











# About This Report

The 2014 KEPCO Sustainability Report (hereinafter referred to as the "Report") contains the current status and future of KEPCO to realize stakeholder values and sustainable growth by utilizing energy solutions. Along with an introduction of KEPCO and mid to long-term strategies for Sustainable Management, the Report includes various activities, performance reports, and future plans under the following themes: Realizing customer value, Stabilizing electricity supply and demand, Creating new growth engines for the future, Realizing ecofriendly energy, Coping with climate change, Creating a people-oriented work environment, and Fulfilling our company's responsibility for sharing and mutual growth.

#### The three Main Characteristics of the Report are as follows.

1. Before publishing the Report, KEPCO organized the pool for issues on Sustainable Management by conducting surveys for stakeholders, analyzing media, and benchmarking the global companies that excel in the area of Sustainable Management and overseas utilities. Based on these activities, we have drawn issues on Materiality Assessment ranging from January to December in 2013. After classifying these issues into units with meaning, we divided theses issues into seven themes.

2. As for the major issues regarding stakeholders in 2013, such as complaints on the construction of electricity facilities and crisis management for electricity supply and demand, we provided full and detailed information by seperately organizing special features.

3. This report details the commitment of KEPC0 to CSV management. In April 2014, we announced the plan for introducing CSV management to fulfill value-creating social contribution, and the company has realized activities such as establishing CSV planning system, making the ecosystem for CSV and developing CSV business models.

#### KEPCO celebrates its 10th anniversary of publishing the Sustainability Report.

Since KEPCO published the first Sustainability Report and joined UN Global Compact in 2005 as the first public company to do so in Korea, KEPCO has consistently communicated with stakeholders with various perspectives.

- 2006 Best Award for the 1st Sustainable Management Awards (Seoul School of Integrated Sciences and Technologies)
- 2007 Best award for LOHAS Management Awards (Korea Green Foundatior Best Award for Korea Sustainable Management Awards (Hanky Ung)
- 2008 Appointed as the UNGC Notable COP (UN Global Compact) Best Award for the sustainable management sector of Global Green Management Awards (Korea Management Association)
- 2014 Best Award for the sustainability report sector of LACP Vision Awards in the U.S. (League of American Communications Professionals)

#### **Reporting Standards**

The 2014 Sustainability Report is based on the G4 Guideline of GRI (Global Reporting Initiative), ISO 26000, and the principles of the UN Global Compact. The reporting standards and definitions of financial data are in accordance with the IFRS (International Financial Reporting Standards).

#### **Reporting Period**

This report contains quantitative performance data from January 1, 2013 to December 31, 2013, and a part of activities and achievements of great importance performed by June 2014 is also included. No significant change in the corporate size, ownership structure, or business occurred in the reporting period.

#### Reporting scope

This report deals with KEPCO's performance for Sustainable Management. For the content about the eco-friendliness of the supply chain (environmental investment expense, CO<sub>2</sub> emissions and air pollutants), we have reported data from six GENCOs (Korea Hydro & Nuclear Power, Korea South-East Power, Korea Midland Power, Korea Western Power, Korea Southern Power and Korea East-West Power) whose shares are fully owned by KEPCO.

#### **Report verification**

KEPCO has been verified by the Korea Productivity Center, an independent verification institution, to secure the report process and data credibility. As for the standard for verification, the AA1000AS (2008) verification standard and AA1000APS verification principle by Account Ability are applied. The result of the verification is included in the Verification Report.

#### Distribution and feedback

This report is published in Korean and English versions. The feedback for the report from stakeholders is being collected through various channels such as our website, e-mail, and telephone. We are waiting for and appreciate your diversified opinions and suggestions.

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Dear Stakeholders, I really appreciate your unceasing care and interest in KEPCO. KEPC0 is striving continuously to communicate with people through energy, create current values for stakeholders, and enhance future values through mutual growth. This report contains KEPC0's efforts and performance for sustainable energy and a better future, as well as directions that we should follow. Last year, we carried out meaningful activities in various sectors, including sectors for credibility and communication, enhancing company values, and sharing values and mutual growth, based on our core values for stable electricity supply.

First, KEPCO is creating a company on trust by listening to customer opinions and communicating with people in person. We are constantly asking ourselves the question about the essence of the electricity industry, not just depending on our reputation as an energy company leading the 116-years of history of electricity in Korea. The answer was clear to us: without confidence, we cannot have a future in the electricity industry. KEPCO has put in great efforts in making a company based on trust by constantly communicating with stakeholders, including customers, local communities, and relevant institutions. We overcame the crisis in electricity supply and demand last summer through the united efforts of the people, companies, and industries. Overcoming all crisis, the light that lit up the seemingly endless tunnel proved to be Communication, as shown in such instance as the eight-year-long conflict over the construction of Miryang transmission lines, which was resolved through communication with local residents. I really appreciate the local residents who sincerely empathized with our government-led business despite the tough circumstances. KEPCO will become the most trusted Public Company and representative energy company, listening to the voices of stakeholders based on communication and trust, which is the foundation of the electricity industry.

Second, KEPCO is enhancing future values by strengthening overseas and new growth businesses. In 2013, we achieved an annual overseas business sales exceeding three trillion won for the first time. Having unrivaled brand value in the overseas market, KEPCO is leading, in the creation of jobs and national wealth by carrying out exports in different ways, such as developing and operating power plants in the UAE, Mexico, Saudi Arabia, and Kazakhstan. KEPCO is currently considering the realization of a world with "Sustainable Energy for All People". In October last year, we held the Daegu World Energy Congress (WEC) and sought a solution for the "Energy Trilemma" with 7,500 participants from 123 countries, including CEOs of prominent Energy Companies and Energy Ministers from across the world. We have held serious discussions at home and abroad on energy issues such as Climate Change and Resource and Energy Imbalance. In response to these issues, KEPCO is preparing for a new era of creative energy. We will focus on the improvement of efficiency in energy consumption, such as smart grids, energy-saving equipment, high voltage direct current (HVDC), and micro-grids, and produce clean energies for future generations by continually expanding renewable energies, such as solar and wind power.

Third, we are spreading love and happiness for all people by sharing the warm energy of hope. KEPC0 is creating a warm-hearted energy world by carrying out the "Eye Love Project," which helps people at home and abroad, threatened with blindness, to recover their eyesight, and expanding energy welfare so that more people can enjoy the basic right of using energy. As well as small and mid-sized companies (SME), social enterprises are engaged in energy conservation activities. In 2013, KEPC0 held an Exhibition for Mutual Growth in the electricity industry for the first time in Korea and supported SMEs by expanding their opportunities for entering into the market at home and abroad, pioneering in the overseas market. KEPC0 will continually promote programs for mutual growth with SMEs until the small-but-powerful companies can stand on their own feet. Plus, we will create more jobs for the underprivileged by carrying out the business of supporting social enterprises to help them to develop further. KEPC0 will open the world of energy with hopes of creating sustainable values together with our partners.

In November 2014, KEPCO will start a new century at Naju Innovation City beyond the headquarters at Samseong-dong. Seoul. By moving to new headquarters, we will seek measures for realizing mutual growth with local communities and develop Naju as a New Energy Valley. Your unceasing support will be a great boost for our great future. We will become a Public Company with a modest but aggressive position, keeping to the middle way and encouraging innovation based on creativity. We will gather sincere hearts and energy to create more shared values and communicate much more closely with customers. I hope that you continue to give KEPCO your unceasing support and care. Thank you.

KEPCO CEO & President Cho Hwan-Eik

**Power Industry & KEPCO Overview** 

#### **Electric Power Industry**

Electricity is generated and consumed instantaneously, and the power grid and generation plants essentially have no storage. For stable power supply, reserve facilities are critical. The national grid is geopolitically isolated, leaving no chance of importing or exporting electric power, and Korea is highly dependent on imported energy resources (about 96%). Power is generated in southern provinces and consumed in the metropolitan areas, which requires long distance transport of electric power. Demand for power is not easily regulated by the market mechanism, and large investments are necessary to construct electric power facilities in order to ensure supply capacity.

#### Industry Structure and Responsibilities of KEPCO

At present, six GENCOs, independent power producers and community energy suppliers, generate electric power. KEPCO purchases electric power via the Korea Power Exchange and sends it through its transmission and distribution grid to end users. KEPCO is a corporation incorporated under the Korea Electric Power Corporation Act for the purpose of promoting power development, stabilizing power supply and demand, and contributing to the national economy. KEPCO is classified as a market-based Public Corporation under the Act on the Operation of Public Organizations. KEPCO is carrying out the development, generation, transmission, distribution, and sales of power, technology research and development, overseas business, investment or contributions, and the utilization of its real estate assets.

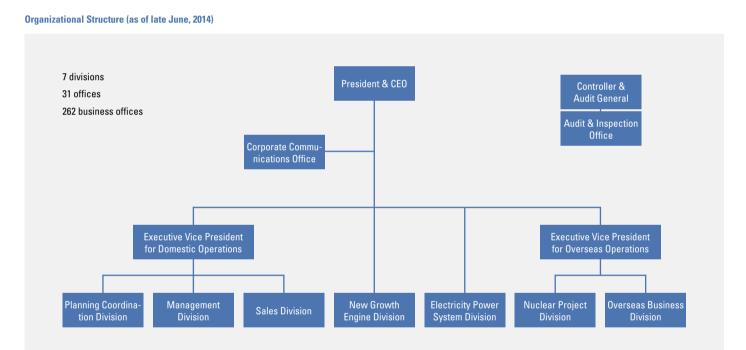
#### Organization

KEPCO has two objectives: enhancing public interest through reliable power supply and increasing profitability through efficient resource distribution. We strengthen horizontal cooperation between organizations and departments while focusing our capabilities on core and strategic businesses.

#### **Company Overview (as of late December, 2013)**

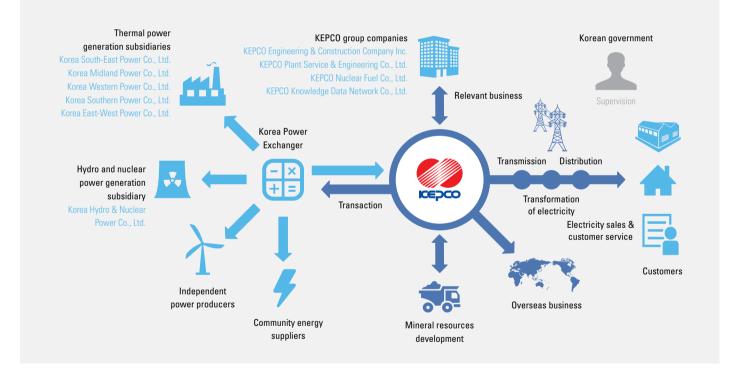
Company name	Korea Electric Power Corporation (KEPCO)
Headquarters	#512, Yeongdong-daero, Gangnam-gu, Seoul, K
Subsidiaries	Korea: 10 subsidiaries including generation cor
	and group companies
	Overseas: 27 subsidiaries including KEPCO-inve
	companies and local offices
Public listing	Korea Exchange (1989, KRX),
	New York Stock Exchange (1994, NYSE)
Assets	155 trillion won
Sales	54 trillion won
Number of employees	19,644
Volume of electricity sales	474.8 billion kWh
Shareholders	Korea Finance Corporation 29.93%
	Government 21.17%
	Foreigners 23%
	Minority shareholders and others 25.90%

#### **Domestic Power Industry Structure and the Role of KEPCO**



#### **KEPCO** History

Lit the first electric lamp in Korea (Geoncheon- gung Palace in Gyeongbok Palace)	Founded Han- sung Electric Company	Completed Supung Hydro- electric Power Plant	Korea Electric Company was established (after the inte- gration of Korea Electric Power Company, Gyeongsung Electric Com-	Completed the nation's first Kori Nuclear Unit 1	Renamed Korea Electric Power Corporation	Listed on the Korea Stock Exchange as People's Share No. 2	Listed on the New York Stock Exchange	Won the first overseas generation project (Malaya Thermal Power Plant in the Philippines)	Completed the Jeju-Haenam submarine transmission line (101km)	Celebrated the com- pany's 100th anniversary / Completed Ulchin Units 3, the Korean Standard Nu- clear Power	Spun off six generation subsidiaries
1897	1898	1944	pany, and South Korea Electric Company) 1961	1978	1982	1989	1994	1995	1997	Plant 1998	



lines		Report / Joined UN Global Compact	Business Divi- sion system
	947/618		
2002	2004	2005	2006

Created KEPCO Completed voltage upgrade to 220V Won the

/ Published the first Sustainability

for distribution / Started power sup- Edison Award /

ply to Kaeseong Industrial Complex Established the

independent

Social Service

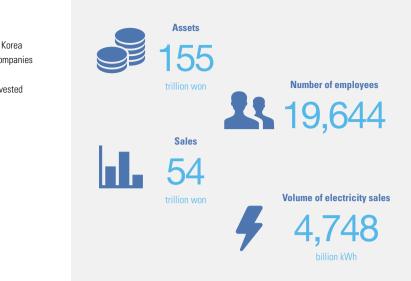
Team

Commercial

operation of

the first 765kV

transmission



Won the first nuclear power plant project (LIAF)

Rescue Squad

Created KEPCO Began the support for socially responsible companies / Completed Jeju Smart Grid Pilot Project / First concrete placement for the first unit of UAE nuclear power plant

2010





Held Daegu WEC (World Energy Congress) / Surpass 3 trillion won in annual overseas sales for the first time / Ranked top for eighth consecutive years in the integrity survey of the Anti-corruption & Civil Rights Commission / Ranked top for the 15th consecutive years in

Custome Satisfaction Survey

2013

Transferred headquarters (to Bitgaram Innovation City, Gwangju, Jeollanam-do) / Received the Vision Awards for Sustainability



# **KEPCO Value System & Sharing Practice**

How can we make a sustainable future and create happiness for human beings?

KEPCO finds the solution in energy. We create new values by developing clean and smart energy technologies and contribute to economic and social development by entering into the global development track. We also fulfill our social responsibilities, driven by our love for our fellow men, by sharing energy with all. With unceasing challenges and innovation, KEPCO will create a happier and better future.





SPECIAL FEATURE

#### "Vision Plus and Guidebook for Action" for sharing values



#### Portal site for sharing visions, "Vision Plus"

In December 2013, KEPCO opened "Vision Plus," a portal site for sharing and internalizing visions for executives and employees. The site is based on the concept that the completion of visions and strategies comes not from a superficially good system, but from internalization and action by members. The key to internalization and ensuring action is the act of sharing. Beginning with this concept, Vision Plus provides participatory content, such as easy and fun video clips for sharing visions, terms for strategies, and articles about

these visions. With great support from members, the number of views for the site surpassed 120,000 as of July 2014.



Back to the basics! Facing both, the crisis of environmental change and the expectations of a new era, KEPCO executives and employees are currently recognizing the importance of the basics again. As a desirable Guidebook for promoting action, "Empathy and Action" contains basic attitudes and a Code of Conduct to create a "warm-hearted" KEPCO, gaining public confidence by innovating corporate culture. For the headquarters and national business sites, a total of 4,200 copies of the Guidebook were distributed, and it has been accepted as the guideline for sharing the value system.



SPECIAL FEATURE

"Realizing economic profits and social contribution values simultaneously" "Fulfilling warm-hearted growth by continually carrying out a new profit-sharing business model"

#### PLAN FOR INTRODUCING KEPCO CSV



For the first time as a public company, KEPCO has established the "KEPCO Plan for the Introduction of CSV." which presents a Social Contribution model based on CSV (Creating Shared Value) in April 2014.

WHY CSV? As one of the most trusted public companies in Korea, KEPCO should pursue both public interest and profitability. We have introduced CSV as a management paradigm to create a system for creative economy and mutual growth.

#### **HOW WILL CSV BE ACHIEVED?**

To launch CSV successfully, KEPCO has established the goal of "Achieving Public Happiness through Creating Values." For a company-wide strategic CSV, we have set up the planning department at the headquarters as the general department for CSV and will firmly establish the CSV system by establishing a CSV Advisory Group and CSV Business Systems based on the network among KEPCO, KOICA, and civil groups. The company will expand cooperative R&D efforts with SMEs, such as the domestication of electricity equipment components, and create a CSV system in which mutual growth is realized by fostering industryacademic cooperation clusters.

#### WHAT KIND OF CSV BUSINESS MODELS ARE **BEING OPERATED BY KEPCO?**

Along with carrying out practical CSV businesses, KEPCO is operating and will continue to operate three domestic and overseas businesses, respectively, to equipment. With the cooperation of KOICA, we will

Domestic Business	Overseas Business
Rooftop solar power business	Electricity supply for overseas remote regions business
- Sharing development profits from welfare facilities and schools	<ul> <li>Micro-grid with connecting renewable energy and ESS</li> </ul>
Renewable energy farm	Electricity facilities improvement business for developing countries
- Profitable business for neighboring electricity facilities	<ul> <li>Improving and exchanging aged electricity facilities</li> </ul>
Developing carbon reduction technologies	Electricity technology education business for developing countries
- Carbon dioxide capture technologies such as IGCC, CCS, etc.	- Establishing on-site technology education academies

Providing electricity to remote regions in the overseas countries: KEPCO provides the disadvantaged in developing countries with electricity by supplying a micro-grid, combining cutting-edge technologies such as renewable energies and energy storage

WHAT IS CSV?

CSV means pursuing economic profit and social contribution while performing the company's original management activities. This is a new management paradigm by which a company fulfills its social responsibilities in a new way beyond the existing CSR (Corporate Social Responsibility).



secure new profit sources and improve energy welfare.

Rooftop solar power business: In this solar power development business model, rooftops at schools and welfare facilities will be utilized. KEPCO manages demands by producing electricity for peak times while creating profits from operating solar power plants and reducing CO<sub>2</sub> with eco-friendly energy.

Renewable energy farm: KEPCO provides participating residents with profits by carrying out renewable energy business for supporting local residents in areas where electricity facilities are constructed. The solar power energy project in Miryang is a typical example.

Developing carbon reduction technologies: KEPCO operates eco-friendly complex plant business (IGCC-SNG), which produces electricity and synthetic natural gas by utilizing low rank carbon, and CCS development business, which compresses, stores, and utilizes CO<sub>2</sub> by capturing it with high purity. With these projects, CO<sub>2</sub> can be saved on a national scale and KEPCO can realize overseas exports and the development of cutting-edge clean technologies.

prepare the foundation for overseas business orders, creating profits by operating a global CSV business.

Electricity facility improvement business for developing countries: KEPCO enhances the level of energy welfare for the underprivileged in developing countries with obsolete electricity facilities by carrying out electricity infrastructure improvement projects by utilizing the ODA of KOICA. The company will create a basis for massive business orders and make profits by operating ODA businesses.

Electricity technology education business for developing countries: By supporting developing countries to foster human resources for electricity technology, KEPCO enhances the countries' capability to operate electricity business, secures profits from operating education programs, and expects to establish a cooperative network and seek follow-up business.

In the future, KEPCO will continually develop new growth business models for sharing profits and creating a sustainable energy environment to make win-win relationships with all stakeholders.

# **2013 Sustainability Management Highlight**

### Appointed as the Best Company with anti-corruption competitiveness for eight consecutive years

The only Public Company to achieve this, KEPCO was appointed as the Best Company in the Assessment for Anti-corruption Competitiveness by the Anti-corruption and Civil Rights Commission of Korea for eight consecutive years.



## Achieved the best level of customer satisfaction for fifteen consecutive years

KEPCO overcame the electricity supply crisis by conducting electricity conservation campaigns based on public consensus and achieved the best level of customer satisfaction for fifteen consecutive years by improving its customer-oriented system.

**Appointed as the Company with Best Governance Structure for six** consecutive vears

In the Korea Corporate Governance Service's assessment of the governance structures of 693 companies. KEPCO was appointed as the Best Public Company for six consecutive years.



# +21.8%

11.53

World-class electricity quality

Thanks to the efforts to secure credibility in

minutes in SAIDI and achieved 3.73% in T&D

loss rate by using high-efficiency infrastructure

and intelligent probability for electricity volume.

electricity supply, KEPCO recorded 11.53

## Increased the company value by 4.3 trillion won, creating surplus for the first time in six years

KEPCO improved the management efficiency by disposing assets and reducing expenses and created a surplus for the first time since 2008, with stock value increasing by 21.8% and market value by 4.3 trillion won.

# Zero

## **KEPCO** overcame the crisis in electricity supply and demand by communicating with the public

KEPCO carried out the movement for saving electricity by using SNS with three million people, realized a zero level for crisis in rolling power cuts by performing an electricity conservation campaign with executives and employees, and reduced critical power shortages by 37 days.

# **Environmental** Management

## **Acquired the Certificate for Environmental Management**

Based on the performance of saving resources and energy, reducing greenhouse gas and fulfilling social responsibility for the environment, KEPCO acquired the Certificate for Green Management system from the Korea Foundation for Quality, and achieved eco-friendly management performance by obtaining the Global Certificate for Energy and Carbon Management from the Carbon Trust Company, UK.

# Dry CO<sub>2</sub>

### **Developing technologies** for new global values

KEPCO began the construction of Asia's largest CO2 capture wet plant with 10MW and a CO2 capture dry plant, being the first in the world to implement 10MW.

**-21**% number of safety related accidents

## by 21% by expanding a companywide Safety Management system along with partner firms

The number of on-site accidents reduced by 21%, by expanding safety and health management systems for not only all the primary business sites and KEPCO headquarters, but also to all 587 partner firms.

Reduced the

# **Smart Grid** Station

## First in the world to establish a Smart Grid Station

Based on the electricity grid, KEPCO established the Smart Grid Station, which collectively controls photovoltaic power generation, Energy Storage Systems (ESS), Advanced Metering Infrastructure (AMI), and systems for charging electric cars, and is leading the expansion of smart grids at home and abroad.



# Awards for the Best Environmental Company

## Ilijan Power Plant received the awards for the Best Environment **Management and Best Environmental Company**

In addition to receiving the best award for environment management from the Ministry of Environment, Philippines. KEPCO was awarded as the Best Environmental Company by the Chamber of Commerce and Industry in the Philippines. By winning these awards, KEPCO has once more been identified as a trusted company in the global market.



## First of the public enterprises to introduce the program utilizing **KEPCO** brand for SMEs

By utilizing the brand power of KEPCO, we have proactively supported exports by using "KEPCO Trusted Partner," a program that uses the KEPCO logo to build trust. Through this effort, export contracts by SMEs increased by 73% compared to 2012.

# **Conflict Management**

## Appointed by the Ministry of Trade, Industry and Energy as the best case in solving conflicts over the construction of transmission and transformation facilities

At the early stage of selecting sites, KEPCO formed the committee for selecting sites by including various stakeholders such as local governments, representatives of residents, and academic circles. Based on public opinion, we have successfully carried out the project, and the construction of Sinjungbu transmission lines with 765kv. This case was selected as the best case of the year to deal with conflicts by the Ministry of Trade, Industry, and Energy.

# Creating & Distributing Economic Values

#### Creating economic values (by separate criteria)

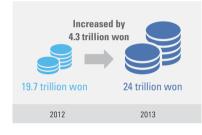
Category	2011	2012	2013
Sales volume	455,070	466,592	474,849
(GWh)			
Sales	431,382	493,349	536,924
(100 million won)			
Operating profit	- 32,952	- 26,928	2,630
(100 million won)			
Net income	- 35,141	- 32,266	2,383
(100 million won)			

In 2013, KEPCO provided 21,018,000 customer units in Korea with electricity in a stable manner and established a basis for creating social values. In the middle of the economic recession, the electricity sales in 2013 was 474,849GWh, which increased by 1.8% as compared to 2012. As for the composition of type of contracts, electricity for industry accounted for 55.9%, regular use for 21.5%, households for 13.9%, and other sectors for 8.7%.

In terms of company value in 2013, KEPCO achieved a surplus both in operating profit and net income for the first time in six years since 2007. Based on consolidated financial statements, operating profit was 1 trillion and 519 billion won, while net income was 174.3 billion won. Sales amounted to 54 trillion and 37.8 billion won, which increased by 9.3% compared to last year. With an increase in electricity bills, sales revenues were 50 trillion and 488.4 billion won, which increased by 9.2% compared to last year. In 2013, KEPCO created a surplus, which was achieved by self-supporting efforts worth 2 trillion and 800 billion won in stabilizing fuel prices, increasing sales cost, selling shares, and returning wages. To secure public confidence by performing a leading role in reducing its debts as a Public Company, KEPCO has established the largest self-help plans on the largest scale in the company's history and will achieve the goal of debt reduction at an early stage by promoting voluntary participation by all the employees. For these objectives, we have organized the Group for Management Innovation, which conducts the role of the control tower for innovation and reform in the overall management. Under this group, we operate three emergency organizations, including Emergency Planning Committees for debt reduction, preventing lax management and innovating systems and culture.

Although we are in a harsh management environment with a slowdown in the growth of electricity demand, continual regulations on electricity price, reinforcement of greenhouse gas reduction, and skyrocketing energy prices, KEPCO will strive to enhance financial performance by carrying out efficient management by continualy creating new profits and reducing costs and operating reasonable cost systems such as the fuel cost pass-through system.

#### **Company value (total market value)**

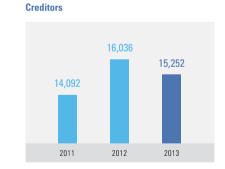


#### Net income (for separate criteria, unit: 100 million won)

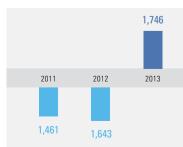


Distributing economic values (for separate criteria, unit: 100 million won)





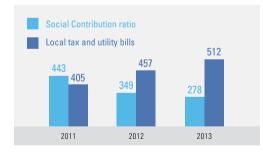
Government



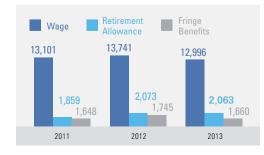
Affiliated Companies



#### Local community



#### **Executives and employees**







# reporting methodology



# **Materiality Assessment** and Selection of Major Issues

KEPCO has conducted the materiality assessment by complying with the important issues recommended by GRI G4 Guideline such as the process of identifying material aspects and setting the boundaries to select major issues that will be reflected in the report. To carry out the materiality assessment process, we identified major issues related to Sustainable Management by utilizing various methods to collect internal and external issues. We decided priorities in line with impacts on stakeholder assessment and the decision-making process, and the importance of economic, environmental, and social impact in terms of business. We also conducted verification and a deliberation process for effectiveness in compliance with the principles of report consistency.

#### Process for Materiality Assessment and selection of major issues



# Step 2 Prioritizing Sustainable Management issues

Materiality principles, Compliance with participation principles by stakeholders



mpleteness, Compliance with participation principles by stakeholders

#### Materiality Matrix



• Impact Influence & Impact Significance with high importance (): Creating economic values, coping with climate changes, stakeholder participation, strategies for social contribution, etc. • Impact Influence with high importance (): Preventing on-site safety accidents, efforts to reduce energy use, enhancing customer satisfaction, preserving biodiversity, etc.

• Impact Significance with high importance (IC): Stability in electricity supply and demand, creating new growth engines for the future, R&D and innovation, expanding overseas business, etc.



#### Methods for drawing major issues

No	Major issues	Material Aspect	Classification				Boundary				Limitation	Report
		(connection with GRI G4)	based on		Internal				External			
			importance	Domestic	Overseas	Subsidiary	Customer	Local	Governmental	Cooperative		
								community	institution	firm		
1	Creating economic values	Economic performance	A	•	•		•		•			Creating and Distributing Economic Values p. 10
2	Coping with climate change	Emissions	A	•	•	•		•			Gathering only domestic greenhouse gas data	#5 Coping with Climate Change pp. 60-65
3	Stakeholder participation	Stakeholder engagement	A	•	•	•	•	•	•	•		Stakeholder Participation p14 15
4	Strategies for	Local communities	A	•	•		•	•			Quantitative performance is only for domestic data,	#7 Fulfilling Our Responsibility for Sharing and Mutual
	social contribution										while qualitative performance deals with both domestic and	Growth pp. 74 79
											foreign data. Energy welfare is targeted for customers.	
5	Developing eco-	Environmental product	A	•	•	•			•	•	Cooperative research tasks with subsidiaries,	#3 Creating New Growth Engines for the Future (Reinforcing
	friendly technology	& Services									government institutions, and partner firms	Technological Competitiveness for High-added Value) pp. 48 49
6	Creating quality jobs	Employment	A	•	•			•	·			#6 Creating a People-oriented Work Environment
	5 1	1.1										(Open Employment) pp. 66 68
7	Respecting diversity	Diversity &	Α	•	•		•	•	·			#6 Creating a People-oriented Work Environment (Open
	in human resources	equal opportunity										management, Happy and Pleasant Workplace) pp. 66 68, p. 71
8	Strengthening the capacity	Training & education	A	•	•			•	·			#6 Creating a People-oriented Work Environment
	of executives and employees											pp. 66 67, p. 69
9	Risk management	Risk management	A	•	•	•	•	•	•	•		Risk management pp. 24 25
10	Eco-friendly	Additional issues other	A	•	•	•		•				#4 Realizing Eco-friendly Energy
	management system	than GRI G4 aspects										(Environmental Management System) pp. 52-54
11	Prevention of on-site	Health and safety	В	•	•		•	•		•		#6 Creating a People-oriented Work Environment
	safety accidents											(Management on Health and Safety) pp. 66-67, p. 73
12	Efforts to reduce	Energy	В	•			•				Quantitative performance is only for domestic data, while	#4 Realizing Eco-friendly Energy
	energy use	-									qualitative performance deals with both domestic and foreign	(Improving Environmental Efficiency) pp. 52 53 ,p. 57
											data. Campaigns to save energy for all people are carried out.	
13	Preserving biodiversity	Biodiversity	В	•				•				#4 Realizing Eco-friendly Energy (Transportation Stage)
												pp. 52 53, p. 57
14	Improving customer	Product & service labeling	В	•			•				Satisfaction level is carried out only for domestic	#1 Realizing Customer Value pp. 30 35
	satisfaction										customers (the nation).	
15	Stabilizing electricity	Availability and credibility	C	•	•	•	•	•	•	•	Main mission is to stabilize domestic electricity supply.	#2 Stabilizing Electricity Supply and Demand pp. 36 41
	supply and demand											
16	Creating new growth	Additional issues other	C	•	•							#3 Creating New Growth Engines for the Future pp. 42 5
	engines for the future	than GRI G4 aspects										
17	R&D and innovation	Research & reliability	C	•	•	•			•	•	Part of the research tasks is carried out for technological	#3 Creating New Growth Engines for the Future
											development by cooperating with government institutions.	(Reinforcing Technological Competitiveness for
											-	High-added Value) pp. 42 43, pp. 48 50
18	Expanding	Additional issues other	C		•					•	Reinforcing the support for SMEs to enter into the	#3 Creating New Growth Engines for the Future
	overseas businesses	than GRI G4 aspects									overseas market	(Accelerating the Advancement into the Global Market)
												pp. 42 43, pp. 46 47

### KEPCO has not only reviewed the internal data for 2020 mid and long-term strategies and management objectives but

Identifying Sustainable Management issues and setting boundaries

also identified the company's Sustainable Management issues by analyzing media, checking issues in similar good companies on the global stage, and international standards for Sustainable Management. We have reflected the current trends on Sustainable Management by adding special announcement issues of the GRI G4 in the international standards for Sustainable Management, Electricity Utility Index, and benchmarking factors for similar companies. Through these processes, we have drawn a total of 34 issues.

#### Methods for deciding major issues

Internal data	Identifying major issues in economics, environment, and society by analyzing 2020 mid and long-term strategies and management objectives and the 2013 sustainability report
Media	Analyzing articles related to Sustainable Management from the media in 2013 (304 in total) and categorized articles by common issues (46%), economics (23%), environment (5%),
	and society (27%) $\rightarrow$ Issues about stakeholder communication, creating economic values, and social contribution were reported with high frequency, while negative issues were also
	analyzed, including violation cases of environment impact assessment, non-recruitment of the handicapped, and insufficient management of waste utility pole.
Benchmarking	Comparing and analyzing issues of best global companies for Sustainable Management in the electricity industry $\rightarrow$ Coping with climate change, strategic social contribution activi-
	ties, and safety and health were identified as issues with top priority.
Global CSR index	Drawing major issues in the international standards related to Sustainable Management, such as GRI G4 (including Electricity Utility Index), ISO26000, DJSI, etc.
Survey	Conducting surveys for stakeholders such as executives and employees, external CSR experts, and customers to draw major issues (July 3-11)
	-> Stability in electricity supply and creating new growth engines for the future were selected as major issues for executives and employees. External stakeholders take a great inter-
	est in issues such as stability in electricity supply, electricity demand management, and safety and health according to the analysis.



#### Deciding priorities in Sustainable Management issues

Based on the list of major issues, KEPCO conducted a Materiality Assessment for the importance of economic, environmental, and social impacts and influence on stakeholders' decision-making process and focused on considering major issues from the assessment with a balanced perspective.

As a result of the Materiality Assessment, issues such as creating economic values, coping with climate change, stakeholder participation, and social contribution were drawn as issues with high materiality. An especially high level of interest was reflected in issues such as KEPCO creating a surplus, which had recorded deficit for five consecutive years, securing financial soundness (creating economic values), expanding regulations on greenhouse gas (coping with climate change), including an emission trading system, and communication with local communities for the construction of electricity facilities (stakeholder participation).

#### Verification of effectiveness and review

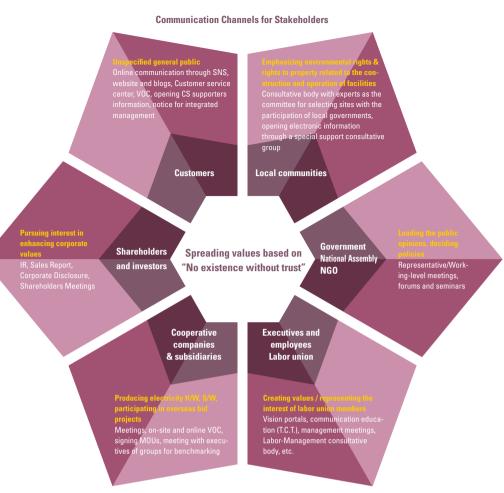
Factors reflected in the report and the boundaries of major issues drawn by the result of Materiality Assessment are as follows. This report particularly deals with the Disclosure on Management Approach (DMA) and index performances for major issues required in the GRI G4 Guideline comprehensively.

## **Stakeholder Communication and Participation**

"No existence without trust": This phrase defines the management activities by KEPCO in 2013. All the executives and employees at KEPCO focus on trust, which is the foremost requirement for creating values for all stakeholders, and listen to various opinions and advice from our stakeholders.

Stakeholders are defined depending on the characteristics and impacts of issues, and we are operating customized communication channels meeting stakeholder needs. KEPCO stakeholders are classified into customers—people using electricity, shareholders and investors focusing on the improvement of company values, local communities with emphasis on the rights to property and environment related to facility construction and operation, the government, National Assembly and NGOs—who are the players in carrying out policies regarding the electricity industry, executives and employees—who create values; and partner firms and groups related to electricity supply and overseas business.

In 2013, KEPCO reinforced online channels by vitalizing SNS and overhauling the website to secure the foundation for credibility and open communication with stakeholders, shared core current issues in the electricity industry, including the operation of the committee for selecting sites for facility construction, and carried out sustainable value-creating activities with stakeholders by opening transparent information such as information on electromagnetic fields.



Stakeholder	Major issue	Communication for issues and efforts by KEPCO	Detailed contents
Customers	Sharing crises in electricity	• Expanding the participation in SNS electricity conservation campaign, promoting electricity saving efforts for all employees	Realizing customer value (pp. 30~35)
	supply & demand /	(July-August 2013), Implementing demands control system	
	Improving service quality	Meeting with five consumer groups (February 2014), operating and recruiting the group of college student supporters (July 2013),	
		operating CS leaders (from April 2013), reforming the website by focusing on customers (December 2013)	
Shareholders	Improving profitability	Enhancing financial soundness by transferring into the surplus and implementing efforts for reducing debts	Creating and distributing economic values
& investors	Risk management	Conducting Shareholder Meetings, IR, and Corporate Disclosure regularly	(p.10)
Local	Rights to property	Establishing and operating the committee for selecting sites with the participation of local residents	Fulfilling our responsibility for sharing
communities	for local community /	- Procedure for operating the committee for selecting Sinjungbu Substation site: Enacting standards for appointing members and	and mutual growth (p. 74)
	Environmental rights,	operation $ ightarrow$ Deciding a candidate band $ ightarrow$ Appointing candidate sites $ ightarrow$ Visiting the sites $ ightarrow$ Reducing the number of	
	safety and health	candidates $\rightarrow$ Deciding the optimal site (July 2013)	
		• Preparing for the enactment of the law on compensation and support for the area near transmission and transformation of	
		electricity facilities and passing the law in the National Assembly (December 2013)	
		Organizing and operating the on-site civil office (with a total of 219 members) for the construction area with facilities (August 2013)	
		Opening the measured values for electromagnetic fields in transmission lines on the website (November 2013)	
Cooperative	Mutual management	Holding the presentation for policies regarding mutual growth by the CEB (February 2013) and communication with the	Fulfilling our responsibility for sharing
companies	with partner firms /	management by visiting SMEs (three times in total)	and mutual growth (p. 74, pp. 81~83)
& groups	Co-development with	• Holding exhibitions for mutual growth with SMEs (April 2013) and consulting periodically to pioneer the sales routes at home and abroad	
	cooperative groups	<ul> <li>Signing an MOU and benchmarking for exchanging human resources and operating businesses with overseas electricity</li> </ul>	
		operators (August, September 2013)	
		<ul> <li>Holding a meeting with presidents from company groups every two months, while establishing a new cooperative system</li> </ul>	
		for R&D and performing co-demonstration businesses	
Government,	Cooperation with the	Sharing issues regularly on conflicts about transmission lines in Miryang, preparing the enactment of the law on compensation and	Stabilizing electricity supply and demand
National	government and National	support for the area near transmission and transformation of electricity facilities and passing the law in the National Assembly (December 2013)	(pp. 36~41) / Managing regional conflicts
Assembly,	Assembly / Improving	Holding the Daegu World Energy Congress (WEC) and discussing current affairs including the crisis for electricity supply and demand	for facility construction and supporting
NGO	electricity system /	• Establishing the network with civil groups such as Korea NGO's Energy Network (July 2013), listening to public complaints, attending	measures (pp. 80)
	Solving problems relating	meetings for policies and conducting campaigns for energy conservation preparing for the crisis for electricity supply and demand (August 2013)	
	to public inconvenience by	• Signing an MOU for cooperation between Korea Meteorological Administration and KEPCO to enhance accuracy in predicting electricity	
	cooperating with civil groups	demands (July 2013), etc.	
	and public institutions		
Executives &	Making a flexible corporate	• Conducting a campaign for abolishing authoritarianism, sending communication mails by the chief (10 times), sharing visions and core	Creating a people-oriented work
employees/	culture / Company-wide	values, communication education (T.C.T, June 2013-Feburary 2014), special lectures by the management (regularly), etc.	environment (pp. 66~73)
labor union	cooperation based on the	• Holding Labor-Management workshops and discussion meetings based on business site units (71 times), participating in 50 tasks for	
	confidence between Labor	efficient management with high intensity based on the consensus between Labor Union and Management	
	Union and Management		
	for current issues		

# Fulfilling Stakeholders' Right to Know

#### **Customers - VOC, Information Disclosure**

KEPC0 has carried out various activities to form a consensus on electricity services for the public. We have drawn up measures for service innovation by conducting diagnosis and assessment for service from various perspectives, such as holding meetings with five consumer groups, including the Green Consumer Network in Korea, operating field experience programs for electricity service with 90 CS supporters consisted of college students, and developing new ideas. The company is also operating VOC to ensure the management of service quality meeting customer needs. The operation performance for VOC (Voice of Customer) in 2013 resulted in a total of 21,000 cases.

