Think **TRUST**

Korea Hydro & Nuclear Power Co.,LTD
Sustainability Report 2015

**KOREA HYDRO &
NUCLEAR POWER CO., LTD**

Respect

Social Responsibility

T R U S T

Technology
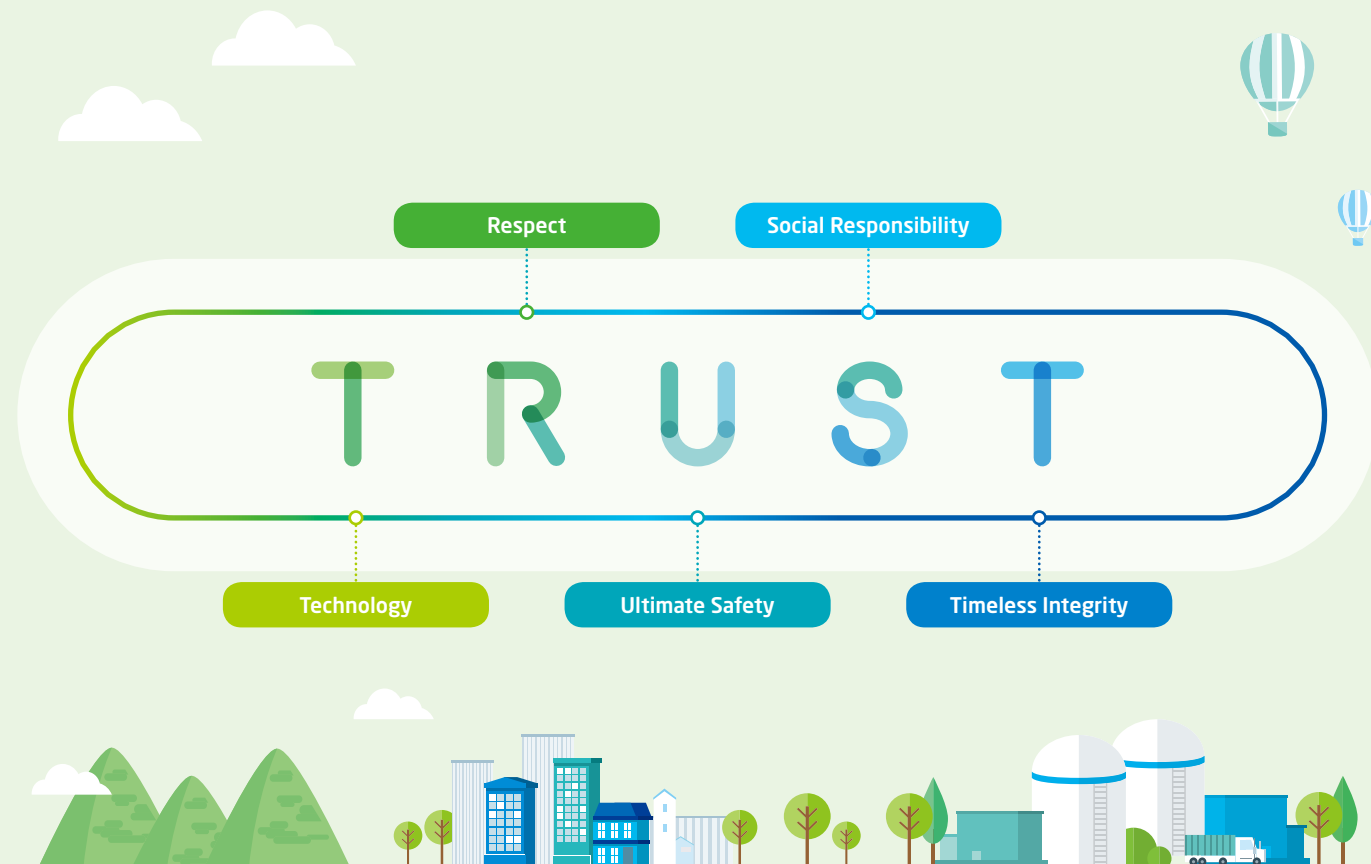
Ultimate Safety

Timeless Integrity

Think TRUST

Korea Hydro & Nuclear Power Co.,LTD

Sustainability Report 2015

About This Report

Purpose of the report

This report is the sixth sustainability report of Korea Hydro & Nuclear Power (KHNP), a green energy company. Through this report, KHNP is sharing, 'TRUST', the vision and core values of KHNP with key stakeholders. We will report sustainability performances in all economic, social, and environmental fields by reflecting perspectives of key stakeholders. KHNP seeks to proactively communicate with key stakeholders by publishing this report every year and timely share our performance data with the public.

Reporting scope and period

The scope of this report covers the HQs and all domestic and international offices of KHNP. This report includes the main sustainability performances from January 1st, 2014 to December 31th, 2014. Data from 2012 to 2014 is provided to help readers understand the related changes in our performance. A partial report of qualitative performance includes the contents of the first half of 2015.

Reporting and verification guidelines

This report was prepared in accordance with GRI G4.0 (Sustainability Reporting Guidelines by Global Reporting Initiative) and reviewed/validated by a third party verification agency to improve the reliability of the contents. We have attached a statement of assurance from the third party verification agency (refer to page 76).

Additional information of the report

Korean and English versions of this report are available at the KHNP website (www.khnp.co.kr) and are downloadable as PDF file. For further inquiries in relation to the sustainability report, please contact us below.

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THINK TRUST

CEO Message ———— Company Profile ———— Main Business ———— Kori #1 Reactor and the Economic Growth Of Korea ———— 2014-2015 Highlight ———— 03

CEO's Message

To whom it may concern,

In 2014, KHNP established a new set of five core values, Technology, Respect, Ultimate safety, Social responsibility, and Timeless integrity (TRUST), in order to pursue a new direction of the company's vision, 'KHNP, the Reliable Global Energy Leader'. The utmost priority among the core values is the Ultimate Safety. In this regard, KHNP has endeavored to secure the highest standard of safety technologies while pursuing the timeless values of integrity and a strong ethical foundation. The company has been building a corporate culture respect each other among employees, improvement of world-class technical skills and advancement of ethical management. Our company stands in the forefront of social contribution and environmental protection to fulfill its social responsibilities as a public company.

Remarkable results have been achieved in different parts of our business operation after all of the management and the employees refresh their mindset. I must praise the determination and dedication of our management and employees on how they have performed their duty to the fullest. The nuclear power utilization rate was increased to 85% in 2014, and the accumulative power generation rate was reached 3 trillion kWh in April 2015 in the 37 years of operating nuclear power plants. The annual revenue in 2014 was KRW 9.5 trillion, which is a 48.5% increase from 2013, and the net income was KRW 1.44 trillion.

We will concentrate all of our capabilities on improving the operational safety of the nuclear power plants.

KHNP has a global reputation for safe nuclear power plant operations. We are ranked 2nd on the World Association of Nuclear Operators (WANO) safety performance evaluation, an overall checkup of operational and safety capabilities of nuclear power plant operation companies worldwide. This is the result of setting safety as the top priority and all of our employees making tremendous efforts to internalize the safety culture. KHNP has constantly sought a better safety practices and actively improved safety standards through safety evaluation for nuclear plants in Korea and abroad. In accordance with the Korea government's policies, the number of nuclear power plants will increase to 35 by 2030. KHNP is preparing for future expansions by enhancing technologies and securing experts to strengthen the overall capability.

KHNP will fulfill its social responsibilities through communications and mutual growth.

To fulfill our social responsibilities, KHNP has organized social contribution activities for the general public and for communities around its nuclear power plants. KHNP is also making efforts to build a robust ecosystem of nuclear power industry by supporting small and medium sized suppliers for mutual growth. Our sincere communications and efforts towards a symbiotic coexistence have resolved several conflicts, especially in the areas of local residents' negative perceptions regarding nuclear power plants. After 15 years, negotiations on Shin-Hanul nuclear power construction have finally reached a resolution in November 2014. Wolsong #1 that was stopped for 946 days after the operation permit expired but it was restarted in June 2015 after reaching agreements with local residents.
These noteworthy results are achieved through active communications with all of our stakeholders, including the Korea government, regional governments and local residents. Based on an empowered trust gained from mutual understanding and shared concerns, we will continue our efforts to communicate with our stakeholders via various channels.

KHNP will equip with the world's best and most competitive technologies.

KHNP has strengthening its position as a global energy leader through continuous technical development. In 2014, KHNP acquired a national standard design approval of our next generation new nuclear power plant 'APR+'. 'APR 1400' is the Korean nuclear power plant and it was successfully exported to the United Arab Emirates (UAE). It passed the preliminary examination for the U.S. Nuclear Regulatory Commission (NRC) design certification. According to the Korean Nuclear Safety and Security Commission's decision on the close of Kori #1, KHNP is planning to take proactive steps to compete in the upcoming decommissioning market based on its reactor disassembly techniques and business foundation. With the UAE project as a showcase of the KHNP's international business, KHNP will become a 'Global Energy Leader' by exporting more nuclear and hydroelectric power plants.

As the Korea's largest power generating company that producing 30% of the nation's electric power through nuclear power, hydropower and pumped storage hydroelectric power, Korea Hydro & Nuclear Power (KHNP) has played a key role in contributing the development of the national economy and the enrichment of the Korean people's lives. Now KHNP is ready to be one of the global energy leaders and to represent Korea on the global stage.

To ensure KHNP's sustainability, we need our stakeholders' support. Like the Korean proverb 'Su-jeok-seok-cheon', which means constant dripping of water eventually breaks a rock, we will continue to grow and overcome any obstacles in our way.
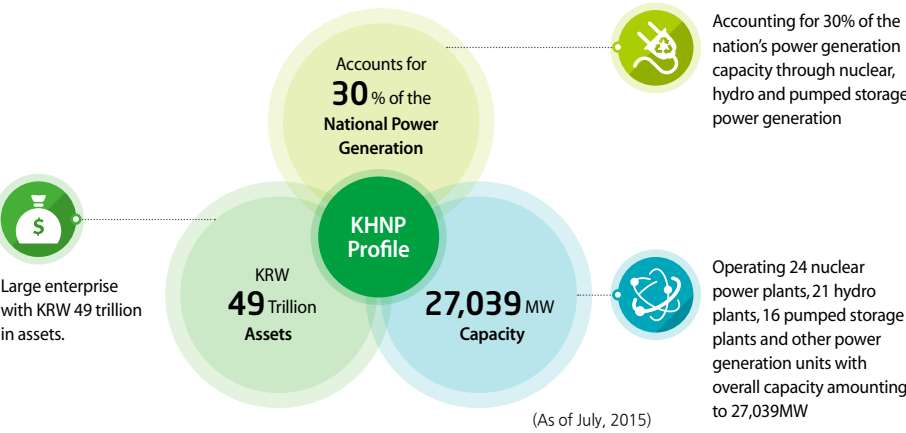
President & CEO, Korea Hydro & Nuclear Power Co., Ltd.   **Cho Seok**

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CEO Message — **Company Profile** — Main Business — Kori #1 Reactor and the Economic Growth Of Korea — 2014-2015 Highlight 05

Company Profile

State of KHNP

	Company Name	Korea Hydro & Nuclear Power Co., Ltd.
	CEO	Cho Seok
	Governing Organization	Ministry of Industry Trade, Industry and Energy of Korea (Public Enterprise)
	Location of HQs	125, Hwarang-ro, Gyeongju-si, Gyeongsangbuk-do, Korea
	Core Functions	Development of electric power resources / power generation and related businesses / R&D and affiliated businesses / overseas businesses
	Established	April 2, 2001
	Capital	KRW 1,212.2 billion (January 3, 2011)
	Employees	10,107.6 (as of June 30, 2015)
	Organization	7 divisions, 26 departments and offices, 4 nuclear power sites (Kori, Yeonggwang, Wolsong, Uljin), 1 hydro power site, 7 pumped storage power plants and 7 other offices

Beginning Stage

(1978~1998)

1978	Started commercial operation of Kori #1 (recognized as the world's 21st nuclear power generating country)
1983	Started commercial operation of Wolsong #1 and Kori #2
1984	Established a plan to secure a proprietary nuclear plant construction technologies
1985	Started commercial operation of Kori #3
1986	Started commercial operation of Kori #4 and Hanbit #1
1987	Started commercial operation of Hanbit #2 Commenced proprietary nuclear plant construction technology project **Exceeded 100 billion KWh of nuclear power generation**
1988	Started commercial operation of Hanul #1
1989	Started commercial operation of Hanul #2
1995	Started commercial operation of Habit #3
1996	Started commercial operation of Habit #4
1997	Started commercial operation of Wolsong #2
1998	Started commercial operation of Wolsong #3 Started commercial operation of Hanul #3, Korea's first Standard NPP (OPR1000) Won the first overseas NPP contract (Guangdong NPP technical advisory)

