Data 3D models (instruments)	
Performance	Technology development		Business development
	Turned 3 elements[1] of configuration management into database Developed linked information system Developed technologies to implement virtual power plants based on VR/AR Developed technologies to predict and diagnose exposure the dose of radiation workers using VR/AR		Issued the configuration management information system development report Submitted the UAE nuclear power plant requirement management system proposal Commercialization of the configuration management system for Shinkori Units 5, 6

[1] 3 elements of configuration management: Engineering requirements, facility configuration information, physical configuration

Creation of Growth Engines for Core Businesses

KEPCO E&C satisfies diverse requirements of customers, maximizes customer satisfaction, expands the EPCM business and engineering-based O&M business, and increases its business competitiveness by diversifying the portfolio such as OPR1000, APR1400, APR+, APR1000 and SMART (SMR).

Expansion of Safety and Eco-Friendly O&M Business

With the decreasing scale of the existing thermal power generation market and increasing demand for safe and eco-friendly technologies, creation of new growth engines has become important. KEPCO E&C newly formed a professional organization for O&M businesses in the nuclear and thermal power areas to lay the foundation for technology-intense, high added value businesses. We have combined the functions of developing technologies and businesses with business promotion to operate performance improvement of old power plants, fuel conversion, and improvement of facilities and the environment. KEPCO E&C also strengthens the seismic safety by expanding the O&M business and leads the high-efficiency and clean power generation market.

Expansion of safe and eco-friendly O&M businesses for power plants in operation

Nuclear power plant area	**Facility improvement** • Improvement of eco-friendly facilities • Expansion of system(NSSS[1]/ESFAS[2]) design services • Building of standard nuclear power plant information (unified parts classification system, etc.)	**Safety** • Follow-up measure on stress test • Follow-up measure on Accident Management Plan (AMP) • Establishment of Multi-barrier Accident Coping Strategy (MACST) • Electro-Magnetic Pulse(EMP) Protection	**Seismic strengthening** • Business to strengthen seismic safety • Production of seismic change to Qualification documents • New construction of emergency response base facilities
Thermal power plant area	**Performance improvement** • Standard thermal power plants performance improvement business • Performance improvement business for old combined cycle power plants • Performance improvement business for old overseas power plants	**Environmental improvement** • Environmental improvement (reduction of fine particles, etc.) • Fuel conversion (heavy oil, coal → eco-friendly fuels) • Indoor coal yards for coal-fired thermal power plants	**Seismic strengthening** • Seismic performance evaluation on thermal power plants • Seismic performance strengthening design business • Expansion of the business targeting industrial plants and SOC

[1] NSSS: Nuclear Steam Supply System
[2] ESFAS:Engineered Safety Features Actuation System)

Providing Customized Consulting

KEPCO E&C is building a customized comprehensive consulting business by expanding business areas to cover the overall value chain. It has established the capability to provide consulting on all power plant services including planning, construction and operation. The consulting business is being strengthened based on power plant engineering capabilities such as feasibility study, site selection and Owner's Engineering (OE). In addition, we are expanding new growth businesses in the consulting area by diversifying the nuclear power plant business throughout the life cycle such as financing and trial operation.

Engineering-based customized consulting

Technical support (including education, etc.)	Identification of facility improvement matters and proposal of customized businesses for power generation companies and private companies (20 cases such as job training for engineer of PLNE, Indonesia, etc.)
Feasibility study	Feasibility study before service execution such as construction of power generation facilities and performance improvement (6 cases such as feasibility study on the construction of the Korean demonstration complex, etc.)
Owner's Engineering	Increasing cooperation with private companies through successful practice of Owner's Engineering (3 cases such as POS Power, Bukpyeong Power, Dangjin Eco Power, etc.)
Performance	Securement of future growth engines with the high added value consulting business (29 cases total, new order volume of KRW 7.2 billion)

Global Business Expansion

Recently, taking orders for overseas nuclear power plants is becoming increasingly important because of the energy transition policy for the expanded renewable energy. Based on excellent power plant engineering technologies accumulated over many years, KEPCO E&C is becoming a comprehensive global engineering company and energy consulting company by broadening the scope of businesses to the global stage with overseas nuclear power plants.

Increasing Order Competitiveness in Overseas Markets

Enhancement of Technology Competitiveness Through Reactor Type Development (Nuclear Power)

The need for the development of new reactor types for overseas markets is growing due to limited growth of the domestic nuclear power plant market caused by the government's energy transition policy. KEPCO E&C develops innovative nuclear reactor types (SMR/iPOWER) with increased safety and economic feasibility and secures future growth engines by developing original core technology. KEPCO E&C is attempting to diversify export through the development of a new nuclear reactor type (APR1000) intended to satisfy the European safety standards and various requirements of clients. We also place efforts to develop original core technology by securing intellectual property rights related to SMR/iPOWER. In addition, we try to take additional construction orders for the successful execution of the SMART PPE project in Saudi Arabia.

Reactor type development road map and goal

APR1000 medium sized nuclear power plant
- Capacity (MWe) : 1,000
- Target nations: Europe(Czech Republic, etc.)
- Road map and goal:
  Development of preliminary basic design for safety system to build the foundation for export in 2014~2020
  Preparation of new nuclear power plant bidding for the Czech Republic in 2019

SMR small module nuclear reactor
- Capacity (MWe) : 50
- Target nations: Developing nations
- Road map and goal:
  Development of core nuclear power plant technologies and branding and exportation of unique SMR brand in 2016~2020

SMART nuclear reactor exported to Saudi Arabia
- Capacity (MWe) : 100
- Target nations: Middle East(Saudi Arabia, etc.)
- Road map and goal:
  Execution of PPE project to construct 2 reactors in Saudi Arabia, securing of original technologies and taking of construction orders in 2016~2022

iPOWER innovative and safe light water reactor
- Capacity (MWe) : 1,000~1,500
- Target nations: South Korea and overseas
- Road map and goal:
  Development of core original technologies and primary future reactor types for 2030s in 2016~2030

Promotion of New Overseas Businesses for Thermal Power and Renewable energy

KEPCO E&C is spurring the overseas expansion of thermal power and renewable energy based on its business experience and know-how. We have established basic strategies for each nation by creating a database on overseas power generation feasibility studies according to the overseas thermal power business information system. We manage risks using the lessons learned DB on the overseas thermal power plant EPCM[1] business. To overcome the shortage of local networks, we prepared the basis for network construction with related local institutions and companies.

[1] EPCM (Engineering, Procurement, and Construction Management): Abbreviation for engineering, procurement, construction and management

Increasing Competitiveness in Overseas Markets to Acquire Overseas Certifications

Competitiveness of KEPCO E&C in the overseas market for the construction of nuclear power plant has been greatly increased by acquiring authoritative design certifications for power plant engineering. APR1400, designed by KEPCO E&C, acquired Standard Design Approval (SDA) from the U.S. Nuclear Regulatory Commission (US NRC) in 2018. Consequently, Korean-style APR1400 nuclear power plant has been recognized worldwide for its technological superiority and safety by enhancing its competitiveness for export. APR1400 is a next-generation nuclear reactor type with much improved safety and economic feasibility developed by remodeling the primary reactor model called OPR1000. As we obtained EUR certification in Europe in 2017, NRC standard design approval in 2018 and design certification in 2019, we expect that this will greatly contribute to our export competitiveness in overseas nuclear power markets, including the U.S., and export of follow-up units of nuclear power plants in the United Arab Emirates.

Overseas projects performance of 2018

Volume of overseas business areas in nuclear power field	Number of participation in bidding for overseas nuclear power field	Bidding performance of overseas thermal renewable power field	Effort to expend coorperative activities for business development on thermal renewable power field
KRW 517 billion	5 cases	10 cases	16 cases

Best Practice

Acquisition of the U.S. NRC Design Certification (DC) for the Standard Design of APR1400 Nuclear Power Plant

New Korean Advanced Power Reactor (APR1400 Nuclear Power Plant) acquired final design certification (DC) from the U.S. Nuclear Regulatory Commission (NRC) in 2019. KEPCO E&C played a leading role throughout the certification process by designing the nuclear reactor system, performing architect engineering and preparing DC application documents. Strict regulatory requirements of the U.S. NRC were fully satisfied. APR1400 Nuclear Power Plant acquired the Standard Design Certification (SDA) in September 2018 and after a one-year rulemaking process by U.S. Congress, it was listed in the U.S. Federal Regulations (10CFR52, Appendix F), effective September 19, 2019. The U.S. NRC DC allows the APR1400 Nuclear Power Plant to be constructed and operated in the United States. This certification is valid for 15 years and can be extended by up to 10 years. Acquisition of this DC is meaningful in that it was the first Nuclear Power Plant of a nation other than the United States that acquired the DC in the United States, a nation that applies the strictest nuclear power plant regulations. The NRC review for APR1400 Nuclear Power Plant was completed in the shortest time in history, objectively proving the safety of APR1400 Nuclear Power Plant and informing the world about excellent nuclear power plant engineering technologies of KEPCO E&C.

Steps of the U.S. Nuclear Regulatory Commission (NRC) Design Certification (DC) process

2011 ~ 2013	2014 ~ 2017	2018 ~ 2019
Step 1 Preparation for DC application and design enhancement of APR1400 Nuclear Power Plant	**Step 2** 6-Phase NRC Review Process for DC	**Step 3** Passing of 6-phase review
• Review of requirements of the U.S. NRC • Development of US APR1400 Nuclear Power Plant	• Application for NRC DC (2014.03) • NRC DC Application docketed and start of NRC 6-phase review (2015.03)	• Acquisition of the Standard Design Approval (2018.9) • U.S. Code of Federal Regulation Listed & Effecutated (2019.9)

Custom Engineering for Each Nation and Finding of New Businesses

Preparation of Basis for Entry into Saudi Arabia

In line with the changing environment of the domestic nuclear power plant project, the overseas nuclear power plant business is becoming more important. As countries around the world are obliging the reduction of greenhouse gases after the launching of the new climate regime, we are shedding new light on the necessity of nuclear power plants as eco-friendly, low-carbon energy sources. KEPCO E&C continues to strengthen competitiveness for nuclear power plant engineering by making improvements based on past engineering experiences, aiming to take construction orders for new nuclear power plants in Saudi Arabia. We discovered core success factors to win orders and presented localization strategies to meet local requirements. We expect to build the foundation for exportation of nuclear power plants by accumulating experience and know-how in Saudi Arabia.

Development of Core Technologies for the Czech Republic

KEPCO E&C is developing cogeneration technologies for medium-sized nuclear power plants to fulfill the requirements of the client while reflecting regional characteristics of the Czech Republic. The Czech Republic is a landlocked country with cold climate that needs nuclear power reactor types with electric power generation and regional heating capabilities. KEPCO E&C is currently developing a customized reactor type for the Czech Republic with economic feasibility and safety using the 1,000MW medium-sized nuclear power plant engineering technology and cogeneration technology. We are seeking to increase market accessibility by building up the network and engaging in opportunities for interaction with local companies more actively in order to secure market competitiveness.

Workshop of Nawah Energy, the nuclear power plant operator of UAE Barakah

Promotion of LTEA Business for Nuclear Power Plants of UAE in Operation

KEPCO E&C is also seeking for entry into the overseas business for nuclear power plants in operation based on its power plant engineering capability. By making efforts to develop follow-up businesses after the successful implementation of the UAE nuclear power plant engineering business, KEPCO E&C signed a Long-Term Engineering Agreement (LTEA) for nuclear power plants in operation with Nawah Energy, a nuclear power plant operator of UAE Barakah, in 2018. After completing construction of UAE Barakah Nuclear Power Plant Units 1~4, KEPCO E&C plans to change and improve designs necessary for nuclear power plant operation, analyze engineering programs and provide technical support for the next 10 years. This was KEPCO E&C's first Operation and Maintenance (O&M) service contract among overseas nuclear power plants in operation, which contributed to diversification of our business target from domestic business to overseas business.

Aging Nuclear Power Plant Project of Rumania

Starting with Cernavoda Nuclear Power Plant Unit 1, nuclear power plants of Rumania are coming to the end of design life (30 years). Rumania is promoting a project on nuclear power plants in operation to refurbish and extend the life cycle of aged nuclear power plants. Accordingly, KEPCO E&C participated in Periodic Safety Review (PSR) and Condition Assessment (CA) for Rumania Cernavoda Nuclear Power Plant Units 1 and 2. PSR is a comprehensive review activity that periodically inspects the implementation of adequate measures to maintain safety from the perspective of valid technology standards for nuclear power plants in operation. It considers the cumulative effects of facility evaluation, operation experience and technology development. KEPCO E&C participated in the bidding for PSR of Rumania Cernavoda Nuclear Power Plant Units 1 and 2 based on its experience of leading domestic PSR services for Kori Unit 1 and Wolsong Units 3 and 4. KEPCO E&C plans to expand into the overseas business for nuclear power plants in operation by actively participating in the feasibility study on Cernavoda Nuclear Power Plant Unit 1 and large-scale facility improvement services.

Finding Future Energy Business Based on Nuclear Power

KEPCO E&C is also participating in small and medium-sized SMART nuclear power plant design in Saudi Arabia through consistent development of technologies. SMART nuclear power plants refer to the integrated reactor vessel assembly that combines nuclear reactor, steam generator, pressurizer and coolant pump in a single vessel. SMART nuclear power plants have a capacity equivalent to 1/14th of commercial nuclear power plants (100MW) and can supply water, power and heating energy in a city of 100,000 residents through electricity and seawater desalination. KEPCO E&C has been performing the 'architect engineering for SMART nuclear power plant construction' since June 2016 in accordance with the 'Korea-Saudi Arabia Pre-Project Engineering (PPE) agreement before construction of SMART nuclear power plant.' After completing verification of licencibility and economic feasibility of SMART nuclear power plants through PPE, we plan to construct 2 nuclear power plants in Saudi Arabia and export plants to third countries. In addition, KEPCO E&C has been conducting joint businesses with the countries with developed nuclear technologies by participating in the International Thermonuclear Experimental Reactor (ITER) construction project since 2007.