#### VOC operation performance for 2013

Item	Cyber	Customer center	Other systems	Telephone	Others	Total
Case	12,204	6,945	1,891	242	199	21,481

Performance of information disclosure and Integrated Management notice in 2013

Information [	Information Disclosure		Integrated Management		
information		Notice			
information	information	Items for	Number of		
disclosure	disclosure	notices	Notice cases		
requested	approved				
charging	deciding to				
information	disclose				
disclosure	information				
416	378	49	14,572		

## Performance of Corporate Disclosure in 2013

Items	

Cases

Disclosure

## Local communities-Creating the Committee for selecting sites and disseminating information on electromagnetic fields

In the case of constructing electricity facilities, KEPCO is listening to complaints from candidate regions for facility construction by operating an organization for public discussion and T/F for dealing with complaints from the stage of appointing sites. We are also establishing a basis for mutual confidence and communication with local residents by having the management visit the sites, holding presentation meetings for residents, and operating field experience programs. Thanks to these efforts, we successfully decided the location of the Sinjungbu Substation 2013, and this was appointed as the best case for dealing with conflicts by the Ministry of Trade, Industry, and Energy. Considering the growing interest in environmental impacts and safety regarding electricity facilities, such as media reports about the safety of electromagnetic fields, KEPCO is operating the Electromagnetic Field Experience Center and providing a measurement service by using the menu for displaying information on electromagnetic fields on the KEPCO website (www.kepco.co.kr) to resolve anxiety and controversy over electromagnetic fields and provide the people with accurate information. We have set up and operated the system for measuring the amount of electromagnetic fields from transmission towers and changes in electromagnetic fields before and after the construction of electricity facilities at six branches in the country to enable the dissemination of information on electromagnetic fields.

### Cooperative companies / subsidiaries – Presentation meetings for mutual growth, VOC, establishing cooperative network

In February 2013, KEPCO held a presentation meeting for promoting mutual growth by the CEO for about 700 workers from SMEs to create a system for mutual communication and cooperation with SMEs. While carrying out on-site visit programs and communication between the management and SMEs, we have not only discussed the way to pioneer new domestic and foreign sales channels but also listened to and improved a total of 41 cases of VOC. We are also proactively supporting overseas exports by overhauling the mutual growth website and have solved a total of 84 cases of complaints through cyber consultations for SMEs. The company is also regularly communicating with J-Power of Japan and State Grid Corporation of China to establish a cooperative network with global electricity companies and has signed an MOU for exchanging business information and human resources with European utility companies. Meanwhile, KEPCO is strengthening the cooperative system based on management with autonomous responsibility by electricity company groups. We are carrying out the role of moderatorsby holding meetings with the Presidents of groups every two months and discussing management information and current affairs. In January 2014, we re-established cooperative relations between KEPCO and its subsidiaries for the enhancement of synergy within groups of electricity companies.

## Government / National Assembly / NGO – Sharing core current issues and establishing a cooperative system

KEPCO has shared core current issues in the electricity industry, such as the construction of electricity facilities and electricity supply and demand crisis, with relevant institutions including the government, National Assembly, and NGOs. We have realized the improvement of electricity systems by listening to various opinions and utilizing communication channels, such as consultative body with government officials, National Assembly seminars, and civil organization networks. The legal compensation system for fundamentally solving construction complaints was passed in the National Assembly (December 2013). The company secured consensus for the cooperation for saving electricity by promoting the crisis for electricity system with relevant institutions, such as signing an MOU with the Korea Meteorological Administration (August 2013), we have created cooperation-based performance, including improvement in the accuracy of predicting electricity demands.

### Executives and employees / Labor Union - Expanding trust-based two-way communication channels

KEPCO has implemented communication education (T.C.T.) along with sending communication mails by the CEO to all employees to expand two-way communication channels between the Management and employees. We are also expanding Labor-Management communication channels by creating a Labor-Management consultative body and holding workshops, while carrying out social volunteering activities for local communities and participating in fifty tasks for highly efficient management based on the agreement between Labor and Management.

Meanwhile, KEPCO is proactively carrying out the task of dissemination of information to realize transparent management. 243 cases of information on major business plans and bidding with significant impacts on the people's lives are disclosed on the website prior to receiving requests from the people. The ICT Planning Office, which is in charge of disseminating information, has increased the ratio of external advisors (from 2 external members and 4 internal members to 3 external members and 3 internal members) to enhance fairness in deliberating disclosed information, launched the FAQ sector for major non-disclosure cases in the second half of 2013, and operated the Customer Advisory Group for disseminating information. KEPCO is also striving to operate the Integrated Management Announcement system, by using the ALIO system and external websites. In 2013, a total of 14,572 cases for 49 items were posted, and we have put in great efforts to enhance the understanding level of the public on Information Notices, by explaining difficult terms.

#### Shareholders / Investors-Corporate Disclosure, IR at home and abroad

To offer reasonable support to the decision-making process for investors, KEPCO is providing financial and non-financial information, such as management activities and governance structure, in a timely manner by carrying out various IR activities including Corporate

Regular	Fair Disclosure	Autonomous	Status of group	SEC Disclosure	Total
Disclosure		Disclosure	companies		
4	16	28	4	42	94



#### What is the Miryang transmission lines construction project?

The business involving the construction of Miryang transmission lines is a part of the construction project for high-voltage transmission lines between Shin-Kori and North Gyeongnam to convey electricity produced from Shin-Kori Nuclear Power Plant to the Yeongnam region. This project covers a total of 90.5km in five cities and counties, including Ulju, Gijang, Yangsan, Miryang, and Changnyeong, and involves the construction of a total of 161 units of transmission towers.

Although the construction for four cities and counties except Miryang was completed in May 2013, the construction of 52 units of towers passing four townships from among a total of 69 units passing Miryang was delayed for three years till the beginning of the construction in October 2013 due to complaints against the construction. As of July 2014, construction is under way across Miryang, and 29 towns among 30 towns with units, which equals 97%, have agreed on the construction.

#### What efforts did KEPCO make?

KEPCO has strived to ensure continuous communication and agreement by approaching various organizations and consultative bodies to solve the conflicts over Miryang transmission lines.

• Formed the committee for dealing with conflicts in Miryang by the Anti-corruption & Civil Rights Commission of Korea (December 2009 – June 2010, 23 meetings in total)

Formed the committee for the improvement of compensation system by Citizens' Coalition for Economic Justice (November 2010 – September 2012, nine general meetings and 14 working-level meetings), held meetings seven times (August to October 2011)
Held meetings between KEPCO and local residents (May to July 2011, 18 meetings in total)
Working-level consultation with the local Resident Planning Committee Against Construction project

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Face-to-face talk with local residents against the construction of transmission lines in Miryang

(October to November 2012, three times in total)
Separate consultations held 71 times and consultation at visiting huts were held 33 times
Held a Public Hearing (Discussion on validity for the construction of transmission lines and solutions for problems regarding rights to health and wealth in December 2012)

#### What was the solution for conflicts in 2013?

For 2013, KEPCO strived to listen to on-site opinions and expand the scope of communication for drawing social consensus. As the CEO visited Miryang 26 times, and the Miryang headquarters with special measures was launched, we have made great efforts to begin conversations with the local residents. We have also continually shown our sincere attitude towards the project by supporting eye surgery for residents in Miryang, providing special rest areas, and carrying out activities to clean the Miryang River.

KEPCO has also strived to draw social consensus. From May to July in 2013, we formed a Consultative Body consisting of nine experts recommended by the National Assembly, local residents, and the government. From August 2013, we have provided the Consultative Body with special support, comprised of 21 members including experts for solving conflicts, local residents, KEPCO, and the government, and drawn a consensus on the plan for providing villages with special business expenses. It was also important for KEPCO to prepare a reasonable compensation system. Along with arranging a visit to the National Assembly by all the executive members, we had a collective discussion to collect opinions from stakeholders and experts by holding 11 general meetings and 20 working-level meetings. Through these efforts, the company has proactively strived to make the "Legislations on the Compensation and Support for Areas near Transmission and Transformation of Electricity Facilities" for ensuring reasonable compensation, and ultimately, preparing practical measures for compensation.

As of July 2014, the construction of transmission towers in Miryang has entered the final stage without problems. Without the firm decision of residents for the construction as a utility business for the people, this project would not have been realized. In the continuous conflicts that lasted nine years since 2005, we have learned the lesson that listening to the opinions of residents who are against the company's plans is valuable and an important requirement for developing the electricity industry further.

#### Finding ways to communicate beyond conflicts

As a result of overcoming problems and solving them through communication, KEPCO has found consensus with local communities for solving conflicts over three businesses other than the Miryang project.

In December 2013, we achieved the target of drawing a consensus on the construction business for transmission lines between Gusan and Saemangeum in six vears. As for the construction business for Cheonawon Sinjungbu transmission lines and substations, the company formed the Committee for site selection. which consists of local governments, representatives of residents and experts, from the selection stage. We also started an office for dealing with complaints by dispatching employees on site, which resulted in not only making a mutual agreement between KEPCO and local residents in January 2014, but also being appointed as the Best Case for Dealing with Conflicts of the Year by the Ministry of Trade, Industry, and Energy. In terms of the construction business for transmission lines with 345kV between Sinpocheon and Sindeok, we resolved the conflict by considering the stance of residents, and in October 2013, we won the Best Award for the Best Project by the Korea Project Management Association.



Consensus on the construction of Gunsan-Saemangeum transmission lines

## Part 1

## Standard Disclosure

# sustainability management



# **Power Industry Trend Reports**

#### Prospect for increasing rate in energy consumption by region (2035)



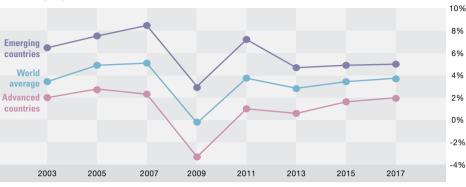
IEA World Energy Outlook 2013

## **Shifting of Global Energies**

#### Shifting of economic powers

While advanced countries have struggled with sluggish economies, emerging countries have experienced an increase in population, which induces larger demands in electricity, water, and food. Non-OCED countries, such as China and India, have started to lead the global economic growth, which signals the beginning of the movement of economic powers.





#### Shifting of power in the energy market

Power in the global energy market is swiftly moving from the Middle East to U.S. regions. U.S.A., Canada, and Brazil are emerging as major oil-producing countries. U.S.A. and Central and South America are major shale gas fields, while Canada is a major oil sand field. Due to this power shift in the energy market, major resource importers, including Korea, need a new approach to strategies for producing resources.

#### Shifting of the awareness in energy

Human beings are confronting climate change crisis and resource depletion. While the global economy is in the middle of limitation of growth due to indiscreet consumption of resources, countries such as China, India, the Middle East, and Central and South America are showing a continuous increase in energy demands. Increasing demand for energy is directly connected to greenhouse gas emission, which leads to climate change. Although various movements for coping with climate change in the world are underway, greenhouse gas emissions are still on the increase and damage due to climate changes such as hurricanes and tsunamis have frequently occurred. Regulations on environment in various countries to prevent climate change have become strong threats as well as opportunities to the energy industry.

#### **Environment of the Global Power Industry**

#### Expanding electricity demands led by emerging countries

With the global economic crisis and the EU financial crisis, many advanced countries have experienced economic downturn, and the electricity demand by the OECD has shown a slow increase, up only by 0.1%. On the other hand, emerging countries such as China, India, and the Middle East, have a rapidly increasing demand rate, up more than 1.6%. With the focus on emerging economies, it is expected to expand opportunities to enter broader energy markets.

#### Stepping towards energy efficiency

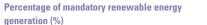
Efficient energy consumption has been realized by drawing solutions for the energy crisis through improving efficiency in the energy consumption sector and saving energy with innovation in battery technologies. With the expansion of ICT-based demand management, the era of the Negawatt is coming, which will substitute the establishment of new plants.

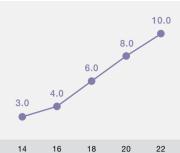
#### Vitalization of policies coping with climate changes

Global attention is growing in environmental regulations for coping with climate change. The EU is preparing measures to vitalize the market and prevent prices for emission rights from plummeting. China has launched the markets for emission trading in seven regions, and the U.S. is operating a plan for coping with climate change. Policies for materializing low-carbon power composition will continuously appear, such as Renewable Portfolio Standard (RPS), Renewable Fuel Standard (RFS), Energy Efficiency Resource Standard (EERS), and Carbon Tax.

#### Adjustment of nuclear power plant ratio is prolonged

After the Japanese earthquake and accident at Fukushima Nuclear Power Plant in 2011, the controversy over the safety of nuclear power plants has been raised and major advanced countries have given up operating plants. The "Renaissance of Nuclear Power Plants" is on the verge of disappearing. The needs for ensuring the technological safety of nuclear power plants and economics in the overall cycle are increasing, and based on Western European countries, movements for scaling back or abolishing nuclear power plants are carried out. While nuclear power markets in the Middle East, Eastern Europe and South Africa are still actively operated, a new type of market is attracting attention, such as the improvement of decrepit power plants and decommissioning businesses.





## Domestic policies for coping with climate change and low-carbon energy

Major policy directions for coping with climate change include reducing greenhouse gas, expanding renewable energy generation, and improving energy efficiency. To reduce greenhouse gas, the carbon emission trading system will be implemented in 2015, and the carbon tax on the amount of carbon in fuel is on the agenda for enactment. Renewable Portfolio Standard (RPS) has been implemented from 2012 to expand renewable energy generation. As part of the policy to improve energy efficiency, the Energy Efficiency Resource Standard (EERS) is expected to be implemented from 2015 to induce the reduction of energy consumption by end users.

## Overcoming the electricity supply shortage crisis and its prospect

Following the incident in 2012, electricity supply shortage crisis occurred in 2013 once again. Reasons for this crisis include various factors, such as electricity demand that exceeded expectations, delay in the planned construction of generators, increased number of breakdowns in generators, spike in electricity demand due to inexpensive electricity bills, expansion of businesses with high levels of electricity use, etc. We overcame the crisis in 2013 by carrying out various activities for demand management, including the public campaign for saving energy. After the summer of 2014, the crisis for electricity supply is likely to be mitigated as the capacity for supply is expanded.

## Carrying out construction of electricity facilities based on social consensus

As conflicts over rights to property and environment regarding the construction of transmission and transformation line facilities are surfacing, material and non-material expenses to solve social conflicts are skyrocketing. People are also expressing their concerns over the additional installment of facilities for processing nuclear waste. To enhance the supply of electricity facilities, KEPCO requires a transparent and fair process for facility construction based on trust with stakeholders and must approach the rights to property and environment more deeply.

KEPCO is establishing business models to prepare for the era of big data and Smart Grid expansion, as well as structural changes in the electricity industry. It is expected to have various effects such as creating a new industrial ecosystem and attracting new market participants by creating new services and jobs.

## Preparing for the era of energy storage

KEPCO is carrying out overseas businesses in various sectors including thermal power, nuclear power, and renewable energy generation to overcome limitations on the growth of the domestic electricity market. Based on our extensive experience and knowhow, we will speed our advance toward achieving 40,000 dollars in national income by making the electricity business a high value-added export husiness

## Stakeholder communication and strengthening credibility

To construct electricity facilities based on social consensus, KEPCO is preparing to carry out measures to promote stakeholder participation in all the stages, from setting up a plan to the actual construction. In addition to reasonable compensation in accordance with the law on compensation and support for the area near transmission and transformation of electricity facilities, which will be implemented from July 2014, we will continuously strive to minimize environmental impact by reinforcing assessments of environmental impacts and developing eco-friendly construction methods.







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## Focusing on demand management and expanding dispersed generation with renewable energy

## **Environment of the Domestic Power Industry**

The 2nd Basic Plan for National Energy, made in January 2014, focuses on the management of the demand and the expansion of dispersed generation with renewable energy. By reforming the system for tax on energy and payment to induce reasonable electricity consumption, the prospected demand for electricity in 2035 is expected to be reduced by more than 15%. By 2035, dispersed generation systems will account for more than 15% of the total amount of generation, and the goal to supply 11% of renewable energy has been proposed. Through these efforts, it is likely to expand self-generation at locations of dispersing power plants. Meanwhile, the proportion of nuclear power will be maintained at 22-29% of total electricity facilities by 2035.

## Challenges for KEPCO

KEPCO is preparing for the new challenge of realizing sustainable energy for all, by considering global energy trends and environmental changes in the electricity industry at home and abroad.

#### New era of the power industry and new business model

KEPCO will invest 650 billion won in developing and vitalizing energy storage systems (ESS) by 2017. With ESS, electricity can be charged at night with low demand for electricity at a cheaper cost, and discharged in the daytime; thus reducing the electricity peak and solving the problem of disturbance in the quality of renewable energy generation.

#### Advancement into the global growth movement

# **Strategies** for sustainable management

#### Strategies for sustainable management

In 2014, KEPCO redefined the vision for sustainable management, which refers to "Creative Energy Leader for Creating Sustainable Future Values," and established eight tasks for four main strategic directions. We have analyzed risks and opportunities by drawing core issues based on each task and elaborated the system for sustainable management by presenting core performances and short and long-term goals. Considering the level of urgency, importance, and impact based on each strategic task for sustainable management in the future, we will make mid and long-term specific plans for sustainable management to create sustainable values with customers, local communities, and executives and employees.





#### Organizations and tasks for sustainable management

Since 2005, KEPCO has operated an organization for CSM (Corporate Sustainability Management) to perform sustainability management in a systematic way. The Planning Office manages overall tasks related to sustainable management, and the operational organization is composed of 262 business places in 31 offices (departments) as of June 2014. In 2013, we held a workshop for staff working at major operational departments, and in 2014, we operated customized education programs and workshops for each department three times, reinforcing communication for sharing our directions for sustainable management. In July 2014, KEPCO won the Best Award in the sustainability report sector in the Vision Awards by LACP (League of American Communications Professionals) in the U.S.

## Mid and long-term objectives for sustainable management

Strategy goal	Task for strategy	Performance index	Goal for 2013	Performance in 2013	Achievement rate	Goal for 2014	Mid and lo	ng-term objectives
							Year	Objective
Creating economic	Stability in electricity	Load rate (%)	75.8	77.1	102%	75 and over	2018	76 and over
value	supply and demand	Reduction in peak time (10,000 kW)	375	606	162%	200	2020	680 and over
	Creating new growth	Capacity for overseas generation facility (GW)	4.3	4.2	98%	4.6	2020	28
	engines for the future	Construction process rate of nuclear	27.9	27.3	98%	45.4	2020	100
		power plants in the UAE (%)						
		Overseas sales (trillion won)	2.9	3.1	107%	4.3	2020	16.6
		Securing core strategic technology	19	19	100%	32	2020	103
		(cases, total)						
		Personnel with capacity in overseas	1,383	1,383	100%	1,513	2020	10% and over
		business (people)						among all employee
Realizing	Expanding Green	Underground wire construction rate (%)	15.6	15.5	99%	15.7	2022	21 and over
eco-friendly energy	Managemnet	T&D loss (%)	3.75 and below	3.73	101%	3.7 and below	2020	3.7 and below
		Environment investment (100 million won)	39,000	38,037	98%	39,500	2020	45,000
	Coping with	Greenhouse gas emission (CO2-1,000 tons)	2,211	1,439	154%	1,829	2020	1,590
	climate change	CDP (rank)	Entering into	3rd rank	100%	2nd rank	2020	1st rank
			one of the major	in energy utility		in energy utility		in energy utility
			five energy utilities					
		Registering to the UN for CDM business	26	27	104%	28	2020	28
		(cases, total)						
Strengthening	Improving	Customer satisfaction (score)	98.3	98.6	100%	98.7	2018	98 and over
stakeholder	customer value	Time for power loss (min.)	11.88	11.53	103%	11.19	2020	8.1
partnerships	Fulfilling our	Volunteer hours per person (hr./person)	15.5	15.8	102%	16	2020	20
	responsibility for	Number of volunteer efforts	11,000	11,043	100%	11,500	2020	13,000
	sharing and	Support for eyesight recovery operation	100	107	107%	100	2021	1,004 in total
	mutual growth	(people)						
		Rate of purchasing products of SMEs (%)	68.5	69.0	101%	70	2018	70 and over
		Amount of exports for Overseas Busienss	4,369	6,285	144%	7,542	2018	9,050
		(10,000\$)						
Creating a	Securing	Hours spent in training and education	80	87.8	110%	90	2020	100
people-oriented	future-oriented	(hr./person)						
work environment	human resources	Rate of recruitment for female workers	20	28	140%	20 and over	2020	20 and over
		(%, employees with 4th position)						
	Creating a safe and	Accident rate (%)	0.026	0.025	104%	0.023 and below	2020	0.02 and below
	happy workplaces	Employee Satiscation (score)		74.8	101%		2020	76 and over

INTERVIEW

#### Son Dong-yeong, Chief of Korea SR Strategy Research Institute

#### What do you think about the conditions for a sustainable company?

A sustainable firm is not just a long-standing company with financial soundness. A sustainable company has economic responsibility based on credibility, practices environmental responsibility, demonstrates the resilience to endure various crises such as climate creating social contribution. It can be considered as a change, and fulfills social responsibilities. Financial



antee sustainability: a non-financial elements, the so called ESG, which is composed of environment, society, and governance structure.

In April 2014, KEPCO

20

#### introduced its management paradigm for CSV (Creating Shared Value). What do you think about the company's efforts for social contribution that creates social value?

The ultimate objective of CSV in KEPCO is national happiness, which is also the goal for realizing valuecombination of the original values of social contribusoundness does not guar- tion and economic values. Carrying out volunteering work is insufficient to persuade all of the company's company should fulfill its stakeholders. The introduction of CSV in KEPCO has been carried out at the right time with the right content. However, I hope that the ultimate result is not a result-oriented paradigm whose only focus is on the success or failure of CSV-type business models. The process itself is much more important.

In consideration of changes in management

environment and stakeholder needs from the perspective of CSV, what do you think is the fundamental value that KEPCO should pursue with CSV?

The fundamental value from CSV does not come from making a profit. Most people think that the development and success of business models, compatible with the objectives of CSV, are the ultimate result. As KEPCO has already pointed out, it is more important to develop an ecosystem for CSV. For example, it is desirable to expand R&D by cooperating with SMEs and vitalizing industry-academy cooperation clusters. Through achievement in these areas, business models can be vitalized and encouraged as well, and this is what I consider the most realistic and practical application of CSV. As you can see in the meaning of "shared value," I hope that KEPCO focuses on these efforts with stakeholders.

## **Governance Structure**

#### **Performance by the Board of Directors**

1st meeting (January 8) Revised terms and conditions for supply and tive version)

 The 6th long-term plan for facility (tentative version) Settlement of holding 2nd meeting (January 17) nanies for Norte Project

#### in Mexico (tentative ve 9th meeting (July 18)

Revised Articles of Ass

ciation (tentative version)

Revised the regulations

on employment (tentative

 Merged EFI with STM and nvestment in kind for EFI

new stocks (tentative version

[Other report] Measures for

electricity supply and demand in the summer seasor

10th meeting (August 22)

Korea electrical Engineerin & Science Research Institu

Abolished the list of

emporary shareholder

first half year for 2013

· Mid and long-ten

shareholders for holding a

ng (tentative version) • Reported the result of the

11th meeting (September 26)

agement goals for 2014-2018

Reported the result of audit

by Audit Department for the

second quarter to external

12th meeting (November 6)

ttee and standards

Organized the Nomin

for assessing candidates

shareholders for holding a

ng (tentative version)

supply and supplementer supply in accordance with

modified electricity bill

welfare (tentative vers

Office reord

13th meeting (November 28

temporary shareholder meet

Revised the provisions on

(tentative version)

Closed the list of

for 2013-2017 (tentative

ment of ICT center in Naju (tentative version Investment of the evnens in developing flaming coal mines in Bylong, Australia in 2013 (tentative version)

3rd meeting (February 21) AFSIFAP (tentative version) Set the limit on rem neration for directors in 2013 ntative version) Report for the result of annual audit in 2012

4th meeting (March 14) separated the financial statements and supplementary documents for the fiscal year of 2012 /to Held the 52nd regular shareholder meeting (tenta tive version) Report for the operation of

internal accounting manage ment system for 2012

5th meeting (April 18) Deokso Substation with 154kV (tentative version) Established and funde holding companies to operat Nohi Son Project in Vietnam [Other report] Current
 issues and future plan for the construction of trans lines in Miryang

6th meeting (May 7) Abolished the list r shareholders for holding a temporary shareholder me ing (tentative version) Held the 53rd regula shareholder i tive version)

#### 7th meeting (May 16)

KEPCO Medical Center Revised the regulation: on management of salary and welfare
 Established and funded overseas corporate body to operate the Fujeij Wind Power Project in Jordan

#### 14th meeting (Decembe Plans for research and

version)

· Reported the result of the audit by the Audit Depart ment for the first quarter to 2014 (tentative version) · Plans for budget, opera tion and loan for external 8th meeting (June 20) funds in 2014 (tentativ

 Mid and long-term fina cial management plan

(tentative version)

#### **Composition of the Board of Directors**

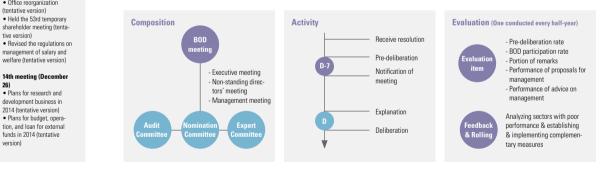
For a sustainable and independent decision-making of the Board of Directors (BOD), KEPCO appoints the majority of BOD members from experts outside the company. The BOD consists of seven executive (standing) directors including the CEO and eight nonexecutive (non-standing) directors. The BOD is chaired by a non-standing director in order to ensure a free and fair discussion about overall business management. The external directors are those experts in the areas of economics, academics, and engineering who contribute to sustainability management by providing advice in business management.

#### Appointment and term in office of directors

The appointment procedure and term in office are specified in the Act on the Operation of Public Organizations and the Articles of Association. When appointing the CEO, KEPCO receives applications for the candidate. The CEO is recommended by the Nomination Committee, consisting of non-standing directors and non-government members, requested by the Minister of Trade, Industry, and Energy, and finally appointed by the President for a three-year term. With a two-year term, a standing director is appointed by the CEO after the resolution of the shareholders' meeting. Among the standing directors, those who will also act as audit committee members are recommended by the Nomination Committee, approved by the Steering Committee, requested by the Minister of Strategy and Finance, and appointed by the President. Non-executive directors also have a two-year term and are recommended by the Nomination Committee, approved by the Steering Committee, requested by the Minister of Strategy and Finance, and appointed by the President. To ensure diversity and representativeness of the BOD members, we are diversifying the scope of institutions recommending candidates for external directors by asking the Ministry of Gender Equality and Family to recommend candidates for female executives. The company reinforces the independence of the committee by excluding the participation of standing directors in the Nomination Committee and includes and operates the detailed standards for candidates in the operation regulations of the committee to ensure professionalism, which includes understanding of the electricity industry and extensive experience in management.

#### **Operation of BOD and prevention of conflict of interests**

The BOD deliberates and votes on important management issues such as management goals, financial management plan, budgets, and electricity tariff in accordance with the Articles of Incorporation and the BOD regulations. Tasks on sustainable management are carried out by the Planning Team, and the director of the Planning Coordination Division is in charge of operating the tasks. The matters regarding economic, environmental, and social performance are separately reported to the BOD. Major issues regarding sustainable management, such as the current condition of the construction of the Miryang Transmission Lines, reinforcing measures for safety management, measures for electricity supply, and demand for summer season, are reported to the BOD by the directors of relevant teams or departments. Related risks are managed by supplementing insufficient elements. If necessary, the BOD invites experts or any concerned persons to listen to their opinions. A director who has special interest with a resolution is not allowed to vote on the resolution under the BOD regulations. After closing the BOD, we communicate with our stakeholders by creating and posting the minutes with the date and time, place, list of participants, resolutions, and vote results. The minutes are disclosed on the KEPCO website, excluding confidential management issues. The executive directors may not carry out for-profit activities in accordance with the article that prohibits the concurrent holding of more than one office under the Act on the Operation of Public Institutions.



#### **Executive directors (Standing members)**



Cho Hwan-ik

Former Vice Minister of the Ministry of Trade, Industry, and Energy



Former prosecutor of Busan & Daejeon District Public Prosecutor's Office





Former Chief of Planning Coordination Division



President of Overseas Onerations Park Jeong-geun



Chief of New Growth Engine Division Kim Byeona-suk

Former Chief of Power Technology & Engineering Division



Division Gu Bon-wu

> Former Chief of Marketing & Operation



Division



years

manager informa

wly app ion-exec

Support on-sit

# Best company in 6 consecutive

Comprehensive assessment for cor-

porate governance structure, society & environment (Korea Corporate Governance Service)

## Vitalization of BOD

In order to invigorate the board operation and realize responsible management, KEPCO has established various systems, introducing self-assessment system for operation performance of the BOD, publishing a monthly brief to strengthen distribution of management information, and holding workshops to develop the job capabilities of newly appointed non-executive directors. Based on this operational system for the BOD, the company has been appointed as the best public company in the assessment of corporate governance by the Korea Corporate Governance Service for six consecutive years

#### Maximizing the non-executive directors' competency

ng ent on	Monthly brief & daily mail- ing services for providing management information	F
for inted itive s	Explaining & discuss- ing major tasks such as electricity transactions & rate systems	
ng ent	Construction site of nuclear power plants in the UAE, thermal power plants in Jordan & the Philippines	Portion o

#### Preliminary deliberation rate

58 8% 2011

#### **Executive directors (Non-standing members)**





Chief of Incheon branch of

Lim Ju-hwan

23

# Received ESG A grade in 2013

Testing & Research Institute

Jeong Hae-ju

Chief of the BOD

Chairman of Korea

KEPCO Sustainability Report 2014

Advanced Technology (New material) Kim Juna-hvun

Professor of Chemical

Engineering at Yonsei

University



cations)





Chief of Planning Former Executive Vice President of

Management Suppor Strategy Division Division

Coordination Division Paek Seung-iung

Former Chief of Overseas Business

#### Assessment and Compensation

The CEO signs a pact with the Minister of Trade, Industry, and Energy with respect to management objectives and key issues to be achieved and addressed during his or her tenure. The progress made with regard to this pact is reviewed by the Performance Appraisal Board for Public Corporations, which is composed of experts from various fields. Executive directors sign a pact with the CEO and are evaluated for performance-based remuneration, while the reappointment of non-executive directors depends on the result of assessment for performance. The directors' remuneration is decided within the range approved at the BOD meeting, and non-standing directors receive expenses for their work.

#### BOD operation in 2013

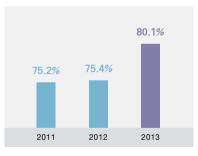
BOD meetings	14
Preliminary deliberation rate	90.3%
Resolutions	56 cases
Portion of revised resolution	8.6%
BOD meeting participation	94.1%
n-executive directors' participation	93.8%
of non-executive directors' comments	80.1%

#### **Composition and operation of the Audit Committee**

The Audit Committee is charged with the oversight of business management and accounting. The Committee oversees and supports the BOD to help management's decision-making maximize corporate value with a system of checks and balances. The Committee is composed of and operated by three directors of the BOD: one standing member and two non-standing members, who are accompanied by one accounting or financial expert. The Committee is chaired by a non-standing member to ensure a transparent and reasonable oversight system. In 2013, 11 audit meetings were held in which the committee voted on 13 resolutions including the annual audit plan for 2013 and received 14 reports for consideration. The appropriateness and performance of the auditing activities of standing auditors are evaluated by the Performance Appraisal Board of Public Enterprises.



#### Portion of non-executive directors' comments



As of August 2014

Public sector (Labor) Lee Gang-hee

Korean Contribution Association



Accounting (Audit) .lo Jeon-hyeok

Professor of Economics at College of Liberal Arts at Myongji University



Law (Audit) Choi Gvo-il

Lawver at the law firm



Eneray (Resources) Choi Gi-rveon

Professor emeritus of Energy at Ajou University



Energy (Superconductivity Seong Tae-hyeon

Professor of Electrical Engineering at Hanyang University

## **Risk Management**

#### **Crisis Management System**

KEPCO designates and manages relevant departments in four major sectors (management risk, disaster, promotion, conflict) with nine risk types to prevent crises that may threaten company management in advance. These departments strengthen responsibility for dealing with crisis by enacting and managing a crisis management manual and enhance efficiency in crisis management by conducting a regular efficiency assessment for a more effective crisis management. Normally, the crisis management organization is composed of Chief Risk Officer (CRO), general department, office in charge of managing the crisis, and relevant department. The chief of the management headquarters plays the role of the executive for crisis management. The general department takes the role of managing the emergency safety office, which manages overall tasks for crisis management. The office in charge of managing the crisis deals with tasks for ten types of risks. Relevant departments support other departments by carrying out general affairs and promotion. In a crisis, the organization forms a crisis management committee with the CEO as the chief, while a crisis management headquarters at the head office and each business branch are formed with the vice president as the chief. The level of crisis is divided into four stages, including attention, caution, alert, and serious. At the attention level, signs of crisis are detected. At the caution level, a cooperative system is formed with the focus on offices in charge of managing the crisis. At the alert level, measures are established. At the serious level, the headquarters for crisis management are made operational.

#### Management risk

Management risk is defined as deteriorated sales performance and increased debt ratio, and KEPCO carries out risk management by focusing on the Committee for Dealing with Financial Risks (Chief: the Head of Planning Team). With the system of prospecting profit and loss, we analyze the sensitivity of major variables, including electricity supply and demand, fuel cost, and exchange rate, to our profit and loss. We also operate contingency plans for each stage

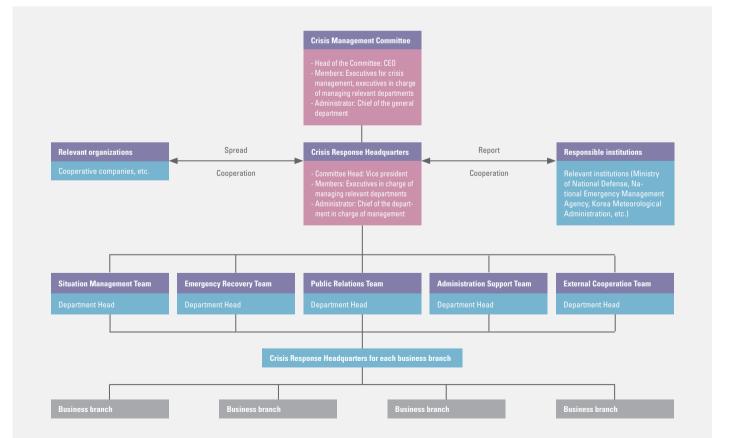
Composition of Emergency Response Organization in case of a company-wide crisis

of crisis. In April 2013, in the middle of a spike in exchange rate and sudden halt of nuclear power plants, the company issued the first stage of the contingency plan, reduced the gap in cost of capital between KEPCO and its generation subsidiaries, and increased the level of the goal in the budget cut. In June 2013, with the suspension of three units of nuclear power plants, we issued the second stage of the contingency plan, carried out the rationalization of policies, in which parties accused of causing the halt of nuclear power plant are held responsible for compensating all losses, moderated the settlement adjustment coefficient, and raised the budget cut goals again. As the suspension of the operation of nuclear power plants was prolonged, we issued the third stage of the contingency plan in October. The company expanded the Special Committee for Improving Finance into the Emergency Planning Committee for Improving Finance, carried out measures for increasing electricity bills, selling assets and returning wages by executives and employees, and further increased budget cut goals. Thanks to these self-recovering efforts, we overcame the management crisis, and as of late 2013, we realized the shift into a surplus trend for the first time in six years.