Growth and Development Stage

(1999~2007)

1999	Started commercial operation of Hanul #4 and Wolsong #4
2000	**Exceeded 1 trillion KWh of nuclear power generation**
2001	Launched Korea Hydro & Nuclear Power Co., Ltd. (spun off from KEPCO)
2002	Started commercial operation of Habit #5 and #6 Ranked 6th in the World's Power Generation Facility Capacity Developed a next generation light water reactor (APR1400)
2004	Implemented ERP system Founded KHNP Community Service Group
2005	Completed construction of renewable energy plants (Kori Wind Plant and Yeonggwang Solar Park), Hanul #5 and #6
2007	Acquired continued operation permit for Kori #1

Takeoff Stage

(2008~)

|	
2008	Domestic nuclear power generation reached 2 trillion KWh.
2009	Won the United Arab Emirates (the UAE) NPP project (USD 40 billion)
2010	Installed a nuclear reactor at Shin-Kori #3 (the first applied APR1400)
2011	Started commercial operation of Shin-Kori #1 (first adopted QPR1000) Acquired pumped storage power generation from thermo-power generation company (4,700MW) Selected as an excellent family friendly organization Selected as the top Korean company in quality competitiveness by the Founded Nuclear Safety Committee
2012	Started commercial operation of Shin-Kori #2 and Shin-Wolsong #1
2013	Signed contract with ACRC for integrity success project
2014	APR+,Korean reactor acquired a standard design permit Groundbreaking ceremony of new company building (at Gyeongju,Korea)
2015	**Exceeded 3 trillion KWh of nuclear power generation** Acquired continued operation permit for Wolsong #1 Started commercial operation of Shin-Wolsong #1

Corporate Overview

KHNP was established in April 2001 when it was separated from the power distribution unit of Korea Electric Power Corporation (KEPCO) in compliance with the government's 'Electricity Industry Restructuring Program'. KHNP is a public energy corporation that supplies reliable and affordable electric power through green energy (nuclear, hydro, and renewable energy).

KHNP Profile

Accounts for **30** % of the **National Power Generation**

Accounting for 30% of the nation's power generation capacity through nuclear, hydro and pumped storage power generation

Large enterprise with KRW 49 trillion in assets.

KRW **49** Trillion Assets

27,039 MW Capacity

Operating 24 nuclear power plants, 21 hydro plants, 16 pumped storage plants and other power generation units with overall capacity amounting to 27,039MW

(As of July, 2015)

Milestones

KHNP has overcome many challenges from the foundation and it will continue to innovate relentlessly. KHNP aims to be more than a major power generation company in Korea but a global energy leader.
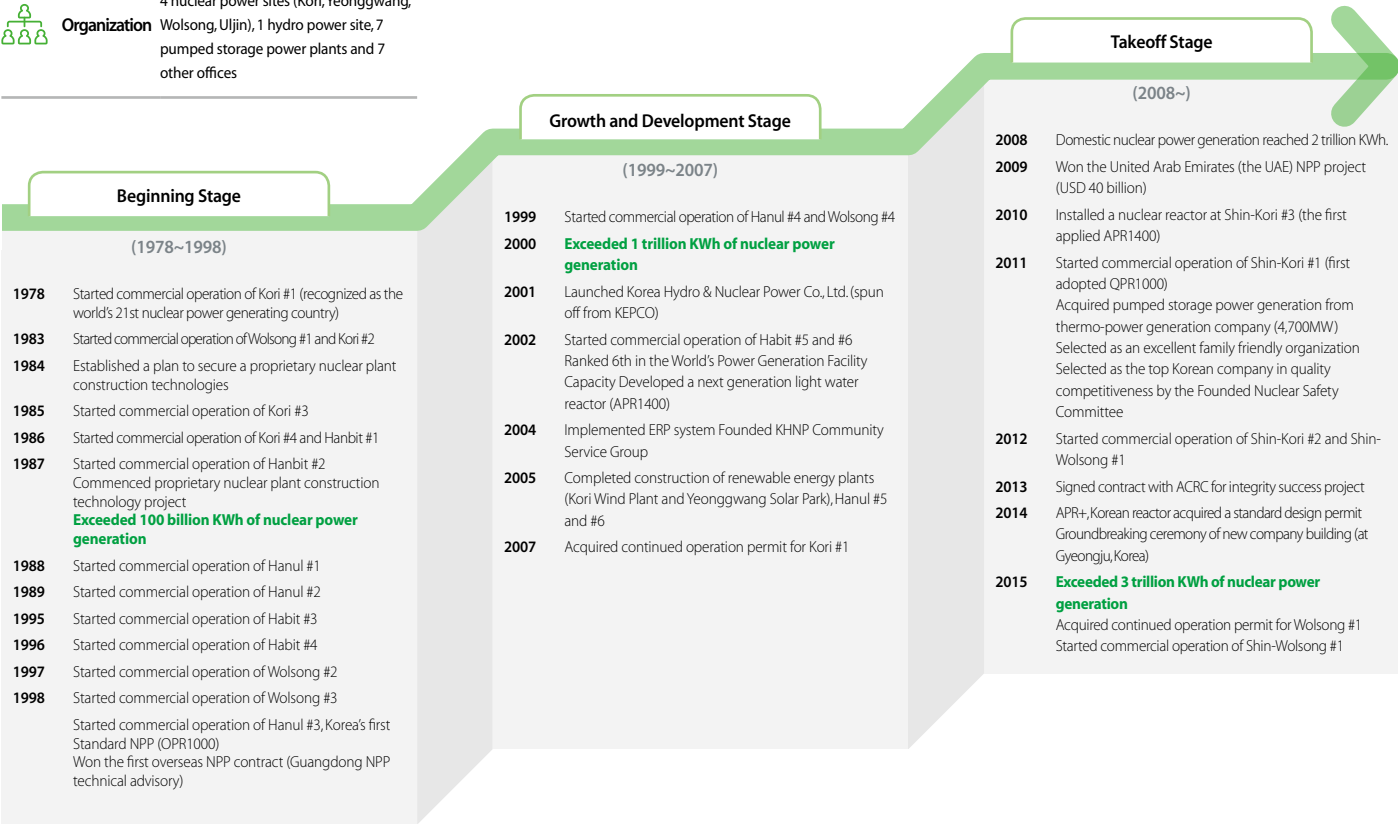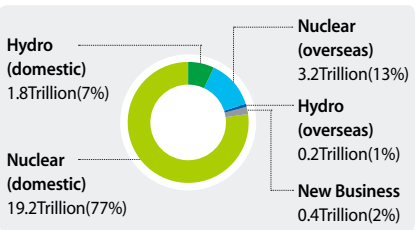
Vision and Core Values

KHNP established a vision of becoming "Reliable Global Energy Leader, KHNP" to produce low cost but high quality reliable electricity. KHNP embodies five core values 'TRUST' (Technology, Respect, Ultimate Safety, Social Responsibility, and Timeless Integrity), and these values demonstrate our firm commitments to stakeholders. Every member of KHNP shares our vision and values, and we are committed to fulfill those objectives.

2030 Business Target

Target	Global energy leader

Hydro (domestic) 1.8Trillion(7%)
Nuclear (overseas)(13%) 3.2Trillion
Hydro (overseas) 0.2Trillion(1%)
New Business 0.4Trillion(2%)
Nuclear (domestic) 19.2Trillion(77%)

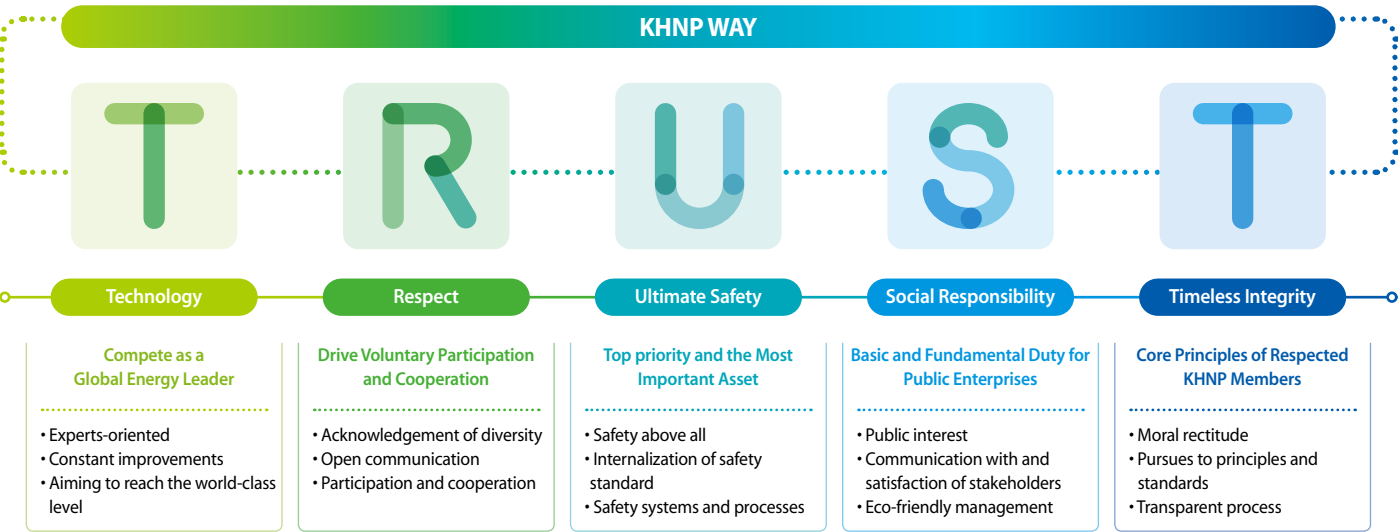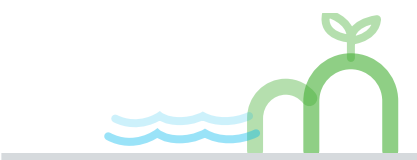|	
Revenue	KRW 25 trillion (overseas revenue accounting for 16%)
Nuclear Power	**Third in the World** 37 units (home) + 5 units (overseas)
Hydro Power	37 units (home) + 8 units (overseas)
Technology	World's most advanced technologies
Employees	18,000

KHNP VISION 2030

Mission	Enrich Lives through Environment-friendly Energy				
Vision	Reliable Global Energy Leader, KHNP				
Core Values	Technology	Respect	Ultimate Safety	Social Responsibility	Timeless Integrity
Strategic Direction	Prioritize the Safety of Nuclear Power Plant		Phased expansion of Overseas Business		Technology-oriented Business Expansion

Business Strategies	Domestic Nuclear Power Generation	Overseas Nuclear Power Generation	Hydro Power Generation	New Business
	• short and medium term: establish structures for safe operation • long term: expand technology-oriented business	• short and medium Term: pursue EPC business • long term: expand BOO business	• domestic: maintain existing system and improve efficiency • global: gradual expansion of regions	• focus on nuclear decommissioning • optimize renewable energy portfolio
Tasks	• Streamlined process: establish KHNP's own integrated management model • Technology leadership: advance construction process and leading technology • Specialization of manpowerts: : establish specialist training system • Organization: redesigning 2030 mid to longterm business organization	• Enhance global competitiveness of export reactors • Reinforce business development capabilities • Reinforce financing competencies • Globalize human resource development framework	• Advance facilities & enhance productivity through increased technology competences • Build more overseas power plant operation references • Expand overseas operation business by leveraging reference projects	• Establish decommissioning business infra • Technology business opportunities based on customer needs • Economically feasible renewable energy business portfolio

KHNP WAY

TRUST

Technology	Respect	Ultimate Safety	Social Responsibility	Timeless Integrity
Compete as a Global Energy Leader	**Drive Voluntary Participation and Cooperation**	**Top priority and the Most Important Asset**	**Basic and Fundamental Duty for Public Enterprises**	**Core Principles of Respected KHNP Members**
• Experts-oriented • Constant improvements • Aiming to reach the world-class level	• Acknowledgement of diversity • Open communication • Participation and cooperation	• Safety above all • Internalization of safety standard • Safety systems and processes	• Public interest • Communication with and satisfaction of stakeholders • Eco-friendly management	• Moral rectitude • Pursues to principles and standards • Transparent process

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CEO Message — Company Profile — **Main Business** — Kori #1 Reactor and the Economic Growth Of Korea — 2014-2015 Highlight 07
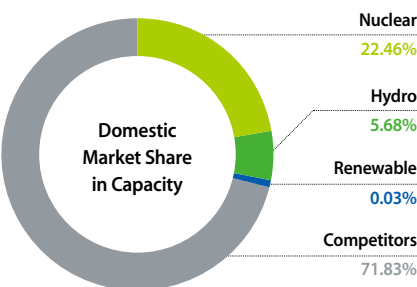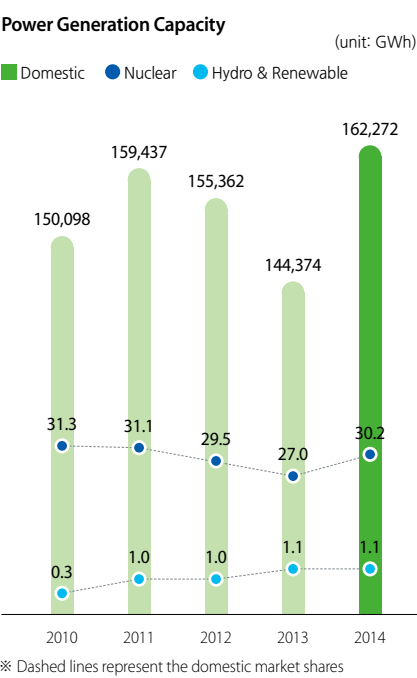
Main Business

Our main businesses are power generation businesses (nuclear power, hydropower, and renewable energy), construction businesses, R&D, and overseas businesses. As Korea's largest power generation company, we are currently generating 30% of domestic electricity power. In addition, KHNP operates 24 NPPs, 16 pumped storage, 5 solar, 1 wind and 14 small hydro power plants, and the total power generation facilities reach to 27,039 MW as of July 2015.