Classification of overseas business areas in the nuclear power field

Target business	Details	Goals
New nuclear power plant export business	Exportation of new reactor types to overseas and starting of new construction business	• Construction of order network through expansion of exchanges • Strengthening order-taking competitiveness through acquisition of overseas certification
Overseas business for nuclear power plants in operation	Maintenance or life extension of nuclear power plants in operation	• Expansion of scope of target nuclear power plants in operation
Future energy business	Future nuclear energy business for ITER, SMART	• Expansion of business areas other than the existing engineering business

03

Better Technologies for Safer and Cleaner Energy

Advancement of Energy Technologies

Safety accidents in the power generation industry can inflict significant and extensive damage environment, human life, corporate images and economy. Therefore, securing the safety of power plants is a very important task for sustainability, environment and society. In addition, people are paying increasing attention to global warming and air pollution. Accordingly, the development of eco-friendly energy technologies that can minimize the emission of greenhouse gases and hazardous substances has become the core factor to be considered for sustainable growth.

Our Approach

We try to provide safer and cleaner energy to people, regarding that it is our responsibility and obligation to hand down a safe and clean habitat to future generations. First off, we secure the safety of facilities through timely execution of risk assessment on all domestic nuclear power plants in operation so they can be operated safely. In addition to preventing failure and increasing the safety of nuclear power plants, we practice response tests for conditions exceeding the design standards to develop design technologies that can cope with extreme calamities. Moreover, KEPCO E&C secured technologies to substantially lower fine dust through optimal design based on independent research efforts, power plant characteristics and on-site conditions.

Our Performance

- Investment in win-win technology innovation: KRW 700 million
- Independence of nuclear decommissioning technology: 87%
- Number of security accidents: 0 case

Link to UN SDGs

- Goal 7. Ensure sustainable energy for everyone
- Goal 9. Industrialization · Innovation and Infrastructure
- Goal 11. Sustainable Cities and Communities
- Goal 13. Climate Action

Advancement of Safe Nuclear Power Technologies

As the national demand for nuclear power safety increases, We strengthened out technological competitiveness by conducting risk assessments for all power plants and developing technologies for disaster preparedness. In addition, We have improved the reliability of nuclear power plants with the best quality through independent design inspection and quality control.

Strengthening Safe Nuclear Power Technologies

Development of Technologies to Increase Reliability of Nuclear Power Plants in Operation

KEPCO E&C strives to develop technologies to live up to the trust of people in the safe operation of nuclear power plants. We developed a methodology of risk assessment for multiple plants to ensure safe operation of nuclear power plants at all times and demonstrated evaluation of Shin Kori Power Plant Units 1~6 using the methodology. In addition, current earth detection and 3D change technology were secured for non-contact detection of pipe corrosion during excavation works. By doing so, KEPCO E&C has not only improved the safety and access restriction of contaminated areas but also enabled response to the future demand for non-excavation indirect inspection. As a result of such activities and efforts, KEPCO E&C acquired ToSPACE GS certification for the first time among institutions under the Ministry of Trade, Industry and Energy in 2018.

[1] ToSPACE: Cooperative development program for small and medium enterprises to replace pipe wall thinning S/W importation
[2] Good Software: National S/W quality certification

Development of Unique design Technologies to Strengthen Seismic Performance

With the increasing risk of earthquakes and strengthening of seismic verification, KEPCO E&C has been concentrating on the development of unique design technologies to strengthen seismic performance of nuclear power plants. Seismic[3] performance of the Kori region was reevaluated, and a site analysis program was developed to replace overseas advisory for earthquake analysis. Furthermore, a new design code for nuclear power facilities with seismic isolation systems was presented at TINCE 2018 (Technological Innovations in Nuclear Civil Engineering in France, August) and the draft of IAEA Report was submitted (September) after objective verification of the KEPCO E&C's model based on joint international research. KEPCO E&C will continue its efforts to enhance global status of unique safety technologies.

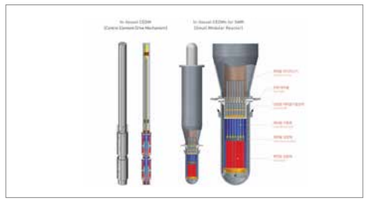
[3] Seismic Design : Attach a special insulator or attenuation devices between the structure and the ground to dissipate the seismic energy transferred from the ground to the structure or reduce the load itself

Development of Disaster Response design Technology

Growth of the domestic nuclear power plant industry is slowing down because of the energy transition. Accordingly, KEPCO E&C is making an effort to develop disaster response design technologies so that its nuclear power plant design technologies can be exported to overseas markets. In particular, the European market requires high explosion safety with fire and terror prevention measures. KEPCO E&C devotes to develop disaster response design technologies by reviewing license and design requirements related to explosionproof, calculating internal and external explosion load of nuclear power plants, and developing analysis techniques. Also, an in-depth cyber security system for APR1400 was built to protect nuclear power plants against cyber threats and fulfill security requirements of regulatory authorities. We have established our own cyber security system by classifying the targets of cyber security and constructing a strategic system for the analysis, evaluation, prevention, detection, alleviation and recovery of vulnerabilities.

Best Practice

Development of World's First Magnet Jack Type In-Vessel CEDM(Control Element Drive Mechanism)



In 2018, KEPCO E&C successfully developed the world's first In-Vessel CEDM that can be used inside high-temperature, high-pressure and high-radiation nuclear reactors without concerns for the rod ejection accidents.
The In-Vessel CEDM developed this time is characterized by a control rod inside a nuclear reactor that controls the output of the nuclear reactor and scrams the reactor in case of an emergency. Unlike conventional design, this device can control output from inside of a nuclear reactor at high temperature of about 340°C, high pressure of 17MPa and high radiation. The device was made to fundamentally prevent the rod ejection accident, where the control rod is ejected from the fuel assembly. In addition, this In-Vessel CEDM has innovatively improved stability and is advantageous for small-sized nuclear reactors. KEPCO E&C published 14 research papers (3 SCI entries and 11 others), applied for 11 domestic and overseas patents and registered 5 patents using this device. We are also raising technological status by receiving the IR52 Jang Young-Shil Technology Innovation Award, winning the Grand Award for Power Companies at the Bitgaram International Expo of Electric Power Technology (BIXPO), and displaying products at the World Nuclear and Radiation Expo.

Enhancement of Competitiveness Through Quality Management

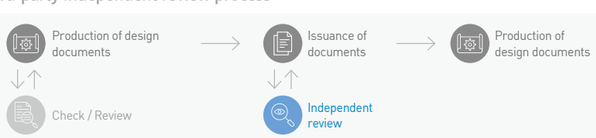
Implementation of Quality Management

Ever since its foundation in 1975, KEPCO E&C has always been maintaining excellent engineering quality by introducing and operating Korea's first nuclear power quality system. We set and practice quality policy and quality goals to fulfill customer requirements and legal and regulatory quality requirements at home and abroad. We are constantly improving the quality management system through corrective and preventive actions, management review, etc. KEPCO E&C acquired ISO9001 quality management system certification in 1996 and has been operating the quality management system that additionally reflects quality requirements of the nuclear power field.

Increasing Reliability of Nuclear Power Plants Through Third-Party Independent Review and Efficient Equipment Qualification

We are conducting strengthened independent review to cope with the demand for safety and engineering quality, which increased after the Fukushima nuclear accident and corruption in the nuclear power industry. Engineering Design Review Team in Nuclear Safety Engineering Center directly under the Nuclear Division, separated from its project organization minimizes engineering errors by engaging in thorough quality assurance activities such as independent review and management system for design documents and correction of discordances and safety hindrances using Corrective Action Program (CAP). We endeavor to maintain the highest quality.

The third-party independent review process



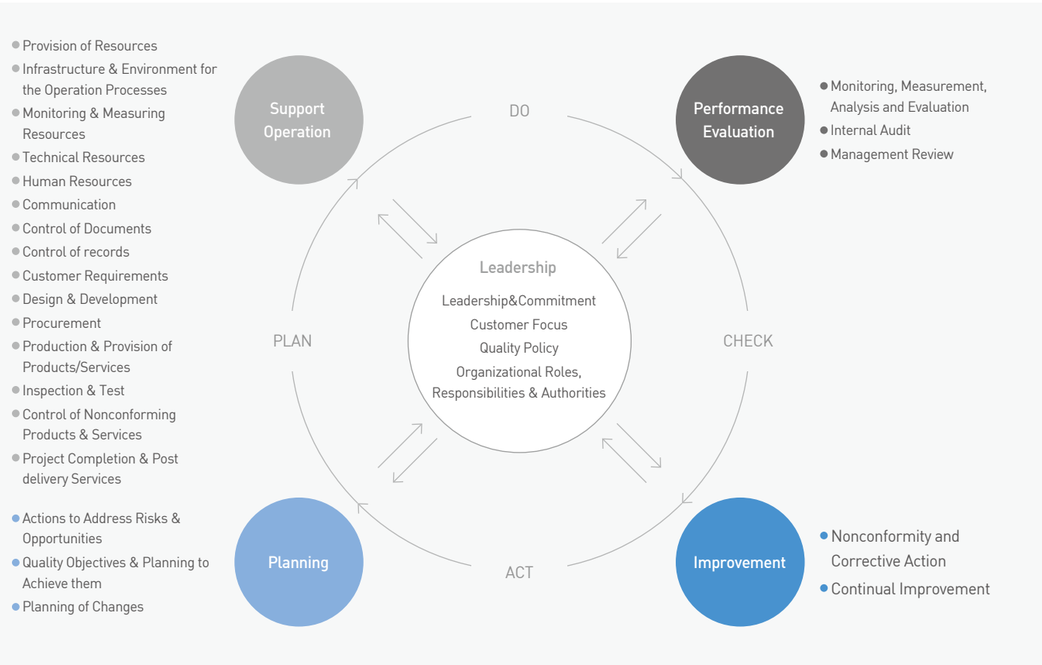
Strengthening Engineering Quality Through Substantialized Quality Control

According to the recommendation of the International Organization for Standardization (ISO) and the International Atomic Energy Agency (IAEA) to implement an integrated management system model, KEPCO E&C established a manual for the construction of the integrated system, revised the procedure, performed mapping of the integration process and conducted education on important hands-on workers in May 2018. In addition, we increased the number of technical experts to 18 persons and performed quality audit to evaluate the design quality for high-quality engineering.

Quality management (quality goal, quality policy)

Quality goal	'Accomplishing zero defect of products and services' & 'achieving the best customer satisfaction (100%)'
Quality policy	Strengthening Global Quality Levels and Enhancing Competitiveness
Realization Principle	1. Compliance with relevant regulation and customer requirements 2. Safety-oriented quality and safety value for all activities 3. Full understanding of the integrated management system, strict adherence and familiarization 4. Development of voluntary participation and preventive activities for continuous improvement and enhancement 5. Performance measure and goal attainment to accomplish zero defects in products/services and enhancement customer satisfaction

Quality Management System Process



Advancement of Eco-Friendly and Renewable energy Technologies

KEPCO E&C is spurring the development of eco-friendly and renewable energy technologies in response to global warming and fine particles. We are developing fuel cell engineering technologies and carbon dioxide capturing and pressing technologies, which can increase energy efficiency and significantly reduce greenhouse gases. We increase the competitiveness of our technologies by accumulating experience in the renewable energy business.

Advancement of Eco-Friendly Technologies

Development of Fuel Cell Power Plant Engineering Technology

KEPCO E&C is making an effort to develop Integrated Gasification Fuel Cell (IGFC) engineering technologies to prepare for the coming hydrogen society. The hydrogen fuel cell is an eco-friendly energy source with higher energy efficiency compared to fossil fuel turbine generation, no noise and low greenhouse gas emission. It is drawing attention as new eco-friendly technology that can be applied to a variety of areas including transportation, power generation, home and portable devices. Accordingly, KEPCO E&C has established a hydrogen energy technology road map to preemptively secure clean power generation design technologies. Based on this road map, we are systematically promoting related businesses. On the one hand, KEPCO E&C promoted modeling and concept design of a fuel cell power plant in 2018 and provided feasibility study service (Namhae, Taean) for the transition of Integrated Gasification Combined Cycle (IGCC) to fuel cell power plants. KEPCO E&C will continue to secure clean power generation design technologies and drive future energy transition by developing technologies for land transportation of idle offshore wind power, hydrogen turbine, and CO_2 capturing and methanation.

Hydrogen energy technology road map

Direction	Type	Period	Application area
Demonstration and increased business participation	Production Gas reforming	2018 ~ 2021	Transition of IGCC to fuel cell power plants
	Production Power to Gas	2019 ~ 2025	Land transportation of idle offshore wind power
	Use Clean hydrogen to fuel	2023 ~ 2035	Hydrogen turbine, CO_2 capturing and methanation

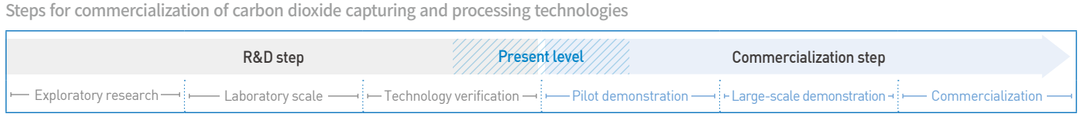
Comparison of energy efficiency and greenhouse gas emission

Type	Stage	Efficiency	CO_2 reduction
Integrated Gasification Combined Cycle	Commercial	42%	13%
Gasified Fuel Cell	Research	55%	25%

Improvement of Carbon Dioxide Capturing and Pressing Technologies

To accomplish the national greenhouse gas reduction goal, KEPCO E&C has entered into pilot demonstration, the first step to the commercialization of Carbon Capture & Storage (CCS). KEPCO E&C participated in the government-driven research on carbon dioxide capturing technologies since 2008, accumulating experiences in wet amine capturing and dry capturing technologies. We have increased capturing capacity and solidified the groundwork for commercialization by improving the conventional commercial capturing and pressing design to a medium-sized pilot process.