Meanwhile, from 2005, KEPCO has performed internal control processes suitable for the Sarbans-Oxley Law, the U.S., and the Law on External Audit for Corporations in Korea to ensure fiscal transparency and minimize financial risks. We report the current status of operation of the internal fiscal management system to the BOD and Audit Committee every business year, and submit the report to the domestic stock exchange market and Financial Services Commission. The company is being recognized for its credibility in financial information by submitting the result of the internal control certificate (Attention) by the management and external auditors to foreign countries (U.S. Securities and Exchange Commission). We will also carry out the advance of internal control process by completing the establishment of the internal control system, meeting the requirements of the U.S. COSO Framework, which was overhauled in 2013 by August 2014

#### Disaster

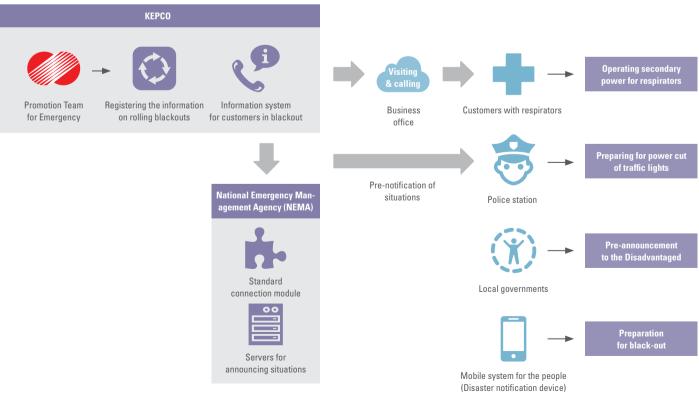
Types of disasters can be classified into a lack of electricity supply due to a spike in demand, disasters and catastrophes, breakdown in electricity grid, and disruption in electricity supply caused by cyber terror attack. KEPCO always secures materials and equipment for retrieving the situation guickly, while operating a real-time situation management system and manuals for dealing with disasters. After overcoming an unprecedented electricity supply and



- Management Risk: Deteriorating annual profit performance (Corporate Planning Department)
- Disaster: Insufficient electricity supply caused by a spike in demand (Demand Management & Optimization Department), disruption in electricity supply due to disaster or catastrophe (Emergency & Security Department), disruption in electricity supply caused by breakdown in electricity grid (Transmission & Substation Operation Department), disruption in electricity supply caused by cyber terror attack (Emergency & Security Department)
- Public Relation: Denial of Promotion for crisis in the electricity sector, damaging the company's image due to bribery cases on a massive scale involving executives and employees (Corporate Communications Office)
- Conflict: Conflicts regarding the construction of transmission and substation facilities (Transmission & Substation Construction Department), disruption in electricity supply due to social elements (Corporate Communications Office)

demand crisis by creating a joint emergency-response system with relevant institutions in 2013, we are continuously reinforcing our capability to deal with emergency cases. The company established summer and winter seasons with a high level of electricity consumption as the special period for electricity supply and demand, while striving to achieve a zero level of emergency by carrying out mock exercises for electricity crises. To prepare for heavy rain and typhoons, we completely checked and reinforced vulnerable facilities at flooded areas. streams, and steep slopes by dispatching 11,720 employees from business branches in the country. While investing 1 trillion and 500 billion won in reinforcing facilities every year to prevent breakdown in electricity facilities, the company is carrying out special safety inspections for stable electricity supply, not only during regular facility checks and the thawing season but also at national events. We perform company-wide disaster management drills to enhance our responses to actual disasters; maintaining the emergency recovery system by carrying out mock exercises for recovering from breakdowns every quarter. For our efforts, we were recognized as having the best level at the assessment for disaster management by the government in 2013. We reinforced information security for electricity control facilities to prevent cyber terrorism and achieved the best level—a first for a public institution—in the assessment for information security management by the National Intelligence Service by separating networks for jobs and the Internet and totally blocking personal information leaks. In 2014, we reinforced capabilities and disaster management organizations by forming the emergency planning committee hosted by the domestic vice president and launching

#### System for spreading crisis for electricity supply and demand with the public



the Disaster Management Team. With the sinking incident of the Sewel Ferry, the company implemented the comprehensive measures for disaster safety management in electricity facilities to strengthen disaster crisis management and strived to operate disaster management by overhauling disaster response manuals to fit actual emergencies in 268 business offices in the country.

#### Conflict

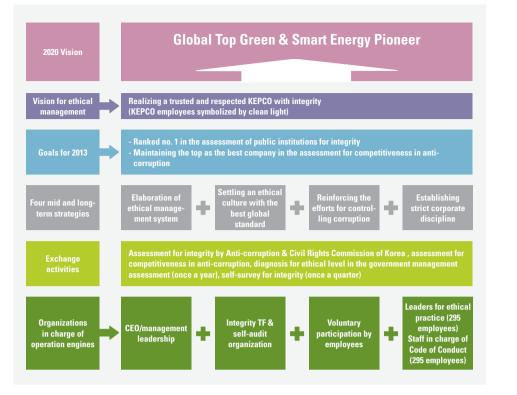
Conflicts deal with complaints about the construction of transmission lines and substations and crisis management with regard to labor and management conflicts. Business branches with complaints about the construction of transmission lines and substations hold meetings for assessing crises with the head of the business branch as chief, and issue warnings for each level of crisis- attention, caution, alert, and serious. In case of crisis levels above caution, the crisis management team with the chief of business branches is made operational. To deal with complaints more effectively, conflict management teams were launched in the construction agency for transmission lines and substations in the headquarters and every construction business branch as permanent organizations in 2013. The construction project for Sinjungbu substation was selected as the best case for conflict management by the Ministry of Trade, Industry, and Energy. In case of a strike, the team for dealing with the situation with the head of management headquarters as the chief issues warnings for each level of the situation with a shortfall of employees, including attention, caution, alert, and serious, and the emergency headquarters with all the management manages overall measures.

#### Promotion

Media response to an electricity supply and demand crisis, and the damage to the company's reputation due to massive corruption incidents by executives and employees are the two major crisis management categories defined by KEPCO. When warnings for crisis are issued, the promotion team, which is composed of the head of promotion department as chief and groups for broadcast, newspaper, and new media, is organized under the headquarters and performs missions which are divided for each level of crisis, including attention, caution, alert, and serious. When an electricity supply and demand crisis happened in 2013 due to a sudden halt of nuclear power plants, 20,000 people participated in the movement to promote energy-saving efforts by SNS, and the company overcame the crisis by carrying out the promotion for saving electricity, such as broadcasting 130,000 cases of information and 3,700 on-street notices. In response to the corruption problem by executives and employees, we operate a manual for responding to the case based on the result and status of investigation by dividing the stages of response into four levels, including attention, caution, alert, and serious.

## **Ethical Management**

Strategies for ethical management



#### **Result of the assessment for anti-corruption** comnetitiveness in 2013





In order to become an ethical company that is respected and trusted by the people, KEPCO has formed a preventive ethical management environment by expanding our culture of integrity and strengthened corruption control activities. For this goal, we are seeking efficiency in establishing and implementing our anti-corruption policy by the TF for integrity with the CEO and management. We are also encouraging all employees to voluntarily participate in ethical management, including leaders and staff members in charge of the code of ethics in each business office. Thanks to these efforts for ethical management, KEPCO has maintained a high level of integrity from 2007. The company was appointed as the Best Public Institution in the assessment for anti-corruption competitiveness by the Anti-corruption & Civil Rights Commission of Korea for eight consecutive years and achieved the top ranking among a total of 653 institutions for internal integrity.

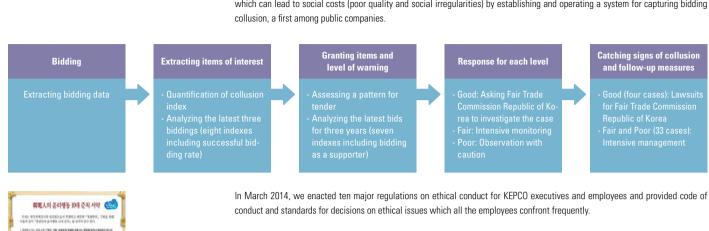
**Comprehensive performances** \* As for internal integrity, KEPCO is the top among 653 public institutions in total 2012 2013 2011 Category Assessment index 8.73 8.50 Anti-corruption & Comprehensive Integrity level Exemption of assessment Civil Rights Commission 9 33 8.98 (3rd rank among External Integrity level (Appointed as the of Korea Internal Integrity level best institution) public enterprises 8.49 9.26 (1st rank among public enterprises Assessment for anti-corruption by Anti-corruption Best institution Best institution Best institution & Civil Rights Commission of Korea Self-survey for Integirty 9.81 9.83 9.87

#### Expansion of ethical management system

KEPCO established the Code of Conduct for Suppliers which incorporates the ten principles of the UN Global Compact, OECD company guidelines and ILO labor and environment guidelines in July 2012 for the first time as a public organization. We ensured practicality and implementation of the code of ethics by integrating with the electronic bidding system, including this in the requirements of tender participation, and a special condition for contract.

#### **Detailed guideline (12 factors)**





KEPCO spreads our transparent corporate culture by operating various ethical education programs for integrity. In 2013, a total of 56 integrity training programs were provided to 3,620 students of the KEPCO Academy, including those newly employed, and 9,497 employees took cyber integrity courses. 98 leaders for anti-corruption were nurtured in the integrity leadership courses, and we performed direct education by visiting 10,913 employees at business sites in the country. The company prepared a forum to share and exchanges ideas on integrity culture with electricity groups, cooperative firms, and relevant institutions by holding a festival for integrity and ethical management

KEPCO A Cyb Intec Lecture by dis Other inspe

Numbe

- Life cycle-based e - Autonomous regis by high-rank exec

- Education for bus TCT changes and

- Integrity Festival - Publishing a clear (on a monthly bas

- Consultation cen discussion forum integrity, self-diag

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관련은 상가 약을 위한다는 행동으로 **반전한지 양태를 실주**시인 것을, 관련금 당 위한 **영화일 등 님께서는 개운지품**도 감수할 것을 지역할 수요.

2042개10일 한국견력공사

Ten major regulations on ethical

conduct for employees of KEPCO

61 x108 0424 07 82 7014 59 841 84 848 84 848

 In May 2012, KEPCO shared the best practices for anti-corruption by signing the Joint Agreement for Integrity and Ethics among Electricity Groups with ten subsidiaries such as Korea Hydro & Nuclear Power and strived to expand ethical management practices by jointly holding a festival for realizing integrity and ethical management. We have put in great efforts in establishing an anti-corruption culture in the electricity industry by holding annual meetings for ethical management with the Korea Electrical Contractors Association and signing an agreement with cooperative firms. In July 2013, we strengthened our efforts to prevent bidding collusion which can lead to social costs (poor quality and social irregularities) by establishing and operating a system for capturing bidding

#### Activity for promoting integrity culture

#### Performances of ethical education by employees

Course		Trainees (Unit: Person)	
	Team leader	Employee	Total
Academy integrity training	981	2,639	3,620
vber integrity training	2,267	7,230	9,497
grity leadership course	19	79	98
istinguished guests for integrity	449	267	716
ection organizations' training	2,999	7,914	10,913
Total of trainees	6,715	18,129	24,844
per of current employees	4,778	14,902	19,680
Completion rate	141%	122%	126%

We operate customized ethical education programs for each stakeholder, such as high-ranking executives and general employees.

#### **Customized ethical education programs**

ethical pledge	- Applicants for employment (819), Candidates for promotion (2,117),
istration of property	Pledge for ethical conduct by all employees
cutives	- Business branches with 2nd rank and above (450 employees, 32.3% compared to the last year)
siness branches with	- Launch of four courses including communication camp
d innovation	(4,263 employees with 3rd rank and above took courses)
	- Employees of business branches in the country (10,910 employees,
	56% compared to the last year)
l (September 2013),	- Integrity plays, quiz contest for ethical issues (100 employees from electricity group companies,
an newsletter	association and integrity partners)
isis)	- Spreading cases for ethics and integrity to 12,456 cooperative firms and employees
	(four times a year)
nter for ethical issues,	- Consultation and discussion on ethical dilemma (Opinions from 1,993 employees were collected
n, quiz with puzzle for	and they participated in the discussion)
agnosis	Five sectors including puzzle for ethical issues and self-diagnosis for anti-corruption
	(781 employees a day on average, 285,000 employees a year)

## **Ethical management**

#### Strict measures for corruption

We share information and inspection methods among KEPCO, generators, and group companies by establishing the Joint Inspection System to prevent corruption. Through this system, we have uncovered a total of 56 cases such as unfair subcontracting practices. We strive to solve problems in inspection and enhance the efficient in joint inspection.

#### **Current condition of punishments caused by** unethical practices

Category	2011	2012	2013
Corruption	14	21	7
incidents	cases	cases	cases
Punishment	22	45	10
	employees	employees	employees

Joint Inspection S	ystem with	electricity	group	companies
--------------------	------------	-------------	-------	-----------

Before improvement (20-year basis – 2012)	Improvement (2013)
Independent inspection (one-track)	Joint inspection (two-tracks)
Creating loopholes in inspection due to division of labor and	Preventing loopholes in inspection and enhancing the efficiency
independent inspection	by sharing inspection methods and information

• 1st inspection (June – August 2013): Inspection of 108 business offices Operation of first cooperative inspection system (uncovering 15 cases such as illegal subcontracts for construction)

• 2nd inspection (December 2013 - January 2014) Inspection of 193 business offices Joint inspection for overall tasks of group companies (uncovering 41 cases such as loose discipline)

KEPCO adopted a one-strike out system for those employees who received money and entertainment and a three-strike out system for those who committed embezzlement, negligence, or misappropriation. In 2014, we revised the Code of Conduct for Executives and Employees to post personal information about those punished due to their unethical practices on the company's intranet site. To reinforce the information collection of corrupt behavior, we operate a reporting system, Sinmungo, under which KEPCO employees, the general public, and the employees of KEPCO partner companies can report any corruption cases under their name or anonymously. We also introduced the Anonymous Reporting System, which is operated by a professional institution, to dispel the concerns over disclosing personal information of those who report cases and encourage vigorous internal report activities.



By operating the Sinmungo system, our anonymous reporting system for unfair practices and postcards, we identified a total of seven corruption cases in 2013. After a close inspection, we took strict measures such as dismissal of ten employees who demonstrated unethical behavior.

#### Establishment and operation of complaint filing system

KEPCO integrated complaint receiving channels, such as the Internet, external organization, and calls, into "Sinmungo" to systematically handle complaints, their handling processes, and results. In principle, those who file a complaint can get a response within seven business days, and the result of the handling is open to the customer. The company continuously strives to minimize customer complaints by analyzing types of complaints and improving our systems. The KEPCO Ombudsman composed of independent people conducts a guarterly review on complaints and their handling for transparent and sensible operation of our complaint handling system. The Sinmungo system received 3,230 complaints in 2013, and 98.8% of the received cases were handled within seven business days. These results are open to those who raised the complaint, and system improvement for areas with frequent complaints is continuously being carried out.

#### **Processed complaints**

Category	2011	2012	2013
Cases	2,699	2,653	3,230

#### Rate of dealing with complaints at the right time

Category	2011	2012	2013
Rate for handling cases at the right time	98.4%	98.8%	98.4%



Part 2

# **Specific Standard Disclosures**

# approach to 7 themes



1 Realizing Customer Value

- 2 Stabilizing Electricity Supply and Demand
- 3 Creating New Growth Engines for the Future
- 4 Realizing Eco-friendly Energy
- 5 Coping with Climate Change
- 6 Creating a People-oriented Work Environment

## DMA

# Realizing Customer Value

## **BACKGROUND ISSUES**

As the IT service environment has advanced, customer needs and their expectations have also become diversified and sophisticated. We not only need to provide electric energy, a necessity for daily life, but also create new energy solutions that meet customer needs and enhance their quality of life. Changes in the market environment for electricity sales, which were caused by the expansion of the Smart Grid, are expected to open the era of electricity service innovation focusing on customer values. That's why KEPCO, which owns advanced sales systems, knowhow, and CS capability, needs to consider greater values for customers and seek strategies for providing comprehensive services to customers.

## PROGRESS

#### Strategy

Customer-focused improvement of system & its operation
Innovation and advancement of IT-based services

#### Capability • Advanced sales system • High-quality CS capability

#### Activity

Innovation of electricity service by communicating with 90 college student supporters
Fostering on-site CS leaders and conducting campaigns for customers in the year

#### Assessment

Achieving the best level in customer satisfaction assessment for public companies by the government for 15 consecutive years
1st rank in the survey for customer satisfaction in the public sector by Korea Productivity Center

## Plan

Standardization of work process for customers
Setting up service targets for each stage and situation and establishing a monitoring system

## PERFORMANCE

Customer satisfaction



Best level in customer satisfaction as public company for fifteen consecutive years

Goal for 2014 :

Facility operation

Facility operation

3.73%

**11.53**min

Power outage time

Goal for 2014 : 11.19 min Goal for 2014 : 3.7% &below

T&D loss rate

Facility construction

Completion rate of transmission lines and substation construction projects

> Goal for 2014 : 99%

QUANTITATIVE GOAL

Customer satisfaction (2018): Score of 98 and over

Power cut hours (2020): 8.1 minutes and below

QUALITATIVE GOAL

KEPCO will accelerate service innovation based on customer value. In addition to achieving our original mission of providing high quality & stable electricity, we will offer you comprehensive energy service, which helps ensure a happy and enriched life. Our efforts to realize improvements and pleasant changes will continue with the aim of enhancing customer value.

## **Energy solution**

#### **Customer-focused** service

After creating the foundation for creating value by providing 21,018,000 households in Korea with a total of 474,849GWh electricity in 2013, KEPCO is continuously improving the sales system to meet various customer needs. In November 2013, we expanded not only the target of paying deposit under the names of tenants from 5kW in the current contract electricity to 20kW to minimize the economic burden of small individual business operators at the initial stage of business, but also the minimum electricity supply during the winter season from 220W to 660W (300kWh in monthly use) for households not paying their electricity bills with poor energy condition to help them to get through winters, warmly. As the need for support of child nurturing facilities are increasing with the expanded social participation by women, we changed the type of contract of these facilities from the education type to general type and reduced the burden of electricity bills by applying a welfare discount. In April 2013, we support special inspection for electricity facilities in massive entertainment facilities such as sports stadiums, amusement parks, and water resorts, whose electricity facilities are owned and managed by customers, to minimize public inconvenience. The company also launched a charging system by using smartphone applications to enhance customer convenience; 9.03 million household customers now use our IT-based billing service

In March 2014, KEPCO held a contest for electricity service improvement to provide customers value-oriented service, not focusing on suppliers, and currently operates online public communication panels. We will continuously develop public-focused CS tasks by strengthening communication with customers and civic groups.





Changes to methods for charging by utilizing



## The value of 1kWh

From waking in the morning to retiring to bed, electricity is always required. Without electricity, we cannot use smartphones, which are always in our hands. Subways, which transport us in our daily life, and lighting, which broadens the scope of living in the day and at will always work together with customers to ensure night, would also not be possible. Although it is a necessity in our lives, it is not easy to change the value of electricity. The following is the value of electricity in

1kWh: Amount of electricity using 1kW of electricity for an hour



vices

which is used for charging 100 smartphones for an hour (10W \* 100 smartphones \* 1 hour)

32



1kWh, which is intangible and invisible. 1kWh refers

to the amount of electricity in which 1kW of electricity

is consumed for an hour. With the value of electricity.

which makes customer value more precious. KEPCO

smarter and more pleasant energy solutions and ser-

1kWh = 860Kcal (kinetic energy) = Amount at the level of consumption in which an adult man runs for more than 90 minutes



SPECIAL FEATURE

Best Three proposals of the contest for the public

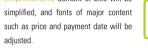
How can service be improved to meet customer needs? KEPCO has found an answer, and the answer was actually quite simple: ask customers directly.

In March 2014, KEPCO held a contest for measures to improve services and systems in the electricity sector and received various proposals from customers. This contest for suggestions has a total of three sectors, including "removing even the slightest problems," "Normalization of abnormal factors," and "Realizing a warm KEPCO." and the content included the current



Issuing selection-typed bill including only major content in consideration of customers' ages 🕨 mplement in October

(Current condition) Seniors of age of 65 and above. who account for 31% (about 5.75 million people) of a total of the entire electricity consumers, experience inconvenience in utilizing bills due to presbyopia (Improvement) Content of bills will be



INTERVIEW	Nam Sang-bin (customer)
Proposal for impro	ving the public service system i

in the electricity service, issuing customer age-based selection-type bills, was chosen as the best proposal

We appreciate your unceasing support and care next decade. for KEPCO and our service. Please briefly explain your proposal for improving electricity service What do you think about the KEPCO contest for and how you came up with the idea.

First of all, I really thank you for visiting such a remote village to meet me and giving me this surprising prize. When I was young, I didn't have any problem seeing tiny print, but as I got older, I couldn't read the print on an electricity bill without wearing reading glasses. nity to broaden experiences, it was impressive to On electricity bills, the text is so tiny and densely printed that seniors like me cannot accurately read customized and effective services by directly asking all the content. Since the recent news have reported that customers what kinds of services they want. In fact, I Korea is becoming a super-aged society, the majority didn't expect that the suggestion from an old man livof customers for KEPCO will be elderly people of the ing in such a remote village could be selected. When age of 65 and above, only ten years from now. That's I received the call, I was really astonished. I hope why I came up with the idea for KEPCO to send elec- that KEPCO will continuously strive to meet customer tricity bills in a simplified version to prepare for the needs from various views.

pany's efforts to provide electricity service that meets customer needs? As sharing various perspectives gives the opportusee KEPCO's efforts to show its sincerity in providing

33

Payment date will be chosen by customers themselves Implement in June

(Current condition) As payment date is

designated based on the day on which the electric meter is read, the rights of selection are limited. (In case of non-payment, late fee, which is 2% of a total cost is imposed)



(Improvement) Expanding the scope of selection in payment date for customers applying electronic transfer and IT-based bill simultaneously / (Current payment date) Payment date + 5 days (Improvement) Basic payment rate + 10 days

systems, problems, measures for improvement, and expectations. Among a total of 1,473 applied cases, 15 cases were selected as good proposals, and KEPCO has actually applied these proposals in improving systems. The following are the best three proposals drawn by empathizing with the public and plans for application of public proposals. We will continuously work to realize electricity service that creates sincere customer value by communicating with the people.



Adopting call-back service and text consultation system for enhancing customer convenience | Implement in November

(Current condition) Lack of service and additional service channels other than telephone service for customers who fail to make a call to service representatives (Improvement) Adopting call-back service and text consultation system for enhancing customer convenience

When encountering difficulty in calling, it becomes possible to make a reservation for service from the calling services by using the "callhack" server

Provides customer service when customers make a call at the time they want.





collecting public suggestions for electricity service in 2014, which was held thanks to the com-



Finally, what do you think is the most important thing for KEPCO to realize electricity supply service that meets customer needs?

Of course, providing high quality electricity in a stable manner is important, but customers can be more sensitive to the level of electricity bills. Therefore, it is important for KEPCO to achieve sincerity and credibility from customers by having a reasonable and convincing system for services regarding electricity bills and striving to ensure trust from customers.

#### Providing high quality electricity

KEPCO's SAIDI stood at 11.53 minutes in 2013, a 4.5% year-on-year decrease which was achieved by diagnosing distribution lines with high-tech IT equipment, such as thermographic and ultrasound cameras, preventing power cut by free repairing electricity facilities for major customers, and providing technical support. KEPCO plans to decrease its SAIDI to around 7 minutes by 2020 by bolstering the power quality management capacity, for example, working to prevent a blackout initiated by high-voltage customers, strengthening the support for customer facilities, and enhancing the expertise of personnel in charge of T&D facility diagnosis.

KEPCO recorded 3.73% in 2013 and enhanced the efficiency of facilities in terms of providing energy by carrying out continuous efforts in reducing electricity loss, such as, equilibrium operation of distribution lines, using low-loss devices, overcoming overload transformers, and allowing the use of cut-out switches for agricultural transformers during suspended periods of electricity use. As elements in the T&D loss rate are increasing every year due to a spike in electricity demands and electricity facilities, we will continuously minimize T&D loss by applying a new system for optimizing the electricity grid, expanding low-loss equipment, and replacing aged electricity facilities at the right time.

#### Power outage per household and T&D loss rate trend

Category	2009	2010	2011	2012	2013
SAIDI (min.)	15.59	15.15	12.40	12.07	11.53
T&D loss rate (%)	4.07	3.99	3.69	3.57	3.73



#### Plans for optimizing electricity grid

KEPCO is establishing the best plan for the electricity grid to prepare for an increase in electricity demand and provide consumers with high guality electricity in a stable manner. In 2013, we made the 6th long-term plan for transmission and distribution facilities and suggested the plan for supplementing 363,773MVA electricity facility substations, which increased by 1.34 times compared to 2012, 39,830c-km for transmission lines, which increased by 1.26 times.

The 6th long-term plan for transmission and distribution facilities complies with the government standards regarding the expansion of the electricity grid and includes plants for supplementing electricity facilities at the right time, connecting 12 new plant units with the electricity grid and improving credibility for electricity grid by preventing voltage and current breakdown. We saved about 450 billion won and strengthened social acceptance for electricity facilities by establishing the plan for applying High Voltage Direct Current (HVDC). We also implemented the reassessment for the suitability of businesses, replaced 108 circuit breakers in a timely manner, established seventeen new branches and replaced electricity compensation devices for ten branches, applied Thyristor Controlled Series Capacitor (TCSC), and improved plans for the electricity grid. Through these efforts, the company saved about 190 billion won and improved the capacity for maintaining the appropriate amount of electricity voltage and transporting electricity by 10%.



In the near future, KEPCO will strive to prevent complaints, save investments, and induce the introduction of generation plants to sites where the construction of long-distance high-voltage transmission lines is minimized by proposing information on the possibility of location in consideration of the conditions for the electricity grid. We will introduce the package of generation and transmission, establishing plans for the construction of plants and transmission lines simultaneously, by improving the existing process for drafting construction plans after selecting sites, as well as reinforce the consistency in construction plans.

#### Expanding electricity facilities at the right time

Storage System (ESS).

Transmission line	Substation	Distribution line
32,249c-km	790	448,610c-km
765/345kV: 9,840c-km	Amount of substations 280,000 MVA	Supports: 8.67 million
~154kV: 22,409c-km		Transformers: 2.05 million
Rate of underground wire construction: 11%	Rate of unmanned operation: 83%	Rate of underground wire construction: 15%
	(Unmanned substations: 657)	

#### SPECIAL FEATURE

everyone can use them freely. This can also apply to use electricity 24 hours a day without any difficulty, electricity, which lights the world. When you wake up people living in a remote region or backwoods conin the morning, you drink a cup of coffee by using an sider electricity as a valuable resource that cannot be electric coffee pot and watch the news on the TV. Are used thoughtlessly. you going to be anxious about not using electricity?



In 2013, KEPCO expanded facilities at the right time by carrying out a total of 45 projects for transmission, 47 for substations, and 114 for distribution. In selecting sites, we are striving to minimize conflicts in the construction of facilities by establishing the construction process with stakeholders to protect their rights to the environment, property, and health and realizing people-oriented business through communication with stakeholders. We reduced construction cost and improved the efficiency of facilities by innovating technologies such as establishing underground power transmission cables and new methods for connection, while building digital substations and Smart Grid Stations, which combined electricity with IT, to realize a smart transmission and distribution grid. Considering various changes such as the expansion of renewable energy production, including wind power plants in Southwest Sea, increasing electricity demands, and electricity grids that are growing in complexity, the company will continuously enhance the efficiency of the electricity grid by applying new eco-friendly technologies such as High Voltage Direct Current (HVDC) and Energy

#### Current status for transmission and distribution facility in 2013

#### What are the common characteristics among water, air, and electricity?

We easily ignore the value of water and air because Probably not. While people living in an urban city can

Even a few years ago, electricity was not provided to Duitgol Village in Inje, Gangwon-do. When electricity began to light this area with only five households, warmth spread to the remote region. An old man, who used cows for farm work, could now cultivate a field by using a machine. Grandchildren, who used to be unwilling to visit their grandmother because they could not watch favorite cartoons on TV. began to visit more often. Another old woman, who used to live alone with only candlelight to see at night, is now laughing in her room while she watches TV.

For remote villages that have experienced difficulty in being provided with electricity, KEPCO is carrying out electricity supply business for 134 households, whose local governments applied for the supply, among the 283 households that meet the requirements under the Law on the Promotion of Electricity Supply Business for Farming and Fishing Villages. The number of households in the regions without KEPCO's transmission and distribution grids is expected to be a total of 323 households, including 174 households in the regions not meeting the requirements of the Law on the Promotion of Electricity Supply Business for Farming and Fishing Villages as of late 2013.

# DMA

# Stabilizing Electricity Supply and Demand

#### **BACKGROUND ISSUES**

Electricity is the foundation for national industry and public life. We experienced the inconvenience caused by massive blackouts, such as rolling power cuts in California in 2001, the New York blackout in 2003, and the blackout in Korea on September 15, 2011, Thanks to these incidents, KEPCO has acutely recognized its responsibility for stable electricity supply. We have also risks which must be solved to enhance the stability in electricity supply and demand. There are various risks that can have great impact on supply: delay or cancellation of the construction of facilities for generation, transmission lines and substations, that require massive time and investment, breakdown or sudden suspension of the operation of plants, and spikes in electricity demands caused by severe weather. A stable electricity supply should be continuously ensured despite these circumstances: this is the reason for KEPCO's existence and its important mission.

## PROGRESS

Operating various demand management systems &securing sufficient reserves

Cooperating with relevant institutions in case of emergency for electricity supply & reducing demands by stages

 Organizing teams in charge of company-wide demand management (One department and three teams for the headquarters, 13 teams for business offices)
 • 323 employees for demand management using about 150 billion won as annual budget

Reducing electricity peak by noticing on a weekly basis & operating designated period system &demand management rate system

• Conducing energy-saving campaigns for the public

Granting incentives for actual reduction in accordance with terms
 & condition for each business office after establishing a
 company-wide goal for demand control
 • Operating demand control system with the government funds for
 the electric power industry & implementing assessment by the
 government & external audit for each year's business performance

• Establishing goals by the government in each year for electricity supply & demand control & restricting about 6 million KW, achieving 110% of the goal in 2013

## PERFORMANCE

Load control

% \_

Load rate

Goal for 2014: 76% and over

Saving energy

# 329<sub>GWh</sub>

Amount of saved energy

Goal for 2014: 288GWh Demand control

# 6million kW

**Peak reductions** 

Goal for 2014: Zero level of emergency in electricity supply & demand

#### QUANTITATIVE GOAL

Load rate (2018): 76% and over

Peak reductions (2020): 6.8 million kW and over

### QUALITATIVE GOAL

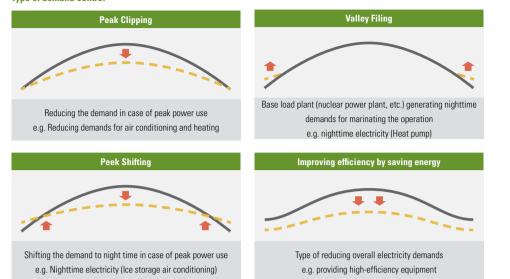
Electric energy provides daily life with dynamic energy. To accomplish its mission to supply stable electricity, KEPCO will provide various customized solutions for characteristics of each season and customer beyond just the supplier's perspective. We will realize a zero level of emergency in electricity supply and demand by establishing an organic and cooperative system with relevant institutions and secure a consensus on saving energy.

# **Electricity** demand control

#### Systemic demand control

KEPCO contributes to the national policy for saving energy by operating a system demand control system and promoting stability in electricity supply and demand.

#### Type of demand control



Although we confronted an unprecedented electricity supply crisis in 2013 due to a sudden halt in nuclear power plants, KEPCO overcame the crisis by reducing peak power by about six million kW, which is equivalent to six units of nuclear power plants. While implementing the regulations on electricity use by customers with massive scale to reduce peak power, the company operated demand control system for a designated period, which adjusted the period of industry vacation or repair, and various demand management efforts such as adjustment of voltage.

#### Peak power and reserves for the summer and winter seasons

Category	Supply	Before demand control		Amount of	After dem	and control
(Unit: 10,000kW)	capability	Peak power	Reserves (%)	demand control	Peak power	Reserves (%)
Winter (3 Jan)	8,071	7,827	244 (3.1%)	175	7,652	419 (5.5%)
Summer (19 Aug)	7,873	8,008	-135 (-1.7%)	606	7,402	471 (6.4%)

Due to the unprecedented lack of reserves for nine days from the second to third weeks of August 2013, we carried out urgent demand control and maintained the amount of reserves at 3.5 million kW and more. As a result, we were able to reduce the number of days of the supply and demand crisis in 2013 from 47 days to 10 days.

#### Prospects for electricity supply and demand and proper measures

Although the situation for electricity supply and demand in 2014 is expected to improve compared to last year, KEPCO will additionally secure two million kW to prepare for errors in demand estimation and provide stable electricity by taking measures for emergencies at each stage to prepare for abnormal weather and sudden suspension in generator operation. With the increasing construction of new power plants after 2015, electricity supply and demand is expected to maintain its stable status.

#### Prospect for electricity supply and demand and relevant measures in 2014 (Unit: 10,000 kW)



Category	Demand Control Measures	Supply Measures
Normal Times: 2 million kW	Designated Period: 0.7 million kW	Utilizing a Trial Trip: 1.3 million kW
Preparation and Interest	Weekly Notice, Etc.: 1.5 million kW	Private Supply Capacity: 0.4 million kW
(5-3 million) 2.8 million kW	Voltage Adjustment: 0.8 million kW	Emergency Generators for Public
		Institutions: 0.1 million kW
Caution and Alert (3-1 million)	Urgent Power Cut: 1.5 million kW	Upward Operation for Coal Thermal Powe
2.4 million kW	Suspension of Air Conditioning for	Plants: 0.15 million kW
	Public Institutions, Etc.: 0.75 million kW	

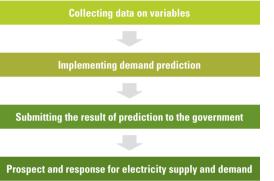


# Category

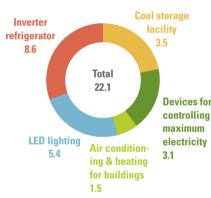
Winter Season(Jar Summer Season(Au

We have enhanced accuracy in predicting demands by drawing the optimal time and amount for electricity demand control. We reduced error by 0.05% compared to the last year by analyzing predictions in consideration of many variables such as temperature sensitivity in each season, demands for air conditioning and heating, and characteristics for demands during the day, which tend to have a high error rate.

**Process for demand prediction** 



#### Reduction for peak time in demand control devices for 2013 (Unit: 10.000 kW)



Category	Power cut	Designated	Weekly	CPP	Private	Modification	Total
	regulation	period	notice		generation	of voltage	
Operating hours (H)	144	115	92	50	183	205	789
Operating months	Jan, Feb, Aug	5-30 Aug	Apr, Aug	Aug	Jun-Aug	Jan-Dec	-
Averaged reduction per capita (10,000 kW)	294	181	135	7	44	49	710
Total (GWh)	429	208	108	4	65	100	914

#### Mid and long-term perspective for electricity supply and demand

Demand control for second to third weeks of

Performances

for

demand control

Reducina

demands for

48-668

million kW

Reserves

before

demand control

Maintaining

3.81 - 5.08

million kW

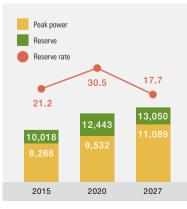
August 2013 Reserves

before

demand control

-51 - -2.28

million kW



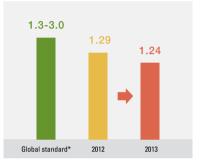
#### Strengthening the efficiency in demand control

KEPCO has first implemented low-cost demand control appropriate for current situations for electricity supply and demand to reduce the cost for demand control. After enforcing regulations on energy use by customers with massive use of electricity, we prevented emergencies in electricity supply and demand and reduced the cost for demand control by about 200 billion won.

#### Reducing the cost for demand control thanks to energy-saving regulations

	Target customers	Participated households	Restricting peaks (10,000 kW)	<b>.</b>	Reduced cost (100 million won)
n 2013)	3,000 kW and over	5,714	286		594
ug 2013)	5,000 kW and over	2,637	296	_	1,641

Decrease in the error rate of demand prediction



\* Global Standard: The lapse rate of overseas electricity companies in predicting the level of demand

#### Various demand control systems

KEPCO is operating various demand control systems for the characteristics of each season. We operate power cut regulations for customers consuming a massive amount of electricity, and designated a period for shifting vacation periods in the industry or repair schedules. We provide weekly notices moderating or suspending demand temporarily, depending on electricity supply and demand situations. We have implemented Critical Peak Price (CPP), in which the cost for peak time is about 3.4 times higher than average cost. We utilize private supply capability with operating generators owned by businesses or operated by community energy operators. We also adjust the supplied voltage in substations and transformers. Through these various methods, we saved 914GWh in the annual electricity demands for 2013 and implemented demand control for 104 days, which is the longest period in history. We saved about 220,000kW in maximum demand electricity by using cool storage facility, saving cooling electric power in the night-time and utilizing it in the day, implementing remote-control systems for air conditioning and heating functions during peak times, and supplying demand control devices such as high-efficiency tools.