Current State of Power Plant Operation and Construction

🟢 Nuclear
💧 Hydro
〰️ Small Hydro
🏭 Pumped Storage

Hwacheon Hydro
Chuncheon Hydro
Cheongpyeong Pumped Storage
Uiam Hydro
Yangyang Pumped Storage
Yangyang Small Hydro (2 units)
Topyeong Small Hydro
Cheongpyeong Hydro
Paldang Hydro
Gangneung Hydro

Yecheon Pumped Storage
Yecheon Small Hydro
Goisan Hydro
Yecheon Solar (2 units)

Hanul Nuclear Power Site
In operation : 6 units
Under construction : 2 units
Preparatory : 2 units

Cheongsong Pumped Storage

Muju Pumped Storage
Muju Small Hydro
Seonjin River Hydro
Wolsong Nuclear Power Site
In operation : 6 units

Yeonggwang Solar Park (3 units)
Hanbit Nuclear Power Site
In operation : 6 units
Kori Wind
Kori Nuclear Power Site
Samrangjin Pumped Storage
In operation : 6 units
Under construction : 2 units
Preparatory : 2 units

Sancheong Pumped Storage
Sancheong Small Hydro (2 units)

Boseong River Hydro

Power Generation Capacity

(unit: GWh)

🟩 Domestic 🔵 Nuclear 🔵 Hydro & Renewable

Year	2010	2011	2012	2013	2014
Domestic	150,098	159,437	155,362	144,374	162,272
Nuclear	31.3	31.1	29.5	27.0	30.2
Hydro & Renewable	0.3	1.0	1.0	1.1	1.1

※ Dashed lines represent the domestic market shares

Domestic Market Share in Capacity

Nuclear 22.46%
Hydro 5.68%
Renewable 0.03%
Competitors 71.83%

Power Plant Facilities

(As of July 2015)

Category	Nuclear				Hydro (incl. Pumped Storage)	Renewable	Total
	Kori	Hanbit	Wolsong	Hanul			
Units in Operation	6	6	6*	6	37	20	81
Capacity (MW)	5,137	5,900	4,779	5,900	5,295 (5.68%)	28 (0.03%)	27,039 (28.17%)
Total (Domestic M/S)	21,716 (22.46%)						

* Commercial operation of Shin-Wolsong #2 has been started (on 24 July, 2015)

New Power Plants under Construction

(As of July 2015)

Category	Under Construction		Under Construction Preparatory Stage	
	Shin-Kori #3 & #4	Shin-Hanul #1 & #2	Shin-Kori #5 & #6	Shin-Hanul #3 & #4
Capacity	1400MW x 2 unit	1400MW x 2 units	1400MW x 2 units	1400MW x 2 units
Const. Periods	2007.9~2016.5*	2010.4~2018.4*	2015.12~2022.3	2017.2~2023.12
Status	Preparing fuel loading	Electro-mechanical & civil engineering	Expecting construction permits	Project preparation
Progress	98.41%	78.05%	-	-

* Shin-Kori #3 & #4, Shin-Hanul #1 & #2 are under review of business schedule

Kori #1 Reactor and the Economic Growth of Korea

◄ Groundbreaking Ceremony of Kori #1 Reactor (Mar 19, 1971)

In June 2015, the KHNP board of directors decided to cease the operation of Kori #1 unit by accepting the recommendation from the Ministry of Trade, Industry and Energy. Therefore, Kori #1 reactor, which initiated its operation in April 29, 1978, will be shutdown on June 18, 2017 after 40 years of operation.

▲ The First Construction Site for Kori NPP

Kori #1 reactor was highly valued as it was the first domestic NPP. After joining the International Atomic Energy Agency (IAEA) in 1957, Korea officially organized a committee on NPP development in 1962 to establish development plans. At the end of 1964, the Kori region was selected through seven months of site inspection, and Korea's first NPP construction was initiated in 1971. Every step of Kori #1 contributed a significant progression to the scientific technologies in Korea. After seven years of the construction, Kori # 1 reactor started its official operation in 1978, and the history of nuclear energy in Korea began.
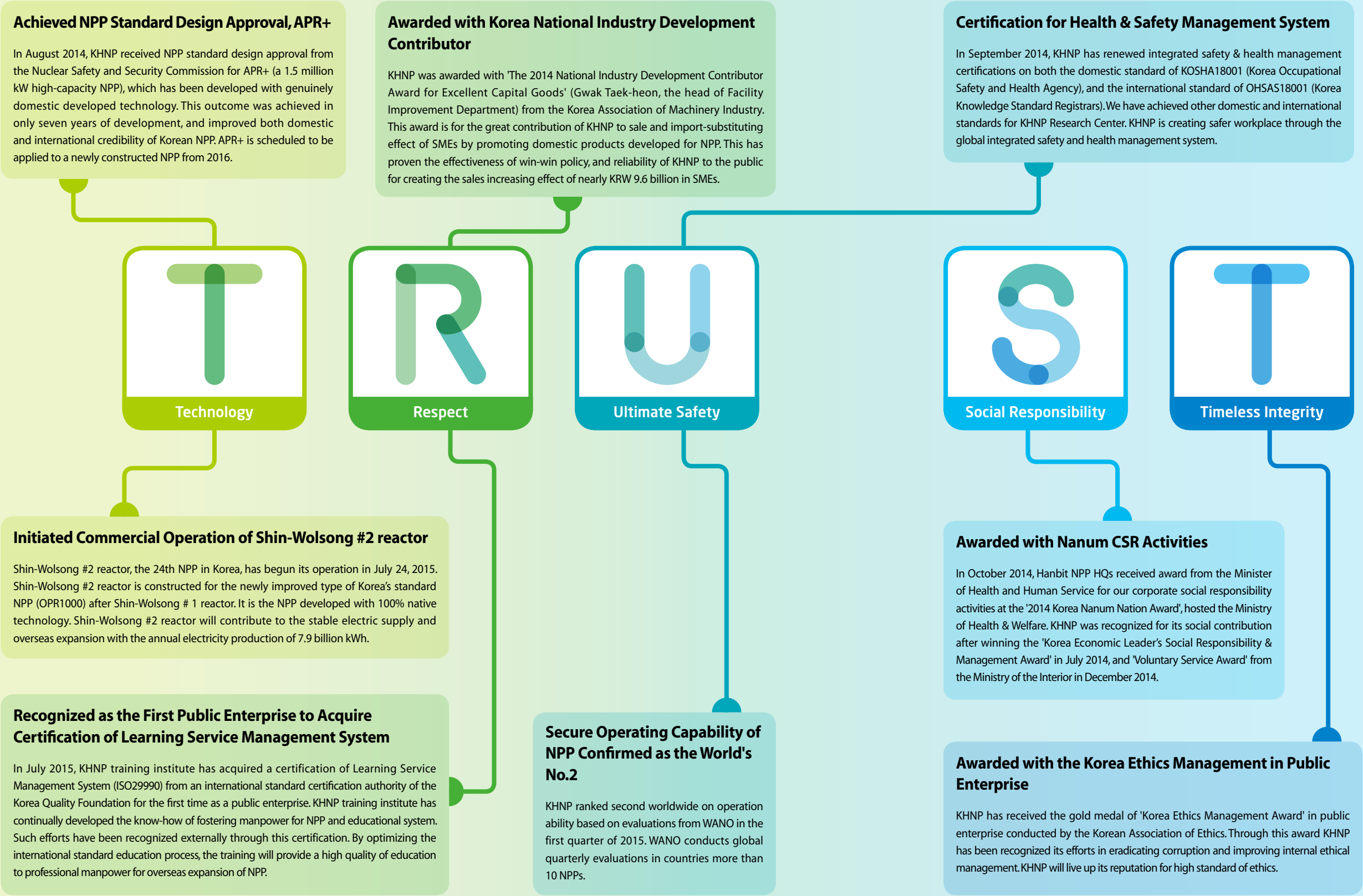
Kori #1 reactor has been the leader of guiding Korea's energy industry and solving the power shortage problem. At the time of completion, the capacity of the plant was so enormous (587MW) that took up 9% of the whole domestic power capacity (6,590MW). The cost of generation, 9.21 KRW/kWh, was 42% cheaper compared with the one of thermal power plant. Due to the inexpensive supply, household expenses in electricity decreased, and companies could operate the factories more actively. During the time of frequent electricity shortages, Kori #1 reactor was a 'light' of hope to Koreans.

KHNP is facing a new challenge of 'Safe Decommission' for the shutdown of Kori #1 reactor. Decommission process is a long-term project, which takes more than 20 years from preparation to environmental restoration. This is the new challenge that Korea has to achieve, since the nation does not have any experiences in decommission. KHNP will be fully prepared for the permanent shutdown and decommission, and keep the value of 'Safety First' until the very last moment of Kori #1 reactor. To achieve this goal, KHNP will cooperate with relevant organizations such as nuclear power academic associations & research institute, and regulatory agency. Please look forward to the new KHNP that will open a new era of NPP industry through the safe decommission of Kori #1 reactor.

▲ View of Kori #1 Reactor (Recent)

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CEO Message — Company Profile — Main Business — Kori #1 Reactor and the Economic Growth Of Korea — 2014-2015 Highlight 09

2014-2015 Highlight

Achieved NPP Standard Design Approval, APR+

In August 2014, KHNP received NPP standard design approval from the Nuclear Safety and Security Commission for APR+ (a 1.5 million kW high-capacity NPP), which has been developed with genuinely domestic developed technology. This outcome was achieved in only seven years of development, and improved both domestic and international credibility of Korean NPP. APR+ is scheduled to be applied to a newly constructed NPP from 2016.

Awarded with Korea National Industry Development Contributor

KHNP was awarded with 'The 2014 National Industry Development Contributor Award for Excellent Capital Goods' (Gwak Taek-heon, the head of Facility Improvement Department) from the Korea Association of Machinery Industry. This award is for the great contribution of KHNP to sale and import-substituting effect of SMEs by promoting domestic products developed for NPP. This has proven the effectiveness of win-win policy, and reliability of KHNP to the public for creating the sales increasing effect of nearly KRW 9.6 billion in SMEs.

Certification for Health & Safety Management System

In September 2014, KHNP has renewed integrated safety & health management certifications on both the domestic standard of KOSHA18001 (Korea Occupational Safety and Health Agency), and the international standard of OHSAS18001 (Korea Knowledge Standard Registrars). We have achieved other domestic and international standards for KHNP Research Center. KHNP is creating safer workplace through the global integrated safety and health management system.

T Technology
R Respect
U Ultimate Safety
S Social Responsibility
T Timeless Integrity

Initiated Commercial Operation of Shin-Wolsong #2 reactor

Shin-Wolsong #2 reactor, the 24th NPP in Korea, has begun its operation in July 24, 2015. Shin-Wolsong #2 reactor is constructed for the newly improved type of Korea's standard NPP (OPR1000) after Shin-Wolsong # 1 reactor. It is the NPP developed with 100% native technology. Shin-Wolsong #2 reactor will contribute to the stable electric supply and overseas expansion with the annual electricity production of 7.9 billion kWh.

Recognized as the First Public Enterprise to Acquire Certification of Learning Service Management System

In July 2015, KHNP training institute has acquired a certification of Learning Service Management System (ISO29990) from an international standard certification authority of the Korea Quality Foundation for the first time as a public enterprise. KHNP training institute has continually developed the know-how of fostering manpower for NPP and educational system. Such efforts have been recognized externally through this certification. By optimizing the international standard education process, the training will provide a high quality of education to professional manpower for overseas expansion of NPP.

Secure Operating Capability of NPP Confirmed as the World's No.2

KHNP ranked second worldwide on operation ability based on evaluations from WANO in the first quarter of 2015. WANO conducts global quarterly evaluations in countries more than 10 NPPs.