Steps for commercialization of carbon dioxide capturing and processing technologies



Best Practice

Fulfillment of Safe and Eco-Friendly design for World's First Urban Underground Seoul Combined Cycle Power Plant

KEPCO E&C successfully completed the synchronization of Seoul Combined Cycle Power Plant Units 1 and 2. Seoul Combined Cycle Power Units 1 and 2 are eco-friendly power plants and the world's first underground power plants that secured renewable energy generation facilities and environmental facilities to supply 800MW of power and 530Gcal/h of heat. Ever since the commencement of construction in September 2013, they have been maintained as accident-free sites. KEPCO E&C fulfilled its responsibility for safe and eco-friendly design by successfully completing the synchronization of steam turbine generators through foundation work, installation of instruments, and trial operation of unit instruments.

Safety-oriented design	Eco-friendly design
• Promoted the design and construction safety verification system from 3 steps to 6 steps • Deflagrating discharge simulation • Confirmation of suitability of firefighting construction and materials • Verification of main building structure construction	• Reinforced nitrogen oxide (NOx) emission standard: 15ppm → 10ppm • Application of iron arsenate (iron oxide included in exhaust gas) capturing facility • Application of safe reducing agent (urea) • Supported engineering to turn headspace of power plant into park

* What is synchronization of combined cycle power plants?
It is the core process of confirming proper operation of all facilities installed in a power plant such as gas turbine, reheating boiler and steam turbine and verifies the ability to supply generated power.

Advancement of Core Renewable energy Technologies

As KEPCO E&C accumulates experiences in the renewable energy business, related technologies are advancing. KEPCO E&C is acquiring core technologies through business and service experiences in the fields of wind power, solar power, IGCC and fuel cell. We would like to expand the distribution of renewable energy by actively conducting joint research at home and abroad.

Technology development and cooperative research status

Technology development

- Development of repowering life cycle technology to improve availability of deteriorated wind power complexes
- Development of technologies for design of offshore wind power demonstration complex and wind power resource evaluation
- Patent applications for wind power tower system and floating offshore generation device (external circulation)

Cooperative research

- Development of prototype technology for stacked type solar power generation system to reduce installation area and increase generation efficiency
- Joint research with Samwon Tech, Photonics Technology Institute and Kongju National University
- Joint demonstration research with the Kuwait government and research institutions (signing of a general agreement for the demonstration of the stacked type solar power generation demonstration project)

Securement of technologies through accumulation of experiences in the renewable energy business

Type	Experience	Acquired technologies
Wind power	Preliminary business for design and procurement of Jeju Hallim offshore wind power complex	Acquisition of technologies through advisory of global companies like K2-Mgt, DNV-GL, etc. Acquisition of safe and eco-friendly future technologies such as floating offshore wind power, large-capacity mono-pile method, etc.
Solar power	Feasibility study on solar power generation business using offshore solar power plant and idle site of Daeho Lake	Acquisition of solar power arrangement technology considering optimal generation scale and land characteristics
IGCC	Feasibility study on Namhae IGCC (400MW)	Securement of technologies to practice concept design / design improvement and secure economic feasibility of increased capacity (400MW) Acquisition of basic technologies for IGFC
Fuel cell	Feasibility study on fuel cell power generation business and design service	Acquisition of technologies to review strengths, weaknesses and economic feasibility of each fuel cell type

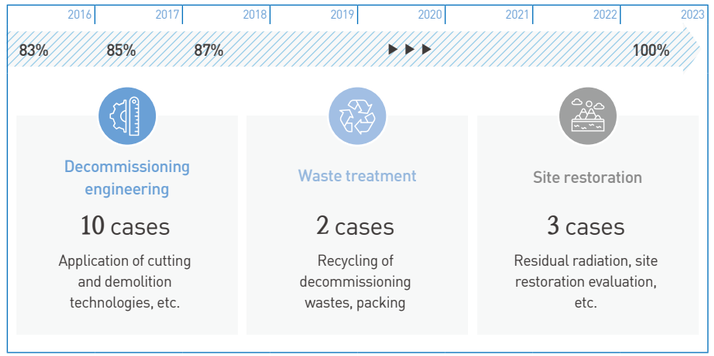
Securement of National Basic Energy Technologies

KEPCO E&C strives to secure national basic energy technologies through backend management of nuclear power plants and standardization of spent fuel management. In addition, as the design information system of KEPCO E&C was designated as an important national information communication facility, KEPCO E&C established countermeasures according to the Act on the Protection of Information and Communications Infrastructure and endeavors to strengthen the security of core technologies.

Promotion of Localization of Nuclear Power Plant Backend management Technologies

KEPCO E&C is trying to secure safe nuclear power plant backend management technologies to minimize radiation leak and site contamination that can occur during nuclear decommissioning. For reference, KEPCO E&C is securing decommissioning engineering, waste treatment and site restoration technologies with the goal of achieving 100% independence by 2023 according to the nuclear decommissioning technology independence road map.

Decommissioning technology independence road map



Securement of Basis for Standardization of Spent Fuel Management

Since new deadly poisonous radioactive substances other than the uranium fuel such as xenon, strontium, cesium and plutonium are generated in Spent Nuclear Fuel (SNF), a large amount of radiation and high heat are radiated after nuclear fission takes place in the nuclear reactor. They are fatal when directly exposed to human beings. However, the management of SNF has a special characteristic that the site can be selected only after preparing for a standardized permanent disposition method. Accordingly, KEPCO E&C places efforts to secure the basis for standardization of SNF management. Currently, KEPCO E&C proposed a plan for the government task with the Ministry of Science and ICT, Ministry of Trade, Industry and Energy and Nuclear Safety and Security Commission with details including the necessity for construction of SNF management characteristic DB and standardization of containers. In the future, KEPCO E&C expects to show an innovative increase of stability and economic feasibility and achieve exportation of products by conducting research and standardizing SNF management according to the government's radioactive waste management policy.

[1] Spent fuel: High level radioactive wastes emitted after fuel is used in a nuclear reactor

Strengthening Security of Core Technologies

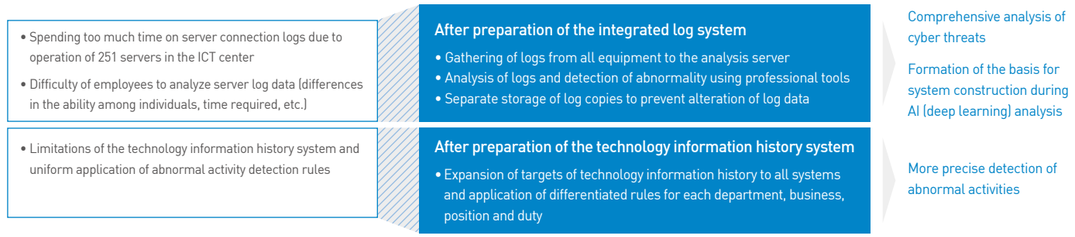
Establishing an Information Security Control System

KEPCO E&C complies with the ISO 27001 (International Standard for Information Security Management System) and maintains its certification through continued efforts to improve the information security system. Our information security goal is to achieve zero cyber infringement accident. We have devised 3 strategies including strengthening of cyber security functions, advancement of security activities and strengthening of capability of security personnel. Detailed tasks are managed through information security status evaluation.

Advancement of Cyber Security Activities

KEPCO E&C focuses on strengthening information security to take the preemptive response to the fourth industrial revolution. The information protection master plan was established in 2017 to prepare for future information security risks, and the master plan is being implemented in 3 stages.
In stage 1 (2017), KEPCO E&C built its own cyber security control office to respond to technical data leakage and cyber hacking in real time. The cyber security control office combined the information protection system and control facility, and can spread situations through real-time monitoring of security threats and technical data leakage accidents.
In stage 2 (2018), the functions of the cyber control system were advanced. Optimized control rules and 2 professional control workers were added for perfect prevention of cyber infringements. In addition, an integrated log management system and a technology information history system were built for comprehensive analysis of cyber threats and more precise detection of abnormal activities.

Effects of the integrated log management system and technology information history system



In stage 3 (2019), the final goal of KEPCO E&C is to build a cyber analysis / control system based on big data and AI, a DB access control system and a disaster recovery system. We will respond preemptively to the fourth industrial revolution and achieve perfect information security.

Cyber infringement accident

Accident rate: ZERO

Cyber attack response training

The highest grade(Excellent)

Enhancing Information Security Awareness

KEPCO E&C accomplished zero security accident through company-wide activities to enhance information security awareness. Security awareness was internalized in all employees by conducting online and collective security education and rewarding departments for excellent information security activities. Outstanding training results such as high report rate and low viewing rate were obtained from simulated email training. In addition, information security inspections on the headquarters, important sites and service companies were conducted internally twice or more per year to evaluate information security level, and quarterly information vulnerability inspections were performed. Externally, KEPCO E&C improved vulnerabilities through information security evaluation of the National Intelligence Service and personal information diagnosis of the Ministry of Public Administration and Security. KEPCO E&C received the highest grade (excellent) among institutions that participated in the cyber attack response training supervised by the National Intelligence Service (155 institutions).

Embodiment of Community That Shares and Grows Together

Win-Win and Sharing

With much attention of people to social values, the government presented the attainment of social values of public institutions as its core policy task. According to the 'Basic Bill on the Attainment of Social Values of Public Institutions,' social values are defined as social, economic, environmental and cultural values that can contribute to the public interest and community development. Accordingly, many public institutions are making an effort to create social values such as contribution to the regional economy, attainment of community benefits and strengthening of publicness through win-win and cooperation, creation of high-quality jobs and revitalization of local communities.

Our Approach

KEPCO E&C engages in social contribution activities that can contribute to the development of local communities for sustainable creation of social values. It stabilizes national life by creating high-quality jobs. Also, KEPCO E&C continuously promotes shared growth activities to increase the competitiveness of partners and develop the regional economy.

Our Performance

- Participation in social contribution: 2,741 hours
- Job creation: 1,633 persons
- Ratio of products purchased from small and medium enterprises: 85.8%
- Preferential purchase from socioeconomic organizations: KRW 110,476,000

Link to UN SDGs

- Goal 1. End poverty in all its forms everywhere
- Goal 2. achive food security and improved nutrition
- Goal 4. Ensuring inclusive and equitable quality education for all and promoting opportunities for life education
- Goal 8. Promote comprehensive and sustainable economic growth, full productive employment and high-quality jobs
- Goal 16. Promote a peaceful and inclusive society and build an effective and responsible inclusive system
- Goal 17. Partnership for sustainable development

Development of Communities Through Social Contribution

Based on its social contribution strategy according to the corporate philosophy and vision, KEPCO E&C promotes social contribution activities to foster future talents using best the technologies, to develop the relocation area and to utilize partnership with external institutions.

Social Contribution Promotion System

KEPCO E&C has a social contribution promotion system that reflects the government policy and community demand. Under its strategic goal to 'become a global social contribution company contributing to the happiness of humankind and society,' KEPCO E&C has devised 3 promotion strategies and conducts various social contribution activities by establishing the social contribution road map for 2022. In addition, Social Contribution Committee administers social contribution activities and Social Contribution Team plans, executes, evaluates and reports social contribution activities.

Social Contribution Strategy

Corporate Philosophy	Humaneering, Harmony of Human, Environment, and Technology
Vision 2025	Global Leading Energy Solution Partner
Strategic Goals	Development into a Global Social Contribution Company That Contributes to the Happiness of Humankind and Society
Strategy	Promising Talent Training-based CSR / Region-based CSR / External Relation-based CSR

Social Contribution Road Map

2018	2019 ~ 2020	2021 ~ 2022
Systematization of Social Contribution Activities	Strengthen Ties with Local Community through Customized Social Contributions	Spread Performance of Social Contributions with Sharing the Excellent case
Establish social contribution system by communication and cooperating with government agencies and local governments	Conduct social contribution program reflecting local demand and environmental changes.	Realize social values of the organization by strengthening the social contribution reflecting the Company's Characteristics

Social Contribution Activities to Foster Future Talents

KEPCO E&C conducts social contribution activities to foster future talents using the best technologies. The power engineering school program provides scholarships to undergraduate engineering students in sophomore and junior years with excellent academic performance after training. The amount of scholarships was KRW 12 million in 2018. KEPCO E&C provides financial support to International Nuclear Graduate School to foster experts in the field of nuclear power generation, financing KRW 290 million in 2018. Furthermore, KEPCO E&C strives to foster convergent agricultural talents in connection with characteristics of the area where the headquarter was relocated. We supported the construction of a training center for Gimcheon Biological Science High School and conducted customized agricultural technology education on students and residents. This a newly started program in 2018 and is greatly contributing to the development of farming villages and job creations in the private sector.

Regional Social Contribution Activities

KEPCO E&C performs regional social contribution activities for the development of the area where the headquarter was relocated and stabilization of livelihood. 'Chamsarang' volunteer group voluntarily formed by employees of KEPCO E&C supports socially disadvantaged groups such as elders and low-income class and the village in the 'One Company-One Village Sisterhood' Program and sponsors facilities for the disabled. Also, KEPCO E&C hosts cultural community events to increase the vitality of the community. In 2018, about 2,500 residents participated in various concerts and recitals. In particular, 'One Mind Chorus Concert' of a choir comprised of employees of KEPCO E&C and residents and 'Angels' Gift Donation' of KEPCO E&C and Gimcheon Welfare Center for Disabled were more meaningful because they were held as participatory cultural events. In addition, the open library and sports facility of the headquarter are opened to residents as cultural space. KEPCO E&C tries to attract visitors to by hosting various the regional events including Gimcheon Plum & Grapes Festival and Gyeongbuk Architecture Festival.

