GLOBAL LEADING ENERGY SOLUTION PARTNER

2016 KEPCO E&C Sustainability Report
KEPCO Engineering & Construction Company, Inc. (hereinafter “KEPCO E&C”) publishes Sustainability Reports every two years. This 2016 KEPCO E&C Sustainability Report is the fifth of its kind and contains major issues as identified by a materiality assessment. Through this report, KEPCO E&C discloses its sustainability management performance and activities in a transparent manner.

Independent Assurance
This report has been prepared in accordance with the GRI Standards and received third-party assurance from an independent verifier to ensure reliability of the content reported herein. The assurance results are provided in the Third-Party Assurance Statement on page 61-62.

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Report Summary
CEO Message

Dear esteemed stakeholders,

First of all, I wish to extend my sincere appreciation of your continued support and encouragement for KEPCO E&C. It is with great pleasure that I introduce our fifth Sustainability Report, presenting KEPCO E&C’s future directions in line with the various paradigm changes taking place in the energy industry.

The energy industry in the Republic of Korea is preparing itself to initiate a new era of development. In line with the government’s policy directions of producing clean and safe energy through a reduction of traditional low-cost nuclear and thermal power, and an increase in environmentally-friendly renewable energy and LNG, we expect rapid changes to take place not only within KEPCO E&C but throughout the entire energy industry.

Engaging in nuclear decommissioning in line with government policies since March 2017, KEPCO E&C has paid close attention to the government’s policy changes while strengthening our technological capacity regarding the next-generation energy sources, such as new and renewable energy, nuclear fusion and hydrogen. We are also systematically preparing to expand our business areas to plants and the environment.

Established in 1975 with the goal of accomplishing self-reliance in power plant engineering technology, KEPCO E&C has utilized its technological capacity in the energy industry to contribute to Korea’s economic development and provide convenience for its people over the past 40 years. Abundance, affordability, cleanliness, security and diversity form the basis of KEPCO E&C’s energy technology. With a “positive attitude can destroy every negative obstacle” and the mindset sailing against headwinds, KEPCO E&C will turn challenges into opportunities. Furthermore, KEPCO E&C is committed to the following sustainability management directions with a view to achieving sustainable development.

First, KEPCO E&C will focus all of its capacity in securing source technologies for new energy sources through sincere commitment to technological development.

Since its establishment, KEPCO E&C has faced a series of challenges but has been able to overcome them through the concerted determination and will of its employees. We believe now is the time to come together as one and move towards the future by focusing on increasing our capacity.

Second, KEPCO E&C will build a robust energy industry by forming win-win relationships with small and medium-sized enterprises.

KEPCO E&C has provided firm support for the national energy industry along with countless small and medium-sized enterprises and we have grown together through mutual technological development and joint projects, based on which we will play a central role in establishing a mutual growth structure.

Third, KEPCO E&C will create a corporate culture that values perseverance and passion, while building a company that fulfills its social responsibilities.

Even under many unfavorable conditions, KEPCO E&C was able to grow into a company possessing the world’s top power plant design technologies, thanks to its corporate culture that values perseverance and passion. We will cherish and further develop our corporate culture and build a solid base on which we can grow, hand in hand with the community.

I ask for your unwavering support for KEPCO E&C as we carry our vision into the future as a socially responsible and ever-growing company.

Thank you very much.

KEPCO E&C will play a leading role in the midst of highly accelerating paradigm changes in the energy industry by promptly reorganizing and expanding new growth engines.

CEO & President  Koo-Woun Park
Introduction

Overview

Since its foundation in 1975, KEPCO E&C has fulfilled Korea’s power plant demands based on its technological capacity to design nuclear, thermal and hydroelectric power plants. One of the world’s best power plant design and engineering companies, KEPCO E&C is the only one that can independently conduct both architect engineering and nuclear steam supply system design. Furthermore, it is pioneering the development of clean coal thermal power plant design technologies by developing eco-friendly facilities through desulfurization and denitrification. KEPCO E&C is also securing competitiveness throughout the energy industry with its eco-friendly and new & renewable energy projects, transmission and distribution/substation projects, and PM/CM projects.

Business Areas

In March 2017, KEPCO E&C added nuclear power plant decommissioning to its existing four essential businesses—design and engineering, operations and maintenance (O&M), eco-friendly business, and project management and construction management (PM/CM)—under its articles of incorporation. The company is thereby preparing itself for new paradigms in the energy industry.

Shareholder Composition

KEPCO E&C was listed on the Korea Exchange in December 2009 with a total of 38,220,000 listed stocks. As a subsidiary of Korea Electric Power Corporation (KEPCO), 65.77% of KEPCO E&C’s shares are owned by KEPCO.

Corporate History

Established in 1975 as Korea Atomic Burns & Roe, KEPCO E&C has played a central role in promoting the technological development of the Korean energy industry and providing a stable supply of electric power for the past 40 years. Since relocating to Gyeongbuk Innocity in 2015, KEPCO E&C prepares to reach new heights as the energy industry readies itself for new paradigm changes.
Vision and Strategy

Global Leading Energy Solution Partner

KEPCO E&C strives to become a “Global Leading Energy Solution Partner” through the Vision 2025 system built on its management philosophy of pursuing customer satisfaction and the prosperity of mankind by reinforcing power plant design and engineering technologies as a leader in the energy industry.

Mid to Long-Term Management Strategy Structure

Actively embracing new paradigms in the energy industry, KEPCO E&C has re-established its mid to long-term management strategies for future sustainability. Based on its five core values of challenge, communication, expertise, reliability, and safety, KEPCO E&C will strive to realize its vision and attain management goals. KEPCO E&C has identified five strategic directions and 16 strategic tasks in line with the company’s Vision 2025 as follows.

Global Leading Energy Solution Partner

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Communication</th>
<th>Expertise</th>
<th>Reliability</th>
<th>Safety</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accept challenges in new business areas</td>
<td>Promote communication among main offices, job groups, and generations</td>
<td>Secure independent technology</td>
<td>Ensure high quality to win reliability from customers</td>
<td>Provide safe and clean energy</td>
</tr>
</tbody>
</table>

Toward long-term management strategies for future sustainability, KEPCO E&C will strive to realize its vision and attain management goals. KEPCO E&C has identified five strategic directions and 16 strategic tasks in line with the company’s Vision 2025 as follows.

Management Goals

- Strengthen competitiveness in core businesses
- Secure future energy solution growth engines
- Strengthen the global business capacity
- Advance energy solution technology
- Strengthen the sustainability management structure

Strategic Directions

- Advance power plant engineering technology
- Expand businesses based on customer needs
- Implement EPC, O&M businesses on a selective basis
- Expand engineering-based O&M businesses
- Secure a business base for back-end management & decommissioning
- Expand new and renewable energy businesses
- Explore energy new businesses for sustainable growth
- Build capacity to expand global business
- Strengthen infrastructure to push forward global business
- Advance safety-oriented nuclear technology
- Advance eco-friendly and high-efficiency plant technology
- Diversify next generation energy solution technology
- Advance safety-oriented nuclear technology
- Advance eco-friendly and high-efficiency plant technology
- Diversify next generation energy solution technology
- Strengthen corporate social responsibility
- Strengthen manpower to enhance execution of strategy
- Build alignment and a development-oriented organizational basis
- Reform the risk management structure at the company level

Strategic Tasks

- Advance to Next-Generation Energy Businesses
- New and renewable energy
- Nuclear Fusion, Hydrogen, etc.
- Nuclear Fusion, Hydrogen, etc.
- Marine Plants
- Decommission, Radioactive Waste Management, etc.

KEPCO E&C endeavors to provide a wider range of services by expanding its business areas to the overall value chain, including pre- and post-management. This includes businesses such as engineering and EPC, as well as energy fields beyond electric power.
Providing Customized Comprehensive Consulting

KEPCO E&C is building a customized comprehensive consulting business by expanding its business areas to cover the overall value chain. Ranging from establishing initial strategic plans, managing, and pre-consulting to engineering cooperation with players in each field, EPCO, O&M, and back-end management & decommissioning, KEPCO E&C’s comprehensive consulting sets the foundation for its Total Solution business structure.

Establishing the Basis for New Energy Businesses

KEPCO E&C is establishing the basis to expand into new businesses in line with new paradigms in the energy industry. It is evolving from power generation businesses based on conventional generation businesses, such as nuclear and thermal power, into next generation businesses using new and renewable energy, like hydrogen and nuclear fusion.

Strategy
- Strategic financing services for power plant construction
- Power plant life cycle design
- Environmental impact assessment
- System optimization
- Diagnose power plant’s lifecycle and establish measures to improve performance
- Assess asset value
- Contractual and legal conflict advisory
- Establish decommissioning plans
- Establish decommissioning operation system

Planning
- Owner’s engineering
- Establish mail to long-term S&SM master plan
- Conduct geotechnical engineering
- Establish a power plant operation system

Construction
- Assess asset value
- Contractual and legal conflict advisory
- Site restoration and final status survey

Operation
- Site restoration and final status survey

Decommissioning
- Site restoration and final status survey

Proactive Risk Management

KEPCO E&C operates a forward-looking and enterprise-wide risk management process by which risks are managed on a regular basis through Corporate Risk Management (CRM) and Project Risk Management (PRM) which analyze and manage corporate risks and project risks, respectively. The Risk Management Team which is in charge of implementing ERM realizes proactive risk management by issuing risk management report in the form of Risk Management Status Reports and Bi-Weekly ERM Reports and incorporating risk management into the organization’s agenda and decision-making processes.

Corporate Risk Management (CRM)
KEPCO E&C is an engineering company whose biggest asset is its human resources. It therefore manages, through the CRM system, corporate risk indicators (CRIs) relating not only to business but social factors that may have an impact on sustainability management. There are 49 CRIs in ten management areas such as financial accounting, auditing, and contracts. The Risk Owners in the relevant departments conduct risk management by assessing risks and formulating effective response measures regularly.

Project Risk Management (PRM)
Project Managers are the risk owners who operate the risk management process from identifying project risks to implementing risk responses. In the case of potential projects, the risk management process is undertaken at the preparation and exploration stage, the bidding stage, and the contracting stage. For ongoing projects, the process is undertaken on a half-yearly basis. The project risk factor pool consists of 66 factors for potential projects and 158 factors for ongoing projects in six areas regarding contract, technology, client, etc. Furthermore, KEPCO E&C applies the lessons learned from its overseas and EPC projects and takes continuous measures to improve the risk management process by updating the risk factors to enhance project performance and increase the project profitability.

Enhancing Enterprise Risk Management System

KEPCO E&C is exposed to higher exchange risks as overseas sales increase due to the diversification of its international market. To systematically manage exchange risks, the Risk Owner of exchange risk receives foreign exchange training program and improve risk management strategies consistently.

As the importance of risk management increases, KEPCO E&C is strengthening its risk management system on the corporate level by implementing various tasks that aim to innovate risk management to enhance profitability and financial soundness.

Type Description Approach

New and Renewable Energy
- Environmentally friendly, safe and renewable energy sources such as solar, hydro, and wind power
- Selective technological investments based on new and renewable energy sources with high investment efficiency
- Technological development and capacity building for new renewable hybrid businesses, converging technologies between new and renewable energy sources or with other energy sources

Hydrogen
- Technological development and reinforcement of research capability in preparation for the mass production of hydrogen using nuclear power
- Implement nuclear power hydrogen demonstration projects through information exchanges and technological cooperation with domestic/international institutions

Nuclear Fusion
- Expanding business areas within ITER and secure business
- Technology and strategy for continuously acquiring contracts
- Secure a leading position in an array of the commercialization of nuclear fusion


Financial risk is an important part of risk management. Exchange risk management involves managing risks related to international transactions, investments, and financial instruments. KEPCO E&C manages exchange risk through a forward-looking and enterprise-wide risk management process. This includes identifying and assessing exchange risks, developing risk management strategies, implementing risk response plans, and monitoring the effectiveness of risk management measures.
Sound Governance

Structure of the Board of Directors

The Board of Directors, the highest decision-making body of KEPCO E&C, consists of eight members: seven directors and one auditor; including the CEO who also serves as the Chair of the Board, one executive auditor, two executive directors and four non-executive directors. The President serves a three-year term, while the directors and auditor each serve a two-year term. The directors and auditor are appointed by the President of the Republic of Korea, the Minister of Strategy and Finance, etc., upon resolution of the general meeting of shareholders, given that they do not fall under the grounds for disqualification set forth in Article 34 of the Act on the Management of Public Institutions.

BOD Status

<table>
<thead>
<tr>
<th>Date</th>
<th>BOD Participation Rate</th>
<th>Type of Directors</th>
</tr>
</thead>
<tbody>
<tr>
<td>(As of August 9, 2017)</td>
<td>77.5%</td>
<td>Directors</td>
</tr>
<tr>
<td></td>
<td>89.3%</td>
<td>Non-Executive Directors</td>
</tr>
</tbody>
</table>

Operation of the Board of Directors

The non-executive director pre-monitoring system adopted in 2015 contributed to increasing the participation of non-executive directors in BOD meetings. To operate the BOD systematically, operations plans are regularly established and reviewed. The BOD is convened at the request of the Chair or at least one-third of the directors in office and shall be attended by the majority of the directors in office. The Chair of the Board shall notify the directors and auditor seven days prior to the meeting, and the voting right of any director with special interest in specific agendas shall be disqualification set forth in Article 34 of the Act on the Management of Public Institutions.

Appointment of the Board of Directors

- CEO & President: Appointment
- Executive Directors: Appointment
- Non-executive Directors: Appointment
- Executive Auditor: Appointment

Management Suggestions by non-executive Directors

<table>
<thead>
<tr>
<th>Year</th>
<th>Resolutions (No.)</th>
<th>Decisions after Amendments (No.,%)</th>
<th>Frequency of Statements by non-Executive Directors (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>22</td>
<td>0(0)</td>
<td>40.0%</td>
</tr>
<tr>
<td>2015</td>
<td>27</td>
<td>0(0)</td>
<td>41.1%</td>
</tr>
<tr>
<td>2016</td>
<td>31</td>
<td>1(3.23)</td>
<td>47.8%</td>
</tr>
</tbody>
</table>

Strengthening the Expertise of Directors

KEPCO E&C secures the expertise of its Board of Directors by receiving recommendations of the President Nomination Committee and evaluating the capability of public agency executives when appointing directors. To ensure rational decision-making and the expertise of the Board, professionals are appointed in fields such as nuclear power and public policy are appointed as non-executive directors.