Awarded with Nanum CSR Activities

In October 2014, Hanbit NPP HQs received award from the Minister of Health and Human Service for our corporate social responsibility activities at the '2014 Korea Nanum Nation Award', hosted the Ministry of Health & Welfare. KHNP was recognized for its social contribution after winning the 'Korea Economic Leader's Social Responsibility & Management Award' in July 2014, and 'Voluntary Service Award' from the Ministry of the Interior in December 2014.

Awarded with the Korea Ethics Management in Public Enterprise

KHNP has received the gold medal of 'Korea Ethics Management Award' in public enterprise conducted by the Korean Association of Ethics. Through this award KHNP has been recognized its efforts in eradicating corruption and improving internal ethical management. KHNP will live up its reputation for high standard of ethics.

As of April 20, 2015, the cumulative electricity generated from the NPPs has exceeded 3 trillion kWh. This was accomplished in 37 years after the beginning of operation of Kori #1 reactor in April 29, 1978.

KHNP has been steadily supplying electricity by producing 3 trillion kWh in the past 37 years, and lessened the burden on the people with low electricity rates.

KHNP will be a reliable partner by supplying uninterrupted electricity to its customers and lead the industry to create economic value and to minimize environmental impact.

What does 3 Trillion KWh is required if it is replaced by of Cumulative Power Generation mean?

Additional cost amounting to KRW **445** Trillion is required if it is replaced by thermal power

(corresponding to 23% of the national GDP in 2014)

Amount that feeds power to all Seoul citizens for **65** years.

(Total power consumption in Seoul was 46.5 billion kWh in 2013)

Amount required for a KTX train to make round trips between Seoul & Busan for **115** million times

Substituted coal fuel import amounts to KRW **219** Trillion

(corresponding to 11% of the national GDP in 2014)

Amount that feeds power to the nation for **6.3** years.

(Total power consumption in Korea was 475 billion kWh in 2013)

Amount that feeds power to the world for **1.7** months

(Global power consumption total was 20.9 trillion TWh in 2012)

Reduction effect of **2** billion tons of greenhouse gas emission

(3.3 times of the national GHG emission in 2011)

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Sustainable   Corporate   Stakeholders   Stakeholders   Materiality   11
Business Strategy   Governance   Engagement   Communication   Evaluation
                       Structure

Sustainable Business Strategy

KHNP Sustainable Business Strategy

KHNP has developed a sustainable business strategy by reflecting the core value 'T.R.U.S.T'. We will be a reliable global energy leader by creating economic, environmental and social values. We developed action plans and performance indices related to the business strategy in order to implement sustainability. We are also strengthening our monitoring system to facilitate active cooperation between the Planning Team, which is in charge of sustainability implementation, and department managers.

Mission	Enrich Life through Environment Friendly Energy
Vision	Reliable Global Energy Leader, KHNP

Orientation by Phases	Short-term (2015) Restoration of trust	Mid-term (2020) World-class safe operator	Long-term (2030) Global energy leader

Sustainable Management Strategies: Become a trusted global energy leader through balanced growth with the economy, environment and society

Technology	Respect	Ultimate Safety	Social Responsibility	Timeless Integrity
• World-class nuclear power generation technology • Expanded overseas nuclear power generation business • Diversified business portfolio	**(Employees)** • Improved organization culture and implementation of GWP • Training specialists **(Partners)** • Support for mutual growth	• Nuclear plant operation with first priority placed on the safety • Improved credibility of nuclear facilities • Enhanced risk management capabilities for relieving citizens worries	**(Environment)** • Reinforced environmental management framework • Minimized environmental impacts • Coping with climate change **(Society)** • Promotion of social contributions	• Further-improved ethical management system • Establish a culture of ethics and integrity

Sustainability Management Organization

In KHNP, Management Advisory Committee (MAC) under the board of directors takes in charge of the decision for key sustainability issues. The Planning Team carries out the overall sustainability practices at working-level. In 2014, the MAC discussed various sustainability issues such as safety improvements of NPP, social contribution project, audit results and wages. The Planning Team has also implemented the entire sustainability tasks according to the annual sustainability-training plan, report development, and review of the sustainability initiative. By emphasizing the communications with onsite workers and assigning operators to each area of 'T.R.U.S.T', we will achieve the active cooperation with relevant departments.

Management Advisory Committee (Affiliated with BOD)

- Chairman CEO
- Director Head of Divisions
- Administrator Managing Director of Planning Division

Working Group of Sustainable Management Operators

Leader : Managing Director of Planning Division   Member : Directors of Planning Team & Deputy Director

Units in Charge of Sustainable Management

- (T) Drivers for Future Growth
- (R) Employees and Partners
- (U) Safety
- (S) Environment & Social Contribution
- (T) Ethical Management

Award and Certification for Global Sustainability

In February 2015, KHNP won the gold medal in the sustainability report of 'Vision Awards' supervised by the League of American Communications Professionals, a marketing investigation agency of the world authority. The Sustainability Report 2014 received full marks in six items including 'stakeholder communicability', 'description ability', 'message clarity', and 'information communicability' among detailed evaluation indices.
In October 2014, for the first time in Korea, KHNP was certified with the SR10, an international standard of social responsibility management (SRM) system. The SR10 certifies the SRM, which includes rules and requirements for the SRM of ISO 26000 (International Standard Guidance on Social Responsibility) and ISO 9001 (International Quality Management System Standard). Through the achievement of SR10, our SRM has been recognized internationally. KHNP will continuously manage the SRM by improving the overall process and the performance indices.

Sustainability Performance Management

Performance Indicators	Unit	2013 Result	2014 Result	2014 Target	Performance Evaluation	2015 Target
Technology						
R&D Investment	KRW 100 Million	3,369	3,031	3,965	◐	3,841
Overseas Sales	KRW 100 Million	1,138	1,909	1,339	●	3,143
RPS Execution	GWh	1,770	1,812	1,767	●	2,133
Respect						
Family-Friendliness	Points	131.8	146	145	●	161
Per-capita Education	KRW Million	3.4	3.41	3.4	●	3.5
Labor-Management Relationship	Points	3.03	3.13	3.12	●	3.21
Purchase of SME Products	%	50.2	50.3	51.6	◐	52.5
HR Support (e.g. Atom Mentor)	Persons	15	25	25	●	30
Overseas/ Domestic Marketing Support	Cases	473	499	450	●	500
Financial Support for SMEs	KRW 100 Million	792	917	830	●	950
Performance Sharing Tasks	Items	12	77	70	●	100
Ultimate Safety						
Failure & Shutdown	Cases/Unit	0.26	0.22	0.35	●	0.33
Radioactive Dose	Man-Sv/Unit	0.53	0.36	≤ 060	●	≤ 0.57
Comprehensive Nuclear Safety Performance Index	Points	99.731	99.804	99.5	●	99.5
Nuclear Safety Management Index (Plants in Operation)	%	12.228	6.7112	≤ 11	●	≤ 9.90
Progress of Fukushima Follow-up Measures	%	65.2	73.9	71.7	●	100
Social Responsibility						
Dandelion Spore Fund (Enforced amount)	KRW 100 Million	43.5	52	80.2	◐	90
Local Community's Receptivity	Points	46.1	45.5	50	◐	52
Environmental Performance Index	Points	176.92	223.64	222	●	246
Timeless Integrity						
Integrity Index	Grade	5	3	3	●	2
Assessment of Anti-Corruption Plans	Grade	3	2	2	●	2

※ Changes in 2014: R&D investments in 2013 (the figures are adjusted due to changes in the investment criteria recommended by the Ministry of Science, ICT and Future Planning of Korea) and target of post-Fukushima measures (adjusted through a consultation with the government depending on the progresses of the relevant projects)

Corporate Governance Structure

Composition of the Board of Directors

The board of directors (BOD) makes major decisions related to business and final decisions for the corporate social responsibility. The BOD consists of less than 15 directors, and half of them are appointed as non-executive directors (NEDs). We are also improving the BOD independency by electing the chairperson from NEDs. KHNP has established a sound governance structure by disclosing BOD's decisions and information timely.

Executive Directors

(As of March 2015)

Name	Position	Term	Role
Cho Seok	President & CEO	~2016.9.	
Wi Jae Min	Executive Auditor	~2016.10.	Audit Committee
Kim Bum Nyun	Head of Power Generation Division (VP)	~2016.8.	
Cho Byung Ok	Head of Quality & Safety Division	~2015.10.	
Jung Ha Hwang	Head of Planning Division	~2016.1.	
Lee Young Il	Head of Construction Division	~2016.10.	

Non-Executive Directors

Name	Position	Term	Role
Ryu Sung Kyu	Former president of Korea Coal Corporation	~2016.2.	Chairman of the BOD
Lee Tae Hyeong	Chairman of Soobong Educational Foundation	~2016.2.	
Jeon Seong Hwan	Chair-professor at Konkook Univ.	~2016.2.	Audit Committee
Cho Jeong Je	Chairman of Daehannews Media Group	~2016.2.	Chairman of Audit Committee
Park Kyu Ho	Executive VP of Domestic Operations at KEPCO	~2016.2.	
Cho Seong Hee	Director of Research Council of Energy & Resources Industrial Development	~2016.10	
Lee Kin Gu	Former non-executive director of Korea Radioactive Waste Agency	~2017.2.	

Operation of the Board of Directors and Subcommittees

KHNP responds to urgent issues by holding temporary BOD meetings. We have actively discovered management issues and proposed the improvements by operating subcommittee of BOD for each field of NEDs in order to expand the activities of the board and to strengthen the NEDs' expertise.

Performances of Board of Directors

Items	Unit	2012	2013	2014
Number of BOD meetings	Times	14	11	10
Resolved agenda	Items	43	34	50
Preliminary review	%	100	100	100
Amended and resolved agenda	Items	4	2	2
Reported agenda	Items	13	23	16
Attendance rate	%	90	93	94
NEDs' attendance rate	%	90	95	93
NEDs' rate of remarks	%	76	85	86
NEDs' management suggestions	Items	42	48	53

Composition of Subcommittees

(As of March 2015)

Specialized Committees	Role	Performances in 2014
Audit Committee (3)	Business, Accounting, Auditing	•14 meetings (10 resolved agendas, 14 reports) • Report on auditing and internal control monitoring
Executive Recommendation Committee (7)	Recommendation of executive promotion	• Nominated candidates for executive auditor and NED (Sep) • Nominated candidate for NED (Dec)
Financial Management Committee (3)	Finance, Management Advisory	• Ordered an emergency report (Current State of Countermeasures against Cyber Security Issues) on hacking and information breaches in nuclear sites and discussed countermeasures and management suggestions
Press Relationship Committee (3)	PR Advisory	• Requested to set up a practical PR strategy through utilizing a Culture Station, a new PR channel
Local Community Development Committee (3)	Advisory for local community and civil petitions	• Requested a review of company-housing plans → Urged alternatives since the construction schedule became uncertain due to complicated landownership
Non-Executive Directors Committee (7)	Negotiations on BOD Affairs	• Revised a provision of BOD code, decreased required budget authorization limit from KRW 30B to 8B

Fair Board Member Election and Compensation

The Executive Recommendation Committee (ERC), consisting of NEDs to secure independency and transparency, recommends nominees of CEO, executive auditor, and NED according to a transparent process. The ERC examines the qualification of nominees thoroughly, and the Management Committee of Public Enterprise recommends final nominees, who do not have conflicting interests with KHNP. The CEO and executive auditor are appointed by the President of Korea through the vote at the annual shareholders' general meeting (AGM), and the recommendation of the Minister of the Ministry of Industry, Trade, and Energy, and the Minister of the Ministry of Strategy and Finance (MoSF), respectively. The Minister of MoSF also appoints the NEDs. And the CEO appoints the EDs at the AGM.
The BOD remuneration adheres to the Executive Wage Guideline, established by the Minister of MoSF, through deliberation and vote of the Management Committee, and the total remuneration in 2014 was KRW 780 million.

Transparent Operation of the Audit Committee

The Audit committee (AC) is a decision-making body that evaluates and improves the current status of internal audit. It consists of one ED and two NEDs. The AC meeting is held quarterly but AC members discuss crucial issues frequently. The AC also controls and manages important issues in terms of environmental and social aspects.

Strengthening the Professionalism of NEDs

NED monitor and review the executive directors' activities, and have rights to vote to limit directors with certain interests in a specific issue. Half of the board is experts with various experiences in the fields of related business, corporate management, media, and local civil feedback. They monitor and consult with important issues related to KHNP. NEDs have improved their understanding on the power generation industry by visiting major sites, and through this they are making practical and reasonable decisions.