#### Performance for each demand control system in 2013

#### Establishing the system for dealing with electricity supply emergencies

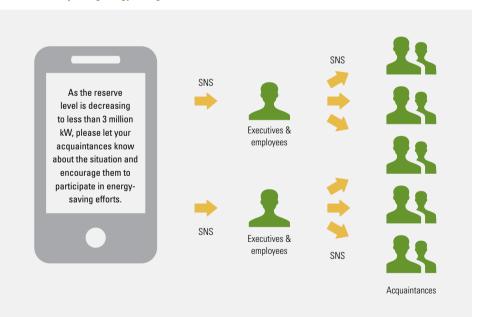
Confronting an unprecedented electricity crisis in 2013, KEPCO overcame it by concentrating our company-wide capability. We established an organic cooperative system for emergencies by operating a common situation room with relevant institutions and strengthened our capability to deal with crises by conducting mock exercises for emergencies and establishing a pre-notice system for vulnerable sectors.



#### Performances of the operation of the situation room for dealing with electricity supply and demand crisis

Winter season in 2012-2013	November 12, 2012 – February 28, 2013 (76 days)	
Summer season in 2013	May 28, 2013 – September 27, 2013 (84 days)	
Winter season in 2013-2014	December 23, 2013 – February 28, 2014 (46 days)	

We carried out various on-site energy-saving activities, including the movement for expanding energy-saving efforts, in which all employees request their acquaintances to perform electricity-saving practices by utilizing SNS. In the future, KEPCO will revise demand management programs to fulfill its own mission of supplying electricity in a stable manner and perfectly prepare for emergency situations by reinforcing customer management and enhancing the implementation level.



#### Movement for expanding energy-saving efforts

#### Employees in charge of customers for demand control



Reassignment of the organization and personnel for preparing emergency cases in electricity supply and demand

KEPCO established a special response period for electricity supply and demand in the summer and winter season, in which the level of electricity use is high. The company played the role of control tower for dealing with emergencies by operating a common situation room with electricity-related institutions such as generation companies and the Korea Power Exchange and working with 4,306 employees a year. We informed about measures for each step in the emergency and personal missions, spread information about the danger of the electricity supply and demand crisis, fostered capabilities in response by conducting joint and mock exercises a total of four times every quarter, and checked the cooperation system with relevant institutions. The company strengthened the cooperation for electricity supply and demand and encouraged the implementation of reduction in demand by dispatching 3,189 employees in charge of managing customers for demand control.

# **Reasonable**

## energy consumption

We raised the bills for general use and industry, which consumes a large amount of electricity, higher than average. Considering the burden of increased price, we slightly increased the electricity bills for households, education, and agriculture. The company has also proactively communicated with stakeholders, such as the National Assembly and industries, to form a public consensus on the realization of electricity cost. We also expanded our time-based cost system for customers with high-voltage electricity in general and industrial use to induce reasonable consumption and introduced our season-based cost system for customers with high-voltage electricity in agricultural use. To reinforce the function of demand management in consideration of recent climate changes, the company changed the standards for distinguishing time and seasons by including June in the summer season. As customers' electricity consumption patterns have become diversified and the design of rate systems reflecting this change has become possible, the company has newly launched and expanded various optional rate systems. In 2013, we expanded various rate systems based on season and time, including general and industrial use, high-voltage optional rate system III, demand control-type optional rate system I and II, etc. In the future, we will establish a cost-based rate system by reducing the gap between costs of various types of contracts.

## Energy-saving campaign

In 2013, KEPCO conducted customized energy-saving campaigns for companies, public institutions, facilities for public use, and the public to overcome the electricity supply crisis in the summer season. For companies, we visited industrial complexes or associations for each business type to encourage them to save electricity (96 times). For public institutions, we requested them to conduct sequential stops in air conditioning devices during peak times (2,150 cases) or implement autonomous power-saving practices. We conducted energy-saving campaigns by visiting facilities for public use, such as department stores and markets (6,000 households). For the public, we conducted on-the-street campaign during commuting times. The CEO and management directly visited 17 households, including customers consuming a massive amount of electricity and facilities for public use, and encouraged them to save electricity to prepare for electricity use during peak times in the summer season. Thanks to these efforts, participation by visited companies in demand control reduced demand by 269MW, which increased reduction by 99% compared to the last year. We proactively implemented electricity-saving campaigns by utilizing SNS such as Facebook and Twitter and encouraged people to voluntarily perform energy-saving practices.

## Company - Visited industrial complexes and associations to encourage them to save

electricity (96 times) - Promoted the standard for limiting the energy use (234 people)

#### Facility for public use

Visited department stores and markets for promotion (6 000 households) - Carried out "Saving Energy" promotion by SNS (Twitter, etc.) (20,000 people)

#### SPECIAL FEATURE

#### The drama of overcoming the dangerous electricity crisis for 123 days

The summer of 2013 was unprecedentedly hot; and the crisis in electricity supply and demand was also serious. First, the slope in with the heads of headquarters in the country. By im-2013 the curve for increasing demands was unex- plementing electricity-saving regulations, we strived pectedly steep. As the monsoon season continued for to notify the public by operating weekly notices and 49 days, electricity demands were not massive in July, meaning there was less necessity for control demands; total performance for demand control in the summer but in August after the monsoon, a heat wave swept season, we performed the demand control for 42 days across the country. From August 12 to 16, reserves for in total, and on August 12, we reduced a maximum a week were expected to record a deficit and reached of 6.68 million kW a day, even excluding on-site the peak of crisis. Although we implemented all the electricity-saving performance. This figure equals the available demand control systems, it was predicted electricity supply from three nuclear power plant units, that we could not reach the reserves with 4 million offsetting three non-operated units. kW, which is the standard for issuing an emergency

warning. It was the worst case in our history. In the second week of August, with the prediction days from August 12 to 14, all employees suspended of electricity reserves in minus figures for the entire their work from the morning and decided to carry out third week of August, KEPCO was in the middle of an on-site energy-saving activities. 6,600 emergency. The company appealed to the people to employees from 191 business branches save electricity by announcing public statements and visited the sites each day and conducted

#### Overhauling electricity hill system

In 2013, KEPC0 increased electricity bills twice (4.0% in January and 5.4% in November) to overcome the electricity supply crisis by strengthening the function of signals in electricity cost.



# Public institution

- Requested sequential stops for air conditioners and autonomous power-saving practices (2,150 cases)
- Asked to pause operating fountains during peak times

#### People

- Conducted energy-saving campaigns for households and broadcasting
- Requested to pause electricity use for agricultural facilities during peak times

spread the news about the emergency in electricity supply and demand by calling a video conference information about the designated period. As for the

This was not the end of the company's efforts. For three



campaigns to encourage the people to save electricity. About 20.000 executives and employees participated in the movement for spreading energy-saving efforts by utilizing the network and calling or sending about 750,000 messages. Thanks to these unceasing efforts,

about 6.49 million kW in electricity demand was saved each day for the third



week in August, and the electricity supply and demand crisis could be prevented. As a result of the 123-day performance from May 28 to September 27, 2013, we issued notices for the level of attention, which is the least serious warning, only four times. Without these electricity demand control and on-site energy-saving activities, 10 rolling power cuts and 9 electricity supply and demand emergency cases would have happened, but KEPCO overcame the crisis by implementing effective demand control.



# DMA

# **Creating New Growth Engines** for the Future

### BACKGROUND ISSUES

Despite the continuous global economic slowdown, global demands for energy are exponentially growing, and various movements for coping with resource depletion and climate change are being carried out. Competition based on technology for discovering resources such as renewable energy and shale gas is getting fierce, while environmental regulations are being reinforced. Meanwhile, opportunities for energy business based on emerging markets are expanding with fierce competition over winning contracts among global companies. KEPCO should prepare for a new century, confronting major changes in energy trends.

## PROGRESS

 Accelerating the advance of businesses for strategic regions and securing technologies for new growth engines • Fostering the best and talented people in the sector for overseas businesses and new growth engines

Capability
• Extensive experiences in developing and operating various overseas businesses with the brand power of KEPCO • Capability for R&D in electricity technology

 Constructed and operated overseas plants in 19,724MW as the world's 6th largest IPP developers. • Won an order for Korea-styled APR1400 in the UAE in 2009 and

joining the group of exporters of nuclear power plants • Won contracts for coal thermal power plants in Vietnam and wind power plants in Jordan in 2013 and exceeding 3 trillion won in overseas sales

• Invested more than 0.5% compared to the amount of sales each year in R&D, securing best personnel for research, launching and expanding organizations for technical business

• Checking performances for creating growth engines by assessing internally and externally and reinforcing the strength for •Fostering human resources and strengthening growth capability

by providing skills at the right time

• Accelerating the advance into overseas markets with competitiveness based on world-class development •Expanding the national benefits and creating more jobs by utilizing the KEPCO brand and entering into overseas electricity markets with domestic companies together

**Overseas** business

4.2<sub>GW</sub>

Facility capacity for overseas generation

Goal for 2014: 4.6GW

**Overseas** business

# 27%

Construction process rate of nuclear power plants in the UAE

technology (total) Goal for 2014:

Securing core strategic

cases

R&D

Goal for 2014: 45%

32 cases (total)

# Employees for business

83 employees

## Personnel with capability for overseas business

Goal for 2014: 1,513 employees

## QUANTITATIVE GOAL

Quantity of overseas generation

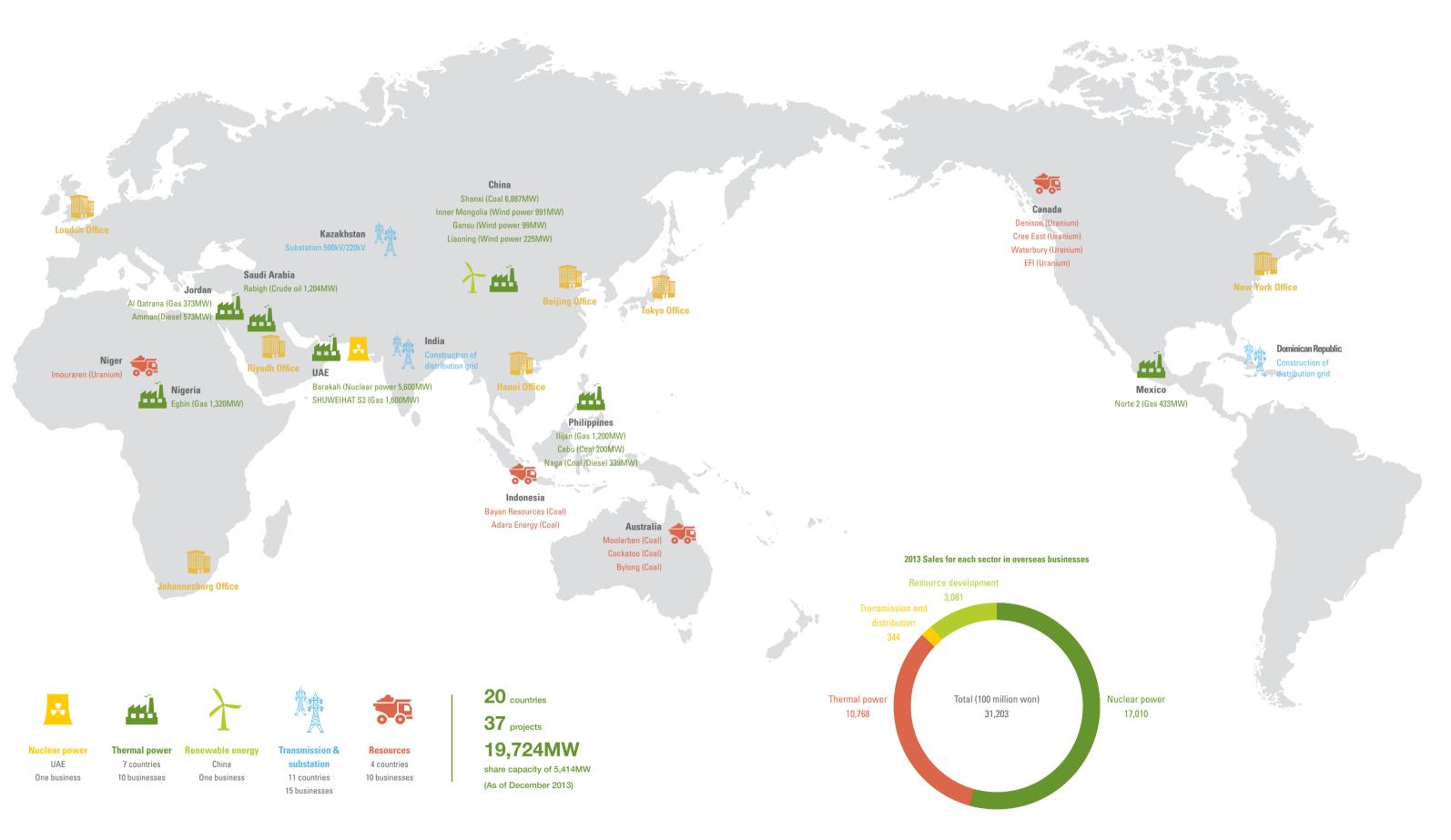
Accumulated cases for securing core strategic skills (2020): 103 case Personnel with capabilities overseas business (2020): 10% and more of all e

## QUALITATIVE GOAL

KEPCO is preparing for a new future. We are creating larger and better values for the future based on our skills and brand reputation. We will not only continuously expand overseas businesses, but also realize creative economy in the new era of electricity by developing next-generati technologies such as Smart Grid and energy-saving equipment. In addition to securing national interests with the electricity industry, KEPCO will create better jobs and open the way to a more prosperous future. more prosperous future.

## **Global network**

KEPCO is proactively carrying out overseas businesses to ensure sustainable growth by solving the economic slowdown in domestic businesses and finding new business opportunities. In 2013, the company's annual sales were 3 trillion and 120.3 billion won, and the company recorded 12 trillion and 324.8 billion won in accumulated sales.



# Accelerating the advance into the global market



Constructing a nuclear power plant in the UAF

#### Location and aerial view of thermal power plants with heavy oil in Rabigh, Saudi Arabia



Location and aerial view of Norte II complex thermal power plants with gas in Mexico



#### Vision to become a global energy developer

Based on capabilities and skills with extensive experience in the electricity markets at home and abroad, KEPCO has accelerated the advance into the overseas market, became the developer of global energy and contributed to the distribution rate of electricity in various countries. We are increasing the national wealth and creating more jobs by entering into the overseas market with domestic companies.

#### Expanding into the global market and diversifying businesses by using customized strategies

After starting business in the Philippines in 1995, KEPCO has expanded its overseas businesses, which used to focus on Southeast Asia, to the Middle East, Central and South America and Africa and is performing various activities in sectors such as nuclear power, thermal power, renewable energy generation, transmission and distribution and resource development. To achieve 16 trillion and 600 billion won in overseas business sales by 2020, we are raising our competitiveness and expanding market shares by utilizing customized strategies for each targeted region and connecting resource development with generation business. We will diversify overseas businesses by utilizing core strategic technologies such as Smart Grid, High Voltage Direct Current (HVDC), Carbon Capture & Storage (CCS), etc.

#### Nuclear power: Constructing and operating high quality nuclear power plants in the UAE

In 2009, KEPCO won the nuclear power plant project worth 18.6 billion won in the UAE for the first time, and it will construct four Korean-styled nuclear power plants (APR1400) with 1,400MW (5,600MW in total). With the beginning of the construction of the first unit in May 2017, we will build a total of four units of plants sequentially by 2020. To accomplish the success of the UAE nuclear power plant project, we are conducting various tasks, including designing nuclear power plants and manufacturing and purchasing devices, by cooperating with electricity group companies and private companies. Following the project in the UAE, we are proactively carrying out various marketing activities, including establishing customized strategies and holding a nuclear power plant roadshow, to win contracts in major markets such as Saudi Arabia, South Africa and Vietnam.

#### Thermal power: Solidifying powerful status of Southeast Asia and Middle East

As the fourth largest generation operator, which accounts for 10% of the total electricity supply in the Philippines, KEPCO is operating power plants in Ilijan, Cebu, and Naga. In China, we are carrying out the Gemeng International Energy Project in Shanxi. In 2013, we won the order for Nghi Son (1,200MW), a business for constructing and operating massive thermal power plants for the first time in Vietnam, laying the foundation for entering into the Indochina market. As for the Middle East, the AI Qatrana Power Project in Jordan began commercial operation in 2011 and the Rabigh Heavy Oil Project in Saudi Arabia began in April 2013. After winning orders for Shuweihat S3 Gas Power Project in the UAE in 2010 and Amman Diesel Internal Combustion Generation Project, we are constructing these plants as of late 2013 and expanding the advance into generation projects in the Middle East. In December 2013, we made an outpost for expanding our advance into the electricity market in Central and South America by completing the construction of the Norte 2 gas thermal power plant in Mexico, which is our first business in this region, while broadening the sector for thermal power business even to African regions by acquiring the operation rights for the Egbin gas plant in Nigeria in November 2013.





Wind power generation complex in Inner Mongolia



Announced as a winning bidder for coal thermal power plants in Nghi Son, Vietnam

KEPCO is carrying out overseas resource development businesses by securing stable fuel to restrain elements that increase electricity bills due to increased fuel costs for generation. As of late 2013, we have secured 15.46 million tons of flaming coal from five businesses including Bylong Mine, Australia, and 785 tons of uranium from five businesses in the Cree East mining area, Canada. Meanwhile, we are focusing on improving quality by carrying out various activities, such as selling non-major mines, to reinforce risk management and rationalization of overseas resource development business.

#### SPECIAL FEATURE

tion arid.

In October 2013, KEPCO successfully held the 22nd World Energy Congress (WEC) in Daegu as the host of the event and received praise for holding the best congress ever in terms of size and content. The congress, which is referred to as the World Energy Olympics, was attended by a total of 30,000 visitors, including about 7,500 participants from 120 countries, 54 leaders and scholars in the world's leading energy industries, and energy ministers from 42 countries.

Under the theme of "Today's Practice for the Future's Energy," Daegu WEC resolved various energy issues. For the first time in WEC history, both the WEC and the government approved the Daegu Declaration, which contains the cooperative resolution for solving the energy trilemma on energy security, equality, and environmental sustainability

In about 40 sessions, various energy issues were addressed by various perspectives. Attendees shared future business strategies of global energy companies such as Royal Dutch-Shell, SIEMENS, and Gazprom and visions for policies of energy ministers from about 40 countries on a real-time basis. Global energy institutions such as the International Energy Agency (IEA) and International Atomic Energy Agency (IAEA) looked energy market.

#### Renewable energy: Establishing the foundation for expanding business in the Middle East, following China

As the largest business partner in wind power, KEPCO has operated wind power business in Inner Mongolia and Liaoning, and wind power generation in 919MW business in Gansu, while constructing plants with 396MW. As of late 2013, we registered 22 cases for CDM business (project for recognizing the performance in reducing greenhouse gas) and secured carbon emission rights worth 960,000 tons. In January 2013, after winning an order for wind power projects in Fujeij, Jordan, we have entered into the wind power generation market as well as the thermal power market in the Middle East and established the stepping stone for expanding IPP business for renewable energy. Currently, we are preparing for the diversification of overseas regions for renewable energy projects and expansion of portfolio, including solar power and heat, geothermal heat, etc.

#### Transmission and distribution: Diversifying various elements from consulting service to EPC

Based on our global-level of skills, which have been accomplished by a short period, KEPCO has successfully completed consulting business on transmission and distribution in countries such as the Philippines, Myanmar, Indonesia, Libya, Egypt, Paraguay, and Uzbekistan. In late 2013, we won an order for technical advice business on transmission companies in Nigeria, Africa, and we are carrying out 13 cases for consulting on transmission and distribution in nine countries such as Saudi Arabia and Bangladesh. From 2010, we have diversified business sectors from consulting service to EPC (Engineering, Procurement, and Construction) and BOT (Build-Operate-Transfer). Through this movement, we won six orders for EPC business worth 300 million dollars in Kazakhstan and Dominican Republic and successfully completed the construction for three cases including the construction of Kazakhstan's distribu-

#### Resource development: Preparing for the reorganization of core businesses

Seeking the solution for global energy by holding Daegu WEC, which was the largest in history



at the big picture of the global energy market and keenly analyzed changes in energy paradigms. Meanwhile, the industrial exhibition was attended by many companies at home and abroad, making a meaningful place for sharing new growth strategies and future

CEO and President Cho Hwan-ik successfully held the congress as the chairman of the organizing committee and carried out various activities to expand the scope of cooperation for overseas business. He also shared

opinions on cooperative measures with the leaders of global energy companies such as GDF Suez and ARE-VA, while broadening the global network by signing an MOU with Enel, an Italian energy company, and the State Grid Corporation of China. In his speech for closing ceremony, World Energy Council Chairman Pierre Gadonneix said, "Every moment of 2013 WEC was really great and inspiring." It was the brightest moment of Korea, a major country in the field of global energy".

# **Reinforcing high** value-added technical competitiveness

#### **Reestablishing Green & Smart technology development system**

KEPCO has re-established our previous technology portfolio, which was divided into eight major strategic technologies and operational technology, to make 12 major strategic technologies based on new types of businesses in 2013. We have made the system to deal with all electric energy sectors by adding consumption and convergence technology sectors in production and transport.

Technology development system



**Green Convergence** 

#### Actual performance for R&D compared to plans (Unit: 100 million won)

Year	Plan	Result
2011	4,117	2,427
2012	3,113	1,878
2013	3,045	1,905

 Although KEPCO's performance in R&D of nuclear power plants reduced due to the the power plant's transfer to KHNP, we are constantly expanding investment in core strategic technology such as ESS

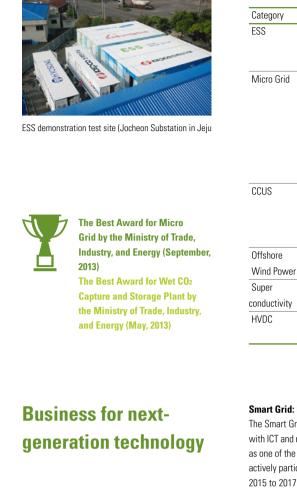
#### Reinforcing technological competitiveness by expanding the investment in R&D

With the goal of investing more than 0.5% of annual sales in R&D, KEPCO invested 190.5 billion won in 2013, reinforced technical skills, and expanded infrastructure for research by developing core strategic technologies and customized operation technologies for each business. We are also focusing on fostering technological experts for operating new growth engines by utilizing educational institutions at home and abroad and the internal human resource development center in 2013.

#### Securing core strategic technologies

48

In 2013, KEPCO achieved a total of 19 cases regarding core strategic technology by securing an additional 13 cases and completed 85 tasks by performing a total of 266 R&D study cases. We have applied for 308 patents for industrial property, registered 172 cases, and published a total of 261 theses in papers and academic conferences at home and abroad. After achieving success in the connected operation of 200kW Micro Grid Test Bed real power system, the company received the Best Award in the Korea Electricity Industry Awards from the Ministry of Trade, Industry, and Energy in 2013 and also received the Best Award by the Ministry for the construction of the 10MW wet CO<sub>2</sub> capture and storage plant, which is the largest plant in Asia.



#### **Roles of KEPCO ESS business**





Vitalizing domestic ESS market
+
ecuring competitiveness in entering

Year Capacity

49

**Smart Convergence** 

Category ESS Micro Grid

#### Major performances for technology development in 2013

#### Development performance

Designed and established the world's best ESS operation system (October 2013)

- Demonstrated the ECC-connected operation system with a volume of 4-8MW (Jocheon Substation, Jeju)
- Achieved the first rank in Asia and second in the world with about 85% in charge and discharge system
- Operated Micro Grid real power system and developed technology for design
- Succeeded in the operation with the connection of Micro Grid Test Bed real power system with 200kW (January 2013)
- Awarded the Best Awards for Korean Electricity Industry by the Ministry of Trade, Industry, and Energy (September 2013
- Completed the design of the electricity grid in the "Energy-independent Island" based on new renewable energy with 700kW for the first time in Korea
- Constructed wet CO<sub>2</sub> capture and storage plant with 10MW, the largest of its kind in Asia (Boryeong, May 2013) - Awarded by the Ministry of Trade, Industry, and Energy (May 2013))
- Constructed dry CO<sub>2</sub> capture and storage plant with 10MW, the first and largest of its kind in the world (Hadong, September 2013)
- Designing and constructing the in-depth climate tower with offshore wind power for the first time in Korea (September 2013)
- Secured the technology for applying superconducting fault current limiters and superconducting power cables (December 2013)
- Designed DC electric power transmission lines with 500kV and secured the technology for applying real power systems (December 2013)

#### Smart Grid: Demonstration project and establishing Smart Grid station

The Smart Grid is a next-generation electricity network enhancing the efficiency of energy use by combining electricity technology with ICT and making electricity networks smarter and more advanced. The government is currently preparing to make the Smart Grid as one of the national core businesses with the aim of establishing the world's first nation-based Smart Grid by 2030. KEPCO is proactively participating in the Jeju Smart Grid Demonstration Project (2009-2013) and Expansion Project (planned to be operated from 2015 to 2017) led by the government. The company is also leading the establishment of major infrastructures such as AMI, Smart Grid station, ESS, infrastructure for charging electric cars, etc. Advanced Metering Infrastructure (AMI) is a core device for Smart Grid, inducing customers' autonomous demands and creating various additional services. KEPCO is planning to finish the installation of AMI for 10 million households by 2016 and 22 million households by 2020.

In 2013, KEPCO established the "Smart Grid Station", which optimizes the company's energy use by combining renewable energy generation (solar and wind power), electricity storage system (ESS), and Building Energy Management System (BEMS), at the building of Guri-Namyangju Office. With this construction, the company shows a best case in expanding the Smart Grid at home and abroad. We will expand the construction of the Smart Grid Station at 119 offices in the country by 2015 and utilize the stations as a center for realizing the Smart Grid City by integrating Smart Grid infrastructures in the region, such as houses, shopping centers, factories, schools, and electric car charging stations.

#### Energy storage equipment: Securing operational skills

The Energy Storage System (ESS) saves electricity and lets consumers use electricity when it is necessary. This system can be utilized in various areas such as demand control, expanding renewable energy generation, improving electricity quality, and adjusting frequency. KEPCO is demonstrating the ESS operation technology by establishing ESS with 4MW (8MWh) at Jocheon Substation, Jeju, for the first time in Korea in 2013. We will establish and operate ESS with 500MW for adjusting frequency by investing about 600 billion won from 2014 to 2017.

#### Plan for establishing ESS for adjusting frequency (F/R)

2014	2015	2016	2017	Total
50MW	50MW	200MW	200MW	500MW

#### Making Gapado a carbon-free island in Jeju



#### Micro Grid: Making Gapado as carbon-free island

As 63 island areas under KEPCO's management are separated from land networks, KEPCO supplies these areas with electricity by installing diesel power plants in these areas. In cooperation with the Jeju Provincial Office in 2013, we established the Micro Grid for the first time in Korea. The Micro Grid provides electricity by replacing electricity produced in diesel power plants in Gapa Island with wind power, solar power, and ESS. The Gapado Micro Grid has become a central icon for the business of establishing carbonfree island of Jeju and will be launched in Gasado and Ulleungdo.

#### High Voltage Direct Current: Connection between Jeju and Jindo

As the cutting-edge technology transmitting long-distance massive electricity by changing AC/DC electricity to a High Voltage Direct Current (HVDC) system, it is likely to have a global market worth about 150 trillion won in the next 15 years. After completing the construction of the first HVDC system from Jeju to Haenam in 1998, KEPCO constructed the second HVDC system from Jeju to Jindo in 2013. We will develop these projects as a core business for creating new growth engines by localizing independent core technologies, connecting electricity grids in Northeast Asia, and entering into the overseas market.

#### Electric cars and charging system: Developing new business models

In 2013, KEPCO developed eight types of business models for electric car charging systems by carrying out the Jeju Smart Grid demonstration project, and the company is conducting the demonstration project for quick charge at six charging stations on expressways for the first time in Korea. We are developing the business for establishing the charging infrastructure by cooperating with the government and private sectors, and are currently providing 5,000 members with services for sharing electric cars and charging. We will supply 1,200 units of charging devices for electric cars by participating in the business for expanding the Smart Grid and developing a system in which consumers can store electricity in electric cars and sell it to electricity companies by cooperating with auto companies.

#### Renewable energy: Contributing to achieving the national goal for renewable energy

As the representative public energy company in Korea, KEPCO will carry out the business for providing renewable energy to contribute to the achievement of the national goal for renewable energy (11% for the year of 2035). To achieve the government-led goal in limited territories and climate condition, we are carrying out various projects by utilizing nation-based business branches, electricity grids, and technologies. For example, the company is conducting the government-led business for the 2.5GW wind power plant in Southwest Sea, business for solar power plants near Miryang transmission lines, welfare facilities in Jeollanam-do Province, and schools in Seoul. By developing renewable energy businesses in 11.5GW in cooperation with generation subsidiaries by 2020, we will realize 72% of the national goal for renewable energy.

#### SPECIAL FEATURE

ESS

In February 2014, KEPCO completed the construction of the world's first Smart Grid Station. The Smart Grid Station (hereinafter referred to as "SG Station") is a system based on the electricity operation system to effectively integrate and control other elements such as renewable energies including solar power and wind power, Energy Storage System (ESS), Advanced Metering Infrastructure (AMI), charging devices for electric vehicles (EV), and Building Automation System (BAS). We will establish SG Stations by investing a total of 26.2 billion won in 119 business offices with more than 300kW of contract power in 14 headquarters by 2015. The SG Station is divided into three models, including types for experience education, research and development, and demand control, and we will utilize these systems in various sectors such



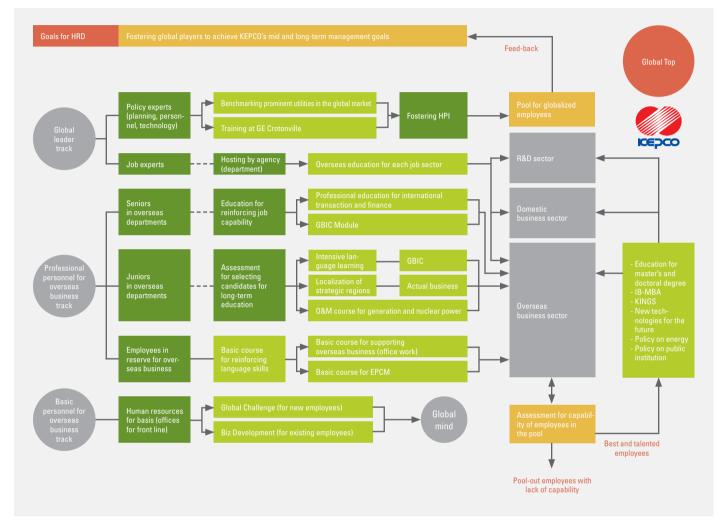
sector, developing applied technology and demand control. Thanks to this project, it is expected that the company will reduce annual peak power by 5% the central office. It is highly expected that KEPCO's (4MW), (10GWh) of electricity use by 10%, and CO2 emissions by 4,700 tons. The company will establish a control system which can comprehensively manage to creating future profits.

Making an eco-friendly energy town with the construction of the world's first Smart Grid Station

as fostering professional personnel in the Smart Grid SG Stations in the country by 2014 and control them automatically by taking steps that are appropriate for each situation of electricity supply and demand from knowhow and new technologies obtained from the construction business for SG Stations will contribute **Fostering global &** professional personnel for new growth engines

KEPCO is continuously conducting specialized education for nurturing globalized human resources to create future growth engines by advancing into the overseas market. In 2012, with education programs for overseas business, we employed 1,044 special employees. In 2013, we fostered 339 professional employees for each activity in overseas business and are currently conducting strategic human resource management by building a pool with 1,383 globalized employees for the future. We are strengthening the professionalism of employees in charge of overseas business for nuclear power plants in the UAE by establishing a mid and long-term master plan, while continuously fostering the best and talented people to reinforce our capabilities in winning new orders for nuclear power plants.

#### System for fostering globalized professional personnel



#### System for professional education about strategic technologies

## Level 1 (Basic)

## Level 2 (Intermediate)

#### Level 3 (Advanced)

50

#### Fostering professional employees for overseas business

#### Fostering professional personnel for strategic technologies

KEPCO is carrying out efforts to foster professional employees to secure future competitiveness in the electricity industry and accomplish the business for core strategic technologies in the early stages. With our education system for fostering human resources based on business lifecycle and level of capability for each strategic technology, we will continuously nurture the best and talented people in sectors such as generation, transmission, and distribution and sales.

#### Education specialized for overseas business in 2013

Category	Education course	Number of people
Basic education	Basic course for supporting business	147
Intensive education	International contract/finance	25
	Generation 0&M course	82
	Job capability reinforcement course	50
Long-term education	Localization for strategic sites course	9
	IB-MBA course	15
	Nuclear power graduate school course	11
Total		339

# DMA

# **Realizing Eco-friendly** Energy

#### **BACKGROUND ISSUES**

Sustainable energy for all should be clean and clear. To create clean energy, clean energy sources should be expanded while minimizing pollutants. The ecosystem should be preserved while conserving energy. As social needs for eco-friendly electricity facility are increasing, electricity facilities that are being constructed nationwide need to consider their environmental impacts on regions such as eco-conservation areas. We should strive to apply new technology and construction methods to enhance energy efficiency and reduce loss along with the efforts to rationalize energy use in a national manner. That's why KEPCO should strive to achieve a clean energy world in the overall electricity value chain from production to transmission and consumption.

## PROGRESS

 $\mathbf{b}$ G

Strategy • Establis hing integrated green and environmental management Reinforcing capability to deal with environmental risks and external partnerships on the environment

 $\odot$ 

Capability
• Acquiring the certificate for company-wide green management system and securing environmental management capability
 Ensuring the effect for restraining additional construction for
generation facility by maintaining the world's best level of T&D loss

• Constructing eco-friendly electricity facilities and applying new technology and construction methods for the co-existence of local communities and biodiversity conservation

• Improving efficiency in facilities to reduce energy and water use and, recycle resources by 100%

Minimizing water and land pollution, reinforcing management of polychlorinated biphenyls (PCBs)

Establishing and implementing annual plans for eco-friendly management, devising and refining company-wide environmental strategies every five years

Adopting a company-wide environmental management system by obtaining the certificate for environmental and green management

•Achieving the goal for over 5% of ground wire construction in 2013, carrying out comprehensive repair for on-air transmission lines by 2022

 Enacting a guideline for writing environmental impact assessment for transmission lines and substations, expanding targets for environmental impact assessment to all business sites

## PERFORMANCE

**Eco-friendly** management



**Environmental investment** 

Goal for 2014: 3.950 billion wor

Eco-friendly facility

**Eco-friendly** purchase

96.99

Ratio of purchased eco-friendly products

> Goal for 2014: 97% and over

15.5%

Rate of underground construction for distribution facility

> Goal for 2014: 15.7% and over

> > QUANTITATIVE GOAL

mental investment (2020): 4,500 billion won

Underground facility rate (2020): 21% and over

QUALITATIVE GOAL

Clean energy is a requirement for sustainable life for the next generation. As an energy company with a responsib for environmental impacts, KEPCO will achieve eco-friendly energy by carrying 3R (Reduce, Recycle and Reuse) for ene-water and resources based on the establishment of eco-friendly networks in the electricity industry. in the electricity industry.



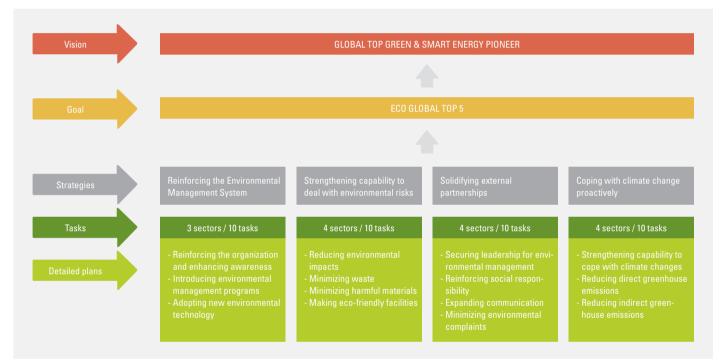
#### Company-wide certificate for GMS (Green Management System)

KEPCO obtained ISO14001, the certification for Environmental Management System (EMS), for its five sites in 2007 and for all sites in 2008. In 2010, the company also received certification for nuclear power plant construction and operation management, and in 2013, we passed the deliberation for renewal of certification. In accordance with the 2013 plan for green management, we acquired company-wide certification for Green Management System (GMS) in October 2013. Green Management System is a Korean system which adds energy management, GHG emission control, and environmental social responsibility to the conventional Environmental Management System. In acquiring the certificate, we expect that KEPCO Green Management System is established and spread for managing energy and resources, reducing GHG emission, and securing social responsibility.

#### Elaborating mid and long-term plans for environmental management

KEPCO assessed the performance of the mid and long-term plans for environmental management, which was established in 2007, supplemented problems; to deal with rapid environmental changes, we established the mid and long-term plans for green and environmental management in 2013. The plan includes the goal for achieving the world's fifth-best capability for environmental management in the energy sector and sets 37 tasks in 14 sectors with four major strategies. We presented roadmaps and detailed plans for each year from 2014 to 2018 to enhance action, and based on the mid and long-term plans, we are developing the plan for green management each year.