Performance of Chamsarang Voluntary Corps

Type	Unit	2016	2017	2018
Number of participants	persons	747	822	1,139
Volunteer hours	hours	3,310	2,332	2,719

Contribution to revitalization of regional economy and community development

Citation from the Minister of Land, Infrastructure and Transport

Economic Vitalization Through Finding of Regional Cooperation Tasks

KEPCO E&C engages in economic vitalization activities by closely cooperating with the local government and community. A multilateral cooperation system composed of KEPCO E&C, Gimcheon City and private companies were formed to develop the stacked type solar power system. This system is greatly contributing to economic vitalization of the area by exporting it. In addition, KEPCO E&C purchases local products of small businesses to revive regional economy depressed by recession. KEPCO E&C procures local products by purchasing Onnuri gift certificates used in traditional markets, promoting and purchasing local farm products, and supporting sales facilities of youth entrepreneurs.

Fostering of future talents in connection with regional characteristics and finding of new industrial development tasks

	Activities	Outcome and expected effects
Smart farm green energy	• New construction of a training center for Gimcheon Biological Science High School • Customized education on farming technologies (enrolled students, residents) • Financing of farming and fishing village cooperation fund for win-win relationship	• Fostered convergent farming talents • Developed farming villages and created private jobs
Stacked type solar power system	• Multilateral cooperation (Gimcheon City, KEPCO E&C, Samwon Tech) • Empirical research and development of stacked type solar power system • Donation of stacked type solar power facilities to the community	• Promoted joint overseas expansion to Kuwait • Expected to achieve annual sales of KRW 4.5 billion in 2019
P2G hydrogen charging station	• Preemptive response to the government's policy for 'hydrogen economy road map' • Commencement of research on P2G engineering based on renewable energy technologies	• Played a preemptive role in Innocity and hydrogen economy and expanded hydrogen charging infrastructures

Efforts to favor regional small and medium enterprises

Type	Production area	Business expense (KRW million)
Laundry	Gumi	106
Publication of in-house newsletters	Andong	76
Bus	Gyeongju etc.	111
Employee counseling	Gimcheon	4
Workplace nursery	Gimcheon	608

Creation of High-Quality Jobs

KEPCO E&C guarantees high-quality jobs for employees by making multilateral efforts to maintain work-life balance. By enforcing the flexible time system and maternity leave system, We are creating additional jobs. Also, KEPCO E&C examines the possibility of job creation in addition to economic performance.

Job Creation Strategy

Under the vision of 'building trust in the energy industry ecosystem through creation of Innocity job platform,' KEPCO E&C has prepared the groundwork for systematic job creation based on the 4 strategic directions below. KEPCO E&C is continuously advancing the job creation strategy system by analyzing previous job creation outcomes, government policies, and needs of the community and stakeholders. We also create jobs by setting up challenging tasks and goals.

Job creation strategy

Vision	Building trust in the energy industry ecosystem through creation of Innocity job platform			
Strategic direction	Enhancement of job transition and employment quality	Job creation in the public sector	Creation of Private sector jobs based on businesses	Vitalization of regional economy by creating shared values
Promotion tasks	Building and maintenance of a job-centered management system Accelerated transition of temporary employees to regular employees Improved treatment of transition workers	Improvement of working style through the flexible time system Drastic increase of experiential youth intern recruitment Expanded scale of new recruitment	Recovery of trust of the energy industry ecosystem Expansion of industrial, academic, research and government cooperation on technologies Strengthening of roles in creating the Innocity platform	Preparation of means to support socioeconomic vitalization Expansion of shared growth programs to create shared values Balanced creation of jobs among generations and social classes

Job Creation Through Work-Life Balance

Spreading the One-Person, One-Flexible Working System

Starting with the implementation of the flexible working system in 2015, KEPCO E&C has continuously introduced various flexible working systems to create high-quality jobs. In 2018, 81% of all employees used the flexible working system. KEPCO E&C continues its efforts to settle down the one-person, one-flexible working system culture. It also creates jobs by recruiting employees to fill in vacancies caused by the flexible time system.

Current status of flexible working systems

Type of flexible working system		Unit	2016	2017	2018
Flexible work	Flexible start and finish	Persons	509	754	773
	Flexible number of working hours		1,346	1,596	1,736
	Intense working		0	2	4
Flexible time			4	15	28
Remote work			0	7	56

Creation of Private Jobs Related to Businesses

Improving Systems for Work-Life Balance

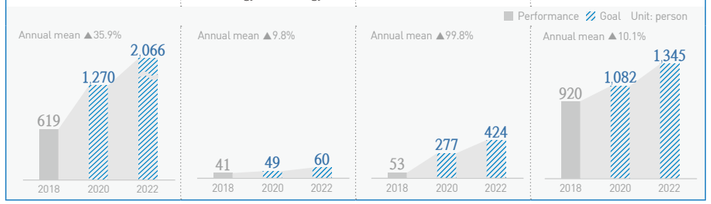
KEPCO E&C increases the life satisfaction of employees by improving systems for work-life balance such as the automatic maternity leave system. At the same time, KEPCO E&C creates jobs by recruiting alternative workers to fill in vacancies created by leave of absence and dispatch workers. The 'One-Stop' system, which applies for maternity leave and leave of absence at the same time was implemented and the period of the paternity leave system was expanded in 2018. Through these changes, KEPCO E&C employed 26 alternative workers, increased by 12 persons compared to the previous year.

Job Creation Through Increased Investment

KEPCO E&C creates private sector Jobs related to its businesses by making the investment into primary businesses, technologies, new businesses and social values. The number of jobs created by activating investment in 2018 was 1,633. KEPCO E&C plans to create 13,600 (cumulative) jobs until 2022.

Job creation through investment

Activation of investment in primary businesses	Activation of investment in technologies (R&D)	Increased investment in new businesses	Activation of investment in social values
Architect engineering service for UAE nuclear power plants	Joint development of stacked solar power technology	Decommissioning engineering for Kori Unit 1	Young CEO startup in Gimcheon
ITER CIS final design / procurement business	Development of floating offshore SMR (stage 1)	Intermediate- and low-level radioactive waste design	Progressive jobs for youths
Stress test service for nuclear power plants in operation	Survey on status of hydrogen energy technology	Service for Sejong Fuel Cell Power Plant	Creation of jobs for middle aged



Strengthening the Cooperation System for Job Creation

KEPCO E&C fulfills its social responsibility by cooperating with various institutions. First, the company fosters the innovation industry (bridge inspection drones) by collaborating with 8 public institutions. We plan to create private sector jobs in the community by supporting the opening of drone departments at local universities and attracting the drone industry. In addition, KEPCO E&C conducts education and helps students get employed by cooperating with local universities and partners on fostering of talents in the field of power plants. In particular, students who already completed education but failed to get employed were reeducated to increase the sincerity of our activities. As a result, 20 Students who finished the education course found a job.

Job Creation Through Creation of Shared Values

KEPCO E&C creates jobs by supporting the business startup of young CEOs, fostering social enterprises, and sharing performance with partners. The young CEO startup program finds entrepreneurs-to-be of the community and supports a business startup. KEPCO E&C prepares the groundwork to help social enterprises create more jobs by engaging in responsible activities to support sales and sustainable growth.

Promotion of Win-Win Shared Growth

KEPCO E&C continues sincerely shared growth activities for SMEs.
To enhance competitiveness with SMEs, KEPCO E&C creates an environment for shared growth by forming fair technology trading relationships, supporting technologies, promoting joint overseas expansion and maintaining fair economic order.

Advancing Shared Growth System

KEPCO E&C engages in shared growth activities for SMEs and small businesses through its shared growth system. We set 'Technology-based shared growth' and 'Performance-sharing cooperation' as the promotion strategies and its own detailed tasks have been established and implemented. Also, we manage and practice company-wide shared growth activities through the operation of the the Commission on Shared Growth and the exclusive organization to shared growth with the CEO as the chairman.

Promotion strategy	Technology-based shared growth		Performance-sharing cooperation	
Direction	Joint technology development and pioneering markets	Protection of core technologies and strengthening of capability	Closing of the gap in jobs among small, medium and large enterprises	Efforts to spread outcome of cooperation and introduction of benefit sharing
Promotion tasks	Joint technology development and commercialization Finding of excellent small and medium enterprises	Support on technology transfer and escrow Strengthening of human resource capability	Wage sharing program Support on job fairs of partners	Introduction of a new benefit sharing system Expansion of performance sharing tasks

Strengthening Competitiveness of SMEs and Small Businesses

Joint business development and commercialization

14 cases

Supporting Technology Transfer and Escrow of SMEs

It is very important to protect core technologies for SMEs. KEPCO E&C supports technology transfer and escrow by increase the competitiveness of SMEs by protecting their core technologies. Also, KEPCO E&C supports SMEs by transferring unused patents and patents of general industries. KEPCO E&C conducts education on the technology escrow system and finances escrow fees. We will continue to support small and medium enterprises to secure the reliability of their technologies and increase the competitiveness by preventing technology extortion.

Joint Technology Development and Joint Overseas Expansion

KEPCO E&C jointly develops technologies by maintaining a cooperative relationship with small and medium enterprises. We help expand the market and increase competitiveness of SMEs by jointly expanding to domestic and overseas markets. In particular, the prototype business for stacked solar power generation jointly developed with small and medium enterprises since 2017 was successfully expanded to overseas. This prototype business is expected to create sales in 2019.

Vitalizing Social Economy and Fostering Socioeconomic Companies

KEPCO E&C has established an operating system to vitalize the social economy and foster socioeconomic companies by actively reflecting the external environment and direction of government administration. Detailed support activities were selected after setting up 4 areas. KEPCO E&C fosters and supports socioeconomic companies from product development to commercialization and market pioneering. KEPCO E&C preferentially procures products and services of socioeconomic companies for ethical consumption.

Direction	Fostering and support of socioeconomic companies		Vitalization of social economy	
	Development of specialties	Growth based	Hosting of exposition	Public procurement
Supported areas	Improvement of employment	Support on promotion	Training of human resources	Market pioneering
	Creation and maintenance of social jobs Job provision	Sustainable support on product development and brand promotion expense	Professional advisory such as tax and law Academy support	Public procurement for sales booth and holding of events

Establishing Fair Economic Order

Improving Contract System

KEPCO E&C reinforces transparency and fairness of contracts by improving irrationalities. We listened to the opinions of partners and reflected them on contract regulations in addition to contract-related laws. We tried to maintain sound contract relationships by conducting anti-corruption surveys and checking power harassment while listening to opinions of partners. KEPCO E&C will continue to improve the contract system to establish fair economic order and create an environment for partners to increase their competitiveness.

Timely Payment

KEPCO E&C contributes to the cash flow of partners by expanding the win-win payment system. The win-win payment rate was 21.1% in 2018. All payments are made in cash to reduce the financial expense of partners. The company completes payment within 5 business days after request to provide realistic help in securing the cash flow.

Performance sharing tasks

5 tasks

Best Practice

Fostering Socioeconomic Enterprises Through Win-Win Cooperation Model

In 2018, KEPCO E&C realized the win-win cooperation model through multilateral industrial, academic and government cooperation. The company devised the method of fostering social enterprises by cooperating with the local government and is currently operating the win-win cooperation system comprised of KEPCO E&C, Gimcheon City, Gimcheon University and social enterprises. KEPCO E&C supports labor cost and initial material expense of social enterprises by financing the farming and fishing village win-win cooperation fund through the donation of employees. We also provide education for product development and market expansion. This win-win cooperation model is expected to create high-quality jobs and vitalize the local community, not only in the present but also in the future.

Sustainability Management System

Governance

Establishing Sound Governance

Structure and Operation of the Board of Directors

The Board of Directors, the highest decision-making body of KEPCO E&C, deliberates and resolves important management decisions. The BOD reviews business strategies and goals of KEPCO E&C and plays a supervisory role. KEPCO E&C manages the BOD in a balanced way by appointing directors with representativeness, expertise and specificity, while complying with the Act on the Management of Public Institutions and its articles of association. As of July 2019, the BOD consists of 4 executive directors including the CEO and 6 non-executive directors. For reference, 9 BOD meetings were convened in 2018. A female member was appointed, and separate meetings of non-executive directors were held.