Cases of Management Suggestions by Non-Executive Directors

<table>
<thead>
<tr>
<th>Case</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>①</td>
<td>Selected “nuclear power plant post-management” as a new growth business (August 5, Gimcheon Headquarters)</td>
</tr>
<tr>
<td>②</td>
<td>Obtained a decommissioning research contract from a foreign company</td>
</tr>
<tr>
<td>③</td>
<td>Added to essential business under articles of incorporation (March 2017)</td>
</tr>
</tbody>
</table>

Business

- Make efforts to develop the nuclear power plant management technologies and market to secure a new growth (Third meeting, March 25)
- Add strategic radiodiagnostic and nuclear medicine business to management programs (October 17)
- Added “real estate leasing” to essential business (October 17)
- Established “Self-developing Energy” (October 20)
- Established “self-developing Energy” and “Sakura Village on nuclear Energy Projects” (August 15, Gimcheon Headquarters)

Director Remuneration

Remuneration of the directors, which consists of a basic salary, incentives, and severance, is paid according to the management performance of the company within the limit approved by the general meeting of shareholders. In the case of executive directors, incentives are paid upon evaluation of their performance against the annual target. External directors receive the monthly fees necessary for carrying out their duties.

As of December 31, 2016, the majority shareholder of KEPCO E&C is Korea Electric Power Corporation (KEPCO) with a share ownership ratio of 65.77%. Pursuant to relevant laws and regulations, all shareholders are entitled to attend general meetings of shareholders, cast votes, and participate in dividing profits. Information regarding corporate management is disclosed in a transparent and accurate manner via the KEPCO website, general meetings of shareholders, and disclosure reports, thereby guaranteeing shareholders’ rights.

Shareholder Status and Protection of Rights

Shareholder Status

<table>
<thead>
<tr>
<th>Name of Shareholder</th>
<th>Number of Stocks Owned</th>
<th>Share Ownership Ratio (%)</th>
</tr>
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<tbody>
<tr>
<td>Korea Electric Power Corporation</td>
<td>25,138,046 shares</td>
<td>65.77</td>
</tr>
<tr>
<td>National Pension Service</td>
<td>2,365,541 shares</td>
<td>6.53</td>
</tr>
<tr>
<td>Three Ocean Energy Research Institute</td>
<td>767,865 shares</td>
<td>2.05</td>
</tr>
<tr>
<td>Retail Investors</td>
<td>5,797,242 shares</td>
<td>15.40</td>
</tr>
<tr>
<td>Employee Stock Ownership Association</td>
<td>883,837 shares</td>
<td>2.30</td>
</tr>
<tr>
<td>Total</td>
<td>38,320,908 shares</td>
<td>100.00</td>
</tr>
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<tr>
<th>Type</th>
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<td>Added &quot;nuclear power plant post-management&quot; as a new growth business (August 5, Gimcheon Headquarters)</td>
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</table>
Materiality Assessment

KEPCO E&C performed a materiality assessment to identify internal and external issues that may affect the company and to collect the various opinions of stakeholders to be effectively reflected in this report. By utilizing standard indicators for sustainability management, a pool of economic, social, and environmental issues was developed, followed by a materiality assessment on each issue using media research, benchmarking of businesses in the same industry, and internal/external surveys. Detailed accounts of the core issues identified by the materiality assessment are thoroughly provided in this report.

**Materiality Assessment Process**

**STEP 1**
Development of a Pool of Issues

Standard indices such as GRI Standards, ISO 26000, DSII, SASB and the UN SDGs were evaluated to identify sustainability management issues. A pool of 44 issues and 24 core issues were identified.

**STEP 2**
Analysis of Issues

Analysis of 1,187 articles relating to KEPCO E&C published in 2015-2016 by approximately 140 domestic and international media outlets.

**STEP 3**
Materiality Assessment

Analysis and evaluation outcomes were comprehensively considered to evaluate the materiality of each issue.

**STEP 4**
Identification of Core Issues

A total of 12 core issues were derived from the materiality assessment, and an internal review was undertaken to determine the scope, extent, and duration of reporting. The core issues were thoroughly reported in the 2016 KEPCO E&C Sustainability Report.

**Major Issue Pool**

**Economic**

1. Creating economic value
2. Market position and corporate reputation
3. Expanding to the global market
4. Technology development and innovation
5. Creating new growth engines

**Social**

6. Healthy corporate culture
7. Improving customer satisfaction
8. Enhancing shared growth
9. Training and education
10. Diversity and equal opportunities
11. Ethical management and anti-corruption
12. Hiring talented people
13. Diversity and equal opportunities
14. Strengthening the information security system
15. Win-win management with the community
16. Proactive risk management
17. Improving quality management

**Environmental**

18. Climate change response activities
19. Company-side energy reduction
20. Eco-friendly management system
21. Eco-friendly technology
22. Pollution discharge management
23. Supply network environmental assessment
24. Biodiversity preservation efforts

A total of 12 core issues were derived from the 24 issues identified through the materiality assessment. The core issues are discussed under the same heading in KEPCO E&C’s report according to its four core values.
Stakeholder Communication

KEPCO E&C categorizes stakeholders that have both direct and indirect impacts on corporate management activities into three groups: value creating and delivering type, value purchasing type, and value impacting type. Stakeholders in each group communicate with KEPCO E&C through various channels. The opinions gathered through this communication are actively reflected so as to enhance corporate sustainability. Through these efforts, KEPCO E&C will continue to do its best to achieve sustainable growth hand in hand with its stakeholders.

Value Creating and Delivering Type
Actor of value creation and partner of value achievement

- Corporate sustainability
- Employment stability, enhancement of labor conditions
- Shared growth, fair trade

Major communication channels
- Management meetings, board meetings
- Management seminars
- Talks with the CEO
- Suggestions for improvement
- Creative and innovative leaders group (The Serom)
- Grievance settlement system
- Labor-management meetings, workshops, working-level meetings
- Supplier meetings and workshops
- Supplier visiting program
- Customer service center

Direction of communication

- Employees: Promote loyalty to the company and boost morale
- Labor union: Promote mutual development based on trust
- Suppliers: Shared growth and fair trade

Value Purchasing Type
Purchaser of businesses related to nuclear power, plants, new and renewable energy, etc.

- Technological capacity for business execution
- Improvement of economic efficiency

Major stakeholders
- Management CTO meetings
- Project review meetings (PRM)
- Project/Engineering review meetings
- Customer satisfaction survey
- Customized technological training

Direction of communication

- Ordering party: Enhance customer satisfaction, increase business execution capability

Value Impacting Type
Stakeholders having direct and indirect impact on corporate management and the implementation of projects

- Implement government policies
- Enhance corporate value
- Right to access corporate social responsibility
- Integrate local economies

Major stakeholders
- Government liaison system
- Protocol system
- Management disclosures
- General meeting of shareholders
- Domestic and international IR
- Media reports
- Information disclosures (Government 1.0)
- Homepage
- Activities in local communities

Direction of communication

- National Assembly:Government, Implementation of government policies and find rational solutions to current issues
- Shareholders: Promote corporate value and achieve continued growth
- Media: Community, Disclose information to build trust and strengthen cooperation

In August 2015, KEPCO E&C constructed a state-of-the-art intelligent building that not only symbolizes its position as a global energy company but also realizes reduced energy consumption. This revolutionary low-carbon green building also provides an incredibly pleasant work environment. With its new, cutting-edge building, KEPCO E&C will reach new heights as it heads into the future.

KEPCO E&C, Reaching New Heights
Major Items
- Transportation
  - Eco-friendly transportation using bicycle parking lots
  - At least two public transportation hubs within 1,500 meters
- Energy
  - Oil points on the energy performance index
  - Non-renewable energy such as sunlight and geothermal heat
- Ecological Environment
  - Improve biodiversity in consideration of the ecological environment
  - Increase the natural soil green area ratio
- Materials and Resources
  - Use eco-friendly certified products
  - Use products that provide information on carbon emissions
- Indoor Environment
  - Create natural ventilation
  - Individual control of the lighting environment in work spaces
- Water Resources
  - Expand the use of rainwater and heavy water
  - Apply water-saving hygiene tools

Support for the Cultivation of Local Talent

Since relocating to Gimcheon Innocity in North Gyeongsang Province, KEPCO E&C has played a leading role in cultivating local talent. In July 2015, KEPCO E&C donated KRW 100 million to the Gimcheon-si Talent Cultivation Foundation, supporting scholarships and the improvement of the educational environment for local talent. It is also expanding industrial-academic cooperation with high schools and universities in the region while implementing various regional cooperation programs—such as a human resources development program in the field of power generation plant engineering CAD—to support the cultivation of local talent.

Agreement with Gimcheon University to Create a Vocational Education and Training Course

A vocational education and training course is an undergraduate degree program established and operated by universities under inter-institutional cooperation with the State, local governments, or enterprises by executing an agreement to promote education particularly in the industrial field. In March 2017, KEPCO E&C signed an agreement with Gimcheon University to establish and operate a Convergence Energy Engineering Department as a vocational education and training course. The Department offers courses converging construction, mechanics, and electric and electronic engineering to approximately 20 students, holds regular student meetings to promote team building and motivation, and provides students with opportunities to participate in exhibitions and study tours to enterprises. Classes are held every Wednesday (evening) and Saturday (daytime) to enable students to effectively combine study and work. Various scholarship programs are being devised to provide 50% of tuition fees to students and other institutional measures to boost motivation.

A Helping Hand to Local Farms

KEPCO E&C has carried out a variety of activities in the local community such as giving a helping hand at local farms during busy farming seasons, cleaning the environment, and volunteering at affiliated institutions. At the center of KEPCO E&C’s community service activities is the Chamsangar (“True Love Service Corps”) Volunteer Group, the company’s own volunteer group that was organized in 2005. In 2017, over 40 employees visited a farming village located in Sanginawon-ri, Goseong-myeon, Gimcheon-si and helped with harvesting onions under the sweltering heat. They also purchased some of the onions they had helped harvest, contributing to the farm’s income.

Support for Promoting Traditional Markets

In an effort to boost the local economy by promoting the use of traditional markets, KEPCO E&C carried out a campaign in June 2017 in Gimcheon Hwanggeum Traditional Market. It also donated Onnuri gift certificates in the amount of KRW 3 million to Wolyeong St. Mary’s House, a welfare organization based in Gimcheon, thereby sharing through giving as well as contributing to the promotion of traditional markets in the region. Since relocating to Gimcheon Innocity in 2015, KEPCO E&C has carried out various win-win activities in the region and will continue to strengthen its ties with the local community.
**KEPCO E&C Announces Ten Major New Growth Businesses**

In January 2017, KEPCO E&C selected and announced new growth businesses, reflecting its purpose of incorporation and future strategic directions. Ten major new growth businesses—(i) nuclear decontamination and decommissioning, (ii) spent nuclear fuel and radioactive waste, (iii) small and medium-sized reactors, (iv) i-PWPOWER, (v) floating storage power plant, (vi) Industry 4.0, (vii) enhancement of thermal power performance, (viii) environment improvement, (ix) generation of new & renewable energy, and (x) convergence of new & renewable energy—were selected in five areas: post-management of nuclear power plants, development of nuclear reactors for export, convergence technology, clean thermal power, and new & renewable energy. These new growth businesses will be implemented in a systematic manner by supplementing relevant organizations, manpower, and institutional systems.

**KEPCO E&C Establishes a Branch Office in Indonesia**

In February 2017, KEPCO E&C established a branch office in Jakarta, Indonesia. The branch office aims to win contracts for thermal power plants and nuclear power plants in countries such as Vietnam and Malaysia by tapping into the Southeast Asian market. It is expected that through our branch office we can effectively make inroads into the rapidly growing Southeast Asian electricity market and KEPCO E&C will continue to make various efforts to expand into overseas markets.

**KEPCO E&C's New Building Wins the Grand Prize at the Green Architecture Competition**

KEPCO E&C’s new building that was built in Gimcheon Incity upon relocation was awarded the Grand Prize at the 2016 Korea Green Architecture Competition hosted by the Presidential Commission on Architecture Policy in November 2016. The new building, boasting a gross area of 145,864m², with 28 aboveground floors and two underground floors, is an eco-friendly, energy-saving building that was rated first class in green construction, 1st level in energy efficiency, and first class as an intelligent building. The award was given in recognition of its excellence as an eco-friendly construction project that actively applies new & renewable energy and various green technologies such as sunlight generation facilities, thermal heat air conditioning and heating systems, and rainwater/heavy water facilities.

**KEPCO E&C Launches an “Open Library” for Local Residents**

In June 2016, KEPCO E&C created an open library for local residents and the families of its employees. Located on the first floor of the new KEPCO E&C building and covering 510m², the open library currently offers over 10,000 publications. These include books for children and young adults, English-language books, and periodicals, and an additional 25,000 books will be acquired in the near future. The open library is expected to serve as a bridge between KEPCO E&C and the local community by offering a learning space for the local children and a cultural space for the local residents.

**KEPCO E&C Earns the Highest Grade in the Shared Growth Assessment**

KEPCO E&C earned a grade of “Excellent” (the highest possible grade) in the 2016 Shared Growth Assessment for Public Institutions, announced annually by the Ministry of Trade, Industry and Energy in accordance with Article 19 of the Act on the Promotion of Collaborative Cooperation between Large Enterprises and Small-Medium Enterprises. KEPCO E&C earned high points for its strong commitment to achieve shared growth, implementation of shared growth plans, establishment of a shared growth roadmap and tasks reflecting its institutional characteristics, and the ON-SHARE shared growth support system. It is notable that KEPCO E&C was selected as an “excellent” organization since it jumped two grades in just one year, an unprecedented achievement in a public institution assessment.