#### System for plans



#### Roadmap

Adopting GMS	Expanding GMS	Proactively coping with climate change	Creating green environmental values	Leading the company for green environment
2014	2015	2016	2017	2018
Introducing and settling GMS certificate system Spreading a system for opening environmental information Establishing plans for cop- ing with climate change Fostering judges for certificate	<ul> <li>Post-management for GMS</li> <li>Challenging to win the award for opening envi- ronmental information</li> <li>Establishing substitute plans for climate change</li> <li>Building human resource pool for certificate judges</li> </ul>	<ul> <li>Deliberating renewal of GMS</li> <li>Expanding the opening of environmental information</li> <li>Systemizing climate change management</li> <li>Establishing comprehen- sive plan for resource energy</li> </ul>	<ul> <li>Post-management for GMS</li> <li>Making environmental information as intellectual property</li> <li>Settling climate adaptation system</li> <li>Introducing high-efficien- cy electricity facility</li> </ul>	<ul> <li>Post-management for GMS</li> <li>Supporting other compa- nies with environmental information</li> <li>Opening of climate adap- tion system</li> <li>Securing growth engines for resource and energy</li> <li>Intellectualizing environ- mental damage prevention</li> <li>Reinforcing environmental and social responsibility</li> </ul>

# **Eco-friendly Power Value Chain**



### GENERATION

KEPCO and its power generation subsidiaries strive to build an organic cooperation system in generation, transmission, distribution, ward an eco-friendly supply chain for electricity.

generation companies have spent 684.4 billion won in total for environment-related investments and costs in 2013. It 87.7 billion won in investments for environmental facilities, 341.6 billion won for operating environmental facilities, 6.8 billion won for disposing waste, 5.7 billion won for environment-related R&D and 42.6 billion won for other sectors.

## GENCO's environment investment and expenses in 2013

f greenhouse gas intensity of GENCOs	Category
MWh)	Expense (Unit: 100 n

448 516

6 GENCOs have introduced eco-friendly process and acquired ISO 14001(Environmental Management System); among them, three GENCOs acquired KSI 7001 (Green Management System).

### Construction and operation of power generation facilities in a way that respects local communities

KEPCO's GENCOs conduct environmental impact assessments with regard to the impact of construction and expansion of their power plants on the natural environment and traffic. The post environmental impact assessments are carried out for five years after the completion of the project, with the result being reported to the government on a yearly basis.

The GENCOs have expanded the use of clean energy sources and operating systems such as desulfurization, denitrification and dust collection, to reduce SOx, NOx and dust emitted from the power generation process. GENCOs also operate comprehensive wastewater treatment facilities to physically and chemically treat wastewater for reuse or discharge, while desulfurized gypsum generated from coal-fired power plants is reused for cement production. The chemical oxygen demand (COD) and suspended solids (SS) emissions by GENCOs were 0.203g/MWh, 0 .154 g/MWh respectively in 2013. Companies focus on minimizing the amount of the emissions in accordance with the laws related to Preservation of Water Quality and Aquatic Ecosystem.

### Performance for environmental management in overseas plants

As of late 2013, KEPCO has established and operated 11 generation businesses in seven countries such as China and the Middle East. At the stage of construction, we receive a monthly environmental audit and monitor whether the company complies with environmental standard or not. At the stage of operation, we strive to comply with the environmental standards of each country, and reduce pollutants and noise produced from plants. As a result, Ilijan Plant in the Philippines was recognized as the best environmental company by the Chamber of Commerce of the Philippines in November 2013.

Current co GENCOs	rrent condition of electricity generation b NCOs		KEPCO and and sales to
Category	Generation	Generation	Environme
	amount (MW)	(MW)	KEPCO's six
2011	67,005	443,409	consists of 2

# 448,756

#### Degree of (Unit: ka/N

68 848

70.845

Year	2011	2012	2013
Intensity	464	474	494

## Air pollutants (Unit: g/MWh)>

2012

2013

Category	2011	2012	2013
SOx (g/MWh)	148	186	182
NOx (g/MWh)	284	297	205
Dust (g/MWh)	8	8	10



54

#### tal investments and costs

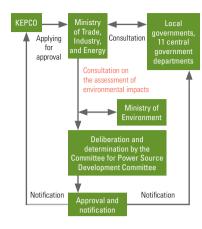
Category	KHNP	KOSEP	KOMIPO	WP	KOSPO	EWP
(Unit: 100 million won)	113	686	674	2,188	880	2,300

#### Establishing green and environmental management system

#### Reducing pollutants by enhancing efficiency in generation facilities

#### **TRANSMISSION**

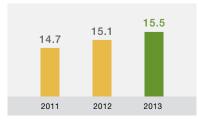
Procedure for approval of power generation expansion plan (Article 5. Electric Source **Development Promotion Act**)



#### New methods and devices for underground construction

New methods	Eco-friendly contents
and devices	
Compact-styled	Due to the limitation of sites, ground
distribution	devices are collectively constructed on
stations	the road at the back side of a building,
	which leads to environmental
	complaints and possibility of
	breakdown $\rightarrow$ Collective construction
	reduces environmental complaints and
	possibility of breakdown.
	Collective construction of each device
	in the building reinforces the safety of
	electricity and creates an aesthetic
	effect.
Pole-type	New construction method for burying
construction	cables underground and establishing
method for	transformers and switches on electric
underground lines	poles
	The construction method will
	contribute to expanding eco-friendly
	electricity facilities by applying it to
	regions where underground lines are
	impossible due to insufficient space.
Compact-styled	With improving internal structure
ground	(plate for radiant heat, steel wire)
transformers	and materials of ground transformers,
	the method brings benefits such as
	reducing the volume of transformers
	compared to the existing device by
	31% and alleviating the inconvenience
	of pedestrians.
Eco-friendly	Meeting with international standards
wire fuse	such as limited use of harmful
	materials (lead)

#### **Underground distribution facilities (%)**



To guarantee a stable power supply, KEPCO constructs transmission and distribution facilities in a timely manner and operates them efficiently. The company strives to maintain eco-friendly power transmission by ensuring objectivity and transparency in site selection, implementing assessment for environmental impacts, expanding eco-friendly facilities that respect local communities, reducing T&D loss rates, protecting the ecosystem, and controlling electromagnetic fields.

#### Securing objectivity and transparency in selecting sites for electricity facilities

To deal with the conflict over the selection of sites for electricity facilities, KEPCO holds the Committee for Selecting Sites with various stakeholders, including local resident representatives, local government and assemblies, and conflict experts, and meetings with local residents before starting business. We are operating "Open Desk" where employees reside at the construction areas to answer questions from local residents.

#### Conducting environmental impact assessment and disclosing its result

To establish transmission lines and substations, consultation with relevant institutions and environmental impact assessment need to be first carried out before starting business. KEPCO complies with the law on the assessment of environmental impacts, conducts assessment before beginning the construction of all transmission lines and substations, and discloses all results. We reinforced the assessment tasks including cooperation with regional environmental agencies and writing and reviewing of the assessment by dispatching external environmental experts starting at Gyeongin construction site in 2012 and sending four experts to the headquarters and three construction sites from April 2014. In 2014, KEPCO will enact the guideline for writing the environmental impact assessment for transmission lines and substations to work more efficiently and consistently.

#### Opening the information on electromagnetic field

Electromagnetic fields which are generated by electricity facilities have a 60Hz frequency. This is very low and is not accumulated in the human body nor transmitted a long distance. KEPCO is operating electricity facilities with a level that is six times lower than domestic standard. To alleviate the anxiety and controversy over the safety of electromagnetic fields and to provide the public with accurate information, we are operating a menu providing information on electromagnetic fields on our website (www.kepco.co.kr) and an experience center for electromagnetic fields. We also disclose the measurement of electromagnetic fields by using measurement services for regions near distribution towers and substations. To manage electromagnetic fields more scientifically, we are continuously carrying out the relevant research and collecting opinions from various channels such as our website.

#### Expanding eco-friendly construction of power facilities

KEPCO is expanding the construction of eco-friendly power facilities for minimum interference with the environment and developing environmentally friendly materials, equipment, and construction methods. We use more aesthetically pleasing tubular steel poles and eco-friendly seals on steel towers, while applying spacers, semi-underground engineering which requires minimum space, and improvements to the overall environment. In order to prevent GHG emissions, KEPCO has also developed and applied epoxy mold insulated switches to replace the existing SF<sub>6</sub> gas. The company has promoted the revision of laws and regulations on the installation of power facilities so that the depth for underground tunnels is reduced to minimize the time required for excavation. Ensuring space for ground facilities within buildings is now required by law in an effort to minimize the inconvenience of pedestrians. The company has also laid the foundation for beautifying the urban landscape by requiring overhead communication lines to be buried along with distribution lines by law.

#### SPECIAL FEATURE Clean sky in the city, safe daily life for the people!

KEPCO is improving the aesthetic features of cities maintenance has helped intricately intertwined proviand public safety by carrying out an antenna repair business in the city. The business for repairing antennas in 20 cities including Seoul and six major cities began through cooperation with the government, local governments, and communications companies in 2013. Antenna refers to the electric lines built for electric poles for distribution and communications and broadcasting lines.

In 2013, KEPCO invested a total of 138.2 billion won in repairing antenna, which was complicatedly tangled. Through this business, 11,083 units of electric poles and 1,168km of electric lines were repaired, and we completed the underground line construction for 140.4km of overhead power utility facilities. This

sion lines for low-voltage customers and communications cables to become more clean and safe. KEPCO is continuously striving to improve antenna facilities for securing clearer skies and safe daily living.







**Process for dealing with PCBs** 

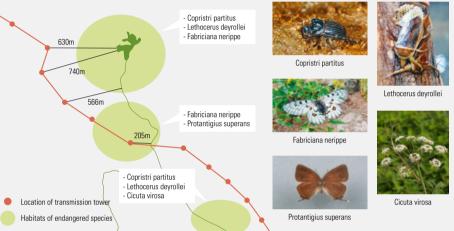


Demolishing and Fauipment centers for each headquarters returning transformers (14 centers)

Collecting samples and Analysis companies (one for each headanalyzing concentration quarters)



KEPCO recognizes the necessity for the preservation of ecosystem and intends to participate in the movement for biodiversity protection by complying with Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES), Convention on Biological Diversity (CBD) and Ramsar Convention. At the stage of power effect estimation, we exclude regions with high value of biodiversity. At the stage of environmental impact assessment, we investigate habitats by focusing on protected species (endangered species), indigenous species, specific species, and species that inhabit the area in groups. Following our effect predictions, measures for reducing environmental impacts are being prepared. At the stage of construction, managers for consultation contents are appointed and relevant contents are checked in a follow-up environmental impact assessment. At the stage of completion of construction, we recover habitats damaged by the construction by consulting with local governments and receiving approval from them.



KEPCO is applying equipment capable of cleaning manholes and processing wastewater to discharge wastewater, which is generated by manholes for Distribution grid established on the ground, after purification. In terms of the construction of tunnels for electric power conduit pipe, we minimize water and soil pollution by establishing and operating disposal facilities for wastewater.

#### Managing PCBs in waste transformers

To meet the Stockholm Convention on POPs for the prevention of production and use of persistent organic pollutants. KEPCO is establishing and operating the management system with the aim of eradicating PCBs (Poly Chlorinated Biphenyls). Waste transformers with ending its duration are strictly controlled in accordance with the management procedure for PCBs. Waste transformers with 2ppm and over in the concentration level of PCBs are processed by professional companies. The number of transformers processed is 210,000 units by 2013. We will conduct strict safety management for PCBs, from demolition to storage, analysis, procession and sales, and carry out economic and stable PCBs management by finding new construction technologies.

### CONSUMPTION

KEPCO is contributing to the national energy-saving policy by operating proactive and systemic electricity demand control. Although we faced an unprecedented power shortage in 2013 due to a sudden halt of nuclear power plants, we reduced about six million kW (equals to six units of nuclear power plants) as the maximum electricity for the peak time by regulating electricity use of large-scale customers, operating demand control system with designating and adjusting vacation and maintenance periods and moderating voltage. With these efforts, the company carried out demand control activities and reduced the days of demand emergency from 47 to 10 days. We also improved error rate in predicting demand by 0.05% compared to the last year by applying various demand analysis methods and maximized demand control by drawing the optimal period and amount for demand control.

#### **Biodiversity protection**

For the first half of 2013-2014, the number of construction efforts that are under way or completed is a total of 61 cases, and the total size of constructed electricity facilities is 17km2. The construction site where endangered species were found was 154kV transmission lines, located at Hoengseong-gun, Gangwon-do; the length of transmission lines passing the region with first level of ecological value is 2.848km. Considering the possibility of destroying the habitats of endangered species such as Lethocerus deyrollei and Cicuta virosa, due to soil erosion, the company suspended the construction, collected opinions from environmental experts and Wonju Environment Agency and made a detour for diversion water way to prevent soil erosion.

#### Distribution of major endangered species



#### Minimizing water and soil pollution

#### Contributing to saving energy by using optimized demand control

# Improving environmental efficiency

#### **Environmental cost**

Category	Cost (100 million won)	Notes
Eco-friendly facilities	34,820	91.5%
Prevention	1,989	5.2%
Follow-up activitiy	1,112	2.9%
Legal response, etc.	116	0.3%

#### Amount of energy use (TJ)

Year	2011	2012	2013
Amount of use	3,053	2,843	2,838
Intensity	70.8	57.6	52.9

• Energy data: Electricity of buildings and facilities supplying electricity, heating fuel, fuel for cooking • Percentage of electricity which is indirect energy:

95% • Energy intensity = Amount of energy use ÷ 1 trillion won

#### Environmental Investments

According to the KEPCO's environmental fiscal system, environmental costs for 2013 were 3 trillion and 803.7 billion won in total, which accounts for 7.04% of the entire sales. We mainly invested in constructing eco-friendly electricity facilities, reducing loss in activities for transmission and distribution, supplying renewable energy facilities and restoring environment. We will swiftly provide stakeholders with information on environmental costs and help the management make decisions by utilizing our environmental fiscal system strategically, which ultimately enhances activities with environmental values.

#### Reducing energy and water use

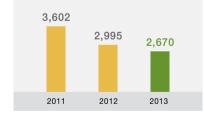
KEPCO is encouraging the reduction of energy use by setting the goals for energy usage amount and carrying out eco-friendly management by making facilities efficient. As electricity supply was deteriorated due to a sudden halt in operation of nuclear power plants in 2013, we especially focused our capability on saving energy. The goal for the amount of energy use was set to reduce 5% compared to 2011; amount of water use was set to 3,299,000 tons, which are the average for the last two years (2011-2012). Especially, the goal for saving electricity use during the period with special measures for electricity supply and demand was set at 10% and 5% respectively compared to the base year (winter season in 2011, summer season in 2012).

\*2012-2013: With the strict energy use due to the government measures for limited energy use, the two years are not suitable for a base year for setting goals.

To achieve the goals, we reflected the reduction of energy amount to performance index of the department in charge of managing energy at the headquarters and checked the internal energy-saving plans and performances in sectors such as buildings, IT facilities, and transport by holding the Committee for Saving Energy with the vice president as chairman every half year. We are accurately and swiftly managing the amount of energy usage by using Energy Portal System. In 2013, we reduced the amount of energy use by 7% and water use by 629,000 tons compared to the initial goal. Especially during the special period for electricity supply and demand in the winter and summer seasons, we contributed to stabilization of electricity supply and demand by reducing the amount of electricity use by 13.9% and 12.8% respectively compared to the base year.

ergy saving	<ul> <li>Appointing staff members in charge of protecting energy for each building and carrying out energy-saving activities</li> <li>Reinforcing the standard for indoor heating and air-conditioning temperature (18°C and below for the winter, 28°C and over for the summer)</li> <li>Adjusting temperature for isothermal-isohumidity at the ICT room (28 °C → 32 °C)</li> <li>Turning off lights and power of devices during lunch time</li> <li>Implementing diagnosis for building energy (two subcontracted offices for diagnosis and four offices with employees)</li> <li>Conducting water-saving campaign during the summer season with high amount of water usage</li> </ul>
enct facilites	<ul> <li>Reducing 475MWh of electricity for a year by establishing 25,000 LED lights in the office building</li> <li>Developing energy-saving new technology and building system</li> <li>Adopting 6,131 office devices for reducing standby power and supplying S/W for saving energy on PC for the overall company</li> <li>Constructing water-saving and recycling facilities at the Naju headquarters (900 tons of rain water of the overall company)</li> </ul>

#### Amount of water use (1.000 tons)



• Water data: Water supply used in buildings (domestic business sites)

• Errors in the data on the amount of water usage of last year are modified.

#### Meanwhile, the goal for reducing electricity and water usage in 2014 is set for the reduction by 5% compared to 2011 and 5% compared to the average of 2011-2012, respectively. KEPCO will lead to the movement of preventing resource depletion and reducing greenhouse gas by carrying out reasonable measures for energy such as securing efficiency in facilities and preventing energy overuse.

#### Operating eco-friendly cars for business

KEPCO is striving to reduce environmental pollution caused by business cars. In 2013, among 1,775 vehicles for business owned by KEPCO, the number of compact cars and eco-friendly cars such as hybrid cars were 1,460 (82.3%), and we will maintain the ratio of possession of eco-friendly vehicles at 80% and over. The amount of fuel use by vehicles in 2013 is 6,169,000 I and fuel efficiency is 7.58 km/l.

\* The current condition of eco-friendly vehicles in 2012, which is reported in the report for 2013, was a total of 1,462 cars, but this data omitted the number of electric cars (10 cars), so in the report for 2014, it was revised to 1,472 cars.

#### Changes in the percentage of eco-friendly vehicles among business cars

Category	2011	2012	2013
Business cars	1,753	1,821	1,775
Eco-friendly cars	1,437	1,472	1,460
- Compact cars	1,377	1,402	1,383
- Hybrid cars	60	60	67
- Electric cars		10	10
Percentage of eco-friendly vehicles (%)	82.0	80.8	82.3

#### **Recycling resources**

KEPCO complies with environmental regulations at home and abroad and proactively recycles recourses to reduce waste and prevent pollution. For collected materials that were classified as after-use waste and returned to material centers, a total of 261,225 tons was estimated as waste in 2013, which increased by about 6.4% compared to 2012, and we saved 38.6 billion won of the budget by recycling such as selling waste. In terms of waste such as concrete and pottery, we are preventing environmental pollution and contributing to vitalizing relevant industries by recycling these waste as aggregates for construction. We will not only save costs, but also carry out practices of saving resources proactively by finding out recyclable resources continuously.

#### Total amount of material use (Unit: ton)

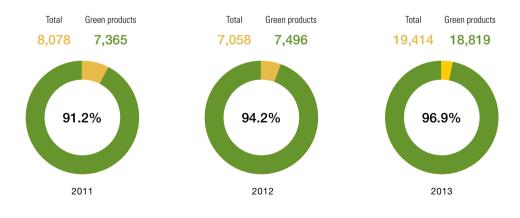
Category	2011	2012	2013
Concrete	417,324	464,161	455,026
Metal	54,147	56,846	54,410
Pottery	2,130	2,069	1,727
Electric wires	25,983	27,594	36,088
Others	4,999	4,529	6,118
Total	504,583	555,199	553,369

#### Amount of recycling and generation of waste for each type (Unit: ton, %)

Туре		2011			2012			2013	
	Generated	Recycled	Recycling	Generated	Recycled	Recycling	Generated	Recycled	Recycling
	amount (ton)	amount (ton)	ratio (%)	amount (ton)	amount (ton)	ratio (%)	amount (ton)	amount (ton)	ratio (%)
Concrete	183,213	175,885	96	181,397	181,397	100	190,226	190,226	100%
Metal	35,191	35,191	100	32,985	32,985	100	40,195	40,195	100%
Pottery	6,503	6,053	100	7,350	7,350	100	6,367	6,367	100%
Eletctric wires	21,668	21,668	100	21,992	21,992	100	23,628	23,628	100%
Others	536	536	100	1,881	1,881	100	809	809	100%
Total	247,111	239,333	97	245,605	245,605	100	261,225	261,225	100%

#### Green purchase

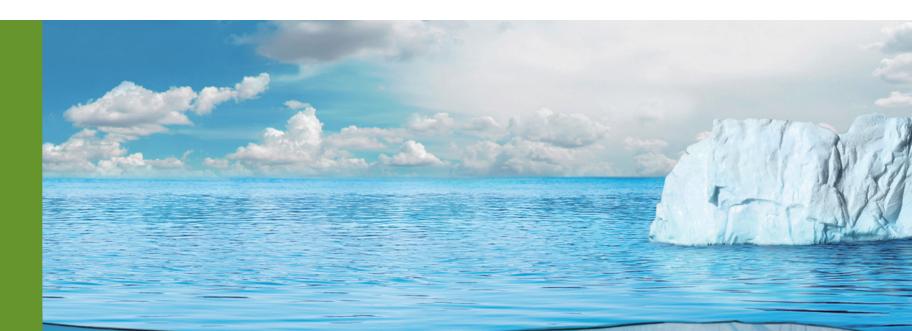
#### Expense and percentage for purchasing green products (1 million won)



To implement green purchase practice more proactively, KEPCO has established index for green product purchase in the self-assessment and introduced competitive systems among business branches. For purchase and construction supervisors, we are carrying out guarterly education about the necessity of green products.

The rate of green product purchase for 2013 was 96.9%, increased by 2.7% compared to last year. We will expand the amount of shared information on green products and continuously enhance the percentage of purchasing green products by improving systems.

# **Coping with Climate Change**



#### **BACKGROUND ISSUES**

DMA

International movement to reduce greenhouse emissions has just begun. Intergovernmental Panel on Climate Change (IPCC) under the UN proposed the goal for reducing greenhouse gas to 40-70% as compared to 1990 by 2050. Especially, as priority was put on the electricity sector, global electricity companies are facing the major challenge. The same goes to the domestic condition. As greenhouse emissions in the process of producing electricity account for 34% of total emissions in the country, the implementation of emission trading system is a major risk in increasing cost for supplying energy. However, crisis is the opposite side of an opportunity. Big changes such as developing low-carbon clean technology, expanding renewable energy, and performing smart energy consumption will create new markets and profit sources. Based on responding to financial risks caused by climate change, developing and operating business for lowcarbon clean technology, we need to create electricity with low cost, high efficiency and low carbon.

## PROGRESS

• Expanding renewable energy, carrying out business and loping low-carbon clean technology lizing technology for reducing energy consumption by combining electricity with ICT

• Establishing an organization in charge of coping with climate change Building capability for technology reducing greenhouse emissions and a system for carbon asset management

• Implementing the management system for national goal to reduce greenhouse gas and verifying greenhouse emissions by the Ministry of Environment

• Establishing and operating company-wide portfolio for reducing greenhouse emissions

Opening data on carbon emissions and policies by participating in the Carbon Disclosure Project (CDP)

• Achieving the goal of exceeding 800,000 tons of carbon dioxide compared to the goal for 2013 • Acquiring Carbon Trust Standard, a global certificate for reducing GHG emissions

• Establishing a master plan for reducing GHG emissions to achieve a position within the top five in the global utility for environmental capability • 2 trillion and 800 billion won in total for investing in clean technology and approximately 9 million tons in reduced carbon with CDM business by 2020

## Carbon reduction

Ratio of GHG emission reduction compared to the average emission in 2007-2009

> Goal for 2014: 40% and over

**Opening information** on carbon status

# **O**rd rank

Energy and utility sectors in the project for disclosing carbon information

> Goal for 2014: 2nd rank

Renewable energy



Cost for implementing RPS obligation Goal for 2014:

500 billion won

Emission trading



**Cases for registering CDM** business for UN in total

> Goal for 2014: 28 cases

## QUANTITATIVE GOAL

Goal for reducing GHG emission (2020): 26% and over compared to the BAU by 2020

Ratio of implementing RPS obligation (2022): 10%

Cases for registering CDM business for UN (2018): 28 cases & over in total

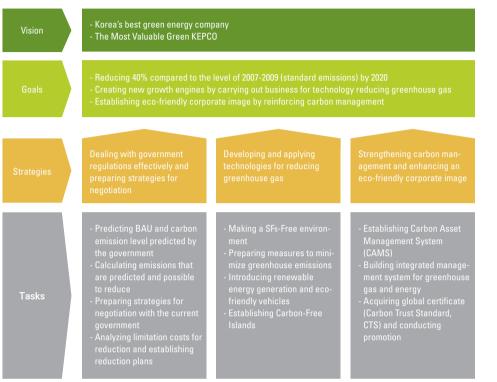
QUALITATIVE GOAL

Climate change is both a crisis and an opportunity. With the RPS system and emission trading system, which will be implemented from 2015, KEPCO will maximize its capability to reduce carbon and increase its synergy effects based on company-wide cooperation. With these efforts, we will proactively implement systems and policies on reducing emission by securing low-carbon technology and power source to achieve our goals. KEPCO will create clean energy for the earth and the humanity.

#### Materializing the Most Valuable Green KEPCO

Korea has no obligation to reduce GHG emission in accordance with Kyoto Protocol, which took effect in 2005, but has strived to reduce the emission by establishing its goals voluntarily. In terms of generation (switch) sector, we have the goal of reducing GHG emission by 26.4% compared to the BAU emission in 2005 by 2020. Based on the master plan for 2013, KEPCO is presenting the vision of "The Most Valuable Green KEPCO" and proactively participating in the achievement of goals for reducing the emission as a global eco-energy group. We have set the goal for reducing emission by 40% and over compared to the base year (2007-2009) by 2020, and the company will continuously carry out carbon management by making business for GHG emission reduction technology and creating new growth engines.

#### Master plan for reducing GHG emission



#### System for carbon asset management

- Distribution SF6 emission/collection
- Fuel amount used by remote generation
- Fuel amount used by vehicles
- Fuel amount used for heating and electricity
in the company
Calculation of

Application and support for emission trading port for data requested by stakeholders to

#### Joint response for climate change by electricity group companies

KEPCO and GENCOs recognize climate change issues as a crisis and a new opportunity for the energy industry and jointly deal with climate change based on the cooperation with group companies. In June 2008, the organization for joint movement was expanded into the Technology Climate Cooperation Committee with CTO of KEPCO as chairman, and under the committee, we launched the Committee for Climate Change and Committee for renewable energy. To reduce GHG emission and create a synergy effect in developing clean energy, we are implementing joint investment for R&D and prepared a roadmap for joint technology development by building a new cooperative system for technology development in 2013. The company has established short and mid-term cooperative measures for a total of 21 technology research such as CCS (Carbon Capture and Storage), Smart Grid and Micro Grid; we will invest more than 5% of yearly sales in R&D. In 2014, we organized a joint taskforce for dealing with emission trading system and deliberated effects and economics on electricity bills. We are proactively consulting with the Ministry of Environment and Ministry of Trade, Industry, and Energy to establish the system successfully and prepare practical measures for emission trading system.

#### Establishing carbon management system

KEPCO has completed the basic research for the introduction of CAMS (Carbon Asset Management System), a system managing carbon emission rights and analyzing company-wide GHG emission condition. In 2014, we are establishing integrated inventory for real-time based monitoring of greenhouse energy data. The inventory will analyze data on emission trading, support the decision making process, and implement the function managing greenhouse data of electricity group companies by connecting with the CAMS of GENCOs.

#### **On-site based greenhouse gas reduction management**

KEPCO is reinforcing GHG emission control for each business branch and promoting technology development. For this goal, we took a step away from the existing system of the headquarters managing company-wide GHG emission, and reducing energy usage on business sites; business sites will launch internal assessment index and operate it for a pilot test from 2015 in efforts to reduce GHG emissions and will be induced to develop GHG emission reduction technology and to innovate suiting the conditions of each business site

## **Greenhouse** gas reduction system and its impact

Implemented from 2012, Renewable Portfolio Standard (RPS) system mandates provision of renewable energy by certain ratio among a total generation amount to reduce greenhouse gas and expand renewable energy. The system is applied to generation operators (13 companies in 2013) with 500MW and over in the scale of facility. KEPCO preserved 220 billion won from generation subsidiaries, caused by the implementation of RPS in 2013, and in case of non-compliance with conditions, penalty is imposed on subsidiaries. The ratio of mandatory provision of RPS is expected to increase from 2.5% in 2013 to 5% in 2017 and 10% in 2022.

#### Emission trading system

Emission trading system assigns emission rights to companies and allows them to emit greenhouse gas within a certain scope, while permitting trade with other companies for surplus and excess. Companies with large amount of reduction cost need to purchase emission rights, while companies with low amount of reduction cost gain profit by selling remained emission rights. In 2011, KEPCO reduced GHG emission by 30% through applying the technology for collecting and recycling SFe gas charging substation and distribution facilities. The company continuously put great efforts to reduce electricity use in vehicle fuels and in the company building. Thanks to these efforts, we secured the early reduction amount of GHG emission under the existing national greenhouse gas energy management system, and this amount of reduction will be utilized in supplementing GHG emission trading rights, which can be insufficient after the introduction of emission trading system in 2015.



Generation

#### Transmission lines and substations

As a result of developing eco-friendly technology continuously even before the beginning of mandatory system to reduce GHG emissions, KEPCO applied the technology enhancing the SF6 gas collection rate from 80% to 97% in 2011, which reduced GHG emissions by 30%. We will continuously reduce the leak of SF6 by reducing volume of switch (240kg/unit) in case of discarding or checking electricity facilities to reduce the use of SF6 gas for charging transmission and distribution facilities, which account for 80% of GHG emissions. In the long term, the company will expand eco-friendly switch facilities, which will be replaced with solid insulators (Dry Air, N2 Gas), to achieve the zero level of SF<sub>6</sub> gas by 2030.

## Consumption

**Reducing GHG** 

Value chain

emissions

#### Process for collecting SF6 gas

Return Collect/Purify STORAGI 

Store

62

Recycle

#### **Renewable Portfolio Standard (RPS)**

KEPCO is leading the development of technology in CO<sub>2</sub> capture and storage by doing research for and proactively demonstrating business models with GENCOs and Korea CCS Association. We own the world-class wet and dry absorbents and identified its best quality as the cost for capturing CO2 was \$30~40/tCO2, compared to an average cost in the OECD countries (\$60~80/tCO2). The company is operating two demonstration plant units with 10MW in wet and dry sectors, respectively. Our post CO<sub>2</sub> combustion capture and storage plant with 10MW in dry sector, built in Hadong in 2014, is the first and largest in the world, and the plant is expected to contribute to the development of technology for commercializing CCS and the reduction of greenhouse emissions significantly.

KEPCO, carrying out technology development and demonstration for Smart Grid to ensure reasonable electricity consumption, has just begun the establishment of infrastructure from 2013. We will invest 1 trillion and 200 billion won in the establishment of Advanced Metering Infrastructure (AMI) for two-way demand control by 2020. The company is also carrying out demonstration projects in charging electric vehicles and Micro Grid. The investments for supplying high-efficiency devices and electricity control systems in 2013 were about 67 billion won, and we will invest 540 billion won in total by 2017. With these investments, it is expected to reduce GHG emissions as well as create new markets with demand control business.

# **GHG** emissions management

#### Achieving the goal to reduce GHG emissions

KEPCO is proactively leading the national roadmap for reducing greenhouse gas by 30% of Business As Usual (BAU) by 2020. As a result, we reduced emissions by 46% compared to the average emission in 2007-2009. Major element for such a great performance in five years lies in the fact that the company focused on developing technology collecting SFs gas, which accounts for about 80% of total greenhouse emissions, and applied the technology to business sites from 2011. Thanks to these performances of KEPCO, the company was recorded as the 2nd rank in greenhouse emissions reduction among companies included in the government's target management for greenhouse gas reduction as of 2012. (The result of 2013 was not published yet)

#### Performances for the target management for greenhouse gas reduction (2012~) (Unit: million ton)

### GHG emissions trend (Unit: CO<sub>2</sub>-eg)





#### <Notes> Category for GHG emission by KEPCO

- Scope 1 (Direct emission): SF6 gas for insulation at substations and distribution facilities • Scope 2 (Indirect emission): Electricity and heating steam used at company buildings
- Scope 3 (Indirect emission): Emission from business trips, commuting, and products sold or purchased

Category	Standard year	2012	2013
	(2007-2009 on average)		
Permissible amount	2.59	2.55	2.21
Emissions	2.59	1.26	1.40
Excessive reduction compared to permission	-	△ 1.29	△ 0.81

· Management system for goals was implemented from 2012.

• Targets for the national management system for goals exclude small-sized business sites with 3,000 tons of emissions or below.

#### **Current condition for GHG emission**

#### Scope 1.2

Category	Scope 1	Scope 2	Types of gas
2011	109	15	
2012	117	13	CO2, SF6, CH4,N2O
2013	131	13	

- Emission factors: Basic emission factors in the 2006 IPCC national inventory guidelines
- Methodology: Adopting the methodology for collecting data on activity (Article 44) in the guideline for the national operation of management for goals of greenhouse gas energy
- · All business branches including small-sized offices

#### Scope 3

Category		Scope 3 (2013)		
Туре	Service for purchased products	Other energy (electricity	Commuting by	Business trips
	(purchased electricity amount)	amount for sales)	employees	
Emission amount	21,981	21,840	0.7	6.5
(10,000 tons)				

#### Emission factors

- Purchased products (purchased electricity) and electricity for sales: Corporate Value Chain (scope 3)
- Commuting and business trips by employees: LCI DB and data by Statistics Korea
- Methodology (common): Adopting the Accounting and Reporting Standard

#### **GHG** emission intensity

Emission intensity	Scope 1	Scope 2	Scope 3
Emission amount (10,000 tons)	131	12	42,828
Intensity (ton/100 million won)	2.42	0.22	792
Total emission intensity (tCO2/100 million won)	2.66 (1.439.665 tCO2 in total	emission amount / 54 trillion a	and 37.8 billion won in sales)

**Global certificate** for GHG emission reduction

### CDM business

### CDP (Carbon Disclosure Project)

of production activity.

## INTERVIEW



areenhouse emissions of KEPCO in 2013. Please assess the company's perforin mind? mance and efforts in reducing greenhouse emissions

About 80% of greenhouse emission in KEPCO is from using SF<sub>6</sub> gas. Thanks to various efforts to enhance collection rates of the gas, the result of emission reduction was remarkable compared to the base year. However, in checking and demolishing electricity devices containing SF6 gas, risks for increasing greenhouse emissions cannot be dismissed. Discrete measures need to be in place.

In 2013, KEPCO reinforced the efforts for managing data on indirect GHG emissions and reducing emissions. We donated a total of 5,154 OA facilities, including 2,311 desktop PCs of employees who finished a training course, and with this donation, we reduced 8.4 tons of emissions possibly generated from discarding these facilities. GHG emissions from business trips and commuting are reduced by operating video conferences, online education for human resources development center and the use of VPN. In 2013, a total of 180 tons of GHG emission was reduced by holding a total of 717 video conferences, and not having to move for attending meetings. A total of 389 tons of GHG emission was reduced by implementing 336 courses as online education, not group education, among 537 courses. With the VPN system, the company provides employees the environment where they can work at home if necessary; as a result of records for using the VPN system in 2013, a total of 121,119 cases of using the system reduced 6.5 tons of GHG emission. Through restraining domestic and overseas business trips that are not necessary or urgent, long-distance business trips decreased from 247,659 cases in 2012 to 82,653 cases in 2013, while overseas business trips decreased from 1,789 cases in 2012 to 1,620 cases in 2013. Thanks to these practices, we reduced relevant GHG emission by 87,000 tons in 2012, and 65,000 tons in 2013, which reduced the emission by 25%.

KEPCO will reduce GHG emission by 30% compared to the predicted emission by 2020 in accordance with the national GHG emission reduction objective; the company is carrying out CDM business at home and abroad to deal with carbon emission trading system more proactively, which will be implemented from 2015. As of late 2013, we registered 26 cases of overseas CDM and one case of domestic CDM to UN. In particular, the result of first reduction business in the CDM business for reducing SF6 gas in domestic distribution sector is being verified, and the economics of the expected secondary business are being deliberated.

#### CTS (Carbon Trust Standard)

Efforts and performances by KEPCO to reduce GHG emission were recognized by Carbon Trust, non-profit group in the U.K. with the aim of changing into sustainable low-carbon economy, and Korea Productivity Center (KPC); in 2013, KEPCO acquired Carbon Trust Standard (CTS), a global certificate for carbon management. In 2015, the company will apply for the assessment of recertification, which will assess the company with more strict standards after two years of the initial certification.



Following the report in 2013, KEPCO disclosed the company's policies and carbon emission data to global investors by submitting CDP Climate Change Report in 2014. Especially, in the report of 2014, we enhanced transparency in data on greenhouse gas by calculating and disclosing emission data on Scope 3 and expressed the willingness to manage GHG emission in the entire process

For companies, greenhouse gas reduction is sometimes considered risks and costs. To make this as an opportunity, not a risk, what do you think is the value that companies should keep

Carbon Emission Trading will be implemented from 2015; the time has come for granting economic values on the activity for reducing greenhouse emissions. Remarkable performances for greenhouse gas reduction can be achieved by sharing company-wide awareness for the necessity in reducing emissions. Therefore, personnel in charge of managing business sites need to be fostered, and by focusing on them, the company needs to provide education programs and shift awareness

Reducing greenhouse emissions, which cause climate change, may currently be considered as a major task for every company; especially, energy utility companies like KEPCO feel a heavier responsibility. What kinds of efforts should KEPCO make to reduce greenhouse emissions?

Greenhouse emissions by KEPCO can be divided into two, a sector in operating own buildings (20%) and SF6 gas for transmission lines and substations (80%). As for buildings, insulation performance and efficiency in air-conditioning and heating devices and electricity devices need to be improved, while in terms of transmission lines and substations, SF6 gas needs to be reduced by putting efforts in research and development for substitutes with mid and long-term perspectives.

# DMA

# **Creating a People-oriented Work Environment**

#### BACKGROUND ISSUES

Company's sustainability begins from "people." With increased instability and fierce competition among global electricity companies, KEPCO is recognizing the fact that competiveness in executives and employees directly leads to the company's competitiveness. Meanwhile, trends and perspectives for good employees and recruitment are changing: Beyond a massive scale of uniform recruitment only focusing on certificates and English proficiency, companies adopt various recruitment methods for high school graduates, professional and experienced candidates and local labor force for overseas business, opening a new era of employment. Practices for fostering the best and talented are also evolving, including establishing capability models meeting self-development needs for executives and employees, reinforcing corporate competitiveness, and providing customized education. As well as rationalizing performance assessment and compensation system, companies should strengthen the foundation by striking a balance between work and life to create pleasant and happy workplaces, establishing cooperative labor and management relation and securing safety. Sustainability of KEPCO begins with people and completes with people.