Structure of the BOD

As of July 8, 2019

Type	Name	Affiliation and Position	Career
Executive	Bae-Soo Lee	KEPCO E&C, CEO	(Former) KEPCO E&C / Director of Planning and Marketing Division
	Ho-Seop Eom	KEPCO E&C, Director of Management and Administration Division	(Former) KEPCO E&C / Head of Management Planning Department
	Tae-Eun Jin	KEPCO E&C, Director of Nuclear Division	(Former) KEPCO E&C / Head of Nuclear Business Department
	Hwa-Wun Byeon	KEPCO E&C, Director of Energy Division	(Former) KEPCO E&C / Head of New Business Development Department
Non-executive	Jae-Hyeon Park	Non-executive director	(Former) MBN, Executive Director
	Taek-Sang Cho	Non-executive director	(Former) Incheon, Head of Dong-gu District
	Moon-Soo Heo	Non-executive director	(Former) Gwangju City Council, Member
	Yeong-Hee Koh (female)	Non-executive director	(Current) Seoul School of Integrated Sciences & Technologies, Associate Professor
	Wun-Tae Ahn	Non-executive director	(Current) Democratic Party of Korea, Seosan Taean Regional Committee, Acting Chairman
	Jae-Seok Choi	Non-executive director	(Current) Gyeongsang National University, Professor of Electrical Engineering

Performance of the BOD

Type	Unit	2016	2017	2018
Meetings	ea.	9	11	9
Agendas(per meeting)	case	4.22	4.27	4.33
Meetings of non-executive directors		0	0	1
Fields of expertise of non-executive directors	ea.	2	2	4
Non-executive director participation rate	%	57.4	67.3	89.7

Major Agendas of the BOD in 2018

No.	Date	Major agendas
1	2018. 01.12	Resolved Appointed members of the Executive Recommendation Committee
2	2018. 01.19	Resolved Changed the 1st extraordinary meeting of shareholders for 2018
3	2018. 02.09	Resolved Convened the 43rd annual meeting of shareholders, 43rd term settlement, 43rd term business report, approved wage limit for directors, approved wage limit for auditors Report Reported the operation plan for nuclear power supervision, reported the operation of the internal accounting management system for the fiscal year of 2017, reported evaluation on the internal accounting management system for 2017, reported the results of annual internal audit for 2017
4	2018. 03.13	Resolved Changed 43rd term settlement, changed 43rd term business report, revised「Operational Regulation on Integrity Contract of Executives」, convened the 2nd extraordinary meeting of shareholders for 2018, closed the shareholder's list Report Reported revision of the mid- to long-term management strategy, reported selling of previous real estate property in 2018
5	2018. 04.30	Resolved Changed the 2nd extraordinary meeting of shareholders for 2018, revised 「Executive Salary Regulation」, revised「Employment Rules」, revised「Internal Accounting Management Regulation」
6	2018. 05.25	Resolved CEO's management performance agreement Report Reported reorganization for 2018
7	2018. 08.23	Resolved Revised「Employment Rules」, financed the internal labor welfare fund in 2018, appointed senior non-executive directors, appointed members of the Executive Recommendation Committee Report Settlement for the first half of 2018 (44th term)
8	2018. 10.30	Resolved Convened the 3rd extraordinary meeting of shareholders for 2018, closed the shareholder's list, revised「Board of Directors Regulation」, mid- to long-term management goals Report Reported signing of CEO's management performance agreement
9	2018. 12.20	Resolved Revised「Employment Rules」, revised「Employee Salary Regulation」, closed Côte d'Ivoire Abidjan Branch, decided 3rd financing of KEPCO International Nuclear Graduate School, business plan and budget for 2019

Increasing Participation of Non-Executive Directors

KEPCO E&C increases the participation of non-executive directors to make reasonable decisions. First off, the Executive Recommendation Committee recommended candidates for non-executive directors to enhance expertise and transparency of non-executive directors. Moreover, the company placed various efforts to secure diversity and strengthen the participation of non-executive directors. The roles of non-executive directors were increased by operating a separate meeting body, and follow-up management was conducted by reflecting important suggestions. The participation rate of non-executive directors in 2018 was 89.7%, increased by 22.4%p compared to the previous year. Their speaking rate was 71.0% and ratio of speech was 65%.

Assessment and Remuneration

Remuneration for directors is comprised of basic pay and performance assessment bonus, and is paid within the wage limit approved at the general meeting of shareholders in accordance with 「Executive Wage Guideline for Public Enterprises and Quasi-Information Institutions」. The basic pay applies the annual increase rate determined by the Ministry of Economy and Finance, and the assessment bonus is paid based on the management performance assessment results for the previous year. Executive directors are given the assessment bonus according to the performance of the company and personal performance according to the annual goal. Non-executive directors receive monthly expenses to cover activities. Salaries of executives and allowances provided to non-executive directors in 2018 are transparently disclosed on the KEPCO E&C website and the public institution information disclosure system (ALIO).

Risk Management

Enterprise Risk Management

Risk Management System

KEPCO E&C is periodically operating risk management processes through Corporate Risk Management (CRM), which analyzes and responds to risks on the company level, and Project Risk Management (PRM), which analyzes and responds to risks of individual projects. We respond to risks proactively by identifying risks, operating risk management of important issues, and reporting the results to the management through ERM Report.

	Corporate Risk Management (CRM)		Project Risk Management (PRM)	
Definition	Securing sustainable growth by stable management of company-wide risks such as financing, personnel, technology, security, etc.		Identification of risks in individual projects such as existing businesses, investment businesses and future businesses and establishment of an efficient response system	
Cycle	Regular	Periodic	Regular	Periodic
Identification of risks	Monitoring of major management trends	Assessment of Corporate risk indicators (55)	Project Development Risk Assessment	Project execution Risk assessment (semi-annual)
Report to management	Regular reporting	Risk management report (semi-annual)	Business deliberation committee, business development meeting (monthly)	Risk management report (semi-annual)
Response activity	Reporting of ERM Report to the management every other week (any time as necessary) Risk assessment → detection and occurrence of crisis → execution of response plan → execution of countermeasures → completion of measures			

Advancement of Risk Management

There are various risks caused by internal and external changes in the business environment including the international trade war, slump of domestic and overseas construction businesses, renewable energy trend, and increased retirement of experienced workers due to aging. Accordingly, KEPCO E&C is strengthening its project risk and financial risk response systems for investment and future businesses. As a representative case, We added 21 risk items for investment and overseas procurement (EP) businesses, which advanced the proactive response system to cope with possible business risks. In addition to such external businesses, KEPCO E&C also tries to respond proactively to operational risks.

Advancement of company's risk management system

Operational risk monitoring		Analysis and response	Outcome
Risk	Reduction of orders and sales, and loss of investment for future growth	•Reduction of sales of primary businesses due to the energy transition policy and poor overseas performance •New formation and reorganization of Backend management Business Group and Renewable Energy Business Group •Efforts to improve the profit structure based on future and overseas businesses	Increased volume of future business orders KRW 6.2 billion in 2017 > KRW 60 billion in 2018: ▲ KRW 53.8 billion
Management indicators	Existing CRI •Annual sales achievement rate •Annual order volume achievement rate •Current ratio		
	Improved CRI •Future business order achievement rate •Future business sales achievement rate •Liquidity indicator		

Strategic Liquidity Management

Establishing Liquidity Management System

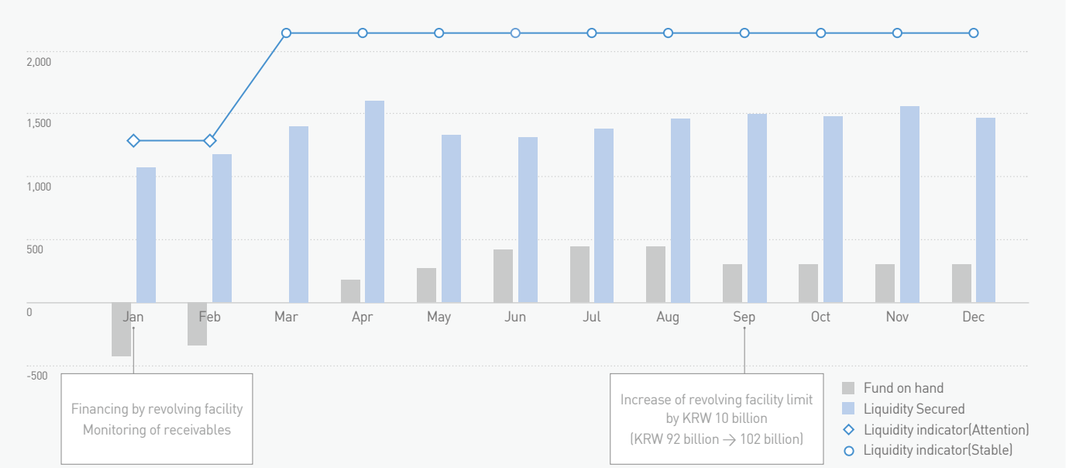
KEPCO E&C tried to devise plans to manage liquidity risks from the increase of unfavorable variability of the business and financial environment and the increase of loan interest due to fluctuations of standard interest. 「Liquidity Indicator」 was developed to strengthen the early alert system, and KEPCO E&C built a stepwise preliminary response system based on monthly forecasting and performance inspection.

Stepwise risk response system for liquidity indicator

Step	Liquidity indicator	Definition of step	Response
Stable	300 or higher	Liquidity secured for 4 months or longer	• Redemption of existing loans • Review of mid- to long-term deposit of surplus fund
Attention	200~300	Liquidity secured for 3 months or longer	• Automatic loan of temporary fund • Review of short- or long-term financing
Caution	100~200	Liquidity secured for 2~3 months	• Borrowing considering mix of short- and long-term loans • Company-wide announcement of financing plan
Danger	0~100	Liquidity secured for the current month and for 1 month	• Monitoring and management of receivables • Long-term financing • Strengthening of liquidity inspection cycle (monthly > weekly)
Serious	Below 0	Liquidity not secured for the current month	• Company-wide control of expenses • Emergency financing

Introduction and operation of liquidity indicator

Liquidity indicator: Liquidity secured[1] / working capital for 1 month x 100



- Secured stable liquidity by establishing and executing stepwise response to liquidity (「Stable」maintained since February)
- Improved fund on hand through monthly deposit and withdrawal and liquidity management (KRW 33.1 billion in the end of 2017 → KRW 49.8 billion in the end of 2018)

[1] Liquidity secured: Liquidity in possession (fund on hand + borrowing + borrowing power) –[net monthly cost + 3-year deviation + incidental cost]

Ethical Management

Advancing Ethical Management System

KEPCO E&C established the C.O.R.E. (Capability, Organization, Risk Management, and Ecosystem) ethical management strategy system to become a core global company that practices advanced ethical management and is trusted by the people and society. KEPCO E&C is promoting primary ethical management tasks below based on the four strategies of capability, organization, risk management and ecosystem. To advance ethical management, KEPCO E&C establishes and promotes 100 anti-corruption and integrity tasks every year to analyze and improve internal vulnerabilities. We place efforts to further elaborate and vitalize existing ethical management systems such as organizations and standards through continuous monitoring. KEPCO E&C pays attention to changes in the external environment and instantly reflects the latest issues of ethical management. KEPCO E&C will make ceaseless efforts to advance the ethical management system and settle down as a public institution that leads integrity and ethics of South Korea.

Ethical management system

Vision	A public institution that leads integrity and ethics of South Korea			
Strategy	Capability	Organization	Risk management	Ecosystem
Task	In-depth education on integrity and ethics, group education Internalization of participatory ethics	Ethical management organizations, strengthening of standards Enhanced accessibility of integrity system	Improved self-diagnosis and monitoring of ethics Strengthening activities in vulnerable corruption areas, etc.	Integrity activities of community and partners Activities with public and civic organizations
	100 anti-corruption and integrity tasks for 2018 + 28 tasks to improve internal integrity vulnerabilities			
Basis for practice	Ethical standards Ethics Charter (employees, partners, engineers) Code of Ethical Conduct Reporting for public interest, reporting of corruption, protection of reporters	External cooperation and private-government councils Gyeongbuk Gimcheon Integrity Cluster Integrity Society Council of Public Enterprises Private-Government Council for Integrity Society of Gyeongsangbuk-do Integrity Inspector	Internal practice organizations Ethical Management Committee Ethical Management Practice Council Ethical Management Leader (Protector)	
Assessment	External Integrity survey, anti-corruption measure assessment			
	Internal Ethical awareness of employees, self-investigation on integrity, self-diagnosis of integrity and ethics			

Elaborating Ethical Management Practice System

Ethical Management Committee is an organization that deliberates on important agendas related to ethical management with the CEO as the chairman. There are company-wide organizations such as Ethical Management Practice Council in place. In addition, KEPCO E&C operates ethical standards appropriate for the circumstances by reflecting amendments to laws and guidelines on ethical standards. KEPCO E&C also operates a multi-layered monitoring system including contest of employees to discover and improve areas vulnerable to corruption and elaborate ethical standards. To maintain such ethical activities, KEPCO E&C motivates employees' participation by reinforcing the integrity mileage system during the assessment. We place various efforts to expand reporting and counseling channels by enacting regulations to protect the privacy of whistleblowers, opening the power harassment report center, and appointing professional counselors.

Efforts to Internalize and Spread Ethical Capability

KEPCO E&C tries to reduce the risk of ethical violations with the management taking the lead to practice integrity and ethics and vitalizing internal communication among employees. Ethical education programs of KEPCO E&C are divided systematically according to purpose and contents into essential common education, life cycle education, and outreach integrity education. In addition to increasing the level of understanding in integrity and ethics, KEPCO E&C operates direct participatory programs and conducts various promotion campaigns to internalize and ripen the ethical practice of employees.

High office leadership practicing integrity and ethics and vitalizing communication of employees

Promotion	Description	Progress
Integrity Convention of the company / each department	Fostering willingness to practice ethics through Integrity Convention driven by high-ranking officials	Secured the driving force by spreading strong will of the management
Integrity contract of executives	Integrity contract and obligation of the new management (4 persons)	
Special integrity lecture of the management	Spreading of the integrity ecosystem with integrity academy and special lecture on integrity clusters	
Integrity training of high-ranking officials	Participation of the management and major executives in integrity training and special integrity lecture	Led the efforts to spread integrity culture in the community, etc.
Spreading ethical management message	Sending of integrity MMS of the management to all employees, integrity education (audit) at overseas sites	
Internal integrity meeting	Communication workshop and meeting to improve unfair work orders, etc.	

KEPCO E&C also strives to spread its ethical management to create an integrity ecosystem in the industry and community. KEPCO E&C participated as a leader in 'Gyeongbuk Gimcheon Integrity Cluster' operated by public institutions of the region in 2018 to host many activities like integrity culture festival with citizens. We share excellent integrity policies among public enterprises and participate actively in Integrity Society Council of Public Enterprises organized against corruption. KEPCO E&C leads the effort to share and spread integrity and ethics by operating programs for external stakeholders including integrity academy tour and special lecture on integrity and ethics inviting local talents.