**2015 - 2016 Highlights**

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**KEPCO E&CWins an Overseas Decommissioning Research Contract for the First Time in Korea**

In August 2016, KEPCO E&C executed a research contract on nuclear decommissioning with a German company, PreussenElektra GmbH, PEI. Pursuant to this contract, KEPCO E&C will conduct research on system changes for optimizing cost and energy during nuclear decommissioning, analyzing the cost benefit of adding or modifying the equipment or systems required for nuclear decommissioning in its preparation stage. By winning the contract, KEPCO E&C’s extensive experience and technology in nuclear power plant engineering were recognized in the overseas nuclear decommissioning market.

**KEPCO E&C Is Awarded the Presidential Award at the Korean National Quality Award**

KEPCO E&C received the Presidential Award at the 42nd Korean National Quality Award, hosted by the Korean Agency for Technology and Standards under the Ministry of Trade, Industry and Energy to reward enterprises and organizations, manpower, and institutional systems. KEPCO E&C was recognized as it had established a quality management system that meets global standards.

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**KEPCO E&C Wins the Invest in Provence Award**

At the ITER Business Forum 2015, KEPCO E&C was awarded the Invest in Provence Award, which is an award given by the Provence Foreign Investment Promotion Agency and the Marseille Chamber of Commerce and Industry in recognition of the contribution to promoting the local economies in France. KEPCO E&C’s contribution to promoting the local economy was recognized as it had established the ITER International Organization Liaison Office in June 2015 and helped increase the organizational capability of ITER.

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2015-2016 KEY PERFORMANCE

2015 International Nuclear Power Plant Design as Published by ENR World’s No. 2

KEPCO E&C’s Ten New Growth Businesses in Five Major Areas

New Growth Businesses

IMPORANCE OF ISSUE

In 2016, the plant industry was impacted by the economic downturn and stronger global competition due to oversupply and low demand. This new era is marked by low growth, low consumption, and high unemployment. Nevertheless, it is critical for companies to turn such hardships into opportunities and advance forward. As such, KEPCO E&C will strive to yield sustainable performance results by facing these new challenges.

OUR APPROACH

Notwithstanding recent hardships in winning contracts, KEPCO E&C has continued to strengthen its capacity in core business areas such as nuclear energy and the plant business. Furthermore, it has selected and actively implemented ten new growth businesses in five major areas: post-management of nuclear power plants, development of nuclear reactors for export, convergence technologies, clean thermal power, and new and renewable energy. In the global electricity market, KEPCO E&C continues to expand into new markets by acquiring contracts regarding small and medium-sized SMART nuclear power plants and ITER projects.

OUR PLAN

KEPCO E&C will continue to strengthen the competitiveness of its core businesses by making advancements in architect engineering technology and expanding its areas of business. The company will also secure new growth engines by implementing its ten new growth businesses in five major areas. Through these efforts, KEPCO E&C seeks to contribute to the prosperity of all as a “Global Leading Energy Solution Partner.”

HEUNG SONG-RYUL (Deputy Head of Department, KEPCO)

“I hope KEPCO E&C will continue to reach new heights with thorough preparations to meet future challenges.”

For an enterprise to achieve sustainable growth in the midst of new energy paradigms set forth by the new government, it must make great efforts to develop new business areas, explore new business items, and make technological advancements. As a leading company in energy technologies, KEPCO E&C has been expanding its business areas into post-management of nuclear power plants, development of nuclear reactors for export, convergence technologies, clean thermal power, and new and renewable energy. All the while, it is maintaining its existing strengths in engineering and EPC projects. Post-management of nuclear power plants is an area where active discussions have been taking place with the recent governmental policies on nuclear decommissioning and the permanent shutdown of the Kori-1 reactor. It is an area that requires technological advancement as well as industrial experience for tapping into overseas markets. New and renewable energy is also an area where technological development and efforts to reinforce competitiveness are vital. I hope that KEPCO E&C will face these challenges by making technological advancements and developing new markets, thereby taking a new leap forward as a total energy solution partner expanding beyond its strengths in architect engineering and the construction of power plants.

1. Began commercial operation of Shin Kori-3, the world’s first third-generation reactor

2. Established a comprehensive design management system to carry out design for multiple reactors simultaneously

Creating Future Growth Engines

KEPCO E&C continues to strengthen its competitiveness by reinforcing the safety of its nuclear power plant architect engineering business, maximizing customer satisfaction by diversifying its portfolio such as APR1400, APR1000+, APR+, and SHIR, and expanding its EP&M and engineering-based O&M business.

Performance

In December 2016, the Shin Kori-3, a third-generation APR1400 reactor, began commercial operation. The safety and propriety of APR-1400, also applied to nuclear power plants to undergo construction in the UAE, has thus been verified. The excellence of the “Korean nuclear reactor design” has been demonstrated through the stable construction of the Shin Kori-3.

KEPCO E&C has established a proactive response system for handling delay factors which checks the status of relevant processes on a daily basis and operates a database that serves as standardized supplier document list. In addition, by establishing a data-based configuration system and a database of design requirements, KEPCO E&C has eliminated any potential nonconformance of reactor design requirements, design documents and physical configuration, as well as gained reliability for its superior reactor design technology.
KEPCO E&C will pursue economically feasible plant design businesses by carrying out proposal-oriented projects based on eco-friendly and highly efficient thermal power plant design. In addition, it creates future growth engines by selectively implementing small and medium-scale EPCM businesses and strengthening competitiveness in the plant business by expanding to thermal-based O&M business.

In order to diversify its portfolio for increased business revenue and achieve its mid to long-term management goal of ‘25% in future growth engine sales’ under Vision 2025, KEPCO E&C has selected ten new growth businesses in five major areas. The new growth businesses were selected based on their propriety, novelty, and marketability in consideration of the government’s strategies in the energy industry and KEPCO E&C’s own management strategies. Mid to long-term plans will be established and implemented for these new growth businesses, which are expected to be the future growth engines of KEPCO E&C.

**KEPCO E&C’s New Growth Businesses**

**Increasing Competitiveness in the Plant Business**

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**Performance in the Plant Business**

1. Successfully completed two large-scale ultra-supercritical coal-fired thermal power plants (1,000MW)
2. Applied VE (Value Engineering) and the 3D design basis verification process
3. Strengthened the EPC business capacity

In 2016, KEPCO E&C successfully completed 1,000MW-scale ultra-supercritical coal-fired thermal power plants, thereby meeting 100% of its target goal for technological independence and setting the foundation for expanding into the overseas market for large-scale thermal power plants. In particular, for Dangjin Units 9 and 10, the design standards for building eco-friendly power plants were improved in response to changes in trends. Air pollution prevention facilities with enhanced performance were also applied to reduce fine dust. Facilities to detect and warn of hazardous substances were also installed, meeting the strict requirements under the Toxic Chemicals Control Act.

Value engineering (VE) refers to a rational approach to enhance design quality while reducing cost, based on the low-cost, high-efficiency economic principle. By applying value engineering in constructing the Gangneung Thermal Power Plants Units 1 and 2, KEPCO E&C was able to not only shorten the construction process but also reduce a total of KRW 75.7 billion of life-cycle costs, including KRW 62.7 billion in construction costs and KRW 13 billion in maintenance costs. In addition, it has developed a 3D design basis verification system to improve design quality, increasing design accuracy by reviewing interference factors in advance by using 3D simulations, while enhancing work efficiency through 3D direct design in each technological area.

By successfully executing the Osan EPC project, KEPCO E&C won customer trust and built the foundation for carrying out preliminary projects for follow-up fuel cell projects and winning additional contracts. Furthermore, by successfully completing the CIPREL IV EPC project in Côte d’Ivoire, KEPCO E&C secured the capability to execute follow-up EPCM projects, based on which it will attempt to obtain new EPCM projects in West African and Southeast Asian countries.

**Optimal design for highly efficient and eco-friendly thermal power plants**

“Increase customer satisfaction by optimizing facilities and advancing eco-friendly power plant design technology”

“Carry out proposal-oriented projects by creating a task force for each ordering party and producing customized designs”

“Strengthen business development in regions with ongoing projects (West Africa) and expand into new markets (Southeast Asia)”

“Expand business areas including power plant performance enhancement and seismic design”

**Post-management Power Plants**

- Decontamination decommissioning
- Spent nuclear radioactive waste

**Development of Reactors for Export**

- Small and medium-sized reactors
- i-POWER

**Clean Thermal Power**

- New and renewable energy generation
- Convergence of new and renewable energy

**Convergence Technology**

- Floating storage power plant
- Industry 4.0

**New and Renewable Energy**

- New and renewable energy generation
- Convergence of new and renewable energy

**Ten New Businesses Major**

- Decontamination decommissioning
- Spent nuclear radioactive waste
- Small and medium-sized reactors
- i-POWER
- Floating storage power plant
- Industry 4.0
- New and renewable energy generation
- Convergence of new and renewable energy
- Optimal design for highly efficient and eco-friendly thermal power plants
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Expanding into the Global Electricity Market

Winning the Contract for the ITER CMA Project

Since 2016, KEPCO E&C has been providing Construction Management-as-Agent services for the International Thermonuclear Experimental Reactor (ITER) project by winning a KRW 230 billion contract. The ITER project is a super-large international joint research project in which seven countries—Republic of Korea, United States, Russia, the European Union, Japan, China, and India—will jointly construct a super-large thermonuclear experimental reactor in Cadarache, France, to substantiate the possibility of mass producing energy through nuclear fusion. KEPCO E&C organized a consortium with AMEC FW UK and ASSYSTEM France, winning the contract based on its technological prowess and confidence gained from a variety of past projects, including radioactive waste management, as well as engineering and cable engineering projects from the ITER international organization. KEPCO E&C was able to accomplish this on the merit of its world-class nuclear and thermal power plant engineering capabilities. Winning this project will help promote KEPCO E&C’s practical engineering and excellent technological capability in the global market and secure various technologies needed to build thermonuclear reactors in the future.

Winning the SMART Pre-Project Engineering (PPE) Project

KEPCO E&C is currently carrying out pre-project engineering (PPE) of a system-integrated modular advanced reactor (SMART) nuclear reactor since winning the KRW 82.5 billion contract. SMART is a small-sized reactor with multiple purposes, such as supplying electricity to small cities with a population of under 100,000 with a quarter of the capacity (100MW) of existing reactors as well as living water and heat through desalination. It is particularly useful in countries that have difficulty building single electrical grids due to the dispersion of the population. Winning this project is significant for KEPCO E&C because the company gained an opportunity for the initial commercialization of small and medium-sized nuclear reactors. This took place in a time when the need for reactors is attracting attention again following the Paris Agreement, under which countries around the world agreed to reduce their greenhouse gas emissions. This project is also expected to be a new breakthrough in which nuclear reactors will become an export item by entry into other countries.

Completing Zero-Accident Construction in Overseas EPCM Businesses

CIPREL project in Côte d’Ivoire

KEPCO E&C successfully had constructed for 4 million hours with no industrial accidents and began commercial operation of the CIPREL project in Côte d’Ivoire. The CIPREL IV Volet B EPC project aims to convert the existing open cycle power plant into a combined cycle power plant by adding two heat recovery steam generators (HRSG), one steam turbine, and one air cooled condenser (ACC). The project also contributed to the development of domestic companies by helping small and medium-sized enterprises enter into overseas markets, while proving KEPCO E&C’s ability for safe construction by achieving 4 million zero-accident hours.

Takoradi T2 Project in Ghana

KEPCO E&C’s T2 project in Ghana was successfully completed with no industrial accidents and has begun commercial operation. The T2 project aims to increase the total generation capacity to approximately 330MW by converting the existing gas plant, the Takoradi T2 (220MW, simple cycle), into a combined cycle power plant. By achieving 7.9 million zero-accident hours, KEPCO E&C proved its ability for safe construction and opened up new possibilities in the EPC business area by successfully completing the first power plant overseas.

Headquarters
ITER Liaison Office, France
Côte d’Ivoire Branch
Ghana Branch
Saudi Arabia Branch
UAE Branch
SAFETY

KEPCO E&C,
Dreaming of a Safer and Cleaner Future

IMPORANCE OF ISSUE
As safety and environmental regulations continue to become more stringent in the international community, demand has been rising for nuclear power design that prioritizes safety. Especially in the aftermath of the Gyeongju earthquakes, public scrutiny of nuclear power plant safety is growing and the importance of verifying safety in the design stage of building is being further emphasized. As eco-friendly and high-efficiency technologies in both the domestic and international markets take center stage, the demand for new & renewable energy, the energy sources of the future, is also increasing.

OUR APPROACH
Upholding safety as one of its core values, KEPCO E&C has established and operates a Health, Safety, and Environment (HSE) management system in accordance with global standards. KEPCO E&C is making strides in creating a safety culture throughout the company through various programs to establish employees’ well-being as the top priority. By concentrating its capability on technological development and the commercialization of eco-friendly energy sources, KEPCO E&C is aiming to become a more competitive player in the next-generation energy businesses oriented around new & renewable energy such as solar, water, and wind power.

OUR PLAN
KEPCO E&C will continue its efforts at the company level to further promote a culture that holds safety as the highest priority. In order to secure growth engines for future energy solutions, one of its five strategic directions, KEPCO E&C will continue making efforts toward developing and commercializing sustainable eco-friendly next-generation energy sources.

Hwang Joo-Ho

Interview

“Research on the management and safety of post-management of nuclear power plants is absolutely essential.”
KEPCO E&C has accumulated extensive technological capacity and experiences in the area of nuclear power plant safety throughout its corporate history. Nuclear decommissioning and post-management have recently become an important issue, requiring a transition from an academic approach to a practical approach based on an engineering perspective. This will enable decommissioning technologies to be applied to actual projects. In this regard, KEPCO E&C must create an organization to handle post-management work, cultivate experts, and increase investment in decommissioning technology. Based on such efforts and outcomes, it is anticipated that KEPCO E&C will play a leading role in securing world-class decommissioning technologies.