#### **PROGRESS**

Strategy • Open employment and designing programs for fostering the best and talented meeting various needs, rationalizing performance assessment and compensation with connecting management strategies • Establishing and carrying out strategies for developing labor and management relation, introducing various systems for striking a balance between work and life

Promoting early adaption by new employees by carrying out suitability assessment for recruitment methods, establishing capability development system for executives and employees and performance-focused remuneration system
 Preventing labor-management conflicts based on the diagnosis for the level of cooperation, strengthening cooperation efforts, and operating life cycle-based welfare

•Leading to socially fair recruitment for women, high school graduates and regional workers, systemizing necessary capability an need-based education programs •Reflecting opinions from employees to all stages of MBO assessment and disclosing the result, strengthening communication based on coaching for high-level positions •Making a reasonable group agreement based on law and principles, enhancing awareness for flexible working system and proactively recommending to use the eventom

ent models, receiving the certificate for the best HRD in the public sector by the Ministry of Education and Ministry of Security and Public Administration (November 2013) •Improving the satisfaction level by executives and employees for the company,

munication, cooperative labor-management relation, etc. suring fairness in the MBO assessment and enhancing the acceptability of subjec

anding open recruitment and reinforcing working-level education to help high school graduates to adapt to working conditions •Increasing the percentage of incentives compared to annual salary continuously

(about 23%)

(about 25%) •Rolling strategies for developing labor-management relation, preparing for introducing new systems such as Smart Work and telecommuting

Diversity



Ratio of female employees in the recruitment for new employees

> Goal for 2014: 20% and over for each stage of recruitment

**Training and** education

Safety and health

# 87.8 hours 0.025%

Hours for training and education for each executive and employee

> Goal for 2014: 90 hours

Accident rate

Goal for 2014: 0.023% and helow

# QUANTITATIVE GOAL

Percentage of female emplo (2020): 20% and above

Hours for training and education for each executive and employed (2020): 100 hours

Accident rate (2020 0.02% and below

#### QUALITATIVE GOAL

People mean competitiveness. KEPCO will raise competitiveness in our global brand by ensuring open recruitment, focusing on capability and not discriminating applicants based on academic background, age, and gender, and expanding the opportunity for education. We will support the dreams of youth by seeking new businesses in the overseas markets and emerging technology and creating new jobs. As people bring competitiveness, safety means life itse KEPCO will secure the value of "safety," which is so important that nothing can substitute it.

# **Open recruitment** in various ways

KEPCO always strives to secure the best and talented human resources, which are the basic requirements for the company's competitiveness and sustainable growth, and continuously expands the recruitment size to fulfill our social responsibility. We are also securing new employees to enhance the vitality in the company and create sustainable growth engines.

#### Recruitment of new employees as the largest scale for public company

l	Category	Number of persons	Notes
Permanent	New employees by open	697	College graduates (487),
employees	recruitment (general position)		High school graduates (210)
	Professionals with experience	15	International lawyers, professionals in international finance,
			ICT and generation, speech writers, etc.
	Researchers	19	Target Recruiting (Advertisement for prestigious colleges
			at home and abroad, and academic journals, etc.)
	Others	88	Skills position (technology), etc.
	Youth interns	1,387	Recruitment-connection type (324), Recruitment-priority type(1,063

As expanding the recruitment for high school graduates, including open recruitment and recruitment-connecting internship, to carry

out open recruitment focusing on capability, not personal background, KEPCO has experienced a significant increase in the number

of high school graduate applicants for the last three years. Plus, by expanding business sectors including overseas business, we can

conduct a massive scale of recruitment, and thus socially fair recruitment is continuously increasing in all areas, such as the employment for the disabled, youth, women, regional applicants and human resources in natural sciences and engineering. We will lead

the open recruitment by continuing the recruitment process based on capability and ability and carry out socially fair employment

by employing various social members including high school graduates, youth interns, regional talented people and female workers.

As for supplementing personnel, we diversified the channels for securing the best and talented and expanded the recruitment for local applicants by employing workers with extensive experience in professional areas such as overseas business, law and patent and carrying out target recruiting for R&D personnel in prestigious universities at home and abroad, beyond the past universal massive recruitment. Also, we have expanded the employment of local residents at oversea work sites. The company is providing opportuni-

ties to reinforce the capability in employment as much as we can by operating a youth internship program with 1,387 participants. As youth interns that can be changed into permanent jobs were a total of 204 (25% of new employees), which exceeded the govern-

2012

New employees

683

197

303

214

10

362

Total

19,278

8,693

11.658

2,967

508

11,991

2013

New employees

819

238

350

229

17

400

Total

19,644

8,609

11.743

3,151

519

12,236

ment's goal (20% of new employees), KEPCO is continuously striving to create more jobs for the youth.

2011

New employees

155

42

55

36

5

49

Performance for recruiting domestic new employees (Unit: person)

Total

19,303

8.978

11.633

2,830

516

11.891

#### Performance for operating youth internship program

	Performance	
Total num	1,387	
Permanent-job-turned interns (person)		204
Change	Compared to recruitment	14.7
rate (%)	for interns	
	Compared to recruitment	24.9
	for new employees	

#### Performance for recruiting local employees in major overseas business areas (Unit: person)

Category	2011	2012	2013
The Philippines	188	194	319
Jordan	9	7	17
Mexico	15	43	48

\* Reasons for selecting major overseas business areas: Business sites which KEPCO manages proactively among overseas local business sites

## Human resource development



	opportunity	

Category

High school graduates

I ocal talented workers

Female workers

The disabled

Workers majored in the natural

science and engineering

KEPCO reinforces the internal capability of company members by encouraging self-development and broadening education opportunity. For these goals, we are providing feedback and developing education programs based on the process of developing capability and identifying needs for training and education. With the introduction of a system with personal education target, we are continuously expanding education opportunities connecting it with personal MBO (Management by Objectives) and group-based internal performance assessment

#### Annual budget for education (100 million won)

Catego	ory	2011	2012	2013
Total bu	dget	21,209	19,618	20,515
Budget for	Internal	78	64	84
education	External	92	205	204
	Total	170	269	288

Category	2011	2012	2013
High-level executives	966	1,884	1,969
Entry-level executives	3,030	6,270	5,991
Employees	8,106	14,954	12,517

12,102

23,108

20,477

Number of trainees for each year (person)

#### Best and talented employees for KEPCO

# With the goal of becoming the world's best energy group in the global market with fierce competition, the followings are the global KEPCO's idealized type of employees with indomitable challenging spirit

KEPCO establishes and operates a capability model for managing customized education courses for each level of capability. We provide various education programs by systemizing common job capability and leadership skills based on the company's vision, strategies for growth and analysis for internal and external environments to overcome the gap in capability among employees. We are supporting self-development and improvement in job capability by vitalizing e-learning programs in humanities, leadership and job courses. The company is operating various language learning programs by utilizing telephone and the Internet to strengthen global capability, and global challenge course to encourage new employees to set new goals and stimulate their passion.

#### System for capability-building education

Global challenge by new employees (On-site education for the overseas electricity industry)



## **Education for internalizing core values**





rnalizing DNA for change and

3rd stage (2014)

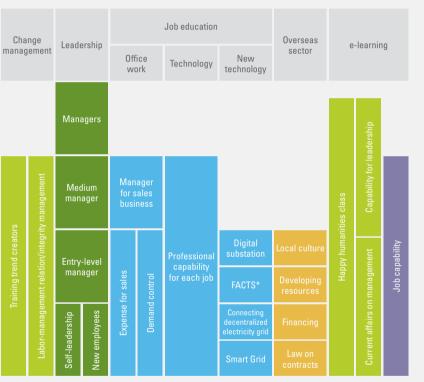
panding on-site practice for hange and innovation



Total



### Systemized education for reinforcing capability



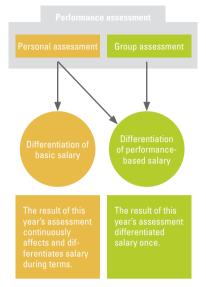
#### Education for internalizing core values

KEPCO is continuously operating education courses for change and innovation based on staged roadmaps to share core values among the entire employees. With this activity, we are leading the innovation of corporate culture and vitalization of communication by gathering internal capability in the ever-changing global management environment.

#### Supporting lifelong learning

KEPCO helps would-be retirees to start a second life by implementing outplacement education. We are enhancing accessibility and efficiency by performing blended learning with online and off-line education for detailed subjects, including lifelong design, launching new business/reemployment, field training, etc. We also provide customized support for retirement by assigning a personal consultant for each trainee.

# Assessment and compensation



#### Initial salary of domestic new employees





#### Human resources management (MBO, etc.)

KEPCO's performance assessment system is composed of achievement assessment based on MBO and capability test; all employees are assessed by the same procedure and methods. As for achievement assessment, KPI (Key Performance Indicator), which each group needs to achieve for a year, is established by the deliberation of Management Assessment Committee at the beginning of the year, and the goal for personal achievement is set by consultation with superiors. Based on the yearly coaching, process for achieving goals is managed, and at the end of the year, performance assessment is carried out by considering the importance and difficulty of performance.

Capability assessment is composed of common capability, leadership capability, and job capability considering the best and talented model of KEPCO, and according to each level of positions, 8-10 levels for each capability elements are estimated. To prevent arbitrary assessment, it is conducted twice by a direct superior and the head of a department; according to five assessment levels (S, A, B, C, D), relative assessment is carried out. The result of assessment is applied to the score in the promotion, and in case of calculation of incentive payment for executive employees, 90% of group assessment and 10% of MBO are applied. The result is also utilized as data for overall personnel management such as other modifications of annual salary and appointment of education staff.

#### Fair and reasonable salary system

The compensation consists of basic salary, increase in salary, and performance-driven salary. We differentiate salaries based on ability and performance assessed through MBO and group assessment. To reinforce fair salary system based on employees' performances, percentage of incentive by yearly performance assessment (23%) is expanded, while various internal assessment systems (Power Incentive, Spot Bonus, etc.) are being vitalized. In 2013, basic annual salary for new college graduate employees is 29,651,000 won, and the percentage of initial salary of new college graduate employees is 243% compared to the minimum income in Korea. As for overseas business sites, we strive to maintain fairness in income and promotion for employees who were employed locally. Especially, the company is fulfilling its social responsibility of protecting human rights of local employees by complying with local laws and systems.

#### Initial salary of new employees at major overseas business sites (Unit: 10,000 won)

	2011		2012		2013	
Country	Legal minimum	Initial wage for	Legal minimum	Initial wage for	Legal minimum	Initial wage for
	wage	new employees	wage	new employees	wage	new employees
The Philippines	24	34	25	34	25	34
Jordan	30	163	30	163	30	163
Mexico	16	108	16	108	15	117

KEPCO is operating the retirement salary system to secure the foundation for a stabilized life in preparing for an aging society; as of late 2013, the number of applicants for personal retirement benefits account is 1.055 employees, and the net worth is 93.6 billion won,

#### Percentage of executives and employees who are expected to retire within the next 5 to 10 years for each type of job and region

Category	Number (person)	Expected number of	Percentage (%)	
		Within 5 years	2,946	15.5
Domestic	19,012	Within 10 years	3,371	17.7
		Total	6,317	33.2
		Within 5 years	15	2.4
Overseas	632	Within 10 years	63	10.0
		Total	78	12.3
		Within 5 years	2,961	15.1
Total	19,644	Within 10 years	3,434	17.5
		Total	6,395	32.6

#### Providing various life cycle-based welfare programs

KEPCO has launched the welfare system meeting various needs from each employee and is operating the system reasonably to spread a family-oriented culture and to make a healthy corporate culture. We provide a systemized platform through web-based cyber welfare center and various life cycle-based welfare programs by making strategic partnerships with external service companies such as shopping malls, self-development, and tourism sectors.

# **Pleasant and happy** workplace

#### Culture of labor union for mutual prosperity

KEPCO is operating the Union Shop system, by which employees are granted the qualification of labor union members upon entrance into the company in accordance with a collective agreement. Within the extent of law regarding labor affairs, such as the Labor Standard Act and Trade Union and labor Relations Adjustment Act, the company guarantees working conditions, activities by the labor union, collective bargaining and agreement, strikes, exemption of working hours (time-off system), etc. As of late 2013, the total number of members in the labor union is 14,748 employees, and the rate of employees joining the labor union is 72%.

KEPCO is making labor-management culture for mutual prosperity by reinforcing communication and cooperation between labor union and management. We stipulate the duty of report and notification of changes for management in the collective bargaining. In 2013, various issues such as preventing safety accidents were discussed 1,005 times in the consultations with the headquarters and labor-management committee, and meetings for discussing current issues in management was held 340 times and were a forum for sharing current affairs in management. We have reinforced two-way communication by operating various labor-management communication channels such as the CEO-led "communication by letters" and fostering 4,263 communication leaders. Based on these methods of communications and cooperation, the company has created major performances including stabilizing electricity supply, solving management deficit and current management affairs, and fulfilling social responsibility.

# 1일 여성관리자 Mentoring 혐약식

Agreement ceremony for mentoring with newly appointed female managers

#### Changes in female employees (Unit: person)

Year	2011	2012	2013
Employment of	36	214	229
permanent positions	(23%)	(31%)	(30%)
Appointment of	7	31	49
executives			

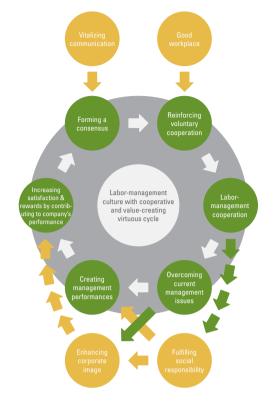
#### Performance of operating flexible working systems (Unit: person)

Year	2011	2012	2013	2014
				(plan)
Flexible	-	21	2,241	3,000
commuting				
hours				
Flexible	20	41	44	150
working				
hours				

\* Measures for implementing remote working system is being designed (2014~)

or seventy one

#### Realizing performance-based labor-management culture with virtuous cycle



## **HAPPY WORK PLACE**

#### Gender equality and family-oriented culture

KEPCO ensures a non-discriminatory compensation and promotion for both male and female employees, and as of 2013, initial salary of new college graduate employees is 29,651,000 won for both genders. With efforts for fostering female leaders, the number of female managers, which was only seven in total before 2000, continuously increased to 178 as of July 2014.

At a happy and pleasant workplace, executives and employees find their balance between work and life, and naturally, the production of a company enhances as well. KEPCO is supporting employees to strike a balance between work and life by operating various family-friendly programs, such as systems for supporting pregnancy and childcare, to create a family-oriented culture. To encourage pregnancy, we provide various leaves, such as leaves for checking fetus, parental leave for spouse, and leave for treating infertility; in 2008, we established the company's nursery facility (KEPCO Bitsarang Daycare Center) and are providing childcare services for 100 children of the employees'.

#### Performance for operating various systems for protecting motherhood (Unit: person, %)

Category	2011	2012	2013
Maternity leave before and after giving birth	180	187	151
Parental leave	200	217	197
Infertility leave	5	6	10
Employees working for a shorter time for childcare	2	3	12
System for adjusting commuting time to guarantee hours for childcare	2	3	4
Retention rate by male and female employees after parental leave	97.0%	97.2%	99.49%

We have launched various types of flexible working systems, including commuting system with different time; to encourage free use of parental leave, the company established the "Pool System for Substitutes" consisting of applicants and retirees so that psychological burden of emptying positions due to pregnancy and childcare can be lifted, and excessive works are minimized.

To celebrate the beginning of new employees, we have invited parents and families of new employees to the company from 2011. We hold a ceremony for entering the company with families, and operate the "Good father" play school with children in five regions. The company operates "Family Day" to encourage employees to go back home early without working overtime and send celebratory messages to employees who are expected to give birth and gratitude messages to parents of employees, who turn sixty one

## Human rights

#### Process of using the system dealing with complaints on personnel affairs





#### preventing sexual harassment (Ministry of Gender Equality and Family, November 2013)

Survey for satisfaction level by employees (5-score scale)



KEPCO recognizes the importance of human rights and implements policies to respect human rights of all the executives, employees, and customers. In 1996, the company clarified the principles of respecting human rights and prohibiting discrimination by enacting and announcing the "Ethical Code of Acts by KEPCO" and after signing up for the UN Global Compact in 2005 for the first time as a Korean company, we comply with the principles on human rights among ten major UNGC principles and submit the report for complying with ten major UNGC principles every year. In the same year, we also enacted and announced the Sustainable Doctrines based on four directions, including economy, environment, society, and people, and after the announcement, we are carrying out management respecting human rights. Plus, with the company's internal regulations, we operate the system and relevant process dealing with complaints on human resources affairs to respect human rights of executives and employees; in 2013, we solved one case of complaint related to human rights.

In September 2013, we conducted a pilot test to adopt Employee Assistance Program (EAP) targeting 924 employees. The EAP is a program that helps to reduce stress caused by emotional labor by providing consultation on psychology, law, finance, and family matters; it is expected that we will take a more systemized approach for human rights based on this pilot test.

Meanwhile, KEPCO operates a center for dealing with complaints on sexual harassment in the headquarters and business branches to take measures for preventing sexual harassment. Service representatives at each center are composed of one male and one female employee, respectively; a total of 494 employees were designated, and by launching education course for consultants and intensive course for dealing with complaints, the efficiency in complaint consultation is being enhanced. We are operating the anonymous report system to spread culture of sexual harassment prevention at workplace, and in 2013, we conducted e-learning education for the entire employee twice. Thanks to these efforts, KEPCO received the award as the best institution preventing sexual harassment by the Ministry of Gender Equality and Family in November 2013.

In accordance with UN Framework and Guiding Principles on Business and Human Rights, KEPCO will introduce every regulation required for management respecting human rights in the work process. We strictly comply with policies of Anti-corruption & Civil Rights Commission of Korea to protect the human rights of the people and consider the human rights and safety of local residents to be the most important in case of the construction of electricity facilities.

#### **Employee satisfaction**

Survey for employee satisfaction is conducted by email for the entire employees, and items for survey are composed of questions on company's vision, satisfaction level for company and job, personnel affairs (promotion, shift, assessment, incentive, education, etc.), communication and labor-management relation. With the survey, the company identifies the satisfaction level for each item, complaints and needs, and based on this verification, we reflect and utilize these results for the improvement of relevant systems and policy data

According to the result of survey for satisfaction level in 2013, satisfaction level for work increased thanks to reasonable personnel shift by implementing mileage points, fair promotion by conducting measures for rooting out unfair personnel measures, implementing family-friendly systems protecting motherhood, and introducing flexible working systems such as commuting at different times. In addition, satisfaction level by employees (5-score scale in total) increased to 3.65 in 2013 compared to 3.47 in 2012 thanks to various efforts to make a sound corporate culture, including operating vision portal for sharing and spreading company's visions and conducting a campaign for eradicating authoritarianism.

SPECIAL FEATURE

#### How to live as a superman and superwoman at KEPCO

Do you find it difficult to strike a balance between work and life? KEPCO is operating various familyoriented programs and systems to make an interesting workplace to help strike a balance between work and life. Let's meet the supermen and superwomen working for KEPCO, who are struggling to take care of both work and life.

> "Where are you going, Dad?" Let's go to the "good father" play school. Deputy Head of department, Son Gi-

jeong, who put finding interesting things to do with his son as his top priority, applied for the "good father" play school, a program directed towards KEP-CO employees. His son, Deok-ryong, is literally his top priority as he got his son after nine years of marriage. However, he is not confident and wonders whether he is a good father or not. Perhaps, most working fathers in Korea have similar thoughts. What he realized through the "good father" play school is that one box can be a great tool for various games, and that these simple games delighted his son. The lesson he learned from the school is to become a sincere friend for his son, not necessarily a great father.

"Are you a working mom who struggles between work and life? Let's be wiser as a good mom and an employee."

Lee Jin-hwa, a deputy head of department, married

a colleague at KEPCO. She might have had a difficult time as a working mom who strives to endure hard times at work and at home. She said "Being a working mom is definitely hard. As time passes, you have more tasks at work which you have responsibility for, and at the same time, you have more things to do at home for your children. Domestic affairs cannot be an excuse for your work, and vice versa. I hope that

we, all working moms, become both great members of KEPCO and great mothers at home despite the struggle." Although tough times are always following her, she has wisdom to share her story and understand other working moms.

# **Safety and Health** Management

#### Safety and Health Management System

KEPCO has verified its global-level safety and health management at home and abroad by launching the safety and health management system (K-OHSMS 180001) to all business branches and 587 cooperative firms and acquiring certificates from accredited institutions. We utilize the guideline for safety management activities of executives, employees, and cooperative firms by enacting guidelines and procedure on safety and health management suitable for the standards for the system and carry out various activities such as internal diagnosis, education, and consulting for cooperative firms by fostering 60 safety experts.

#### Expanding safety and health culture

To spread the safety culture, KEPCO issues "Safety-Zine," operates notice and alarm system for safety accidents, provides safety calendar and traffic sings, carries out self-diagnosis for web-based securing safety and conducts e-learning education. Every summer season as vulnerable period for safety, we strive to enhance awareness and communication on safety issues by designating period for stressing industrial safety and health (June, July), spreading atmosphere for non-disaster and special activities for preventing accidents with labor union and holding company-wide meetings with managers in charge of safety and health management.

#### Safety management on construction sites

KEPCO established the monitoring system for construction sites on a real-time basis to pre-



Best Award for Culture with Electricity Safety in Korea (Ministry of Trade, Industry, and Energy, October 2013)

Category Executives & Na employees Per Dis Contractors Di Peo Dis General Ele

#### INTERVIEW

#### Lee Sun-bae, Deputy head of department at KEPCO

public



After the Sewol Ferry in a safe manner. incident in April 2014, Korean people are having a lively discussion on the approach by KEPCO to secure the value of safety? To live up to customer needs and the government policies

zero level of accidents in every disaster by establish- ties at an early stage. The company also launched the ing the safety management system for disasters with department in charge of dealing with disasters at the the consideration of unprecedented and extreme situ- headquarters and dispatched experts to prepare for ations. The beginning and ending point of safety is the social and natural disasters and strengthen the safety "site" itself.

Please explain KEPCO's efforts to manage sites safety and disaster sector.

The answer to safety management lies in the site itself. To reinforce on-site safety management, KEPCO has completed special inspection for 861 business safety issue. What is the branches including massive construction sites and major transformers for about one month. We changed decrepit electricity facilities, supplementing firefighting facilities for electric power conduit pipe and complex substations vulnerable to fire, and reinforcing facility on reinforcing safety management, KEPCO will ensure safety by executing the budget for the existing faciliof on-site electricity facilities. In this way, the company reinforced the function of control tower in the

vent safety accidents such as falls and electric shocks for employees of cooperative companies; in 2013, we remotely checked the measures for safety of construction sites (78,776 times in total) and strictly checked whether business branches implemented safety measures by carrying out special diagnosis (35,436 times in total) for construction sites with the Safety Patrol team in charge for the headquarter and business branches.

#### Prevention of electric shocks of the public

To prevent electric shock accidents caused by touching electricity lines, KEPCO selects various types of electric shock accidents based on themes of the causes: electricity accidents by transporting for moving and outdoor activity from March to May and flooding by typhoon and monsoon season and electric shocks at construction sites from June to September. With these themes, we are implementing various promotion activities for safety by using various media (broadcast, newspaper, SNS, etc.) Thanks to these performances, the company received the presidential citation for electricity safety culture by the Ministry of Trade, Industry, and Energy in October 2013.

#### Medical management programs for executives and employees

To prevent occupational diseases and promote health for executives and employees, KEPCO carries out special medical check-ups (blood tests) other than general examination every two years, and for employees with a high possibility of being exposed to specific diseases, we operate a non-smoking clinic and medical consultation center for metabolic syndrome by connecting adjacent community health care centers and enhance the satisfaction level of health management by launching programs for physical examination by Korea Occupational Safety and Health Agency. As a swift response measure for safety and health risks at overseas business locations and for business trips, we have established the "Safety Guard System" and reinforced health management by consigning small-sized business branches (50 employees and below) with low level of health management to professional institutions.

\* ( ): Death toll

#### Statistics of safety accidents for the latest five years

	2009	2010	2011	2012	2013
National disaster rate (%)	0.70	0.69	0.65	0.59	0.48
People damaged by disasters (person)	11(5)	4(0)	4(2)	7(1)	5(3)
Disaster rate (%)	0.055	0.020	0.021	0.036	0.025
Disaster rate for public companies (%)	-	0.57	0.46	0.54	0.48
People damaged by disasters (person)	317(13)	291(11)	174(7)	162(11)	123(6)
Disaster rate (%)	-	1.73	0.99	2.42	0.97
Electric shock accidents (person)	2(1)	10(4)	6(3)	1(1)	4(1)
Lawsuits for disasters	1	1	1	2	3

#### Which points does KEPCO focus on to bring out practical effects in safety and disaster management?

The scope of targets for safety and disaster management is so extensive because electricity facilities are located across the country, including generation facilities in remote regions and steel towers in mountainous regions. For these reasons, KEPCO will launch the management in charge of safety and disaster and dispatch experts to deal with situations in a swift manner for local disasters for each unit of regions. We will establish the safety and disaster management system by carrying out diagnosis and consulting by external experts, using high-quality equipment and devices, checking facilities by utilizing new technology and advanced equipment, and implementing repetitive drills.

# DMA

# **Fulfilling our Responsibility for Sharing & Mutual** Growth

#### **BACKGROUND ISSUES**

We cannot easily imagine a world without electricity. Everyone should be allowed to enjoy the basic rights of using energy regardless of income level. As a representative energy public company, KEPCO aims to provide "warm energy" by conducting energy welfare activities. The social responsibility that KEPCO should fulfill is expanded to the materialization of ecosystem with mutual growth and cooperation. As small and mid-sized companies are getting stronger and more jobs are being created, the happiness of sharing is also increasing. When we work together, we can go further; that's why we have to carry out sharing and mutual growth practices with our stakeholders by supporting social companies, helping SMEs to grow and creating jobs.

## PROGRESS

 Strategy
 Establishing and operating a social contribution system connecting with core capability and job characteristics • Expanding mutual growth with SMEs, maximizing the creation of values by advancing into the overseas market with SMEs

 Operating 287 voluntary groups (19,000 members), the largest scale as a public company, and funds for voluntary works (4.3 billion won/year) Having professional personnel for disaster relief, establishing KEPCO-styled model for creating jobs, possessing a new managem systems for social contribution activity •Operating the department in charge of managing mutual growth with SMEs, monitoring the performance by the Mutual Growth Committee

Expanding energy welfare, supporting low-income blind people to have eyesight recovery surgery
Carrying out disaster (typhoon, etc.) relief activities, Supporting social companies and the vulnerable to launch business • Signing an agreement for mutual growth, holding exhibitions, nutual cooperation

• Acquired A grade in the index for social contribution by the government management assessment • Received the best CSR Korean company investing in the Philippines (November 2013)

• Seeking social contribution programs customized and specialized for each region, expanding business models for social companies • Creating future-oriented jobs by reinforcing new growth engines, developing models supporting SMEs connecting with Naju Innocity

#### Performance



Goal for 2014: 250 billion won and over

Supporting local communities

Law on Transmission & Substations were passed in the National Assembly (December 2013) \* Law on compensation and support for the area near transmission and transformation of electricity facilities

marketing by SMEs Goal for 2014: 90.05 million dollars

Mutual growth

62.85

million dollars

Performance of consultation

on export and support for overseas

Goal for 2014: Compensation or 90 billion won and over

Social contribution

# 257<sub>persons</sub>

Total support for eyesight recovery surgery at home and abroad

Goal for 2014: 350 persons and over (total)

## QUANTITATIVE GOAL

Number of voluntary works (2020): 13,500 times/year

Percentage of purchasing SME products (2018): 70% and over

Support for eyesight reco surgery (2021): 1,004 per

## QUALITATIVE GOAL

The way to increase the temperature of happiness and the beginning point of KEPCO is "warm energy." Until the day everyone enjoys the basic rights of using energy, KEPCO will continuously carry out energy welfare and become a trustful partner by supporting social companies, creating jobs for the underprivileged and materializing mutual growth with SME We will make bigger values for share by carrying out social contribution for local communities and globalized world For a happier future than today, KEPCO will always be with you.

# Efforts for social contribution

#### System for carrying out social contribution activities

_	
	Social Voluntary Work Team
	Support Team for Social Companies
	119 Disaster Rescue Team

Organization of KEPCO Social Voluntary Work Team



#### Eye Love Project (Unit: person)



## **Current condition for social contribution** activities

Category	2011	2012	2013
Hours/person	15.0	15.2	15.8
Number of activities	10,204	10,680	11,043



Activities for recovering regions damaged by typhoon in Mirvang by 119 Disaster Rescue Team

#### 10 years of sharing love, 100 years of sharing happiness

In 2014, KEPCO has celebrated its 10th anniversary for establishing the social voluntary group. KEPCO social voluntary group, which was founded in 2004, is the largest voluntary group as public company, having 19,000 members and being operated by 4.3 billion won in funds for a year. Over the last decade, we carried out various social contribution activities: specialized social contribution activities such as support for eyesight recovery surgery and 119 Disaster Rescue Team, customized voluntary works such as talent donation, job-creation social contribution activities such as support for social companies, and global voluntary works by utilizing overseas voluntary groups. With these various activities, we have strived to share lights and love with customers and societies at home and abroad. We will continuously contribute to local communities for the era of Naju Bitgaram and seek social contribution programs to meet global needs.

#### Vision for social contribution



#### **SPECIALIZED SOCIAL CONTRIBUTION**

#### **Eve Love Project**

KEPCO has helped the disadvantaged by performing eyesight recovery surgery for the visually impaired with low income every year. In 2011-2012, we provided 150 visually impaired people with the benefit of eyesight recovery surgery and offered the benefit to 107 patients in 2013. We will expand the target of benefit and support the surgery for 1,004 people by 2021. Meanwhile, the company conducted a company-wide campaign for donating cornea; a total of 8,138 employees, which account for 42.2% of all workers as of late 2013, pledged to donate corneas. This performance was recorded as the largest size of pledges as a single institution.

#### Rescue activity by 119 Disaster Rescue Team

In October 2010, KEPCO established 119 Disaster Rescue Team for the first time as a public company and is carrying out voluntary works for emergency relief. Until 2013, 990 people participated in activities for emergency relief at disaster sites due to typhoon and water damage, and the company provided medical support to national events such as Nuclear Security Summit seven times. Especially, when the Sewol Ferry disaster occurred in 2014, we dispatched nurses to the incident site, and for the 2014 Incheon Asian Games in October, we will provide emergency medical help and support for safety of the event.

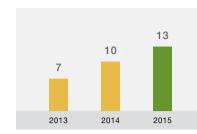
#### **Energy welfare**

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KEPCO is providing the handicapped, patriots and veterans, and recipient of national basic livelihood guarantees with the benefit of welfare discount in their electricity bills (18-31.4% in discount rate). As we carried out business for sharing energy in love to support the low-income households who have difficulty paying electricity costs, we provided a total of 15,536 households with about 2.1 billion won from 2003 to 2013. In the middle of summer and winter, we suspended the limitation of electricity supply to customers who did not pay the electricity bill. In 2013, the company provided electricity to 1,513 households with limited provision, and from November 2013, we expanded the amount of necessary electricity use for households with limited provision from 200W to 660W, which strengthened energy welfare for the vulnerable.

In addition, KEPCO broadened the target of customers with exemption of deposit payment to lift the burden of paying electricity bill for tenants. With the special discount system for traditional markets, we sponsored small merchants with 2.4 billion won and expanded the scope of benefits by extending the period for the system from late 2013 to late 2014.

#### **Goals for fostering social companies**



priority, checking electricity facilities, and consulting electricity use. **Rainbow with Hope Project** "Rainbow with Hope Project" is KEPCO's microcredit project in which the company supports funds for the vulnerable and social companies to launch business without collateral with Social Solidarity bank by utilizing small part of the salary (less than 1,000 won) of the company's executives and employees; we selected and supported three would-be business operators and four social companies in 2013. In 2014, we will carry out our pro-bono activities and talent donation to ensure sustainable growth of the selected social companies.

#### **Directions for supporting social companies**



KEPCO's CEO, management and labor union visited facilities with severely handicapped people at the end of the year and carried out voluntary works such as cleaning and helping them with rehabilitation. Plus, for 1,000 households with difficulties in moving, we established wireless switches, which can turn a maximum of three lights on and off by remote control.

## Talent donation

KEPCO is carrying out customized social contribution activities meeting needs from residents and societies by building a personnel pool with the talented in 3,655 sectors such as language and technology. As of 2013, a total of 2,234 employees are proactively donating their talents, and the performance for matching the vulnerable with contributors according to the characteristic of regions and demands is a total of 2,848 cases. As for the sectors, the percentage of education and mentoring was the highest, which was 46%.

## Support for children and teenagers

KEPCO is conducting campaigns for missing children by posting their photos on electricity bills and conducting the name tag campaign. As a result, as of 2013, a total of 109 missing children found their families, and we received the citation for preventing missing children by the Ministry of Health and Welfare. Plus, by making partnership with 287 regional children centers, we carried out a total of 313 times of voluntary works such as education guidance, cultural experience and support for meals. As we also performed the mentoring voluntary works (1,210 times) for neglected children and teenagers (2,062 people), through which we helped them overcome their weakness and realize their dreams.

## Fostering the best and talented for the future technology

Sponsorship for students majoring in electronic and electrical engineering



Play psychotherapy for regional children center



Received the citation for preventing missing children (Ministry of Health and Welfare, May 2013)



#### Support for social companies and cooperatives

KEPCO is promoting to create more jobs for the vulnerable by vitalizing social companies and cooperatives. In 2013, we carried out the business for supporting social companies, selected a total of nine cooperatives, including one "Café with Hope" and Media Content Creators Cooperative, and provided them a total of 500 million won as a fund for establishment. We made agreement with 15 social companies in 14 regional headquarters in the country and are providing various supports such as purchasing products with

Supporting for a successful settlement of companies by providing total solutions from establishment to incubating and pioneering new markets

## **CUSTOMIZED VOLUNTARY WORKS**

#### Sharing love jointly with labor union and management

As part of activities for sharing knowledge at industry-academy clusters with Korea Electrical Engineering & Science Research Institute and ten colleges, KEPCO held a camp for electricity technology, a program for 60 college students majoring in studies regarding electricity in August 2013. We held the "Junior Doctor Program" six times, which provided 120 middle school students with the opportunity to take lectures and experiment the basic principles of electricity. Meanwhile, in July 2013, we granted 50 students majoring in electrical electronics with good grades from 50 colleges, and children from low-income households with scholarships worth of 330 million won to foster the best and talented for the future technology.

Since 2012, KEPCO has aggressively carried out business for supporting social companies. Let's meet two social companies with which KEPCO cooperates to make a better and happier world.

#### "We hope to create a fair English education without any discrimination." English Cooperative (Eng Co-on)

"Support from KEPCO was a great help for us. It was a solid foundation for maintaining the current status. After being appointed as the business to receive support from KEPCO, we were selected as the best case as a cooperative by Seoul Metropolitan Government and earned more recognition."

Yun Mo-rin, CEO of English Cooperative (Eng Co-op), a social company, expressed her gratitude to KEPCO. Eng Co-op was selected as one of the business models as a cooperative by KEPCO in 2013 and was provided with funds. With the aim of supporting English education for recipient of national basic livelihood guarantees and multicultural households, Eng Co-op is a social cooperative which returns total profits generated from English education for general households to support English education for the disadvantaged. The company originated from the sharing practice by the housewives who came back from foreign countries in 2010. Doing voluntary works in providing English education for low-income households. Ms. Yoon was shocked to find that the level of education largely depends on income and established the cooperative with other housewives with the aim of establishing a nondiscriminatory and fair education.

As of late last year, Eng Co-op has a total of 40 members and is providing classes at children's centers at three regions. They provide English classes at a more reasonable price compared to regular academies,



CEO Yoon Mo-rin (middle) and teachers who established "Eng Co-op," social cooperative company supporting underprivileged households with English education



Employees who put great efforts to make their dreams come true at the first branch of Café with Hope, Choi Eun-yeoung, Sin Yeoung-su and Rashodan (from the left)

and generated profits are being used to expand free English education class connected with the regional children's centers. Especially, children of cooperative members who pay investments are allowed to take classes at half price

"If you want high-quality English education at a reasonable price, why don't you join us as a member of Eng Co-op?" KEPCO sincerely supports Ms. Yoon, who genuinely asks for support in fair education, and her cooperative, Eng Co-op.

#### KEPCO Café with Hope, supporting the underprivileged with jobs to dream a better future

"I don't have any professional skills, money to learn skills or available jobs "

That's silent shout of the youth from vulnerable class KEPCO Café with Hope will provide them a hopeful "seed" by giving them the opportunity to get a job. The first branch of Café with Hope, which was launched in October 2013, was the first step to create a better future with "Jari," a company with vision of creating more jobs for the vulnerable and disadvantaged. KEPCO Café with Hope is one of the company's businesses supporting social companies to create jobs. With "Work Together Foundation," we selected the coffee and bright smiles. Ms. Rashodan, who got marcompany "Jari" by holding a contest for social venture companies, and would-be and accredited social companies, and in June 2013, we provided the company lot of tea, she did not understand her husband who sponsorship to establish the café.