Community invitation events to spread integrity and ethics

Integrity academy tours	Special integrity lectures inviting local talents
• Held 8 times for 345 participants including students, civic organizations, partners, private companies, etc. • Introduction of the anti-corruption integrity system, field trip to integrity facilities like public report and integrity cabinet, special lecture of standing auditor, integrity dart game, etc.	• Students attending Gumi Electronic Technical High School (70 persons) • Children and families, etc. from Gimcheon Dream Start Center (40 persons) • New public officers of Gimcheon City (30 persons)

Based on such activities, KEPCO E&C was selected as an institution with excellent integrity by receiving overall integrity grade 2 from the Anti-Corruption & Civil Rights Commission in 2018. KEPCO E&C positioned as a leading public institution for integrity and ethics by elevating the anti-corruption measure assessment result by a grade.

Integrity and anti-corruption evaluation results

Type		Unit	2016	2017	2018
Integrity investigation	Overall	Grade (Score)	3(7.79)	3(8.44)	2(8.87)
	External		4(7.87)	3(8.72)	2(9.16)
	Internal		2(8.32)	3(8.21)	3(8.22)
	Policy customers		3(7.55)	2(8.09)	2(8.66)

Type		Unit	2016	2017	2018
Anti-corruption measure evaluation	Overall	Grade (Score)	4(85.4)	2(92.1)	1(95.2)
	Establishment of anti-corruption plan	Score	75.0	75.0	85.0
	Development of integrity ecosystem		91.0	95.9	94.4
	Removal of corruption risks		88.0	89.9	93.8
	Settlement of integrity culture		88.6	98.5	100
	Integrity improvement		61.0	89.0	100
	Spreading of anti-corruption cases		100	95.0	99.0

Human Rights Management

Establishing Human Rights Management

KEPCO E&C aims to become the best human-centered institution of the energy industry by following the human rights policy of the government and managing human rights risk for global management. KEPCO E&C had the human rights management proclamation ceremony in November 2018 under the vision of 'KEPCO E&C pursuing human dignity and value.' We have been forming and promoting a human rights management system to practice human rights management in the public sector.

Human rights management strategy system

Vision	KEPCO E&C pursuing human dignity and values			
Promotion strategy	Building global human rights management system	Creation of human rights management awareness and culture (sharing, spreading)	Prevention and proactive response to human rights management risks	Diffusing human rights management and strengthening cooperation
Promotion task	Preparation of systems and regulations Preparation of promotion process	Operation of education contents Consensus programs	Enhancement of awareness and practice Prevention and response	Improvement of systems in vulnerable areas Development of human rights management ecosystem
Organization	Human Rights Management Committee	Human Rights Management Council	Human Rights Counseling Center	

Progress of human rights management of KEPCO E&C

- Prepared the draft for the human rights management system: '18.9.18
- Built the human rights management system and collected internal and external opinions: '18.9.18 ~ 10.15
- Hosted the Human Rights Management Committee: '18.10.17
- Enforced and executed the Human Rights Management Charter and Guideline: '18.10.23
- Held the human rights management proclamation ceremony: '18.11.1
- Conducted human rights impact assessment: '18.11.1

Based on such human rights management strategy system, KEPCO E&C actively practices human rights management. We have derived human rights management tasks by analyzing the environment and assessment in depth and gathering opinions of internal and external stakeholders like labor union and partners. Exclusive organizations were formed with human rights standards. KEPCO E&C is fully prepared with a relief procedure to cope with human rights infringement.

Human rights management standards and exclusive organizations

Standards	Organizations
•Human Rights Management Practice Guideline •Human Rights Management Charter	•Human Rights Management Committee and Human Rights Counseling Center •Ethics & Corporate Culture Team (Innovation Growth Department)

Human rights infringement relief procedure

Reporting human rights infringement	Investigation and reporting	Deliberation and follow-up measure
Human Rights Counseling Center Grievance system Sexual harassment and violence report	Human rights team (Ethics & Corporate Culture Team) Grievance team	Human Rights Infringement Deliberation Committee, Grievance Committee Sexual Harassment and Violence Grievance Committee

Human Rights Education and Diffusing Efforts

By establishing the human rights management system, KEPCO E&C places various efforts to conduct education on human rights and diffuse human rights management internally and externally. KEPCO E&C operated education programs to foster human rights such as education on improved awareness of disability and a special lecture on human rights management. We took our first step toward human rights management by implementing the human rights proclamation ceremony, human rights practice guideline, and human rights management charter. Externally, KEPCO E&C declared human rights management via its website and sent out a letter to partners. We tried to diffuse human rights management internally and externally by participating in the 2018 UN Forum on Business and Human Rights.

Human Rights Impact Assessment

Human rights impact assessment is a procedure in which an institution identifies and evaluates actual and potential human rights risks caused by its businesses or activities. The purpose of human rights impact assessment is to prevent or reduce human rights infringements in advance by discovering vulnerabilities, not to compare with other institutions or announce the results.

Implementation of human rights impact assessment

Evaluation goal: To identify human rights risks of the company and derive human rights management strategies by finding vulnerabilities

Development of assessment indicators	Conduct of assessment	Development of assessment indicators
Institutional operation (10 areas, 118 indicators) Major businesses (8 areas, 81 indicators) Shinkori Units 5, 6 / Shinseocheon Thermal Power Plant	Checklist based Self-inspection and expert interviews in each field	Advancement of the human rights management system Management of human rights risks of partners

KEPCO E&C conducted human rights impact assessment on November 1, 2018 through documentary and face-to-face investigation on representatives for different indicators. Based on the overall results of assessment, 8 out of 10 areas including prohibition of discrimination in employment, guarantee of freedom of association and collective bargaining, prohibition of forced labor, prohibition of child labor, guarantee of industrial safety, protection of human rights of residents, guarantee of environmental rights, and protection of personal information showed positive results. Various supplementary measures were found to be necessary to protect and enhance human rights of external stakeholders such as partners and residents. As a result of inspecting major businesses, positive responses were found in 60 of 81 indicators. KEPCO E&C discovered that 18 indicators such as the construction of the human rights management system, equal opportunity and non-discrimination, responsible management of partners, protection and respect of human rights of employees, etc. need improvement. Considering the fact that this assessment was the first year of human rights management for KEPCO E&C, these results suggest that there is a lack of efforts to share guidelines for human rights management policy and system with the stakeholders. After the settlement of the human rights management execution system in the future, KEPCO E&C will take an initiative role and fulfill social responsibility through more effective practice of human rights management by sharing opinions of persons in charge.

Rearrangement of promotion strategies in connection with the results of human rights impact assessment

Finding improvement areas	Connection with human rights management strategies	Finding detailed tasks
Advancement of the human rights management system Responsible management of partners	Benchmarking of global human rights management systems Development of human rights awareness and culture	Expansion of human rights management education Support of partners to practice human rights management Monitoring of human rights management throughout the supply chain

Talent Management

Fair Talent Recruitment

KEPCO E&C evaluates job competency and opens up opportunities to anyone without discriminating against gender, educational background and region. In addition, KEPCO E&C enhances social equity by eradicating discriminating factors against women, the disabled, talents of relocated area, talents of non-capital areas, women with a career break, high school graduates, etc.

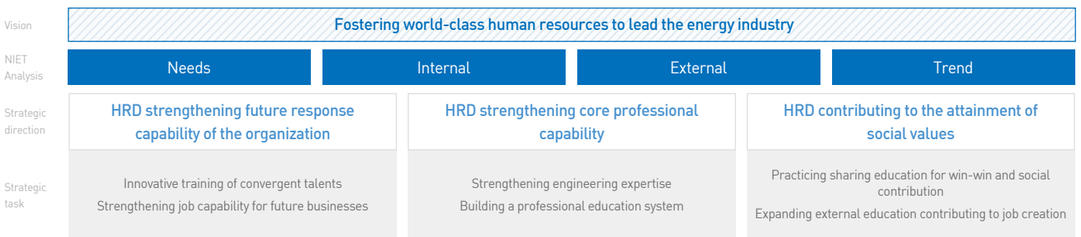
Fair recruitment of talents

Classification	Unit	2017	2018			
		Performance	Goal	Performance	Achieved	Remark
Satisfaction on blind recruitment	%	-	90	92.1	102	•Spread an excellent case of blind recruitment •Certified as a fair recruitment institution
Obligatory employment of youths		2.1	3	3.6	120	•Installed a committee to review objections
Recruitment of talents of relocated area		18	18	22.2	123	•Granted additional opportunities to 110 persons through the on-site preliminary registration system •Improved the 2-level promotion system for women
Recruitment of talents of non-capital areas		64	35	53	151	•Recruited 14 persons (6 new employees and 8 interns)
Recruitment of women		29	20	21	105	

Systematic Training of Talents

KEPCO E&C established an HRD strategy and systematic education curriculum to consistently improve its business performance by quickly responding to the rapidly changing business environment and maintaining a leading position in the core areas. In addition, we diagnose the needs and capabilities for the successful promotion of HRD and provide customized education and training programs for employees of varying jobs and positions.

HRD strategy system and task



Education Curriculum

KEPCO E&C enforces a capability-based education curriculum according to educational needs. Including a company-wide lecture that invites industrial experts to foster common capabilities, KEPCO E&C strives to strengthen its core capabilities by building a system for convergent talents in each area. Especially, 4 primary areas composed of ROMM*, renewable energy, digital 4.0, and global marketing were selected for job capability to educate employees on future businesses of KEPCO E&C. Internal education programs are intended to foster engineering experts, secure design quality through code education, strengthen unique engineering capability by teaching core technologies, and build a professional management education system. In addition to capabilities, KEPCO E&C expands related education by matching the social value keyword to practice an HRD strategy that contributes to the attainment of social values.

KEPCO E&C also endeavors to develop an educational ecosystem by advancing diagnosis of capabilities, expanding the engineer licensing system, and enhancing capabilities of internal instructors.

[1] ROMM: Extension of life span of aged power plants, performance improvement, feasibility study such as repowering, EPC work

HRD promotion performance

Employee capability index increased by 3.8%		Satisfaction about education increased by 12.7%		Composite HRD index of KEPCO E&C	Education budget (executed)	Education time
2017	2018	2017	2018	2018	KRW 3.2 million per person (KRW 1.7 million)	65 hours per person
4.22	4.38	67.22	75.75	4.39		

[1] Educational training costs per person : 1.7 million KRW (KEPCO E&C) VS 0.99 million KRW (Average of public institution in Korea), Source : "The 14th Human Resource development survey" conducted by 'Expert Conculting'

Reasonable Performance Assessment

KEPCO E&C offers fair rewards for the performance of employees by establishing a reasonable performance assessment system. We improve assessment groups by adjusting them based on work characteristics of departments, operate warning indicators, and reestablish the assessment indicator system to attain social values and innovative growth. In addition, we try to enhance and advance the appropriateness of the performance assessment method by adjusting weighted values of indicators based on the importance and representativeness.

KEPCO E&C is always operating an objection system to ensure fairness of such performance assessment, constructing a communicative performance management system by gathering opinions in all stages from indicator setting to planning and finalization of results.

Win-Win Labor-Management Relationship

KEPCO E&C attempts to form an advanced and rational labor-management relationship through active communication and mutual cooperation with the goal of achieving a win-win future based on trust and harmony. Labor-Management Council advanced the labor-management consultation process by dividing it into two parts, gathering opinions of the labor union through representative meetings and operation meetings and finding agendas of the company such as welfare system and improvement points. KEPCO E&C also attempted to operate the process from finding of agendas to implementation efficiently by setting up its independent operating agendas.

KEPCO E&C is forming a bond of sympathy between labor and management by operating a variety of labor-management channels. In addition, KEPCO E&C supports stable labor-management relationship with systematic communication channels divided vertically, horizontally and according to communication type.

Improvement of labor-management cooperation

Quantitative performance					Non-quantitative performance
Type	Number of agendas	Number of implementations	implementation rate	Period of Compliance rate	
2017	8 cases	6 cases	75%	50%	• Achieved quantitative (number of agendas) and qualitative (implementation rate) improvement of Labor-Management Council • Operating rational and periodic councils based upon laws and principles • Labor-management partnership centered on employees through consultation • Early settlement of wage and collective negotiations (11. 29)
2018	27 cases	24 cases	89%	100%	
Change	19 cases	18 cases	14%p	50%p	

Appendix

Stakeholder Inclusiveness

Stakeholder Communication

KEPCO E&C operates stakeholder communication channels for each value flow. The stakeholders were determined according to the value perspective of each stage including power supply plan, power plant construction and power supply while considering the value chain of the power industry. Also, we try to enable smooth communication by identifying the needs of each stakeholder and operating customized communication channels. We actively reflect opinions of stakeholders on business operation for sustainable growth of KEPCO E&C.

Stakeholders considering the value chain of the power industry

Value Chain	Classification of value		Stakeholder setting	
	Type	Concept	Main targets	Interest areas
power supply plan	Value effect	Bodies that affect value creation	Government and local governments	• Securing competitiveness in the new energy industry • Vitalization of regional economy and environment
Power plant construction	Value production	Internal employees who participate in value creation	Employees, labor union	• Expansion of business and strengthening of competitiveness • Settlement of mutual trust and communication culture
	Value cooperation	External employees who participate in value creation	Partners, regional companies	• Securement of works and shared growth • Opportunity to participate in energy-related businesses
Power supply	Value consumption	External customers who share values	Citizens, residents, shareholders	• Safety, eco-friendliness and job creation • Communication with people such as information disclosure, etc.