NEDs' Activities

(Unit: Items)

- 🟩 Management Suggestions by NEDs
- 🟩 Adopted Suggestions

	2012	2013	2014
Management Suggestions by NEDs	17	16	19
Adopted Suggestions	42	48	53

19%
10%
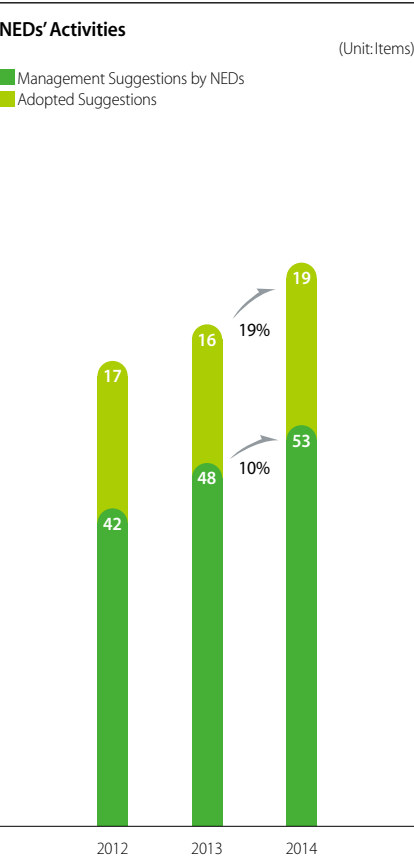
2014 NEDs' Competence Improvement Program	• Workshop for new NEDs (5) (Feb, HR Development Institute) • Site tour to NPPs at home and abroad for increased hand-on understanding • Kori, Samrangjin (Feb) / Wolsong, Radioactive Wastes Complex, Gyeongju HQs (Aug) • Barakah Plant, the UAE (Nov)

Site Tour at Kori Power Site

Site Tour at Wolsong Power Site

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SUSTAINABILITY GOVERNANCE

Sustainable Business Strategy • Corporate Governance Structure • **Stakeholders Engagement** • Stakeholders Communication • Materiality Evaluation

15

Stakeholders Engagement

In October 2014, KHNP achieved the SR10, the international standard on Social Responsibility Management System, for the first time in Korea. Major stakeholders are identified in seven types based on the SR10 standard.

6. Local Community
It is a local community that has an interest in the eco-friendly construction of NPP, the safe operation of NPP, the transparent information disclosure, and social contribution.

7. Environmental Groups
These groups monitor environment related impacts. They have an interest in direct and indirect influences of KHNP's business upon environment.

1. Shareholders and Investors
Shareholders and investors are the group who invest in a company with the purpose of profit and have an interest in the improvement of financial stability and profitability, the distribution of business performance, IR activities, and creating of synergy among electric power groups.

2. Customers
Customers are the group who purchase company's product or service. They are the general public influenced by the corporate activities directly or indirectly.

3. Suppliers
Suppliers are the group who produce values together with a company by providing a certain function or collaborating to maximize efficiency of a company's management, including legal competence. They have an interest in the practice of fair trade and mutual growth.

4. Government
Government is the governing body, including legislative, judicial and administrative bodies that have legal authority over the company operations.

5. Employees
This group includes executives and employees internally employed for a company operation and value creation. They are interested in a sound and stable labor-management relation, rational HR management, and competency development.

	Communication Channel	Opinion	Management Actions	Report
Shareholders and investors	Non-executive director management advice	100% return of incentives from executives involved in any violation of integrity regulations	• Enhancing executives' awareness on integrity	67
		Initiated social contribution campaigns	• Installed Safe Street Lightings and conducted Plus Happiness, Wings to Hope Project	58~61
		Continuous facility improvements to secure nuclear safety	• Continuously monitoring facilities through preventive maintenance and natural aging management programs such as replacement of steam generators for Hanul #3 and #4, and reactor head for Hanbit #3 and #4, etc.	42
Customers	Ombudsman system	Need for public/enterprise-wide integrity-related declarations	• An establishing member of 'Transparent Society Network' affiliated with ACRC (2014) • Pledge of ethical practices among executives, managing directors of divisions and departments and executive director of power sites, and the announced managers with high moral rectitude (Jun 15, 2015) • Pledge of integrity campaign for local nuclear industries (Jul 27,2015)	67
		Improve the quality of integrity and ethics education program through play	• Play-based integrity education at HQs and plant sites (May, 2015)	68
		Publication and enterprise-wide distribution of code of ethics handbook	• Publication and distribution of handbook of code of ethics (2014) - Cartoons, quiz and opinions based on or regarding the articles of the code are included	67~68
	Future Development Committee	Need for programs to recover citizen's trust and to restore internal momentum for sustained innovations	• Hosted the 'Award for Proud KHNP Personnel' for morale support • 'Reduce Unnecessary Works' campaign to simplify processes and reduce employees' fatigue • Increased face-to-face communication with the CEO for improved awareness of internal communication	29~30
Suppliers	Mutual growth Meetings	Difficulties in anticipating PO timing which can affect production plans	• Disclosure of materials plan and specifications for 3 years to come	33~35, 74
	Purchase Consulting	Requested a purchase consulting session where they can meet and discuss with actual buyers	• 1:1 meeting with participating suppliers offering goods and departments/divisions in demand of them	35
	Meetings with Partners	Requested regarding purchase related difficulties and for mutual growth-related projects	• Accepted and resolved 40 requests and reports, including region-specific bidding system and improved site access control. • Improvements on mutual growth support projects (e.g. purchase consulting and Atom Mentor)	35, 74

	Communication Channel	Opinion	Management Actions	Report
Government	National audit	Suggested to reserve a fund, in cash, to finance decommissioning expenses	• Reserved KRW 603.3 billion for a decommission fund (Feb 2014)	7, 23
	Management assessment	Urged taking measures to prevent diving accidents	• Implemented the industrial diving safety procedures and improved diving equipment and facilities	39~40
		Need for enterprise-wide campaigns to improve the public awareness of nuclear power generation	• Further activated community-centric social activities (Plus Happiness Attaching Wings to Hope Project) • Social activities reflecting the nature of the business (installing solar-powered LED safety lightings)	58~61
	Committee for Fixing Lax Management Practices	Establishment of a sustainable system to normalize the lax management practices	• Implemented/enforced normalization plans and established a plan to resolve labor conflicts	74
		Reduction of excessive employee benefits	• Reduced the welfare expense by 43% compared to 2014	
		To improve labor and management cooperation	• Labor-management agreements through on-site visits and communication campaigns (travel distance amounting to 20,000km)	
Employees	Working level management (CEO)	Sharing CEO's management philosophy and pending issues of the corporate and stirring up participation to overcome the current challenges	• Increased the CEO's focus on working-level agendas (management-on-site practices to 29 sites and offices in 2014; travel distance amounted to 20,000km)	29, 57, 74
	Labor-management council	Categorized agendas such as improvements of labor/HR management regulations, employee educations/trainings & working conditions, and grievance management by reporting, negotiation and discussion items, and then draw solutions through discussions with labor representatives	• Improve employees' satisfaction through improving welfare systems and working conditions • Served as a communication channel between the company and employees, promoting a smooth communication	74
Local community	NPP operation council	Emphasized the necessity of sharing information regarding power plant operation (Kori)	• Expanded the text notification service for nuclear power information (end user expanded from 300 to 1,350).	66
	Anti-corruption citizen watch group	Incorporated opinions of local communities and monitored the opinions and stance of stakeholders	• Held meetings every six months as requested or required	16~17, 73
Environment groups	Private environmental watch group	Require a systematic chemical accidents preventive program to cope with the changes in the environmental safety regulatory circumstances	• Introduced self-diagnosis system for environmental safety risks and improved the system	49
		Utilization of the group as a channel to communicate with local communities close to nuclear plants	• Promised a private-public joint monitor for all facility replacements	43, 73

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SUSTAINABILITY GOVERNANCE

Sustainable Business Strategy — Corporate Governance Structure — Stakeholders Engagement — **Stakeholders Communication** — Materiality Evaluation 17

Stakeholders Communication

T Sustainability of KHNP

I am expecting safer and more transparent KHNP

Jang Dae Cheol
Visiting Professor at Management School of KAIST

I believe that KHNP's activities and system establishment have been done very well for promoting sustainability management. However, to increase the reliability of information about NPP safety presented in the sustainability management report, more efforts are needed and such efforts should be disclosed specifically in the report. Companies in other countries meet local residents or environmental organizations frequently to explain the safety of NPP and ease the access to internal data. Also, there are cases that the company meets all of nearby local residents frequently. Therefore, we need to keep it in mind that trust is built up by rather subjective and emotional approach than objective.

I highly evaluate KHNP's efforts and various activities for establishing the system of ethical management. I request to disclose the results of ethical management transparently in this report. I think the governance structure should be composed of experts in electricity power industry or stakeholders, who are closely related with KHNP, in order to improve transparency and social responsibility.

R Technology

I hope KHNP find growth drivers and business stability in sustained technology development

Park Jae Young
Director of Department of Nuclear Industry Policy at the Ministry of Trade, Industry & Energy of Korea

The sequence of controversies regarding KHNP and the NPPs has generated a great interest from the public in recent years. While the public is highly keen on KHNP's handling of the controversies, it is considered as a good time to improve the public's understanding on the needs and importance of nuclear power by providing honest and transparent information about nuclear power. Especially, it can be a good opportunity to fully inform the advantages of nuclear power as the response to climate change has emerged as a worldwide concern. Nuclear power, as a clean energy resource without GHG emission, is expanding all over the world, and order of NPP from overseas is regarded as a KHNP's new growth driver. KHNP's overseas business can be actively promoted once the UAE operation is deemed successful. And the dismantlement of NPP should be prepared through preemptive technology development. Although KHNP is constructing and operating NPPs safely at the world-class level, I think certain parts still need to be improved. This is also the task for all NPPs in the world. I believe that if the safety of NPP can be improved through continuous innovation in safety culture and technology development, then a wider public support can be gathered which may be used as a driving force to leverage further overseas opportunities.

Respect

I hope the entire nuclear industry can make a balanced growth based on sound belief and will

Kim Yun Ho
CEO of Flowserve KSM Co., Ltd.

KHNP is contributing to the development of nuclear power plant business and domestic business by Flowserve KSM is contributing to the development of NPP business and domestic business by localizing major parts through developing shaft seal device, the core part of nuclear reactor coolant pump that was imported thoroughly before. When we first developed the product, we were not able to use it practically due to the short of quality standards of KHNP NPP. However, after it was supported by KHNP via SMEs' technology development program, we could finally make it to a practical phase through stability evaluation process of quality safety and verification test under KHNP's systematic support and active participation for three years. KHNP selected this product to replace their conventional part and it is used in Hanbit, Hanul and Wolsong NPPs.

Unlike the beginning of industrialization of Korea, there are lots of SMEs that have global technology competitiveness. If these technologies are commercialized for improving nuclear power parts, I anticipate that the effectiveness and possibility of mutual growth will be increased. However, I think KHNP should prioritize creating an atmosphere empowering the nuclear power industry to concentrate on R&D with firm faith and will.

U Ultimate Safety

Safe nuclear power generation is a basis of the citizens' happiness

Park Yun Won
Professor at KAIST (Dept. of Nuclear & Quantum Engineering)

KHNP's efforts for the safe operation of NPP and the recovering of trust have been showing tangible results gradually. The number of random shutdown of each reactor that is one of the indicators showing the safety of NPP operation was 0.22 times in 2014. This shows not only the most stable condition of the operation during the last 30 years of operation but also considered as the highest level worldwide. In addition, the safety condition has been highly raised after safety has been preceded than productivity at the NPPs. To draw practical effects out of such KHNP's safety management, a safety culture should be penetrated into the entire fieldwork. Especially, not only the safety culture of suppliers should be raised to the equivalent level of KHNP but also each individual, leader and organization should embrace the safety culture. Trust by the public is important for sustainable management. Since trust cannot be accumulated in a short period of time, I wish that KHNP, with patience, would become a trusted company by the public through consistent policy and transparent operation.

S Social Responsibility

Wholehearted and persistent social contributions, that's what I am expecting from KHNP

Jeong Jin Woong
A Staff of KHNP-SNU Global Volunteer Group / Majoring in Psychology at SNU

The KHNP-SNU Global Volunteer Group (GVG) has been dispatched to Vietnam, twice a year since the winter of 2013, to solve underdevelopment and poverty. As a member of KHNP-SNU GVG, I went to Phuoc An, Binh Dinh in Vietnam during the summer of 2015 to participate in technology sharing of rainwater harvest tank installment, water filter production, and sink installment with elementary students.

KHNP-SNU GVG was impressive because it actually utilized sustainable technology based on analysis of local needs through rigorous preparation. In addition, I could feel the sincere volunteer spirit through KHNP volunteers who are unlike other corporate volunteer groups that is solely for the purpose of company promotion. Short-term volunteering cannot make fruitful results so I hope that KHNP's global social contribution would continue and many more people could participate in.