Safe and Clean Energy

Strengthening the HSE Management System

KEPCO E&C has selected ‘safety’ as one of its core values and applies a systematic HSE management process to effectively operate its HSE management system.

HSE Management Process
KEPCO E&C operates a systematic Health, Safety, and Environment (HSE) management system based on the requirements of the international standards OHSAS 18001 and ISO 14001. The HSE management system covers practical operational measures to prevent disasters and accidents during the course of business, according to which the company will manage the relevant processes.

HSE Plans and Operation
In executing the EPC project, KEPCO E&C operates a systematic Health, Safety, and Environment (HSE) management process that both reflects the needs of the government and customers, and can be adapted to the business environment. First of all, HSE plans are devised after the legal requirements and customer demands are accurately identified. A risk assessment is then carried out for the overall project, based on which risk factors are identified in advance. Prevention measures are then established and implemented accordingly. The Hygiene Management and First Aid Center is operated according to the HSE plans, managing the health of KEPCO E&C’s employees. The work permit system enables safe and eco-friendly construction through the management of hazardous substances and dangerous work and the prevention of fire. KEPCO E&C instills safety consciousness throughout the company by implementing HSE education in each work area and distributing HSE handbooks for employees to make sure they understand and practice what they have learned.

HSE Inspection and Measures
At the inspection stage, the HSE check, HSE audit and safety accident investigations are carried out to identify any non-conformance arising in the course of EPC project and establish response measures. In particular, the HSE inspection applies the color coding system for all business managers to easily identify any non-conformance arising in the course of EPC project and establish response measures.

First Aid Center
First Aid and CPR Education
Color Coding HSE Inspection

HSE Management System (Certificate)
KEPCO E&C has identified core activities and implemented various programs to establish a safety culture. In addition, it carries out regular monitoring to check and improve safety issues, which will allow such a culture to take root in the company.

Establishing a Safety Culture Policy and Process for Nuclear Power Plants

By establishing a safety culture policy, KEPCO E&C’s CEO has demonstrated his conviction to firmly establish a safety culture in the company. By applying the Corrective Action Program (CAP, the safety culture data processing system) to all nuclear power businesses, non-conformance items in safety, health, environment, and quality are continuously identified and handled. Through these efforts, KEPCO E&C is able to secure high quality by identifying in advance and effectively managing potential problems that may arise during architect engineering.

Increasing Safety Consciousness

KEPCO E&C provides safety culture education courses for each rank to instill safety consciousness in all employees, while completing domestic and international professional courses to secure safety culture professionals and expertise. An event called “Quality Day” is regularly held with suppliers to share opinions on quality issues as well as improve their understanding of the importance of nuclear power plant safety.

Evaluating the Safety Culture

As part of its efforts to implement a safety culture program based on the International Atomic Energy Agency (IAEA) standards, KEPCO E&C has been conducting self-evaluations of its safety culture since 2013. Using the safety culture survey jointly developed by KEPCO E&C and the Korean Atomic Energy Research Institute, the level of safety culture among its employees is regularly evaluated. Through these efforts, vulnerabilities and areas for improvement are identified and reflected in various activities to promote greater safety within the company.

Securing Safe Nuclear Power Technology

Designing Safe Nuclear Power Plants in Korea

KEPCO E&C has conducted a probabilistic seismic safety assessment to verify the earthquake resistance of nuclear power plants in case of natural disasters. Through the analysis of seismic hazards, seismic fragility, and seismic accident sequences, the company increased the resilience of nuclear power plants in the face of disasters by strengthening seismic design standards in next-generation reactor types. Furthermore, a stress test was conducted to evaluate the response capability of nuclear power plants in operation against extreme natural disasters, which confirmed their response capability and safety design. In October 2015, KEPCO E&C obtained a license to operate Shin Kori Unit 3, the world’s first third-generation reactor and gauge for judging the propriety of APR1400 design as the preceding unit of the nuclear power plant in the UAE, and began its commercial operation in December, 2016.

Analysis of Seismic Fragility

- Review historical materials on earthquakes
- Review materials on epicenters and topographies
- Analyze seismic hazard

Analysis of Seismic Accident Sequences

- Analyze accident sequences
- Analyze soil-structure interaction

Analysis of Seismic Hazards

- Review historical materials on earthquakes
- Review materials on epicenters and topographies
- Examine analyzed sites

Completing Accident-free Construction in All Domestic and Overseas EPC Projects

In carrying out power plant extension projects in Ghana and Côte d’Ivoire, KEPCO E&C operates an HSE management system in which the laws and regulations of each country, company rules, and customer demands have been well reflected. Thanks to its systematic HSE management system, KEPCO E&C was able to achieve 12.79 million accident-free hours in the entire construction process, earning recognition for its world-class quality and safety management capability.

Country | Site Name | Construction Date | Accident-free Hours
---|---|---|---
Ghana | Tuarabid T2 Combined Cycle EPC Site | December 2015 | 7,930,000
Côte d’Ivoire | CPPRL NDD EPC Site | February 2016 | 4,543,000
Republic of Korea | Shin Kori Unit 4 and Nuclear Power Plant Site | February 2020 | 334,710
KEPCO E&C is a leader in realizing “clean energy,” based on its extensive engineering experience and eco-friendly technologies. In line with the government’s environmental conservation and greenhouse gas emission reduction policies, KEPCO E&C will strive to protect the environment and secure technological independence by actively expanding into new business areas related to new and renewable energy and eco-friendly power plants.

Securing Eco-friendly Technologies

In order to reach Korea’s greenhouse gas reduction goal, obtaining carbon capture and storage (CCS) technologies for commercial use is necessary. In this regard, KEPCO E&C has been participating in government-led CCS technology development projects since 2008 and has accumulated experiences in wetamine Carbon Capture and dry Carbon Capture technology, as well as patent application. The company also boasts excellent technological capacity in air pollution prevention facilities such as carbon desulfurization and denitrification, in addition to design and construction capacity and wide-ranging project execution experiences in the area of waste water and waste water treatment technology. In 2016, in response to the government’s special requirements of fine particles immediately, KEPCO E&C modified the design standards of the air pollution substance emission for Dangjin Units 9 and 10 and Taean Units 9 and 10, and then took measures to fully satisfy the licensing requirements.

Developing Technology to Demonstrate New and Renewable Energy

KEPCO E&C is making consistent efforts to gain technological competitiveness in the businesses that are driven by new & renewable energy technologies, such as solar, offshore wind, and bio-based power. In 2016, the company developed demonstration technologies for generating power from new & renewable energy and expanded its business areas. These business area expansion efforts include developing a feasibility analysis tool for offshore wind farm project, optimal process for multi-fuel biomass facilities, feasibility analysis and design technologies for solar power plant.

Energy Generation

Wind Power

• Developed a feasibility analysis tool for offshore wind farm project (Jan. ‘14 - Dec. ‘15)
• Developed an optimal floating storage-based model for offshore wind farm (Jan. ‘16 - Dec. ‘16)
• Developed technology for designing wind turbine towers (June 14 - June 20)
• Developed technology for designing wind turbine towers (Sept. 14 - Sept. 17)

Bio-based Power

• Developed optimal processes for multi-fuel biomass facilities (Jan. ‘14 - Dec. ‘15)

Solar Power

• Developed feasibility analysis and design technology for solar power generation (Sept. ‘14 - Sept. ‘17)

KEPCO E&C’s Eco-friendly Building Receives Highest Level Certifications in Four Areas

In November 2016, the KEPCO E&C building located in Gyeonghoen, Gyeongbuk Province won the Grand Prize at the 2016 Korea Green Architecture Competition. The award was given in recognition of its excellence as an eco-friendly building that actively applies new and renewable energy and various green technologies such as solar power generation facilities, thermal heat conditioning systems, and rainwater/heavy water facilities. The building is highly energy efficient as it uses a vacuum/triple glazing system, high-efficiency energy materials, and high-efficiency LED lighting. It was also certified as an eco-friendly, energy-saving building, being rated first class in green construction, 1+ level in energy efficiency, and first class as an intelligent building.
Corporate social responsibility (CSR), the idea that companies have social responsibilities to fulfill beyond seeking profits, is now a core value adopted by many companies. More recently, by combining CSR and each company’s business model, the idea of creating shared value (CSV) and shared growth is now accepted as an important social paradigm. Various government policies also encourage the alleviation of polarization, as well as balanced regional development, by supporting companies’ relocation to innovation cities and win-win cooperation activities.

Since relocating its headquarters to Gimcheon in 2015, KEPCO E&C has enacted various CSR programs as it strives to earn recognition as a member of the local community. As a public enterprise in architectural engineering, KEPCO E&C shares its excellent technological capacity and the skills possessed by its employees through programs to foster talent, namely the Power Engineer Training School. The company also carries out shared growth activities with small and medium-sized enterprises in the region. In addition, it operates various shared growth programs with small and medium-sized suppliers, supporting their capacity-building through joint technology development, a win-win payment system, and public procurement.

In an effort to build a strong partnership with the local community and its small and medium-sized suppliers, KEPCO E&C will communicate with them as much as possible and reflect their needs in its mid to long-term strategies. KEPCO E&C will consistently strive to improve and implement social contribution and shared growth programs.

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KEPCO E&C is well-positioned to implement an array of activities to foster talent due to the company's unmatched power plant architectural engineering technologies and accomplished employees. The company trains future talent in the natural sciences and nuclear power fields and provides young adults in the local community with opportunities to explore their future careers and develop their capabilities.

Power Engineering School (PES) Camp Since July 2011, KEPCO E&C has held the Power Engineering School (PES) Camp twice a year (in the summer and winter seasons) for university students studying natural sciences across the country. PES is a three-day camp offering various programs including special lectures in humanities, basic education in nuclear power, team tasks, and power plant tours. Participants are invited to visit the KEPCO E&C headquarters, Kori nuclear power plants, and the KEPCO International Nuclear Graduate School during the camp. The program not only offers a valuable opportunity for participants to improve their understanding of nuclear power and explore their future careers, but it also academically motivates them to pursue their interest in electric power technology by providing scholarships to outstanding students. A total of 600 university students have completed the course from 2011 to 2016.

Fostering Local Talent and Exploring Careers KEPCO E&C operates a variety of programs to cultivate future talent, such as academic-industrial cooperation, scholarship support, and career exploration. In 2015 and 2016, KEPCO E&C donated KRW 100 million, respectively, to the Gimcheon-si Talent Cultivation Foundation to financially support outstanding students and help improve the local educational environment. The company also helps local talent develop their capabilities through academic-industrial cooperation with high schools and universities in the region, operating power generation plant engineering CAD programs and student research programs.

KEPCO E&C spreads the value of sharing to those in need by utilizing its business characteristics and core capabilities and cooperating with related organizations.

Gyeongju Earthquake Disaster Relief Activities In 2016, a series of earthquakes hit Gyeongju, a city where multiple nuclear power plants are located. KEPCO E&C provided emergency technical support by dispatching a group of seismic design and reactor safety assessment experts, and then donated a relief fund of KRW 62 million to earthquake victims.

Global Social Contribution Activities KEPCO E&C regularly carries out social contribution activities overseas to achieve the company's goal of contributing to the happiness of people and societies around the world. It provides support for improving education and the environment in villages in Vietnam and the Philippines. In Yanbian, China, the company supports the conservation and inheritance of Korea's 'national soul' among ethnic Korean adolescents residing in the region. In 2015, KEPCO E&C signed a sisterhood agreement with Yanbian People's Publishing House for the support and cooperation of the "Yun Dong-Ju Poetry Prize" literary contest. Through this agreement, KEPCO E&C helps promote the Korean language and culture among ethnic Korean adolescents in China.

Since relocating its headquarters to Gimcheon Innocity in 2015, KEPCO E&C has been making various efforts to communicate with the local residents and contribute to regional development. In doing so, it created a consultative body including Gimcheon City and 73 welfare facilities in April 2015, and has been engaging in many region-specific social contribution activities. Engaging Employees for Volunteer Activities KEPCO E&C’s employees have come to grasp the true meaning of sharing and earn recognition as part of the Gimcheon community through their volunteer work. This was able to take place because of the employee’s sincere communication and cooperation with the local residents. The company’s Chamsarang Volunteer Corps engaged in a diverse range of volunteer activities. These efforts included volunteer work by new employees, activities conducted in small groups, and lending a helping hand at local farms and welfare institutions. In 2016, the Talent Sharing Volunteer Corps was launched and it attracted the participation of 107 employees thus far. These volunteers donated their skills by offering weekly tutoring and experiential learning opportunities to individuals from socially vulnerable groups. The Mayor of Gimcheon City lauded KEPCO E&C for the company’s contribution to promoting the community’s welfare with a certificate of appreciation.

Greater Access to Experiential and Cultural Activities Since 2016, KEPCO E&C has organized a myriad of cultural and experiential programs for the purpose of helping members of the local community gain a basic understanding of nuclear power generation. These programs also provide greater opportunities to local residents who have relatively less exposure to culture compared to individuals living in large cities. For instance, KEPCO E&C has created an open library on the first floor of the company’s headquarters, offering a space for local residents to enjoy over 10,000 publications including children’s books, educational materials, and English-language books. The company also provides various educational and cultural activities and programs to the local community, including the Wolseong nuclear power plant tour for children from low-income families in the region, book donations, free screenings of the latest movies, and musical performances.