Creation and operation of stakeholder communication channels according to value

Type	Stakeholder	Communication strategy	Major communication methods	Monitoring
Value effect	Government and local governments	• Implementation of government policy • Response to the energy transition policy • Vitalization of the community	• Government inspection / work contact • Council of public institutions on nuclear power plants • Council of public institutions on relocation	• Satisfaction of external customers • Job creation performance
Value production	Employees, labor union	• Strengthening of corporate competitiveness • Clarification of vision and management goals • Labor-management relationship of trust and cooperation	• Open business presentation • CEO communication program • Expanded executive meeting • Internal portal bulletin board • Labor-Management Council	• Awareness of the value system • Satisfaction of internal customers
Value cooperation	Partners, regional companies	• Shared growth • Contribution to vitalization of regional economy	• Shared growth academy • Gimcheon Win-Win Dream Valley Council	• Shared growth grade • Integrity evaluation
Value consumption	Citizens, residents, shareholders	• Recognition of nuclear safety and strengthening of eco-friendly technologies • Participatory innovation through communication and participation of people	• People's suggestion box • Citizen Innovation Committee • Opening of public data and information disclosure	• Intergrated disclosure inspectionof public institutions supervised by the Ministry of Strategy and Finance

Materiality Assessment and Report

Materiality Assessment Process

KEPCO E&C conducted materiality assessment to determine items for the 2018 Sustainability Report and to identify and select sustainable management issues that require intense management. The company analyzed management strategy, performance, external evaluation, policy and regulation, and industrial cases to identify sustainability issues and create an issue pool. Issues of KEPCO E&C exposed on external media were additionally analyzed. Stakeholder impact analysis and business impact analysis were performed on the issues derived, and the final issues to be reported were selected according to the analysis results.

Step 1

Identification of issues and creation of an issue pool

- Review of past sustainability issues of KEPCO E&C
- Sustainable management standards and evaluations (DJSI, GRI Standards, etc.)
- Policy and regulation
- Business strategy and performance
- Advanced industrial cases
- Media survey

Identified about 570 issues

Step 2

Selection of key issues

- Categorization of issues (removal and integration of redundancies)
- Omission of low-impact reports
- Analysis considering probability and impact of risks

Selected 18 key issues

Step 3

Materiality assessment

- Survey on internal and external stakeholders

Period of survey:

Employees 19.9.4~19.9.20
External stakeholders 19.9.4~19.9.18

Number of respondents:

Employees 281, citizens 224, National Assembly & related public institutions 13, shareholders & investors 12, Partners 10, Local communities 9, etc. 9, Total 448 persons

- Business impact analysis

Determined priority among key issues and details of report

Step 4

Third party verification

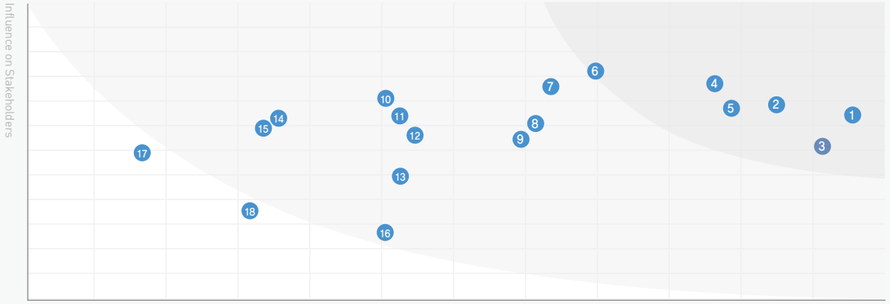
- Third party verification of the materiality assessment process
- Verification of reporting of important topics

Performed third party verification

Materiality Assessment Results

Key issues are divided into core report issues, priority report issues and selective report issues based on the materiality assessment results. The selected key issues include the expansion of new growth businesses, creation of economic performance, strengthening of core businesses, advancement of energy technologies, entry into overseas markets, and creation of a safe work environment. The priority report issues were risk management, minimization of environmental impact, training and education of employees, spreading of ethical management and integrity culture, response to climate change, and respect of human rights and diversity. KEPCO E&C tried to report all important issues by also including the selective report issues in the report.

- Business Impact: Financial, operational and strategic impact
- Influence: Impact on corporate image and reputation



Topic	Report Category	Business impact on KECPCO E&C Score(X-axis)	Influence on Stakeholders Score(Y-axis)	The origin distance	2018 Priority	Report page
Expansion of new growth businesses	Value Adding Activities 1: Early Securement of Future Businesses	97.77	78.67	125.50	1	22-25
Creation of economic performance	Appendix: Social Responsibility Performance	92.21	79.78	121.93	2	62-63
Strengthening of core businesses	Value Adding Activities 2: Reinforcement of Core Businesses	95.55	75.42	121.72	3	26-28
Advancement of energy technologies	Value Adding Activities 3: Advancement of Energy Technologies	87.70	81.84	119.96	4	32-39
Entry into overseas markets	Value Adding Activities 2: Reinforcement of Core Businesses	88.87	79.38	119.16	5	29-31
Creation of a safe work environment	Value Adding Activities 3: Advancement of Energy Technologies	78.86	83.11	114.57	6	33
Risk management	Sustainability Management System: Risk Management	75.52	81.52	111.12	7	50-51
Minimization of environmental impact	Value Adding Activities 3: Advancement of Energy Technologies	74.42	77.90	107.74	8	36-37
Training and education of employees	Sustainability Management System: Talent Management	73.30	76.24	105.76	9	56-57
Spreading of ethical management and integrity culture	Sustainability Management System: Ethical Management	63.29	80.33	102.26	10	52-53
Response to climate change	Overview: Vision & Strategy	64.41	78.60	101.62	11	6-7
Respect of human rights and diversity	Sustainability Management System: Human Rights Management	65.51	76.59	100.79	12	54-55
Promotion of shared growth	Value Adding Activities 4: Win-Win and Sharing	64.40	72.41	96.91	13	45-46
Communication with stakeholders	Appendix: Stakeholder Inclusiveness	55.52	78.39	96.06	14	59
Establishment of sound governance	Sustainability Management System: Governance	54.39	77.45	94.64	15	48-49
Employment of employees	Appendix: Social Responsibility Performance	63.30	66.59	91.88	16	66-67
Energy saving	Appendix: Social Responsibility Performance	45.51	74.70	87.47	17	65
Development of community	Value Adding Activities 4: Win-Win and Sharing	53.29	68.80	87.02	18	41-42

Social Responsibility Performance

Economic Performance

Statements of Financial Position

Category	Unit	42nd Period[1]	43rd Period[2]	44th Period[3]
Assets				
Current assets	KRW	**270,553,473,741**	**257,528,889,339**	**281,389,537,047**
Cash and cash equivalents		21,451,507,884	18,383,395,908	31,457,107,787
Current financail assetes		2,986,850,119	14,060,951,874	56,152,839,440
Trade and other receivables		64,075,156,476	53,340,683,120	45,509,052,758
Due from customer for contract work		137,622,731,067	128,449,005,042	112,395,247,032
Income tax assets		5,257,387,747	0	0
Current non-financial asset		15,887,046,536	16,723,668,255	13,742,069,551
Non-current assets held for sale		23,272,793,912	26,571,185,140	22,133,220,479
Non-current assets		516,042,270,043	504,636,954,825	490,090,449,948
Non-current financial assets		42,676,540,241	35,498,314,653	35,800,570,057
Long-term trade and other receivables		18,507,953,303	22,034,484,082	17,871,256,637
Property, plandt and equipment		328,118,688,933	314,362,617,913	300,680,322,522
Intangible assets		57,277,122,849	64,643,573,100	61,851,241,960
Investment property		0	1,019,746,352	970,082,394
investments in associate and joint venture		5,818,036,445	398,548,696	3,967,881,742
Deferred income tas assets		58,993,814,264	61,914,666,684	67,374,488,938
Non-current non- financial assets		4,650,114,008	4,765,003,345	1,574,605,698
Total assets		786,595,743,784	762,165,844,164	771,479,986,995
Liabilities				
Current liabilities	KRW	**286,443,757,114**	**221,860,035,071**	**248,402,017,936**
Trade and other payables		88,273,920,532	80,738,552,779	66,955,139,529
Due to customers for contract work		57,574,596,652	62,149,839,438	90,471,211,165
Current financial liabilities		91,810,000,000	9,061,000,000	30,000,000,000
Current provisions		42,276,877,950	41,270,947,170	51,629,225,085
Income tax liabilities		0	20,238,933,355	8,174,499,584
Current non-financial liabilities		6,508,361,980	8,400,762,329	1,171,942,573
Non-current liabilities	KRW	**78,232,410,286**	**83,274,337,086**	**61,697,861,143**
Non-current trade and other payables		1,007,834,000	1,307,834,000	1,081,257,000
Non-current financial liabilities		0	30,010,000,000	10,000,000
Defined benefit liabilities		56,843,032,595	24,804,022,406	20,643,865,715
Non-current non-financial liabilities		10,054,496,623	8,906,460,606	10,112,656,675
Provisions		10,327,047,068	18,246,020,074	29,850,081,753
Total liabilities		**364,676,167,400**	**305,134,372,157**	**310,099,879,079**
Equity				
Paid-in capital	KRW	**7,644,000,000**	**7,644,000,000**	**7,644,000,000**
Share capital		7,644,000,000	7,644,000,000	7,644,000,000
Retained earnings		424,410,254,775	459,509,378,375	464,417,557,624
Legal reserve		3,822,000,000	3,822,000,000	3,822,000,000
Voluntary reserve		407,856,475,546	416,403,469,225	447,317,807,275
Unappropriated retained earnings		12,731,779,229	39,283,909,150	13,277,750,349
Other equity components		**(10,134,678,391)**	**(10,121,906,368)**	**(10,681,449,708)**
Treasury shares		(10,300,328,600)	(10,300,328,600)	(10,300,328,600)
Accumulated other comprehensive income		165,650,209	178,422,232	(381,121,108)
Total equity		**421,919,576,384**	**457,031,472,007**	**461,380,107,916**
Total liabilities and equity		**786,595,743,784**	**762,165,844,164**	**771,479,986,995**

[1] 42nd period: 2016. 12. 31 | [2] 43rd period:2017. 12. 31 | [3] 44th period: 2018. 12. 31

Statement of Comprehensive Income

Category	Unit	42nd Period[1]	43rd Period[2]	44th Period[3]
Sales		**506,012,235,393**	**490,192,813,674**	**433,700,598,144**
Service		469,011,054,329	482,496,793,850	429,536,431,112
Construction		37,001,181,064	7,696,019,824	4,164,167,032
Cost of Sales		**319,625,983,408**	**352,914,035,966**	**296,901,641,414**
Service		287,205,726,701	337,989,902,419	287,964,922,744
Construction		32,420,256,707	14,924,133,547	8,936,718,670
Gross profit		186,386,251,985	137,278,777,708	136,798,956,730
Selling, general and administrative expenses		180,440,434,532	119,224,798,384	115,299,640,965
Operating profit		5,945,817,453	18,053,979,324	21,499,315,765
Finance income		10,781,121,506	5,817,624,605	2,351,597,545
Finance costs		2,448,303,480	428,644,062	743,762,549
Other income		14,779,678,133	13,041,771,488	7,342,223,165
Other expenses		2,355,950,527	772,642,868	8,120,268,182
Other income (loss), net		(1,072,236,864)	(1,545,347,205)	(2,491,881,557)
Share of loss of associate	KRW	(2,212,175,863)	(999,250,044)	(18,797,706)
Profit before income tax		23,417,950,358	33,167,491,238	19,818,426,481
Income tax expense		5,622,343,393	11,945,406,950	6,881,585,628
Profit for the year		17,795,606,965	21,222,084,288	12,936,840,853
Other comprehensive income for the year, net of tax		**(5,052,388,034)**	**18,074,596,885**	**(218,633,844)**
Items that are or may be reclassified subsequently		11,439,702	12,772,023	(3,584,770)
Unrealized net changes in fair value of available-forsale financial assets, net of tax		10,604,041	10,664,636	0
Share of comprehensive income of joint venture		835,661	2,107,387	(3,584,770)
Items that will never be reclassified to profit or loss		(5,063,827,736)	18,061,824,862	(215,049,074)
Remeasurements of the defined benefit liability, net of tax		(5,039,443,892)	18,055,907,336	(215,049,074)
Share of remeasurements of the defined benefit liability of associate		(24,383,844)	5,917,526	0
Total comprehensive income for the year		**12,743,218,931**	**39,296,681,173**	**12,718,207,009**
Earnings per share				
Basic and diluted	KRW	468	558	340

[1] 42nd period: 2016. 1. 1 ~ 2016. 12. 31 | [2] 43rd period: 2017. 1. 1 ~ 2017. 12. 31 | [3] 44th period: 2018. 1. 1 ~ 2018. 12. 31

Environmental Performance

Development of Eco-Friendly Technologies

Category	Unit	2016	2017	2018
Eco-Friendly R&D Personnel	M/M	167.5	215.9	220
Eco-Friendly R&D Cost	KWR million	2,730	2,180	2,514

Greenhouse Gas Emissions and Energy Consumption

Category		Unit	2016	2017	2018
GHG Emissions	Scope 1	tCO_2eq	945	935	938
	Scope 2		6,329	5,810	5,949
	Total		**7,274**	**6,745**	**6,887**
Gas Consumption		m^3	284,619	288,031	308,105
Electric Power Consumptionm		MWh	13,574	12,462	12,759

Water Consumption (Water and Wastewater Consumption)

Category	Unit	2016	2017	2018
Consumption	Ton	89,223	102,089	92,817

* Water consumption is comprehensively managed without separating water and wastewater.