T Timeless Integrity

Real change for integrity may begin with small efforts in every corner of KHNP

Hwang Joo Ho
Professor of Nuclear Engineering & the Dean of Engineering School at Kyunghee Univ. / Current Chairperson of Upright Ombudsman Council

Anti-corruption can give a result by the enforcement system or the reinforcement of legal action but these methods can only give a temporary impact. To obtain the best result in the long-term, awareness of employees must be improved and self-esteem of employees must be increased. In this aspect, the collaborative effort of KHNP executive members to communicate and share awareness with fields has been effectively applied to employees' awareness of anticorruption in a short period.

I think that continuous attention and support are needed in both company and society to settle such effort as a tradition of KHNP in the future and to perfectly internalize employees' awareness of anti-corruption. Above all, internally, a continuous differentiated education for each field, headquarter, and position shall be effective to help members to have pride and self-esteem. It is desirable to help them enhance their professionalism in jobs and find the answers of their existence, but also enhance their human-social and artistic knowledge to see the whole humanity as well.

Materiality Evaluation

Materiality Evaluation Outline

KHNP has prepared this report by faithfully reflecting the four reporting guideline principles of GRI (Global Reporting Initiative) of sustainability management, 'sustainability context', 'materiality', 'stakeholders' participation,' and 'completeness'. In addition, research was conducted for the stakeholders of international standard analysis and advanced group benchmarking, and media research to understand important issues related to KHNP. Based on the research, important or potential issues of sustainable management related to KHNP have been emerged. In accordance with the GRI G4.0 guideline, materiality evaluation was conducted on deduced important issues, and the final reporting issue was selected through prioritizing process.

Materiality Evaluation Process

STEP 1 — Pool of Issues
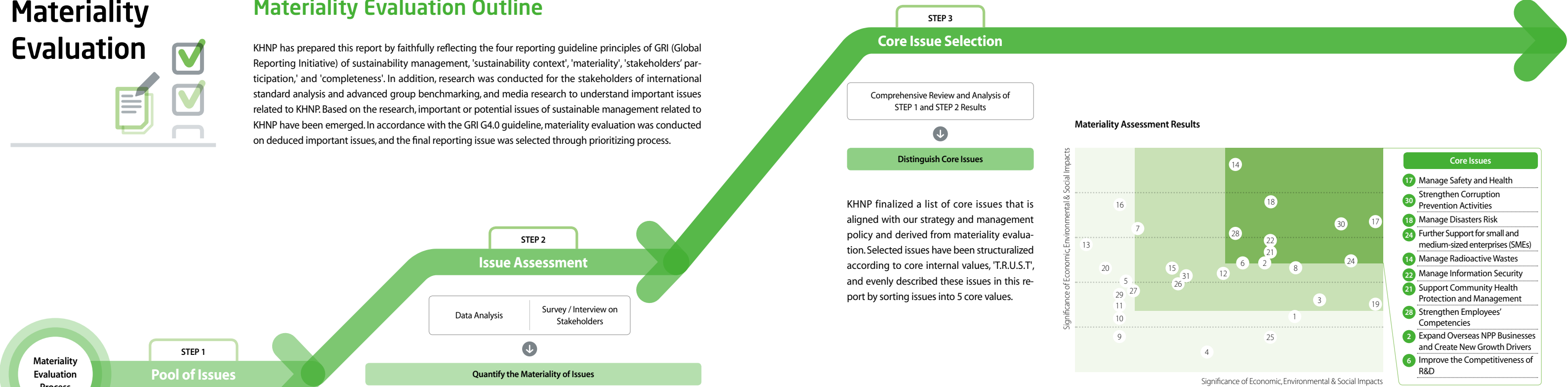
Global Benchmark | International Standards Research
Media Research | Internal Data Review

Draw a Pool of Issues
※ 31 Critical Issues

KHNP has analyzed the initiatives of international sustainability management of GRI G4.0 (Sustainability Reporting Guidelines) and ISO 26000 (Guidance Standard on Social Responsibility) to understand the sustainability trend and to validate important sustainability issues in the industry by benchmarking global sustainability leaders. In addition, a pool of 31 issues in economy, environment, and social fields has been compiled based on internal data and relevant media articles.

STEP 2 — Issue Assessment

Data Analysis | Survey / Interview on Stakeholders

Quantify the Materiality of Issues

An online survey regarding 31 sustainability management issues were sent to internal and external stakeholders to understand their expectations and to assess the relative importance for them. In addition, an in-depth opinion by having interviews with external experts about the present and future competencies of KHNP has been verified. The research results were evaluated based on materiality by reflecting 'Influence on decision-making of stakeholders' and 'Importance of economical, environmental, and social influence'.

Evaluation of Sustainability Management Level

KHNP conducted sustainability management survey on KHNP with internal and external participants, and half of survey respondents answered positively about KHNP's sustainability management practices. However, a majority of internal respondents scored KHNP's sustainability management as 'low', therefore, it is necessary to strengthen our sustainability management capacity and practices internally.

	Internal	External
Very Low	4	1
Relatively Low	9	6
Moderate	26	32
Relatively High	38	46
Very High	24	16

(Unit: %)

STEP 3 — Core Issue Selection

Comprehensive Review and Analysis of STEP 1 and STEP 2 Results

Distinguish Core Issues

KHNP finalized a list of core issues that is aligned with our strategy and management policy and derived from materiality evaluation. Selected issues have been structuralized according to core internal values, 'T.R.U.S.T', and evenly described these issues in this report by sorting issues into 5 core values.

Materiality Assessment Results

Significance of Economic, Environmental & Social Impacts

Core Issues

- 17 Manage Safety and Health
- 30 Strengthen Corruption Prevention Activities
- 18 Manage Disasters Risk
- 24 Further Support for small and medium-sized enterprises (SMEs)
- 14 Manage Radioactive Wastes
- 22 Manage Information Security
- 21 Support Community Health Protection and Management
- 28 Strengthen Employees' Competencies
- 2 Expand Overseas NPP Businesses and Create New Growth Drivers
- 6 Improve the Competitiveness of R&D

Core Issues in the perspective of GRI G4.0

NO	Issue Code	Core Issue	Aspect	Industrial Indicator	Scope	Significance
1	Core 2	Drivers of future growth (incl. expansion of overseas nuclear plant business)	Proprietary aspect with the impacts on the business reflected		Company-wide	High
2	Core 6	Strengthen competitiveness of R&D	R&D	◎	Company-wide	High
3	Core 3	New business development (incl. diversification of business portfolio)	Proprietary aspect with the impacts on the business reflected		Company-wide	Medium
4	Core 28	Strengthen employee competencies	Training & education		Company-wide	High
5	Core 24	Further support for SMEs	Procurement practices		Partners	High
6	Core 17	Safety and health management	Industrial safety and health protection		Company-wide, Partners	High
7	Core 18	Disaster risk management	Disaster prevention strategies and education programs	◎	All Stakeholders	High
8	Core 22	Information security management	Protection of customer information		Company-wide, Partners, Customers, Government	High
9	Core 7	Enhancement of quality competitiveness	Proprietary aspect with the impacts on the business reflected		Company-wide, Partners	Medium
10	Core 14	Radioactive waste management	Waste water and waste materials	◎	All Stakeholders	High
11	Core 21	Community support for health protection and management	Customer health and safety		Communities	High
12	Core 19	Strengthen social contribution activities	Communities		Communities	Medium
13	Core 12	Adaptation to climate change	Emission		All Stakeholders	Medium
14	Core 15	Water pollutant management	Waste water and waste materials		Communities	Medium
15	Core 30	Strengthen preventive anti-corruption activities	Anti-corruption		Company-wide	High
16	Core 8	Transparent information disclosure	Product and service labeling		All Stakeholders	Medium
17	Core 31	Expansion of corruption report system	Anti-corruption		Company-wide, Partners	Medium

T.R.U.S.T core values:
- Think TRUST 1 — Technology
- Think TRUST 2 — Respect
- Think TRUST 3 — Ultimate Safety
- Think TRUST 4 — Social Responsibility
- Think TRUST 5 — Timeless Integrity

Technology

Technology,

"Competitiveness of
Global Energy Leaders"

• **Experts-oriented**
• **Constant
improvements**
• **World-class
performance**

Core Issues Consisting Core Aspects		
No.	**Core Issues**	**Significance**
Core 2	Reinforced competitiveness of R&D	High
Core 6	Safety and health management	High
Core 3	New business development (incl. diversification of business portfolio)	Medium

Issues to Report Reflecting Core Issues
Think TRUST 1. Technology
• Experts-oriented • Constant improvements • World-class performance

Technology

"Based on our strong technologies, we will be the best nuclear power generation company in the world."

Our Performance

World-class Technology
- Achieved APR+ standard design permit
- 4 proprietary decommissioning technologies

Completed
42.22 % of USE NPP Construction

Renewable Energy
- Achieved more than 1,812 GWh of RPS execution
- Launched overseas hydropower plant projects (2.3 projects)

Business & Social Context

The global NPP market has significantly declined after the nuclear accident in Fukushima. However, some countries are advancing nuclear power based on its resources and circumstances. A majority of countries shows a tendency of either maintaining or expanding the existing nuclear power policy by considering issues such as energy security, financial feasibility and climate change. As the demand for energy has increased dramatically in developing countries, such as China and India, efforts to construct new NPPs are actively taking place.
The IIEA states that the amount of energy generated by NPPs is expected to more than double the amount of current energy production now and to reach approximately 930GW by 2050. In order to expand the export our NPP technology in light of this growth, it is imperative that we obtain world-class level technologies beforehand. The nuclear decommissioning market, around 147 reactors require decommission, is also expected to ramp up by 2030 as most of the world NPPs are entering the long-term operation era. Securing the decommission techniques of NPP is an urgent issue in Korea due to the shutdown of Kori #1 reactor. In order to be competitive worldwide, KHNP must secure technologies of safe NPP construction, operation and decommission through continuous R&D to prepare for future foreign and domestic projects.

Our Progress

KHNP's current R&D initiatives aim to develop 13 key technologies related to four strategies required to obtain technological advantage over our global competitors.
'APR+', the next generation of NPP, was given standard design approval in 2014 in recognition of the R&D at KHNP. Moreover, 'APR1400', Korean NPP, which was successfully exported to the UAE, passed the preliminary inspection of the US Nuclear Regulatory Commission (NRC) design certification in 2015. KHNP, relying on competitiveness in technical development and its rich experience in NPP construction and operation, is generating new revenue growth by entering global markets, such as Asia, Western Europe and the Middle East. Furthermore, KHNP is improving the competitiveness in the green energy business by creating various business portfolios such as hydropower, pumped storage power, and other renewable energy sources.

Future Plan

KHNP is planning to develop new foreign NPPs and making efforts to enter the nuclear decommissioning business, with the goal of generating more than 10% of its profits from overseas sales based on the '2030 Mid to Long-term Management Strategy'. To accomplish this, KHNP plans to secure world-class level technologies by focusing its resources to develop 13 key technologies. KHNP will also safely operate national NPPs and expand its environment-friendly businesses. KHNP will advance into the role of 'Reliable Global Energy Leader' by continuously improving its world-class level technologies and strengthening its capabilities in overseas market and business portfolios.

Securing World-class Technologies in Nuclear Power Industry

Representative Technologies of R&D Strategies

Strengthening NPP Safety
1. Major accident prevention and response technology
2. Optimal safety analysis technology
3. Radiation life safety evaluation technology
4. Radioactive waste vitrication technology

Securing electric power supply safety
5. Human error prevention and MMIS (Man Machine Interface System)
6. Used nuclear fuel safe storage technology
7. Data (ICT) based NPP life cycle management technology
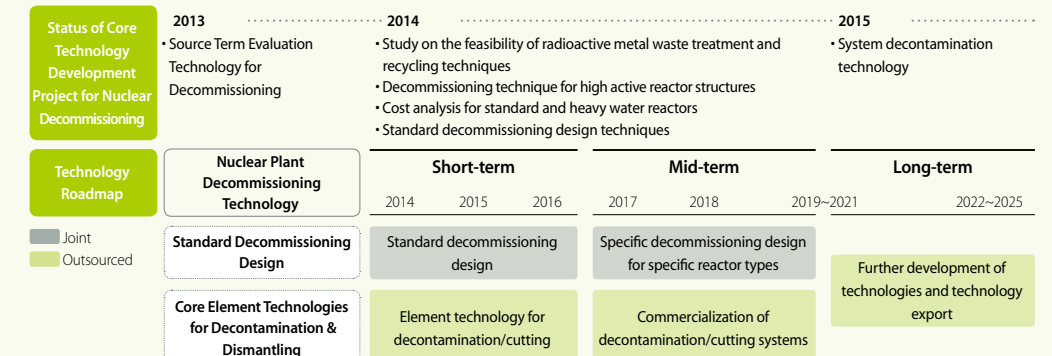
Improving Equipment Reliability
8. Equipment and structure degradation evaluation
9. Optimum reliability base operation technology
10. Major equipment monitoring, diagnosis and veri cation technology

Creating Growth Potential
11. New concept lightwater reactor development technology
12. NPP dismantling and environment recovery technology
13. Hydraulic and renewable energy technology

R&D Strategy System

With a vision of "Leading the Development of World-class Technologies in the field of NPP", KHNP has selected 13 key technologies from four strategies of 'strengthening NPP safety', 'securing electric power supply safety', 'improving equipment reliability', and 'creating growth potential'. The representative technologies were selected through interviews of key executives, professional consultation and R&D innovation workshop, and they will not only improve efficiency of management at KHNP, but also serve as the source of growth potential in the future. KHNP is concentrating all of its resources into developing the following technologies: a 'new concept lightwater reactor development technology' to build power plants that will have no need for surrounding residents to evacuate even when there are large-scale natural disasters and other extreme events; a safe and economical 'NPP dismantling and environment recovery technology'; and a 'hydraulic and renewable energy technology' to secure conventional hydropower technologies that will successfully meet the goals of Renewable Portfolio Standard (RPS) implementation plan.