Campaign to Promote Traditional Markets and Boost the Local Economy In an effort to build up the local economy and strengthen ties with the community, KEPCO E&C’s CEO and employees held a campaign to promote traditional markets in Hwanggeum Market in Gimcheon City. The campaign was done with the hope of contributing to a more vibrant local economy and to enable the company to build deeper relationships in the region.
Win-win-based Shared Growth

Strategy

By setting leading changes in the technological ecosystem through win-win growth as one of its four strategies, KEPCO E&C has established strategic tasks that the company is now implementing. The win-win growth strategy was established through a process of opinion gathering and discussion, establishment and reporting of strategies, submission of basic plans to the government, and activity review. The company is focused on carrying win-win cooperation activities and is strengthening corporate social responsibility (win-win management) in its mid to long-term management strategies. As a result of these efforts, KEPCO E&C received the highest grade of excellent in the 2016 Shared Growth Assessment by the Ministry of Trade, Industry and Energy, which is an improvement of two grades compared to the previous year.

Organization

In 2016, KEPCO E&C newly established the Corporate Partnership Team to take charge of the company’s win-win growth initiatives and systematically implement them. This team then formed a company-wide shared growth consultative body, the Shared Growth Consultative Group. Driven by its determination to achieve win-win growth, the company also made adjustments to related organizations and policies, such as elevating the position of the Chair of the Shared Growth Committee, the highest decision-making body regarding shared growth, from director-level to the CEO. KEPCO E&C also received positive feedback in the government’s shared growth assessment for its professional and systematic performance management by the organization in charge, company-wide cooperative efforts, and pursuing shared growth at the business-planning stage.

Organizational Structure for the Shared Growth Consultative Group

Strategic Promotion of Shared Growth Culture and Establishment of Infrastructure

Innovating and spreading the Shared Growth Ecosystem as a Relocated Public Institution

Upon completing relocation to Gimcheon InnoCity in 2015, KEPCO E&C has established a three-track strategy consisting of market development, talent cultivation, and joint research. This strategy sets the direction for the company as it fulfills its social responsibility as a public institution and strengthens the competitiveness of small and medium-sized enterprises in the region. Various programs have been carried out in accordance with this strategy. KEPCO E&C has participated in local purchasing consulting events, conducted academic-industrial joint research with local institutions, and developed technologies for localization. Thus far, the company’s job creation and talent cultivation efforts in the region have increased employment in Gimcheon city by 9.5% (Employee Trends by Region in April 2016 by the Ministry of Employment and Labor, August 22, 2016).

Win-win Management by Developing and Expanding Benefit Sharing

The Benefit-sharing system is a core shared growth task of the government. The Ministry of Trade, Industry, and Energy announced the establishment of a win-win culture through benefit sharing via the Third Basic Plan Regarding Large, Medium, and Small-sized Companies (November 17, 2014) and press release in January 2015. In line with these government policies, KEPCO E&C has enacted various efforts to expand the benefit-sharing system and play a leading role in implementing shared growth and win-win cooperation. As a result, the company was able to increase the number of registered and confirmed performance-sharing tasks from zero in 2015 to five in 2016.

Establishing a Shared Growth & Win-win Development Structure Utilizing Its Technological Capacity

As a public enterprise specializing in architectural engineering technology, KEPCO E&C has aimed to create and adopt a shared growth model consistent with the company’s characteristics to increase the effectiveness and longevity of its win-win cooperation activities. KEPCO E&C’s efforts have been concentrated on creating a one-stop support system for small and medium-sized entrepreneurs, covering technological development, technical protection, and market development. KEPCO E&C’s program for SMEs helps them jointly expand their overseas markets by supporting localization and experience-gathering in global settings. The company also supports SMEs to explore and develop new markets through joint technological and business development activities.

Strengthening Public Value by Purchasing More SME Products

KEPCO E&C has contributed to stabilizing SME management and building a healthy industrial ecosystem by actively promoting the purchasing of SME products. To ensure that the company may continue to purchase SME products, irrespective of any changes in its management circumstances, KEPCO E&C has set the goal to increase the purchasing ratio, rather than the absolute amount of purchasing. As a result, the ratio increased from 65% in 2014 to 70% in 2015, followed by 80% in 2016.

Pursuing Two-way Shared Growth by Strengthening Communication with Suppliers

KEPCO E&C has strengthened communication efforts with its SME suppliers to achieve actual shared growth based on a win-win relationship, rather than one-way support. Since December 2016, KEPCO E&C has adopted the “Shared Growth Finds You” program through which the company visits its suppliers to hear their directions and suggestions. In April 2017, it organized the KEPCO Cooperation Society, which is a consultative body of subcontractors consisting of ten suppliers, and signed a shared growth win-win agreement. It also continues to make improvements to the contract system and internal regulations for the fair and transparent selection and management of suppliers.
Providing Reliable Quality

Increasing Competitiveness through Quality Management

Systematic Establishment of the MB Quality Management Model

**OUR APPROACH**

KEPCO E&C identifies emerging risks and prevents them in advance. The company minimizes potential damage or loss by responding in a timely manner to risk factors that may emerge during the course of business due to quality issues and information leaks. To prevent and systematically handle anti-corruption issues, the company analyzes its ethical management performance from a PDCA perspective and reflects the results in the ethical management plans for the following year.

**OUR PLAN**

KEPCO E&C will continue its efforts toward establishing an advanced ethical culture throughout the company by upgrading its quality management system, spreading a culture of integrity throughout the company, and strengthening its ability to "self-treat" corruption. Furthermore, the company will reinforcing information security by making its security control activities more effective and the relevant systems more stable.

**INTOUMANCE OF ISSUE**

Stronger demands are being placed on companies to implement the government's anti-corruption policies and fulfill their social responsibilities. In view of eliminating corruption and the abuse of office within the public sector and society in general, the Anti-corruption and Bribery Prohibition Act, also known as the "Kim Young-ran Act," has been enacted, along with many other efforts to establish a corporate culture of integrity. As companies become more exposed and vulnerable to risk factors such as sophisticated cyber attacks and the recurrence of design errors, internal reform is necessary to improve their competitiveness.

**OUR APPROACH**

KEPCO E&C offers advanced ethical management training programs to employees and conducts a customer satisfaction survey in the first half of the year and reflecting the analysis results and improvement measures in the second half.

**OUR PLAN**

KEPCO E&C will continue its efforts in always being vigilant against corruption and internalizing an ethical consciousness.

You Han-Beom, a Managing Director of Transparency International Korea, states: "In today's management environment, integrity and ethics have become a demand of the times as well as a universal value for all companies. The paradigm is also changing from preventing corruption simply by abiding by the law to a passive sense to voluntarily achieving integrity and ethics by actively establishing an appropriate set of values in an organization's members. In this regard, KEPCO E&C has been providing incentives to people of integrity and spreading ethical culture throughout the company by implementing various ethical management programs including the Sinmungo, the personnel's self-line petition & discussion system, ethics & integrity reward system, and the integrity day. I hope that KEPCO E&C will continue its efforts in always being vigilant against corruption and internalizing an ethical consciousness."
Establishing a Transparent Organization through Ethical Management

In pursuing ethical management at the highest level, KEPCO & E&C strengthens its integrity and ethics infrastructure by establishing an integrity/ethics system and promotes an ethical awareness among its employees by offering customized ethical education courses. The company also makes diverse efforts to create a clean ecosystem among its suppliers and the local community.

Establishing an Ethical Management System

Streves to win the trust and confidence of the society through its companywide ethical management, KEPCO & E&C has established a TOP ethical management system. TOP stands for Trust through the enhancement of ethical awareness, Organization of the ethical management infrastructure, and Pride in its culture of integrity and ethics. According to the TOP strategic plans, the company selects and executes implementation of the major tasks.

TOP Ethical Management Strategic System

Vision ▶

To enhance design quality and the efficiency of the design process, KEPCO E&C carries out various quality verification activities. It regularly inspects the design process, the results of which are reflected to improve the process. Quality assurance activities for the design process include quality assurance audits and quality monitoring. Both internal and external quality assurance audits are performed according to annual audit plans, and quality monitoring is carried out on specific processes for design outputs on an ad hoc basis.

In 2016, KEPCO E&C included technical experts in the internal auditing process, thereby strengthening the inspection of conformance between licensing and design documents. Meanwhile, the company maximized the efficiency of the external auditing process by, for instance, conducting a comprehensive audit on suppliers involved in multiple projects.

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Minimizing Design Errors through Corrective and Preventive Action

KEPCO E&C seeks to minimize design errors in its nuclear and thermal power plants by improving and supplementing its design process. The detailed processes that may affect design quality from the planning stage to the final stage are thoroughly documented, computerized, and strictly managed. Moreover, the company takes measures in advance to modify any part of the design input, design changes, supplier documents, corrective action report, and quality control record that require improvement, and preventive activities were strengthened by promptly implementing corrective actions. Such efforts resulted in the company reducing the average number of items requiring corrective action from 4.3 cases per audit in 2015 to 3.2 cases in 2016, and design errors continue to decline.

Ethical Education Performance

Ethical education to each level of job position•   Education for newly recruited employees and online education for each customer

KEPCO E&C has been a leader in quality management, having obtained the N-Certificate from the American Society of Mechanical Engineers (ASME) in 1984 and becoming the first engineering company in Korea to adopt a quality management system. As a public enterprise in engineering, the company has also led quality management among domestic companies in the same industry by adopting international standards such as ISO 9001, OHSAS 18001, and ISO 27001. Based on its superior design quality, KEPCO E&C actively expanded into the global market, attaining many notable achievements such as being ranked No. 1 in “oversea revenue from nuclear power plant design” for four consecutive years (2012–2015) and No. 3 in “oversea revenue from combined cycle power plants” (2015) on Engineering News-Record (ENR), an American architectural and engineering magazine. Rising to become a truly global engineering company, KEPCO E&C was honored with the Presidential Award at the Korean National Quality Award in 2016, in recognition of the outstanding quality of its power plant designs and safety efforts.

KEPCO & E&C receives the Presidential Award at the Korean National Quality Award

Promoting Education and PR activities targeting Suppliers ▶ In an effort to build the basis for fair trade and develop hand-in-hand with its suppliers, KEPCO & E&C offers ethical management education to their employees and expanded related activities. In particular, the company demonstrates its determination to implement ethical management by strengthening PR activities such as displaying promotional banners, implementing the use of specific document forms for ethical management, and adding ethics news to the corporate newsletter to introduce integrity and ethics-related news.
Organization: Advancing the Ethical Management System

- Strengthening the Ethical Management Organization and Ethical Code
  - To strengthen the driving force behind the company’s pursuit of ethical management, KEPCO E&C operates the Ethics Management Team and the Ethics Management Committee, which is the highest body deliberating on important ethical management issues. In addition, it pursues ethical management attuned to the characteristics of each division and appoints Code of Conduct managers from the department head level and “ethical management keepers” from working level employees for effective communication with the voices from the field. Moreover, it was the first domestic company to establish the “Code of Ethics for Professional Engineers,” stipulating it in the Ethical Code of Conduct for employees and elevating this code to the level of company regulations. KEPCO E&C has strengthened the standards of professional conduct based on current status analysis through lectures and meetings, while expanding educational and PR activities regarding improvements to the prior reporting system.

Establishing the Ethical Management and Monitoring System

- To engage employees in ethical management activities, KEPCO E&C operates an integrity and ethics system, through which the company announces its ethical management strategies, the Code of Ethics, the Ethics and Ethics Newsletter among other items to help employees gain an understanding of the overall integrity policy. KEPCO E&C also operates a single portal system encompassing all matters related to ethical management, such as application for and management of the integrity mileage and corruption/brigade reporting system. Finally, to systematically implement ethical management, KEPCO E&C has established a PDCA-based ethical management process through which it analyzes the related results each year and reflects in its ethical management plans for the next year.

Ethical Management Emblem and Slogan

- The number of users logging on to the Integrity and Ethics System increased due to the reinforcement of Integrity and Ethics system in 2016. KEPCO E&C hosted the UN Global Compact. The company also focuses its regional cooperation efforts on transparency, a public-private anti-corruption consultative group and signing the Fair Play Pledge against corruption. To help employees gain an understanding of the overall integrity policy, KEPCO E&C holds the Integrity Convention to demonstrate the company’s resolve to eliminate corruption and solidify a culture of integrity. The company also emphasizes its intention to conduct business ethically by installing banners in the main lobby of the headquarters building, entrance of each department, and other major locations, as well as printing the integrity emblem and slogan on business cards and outgoing documents. Other efforts include the Integrity and Ethics System which fundamentally blocks any leakage of design documents. For the first time in the KEPCO Group, KEPCO E&C adopted the “Document Centralization System” which fundamentally blocks any leakage of technical documents in real-time and disseminates status information by combining information protection system and control facilities. It has also strengthened its internal security response capacity by assigning security control experts and established control rooms, conference rooms, and other facilities to undertake information security control-related work. The company has built a solid foundation in robust preparation for cyber attacks by not only operating its own cyber security control tower but connecting it to the control towers of the National Intelligence Service and the Ministry of Trade, Industry and Energy. Furthermore, KEPCO E&C conducts simulated training against malicious emails to raise awareness of the importance of preventing the leakage of technical documents. Finally, the company improved terminal server security by blocking network connections to terminal servers that are vulnerable to security threats.

Strengthening Security Processes

- As part of its efforts to systematically implement and gradually reinforce information security, KEPCO E&C strengthened security processes in the areas of facility, document, and human resources management, controlling access more strictly by applying a dual control system that requires passwords and card keys to restricted access areas. These systems allow for more rigorous control of access by outsiders or incoming equipment, and it also blocks the leakage of internal documents. Furthermore, the company reduces security risks by systematically managing informational assets, for instance, by regularly evaluating the propriety of authority to handle confidential information and detecting irregular internal activities using the technical information log system.

Strengthening the Information Protection System

- KEPCO E&C operates security regulations that fully reflect the Basic Guidelines on National Information Security and the Operational Guidelines on Information Security of the Ministry of Trade, Industry and Energy. After the related information systems were designated as national information communication infrastructure in January 2016, the company has spared no effort in establishing measures in accordance with the Information Communication Infrastructure Protection Act. It continues to strengthen its information security system to prevent any leakage of design technology and documents in response to increasing cyber hacking attacks.