Café with Hope is not one of those regular coffee shops selling only coffee; the Café creates more jobs for the socially disadvantaged, carries out education courses to be a barista free of charge and helps them to stand on their own economically and psychologically. Sin Ba-da, CEO of Jari, said that the company will make the café as a center for a hopeful world by



making a happier society with those who could not take opportunity to work due to social prejudice

The CEO said, "The support from KEPCO helped us greatly. Although our company is a social company, I believe creating profits is also important. Maintaining the operation of a company guarantees more jobs. We will strive to develop ourselves so that we can operate such as single-parents or multicultural households. a second and third Café with Hope based on the support of KEPCO "

> At this Café with Hope, Ms. Rashodan, a migrant woman, and two other teenagers work together and strive to make their dreams come true: they are interns selected among the socially underprivileged who want to become a barista. They said that they want to become happy people who give customers a cup of tasty ried and came to Korea from China, has a child at the age of five. Coming from China where people drink a said that the "bitter" coffee tastes good; now, she is saying that she wants to drink a cup of coffee that she made herself with her husband. Ms. Choi Eun-yeoung hopes to run a small café with her mother after receiving the training course for baristas. Mr. Sin Yeoung-su has the wish of becoming the best barista. Through KEPCO's Café with Hope, we will continuously support many people with valuable dreams to live their lives with confidence.

SPECIAL FEATURE

tal protection.

Global social contribution

KEPCO is carrying out various social contribution programs to strengthen cooperative foundation with local communities and secure credibility and love from the local residents at overseas business sites such as the Philippines, Jordan and Mexico. We fulfill our social responsibility as a global company by carrying out customized-social contribution activities including medical voluntary works such as evesight recovery surgery, establishing libraries at elementary schools and supporting regions near the plants. We will continuously expand various cooperative businesses to solidify the unity with local residents and environmen-





Medical voluntary works for regions near Ilijan Plant

#### Social contribution activities in the Philippines

Category	2011	2012	2013
Medical voluntary works	11 times (6,608 participants)	6 times (1,875 participants)	6 times (1,909 participants)
Scholarship business	Scholarships were provided 43 times	Scholarships were provided 18 times	Scholarships were provided 16 times
	(3,501 beneficiaries)	(1,292 beneficiaries)	(1,546 beneficiaries)
Support for the neighborhood	187 times (21,197 beneficiaries)	153 times (16,524 beneficiaries)	159 times (17,127 beneficiaries)

#### Current condition of Eye Love for "Eye-opening" with Hope project in 2013 (Unit: person)

Category	The Philippines	Mexico	Jordan	Vietnam	China	Mongolia	Nigeria	Indonesia	South Africa	Total
2012	2	12	11	-	6	1	2	2	4	40
2013	-	-	5	1	1	-	-	-	-	11
2014 (plan)	3	2	5	-	-	1	2	2	2	21

## Supporting schools for the blind in China and eyesight recovery surgery for the vulnerable

KEPCO has supported Shanxi, China, where the wind power generation business is performed, providing blind children school with winter clothing, bedding and daily necessities. By 2013, we supported eyesight recovery surgery for a total of nine persons from yulnerable households.

### Supporting the expense for surgery of malforma tion of lips for the disabled in West Timor

In January 2014, KEPCO invited Ms. Merienti, a disabled person from West Timor, Indonesia, which is inflicted by long-standing conflicts and ethnic conflicts, to Korea and supported all the medical expense for surgery of cleft lip and cleft palate. With the congenital cleft lip, she had difficulty living a normal life since was finished



In 2013, the company established an elementary school at the region near the Ilijan Plant in the Philippines and carried out business for making a clean environment and education voluntary works. We also provided 63 million won in disaster relief aid collections for the damage caused by earthquake and typhoon. We sup-

ported five Philippine multicultural households living in Miryang to visit their home country. Thanks to these social contribution activities, we received the best award in CSR as a Korean company investing in the Philippines and were reported in "The Philippine Star," which is a prestigious daily newspaper in the Philippines.



Global voluntary work group

she was bullied by friends and could not easily ingest foods. Her unfortunate condition was informed to KEP-CO by a Korean missionary, who carried out missionary works in West Timor, and he conveved her story to his



A disabled person from West Timor after the surgery

acquaintance working for KEPCO. The surgery for cleft lip and cleft palate requires high-level of technology in the plastic surgery sector, but local medical skills in West Timor are too decrepit and expensive that she could not afford to undergo the surgery. During her stay in Korea, KEPCO provided all expenses for the surgery, airfare, and charge for board and lodging.

Technological support for a refugee camp in Syria

With the request to support a refugee camp in Zaatari from the UNHCR. KEPCO improved the Distribution grid at the camp and implemented consulting service for electricity bills and measurement system. At Zaatari refugee camp, about 120,000 Syrians, who passed the boundary of Jordan to escape from the civil war in Syria, are staying.

# **Conflict management** and support for regions with facility construction



Signing mutual contracts for the construction of Sinjungbu substations and transmission lines between KEPCO and local residents

#### Communication and empathy as requirements for the construction of electricity facilities at the right time

The precondition for the construction of electricity facilities at the right time to provide stable electricity is the communication and empathy with stakeholders in regions where the construction for facilities is carried out. To conduct the construction of Sinjungbu substations, KEPCO operated the Committee for Selecting Sites, composed of 21 members, including local resident representatives, local governments, academia, media, environmental and conflict experts, etc., from February to July 2013 and strived to reflect stakeholders' opinions more proactively. We adopted the result of assessment (11 items such as shelters for housing, landscape, etc.) by using scientific methods; the Committee decided the optimal site (July 2013) and the decision was accepted by four cities and counties.

#### Adopting scientific and transparent result for the assessment of candidate sites with multifaceted communication

To inform the necessity of business and current condition, KEPCO put great efforts in communicating with various stakeholders by holding meetings between the management and opinion leaders such as lawmakers and county governors (5 times) and meetings with reporters (July 2013). From August 2013, the company has operated the "Open Desk" where a KEPCO employees deal with complaints from local residents directly by residing at each site, and with this system, the company listens to various opinions from local residents and adopts their opinions in carrying out businesses.

#### Signing a MOU for mutual growth between KEPCO and local residents

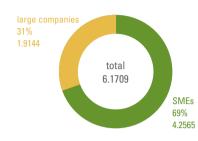
In January 2014, KEPCO signed a MOU for mutual growth between the company and local residents with local resident representatives, lawmakers and KEPCO's CEO attending the meeting; with this agreement, the conflict over selecting sites for substations with 765kV and transmission lines was settled. To make the foundation for materializing separate support, which was a major request by residents in areas near substation and transmission lines, the company revised its regulations (detailed rules for operation of special compensation on transmission and substation facilities, August 2013) and is providing separate supports such as supplying solar power housing and revising houses. Based on the law on compensation and support for the area near transmission and transformation of electricity facilities, which was passed in January 2014, we will continuously carry out legislation and support for local communities

#### Agreements on support business for regions near Sinjungbu substations with 765kV

Category	Contents
Target	Six villages in Ochang-eup, Cheongwon, Two villages in Dong-myeon, Cheonan (about 340 households)
Period October 2013 ~ (Six villages completed the construction among eight villages)	
Major business	Solar power housing, revised houses, purchasing lands for joint farming, etc.

# **Management for** mutual growth with **SMEs**

#### Sales performance by SMEs in 2013 (Unit: trillion)



Performance in purchasing products manufactured by companies with the socially disadvantaged in 2013 (Unit: 100 million won)



From February 2014, KEPCO has expanded the lowest limit for order to realize mutual growth with cooperative firms and supported the stabilization of management in cooperative firms, including predicted production and sales guarantee. Order with the lowest limit system is to guarantee monthly minimum orders for major items operated by KEPCO with price contracts; the system is a result of listening to voices from SMEs requesting even and continuous orders at the meeting for policies on mutual growth with SMEs, held by KEPCO in 2013. Thanks to this system, as of 2014, a total of 12 billion won worth of products will be additionally ordered by about 70 SMEs.

SPECIAL FEATURE

Due to the counterfeit and fabrication 2012, we have found that there were no problems with of accredited test reports in the nuclear the reports. With the introduction of the registration domestic test institutions and proactively discussed power sector, KEPCO began to receive system by suppliers, we have received accredited test accredited test reports, which are man-reports directly from test institutions. From April 2012, KEPCO will strive to manage prevention-focused supdatory documents, directly from suppliers from Janu- the company revised the system so that suppliers diary 2013. With this movement, we have completely rectly submit reports to enhance work efficiency and prevented counterfeit and fabrication. Plus, after provide convenience. However, test report fabrication analyzing a total of 422 accredited test reports which incidents made us realize the importance of trust and were submitted by suppliers from April to December safety, and we immediately took measures to overhaul

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#### Managing the supply chain

KEPCO manages contracts and supply chain in accordance with "Act on Contracts to which the State is a Party (State Contract Law)." Suppliers who desire to participate in KEPCO's biddings have to meet the requirements in the "Guidelines for Management of Suppliers of Equipment," which is a standard of KEPCO, other than requirements stipulated in the State Contract Law. As for major items, we identify the qualification of bidders before biddings.

In terms of risk management of the supply chain, the company imposes sanctions, such as restricting the qualification in bidding, for illegal business operators who violate regulations limiting subcontracts, collude, forge or falsify documents on bidding and contract and accept bribe in accordance with the Article 75 of Enforcement Ordinance and Article 15 of Regulations on Contract in the State Contract Law. For suppliers who significantly contribute to the electricity industry, we provide various incentives such as supports for overseas business and exemption of contract deposits.

We recommend the "Code of Conduct for Suppliers" for companies participating in biddings. Suppliers are allowed to apply for bidding and write contracts only after reading the Code of Conduct; in 2013, a total of 23,374 companies perused the Code of Conduct. The regulations are mainly composed of ethical standards which cover the prohibition of illegal subcontracts, bribery, collusion and unfair request; social standards which guarantee the prohibition of discrimination based on race, religion, gender and physical capability, and the freedom of assembly and association; and environmental standards regarding the provision of safety equipment and making safe working environment. The special condition for conducting integrity, which includes these ethical standards, is attached to all kinds of contracts.

#### Policies on purchase and service

KEPCO strives to support the socially disadvantaged to create mutual growth in the electricity industry. Especially, we put great efforts in expanding purchase for products produced by SMEs, companies with female workers and the handicapped to help them stand on their own. As for the socially underprivileged, we add more scores for them to participate in bidding competition at a favorable position. We have also launched and operated the system for provision bidding by SMEs in priority, in which only SMEs are allowed to take part in biddings for contracts for equipment worth of less than 230 million won. To minimize damage for SMEs due to fierce price competition, the company guarantees a lower limit (88% as of 2014) and contributes to improve the profitability of SMEs by conducing deliberation for qualification and excluding a bidding system for the lowest price. Thanks to these efforts, a total of purchase performance for SMEs in 2013 was 4 trillion and 200 billion won, which includes 520 billion won for products manufactured by companies with female employees, 18 billion won for companies with the handicapped, and 19.5 billion for companies with patriots and veterans.

Further, in accordance with the Article 21 in the State Contract Law, KEPCO is implementing the limited regional competition for each business branch to establish the foundation for growth of regional SMEs and promote the regional growth and increase employment. Contracts with limiting competition is to restrict the scope of competition to persons who have business offices in special governing cities, general cities and provinces controlling the construction, contracts or sites for purchasing products and supply. Based on the estimated price, 9.5 billion and below is for general construction; 700 million won and below for special construction such as electricity construction; and 230 million won and below for the production, purchase and contract for products. In 2013, the number of contracts for limited regions was 3,904 cases in total, which was worth of 358.6 billion won.

#### Complete prevention of counterfeiting and fabrication by submitting test reports for parts directly

the system. In May 2014, we held meetings with major jointly dealing with fabrication and counterfeiting. ply chain to achieve zero level of counterfeiting and fabrication of electricity devices and equipment.

# **Management for** mutual growth with **SMEs**

## Strategies for mutual growth

With the aim of fostering small but strong SMEs with global competitiveness, KEPCO is striving in various ways to lead mutual prosperity based on three strategies, including enhancing capability for innovating technology, increased supports for channels for overseas sales, and making a culture for mutual growth.



#### Enhancing capability for innovating technology

KEPCO is performing R&D in cooperation with SMEs and investing 2.5-3 billion won per year to enhance technological level of SMEs and secure competitiveness in export. In 2013, we overhauled relevant systems, such as eliminating the ratio of cash payment for SMEs and increasing the amount of sponsorship to 1 billion won for each task to increase the opportunity for SMEs to participate in various businesses and make a cooperative environment. We provided customized technical support 16 times by utilizing professional employees at KEPCO and carrying out mentoring service for R&D. In 2013, we started the 3.0 movement for industrial innovation, which support consulting services for the innovation of productivity of SMEs. This movement is a business with the aim of improving productivity by conducting professional consultation on procedures, management and production technology; currently, in June 2014, we are supporting a total of 20 companies. The company will expand the performance of 3.0 industrial innovation movement and provide 1 billion won for 100 companies by 2017.

#### Increased supports for channels for overseas sales

For the first time as a public company, KEPCO has launched the KEPCO Trusted Partners System, which is an export promotion brand, to encourage SMEs to enter into the overseas markets. Export promotion brands is to provide SMEs to KEPCO's brand symbolizing trust; in 2013, we confirmed 65 companies as KEPCO Trusted Partners and achieved the export performance worth of 62.85 million dollars in eight countries such as Russia and Ukraine. We jointly entered into Egbin Plant in Nigeria and UAE Nuclear Power Plant with domestic SMEs and achieved the exports worth of over 110 million dollars. As of late June 2014, we have held export exhibitions with 45 SMEs in seven countries and achieved the performance in export consultation worth of 147.43 million dollars. In 2013, for the first time as public institution, KEPCO opened the SME export promotion center for overseas market at KEPCO branches in Indonesia and the Philippines; and in 2014, we plan to launch an additional center in Vietnam. Further, to support the advancement of SMEs into the overseas market more aggressively, we will cooperate with KOTRA and implement the "Overseas Base Camp" business.

www.kepco.co.kr/trustedpartner

KEPCO Trusted Partner Emblem

Supporting marketing activities for overseas export

#### Making a culture for mutual growth

In 2013, KEPCO reduced the number of equipment registered in advance by 25% to broaden the advancement of SMEs into the market and revised the standard for deliberation of qualification to make conditions more favorable to SMEs in the procurement market. Following the launch of exhibition for mutual growth for the first time as public company in 2013, we held KEPCO Electric Fair in June 2014 to promote technical exchanges with SMEs and support to pioneer the market, 176 SMEs and about 70 overseas buyers from 21 countries participated in the exhibition, exchanged best technologies, and conducted consultation services for SME products. Major performances in the exhibition include consultation service for a purchase worth of 11.4 billion won and 114 cases in consultation on technology transfer of 40 best technologies. In 2014, we will permanently exhibit best SME products by establishing the business plaza for SMEs at Naju Inno-city and support SMEs to enhance their convenience.



Making business for electricity technology & Exhibition for mutual growth

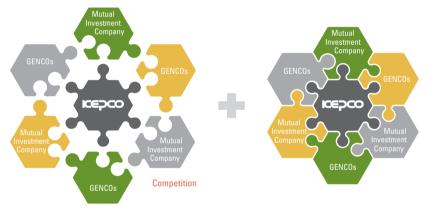
## (units: cases)



**Current Status of Cooperation in R&D of SMEs** 



KEPCO pursues competition with mutual prosperity based on autonomous management by each group company and maintains and reinforces the cooperative system to create a stable electricity supply and management efficiency. The company holds meetings with CEOs of each electricity group company every two months and coordinates interests by sharing management information and discussing common current affairs.



#### Current condition of overseas businesses with cooperating group companies (2009~2013)

Al Qatrana (Jordar KEPCO: Project De GENCO(KOSPO): Or generation plants

In January 2014, KEPCO reestablished cooperative relations with GENCOs to enhance synergy effects among electricity group companies and prepared measures for securing common facilities for relocation of the headquarters\*. Through these activities, we are preparing for a new cooperative era where we can live up to the public expectations and contribute to developing local communities.

•8,300 employees at the headquarters and ten electricity group companies will be relocated to local areas (2014-2015).

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PARTNER

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#### Creating shared values with SMEs

In 1993, KEPCO launched a department in charge of managing SMEs for the first time as a public company and has carried out various businesses to create an ecosystem for mutual growth with SMEs. We have also developed and operated creating shared value-typed programs, which create economic profits for KEPCO and SMEs. For instance, by doing cooperative research, SMEs can increase their sales by enhancing technological competitiveness, while KEPCO reduces operation costs for electricity facilities by purchasing products developed by SMEs. Further, SMEs have increased their sales as we support the innovation of quality of products and marketing activities for export.

After analyzing the performance of supports for 608 SMEs from 2009, it has been found that a total of 483.2 billion won in sales was produced, and KEPCO obtained 308.5 billion won in profitable performances. Especially, thanks to mutual growth business, 782.9 billion won in production-encouraging effect, 1,335 people in employment-creating effect and 228 billion won in added-value-creating effect were produced in terms of the national economy.

#### Performance by mutual growth business (2009-2013)

Number of applied companies	Sales of SMEs (100 million won)	Profitable performance by KEPCO (100 million won)
608	4,832	3,085

#### Contribution in the national economy by mutual growth business (2009-2013)

oduction	Employment	Number of people	Added-value
on won)	(person)	getting jobs (person)	(100 million won)
9	1,177	1,335	2,280

#### Strategy for mutual growth with electricity group companies

#### Cooneration

Stable electricity supply

Mutual growth with

electricity group companies

Joint purchase of generation fuels Cooperation in R&D and overseas business Jointly coping with climate and environmental change

In 2013, GENCOs completed the construction of plants with 1,950MW in total at the right time and supplied electricity in a stable manner by maintaining a high level of plant use. For management efficiency, they also implemented various policies such as joint purchase of generation fuels, integrated operation of repair equipment and cooperation in R&D of electricity technology. As for detailed business, we strengthened our cooperative system; in 2012, KEPCO and six GENCOs jointly established a corporate body and are currently carrying out a demonstration business for offshore wind power complex in the Southwest Sea. As of late 2013, a total of three overseas generation businesses are being operated by KEPCO and GENCOs.

in)	Rabigh (Saudi Arabia)	Norte 2(Mexico)
evelopment,	KEPCO: Project Development,	KEPCO: Project Development,
Operating and repairing	GENCO(KOSPO): Operating and repairing	KEPCO Plant Service & Engineering (KPS):
;	generation plants	Maintenance

# **Financial information**

### Consolidated statement of financial position (Unit: 100 million won)

Account	The 53rd period (As of December 31, 2013)	The 52nd period (As of December 31, 2012)
1. Current assets	152,691	139,335
1) Cash and cash equivalents		19,550
2) Trade receivables and others	75,263	71,846
3) Inventory	42,796	34,403
4) Other current assets	12,309	13,536
2. Non-current assets	1,402,582	1,322,193
1) Tangible assets	1,293,676	1,223,762
2) Intangible assets	8,107	8,838
3) Investment interests	52,308	48,909
4) Other non-current assets	48,491	40,684
Total assets	1,555,273	1,461,528
1. Current liabiltiies	202,138	188,171
2. Non-current liabilites	838,628	762,715
Total liabilities	1,040,766	950,886
1. Capital stock	40,536	40,536
2. Retained earnings	327,661	325,643
3. Other components of equity	134,400	132,709
4. Non-controlling interests	11,910	11,754
Total sharholders' equity	514,507	510,642
Total liabilities and shareholders' equity	1,555,273	1,461,528

## Consolidated Statement of Comprehensive Income (Unit: 100 million won)

Account	
I. Sales	
2. Cost of sales / other sales and management expenses	
3. Operating loss/profit	
1. Other revenues	
5. Other expenses	
6. Other profits (loss)	
7. Financial profits	
3. Financial cost	
9. Gains / loss on equity methods	
0. Gains on the disposal of relevant companies	
11. Income before income tax (11th item included in the last year's report)	
2. Income tax expenses	
3. Net income	
- Net income from controlling interests	
- Net income from non-controlling interests	

appendices

The 52nd period (As of December 31, 2012)	The 53rd period (As of December 31, 2013)
494,215	540,378
502,394	525,188
-6,179	15,190
3,740	4,002
746	998
-17,819	1,285
11,284	6,295
30,683	29,316
1,859	294
-69	-717
-40,633	-3,965
-9,854	-5,708
-30,779	1,743
-31,666	600
887	1,143

## Independent assurance statement/Korea Productivity Center

#### To the stakeholders of KEPCO

Korea Electric Power Corporation (KEPCO) commissioned the Korea Productivity Center (the "Assurer") to provide an independent assurance of its 2014 Sustainability Report (the "Report").

#### **Responsibility and Integrity**

Korea Electric Power Corporation (KEPCO) is responsible for the reliability and accuracy of all information and opinions presented in this "Report". The Assurer holds the responsibility which lies solely in providing a third party verification of the content in the "Report". As an independent assurance agency, the Assurer was neither involved in the process of preparing this "Report" with Korea Electric Power Corporation (KEPCO), nor in any conflicts of interest that may undermine our independence.

#### Assurance Standards

The independent verification process was planned and performed in accordance with the AA1000AS (2008) Assurance Standard to provide Type 1 moderate level of assurance. This is achieved through the evaluation of the organization's adherence to the AA1000APS Accountability Principles (2008) of Inclusivity, Materiality and Responsiveness. Additionally, the assurance was performed to ascertain the organization's adherence to the Global Reporting Initiative (GRI) G4 Guidelines and the standard of Electric Utilities Sector Supplement in preparing and presenting sustainability performance information.

## **Assurance Limitations**

Based on the aforementioned assurance standards, the Assurer performed verification of the organization's sustainability performance and credibility during 2013. As for some environmental data such as greenhouse gas emissions and amount of water use, we deliberated materials which were submitted to the government, and as for economic data such as

financial data, financial statements, which was audited by auditing institutions, and data on ALIO were checked. In terms of social data, we checked the moderate level of the verification by using Type 1 and sampling. Site inspection was performed at the head office. Therefore, the Assurer clearly states that any additional verification conducted in the future may issue varied results

#### Assurance Methodology

The assurance was undertaken following the methodology specified below:

1. Verified compliance with the requirements for Core Options in the GRI G4 Guidelines. 2. Verified consistency with the principles dictating the content and quality of sustainability

reports based on the GRI G4 Guidelines. 3. Verified the appropriateness of identifying key issues and the responsiveness to the content presented in the Report by the material analysis methodology, media research and benchmarking

4. Verified the appropriateness of the report content with other sources for incorrect information through comparative analysis

5. On-site verification at the head office and plant has been conducted to confirm evidences for key data and information as well as internal processes.

#### **Findings and Conclusions**

It is the Assurer's opinion that the Report fairly and accurately presents the sustainability efforts and performance of Korea Electric Power Corporation (KEPCO). It is also verified that the Beport complies with the requirements for Core Options in the GBI G4 Guidelines. In terms of General Standard Disclosures, the Report is found to comply with the requirements for Core Options; for Specific Standard Disclosures, Disclosure on Management Approach (DMA) and indicators for material issues drawn by the decision process in the items for the Report as follows

Sub Category	Material Aspect	DMA & Indicators				
Economics	Economic Performance	EC1, EC2, EC3, EC4				
	Products and Service Labeling	DMA-Realizing Customer Value, PR3, PR4, PR5				
	Availability & Reliability	DMA-Stabilizing Electricity Supply and Demand, EU6, EU10				
	Future Growth Engine (Other than GRI G4 aspect , Additional issues)					
	Research & Development					
	Global Growth (Other than GRI G4 aspect , Additional issues)	DMA-Creating New Growth Engines for the Future, EU8				
Environment	Green Environment Management System (Other than GRI G4 aspect , Additional issues)	DMA-Realizing Eco-friendly Energy / EN3, EN4, EN5, EN6, EN7, EN27, EN28				
	Energy	EN11, EN12, EN13, EU13, EN14				
	Product & Service					
	Biodiversity					
	Emissions	DMA-Coping with Climate Change, EN15, EN16, EN17, EN18, EN19, EN20, EN21				

Sub Category	Material Aspect	DMA & Indicators		
Executives and	Occupational Health and Safety DMA Making People-oriented Work Environment, LA5, LA6, LA7, LA8, LA9, LA10, LA11			
employees	Training & Education	LA1, LA2, LA3, EU15, EU17, EU18, LA12		
	Employment			
	Diversity and Equal Opportunity			
Social Community	Local Communities	DMA-Fulfilling the Responsibility for Sharing and Mutual Growth, SO1, SO2, EU19, EU20, EU22		





\* AA1000AS (2008): Enacted by Accountability, AA1000 Assurance Standard (2008) is a global standard for verification and provides methods for reporting issues on sustainable management by assessing the operation of organization for management performance, compliance with principles and credibility of information on performance.

#### 2. Materiality: Selecting and reporting major issues

The principle of materiality articulates that organizations should focus on issues relevant and material to both the organization and its major stakeholders. It has been identified that KEPCO recognizes major issues regarding sustainable management and the company by doing media and benchmarking research and analyzing internal data and selected major issues by operating reasonable process for assessing materiality. Selected major issues are composed of seven major themes, and it has been verified that the themes are connected to the DMA, in which performances, plans and goals were applied, and reflected in the report in a balanced manner.

#### 3. Responsiveness: Responding to issues by the organization

The principle of responsiveness articulates that organizations should be responsive to issues that may have impacts on stakeholders' performance. KEPCO discloses its efforts for each theme by reporting environmental analysis, response process, strategies and performances in detail for seven major themes, which were identified as priorities. Further, it is considered that the quantitative and qualitative goals, first presented in the report, indicate the directions by which KEPCO desires to go in the future to the stakeholders.

#### Recommendations

potential risks more proactively.

July 2014 Jin Hona Chairman Korea Productivity Center

Kim Dong-su, Director of Sustainability Management Center Lee Yang-ho, Team Leader Senior Fellow of Sustainability Management Center Park Ju-mi, Expert adviser of Sustainability Management Center



## 1. Inclusivity: Stakeholder engagement

The principle of inclusivity articulates that organizations should include stakeholders in developing and achieving an accountable and strategic response to sustainability. KEPCO divided stakeholders based on the importance: customers using electricity, local communities having impacts on the rights to property and environment, government/National Assembly/NGOs leading the public opinion and making a decision on policy, shareholders who are interested in enhancing the value of the company, cooperative firms and groups who are partners in producing electricity and overseas export, executives and employees/labor union who are the main player in creating company values. The company is continuously monitoring major issues on sustainable management by using communication channels for each stakeholder. In the process of writing the report, it has been verified that the company conducted surveys and identified latest issues and interest for stakeholders for the reported year.

The Assurer commends Korea Electric Power Corporation for making a variety of efforts to improve sustainability, resulting performances, and presents the following recommendations to enhance future sustainability reports and sustainable management.

1. [Establishing an infrastructure enabling the management of stakeholder issues collectively] KEPCO needs to establish an organization or infrastructure, which can play a role as the center for managing issues regarding sustainable management collectively. Based on this establishment, the company can identify where the issues presented by each stakeholder came from and deal with

2. [Establishing the system for managing performance of sustainable management] It is recommended that KEPCO establish a company-wide integrated system, which manage performances for each environmental and social sector, including amount of water use, rate of employing local workers and current condition of paying wage, and manage the system more systemically so that credibility of the data can be enhanced.

3. [Establishing a cooperative system to deal with sustainable management] As for eco-friendly supply chain, KEPCO is dealing with some issues by establishing a cooperative system, such as environmental data on generation companies for consumption and emission at the stage of electricity production, joint inspection for the prevention of corruption and joint response to emission trading system. It is recommended that the company should manage the achievement of goals for sustainable management more collectively in order to build a sustainable management system as a company group and enhance capability.

D.S. Kim =/=>=> Jennie

The Sustainability Management Center of the Korea Productivity Center is an assurance agency officially certified by Accountability, which established AA1000, the international standards for Stakeholder engagement and verification, and has qualifications to perform independent assurance engagements. Our Assurance Committee is also comprised of competent experts who have in-depth experience in sustainability management consulting and assurance and completed the relevant professional training.

\* AA1000APS (2008): Enacted by Accountability, AA1000 Accountability Principles Standard (2008) is a global standard for verification and provides the principles for the foundation of AA1000 standard.

# **GRI G4 Index**

#### General Standard Disclosure

Aspect	G4	Indicators	ISO 26000:	Report	Location	3rd Pa
Chantany 9	G4-1	Statement from the Most Senior Decision-maker of the Organization (such as CEO, chair, or equivalent senior position)	2010 CLAUSES 4.7, 6.2, 7.4.2	Standard	p2~3	Assura
Strategy & Analysis	64-1	about the Relevance of Sustainability to the Organization and the Organization's Strategy for Addressing Sustainability	4.7, 0.2, 7.4.2	•	μz~3	
7 maryolo	G4-2	Description of Key Impacts, Risks, and Opportunities		•	p18~19	
rganizational	G4-3	Name of the Organization	6.3.10, 6.4.1-6.4.2,		p10 10	•
Profile	G4-4	Primary Brands, Products, and Services	6.4.3, 6.4.4, 6.4.5,	•	p5	•
	G4-5	Location of the Organization's Headquarters	6.8.5, 7.8	•	p5	•
	G4-6	Number of Countries Where the Organization Operates, and Names of Countries Where Either the Organization		•	p44~45	•
		has Significant Operations or That are Specifically Relevant to the Sustainability Topics Covered in the Report				
	G4-7	Nature of Ownership and Legal Form		•	p5	•
	G4-8	Markets Served (including geographic breakdown, sectors served, and types of customers and beneficiaries)		•	p4, 32	
	G4-9	Scale of the Organization		•	p5	•
	G4-10	Total Number of Employees		•	p5, 68	•
	EU1	Installed Capacity, Broken down by Primary Energy Source and by Regulatory Regime		•	p92	•
	EU2	Net Energy Output Broken down by Primary Energy Source and by Regulatory Regime		•	p92	•
	EU3	Number of Residential, Industrial, Institutional and Commercial Customer Accounts		0	p32	
	EU4	Length of above and Underground Transmission and Distribution Lines by Regulatory Regime		•	p35	•
	EU5	Allocation of CO <sub>2</sub> Emissions Allowances or Equivalent, Broken down by Carbon Trading Framework		•	p63, 64	•
	G4-11	Percentage of Total Employees Covered by Collective Bargaining Agreements		•	p71	
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	G4-13	Any Significant Changes during the Reporting Period Regarding the Organization's Size, Structure, Ownership, or its Supply Chain		•	p0	•
	G4-14	Precautionary Approach or Principle Addressed by the Organization		•	p24~25, p54	•
	G4-15	List of Externally Developed Economic, Environmental and Social Charters, Principles, or Other Initiatives to		•	p94	
		Which the Organization Subscribes or Which It Endorses				
	G4-16	Memberships of Associations (such as industry associations) and National or International Advocacy Organizations		•	p95	
Identified	G4-17	Entities Included in the Organization's Consolidated Financial Statements or Equivalent Documents or	5.2, 7.3.2, 7.3.4	•	p5, 10	•
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Aspects &	G4-18	Process for Defining the Report Content and the Aspect Boundaries and How the Organization Has Implemented		•	p12~13	•
Boundaries		the Reporting Principles for Defining Report Content				
	G4-19	List of All the Material Aspects Identified in the Process for Defining Report Content		•	p12~13	•
	G4-20	Aspect Boundary within the Organization for Each Material Aspect		•	p13	•
	G4-21	Aspect Boundary outside the Organization for Each Material Aspect		•	p13	•
	G4-22	Effects of Any Restatements of Information Provided in Previous Reports,		•	Revised parts compared to the	•
		and the Reasons for Such Restatements			last year are marked with footnote	
	G4-23	Significant Changes from Previous Reporting Periods in the Scope and Aspect Boundaries		•	No significant changes	•
Stakeholder	G4-24	List of Stakeholder Groups Engaged by the Organization	5.3	•	p14	•
Ingagement	G4-25	Basis for Identification and Selection of Stakeholders with Whom to Engage		•	p14	•
	G4-26	Organization's Approach to Stakeholder Engagement, Including Frequency of Engagement by Type and by		•	p12, 14~15	•
		Stakeholder Group, and an Indication of Whether Any of the Engagement was Undertaken Specifically				
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	G4-31	Contact Point for Questions Regarding the Report or Its Contents		•	p0	•
	G4-32	"In Accordance" Option the Organization Has Chosen and the GRI Content Index for the Chosen Option		•	p88~91	
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	G4-37	Processes for Consultation between Stakeholders and the Highest Governance Body on Economic, Environmental		0	p22	
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	G4-40 G4-41	Nomination and Selecting Highest Governance Body Members Processes for the Highest Governance Body to Ensure Conflicts of Interest are Avoided and managed Highest Governance Body's and Senior Executives' Roles in the Development, Approval, and Updating of the		•		•

## General Standard Disclosure

Aspcet	G4	Indicators 2010 CLAUSES	ISO 26000 :	Report	Location	3rd Party
_			Standard		Assurance	
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		Impacts, Risks, and Opportunities (Including the Highest Governance Body's Role in the Implementation of Due				
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	G4-48	Highest Committee or Position that Formally Reviews and Approves the Organization's Sustainability Report		•	p22	•
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	G4-49	Process for Communicating Critical Concerns to the Highest Governance Body		0	p22	•
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		related to organizational integrity, such as escalation through line management, whistleblowing mechanisms or hotlines.				