Municipal Waste Output (Gimcheon HQ)

Category	Unit	2016	2017	2018
Municipal Waste Output	Ton	31	109	114

Waste Paper Recycling and Waste Acid Treatment

Category	Unit	2016	2017	2018
Waste Paper Recycling	Ton	117	107	189
Waste Acid Treatment	Ton	2	2	2

[1] Waste acid is used for boiler washing in Yongin office building, which full collected and recycled by specialized company
Type: Other waste acids | **Process Result**: Report to Yongin

Social Performance

Current status of ethical management

Category	Unit	2016	2017	2018
Intergrity evaluation (The Anti-Corruption and Civil Rights Commission)	Grade	Level 3 (7.79 points)	Level 3 (8.44 points)	Level 2 (8.87points)
Evaluation of anti-Corruption Policy	Grade	Leve 4 (85.39)	Level 2(92.08)	Level 1 (95.23)
Internal-cunstomer Satisfaction	Point	62.5	69.9	78.49
Violance of Social Responsibility	Case	0	2	0

Current status of shared growth

Category	Unit	2016	2017	2018
Government Assessment	Grade	Excellent (Level 1)	Good	Average
Job Creation	Persons	5,214	1,598	1,633
Technology Education for Supplier's Employees	Persons	561	906	753
Public procurement: SMEs product	%	80.3	82.9	85.8
Public procurement: Technology development product	%	6.7	14.2	17.6
Onnuri Gift Certificate	KRW hundred million	1.2	8.6	8.0

Current status of talent management

Category		Unit	2016	2017	2018
Total		**Persons**	**2,336**	**2,370**	**2,360**
Employment Type	Permanent	Persons	2,311	2,345	2,335
	Contract worker		20	20	20
	Temporary		5	5	5
Gender	Female	Persons	230	239	254
	Male		2,106	2031	2106
Current status of female human resources	Female manager*	Persons	9	10	11
	Female employee rate	%	10.4	10.9	11.6
	Female manager rate	%	0.4	0.5	0.5
Current status of Socially dis-advantaged rate	Disabled employment (rate)	Persons(%)	57(2.44)	49(2.06)	55(2.33)
	National merit (rate)		100(4.28)	99(4.17)	95(4.02)
Retirement	Regular retirement	Persons	42	50	71
	Voluntary retirement		-	5	2
Labor Union membership	Total labor unions	Persons	1,494	1,458	1,496

[1] Female manager: 1~2 level employees

Current status of new permanent employment

Category	Unit	2016	2017	2018
Female	Persons	11	16	19
Disabled employee		0	0	6
Non-metropolitan talent		31	35	48
Regional talent		5	10	20
High school graduate		6	2	0
Total new hire		72	55	90

Current status of young internship

Category	Unit	2016		2017		2018	
		Experience type	Recruitment type	Experience type	Recruitment type	Experience type	Recruitment type
Female	Persons	25	-	-	14	59	9
Disabled employee		0	-	-	0	8	3
Non-metropolitan talent		57	-	-	27	57	22
Regional talent		28	-	-	9	27	8
High school graduate		19	-	-	2	0	0
Total new hire		**93**	**-**	**-**	**42**	**125**	**36**

Human Resource Developmet

Category	Unit	2016	2017	2018
Total number of employees trained	Persons	24,463	32,512	40,495
Training time per person	Time	86	67	65
Training budget per person	KRW Ten Thousand	280	240	320
Education satisfaction	Point	59.80	67.22	75.75

Construction accident rate

Category	Unit	2016	2017	2018
KEPCO E&C rate	%	0	0	0
Construction accident average rate		0.57	0.59	0.75

Third Party's Assurance Statement

To the Readers of KEPCO E&C 2018 Sustainability Report :

Foreword

Korea Management Registrar Inc. (hereinafter "KMR") has been requested by of KEPCO Engineering & Construction Co., Ltd. (Hereby referred to as "KEPCO E&C") to verify the contents of its Sustainability Report 2018 (Hereby referred to as "the Report"). KEPCO E&C is responsible for the collection and presentation of information included in the Report. KMR's responsibility is to carry out assurance engagement on specific data and information in the assurance scope stipulated below.

Scope and standard

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

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

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

Management approach of Topic Specific Standards
Economic Performance: 201-2
Indirect Economic Impacts: 203-1, 203-2
Anti-Corruption: 205-1, 205-2
Energy: 302-1
Water: 303-1
Emissions: 305-1, 305-2
Effluents and Waste: 306-2
Employment: 401-1, 401-3
Training and Education: 404-1, 404-2
Diversity and Equal Opportunity: 405-1
Human Rights Assessment: 412-1
Local Communities: 413-1
Customer Health and Safety: 416-1, 416-2
Customer Privacy: 418-1

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

Our approach

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

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

Our conclusion

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

■ Inclusivity

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

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

■ Materiality

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

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

■ Responsiveness

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

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

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

Recommendation for improvement

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

■ KEPCO Engineering & Construction Company offers a well-balanced report of its economic, environmental and social performance as a tool to communicate with stakeholders. The organization is advised to improve the performance evaluation system on sustainability and establish it as part of its culture.

Our independence

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

KMR SRV1000 Sustainability Committee Assurance AA1000 Licensed Assurance Provider 000-129

October 21, 2019 CEO

E. J Hwang

GRI Standards Index

Universial Standards(GRI 100)

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	416-2	Incidents of non-compliance concerning the health and safety impacts of products and services	33-35
Customer Privacy	418-1	Substantiated complaints concerning breaches of customer privacy and losses of customer data	39

UNGP Reporting Framework

The UNGP Reporting Framework, launched in 2015, is the comprehensive global guidance for companies to report on how they respect human rights. KEPCO E&C is actively engaging in a various of activites for human rights protection of stakeholders, and these activites are reported in the report according to the UNGP Reporting Framework.

Criterion	Reporting Principle		Description	Page
Governance of Respect for Human Rights	A1	Policy Commitment	Public disclosure of commitment to respect human rights	54
	A2	Embedding Respect for Human Rights	Implementation of its human rights commitment	54
Defining the Focus of Reporting	B1	Statement of salient issues	State the salient human rights issues associated with the company's activities	55
	B2	Determination of salient issues	Describe how the salient human rights issues were determined	55
	B3	Choice of focal geographies	Human rights issues focuses on particular geographies, explain how that choice was made	-
	B4	Additional severe impacts	Identify any severe impacts on human rights that occurred or were still being addressed	-
Management of Salient Human Rights Issues	C1	Specific Policies	Any specific policies that address its salient human rights issues	54
	C2	Stakeholder Engagement	Engagement with stakeholders in relation to each salient human rights issue	-
	C3	Assessing Impacts	Identify any changes in the nature of each salient human rights issue	55
	C4	Integrating Findings and Taking Action	Company integrate its findings about each salient human rights issue into its decision-making processes and actions	55
	C5	Tracking Performance	Efforts to address each salient human rights issue are effective in practice	55
	C6	Remediation	Effective remedy if people are harmed by its actions or decisions in relation to a salient human rights issue	55

UN Global Compact

Since joining the UN Global Compact in 2007, KEPCO E&C has complied with ten major principles in the four areas of human rights, labor, environment, and anti-corruption.
KEPCO E&C will strive to be a leading Korean company in global sustainable management by respecting international standards in sustainable management and fulfilling its social responsibility.

Major themes	Principle	Page
Human Rights	1. Businesses should support and respect the protection of internationally proclaimed human rights	54-55
	2. Make sure that they are not complicit in human rights abuses	
Labor	3. Uphold the freedom of association and the effective recognition of the right to collective bargaining	56-57
	4. Eliminate all forms of forced and compulsory labor	
	5. Abolish child labor effectively	
	6. Eliminate discrimination in respect of employment and occupation	
Environment	7. Support a precautionary approach to environmental challenges	32, 36-37
	8. Undertake initiatives to promote greater environmental responsibility	
	9. Encourage the development and diffusion of environmentally friendly technologies	
Anti-Corruption	10. Work against corruption in all its forms, including extortion and bribery	52-53

ISO 26000

ISO 26000 is an international standard published by the International Organization for Standardization (ISO), providing guidance on integrating social responsibility into a company – more specifically, the seven core issues of organizational governance, human rights, labor practices, the environment, fair operating practices, customer issues, and community involvement and development. Through various efforts to comply with the ISO 26000, KEPCO E&C will strive to be a sustainable company.

Core Subject	Key Issues	Index	Page
Governance Structure	Decision-making process and structure	6.2.3	48-49
Human Rights	Duty of care	6.3.3	54-55
	Status of human rights risks	6.3.4	
	Avoidance of collusion	6.3.5	
	Handling of complaints	6.3.6	
	Discrimination and vulnerable groups	6.3.7	
	Civil and political rights	6.3.8	
	Economic, social, and cultural rights	6.3.9	
	Basic principles and rights at workplaces	6.3.10	
Labor Practices	Employment and employee-employer relations	6.4.3	56-57, 66-67
	Labor conditions and social protection	6.4.4	
	Social dialog	6.4.5	
	Health and safety at workplaces	6.4.6	
	Human development and on-the-job training	6.4.7	
Environment	Prevention of pollution	6.5.3	36-37, 65
	Sustainable use of resources	6.5.4	
	Alleviation of and adaptation to climate change	6.5.5	
	Protection of the natural environment and restoration	6.5.6	
Fair Operating Practices	Prevention of corruption	6.6.3	45-46
	Responsible participation in politics	6.6.4	
	Fair competition	6.6.5	
	Promotion of social responsibility in the value chain	6.6.6	
	Respect for property rights	6.6.7	
Consumer Issues	Fair marketing	6.7.3	32-35
	Guarantee of consumers' health and safety	6.7.4	
	Sustainable consumption	6.7.5	
	Consumer services, support, complaint and dispute settlement	6.7.6	
	Protection of consumer information and privacy	6.7.7	
	Access to essential services	6.7.8	
	Consumer and civil education and understanding	6.7.9	
Community Involvement and Development	Participation in local communities	6.8.3	40-45
	Education and Culture	6.8.4	
	Creation of jobs and functional development	6.8.5	
	Technology development and access	6.8.6	
	Creation of wealth and income	6.8.7	
	Health	6.8.8	
	Social investment	6.8.9	

Awards and Membership in Associations

External Evaluations and Awards

Title of Award	Supervision	Year
Award for Excellent Shared Growth Public Institution of 2017	Ministry of SMEs and Startups	2017
Medal of Honor from the Republic of Korea National Red Cross	Republic of Korea National Red Cross	2017
2017 Dream Start Performance Report Appreciation Certificate	Gimcheon City	2017
Gimcheon Mayor's Award for Social Volunteer Activities	Gimcheon City	2017
Presidential Award for Shared Growth	Korea Commission for Corporate Partnership	2017
Grand Award at BIXPO 2018	KEPCO	2018
Jang Young-Shil Technology Innovation Award	Korea Industrial Technology Association & Maeil Business Newspaper	2018
Bronze Award at the Personnel Innovation Contest	Ministry of Personnel Management	2018
Social Contribution Appreciation Plaque	Korea Association of Persons with Physical Disabilities	2018
Order of Science and Technology Merit, Ungbi Medal	Ministry of Science and ICT & Ministry of Trade, Industry and Energy	2018
The Minister of Land, Infrastructure and Transport's citation	Ministry of Land, Infrastructure and Transport	2018
「2019 Republic of Korea Public Policy Awards」 Excellence Award for Innovative Growth	Korea Association of Public Policy & Korea Institute of Public Sector	2019
Gimcheon Mayor's Award for 'Chamsarang' Volunteer Service	Gimcheon City	2019

Membership to Organizations

Korea Chamber of Commerce and Industry	Korea Engineering & Consulting Association	Korea Listed Companies Association (Auditor)
Seoul Office of Korea Exchange	Korea Electrical Contractors Association	CFO Academy
Korea Fire Safety Association	Korea Electric Engineers Association	Korea Personal Improvement Association(HRM)
Daedeok Innopolis	Korea Information & Communication Contractors Association	Korea Productivity Center
Korea Architects Registration Board	Korea Software Industry Association	Korea Council of Chief Information Officers
Construction Association of Korea	International Contractors Association of Korea	Korea Management Association
Korea Association of Surveying and Mapping	Environmental Impact Assessment Association	Public Corporation Audit Forum
Korea association of ESCCO	Association of Lawyers for Seoul	Korea Special Library Association
Korea Association of Construction Consulting Engineering & Management	Seoul Bar Association	Council of Daedeok Innopolis chiefs
Korea Construction Engineers Association	Emergency Safety Planner, Ministry of Trade, Industry and Energy	Korea Personal Improvement Association(Education)
Korea International Trade Association	Korea Nuclear Association for International Cooperation	Korean Standards Association
Korea Fire Facility Association	Institute of Internal Auditors Korea	Korea Plant Industries Association
Professional Infrastructure developers association	Korea Listed Companies Association	

Membership to Technology-related Organization

Korea Construction Engineers Association	NFPA (National Fire Protection Association)	CICIND (International Committee on Industrial Chimneys)
Korea Electirc Engineers Association	ASME (The American Society of Mechanical Engineers)	Development Forum of Korean Institute of Electrical Engineers
Korea Engineering & Consulting Association	The Korean Society for Noise and Vibration Engineering	Korea Carbon Caputre and Storage Association
Korea Electric Association	IEEE (Institute of Electrical & Electronics Engineers)	Korea Wind Energy Industry Association
Korea Atomic Industrial Forum	Korean Society of Civil Engineering	WNA (World Nuclear Assocication)
Korean Nuclear Society	Earthquake Engineering Society of Korea	NUGENIA
Korea Industrial Technology Association	ASTM D-33 Technical Committee	COG (CANDU Owners Group)
Korea Energy Foundation (WEC Korean member committee)	ACI (America Concrete Institute)	Wind Service Association
The Association of Energy Future Forum	Architectural Institute of Korea	Korea Renewable energy Association
Korea Association for Fusion Energy and AcceleratorTechnology	Korea Project Management Association	Korea drone Industry Promotion Association
Research Association of Korea Fusion energy & Accelerator(RAKFA)	Korea Institute of Construction Engineering and Management	Korea Hydrogen Industry Association
The Korean Society of safety	RANDEC (Radwaste & Decommissiong Center)	Korean Standards Association
Women in Nuclear Korea	The Korean Society of Mechanical Engineers(Materials and Fracture)	Korea Institute of Quality Management
Korean Radioactive Waste Society	Korean Society of Pressure Vessels and Piping	NQA(National Quality Award) Winners
The Korean Society of Mechanical Engineering	The Corrosion Science Society of Korea