Developing Korean NPP Technologies and Securing Competitiveness

Acquiring Foreign Certification for APR1400
The standard design of APR1400(Advanced Power Reactor 1400), domestic built advanced power reactor, has passed the preliminary inspection of the USNRC Design Certification (DC). KHNP aims to pass the USNRC DC review without any issues. If the USNRC DC is successfully achieved, it will not only be possible to obtain contracts for NPPs in the US but also raise the competitiveness of our NPPs export. With the goal of achieving European certificate by 2017, KHNP is also exerting its efforts on developing technologies that can meet the European standard.

The Next Generation NPP Technology
APR+, massive 1.5 million kw NPP built solely with technologies developed in Korea, has received a standard design approval from the Korea Nuclear Safety Commission. This result was achieved after only seven years and with this approval, trust in Korean NPPs has increased even further both at home and abroad. The power production capacity of APR+ has increased 10% when compared to the existing APR 1400. The stability of APR+ during emergency situations also has been increased dramatically with its walls designed to be of a higher strength and the application of a passive safety device. According to the 7th Basic Plan for Electricity Supply and Demand of Korea, these technologies will be included in new NPPs starting in 2026.

Securing NPP Decommission Technology

Considering of mid to long-term development of NPP industry, we decided that Kori #1 reactor, the first and thus the oldest nuclear reactor in Korea, should completely cease its operation. Kori #1 reactor will be operated until June 2017 and then go through the necessary decommissioning process. In preparation for this task, KHNP has started to obtain technologies required in NPP decommission. A total of 6 core technologies for

nuclear decommissioning process were identified in February 2015 to begin their development. Essential technologies such as site restoration and waste disposal will be developed in stages according to the nuclear decommissioning technology development roadmap. Through such efforts, it will be possible to integrate business management techniques such as design of decommissioning process and integral technologies after 2022, which is expected to result in the further development of relevant technologies and export to foreign markets.

Nuclear Plant Decommissioning Process (Expected to take over 15 years)

Preparatory actions for permanent decommissioning [2 years]
▼
Fuel cooling and safety management (Fuel uploading Discharge/Isolation Safety Management) [Min. 5 years]
▼
Decontamination & Dismantling [Min. 6 years]
▼
Restoration & Closing [2 years]

Status of Core Technology Development Project for Nuclear Decommissioning

	2013	2014	2015
	• Source Term Evaluation Technology for Decommissioning	• Study on the feasibility of radioactive metal waste treatment and recycling techniques • Decommissioning technique for high active reactor structures • Cost analysis for standard and heavy water reactors • Standard decommissioning design techniques	• System decontamination technology

Technology Roadmap

☐ Joint
☐ Outsourced

	Short-term			Mid-term			Long-term	
	2014	2015	2016	2017	2018	2019~2021	2022~2025	
Nuclear Plant Decommissioning Technology								
Standard Decommissioning Design	Standard decommissioning design			Specific decommissioning design for specific reactor types			Further development of technologies and technology export	
Core Element Technologies for Decontamination & Dismantling	Element technology for decontamination/cutting			Commercialization of decontamination/cutting systems				

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SUSTAINABILITY ISSUES

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Think TRUST 1 **T**echnology Think TRUST 2 **R**espect Think TRUST 3 **U**ltimate Safety Think TRUST 4 **S**ocial Responsibility Think TRUST 5 **T**imeless Integrity

Expanding Overseas NPP Business

Exporting NPP to New Overseas Market

KHNP is one of the world's biggest NPP generation companies, and is conducting both NPP construction and electricity generation at the same time. KHNP is using its accumulated experiences to expand its area of business beyond the domestic market of Korea utilizing a 'Plant Lifecycle Management' technique, which handles tasks such as research and development, construction, management and repair at newly built nuclear plants. KHNP is putting strenuous efforts into its overseas NPP construction and management business.

For a Sweden project, KHNP has renewed the certification of a supplier every year after receiving the qualification of a supplier in 2013, and it has continued this business according to the schedule of the Swedish company. The business in Finland has been stopped due to the client's request but the cooperation channel is still maintained with the client for the next business order.

Additionally, utilizing its experiences in construction and operation of NPPs, KHNP is offering NPP education and training and providing equipment supplies and construction technologies to Chinese and Canadian companies. The efforts to transfer technologies to American companies are also taking place. Ordering activities in Egypt, Vietnam, Brazil, and the Czech Republic are currently taking place through cooperation with KEPCO. KHNP will continuously expand its business territory into global equipment market in order to accomplish its goal of creating more than 10% of its profits from overseas sales according to '2030 Mid to Long-term Management Strategy'.

Putting Efforts into the UAE NPP Business

Working Towards the Goal of Finishing Construction on Time

After signing the contract for four reactors of APR1400 with the UAE in 2009, the construction on those four reactors started in 2012. This was the first KHNP's overseas NPP construction. KHNP took every precaution and putting all of its resources to ensure the on-time completion of the construction. In 2014, installation of #1 reactor begun and so far, 42.22% of the construction process has been completed. Installation of #2 reactor was successfully completed in June 2015. There is a plan to finish the construction of #1 reactor by May 2017.

Training Manpower Specializing in Operating Support Services Agreement (OSSA)

KHNP is planning to generate additional revenues by signing OSSA after completing the construction of the NPP s. For successful signing of OSSA, infrastructures of NPP simulator and training center office building were constructed at Shin-Kori NPP plant in March 2015. From the beginning of 2014, KHNP has selected manpower, which will be sent to the UAE based on the recommendations from the headquarters and power plants of KHNP for the purpose of successfully signing the agreement.

Overseas Business status

(As of Jun 2015)

- Penetrated
- Penetration in preparation
- Potential target areas
- KHNP overseas offices
- tentative suspension
- OEM markets

Finland
- TVO, a Finnish power company: Olkiluoto Nuclear Plant #4 Unit (OL4) Construction Project

UAE
- Won the UAE nuclear plant construction project in 2009 (4 APR1400 units)
- Closed an MOU with ENEC for professional support for the UAE nuclear power operation in 2013

Sweden
- Swedish Public Power Company – NPP Construction Project

United Kingdom
Paris Office
The Republic of Czech
Egypt
Saudi Arabia

South Africa

Headquarters (South Korea)

WANO Tokyo Center

Nepal
- Won the PO of mechanical engineering project for Chamelia hydro plant in 2009

China
Vietnam

Canada
New York Office
Brazil

Diversification of Business Portfolio

Leading the Field of Technologies Related to Green Energy

KHNP is actively developing green energies such as hydropower and renewable energies to increase its competitiveness in the field of green energy and narrow the technical gap with global industry leaders. KHNP has promoted the domestication of Francis water-turbine generator with more than 10MW generation capacity to strengthen technologies of hydropower, and the installation of 15 MW Francis water-turbine generator and main devices of control system was completed in the first half of 2012.

KHNP has continuously discovered the core technologies of renewable energy in order to meet the requirements of RPS. KHNP plans to secure the core technologies such as pumped storage power generator, small hydro generator, design technology of 30 MW water-turbine generator, and tidal stream power generation.
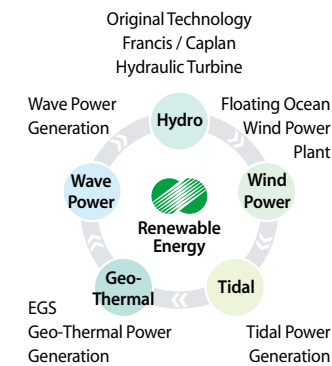
Expanding Eco-Friendly Power Generation Business

'Renewable Business New Start Initiative' was established in 2014, which added wind power industry to the existing portfolio of renewable business centered on hydropower, solar energy and fuel cell. This initiative includes 'Renewable Energy Mid to Long-term Plan' and 'Profit and Public Service Plan using Renewable Energy'. Based on such initiative and plans, KHNP will expand the capacity of green energy equipment to 1,395 MW by 2018 and become the Korea's most green energy company by accomplishing more than 100% of its goal set by RPS.

Seeking Ways to Enter Overseas Hydropower Business

Overseas hydropower business market is anticipated to continuously grow as an alternative to fossil fuel. Therefore, KHNP concentrates its capacity on areas with a higher profitability and lower risks. It is also actively promoting technology-oriented businesses, including function improvement and technical supervision. In 2014, KHNP signed a memorandum of agreement with a Korean construction company for hydropower business development in Azad Pattan, Pakistan. In 2015, KHNP plans to develop hydropower business in Pakistan, Vietnam and Peru.
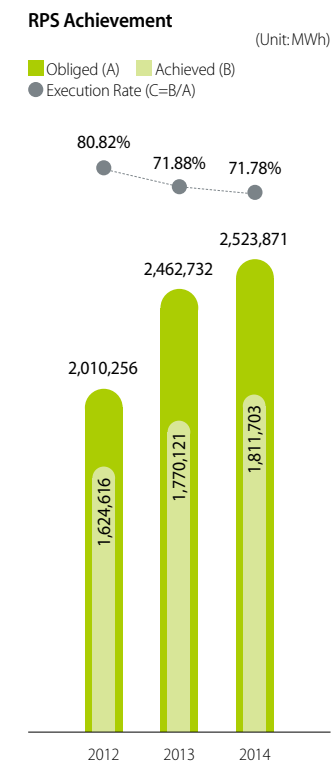
Diversification of New Business in Renewable Energy Industry

KHNP currently has a diverse renewable energy business portfolio, which includes fuel cell, solar energy and wind power generation. As of June 2015, KHNP is working on fuel cell projects such as constructing Noeul green energy (20 MW) located in Sangam-dong, Seoul and Busan green energy (30 MW) located in Haeundae, Busan. Six power generation companies, including KEPCO, are cooperating to develop Miryang solar business.

In the case of wind power generation, KHNP plans to construct total 140 MW onshore wind farm at 7 complexes, which include Cheongsong and Goheung, and its goal is to complete the construction of at least two complexes by the end of 2015. Furthermore, KHNP has signed a MOU with local governments of Gyeongsangbuk-do and Ingegun in order to vitalize the development of renewable energy business and to seek for additional business opportunities.

In addition, KHNP is concentrating its resources on signing contracts to purchase renewable energy from external firms and form joint ventures with other companies to obtain Renewable Energy Certificate (REC). KHNP is striving to provide more than 80% of the required amount of renewable energy according to RPS. KHNP achieved 71.78% in 2014, and is planning to increase RPS implementation rate to 80.12% in 2015.

Original Technology
Francis / Caplan
Hydraulic Turbine

Wave Power Generation
Floating Ocean Wind Power Plant
Hydro
Wave Power
Wind Power
Renewable Energy
EGS
Geo-Thermal Power Generation
Geo-Thermal
Tidal
Tidal Power Generation

RPS Achievement (Unit: MWh)

- Obliged (A)
- Achieved (B)
- Execution Rate (C=B/A)

	2012	2013	2014
Execution Rate	80.82%	71.88%	71.78%
Obliged (A)	2,010,256	2,462,732	2,523,871
Achieved (B)	1,624,616	1,770,121	1,811,703

※ Remarks: No penalty for 2012-2014. Certain proportion of obligation can be carried over to the next year.