Establishing an Information Security Control System

- KEPCO E&C complies with the ISO 27001, the international standard for information security management systems, and maintains its certification through continued efforts to improve the information security system. Through various efforts to strengthen information security in accordance with its information protection system, the company received a higher ranking in the security audit of public institutions under the Ministry of Trade, Industry and Energy.

Undertaking More Advanced Cyber Security Activities

- KEPCO E&C operates its own cyber security control tower capable of responding rapidly to information leaks and cyber hacking. The cyber security control tower monitors for security threats and leakage of technical documents in real-time and disseminates status information by combining information protection system and control facilities. It has also strengthened its internal security response capacity by assigning security control experts and established control rooms, conference rooms, and other facilities to undertake information security control-related work. The company has built a solid foundation in robust preparation for cyber attacks by not only operating its own cyber security control tower but connecting it to the control towers of the National Intelligence Service and the Ministry of Trade, Industry and Energy. Furthermore, KEPCO E&C conducts simulated training against malicious emails to raise awareness of the importance of preventing the leakage of technical documents. Finally, the company improved terminal server security by blocking network connections to terminal servers that are vulnerable to security threats.

Increasing Log-ins to the Integrity and Ethics System

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<th>Execution</th>
<th>Monitoring</th>
<th>Feedback</th>
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<td>• Analyze the internal/external management environment and the previous year’s performance</td>
<td>• Develop detailed plans for implementing ethical management strategies</td>
<td>• Conduct the ethical management survey</td>
<td>• Reflect in the internal/external management environment and the previous year’s performance</td>
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<tr>
<td>• Adjust organizational and business structures</td>
<td>• Operate the integrity and ethics management system at the company level</td>
<td>• Conduct the ACRC integrity survey</td>
<td>• Adjust the content of ethical education according to the level of accomplishment</td>
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<td>• Improve the integrity and ethics management system</td>
<td>• Establish the Code of Conduct managers at the division and bureau levels</td>
<td>• Reflect in the responsible management management</td>
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Pride: Instilling Pride through a Culture of Integrity

- Operating Ethical Management Promotion Programs
  - KEPCO E&C holds the Integrity Convention to demonstrate the company's resolve to eliminate corruption and solidify a culture of integrity. The company also emphasizes its intention to conduct business ethically by installing banners in the main lobby of the headquarters building, entrance of each department, and other major locations, as well as printing the integrity emblem and slogan on business cards and outgoing documents. Other efforts include the Integrity Pledge taken by all employees, monthly integrity messages, the Integrity Golden Bell quiz contest, and the integrity reward system, through which employees actively participate and take the lead in the company's ethical management activities.

Strengthening External Cooperation to Create a Clean Ecosystem

- In view of creating a clean, corruption-free ecosystem, KEPCO E&C makes various efforts to build a fair society through external cooperation, such as actively taking part in the activities of the Korean Network on Anti-corruption and Transparency, a public-private anti-corruption consultative group and signing the Fair Play Pledge against Corruption hosted by the UN Global Compact. The company also focuses its regional cooperation efforts for ethical management by, for instance, signing an MOU for supporting ethics-related work among public institutions in Gyeongin Incheon.

Overview

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Appendix

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Sustainability & Human Rights

- Sustainability & Human Rights

Performances

- Performances

Appendix

- Appendix

* The number of users logging on to the Integrity and Ethics System in 2016 increased due to the reinforcement of ethical policies such as the enactment of the Anti-Corruption Act and better access to the system.
Strengthening Talent Management and Cultivation

Fair Recruitment System

KEPCO E&C’s recruitment opportunities are open to anyone on an equal basis irrespective of gender, alma mater, or region. To recruit employees based on their work performance capacity based on a fair recruitment and selection system, the company developed job descriptions based on the National Competency Standards (NCS) in 2015 and has applied them in the recruitment process. As a public enterprise, the company contributes to increasing social equality by actively recruiting women, the disabled, local talents, and high school graduates.

Systematic Talent Development

In order to respond in a timely manner to the changing management environment, maintain its position as a leader in core business areas, and continuously enhance its business performance, KEPCO E&C has established an HRD strategy and a mid to long-term talent cultivation roadmap in connection with its management strategies.

Cultivating Talent in Connection with Management Strategies

To successfully implement its HRD strategy, KEPCO E&C performs job analyses and organizational competency evaluations, based on which the company adjusts its competency-oriented training program and provides customized training programs according to the employees’ job and positions.

Recruitment Performance

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2015</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permanent employees</td>
<td>80</td>
<td>73</td>
<td>62</td>
</tr>
<tr>
<td>Temporary employees</td>
<td>29</td>
<td>23</td>
<td>18</td>
</tr>
<tr>
<td>Interns</td>
<td>15</td>
<td>13</td>
<td>12</td>
</tr>
</tbody>
</table>

Social Equality Recruitment Performance

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2015</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current female employees</td>
<td>208</td>
<td>197</td>
<td>206</td>
</tr>
<tr>
<td>Female employees</td>
<td>218</td>
<td>207</td>
<td>216</td>
</tr>
<tr>
<td>Female managers</td>
<td>9.4</td>
<td>9.2</td>
<td>9.6</td>
</tr>
<tr>
<td>Female managers ratio (%)</td>
<td>3.0</td>
<td>3.0</td>
<td>3.0</td>
</tr>
</tbody>
</table>

Lee Dong-hoon, Team Manager, Subcontract Team, KEPCO E&C

“Enhancing productivity through an employee-centered corporate culture” Since relocating its headquarters to Gimcheon Innocity in the second half of 2015, KEPCO E&C has helped its employees to settle down in the region by opening an in-house daycare center, adopting flexible work hours, building a company dormitory, and leasing rental apartments. The company also helps its employees enhance expertise in their work by offering education through its “Mid to Long-term Talent Cultivation Strategy” program and provides customized training programs according to the employees’ job and positions.
Job Competency Training

KEPCO E&C provides various technical training courses for different fields and career levels to continuously strengthen its employees’ competency in core technologies. In particular, the four-level mandatory technical training course for design specialists is the company’s core technology education, the subjects and contents of which are organized in consideration of the employees’ number of years of service and job duties. Recently, more educational courses have been offered in connection with other job areas to promote engineers’ ability to cooperate and integrate their knowledge with other fields. Furthermore, the company responds to the needs of specific employee groups and encourages their integration by, for instance, offering basic technology orientation course to high school graduates and career and temporary employees, and establishing a Convergence Energy Engineering Department in a local university. The company also provides field-centered and career-oriented professional education so that the technology transfer of the cumulated know-how of long-term employees and retirees can be made effectively.

In addition to these efforts, KEPCO E&C maintains its pool of professionals in each technological area by helping employees obtain professional certifications, while encouraging them to acquire the latest technologies and knowledge by offering education via domestic and overseas professional institutions. In particular, the company runs degree programs in 12 major technological areas including deep commissioning and post-management, thereby cultivating key personnel in new growth areas.

Four-level Mandatory Technology Education Course for Design Specialists

<table>
<thead>
<tr>
<th>Level</th>
<th>Description</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1</td>
<td>Introductory Training</td>
<td>Up to 1 year of experience</td>
</tr>
<tr>
<td>Level 2</td>
<td>Engineering Training-Basic Courses</td>
<td>1 to 4 years of experience</td>
</tr>
<tr>
<td>Level 3</td>
<td>Engineering Training-Intermediate Courses</td>
<td>5 to 7 years of experience</td>
</tr>
<tr>
<td>Level 4</td>
<td>Engineering Training-Advanced Courses</td>
<td>More than 7 years of experience</td>
</tr>
</tbody>
</table>

Performance Evaluation in Connection with Management Strategies

KEPCO E&C conducts organizational and individual evaluations of all employees on an annual basis, and ensures that efforts are rewarded by fair compensation through a reasonable performance evaluation system. By setting individual performance goals in connection with the strategic directions of Vision 2025, KEPCO E&C’s management goals, the company will be able to achieve its goals in an efficient manner. To ensure that the evaluations are objective, the weight of each index is adjusted in consideration of the characteristics of each department and workforce, and the evaluations are provided to performance managers to enhance their expertise. Finally, the company is able to conduct such evaluations in a fair manner with the help of a performance management organization as well as deliberation and appeal system through the Performance Management Committee.

Reasonable and Fair Performance Evaluation

Established the SAT (Systematic Approach to Training) Program in compliance with IAEA Standards

The Systematic Approach to Training (SAT) is an education development methodology recommended by the International Atomic Energy Agency (IAEA). In order to enhance reliability in job performance, KEPCO E&C introduced the SAT Program in 2015 and established the Personnel Qualification (PQ) management system. According to the system, qualifications required for job performance are identified through a job analysis, in which the company’s professional qualifications levels are established. In ten job areas, 127 PQs were developed, as well as procedures including work performance procedures which were reflected in PQs. Accordingly, the company allows only those who have obtained required qualifications to perform their work. Furthermore, new programs, such as the instructor certification program, were introduced to support the SAT, while education and training regulations, operational guidelines, and other related regulations were modified. Through these efforts, KEPCO E&C received 3.92 out of 4 points in the SAT system assessment conducted by Sargent & Lundy, a firm that provides consulting services in establishing the SAT, thereby being recognized as an educational system in compliance with IAEA standards and regulations. By further expanding the application of the system, 2,190 qualifications have been obtained in 19 job areas as of the end of 2016.
Establishing a Sound Organizational Culture

Supporting a Balance between Work and Family
To help its employees find a healthy balance between work and family life, KEPCO E&C offers various maternity and childcare support policies. Prenatal examination leave has recently been adopted, while the company guarantees maternity leave as an employee’s right and strongly encourages them to take maternity leave. Moreover, the company has opened additional daycare centers in the workplace and improved the conditions of “maternity rooms” for pregnant and nursing employees. Furthermore, KEPCO E&C has adopted the flexible work hour system to promote leisure among its employees. After a pilot test, employees took a survey, providing feedback to fine-tune the system. Accordingly, employees can choose from several flexible systems according to the reasons why they are opting for flexible work—whether it be self-development or childcare. Furthermore, every second and fourth Thursday has been designated as “Self-Development Day,” on which employees are encouraged to depart work on time and spend time on themselves. Finally, the company continues its efforts to enhance employees’ quality of life, for example, offering self-development programs in yoga, baking, etc.

Helping Employees Settle Down in Gimcheon
To help employees settle down and start a new life in Gimcheon after relocating, KEPCO E&C offers support for residential and cultural activities. It provides residential support through temporary company housing, dorms, and support for paying interest on housing funds, while improving living conditions by holding concerts and musicals as well as operating convenience facilities such as a library, café, and dry cleaning service.

With the goal of “establishing win-win labor-management relations by creating a culture of reliability and harmony,” KEPCO E&C makes various efforts to build healthy and reasonable labor-management relations through active communication and cooperation. The labor-management Council, consisting of fewer than ten members with at least three from each side, consults on issues such as employee grievances, working hours, safety, and hygiene. The council’s regulations clearly state its obligation to thoroughly report on management issues including management performance and plans and HR management. In 2016, the company also created the Win-win Labor Management Relation Manual in an effort to establish a labor-management conflict prevention and management system under a multiple union system. Such consistent efforts enabled KEPCO E&C to mark 12 consecutive years of zero labor-management disputes.

Establishing Win-win Labor-management Relations

Labor Union Status

<table>
<thead>
<tr>
<th>(Unit: Number of persons)</th>
<th>Number of Employees Eligible to Join Labor Unions</th>
<th>Members</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Union</td>
<td>1,448</td>
<td>1,433</td>
</tr>
<tr>
<td>Second Union</td>
<td>2,102</td>
<td>20</td>
</tr>
</tbody>
</table>

* As of the first quarter of 2017

Establishing an Open Labor-management Culture
In 2016, KEPCO E&C opened an online one-stop grievance settlement system in connection with the company’s portal, through which all nine of the cases reported were settled. In addition, “Let’s Talk,” an event for employees to openly discuss issues with the CEO, was held twice. Other efforts to build a labor-management culture of open communication include the foundation of “The Seren,” a creative and innovative leaders group to invigorate communication within the company.

Developing Core Independent Technologies

Research and Development Performance

<table>
<thead>
<tr>
<th>Category</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>R&amp;D Cost (Unit: billion won)</td>
<td>78</td>
<td>79</td>
<td>127</td>
</tr>
<tr>
<td>R&amp;D Cost Ratio against Sales (%)</td>
<td>15</td>
<td>15</td>
<td>12</td>
</tr>
<tr>
<td>Number of Patent Applications and Registrations (Domestic)</td>
<td>24</td>
<td>36</td>
<td>32</td>
</tr>
<tr>
<td>Number of Patent Applications and Registrations (Overseas)</td>
<td>11</td>
<td>15</td>
<td>9</td>
</tr>
</tbody>
</table>

Level of Technological Independence in Nuclear Decommissioning Design

83.1%

Supporting flexible working hours with 8 working hours per day, 5 days per week.

In order to secure a basis for advancing energy technologies to achieve the goal of becoming a “Global Leading Energy Solution Partner” under Vision 2025, KEPCO E&C actively pursues the development of technologies for the stable supply and demand of electric power and new growth. With a focus on diversifying technology and building a core basis to strengthen safety-related power plant design technologies, enhance quality reliability, and build new growth capacity, the Power Engineering Research Institute and technology groups under each division play a central role in carrying out various core independent technology development tasks.

Efforts to Develop Nuclear Decommissioning Technologies

With the advent of the nuclear-free era beginning with the decision to permanently shut down nuclear power plant Kori-1, KEPCO E&C is making diverse efforts to achieve complete technological independence in nuclear decommissioning design and secure decommissioning execution ability by 2021. In December 2015, the company signed a decommissioning technology development project with PEL Germany and Westinghouse USA. KEPCO E&C also signed a long-term cooperation system for acquiring technology through, for example, consultations with technology experts and technology transfer education. It also continues its efforts to develop its own technologies.