## Specific Standard Disclosures

Instrument of all real products of activity of a structure	Main Aspect &	Indicator	Description	ISO 26000:		Cross / Reference	3rd Party
Status Suppliment         CATEGONNIC         Sector		mulcator	Description		Reported		
CATEGORY ECONOMIC         Gel BMM.         Management Approach         p10           Controline         64 BMM.         Management Approach         p10         p10           Performance         EC         Timeric Implications and Other Risks and Opportunities for the Organizations         6.5.1         p60-93           EC2         Financial Implications and Other Risks and Opportunities for the Organizations         6.5.7         p10         •           EC3         Financial Implications and Other Risks and Opportunities for the Organizations         6.7         p10, p20, p20, p20, p20, p20, p20, p20, p2				2010 CLA03L3	neponeu	Direct Answer / Unission	Assulative
Externine         64-00.4.         Monggement Approach         0         010           Performance         EC         Direct Economic Value Generated and Distributed         68.1 6.8.2 (6.8.3)         6.9.1 6.8.9         p10         •           EC         Financial Implicatione and Ober Risks and Opportunities for the Organization's Activities Dut to Clinetal Danage         6.5.5         •         p10         •           EC         Financial Implicationes and Opportunities for the Organization's EC         EC         Pinanet Clinetal Danage         •         P10, 894 (Ammorg RCPOS R80 Dasks, tasks supported by the gommernet wes 173 csts, and the fluid bit the commernet wes 173 bition wonl         •         P10, 894 (Ammorg RCPOS R80 Dasks, tasks supported by the gommernet wes 173 bition wonl         •         P10, 894 (Ammorg RCPOS R80 Dasks, tasks supported by the gommernet wes 173 bition wonl         •         p10, 894 (Ammorg RCPOS R80 Dasks, tasks supported by the gommernet wes 173 bition wonl         •         p30-37         •           Anallability & Belidability & EUID         Hammed Equasity Against Projected Eluctricity Demand over this Long Term, Breker         6.33, 6.54, 6.54, 6.55, 5         •         p39-37         •           Demotograment         EUID         Hammed Equasity Against Projected Eluctricity Charanerical, Institutoral and Industrial Programs         6.53, 6.54, 6.55, 5         •         p39-30         •           Demotograment         EUID		с					
Performance         EC1         Direct Economic Value Generated and Distributed         68.1 6.82 (6.8.) (6.87, 6.8)         •         p10         •           EC2         Financial Inglications and Other Risks and Opportunities for the Organization's Activities Due to Climate Change         6.87, 6.83         •         p60-63         •           EC3         Excension & United Statistics Defined Render Ran Obligation         6.87         •         p70         p70         •         p70         p70         p70         p70			Management Approach		-	n10	
BC2         Financial Implications and Ober fields and Opportunities for the Organization's defined Benefit Pan Obligations         6.6.7, 6.8.9         p60-43				681-682 683			
Arthites Due to Climate Orange         Arthites Due to Climate Orange         970	1 enormance	LUI			•	pro	•
EC3         Coverage of the Organization's Defined Benefit Plan Obligations         6.8.7         •         p10, p80 [Annorg KPC0's R&D tasks, tasks           Autibility EC4         Financial Assistance Received from Government         .         <		EC2	Financial Implications and Other Risks and Opportunities for the Organization's	6.5.5	•	p60~63	•
EC4         Financial Assistance Received from Government         p10.p48 (Among KEPC0's R&D tasks, tasks supported by the government were 75 billion wond the funds by the government were 75 billion wond the funds by the government were 75 billion wond           Availability & Reliability         EU10         Prement Capacity Against Projected Electricity Demand over the Long Term, Beeken down by Energy Source and Regulatory Regime         53.8, 55.3, 55.4, 55.5, 5         p38-39           Demand-Side         EU10         Premand-Side         53.8, 55.3, 55.4, 55.5, 5         p39         •           Demand-Side         EU17         Premand-Side         53.8, 55.3, 55.4, 55.5, 5         p39         •           Management         exemand-Side         EU8         Research and Development forgenesis         6.75, 67.8, 58.86         p48-50         •           Development         Electricity and Promoting Statiantice Bedorgment Plant         EU8         Research and Development forgenesis         6.53, 5.8.8         0         KEPC0 has no independently opparated nuclear power plants, and with the nuclear power plant busins in the U48, which will complete is constructional plant will be begin.         •         p30-31         •           System Efficiency         64-DNA         Management Agernach         6.5.4         •         p52-53, p58         •           Every         64-DNA         Management Agernach         6.5.4         •         p68 </td <td></td> <td></td> <td>Activities Due to Climate Change</td> <td></td> <td></td> <td></td> <td></td>			Activities Due to Climate Change				
Analability &         EUS         Maragement Approach to Ensure Shore and Long-term electricity Availability and Reliability         63.3, 65.3, 65.4, 65.5, 65.6, 67.8, 83.3, 66.6         9         96-37         •           Beliability         Peliability         6.00         p38-37         •         •         95-37         •           Beliability         Maragement Approach to Ensure Shore and Long-term electricity Demand one the Long Term, Broken down by Energy Suace and Regulatory Regime         63.3, 65.5, 6.7, 8.83, 8.65         •         p39-39         •           Demand-Side         EU7         Demand-field Management Programs Including Reliability and Industriat Programs         63.2, 65.2, 6.55, 6.7         •         p39         •           Research & Development         EU8         Research and Development Athird and Expenditure And and 6.7.5, 67.8, 68.3         •         p49-50         •           Plint         EU9         Provisions for Decomissioning of Nucleier Power Sites         6.5.3, 6.8.8         •         p00-90-90-90-90-90-90-90-90-90-90-90-90-9		EC3	Coverage of the Organization's Defined Benefit Plan Obligations	6.8.7	•	p70	•
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Beliability         Belaility						the funds by the government were 17.5 billion won.)	
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	EU13	Biodiversity of Offset Habitats Compared to the Biodiversity of the Affected Areas		•	p57	•
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		Habitats in Areas Affected by Operations, by Level of Extinction Risk		-		

# **GRI G4 Index**

Main aspect &	Indicator	Description	ISO 26000 :	Reported	Cross Reference/Direct Answer/	3rd Par
Electirc Utility			2010 CLAUSES		Sector Supplement	Assuran
ector Supplement					Omission	
missions	G4-DMA	Management Approach		•	p60~61	
	EN15	Direct Greenhouse Gas (GHG) Emissions (Scope 1)	6.5.5	•	p64	•
	EN16	Energy Indirect Greenhouse Gas (GHG) Emissions (Scope 2)		•	p64	
	EN17	Other Indirect Greenhouse Gas (GHG) Emissions (Scope 3)			p64	
	EN18	Greenhouse Gas (GHG) Emissions Intensity			p64	
	EN19	Reduction of Greenhouse Gas (GHG) Emissions			p64	•
	EN21	NOx, SOx, and Other Significant Air Emissions	6.5.3	•	No domestic business sites have significant	
	LINZI	Nox, dox, and other dignificant par Emissions	0.0.0	•	impacts by air pollution	•
roducts &	G4-DMA	Management Approach		•	p52~53	
ervices	EN27	Extent of Impact Mitigation of Environmental Impacts of Products and Services	6.5.3, 6.5.4, 6.5.5, 6.7.5	•	p41, p56~57	•
mployment	G4-DMA	Management Approach			p42~p43, p51	
	EU14	Programs and Processes to Ensure the Availability of a Skilled Workforce	6.4.7	•	p51	•
	EU16	Policies and Requirements Regarding Health and Safety of Employees and Employees of Contractors	6.3.3, 6.3.5, 6.4.6,	•	p73	•
		and Subcontractors	6.6.6			
	LA1	Total Number & Rates of New Employee Hires & Employee Turnover by Age Group, Gender & Region	66.4.1-6.4.2	0	Turnover rate 0.6% (109 employees for voluntary turnover)	•
	LA2	Benefits Provided to Full-time Employees that are Not Provided to Temporary or Part-time Employees,	6.4.4, 6.8.7	O	p70	•
		by Significant Locations of Operation				
	LA3	Return to Work and Retention Rates after Parental Leave, by Gender	6.4.4	•	p71	•
	EU15	Percentage of Employees Eligible to Retire in the Next 5 and 10 Years Broken down	6.4.3, 6.4.4	•	p70	•
		by Job Category and by Region	6.3.3, 6.4.3, 6.4.4,			
	EU17	Days Worked by Contractors and Subcontractor Employees Involved in Construction, Operation & Maintenance Activities	6.4.6, 6.6.6	O	p73	
	EU18	Maintenance Activities     Percentage of Contractor and Subcontractor Employees that Have Undergone Relevant Health	633 636	0	p73	
	LUID	Percentage of Contractor and Subcontractor Employees that Have Undergone Relevant Realth and Safety Training	6.3.3, 6.3.5, 6.4.6, 6.6.6	U	μιο	•
ATEGORY: SOCIAL		and dately mailling	0.4.0, 0.0.0			
ccupational	G4-DMA	Management Approach		•	p66-67	
lealth and Safety	LAS	Percentage of Total Workforce Represented in Formal Joint Management-worker Health and Safety	6.4.6	0	p00-07	•
,		Committees that Help Monitor and Advise on Occupational Health and Safety Programs		·	P	-
	LA6	Type of Injury and Rates of Injury, Occupational Diseases, Lost Days, and Absenteeism, and Total	6.4.6, 6.8.8	•	p73	•
		Number of Work-related Fatalities, by Region and by Gender				
	LA7	Workers with High Incidence or High Risk of Diseases Related to their Occupation		0	p73	•
	LA8	Health and Safety Topics Covered in Formal Agreements with Trade Unions	6.4.6	•	p71	•
raining &	G4-DMA	Management Approach		•	p66~67	
ducation	LA9	Average Hours of Training Per Year Per Employee by Gender, and by Employee category	6.4.7	•	p69	•
-	LA10	Programs for Skills Management and Lifelong Learning that Support the Continued Employability of	6.4.7, 6.8.5	•	p69	
		Employees and Assist them in Managing Career Endings				
	LA11	Percentage of Employees Receiving Regular Performance and Career Development Reviews,	6.4.7	•	p70	•
		by Gender and by Employee Category				
Diversity &	G4-DMA	Management Approach		•	p66~67	
qual Opportunity	LA12	Composition of Governance Bodies and Breakdown of Employees Per Employee Category According to	6.2.3, 6.3.7,	0	p68, P71	•
		Gender, Age Group, Minority Group Membership, and Other Indicators of Diversity	6.3.10, 6.4.3			
ocal Communities	G4-DMA	Management Approach		•	p74~75	
	S01	Percentage of Operations with Implemented Local communities Engagement, Impact Assessments,	6.3.9, 6.5.1-6.5.2,	•	p56~57, p76~80	•
		and Development Programs	6.5.3, 6.8			
	S02	Operations with Significant Actual and Potential Negative Impacts on Local Communities	6.3.9, 6.5.3, 6.8	0	p16, p80	•
	EU19	Stakeholders Participation in Decision Making Processes Related to Energy Planning and	6.8, 6.8.3	0	p15~17, P80	•
		Infrastructure Development				
	EU20	Approach to Managing the Impacts of Displacement	6.3.3, 6.3.4, 6.3.6,	0	p80	•
			6.3.8, 6.3.9, 6.8,			
			6.8.3, 6.8.7, 6.8.9			
	EU22	Number of People Physically or Economically Displaced and Compensation,	6.3.3, 6.3.4, 6.3.6,	0	p80	
·		Broken down by Type of Project	6.3.8, 6.3.9			
Disaster/Emergency	G4-DMA	Management Approach Contingency Planning Measures, Disaster/Emergency Management Plan and Training Programs,			p25, p74~75, p76	
lanning & Response Sustomer Health	EU21			•	p24~25, p73	•
	G4 DMAA	and Recovery/Restoration Plans		- <u>-</u>	DE 574 7E 70	
l Safety	G4-DMA	Management Approach	4.6	•	p25, p74~75, 76	
	EU25	Number of Injuries and Fatalities to the Public Involving Company Assets Including Legal Judgments, Sattlements & Pending Legal Cases of Diseases (Damage to the Canada Public, not Everytings & Employees)	4.0	•	p73	
roduct & Service	G4-DMA	Settlements & Pending Legal Cases of Diseases (Damage to the General Public, not Executives & Employees) Management Approach		•	p30-31	
abeling	PR3	Type of Product and Service Information Required by the Organization's Procedures for Product and	6.7.1-6.7.2, 6.7.3,		p30~31	
aboning	i nə	Service Information and Labeling, Percentage of Significant Product and Service Categories Subject	6.7.4, 6.7.5, 6.7.9	U	410	
		to Such Information Requirements				
	PR4	Total Number of Incidents of Non-Compliance with Regulations and Voluntary Codes Concerning	4.6, 6.7.1-6.7.2,	•	No violation	•
		Product and Service Information and Labeling, by Type of Outcomes	6.7.3, 6.7.4, 6.7.5,			5
		v., II	6.7.9			
	PR5	Result of Surveys Measuring Customer Satisfaction	6.7.1-6.7.2, 6.7.6	•	p30, 31	•
ccess	G4-DMA	Management Approach		•	p30~31	
	EU23	Programs, Including Those in Partnership with Government, to Improve or Maintain Access to	6.7.8, 6.7.1-6.7.2, 6.7.6	•	p30~31, p35	•
		Electricity and Customer Support Services				
	EU26	Percentage of Population Unserved in Licensed Distribution or Service Areas	6.7.8	•	р35	•
	EU27	Number of Residential Disconnections for Non-payment, Broken down by Duration of Disconnection	6.3.7, 6.7.8	•	Power cut for 169,000 households due to	•
		and by Regulatory Regime			non-payment of electricity bills	
	EU28	Power Outage Frequency		•	p24, p38, p57, p92	•
	EU29	Average Power Outage Duration		•	p92	•
	EU30	Average Plant Availability Factor by Energy Source and by Regulatory Regime		•	p92	•
rovision of	G4-DMA	Management Approach		•	p74~75	
			007.070			
formation	EU24	Practices to Address Language, Cultural, Low literacy and Disability Related Barriers to Accessing	6.3.7, 6.7.8	•	p76	•

## GRI G4 Other Disclosures

Aspect	Indicator	Description	ISO 26000 : 2010 CLAUSES	Reported	Cross Reference / Direct Answer / Omission	3rd Parl Assuran
Market Presence	EC5	Ratios of Standard Entry Level Wage by Gender Compared to Local	6.3.7, 6.3.10, 6.4.3,	•	p70	٠
	EC6	Minimum Wage at Significant Locations of Operation Proportion of Senior Management Hired from the Local communities at	6.4.4, 6.8.1-6.8.2	0	p68	•
	LOU	Significant Locations of Operation	6.8.5, 6.8.7	U	μο	•
direct Economic	EC7	Development and Impact of Infrastructure Investments	6.3.9, 6.8.1-6.8.2,	•	p32~35	٠
npacts		and Services Supported	6.8.7, 6.8.9			
	EC8	Significant Indirect Economic Impacts, Including the Extent of Impacts	6.3.9, 6.6.6, 6.6.7,	•	p76~77, p81~83	
			6.7.8, 6.8.1-6.8.2, 6.8.5, 6.8.7, 6.8.9			
ocurement	EC9	Proportion of Spending on Local Suppliers at Significant Locations	6.4.3, 6.6.6,	0	p81	
actices		of Operation	6.8.1-6.8.2, 6.8.7			
laterials	EN1	Materials Used by Weight or Volume	6.5.4	•	p59	•
	EN2 EN8	Percentage of Materials Used That are Recycled Input Materials Total Water Withdrawal by Source	6.5.5		p59	•
ater	EN9	Water Sources Significantly Affected by Withdrawal of Water	6.5.7	- <u> </u>	Domestic business sites have no water sources that are significantly	
					affected by withdrawal of water.	
	EN10	Percentage and Total Volume of Water Recycled and Reused	6.5.8	•	No water was reused, but Naju headquarters will use facilities	•
ffluents & Waste	EN22	Total Water Discharge by Quality and destination	6.5.3, 6.5.4	0	for heavy water	
	EN23	Total Weight of Waste by Type and Disposal Method	6.5.3	- <u> </u>	p59	•
	EN26	Identity, Size, Protected Status, and Biodiversity Value of Water Bodies and	6.5.3, 6.5.4, 6.5.6	0	p57	٠
		Related Habitats Significantly Affected by the Organization's discharges of Water and Runoff				
ompliance	EN29	Monetary Value of Significant Fines and Total Number of Non-monetary	4.6	•	Three cases of environmental violation	٠
ansport	EN30	Sanctions for Non-compliance with Environmental Laws and Regulations Significant Environmental Impacts of Transporting Products and Other Goods	6.5.4. 6.6.6		p5657	
anaput	ENJU	and materials for the Organization's Operations, and Transporting Members	0.0.4, 0.0.0	U	ינ-שטע	
verall	EN31	of the Workforce Total Environmental Protection Expenditures and Investments by Type	6.5.1-6.5.2	•	p58	
ipplier Environmental	EN32	Percentage of New Suppliers That were Screened Using	6.3.5, 6.6.6, 7.3.1		p26, 81	•
ssessment		Environmental Criteria				
bor/ Management elation	LA4	Minimum Notice Periods Regarding Operational Changes, Including Whether These are Specified in Collective Agreements	6.4.3, 6.4.5	O	p71	•
qual remuneration	LA13	Ratio of Basic Salary and Remuneration of Women to Men by Employee	6.3.7, 6.3.10, 6.4.3,	•	P70	•
r women and men	_	Category, by Significant Locations of Operation	6.4.4			
ivestment	HR1	Total Number and Percentage of Significant Investment Agreements and Contracts That Include Human Rights Clauses or That Underwent Human	6.3.3, 6.3.5, 6.6.6	Ð	p26, 81	
	HR2	Rights Screening           Total Hours of Employee Training on Human Rights Policies or Procedures           Concerning Aspects of Human Rights That Relevant to Operations,	6.3.5	•	p72	
		Including the Percentage of Employees Trained				
on-discrimination	HR3	Total Number of Incidents of Discrimination and Corrective Actions Taken	6.3.6, 6.3.7, 6.3.10, 6.4.3	0	p72	
reedom of	HR4	Operations and Suppliers Identified in Which the Right to Exercise Freedom	6.3.3, 6.3.4, 6.3.5,	0	p71	
ssociation and		of Association and Collective Bargaining may be Violated or at Significant	6.3.8, 6.3.10, 6.4.5,			
ollective Bargaining hild Labor		Risk, and Measures Taken to Support these Rights Operations and Suppliers Identified as Having Significant Risk for Incidents	6.6.6		No business sites conduct child labor or forced labor as KEPCO complies	
	TIIIJ	of Child Labor, and Measures Taken to Contribute to the Effective Abolition of Child Labor	6.3.7, 6.3.10, 6.6.6, 6.8.4	v	with the Labor Standard Act and Human Rights Convention No.105 "Forced Labor Convention" and faithfully implements principles in labor standards among ten major Global Compact principles.	
orced of	HR6	Operations and Suppliers Identified as Having Significant Risk for Incidents of Forced or Compulsory Labor, and Measures to Contribute to the	6.3.3, 6.3.4, 6.3.5, 6.3.10, 6.6.6	0		
ompulsory Labor		Elimination of All Forms of Forced or Compulsory Labor	0.3.10, 0.0.0			
upplier Human	HR10	Percentage of New Suppliers That were Screened Using	6.3.3, 6.3.4, 6.3.5,	0	p26, 81	
ghts Assessment		Human Rights Criteria	6.6.6			
iman Rights	HR12	Number of Grievances about Human Rights Impacts Filed, Addressed,	6.3.6	•	p72	•
tievance Mechanisms		and Resolved through Formal Grievance Mechanisms Total Number and Percentage of Operations Assessed for Risks Related to	6.6.1-6.6.2, 6.6.3	•	p28	•
		Corruption and the Significant Risks identified			r ·	
	S04	Communication and Training on Anti-corruption Policies and Procedures	6.6.1-6.6.2, 6.6.3,	•	p28	•
	005		6.6.6			-
ublic Policy		Confirmed Incidents of Corruption and Actions Taken Total Value of Political Contributions by Country and Recipient/Beneficiary	6.6.1-6.6.2, 6.6.3		p28	•
land rondy	000		0.0.1 0.0.2, 0.0.1	-	bodies are not allowed to donate political funds, and any political funds related to domestic corporate bodies are not allowed to be donated,	·
					and KEPCO complies with this provision.	
nti-competitive	S07	Total Number of Legal Actions for Anti-competitive Behavior, Anti-trust,	6.6.1-6.6.2, 6.6.5,	•	In the process of carrying out business, KEPCO strictly complies with	•
ehavior ompliance		and Monopoly Practices and Their Outcomes Monetary Value of Significant Fines and Total Number of Non-monetary	6.6.7	•	relevant legislations to establish fair and free transaction orders.	
, and a second se		Sanctions for Non-compliance with Laws and Regulations		·	Electrical Construction Business Act, Framework Act of the Construction Industry, Engineering Technology Promotion Act and Nuclear Safety Act; KEPCO has no cases for violating legislations or regulations regarding	-
upplier Assessment		Percentage of New Suppliers That were Screened Using Criteria for	6.3.5, 6.6.1-6.6.2,	0	the company's business and being imposed sanctions by the government. p26, 81	•
r Impacts on Society		Impacts on Society	6.6.6, 6.8.1-6.8.2, 7.3.1			
rievance Mechanisms	S011	Number of Grievances about Impacts on Society Filed, Addressed,	6.3.6, 6.6.1-6.6.2,	0	p28	٠
r Impacts on Society ustomer Health	PR1	and Resolved through Formal Grievance Mechanisms Percentage of Significant Product and Service Categories for Which Health	6.8.1-6.8.2		p15, p56	
Safety	111	and Safety Impacts are Assessed for Improvement	6.7.5, 6.8.8	U	p10, p00	
arketing mmunications	PR7	Total Number of Incidents of Non-compliance with regulations and Voluntary Codes Concerning Marketing Communications, Including Advertising, Promotion, and Sponsorship, by Type of Outcomes	4.6, 6.7.1-6.7.2, 6.7.3	•	KEPCO carries out promotion for conveying truth such as terms and condition of electricity supply, advertisement for encouraging the people to participate in energy-saving or electricity safety movements and other PR; there are no cases for violating marketing communication by false or exaggerated advertisement.	•
ustomer Privacy	PR8	Total Number of Substantiated Complaints Regarding Breaches of Customer	6.7.1-6.7.2, 6.7.7	•	One case for the violation of Personal Information Protection Act	•
ompliance	PR9	Privacy and Losses of Customer Data Monetary Value of Significant Fines for Non-compliance with Laws and	4.6, 6.7.1-6.7.2, 6.7.6	•	(Corrective measures were completed) Laws and regulations having impacts on business include Electricity Act,	•
оприлинос	1113	wonetary value of significant rines for won-compliance with Laws and Regulations Concerning the Provision and Use of Products and Services	+.o, o.f.1+0.f.2, 0.f.0	-	Lews and regulations raving impacts on dosiness include Electricity Act, Electrical Construction Business Act, Framework Act of the Construction Industry, Engineering Technology Promotion Act and Nuclear Safety Act; KEPC0 has to cases for violating legislations or regulations regarding the company's business and being imposed sanctions by the government.	•

# **GENCOs**

Korea South-East Power Co., Itd. (KOSEP) Equity share 100%	Address: 32, 123beon-gil, Sadeul-ro, Jinju, Gyeongsangnam-do Employees: 2,018 Paid-in capital: 290.1 billion won www.kosep.co.kr	KOSEP is operating the Samcheonpo Thermal Power Plant and Yeongheung Thermal Power Plant as base load. As of the end of 2013, KOSEP has an installed capacity of 8,226MW, which includes 6,909MW from 11 bituminous coal units (84.3%), 922MW from 10 LNG combined cycle units (11.2%), and 325MW from anthracite units (3.9%). Under the long-term power supply plan, Yeongheung Thermal Power Plant Units 5 & 6 are under construction with an installed capacity of 1,740MW. The Yeosu Power Plant unit 1 (350MW), which is shut down, is being replaced with thermal power plant.
Korea Midland Power Co., Itd. (KOMIPO) Equity share 100%	Address: 38 Taeheranro 114 gil. Gangnam-gu, Seoul Employees: 2,193 Paid-in capital: 137.3 billion won www.komipo.co.kr	KOMIPO is operating the Boryeong Thermal Power Plant and the Seocheon Thermal Power Plant as base load. As of the end of December 2013, KOMIPO has an installed capacity of 8,933MW, which breaks down as 4,000MW of eight bituminous coal units (44.8%), 4,230MW of 25 LNG combined cycle units (47.4%), 400MW of two anthracite units (4.5%), and 285MW of four oil units (3.2%). Under the long-term power supply plan, KOMIPO is building Sinboryeong units 1 & 2 (2,000MW) and Seoul combined cycle units 1 & 2 (800MW).
Korea Western Power Co., Itd. (WP) Equity share 100%	Address: 152 Taeheran St. Gangnam- gu, Seoul Employees 1,974 Paid-in capital: 158.9 billion won www.westempower.co.kr	WP is operating the Taean Thermal Power Plant as base load. As of the end of December 2013, WP has an installed capacity of 8,908MW, which includes 4,000MW of eight bituminous coal units (44.9%), 3,482MW of 26 LNG combined cycle units (39.1%), and 1,400MW of four oil units (15.7%). Under the long-term power supply plan, WP is building Taean thermal plants (2,100MW), Taean IGCC (380MW) and Pyeongtaek-2 combined cycle unit (974MW).
Korea Southern Power Co., Itd. (KOSPO) Equity share 100%	Address: 512 Taeheran St. Gangnam- gu, Seoul Employees: 1,951 Paid-in capital: 228.8 billion won www.kospo.co.kr	KOSPO is operating the Hadong Thermal Power Plant as base load. As of the end of December 2013, KOSPO has an installed capacity of 9,200MW, which breaks down as 4,000MW of eight bituminous coal units (43.5%), 4,553MW of 31 LNG combined cycle units (49.5%), 600MW of 4 oil units (6.5%), and 41MW of 19 wind units (0.4%). Under the long- term power supply plan, KOSPO is building Samcheok Green Power (2,100MW) and Andong combined cycle (417MW).
Korea East-West Power Co., Itd. (EWP) Equity share 100%	Address: 395, Jongga-ro, Jung-gu, Ulsan Employees: 2,231 Paid-in capital: 282.9 billion won www.ewp.co.kr	EWP is operating the Dangjin Thermal Power Plant and Honam Thermal Power Plant as base load. As of the end of December 2013, EWP has an installed capacity of 9,342MW, which includes 4,500MW of 10 bituminous coal units (48.2%), 2,586MW for 19 LNG combined cycle units (27.7%), 1,800MW of six oil units (19.3%) and 400MW of two anthracite units (4.3%). Under the long-term power supply plan, EWP is building Dangjin 9th and 10th units of thermal plants (2,040MW) and Ulsan combined cycle (948MW).
Korea Hydro & Nuclear Power Co., Itd. (KHNP) Equity share 100%	Address: 534 Taeheran St. Gangnam- gu, Seoul Employees: 2,018 Paid-in capital:290.1 billion won www.khnp.co.kr	KHNP is operating nuclear power plants as base load and hydroelectric plants as peak load. As of the end of December 2013, KHNP has an installed capacity of 26,039MW, which is composed of 23 nuclear units of 20,716MW (79.6%), 16 pumped storage and power generation units of 4,700MW (18.1%) and 21 hydroelectric units of 595MW (2.3%). Under the long-term power supply plan, KHNP is building five nuclear power plant units (6,600MW), which are Sinwolsung unit 2, Shin-Kori units 3 & 4, Sinulchin 1 & 2.

# Summary for statistics of GENCOs (As of December 31, 2013)

## Amount of facilities for each power plant (Unit: MW)

	Water power				Energy			Combined	Internal-	New	Nuclear	Total
General	Pumped	Total	Anthracite	Flaming	Heavy oil	LNG	Total	cycle thermal	combustion	renewalbe	energy	
water	water			coal				power	power	energy		
634	4,700	5,334	1,125	23,409	3,950	888	29,371	14,886	330	208	20,716	70,845

#### Amount of generation for each power plant (Unit: GWh)

	Water power				Energy			Combined	Internal-	New	Nuclear	Total
General	Pumped	Total	Anthracite	Flaming	Heavy oil	LNG	Total	cycle thermal	combustion	renewalbe	energy	
water	water			coal				power	power	energy		
1,575	4,105	5,679	8,054	193,064	13,941	3,526	218,585	84,561	741	406	138,784	448,757

#### Average efficiency of thermal power plants for each power (Unit: %)

Anthracite	Flaming	Heavy oil	Gas	Combined	Internal-	Average
	coal			cycle thermal	combustion	
				power	power	
34.93	38.64	36.26	36.06	45.42	41.20	40.06

#### Average rate of use for each power plant (Unit: %)

Water power	Anthracite	Flaming coal	Heavy oil	LNG	Combined cycle	Internal-	Nuclear energy	Average
					thermal power	combustion power		
12.2	81.7	94.2	40.3	37.9	63.5	23.2	75.5	73.3

# **KEPCO Group companies and** companies with equity investment

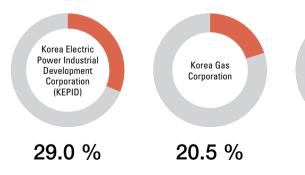
Address: 2354 Yonggudaero, Giheung-gu, Yongin City, Gyeonggi Prov	
Employees: 2,223 Paid-in capital: 7.6 billion won www.kepco-enc.com	

KEPCO Engineering & Construction (E&C) was founded to achieve self-reliance in design technology of nuclear and thermal power plants. Based on safety and economy, KEPCO E&C developed Korean Standard OPR1000 and APR1400 and became a globally competitive nuclear power plant design company. KEPCO E&C exported 500, 800, 1,000MW standard thermal power plant design technology and has competitiveness in transmission and substation, renewable energy and project/construction project management, contributing to the enhancement of national energy competitiveness.

## **KEPCO Nuclear Fuel Co., Ltd.**

KEPCO Nuclear Fuel is the only nuclear fuel design and manufacturing company which was established to localize nuclear fuel and achieve technology self-reliance. KEPCO Nuclear Fuel is providing nuclear fuel for all light and heavy water reactors in Korea and will supply fuel to the UAE nuclear power plant. It is developing and supplying two kinds of high-quality modified nuclear fuel. High performing nuclear fuel for export is under development and expected for commercial supply from 2016.

## Equity rate of mutual investment companies (As of December 31, 2013)



Frequency of suspension of plants: 105 cases

Category

Sudden suspension

2011

45

2012

98

2013

105

#### **KEPCO Plant Service & Engineering Co., Ltd.**

KEPCO Plant Service & Engineering (KPS) is a comprehensive plant service company

and provides high-quality maintenance services for power plants (nuclear, thermal,

for commissioning maintenance of power plants under construction, and ordinary

maintenance, planned outage and other repair & maintenance of power plants in

hydroelectric), transmission and substations, and industrial facilities. KPS is responsible

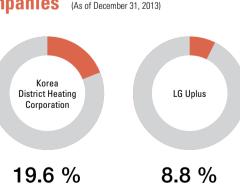
operation, contributing to preventing unplanned shutdowns and improving the capacity

factor. KPS also expands its global business in 25 countries including the U.S., Australia

#### KEPCO Knowledge, Data & Network Co., Itd. (KDN)

and Saudi Arabia.

Since KEPCO Knowledge, Data & Network (KEPCO KDN) was founded as the IT provider of KEPCO. KDN has offered total IT services, growing into a global electric power IT company. KEPCO KDN has been mainly engaged in development/operation of information systems, electric power IT service, the development and maintenance of IT infrastructure, intelligent distribution system, and information security. KEPCO KDN is now striving to enhance PLC AMI and smart distribution system to realize smart grid.



# Awards & Initiatives

#### Awards received in 2013

Period	Awards	Institution
May 2013	Citation for the 7th Anniversary of the Day for Missing Children	Ministry of Health and Welfare
June 2013	Medals for Disaster Management Assessment	Prime Minister
July 2013	Making bicycle roads for Seomjingang River and vitalizing	Ministry of Security and
	the use of bicycles	Public Administration
September 2013	Best Award by the Ministry for Best Training and Education	Ministry of Employment and Labor
October 2013	Best Award by the Minister for Mutual Growth	Ministry of Trade, Industry, and Energy
October 2013	Presidential citation for the Best Award for Electricity Safety	Ministry of Security and Public
	in Korea for 2013	Administration
October 2013	Best Awards for the This Year's Project (Electricity Service Sector)	Korea Project Management Association
November 2013	Best institution for preventing sexual harassment	Ministry of Gender Equality and Family
November 2013	Best award for CSR as Korean company investing in the Philippines	Ministry of Trade, Industry, and Energy
November 2013	Participating in the international invention contest and received	Invention Contest in Nuremberg, Germany
	two best awards and one gracious award	
December 2013	Best Web Award for the Public Sector in Korea	Korea Internet Professionals Association

#### **Engagement in major initiatives**

Transparent Society Pact signed among CEOs of 18 public corporations	June 2005
and Korea Independent Commission Against Corruption	
Renewable Portfolio Agreement signed with the Ministry of Commerce, Energy and Industry	July 2005
Agreement to comply with UN Global Compact and 10 principles	August 2005
Transparent Society Pact in the Electric Power Sector with 11 KEPCO Group companies and major electric power companies	September 2005
Integrity Pact between KEPCO and partner companies (1,519 companies, 18,135 persons)	January 2006
Agreement with private-sector organizations on business cooperation in the area of the environment	June 2007
(UNEP National Committee for Korea, Korea Green Foundation, Korea Women's Environmental Network)	
Second Renewable Portfolio Agreement signed with the Ministry of Knowledge and Economy	July 2009
Accession to UN Global Compact in Korea	December 2009
Sisterhood partnership with 36 traditional markets	August 2011
Joint Agreement on Integrity and Ethical Practices of KEPCO Group companies (10 companies)	June 2012
Cooperative Shared Growth Pact in the Power Equipment Sector	June 2012
Select 65 power industry SMEs as KEPCO Trusted Partners	July 2012
Contracts for transferring technology to SMEs for 27 patent cases owned by KEPCO	September 2013
Signed a contract for jointly fostering professional personnel among electricity group companies	October 2013
Signed a contract for mutual growth and fair transactions with 214 SMEs	December 2013

## Glossary

#### Micro Grid

Electricity supply system by focusing on independent and separate power source from the existing extensive electricity system. It has supplementary relation with the existing electricity system.

#### BEMS: Building Energy Management System

A system controlling the amount of energy use automatically and efficiently by launching sensors to energy using devices in buildings (lightings, air conditioning) and connecting to communications network.

#### ETS: Emissions Trading System

The system that sets the total quantity of greenhouse emissions of all advanced nations and imposes a certain amount of emission quotas. Countries exceeding the quota can purchase emission rights and those under the quota can sell emissions.

#### CAMS: Carbon Asset Management System Systemic load factor with considering GHG emission rights

such as certified emission reductions as products that can be changed into cash. It refers to percentage of average electricity for the maximum amount of electricity for a specific period and index for efficiency in the investment of electricity facilities.

#### CDM: Clean Development Mechanism

An arrangement allowing industrialized countries with a greenhouse gas reduction commitment to invest projects that reduce emissions in developing countries as an alternative to more expensive emission reductions in their own countries.

#### Demand Control

All the activities to satisfy electricity demand at a minimal cost by changing customers' electricity use patterns. Load control and energy efficiency improvement are major methods for demand control.

#### c-km: Circuit Kilometer

Length of one cable made up of three lines. One of the most

generally used units for the length of transmission line.

#### Transmission & Distribution Loss

Electricity loss incurred while electric power flows from power plant to substation, transmission/distribution lines, and finally point of consumption, mainly due to resistance.

#### DR: Demand Response

To convey changeable information on electricity cost depending on the situation of electricity supply and demand to customers on a real-time basis and induce the reduction of electricity peak and consumption by using incentive programs.

#### RPS: Renewable Portfolio Standard

Regulation that requires the increased production of energy from renewable energy sources.

#### EERS: Energy Efficiency Resource Standard

Demand management system where the government grants energy suppliers with goals for reducing energy and depending on the implementation imposes incentive or

## **Association & international organization memberships**

Name of Association/Institution	Purpose for Joining	Year
Korean Institute of Electrical Engineers	Promotion and development of academics and technology related to electrical engineering	1961
Korea Standard Association	Exchange of information on technological standards, including industrial standardization and quality management	1964
Korea Electric Association	Promotion and development of electric industry	1965
Korean Member Committee of the World Energy Council	Enhancement of international relationship in the energy area	1969
Korea Atomic Industrial Forum	Exchange of nuclear technology at home and abroad	1975
Korea Electrical Engineering & Science Research Institute	Basic research and nurturing of human resources with regard to electric power industry	1989
Korean Society for Quality Management	Exchange of information among quality management organizations to improve quality management activities	1995
Korea Nuclear Society	Technology development and academic exchange with regard to nuclear power	1995
Korean Institute of Electrical & Electronic Material Engineering	Academic exchange and cooperation between industry and academia regarding electrical and electronic material engineering	1996
AESIEAP	Cooperation among electric power companies & experts of East Asia and the Western Pacific	1998
EEI	Protection of the rights of U.S. electric power companies and provision of information on the electric power industry	2004
Korea New & renewable energy Association	Promotion of new and renewable energy industry and information sharing	2004
AEIC	Technological exchange among electric power companies in North America	2008
Korea Invention Promotion Association	Exchange of needs and trends of IPR market	2009
Korea Smart Grid Association	Smart grid information sharing and mutual cooperation	2009
Korea Nuclear Association for International Cooperation	Export of Korean standard nuclear power plant, analysis of overseas nuclear trends, mutual cooperation and information	2010
	sharing in the nuclear industry	
Korea carbon Capture and Storage Association	Spread and support for providing CCS technology	2010
Korea Nuclear Association for International Cooperation	Analyze Korea-styled nuclear power plant export and overseas trend, cooperate with other nuclear power plant businesses	2011
	and exchange information	
World Nuclear Association	Enhance the national status and carry out marketing activities for nuclear power plants	2012
Korea Management Association	Innovate management and support for consulting service	2013
Future Energy Forum	Review current affairs and policies in the energy sector	2013
Korea Photovoltaic Industry Association	Market research, participate in proposing policies, collect information on new technology	2013
Korea Wind Energy Association	Market research, participate in proposing policies, collect information on new technology	2014

1. AESIEAP: Association of the Electricity Supply Industry of East Asia and the Western Pacific

2. EEI: Edison Electric Institute

3. AEIC: Association of Edison Illuminating Companies

#### penalty.

## EMS: Energy Management System

A system controlling the operation of generation facilities connecting with electricity grid in an optimal way by collecting information on the entire electricity grid and monitoring load frequency.

#### Greenhouse gases

Elements of air generated either naturally or artificially, which may contribute to global warming when there is an excessive increase of their proportion in the atmosphere. Refers to gases like carbon dioxide (CO2), methane (CH4), chlorofluorocarbon (CFC), nitrous oxide (N2O), and sulfur hexafluoride (SF6).

#### ESS: Energy Storage System

A device for storage where exceedingly supplied electricity is saved and transmitted in case of a temporary lack of electricity. It includes battery storing electricity and relevant devices managing battery efficiently.

# Electric quality

The quality of electricity provided is represented as blackout time, voltage & frequency margin and total harmonic distortion (THD).

#### HVDC: High-Voltage Direct Transmission Current

High voltage direct transmission current which converts alternating current to direct current for transmission, and converts into alternating current again for use.

#### Electricity Effect Valuation System

A technique to select ideal sites for constructing transmission and substation facilities. Quantifies the effect of electricity on the natural, social and technology

importance of the effect. Results are rendered in 3D images.

#### IGCC: Integrated Gasification Combined Cycle

New eco-friendly generation technology which operates the turbine by gasifying coals at high temperature and pressure and producing and purifying mixed gas with CO and hydrogen

#### **CER: Certified Emission Reduction**

CERs are carbon credits issued by the CDM Executive Board for emission reductions achieved by CDM projects

#### RFS Renewable Fuel Standard

A system where transport fuels are mandatorily mixed with renewable energy by certain percentage.

#### CCS: Carbon Capture and Storage,

CCUS: Carbon, Capture, Utilization and Storage Technology with extracting CO<sub>2</sub>, from fossil fuels before being emitted in the air, pressing and storing it into liquid.

#### SNG: Substituted Natural Gas

environment by using GIS and CAD and analyzes the weighted Produced from oil or coals, the gas has similar components with natural gas whose major component is methane.

# **Additional** information

All Sustainability Reports (issued from 2005) including this one and Annual Reports can be downloaded on the website of KEPCO. Additional information of the management of KEPCO is available on the websites below. Expressions such as forecast, expect and estimate are the description of the analysis of future as of today. Therefore, for specific risk or uncertainty, please refer to Form 20-F.

Category	Website	Address
Business Report	Financial Supervisory Service's DART (data analysis, retrieval and transfer system)	
	/company overview	dart.fss.or.kr
Form 20-F	U.S. Securities and Exchange Commission	www.sec.gov
Annual Report	KEPCO homepage/Investor relations/management	www.kepco.co.kr
Statistics of Electric	KEPCO homepage/Investor relations/Investor resource/Statistics of electricity	www.kepco.co.kr
Power in Korea		
Social contribution	KEPCO homepage/company overview/social contribution	www.kepco.co.kr
Management Information of	Public Institution Information Management System,	www.alio.go.kr
Public Institutions	Ministry of Strategy and Finance	



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Demand Management & Optimization Department

Distribution Planning Department

Distribution Opeartion Department

Transmission and Substation Construction Department

Business Support Department

#### 5. Coping with Climate Change

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#### 6. Making People-oriented Work Environment

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Labor Management Department Kang Min-suk, Kim Kook-zin, Ahn Chul-hong

Emergency & Security Department Baek Wan-ki, Seo Pyung-taek, Lee Soon-bae

#### 7. Fulfilling the Responsibility for Sharing and Mutual Growth

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Procurement & Contract Department Son Ki-jung, Baek Sang-jun

Technology Policy & Planning Department Choi Wee-kyung

Transmission & Substation Construction Department Ahn Dae-wook

\* Name of department: Order of organization (However, departments with more representativeness for each theme are placed at first)

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