Government R&D Project
As part of the 5th five-Year Nuclear Research and Development Project by the government, we led the development of the core technology for i-Power/SMR* making contributions to the nation’s technological innovation in the nuclear industry. In 2016, we were recognized for our technological expertise in the PANS** (Passive Auxiliary Feed-water System) and it was designated as the nation’s core technology.

* i-Power: Innovative and safe light-water reactor / SMR: Small modular reactor
** PANS: Passive Auxiliary Feed-water System: A technology that allows safety cooling of nuclear reactors without the need for control by an operator, enabled by a natural driving force mechanism even in the case of power outage in a nuclear power plant

Efforts to Secure Eco-friendly Technologies
In an effort to help achieve the national greenhouse gas reduction target and respond to rising national concerns over micro dust, KEPCO E&C actively pursues the realization of clean thermal energy and development of new & renewable energy design technologies. The company is working toward commercializing carbon capture and storage (CCS) technology through the development of CCS-related design technology and patent applications. Beginning in 2016, the company has played a leading role in developing technologies to optimally reduce fine particles in Korea by starting the development of design technology for fine particles reduction equipment in power plants. At the same time, the company actively pursues technological development for wind, biomass, and solar power.
SUSTAINABILITY & HUMAN RIGHTS PERFORMANCES

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## Economic Performance

### December 31, 2016 and 2014

#### (Unit: KRW)

<table>
<thead>
<tr>
<th>Statements of Financial Position</th>
<th>42nd Period</th>
<th>41st Period</th>
<th>40th Period</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Assets</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current assets</td>
<td>239,534,812,784</td>
<td>241,365,463,775</td>
<td>250,292,243,582</td>
</tr>
<tr>
<td>Cash and cash equivalents</td>
<td>21,452,507,805</td>
<td>15,267,560,438</td>
<td>17,772,877,110</td>
</tr>
<tr>
<td>Current financial assets</td>
<td>2,986,051,119</td>
<td>7,462,977,293</td>
<td>4,192,763,827</td>
</tr>
<tr>
<td>Trade and other receivables</td>
<td>14,710,156,495</td>
<td>22,677,709,523</td>
<td>31,800,361,885</td>
</tr>
<tr>
<td>Due from customers for contract work</td>
<td>137,622,731,087</td>
<td>129,357,478,236</td>
<td>164,022,822,773</td>
</tr>
<tr>
<td>Income tax assets</td>
<td>5,257,387,147</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Inventories</td>
<td>9</td>
<td>9</td>
<td>1,193,495</td>
</tr>
<tr>
<td>Current non-financial assets</td>
<td>15,887,046,536</td>
<td>23,538,848,560</td>
<td>25,495,113,300</td>
</tr>
<tr>
<td><strong>Assets</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total assets</strong></td>
<td>786,595,743,784</td>
<td>855,155,721,311</td>
<td>777,612,449,889</td>
</tr>
</tbody>
</table>

- **Current assets**
- **Non-current assets**
- **Total assets**

<table>
<thead>
<tr>
<th>Liabilities</th>
<th>42nd Period</th>
<th>41st Period</th>
<th>40th Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current liabilities</td>
<td>33,644,415,718</td>
<td>32,284,935,963</td>
<td>31,705,213,712</td>
</tr>
<tr>
<td>Trade and other payables</td>
<td>86,272,920,525</td>
<td>109,034,523,203</td>
<td>117,100,467,380</td>
</tr>
<tr>
<td>Due to customers for contract work</td>
<td>57,574,505,022</td>
<td>76,215,409,011</td>
<td>85,877,401,008</td>
</tr>
<tr>
<td>Current financial liabilities</td>
<td>91,830,900,000</td>
<td>58,281,820,905</td>
<td>65,390,211,034</td>
</tr>
<tr>
<td>Current provisions</td>
<td>42,618,817,705</td>
<td>68,321,523,422</td>
<td>81,431,327,710</td>
</tr>
<tr>
<td>Income tax liabilities</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Current non-financial liabilities</td>
<td>3,058,560,300</td>
<td>1,314,107,690</td>
<td>3,750,764,245</td>
</tr>
<tr>
<td>Current liabilities</td>
<td>1,007,204,922</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Non-current liabilities</td>
<td>30,021,030,290</td>
<td>3,904,000,000</td>
<td>0</td>
</tr>
<tr>
<td>Refundable liabilities</td>
<td>56,441,351,749</td>
<td>9,550,078,034</td>
<td>0</td>
</tr>
<tr>
<td>Non-current non-financial liabilities</td>
<td>29,054,496,627</td>
<td>3,177,354,716</td>
<td>3,167,428,475</td>
</tr>
<tr>
<td>Provisions</td>
<td>32,307,421,088</td>
<td>2,376,969,852</td>
<td>2,092,065,383</td>
</tr>
<tr>
<td>Total liabilities</td>
<td>944,919,537,245</td>
<td>438,702,802,358</td>
<td>410,961,943,023</td>
</tr>
</tbody>
</table>

- **Equity**
- **Shareholders’ equity**
- **Share capital**
- **Retained earnings**
- **Legal reserve**
- **Non-controlling interests**
- **Unappropriated retained earnings**
- **Other equity components**
- **Total equity**

<table>
<thead>
<tr>
<th>Statement of Comprehensive Income</th>
<th>42nd Period</th>
<th>41st Period</th>
<th>40th Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Income from continuing operations</td>
<td>506,012,235,393</td>
<td>657,943,284,844</td>
<td>841,659,293,658</td>
</tr>
<tr>
<td>Service</td>
<td>488,915,859,229</td>
<td>681,702,243,385</td>
<td>692,007,544,064</td>
</tr>
<tr>
<td>Construction</td>
<td>37,030,114,044</td>
<td>175,313,212,238</td>
<td>346,574,964,285</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
<td>0</td>
<td>2,494,750,000</td>
</tr>
<tr>
<td>Total sales</td>
<td>506,012,235,393</td>
<td>657,943,284,844</td>
<td>841,659,293,658</td>
</tr>
<tr>
<td>Service</td>
<td>488,915,859,229</td>
<td>681,702,243,385</td>
<td>692,007,544,064</td>
</tr>
<tr>
<td>Construction</td>
<td>37,030,114,044</td>
<td>175,313,212,238</td>
<td>346,574,964,285</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
<td>0</td>
<td>2,494,750,000</td>
</tr>
<tr>
<td>Profit before income tax</td>
<td>23,417,070,159</td>
<td>31,047,245,952</td>
<td>70,639,249,267</td>
</tr>
<tr>
<td>Income tax expense</td>
<td>5,622,383,199</td>
<td>4,401,581,094</td>
<td>21,709,177,924</td>
</tr>
<tr>
<td>Profit for the year</td>
<td>17,794,687,960</td>
<td>26,645,664,858</td>
<td>48,929,071,343</td>
</tr>
</tbody>
</table>

| Other comprehensive income (loss) for the year, net of tax | 2,520,338,085 | 482,452,523 | 3,843,401,826 |
| Share of remeasurements of the defined benefit liability, net of tax | 11,439,782 | 7,073,883 | 3,843,401,826 |
| Share of comprehensive income of joint venture | 935,913 | 935,913 | 935,913 |
| Share of comprehensive income of joint venture | 935,913 | 935,913 | 935,913 |
| Share of remeasurements of the defined benefit liability, net of tax | 2,520,338,085 | 482,452,523 | 3,843,401,826 |
| Total comprehensive income for the year | 12,740,845,161 | 31,520,050,472 | 40,274,493,086 |
| Earnings per share                | 468           | 816          | 1,429         |

2016 KEPCO E&C Sustainability Report

**Overview**

- Sustainability Issue
- Sustainability & Human Rights Performances
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Environmental Performance

Development of Eco-friendly Technologies

<table>
<thead>
<tr>
<th>Eco-friendly R&amp;D Personnel (Unit: M/M)</th>
<th>Eco-friendly R&amp;D Cost (Unit: KRW million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>240.0</td>
</tr>
<tr>
<td>2015</td>
<td>156.6</td>
</tr>
<tr>
<td>2016</td>
<td>167.5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Water Consumption (Water and Wastewater Consumption) (Unit: Ton)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>45,918</td>
</tr>
<tr>
<td>2015</td>
<td>72,909</td>
</tr>
<tr>
<td>2016</td>
<td>85,223</td>
</tr>
</tbody>
</table>

Greenhouse Gas Emissions and Energy Consumption

<table>
<thead>
<tr>
<th>Category</th>
<th>Unit</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>GHG Emissions</td>
<td>tCO2eq</td>
<td>3,324.15</td>
<td>6,287.95</td>
<td>7,274.62</td>
</tr>
<tr>
<td>Direct Emissions</td>
<td>tCO2eq</td>
<td>665.51</td>
<td>813.70</td>
<td>941.95</td>
</tr>
<tr>
<td>Indirect Emissions</td>
<td>tCO2eq</td>
<td>2,658.67</td>
<td>5,354.25</td>
<td>6,329.02</td>
</tr>
<tr>
<td>Gas Consumption</td>
<td>MWh</td>
<td>103,881</td>
<td>282,985</td>
<td>286,663</td>
</tr>
<tr>
<td>Electric Power Consumption</td>
<td>MWh</td>
<td>3,589</td>
<td>11,494</td>
<td>13,474</td>
</tr>
</tbody>
</table>

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

Waste Consumption (Water and Wastewater Consumption)

<table>
<thead>
<tr>
<th>Water Consumption (Water and Wastewater Consumption) (Unit: Ton)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
</tr>
<tr>
<td>2015</td>
</tr>
<tr>
<td>2016</td>
</tr>
</tbody>
</table>

Municipal Waste Output (Gimcheon)

<table>
<thead>
<tr>
<th>Municipal Waste Output (Gimcheon) (Unit: Ton)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
</tr>
<tr>
<td>2015</td>
</tr>
<tr>
<td>2016</td>
</tr>
</tbody>
</table>

Waste Paper Recycling and Waste Acid Treatment

<table>
<thead>
<tr>
<th>Waste Paper Recycling (Unit: Ton)</th>
<th>Waste Acid Treatment (Unit: Ton)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>80.0</td>
</tr>
<tr>
<td>2015</td>
<td>42</td>
</tr>
<tr>
<td>2016</td>
<td>117</td>
</tr>
</tbody>
</table>

Social Performance

Talent Management Performance

<table>
<thead>
<tr>
<th>Category</th>
<th>Unit</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permanent Personnel</td>
<td>Persons</td>
<td>2,200</td>
<td>2,200</td>
<td>2,200</td>
</tr>
<tr>
<td>Temporary Personnel</td>
<td>Persons</td>
<td>102</td>
<td>67</td>
<td>50</td>
</tr>
<tr>
<td>Male</td>
<td>Persons</td>
<td>2,072</td>
<td>2,000</td>
<td>2,000</td>
</tr>
<tr>
<td>Female</td>
<td>Persons</td>
<td>28</td>
<td>20</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>Persons</td>
<td>2,330</td>
<td>2,270</td>
<td>2,200</td>
</tr>
<tr>
<td>Disabled Employment Rate</td>
<td>%</td>
<td>3.00%</td>
<td>2.99%</td>
<td>2.98%</td>
</tr>
<tr>
<td>New Recruitment</td>
<td>Persons</td>
<td>120</td>
<td>88</td>
<td>71</td>
</tr>
<tr>
<td>Retirement</td>
<td>Persons</td>
<td>81</td>
<td>68</td>
<td>50</td>
</tr>
<tr>
<td>Temporary</td>
<td>Persons</td>
<td>29</td>
<td>29</td>
<td>20</td>
</tr>
<tr>
<td>Education Hours per Person</td>
<td>Hours</td>
<td>118</td>
<td>118</td>
<td>118</td>
</tr>
<tr>
<td>Industrial Accidents Disaster cases</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Labor Union Membership</td>
<td>Persons</td>
<td>1,552</td>
<td>1,483</td>
<td>1,363</td>
</tr>
</tbody>
</table>

* 2014 data have been adjusted following the reestablishment of calculation standards in 2015.

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

* Increase in greenhouse gas emissions in 2015 is the result of emissions being comprehensively managed in the relocated headquarters in Gimcheon Inocity with a plottage that is 3.5 times larger than the former headquarters in Bundang, Jukjeon Innocity in 2015.

* 2014 data have been modified from previous reports according to adjusted calculation standards.

* Please note that KEPCO E&C’s environmental performance data show high-fluctuating values after the relocation of the headquarters to Gimcheon Innocity in 2015.

Social Purchasing

<table>
<thead>
<tr>
<th>Category</th>
<th>Unit</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disabled Persons Enterprises</td>
<td></td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Technology Development Projects</td>
<td>KRW 100M</td>
<td>33</td>
<td>50</td>
<td>40</td>
</tr>
<tr>
<td>Small and Medium-sized Enterprises</td>
<td>KRW 2,398</td>
<td>2,006</td>
<td>1,310</td>
<td>1,798</td>
</tr>
<tr>
<td>Public Procurement %</td>
<td>65.1%</td>
<td>66.5%</td>
<td>66.3%</td>
<td>82.0%</td>
</tr>
</tbody>
</table>

* Public procurement ratio of cost spent in purchasing SME products out of the total annual product purchasing cost (According to the Act on Facilitation of Purchase of Small and Medium Enterprise-manufactured Products and Support for Development of Their Markets, 50% of total purchasing cost is the mandatory ratio)

* Public procurement has steadily increased due to efforts to fulfill KEPCO E&C’s social responsibility as a public enterprise and actively respond to government policies.

* From 2014 to 2015, the purchase of CCTVs and generators (those certified as technology development products) sharply increased due to changes in management conditions and the completion of headquarters relocation.

* Job creation and contract performance decreased due to changes in management conditions and the completion of headquarters relocation.

* Please note that KEPCO E&C’s environmental performance data show high-fluctuating values after the relocation of the headquarters to Gimcheon Innocity in 2015.
Human Rights Management

KEPCO E&C Human Rights Management

KEPCO E&C fully supports the Universal Declaration of Human Rights and does its best to prevent any human rights violations in connection with business management and business relations. The company also strives to comply with the United Nations Guiding Principles on Business and Human Rights (UNGPs) as demonstrated in its major performance in human rights outlined below.

Respect for Diversity and Prohibition of Discrimination
In order to respect diversity and eliminate discrimination based on gender, level of education, race, religion, and other factors, KEPCO E&C makes various efforts to bring about change in people's awareness and improve the related policies. To prevent discrimination based on the form of employment, employees performing work continuing on a permanent basis are considered for permanent employment and are subject to the same salary increase rate and benefit packages as permanent employees. The company fully complies with the Act on the Protection of Displaced Workers and the Act on the Protection of Fixed-term and Part-time Employees, the number of violations of these laws standing at zero as of 2016. In addition, the company bans discrimination and promotes fairness in human resources management by prohibiting unfair and discriminatory factors such as level of education, solicitation, and regional ties in promotion assessments and operating a performance-oriented HR management.

Prohibition of Forced Labor and Child Labor
KEPCO E&C prohibits all forms of forced labor such as involuntary servitude and slavery, grave human rights issues that are taking place on a global scale. At the same time, the company also makes systematic efforts to protect the basic rights of the employees of its suppliers, who may be vulnerable to forced labor. All forms of child labor are also strictly prohibited.

Protection of Motherhood
KEPCO E&C systematically helps its female employees to find a healthy balance between work and home. To make the company’s maternity and childcare policies more practical, the company now allows mothers to divide their maternity leave into two time periods and encourages them to take prenatal examination leaves according to their stage of pregnancy. The company has also opened more daycare centers that are able to accommodate a total of 350 children compared to 140 previously. Furthermore, conditions of “maternity rooms” within the workplace have been improved to better support pregnant and nursing employees. As of 2016, 10.5% of KEPCO E&C’s employees are women.

Strengthening Communication between Labor and Management
KEPCO E&C encourages communication between labor and management through multiple communication channels and various activities. Employees’ grievances are settled through the Labor-management Council, in addition to labor-management workshops and collective bargaining to solve issues in a timely manner. In 2016, various issues were settled by holding collective bargaining and workshops on six and two occasions, respectively. Additionally, the company has designated personnel in charge of employee grievance settlements in order to systematically collect and handle employees’ opinions. The grievance settlement system is further supported by the Grievance Settlement Committee, Grievance Settlement Counseling Center, and the Voices of Employees.

<table>
<thead>
<tr>
<th>Maternity Leave Status</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
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</thead>
<tbody>
<tr>
<td>Male</td>
<td>31</td>
<td>20</td>
<td>44</td>
</tr>
<tr>
<td>Female</td>
<td>12</td>
<td>15</td>
<td>34</td>
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</table>

<table>
<thead>
<tr>
<th>Return-to-Work Rate after Maternity Leave</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
</tr>
<tr>
<td>Male</td>
</tr>
<tr>
<td>Female</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>
Third-Party Assurance Statement

To The Stakeholders of KEPCO E&C

Preface

KFQ was engaged by KEPCO E&C to provide limited assurance on the ‘2016 KEPCO E&C Sustainability Report’ (further ‘the Report’). Our responsibility is to perform a limited assurance engagement and to express a conclusion based on the work performed. KFQ conducted its assurance based on completeness of the data and information provided by KEPCO E&C. KEPCO E&C is responsible for all contents within the Report including the reporting principles and standards.

Independence

KFQ is not involved in the preparation of any part of the Report, other than providing an assurance opinion, and there has been no interest between KEPCO E&C and KFQ. KFQ has no biased opinion on stakeholders of KEPCO E&C.

Assurance Standards

KFQ has designed and implemented assurance according to the following standards.

• AA1000 Assurance Standard 2008
  • AA1000 Accountability Principles Standard 2008
  • GRI Standards
  • ISO 26000. Social Responsibility Standard

Assurance Scope

KFQ identified the followings as its scope:

• KEPCO E&C’s sustainable management activities and performances of the headquarters and all business establishment (domestic and overseas) described in the Report
• Compliance with the guidelines according to GRI Standards Core Option
• GRI Standards compliance assessment regarding contents of the Report and assurance principles of reporting quality
• Application of Type 1 assurance approach according to AA1000 APS 2008 and AA1000 AS 2008 to assess compliance with inclusiveness, materiality and responsiveness principles and reliability of sustainability performance information. The term ‘Moderate Assurance’ used in AA1000 AS is designed to be consistent with ‘Limited Assurance’ as articulated in ISAE 3000.
• Core subjects in ISO 26000

Assurance Procedures

KFQ designed procedures to have reasonable assurance of the Report’s critical errors or inappropriate information. KFQ verified the reliability of the contents, processes and systems of data generation and report preparation.

• Document Review
  We reviewed the reliability of non-financial data in respect of the ‘Sustainability’ by cross-checking the Report with GRI Standards, quantitative data of KEPCO E&C, and internet & media research information. We also confirmed whether or not the financial information mentioned in the Report was correctly derived from internal documents and the audited financial statements from business report on Financial Supervisory Service Dart System (http://dart.fss.or.kr).

• On-site Verification
  KFQ visited KEPCO E&C headquarter and conducted on-site verification to confirm reliability of the sustainability activities and performance data contained in the Report and to evaluate the effectiveness of the reporting process. We performed verification in the accuracy topic of the aggregated data from KEPCO E&C. These procedures included the following:

  1. (Stakeholders Inclusiveness) KEPCO E&C subdivided nine stakeholders into three groups related to the major issues of sustainable management. To hear any concerns and opinions from them, KEPCO E&C had a customized communication strategy for each stakeholder group and reflected their responses and opinions to its sustainable management activities.
  2. (Sustainability Context) In terms of sustainability, KEPCO E&C continues to actively respond to the economic, environmental and social effects that stakeholders require based on the core issues. These sustainable management activities and performances were properly contained in the Report.
  3. (Materiality) KEPCO E&C established issue pools and reviewed by internal guidelines and external assessment criteria (GRI Standards guideline, DJSI, ISO 26000, media coverage, benchmark, and issue analysis) incompliance with the materiality assessment process. We are not aware of any material topics concerning its sustainability performance which have been excluded from the Report.
  4. (Completeness) KEPCO E&C applied reporting scope, boundary and temporal criteria. We confirm that the Report is suitable for stakeholders to assess sustainability performance.

Recommendation for Improvement

For further advanced sustainable management, KEPCO E&C is expected to monitor sustainability performance index for corporate social responsibility in a systematic way, reflect those required improvements on its management activities by setting up medium to long-term plans. In addition, KFQ recommends KEPCO E&C to set up continuous management improvement measures for the key issues evaluated by their engagement.

Resolution of Findings

• KFQ confirmed that some errors, inappropriate information, and ambiguous expressions found during on-site visit were properly reflected in the final Report.

Limitations

The Report has been prepared solely for KEPCO E&C in accordance with the terms of our engagement. We do not accept or assume responsibility to anyone other than KEPCO E&C for our conclusions we have reached in the statement. Completeness and responsiveness of sustainability performance information presented in the Report have inherent limitation due to their nature and the methodology used for determining, calculating and estimating such data.

Opinion

Based on the verification activity stated herein, KFQ confirmed that the Report meets the GRI Standards ‘Core Option’. According to the principles of AA1000 APS 2008 and AA1000 AS 2008, inclusiveness, materiality and responsiveness, sustainability performance information were assessed and KFQ could secure reasonable grounds to provide Type 1 level of assurance with the following confirmation:

1. (Stakeholders Inclusiveness) KEPCO E&C subdivided nine stakeholders into three groups related to the major issues of sustainable management. To hear any concerns and opinions from them, KEPCO E&C had a customized communication strategy for each stakeholder group and reflected their responses and opinions to its sustainable management activities.
2. (Sustainability Context) In terms of sustainability, KEPCO E&C continues to actively respond to the economic, environmental and social effects that stakeholders require based on the core issues. These sustainable management activities and performances were properly contained in the Report.
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Recommendation for Improvement

For further advanced sustainable management, KEPCO E&C is expected to monitor sustainability performance index for corporate social responsibility in a systematic way, reflect those required improvements on its management activities by setting up medium to long-term plans. In addition, KFQ recommends KEPCO E&C to set up continuous management improvement measures for the key issues evaluated by their engagement and mainly focus on them when generating future reports.

August 2017
Seoul, Korea

CEO Nam Dae Hyun
Korean Foundation for Quality (KFQ)
## GRI Standards Index

### GRI Standards Universal Standards (GRI 100)

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<th>Page</th>
<th>Note</th>
</tr>
</thead>
<tbody>
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<td>GRI 101 : Organizational Profile</td>
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<td>Activities, brands, products, and services</td>
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<tr>
<td>GRI 101 : Organizational Profile</td>
<td>102-3</td>
<td>Location of headquarters</td>
<td>3</td>
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<td>GRI 101 : Organizational Profile</td>
<td>102-4</td>
<td>Location of operations</td>
<td>27-28</td>
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<td>GRI 101 : Organizational Profile</td>
<td>102-5</td>
<td>Ownership and legal form</td>
<td>5-6</td>
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<td>GRI 101 : Organizational Profile</td>
<td>102-6</td>
<td>Markets served</td>
<td>5</td>
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<td>GRI 101 : Organizational Profile</td>
<td>102-7</td>
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<td>GRI 101 : Organizational Profile</td>
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<td>1, 5, 34-40</td>
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<tr>
<td>GRI 102 : Strategy</td>
<td>102-14</td>
<td>Statement from senior decision-maker</td>
<td>3-4</td>
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<td>GRI 102 : Ethics and integrity</td>
<td>102-16</td>
<td>Values, principles, standards, and norms of behavior</td>
<td>7-8</td>
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<td>GRI 102 : Governance</td>
<td>102-18</td>
<td>Governance structure</td>
<td>11-12</td>
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<td>GRI 102 : Stakeholder Engagement</td>
<td>102-40</td>
<td>List of stakeholder groups</td>
<td>15</td>
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<td>GRI 102 : Stakeholder Engagement</td>
<td>102-41</td>
<td>Collective bargaining agreements</td>
<td>15</td>
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<td>GRI 102 : Stakeholder Engagement</td>
<td>102-42</td>
<td>Identifying and selecting stakeholders</td>
<td>15</td>
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<tr>
<td>GRI 102 : Stakeholder Engagement</td>
<td>102-43</td>
<td>Approach to stakeholder engagement</td>
<td>15</td>
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<td>GRI 102 : Stakeholder Engagement</td>
<td>102-44</td>
<td>Key topics and conformance</td>
<td>19</td>
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<td>GRI 102 : Stakeholder Engagement</td>
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<td>Entities included in the consolidated financial statements</td>
<td>5-6</td>
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<td>GRI 102 : Reporting practice</td>
<td>102-46</td>
<td>Defining report content and topic boundaries</td>
<td>10-14</td>
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<td>GRI 102 : Reporting practice</td>
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<td>GRI 102 : Reporting practice</td>
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<td>GRI 102 : Reporting practice</td>
<td>102-49</td>
<td>Changes in reporting</td>
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<td>GRI 102 : Reporting practice</td>
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<td>GRI 102 : Reporting practice</td>
<td>102-52</td>
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<td>Contact point for questions regarding the report</td>
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<td>Claims of reporting in accordance with the GRI Standards</td>
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<td>GRI 102 : Reporting practice</td>
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<td>GRI content index</td>
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<td>GRI 102 : Reporting practice</td>
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<td>GRI 103 : Management Approach</td>
<td>103-1</td>
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<td></td>
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<td>GRI 103 : Management Approach</td>
<td>103-2</td>
<td>The management approach and its components</td>
<td>23, 25, 35, 41, 47</td>
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<tr>
<td>GRI 103 : Management Approach</td>
<td>103-3</td>
<td>Evaluation of the management approach</td>
<td>23, 25, 35, 41, 47</td>
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### Economic Performance (GRI 200)

<table>
<thead>
<tr>
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<th>Title</th>
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<tr>
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<td>Direct economic value generated and distributed</td>
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### Environmental Performance (GRI 300)

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<tr>
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<td>57</td>
<td></td>
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<tr>
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<td>305-1</td>
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<td>57</td>
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<tr>
<td>GRI 306 : Effluents and Waste</td>
<td>306-2</td>
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### Social Performance (GRI 400)

<table>
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<tbody>
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<td>GRI 418 : Customer Privacy</td>
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<td></td>
</tr>
</tbody>
</table>
Since joining the UN Global Compact in 2007, KEPCO E&C has complied with the ten major principles in the four areas of human rights, labor, environment, and anti-corruption. The company will strive to be a leading Korean company in global sustainable management by respecting international standards in sustainable management and fulfilling its social responsibility.

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.
## External Evaluations and Awards

<table>
<thead>
<tr>
<th>Award</th>
<th>Year</th>
<th>Organization</th>
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<tbody>
<tr>
<td>Minister of Defense Appreciation Certificate for “One-company, One-barrack” program</td>
<td>2015</td>
<td>Ministry of Defense</td>
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<tr>
<td>President of the Korean Red Cross Appreciation Certificate for establishing customized CSR</td>
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<td>Red Cross Gyeonggi/Branch</td>
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<tr>
<td>2015 Korea Nuclear Technology Award – Group Award for Nuclear Design and Equipment Production (Development BG)</td>
<td>2015</td>
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<tr>
<td>Sustainability Report Award - LACP 2015 Spotlight Awards Gold</td>
<td>2015</td>
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<td>ITER Business Forum 2015 – ‘Invest in Provence Award’</td>
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<td>Marseille Chamber of Commerce and Industry</td>
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<td>Korean National Quality Award, Presidential Award</td>
<td>2015</td>
<td>Korean Standards Association</td>
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<td>2016 Korean Green Architecture Competition, Grand Prize</td>
<td>2016</td>
<td>Gyeongheungonomy Society</td>
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<tr>
<td>Overview Sustainability Issue Sustainability &amp; Human Rights Performances Appendix</td>
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