① Solar Power Generation
② Wind Power Generation

Respect

Respect,

"Drive Voluntary Participation and Cooperation"

- **Embracing the Diversity**
- **Open Communication**
- **Participation and Cooperation**

Core Issues Consisting Core Aspects		
No.	**Core Issues**	**Significance**
Core 28	Reinforcement of Employees' Competences	High
Core 24	Further Support for SMEs	High

▼

Issues to Report Reflecting Core Issues

Think TRUST 2. Respect for our Employees

- Acknowledgement of diversity
- Open communication
- Participation and cooperation

Think TRUST 2. Respect for our Partners

- Contribution to sound and healthy nuclear ecosystem
- Support business partners for their competence improvement

Think
TRUST
2

Think TRUST 1
T echnology

Think TRUST 2
R espect
Respect for our Employees
Respect for our Partners

Think TRUST 3
U ltimate Safety

Think TRUST 4
S ocial Responsibility

Think TRUST 5
T imeless Integrity

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Respect for our Employees

> We will do our utmost to create an enjoyable working environment, where each and every employee can perform to his/her highest level.

Our Performance

Best Family-friendly Company Certificate
Valid until **2016**

First Public Enterprise Established a Committee to Safeguard Rights of Women

Per Capita Education Expenditure
KRW **3.41** Million

Business & Social Context

While the head office of KHNP is scheduled to be relocated to Gyeongju-city by the end of 2015 according to the policy of regional allocation development, the introduction of both wage peak system and performance-based yearly wage system have caused various labor-management issues due to the government's 'Second-step towards Normalizing Public Policy'. In order to respond proactively to internal and external changes in the business, the management is required to make fundamental commitment for innovation.
Furthermore, positive and flexible work culture is required to create a consensus among the employees and for active participation of the employees in the business of KHNP.
Only when the combination of will and action from the top management is connected to each individual, then collective will from all of the employees will lead increased competitiveness of the company. Meanwhile, KHNP plans to increase the number of domestic nuclear plants to 35 and increase manpower to 18,000 by 2030. Securing professionals is necessary as KHNP faces increased demands in the nuclear sector from both exporting NPPs and the decommissioning industry, which will determine competitiveness of the company when securing future business partners. KHNP will develop a systematic human resource initiative to develop working professionals in the field.

Our Progress

KHNP has actively created a positive work environment that promotes gender equality and the core values of "TRUST". KHNP creates a workplace that employees can voluntarily participate to accomplish the company's goals. KHNP also pursues a work-life balanced workspace and to increase employees' satisfaction through family-friendly initiatives such as "KHNP Work & Family Advantage Program". The company also supports its employees to take various classes in different fields. In addition, based on an employee's experience, position and professional field, customized courses have been provided so that the professionals can maintain the safety of the NPPs.

Future Plan

KHNP plans to invest increasingly in the training of its employees not only to deal with increased demands on education according to its business expansion both domestic and overseas but also to train its professional manpower systematically so that they can manage the NPPs safely. KHNP will develop a plan to raise the professionalism of employees so the company and employees can grow together through continuous learning. We will also enhance work satisfaction and productivity at the same time, by introducing family-friendly initiatives, such as the expansion of flexible work-week, and emphasis on work and life balance.

Improvement of Organization Culture

Three Innovations Aimed at Building a New Organization Culture

In April 2014, KHNP announced 'the 2nd Foundation of the Company' and showed its determination for radical changes in order to open a new chapter after a series of corruption scandals, regarding NPP parts, were found to have taken place inside the company. As a result, KHNP placed intensive effort on implementing the 'Three Innovations of Organization Operation' and undertook sweeping changes in the fields of organization, human resources and company culture with contributions from every employee to establish a core value TRUST and to be born again as a new KHNP.

Internalization of the Core Value TRUST
We promoted the internalization of core values in order to compel employees to create change. Handbooks and promotional videos were produced and distributed to all employees, and TRUST trainings have been provided to everyone at the company. Starting in 2015, the 'Best practice LETTER' has been sent to employees' family to create the management consensus externally.

Establishment of a Positive Cooperative Culture

In order to expand employees' capacity for innovation and to turn the positive cooperative culture into the part of the company, various programs aimed at enticing voluntary changes within employees have been implemented. Different campaigns such as 'Compliment Relays', 'Department of the Month' and 'Award for Proud KHNP Personnel' were hosted to raise employees' morale. A campaign of 'Compliments and Appreciations Starting from the Top' has been implemented to cultivate a positive mindset amongst senior staff and to boost morale of all of the employees. The culture of complimenting each other has been spread throughout the company. The 'Do It Together! Cooperation' online board was created on the intranet portal to allow different departments to adjust work-related issues through cooperation. Not only that, KHNP has created various online boards on its intranet portal, and held the 'Team KHNP Warrior Workshop' and other similar activities to revitalize communication within the company. These changes and practices by employees have renewed their desire for innovation and have uplifted working atmosphere within the company.

Creating Gender Equality Organization Culture

KHNP has expanded female employee oriented programs to develop their career as their number has tripled compared to the one at the foundation of KHNP. Such programs include a life cycle education of marriage, childbirth and nurturing, and various internal and external classes. KHNP also offers sexual harassment counseling for female workers, which has become the first government-owned entity to establish a Women's Committee, and where female employees can voice complaints. The number of female employees in KHNP stood at 798 in 2012 but its number has been gradually increasing. There were 899 and 971 (accounting for 9.9% of the total workforce) female employees in 2013 and 2014, respectively. KHNP will lead in promoting gender equality by continuously recruiting female Workers and Supporting Them to Grow.

Support System for Female Employees

MOM's Package	Offer pregnant employees a package including guidance for pregnancy-relevant regulations and benefits, work support materials, and a gift.
Culture of Maternal Care	Promoting a culture to care pregnant employees and enforce maternal protection indicators
'Restart' Program	Welfare program for employees under career discontinuity due to career after birth, maternity leave

KHNP Women's Committee Established (November 2014)
KHNP Women's Committee (KWC) is a special committee that seeks to enforce policies regarding the training of female workers. In 2014, the committee received consultation from an advisory panel to select eight promotion tasks, including 'Working Mom Program', and established implementation plans.

Opening Ceremony of KHNP Women's Committee

Direction

Root out Sources of Corruption
Establish Safety-first Nuclear Pant Operation System
Reinforce Drivers of Innovation

• Improve transparency of hires and promotions
• Improve plant safety management
• Establish a constructive framework for human affairs through communication and collaboration

Human Affairs Innovation

Organizational Innovation

Cultural Innovation

• Safety-oriented nuclear plant operation
• Healthy culture of check and prevention of corruptions
• Increased communication and collaboration
• Basis for future growth

• Culture of transparent organization
• Promotion of field-oriented culture for safety
• Organizational innovation capability

Programs to Promote a Positive & Cooperative Culture

Autonomous culture
• Improvement ideas
• Workshop for change and innovation

Rational task adjustment
• Reinforced ownership through eliminating conflicts among divisions

Driver of a positive culture
• Campaigns promoting compliments and positive thinking
• Awards of Proud Man of KHNP

Think TRUST 1 **T**echnology
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Respect for our Employees
Respect for our Partners
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Think TRUST 5 **T**imeless Integrity

Realization of Great Work Place (GWP)

Securing Work and Life Balance

'KHNP Work & Family Advantage Project'

Work and life balance leads to an increase in employees' satisfaction with their work and raises both the efficiency and competitiveness of their work. KHNP is leading an active corporate culture by introducing and expanding the 'Work & Family Advantage' program.

'Work & Family Advantage Project', one of the core programs implemented by KHNP to create a work and life balance, takes its inspiration from the Korean proverb known as Il-geo-yang-deuk, which means killing two birds with one stone. Employees are contributing to the expansion of a positive company culture after recovering their pride after experiencing work-life balance.

'10 Resolutions for Making a Happy Workplace' Campaign

In order to remove unhealthy customs at the workplace, a campaign of '10 Resolutions for Making a Happy Workplace' has been promoted. Ten improvement tasks were obtained by conducting a survey targeting everyone in the company. KHNP has encouraged employees' participation by selecting one issue for each month, and producing and playing promotional videos. As a result, employees' satisfaction has risen in all areas in just ten months since the beginning of the campaign. Especially, 'Leave Office on Time Culture' campaign raised the satisfaction the most through the activation of a 'Family Love Day', which is every Wednesday and Friday.

Accomplished the Extension of a Family Friendly Management Certification

KHNP has also implemented a system of the flexible work schedule such as the flexible time work or alternative work schedule to settle the family-friendly system. In recognition of these efforts, it was possible to extend the certification of the 'Best Family Friendly Certificate', received from the Ministry of Gender Equality and Family in 2011, to 2016.

Employee Care Service

Operation of Psychology Consultation to Deal With Employee's Stress Levels

KHNP is providing psychology consultation to help employees deal with stress from work and daily lives so that they can effectively carry out their duties. Employees can receive stress coaching and psychological consultation at a professional psychological consultant center contracted with the company. A 'Visiting Counseling Service' has been operating for remote areas in order to increase accessibility. According to a satisfaction survey in 2014, 95% of employees answered that they found consultations to be helpful. In order to create an even healthier environment in the future, KHNP will implement online consultations for all employees.

The Opening of the Radiation Emergency Medical Center (REMC)

In order to deal with radiation emergency situations and offer preliminary medical assistance in case of emergencies, the REMC was opened at the head offices of the four NPPs (Kori, Hanbit, Wolsong and Hanul). During normal operation, the REMC carries out stress tests for employees, measures arterial stiffness and operates non-smoking and obesity clinics. At times of emergency, REMC handles preliminary medical treatment, the transportation of emergency patients and other related tasks to protect the health and safety of employees.
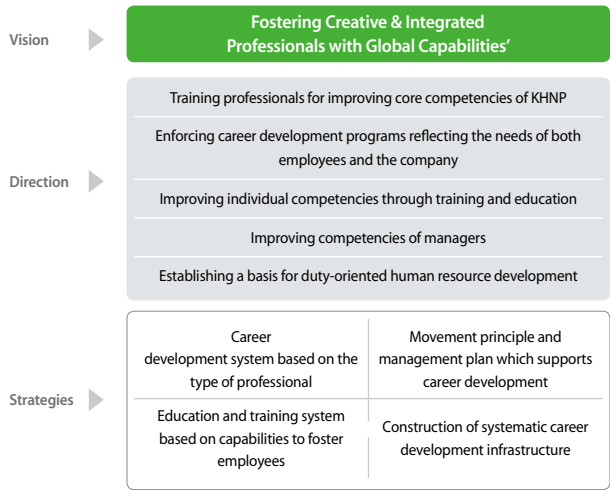

At the Hanbit Head Office of the REMC on its Opening Day

Happy Workplace ⊕

Training programs to revitalize the organization, support for group activities for learning, cultural and art education programs
→ Promoting a positive and communicative culture

Balance of Work and Family ⌁

Happy Camp, field education program for employees and their families, tailored education for age groups
→ Increasing company loyalty and employees' dedication

Support for Self-Enrichment ☆

Support for employees to obtain certificates & licenses, special education for female employees
→ Driving a mutual growth of individuals and the company

Increased Employees' Satisfaction

Punch-out
61.4 ⇒ **70.9** Points

Vacation
51.8 ⇒ **64.9** Points

Meetings
58.3 ⇒ **67.8** Points

Source: Internal survey (Jan. 2014, Oct. 2014)

10 Promises for Happy Workplace

Work order	Specify the background, direction and timeline of work you are to order
Meeting	Have a meeting with only a few selective with the closing time clarified
Communication	Do not speak or act if it can disregard personality of others
Event/Protocol	Minimizing the scale & the number of events, and simplifying the processes of protocols
Punch-out	Work overtime only when needed for efficiency, while trying to minimize overtime
Vacation	Each team establish a vacation plan every month with the order given to members in higher to lower positions
Dinner after Work	Have a dinner together and break up earlier if possible. Do not ply others with a drink
Co-prosperity	Respect partners as a partner for co-prosperity, not the weak
Company Housing	Respect other's life
Daily Life	Focus on works at work, and do private affairs after work.

Training Professional Personnel for NPP safety

Strategy of Training Professionals

KHNP is looking for professionals 'who are faithful to the basics, considerate of others, mutually respect, and global professional'. We have set a vision of 'Fostering Creative & Integrated Professionals with Global Capabilities' to those who conform to these, and numerous education and training programs that have been developed. In addition, four strategies are being implemented that are aimed at establishing 'Career development system based on the type of professionals', 'Movement principle and management plan which supports career development', 'Education and training system based on capabilities to foster employees', and 'Construction of a systematic career development infrastructure'.

Vision

> Fostering Creative & Integrated Professionals with Global Capabilities'

Direction

> Training professionals for improving core competencies of KHNP

> Enforcing career development programs reflecting the needs of both employees and the company

> Improving individual competencies through training and education

> Improving competencies of managers

> Establishing a basis for duty-oriented human resource development

Strategies

Career development system based on the type of professional	Movement principle and management plan which supports career development
Education and training system based on capabilities to foster employees	Construction of systematic career development infrastructure

Securing Advanced Education and Training Infrastructure

KHNP is planning to expand the current manpower of 10,000 to 18,000 by 2030. In order to prepare for such an expansion, restructuring plans have been made for the professional training system, such as to reform the professional development organization and to supplement education facilities. A training team in charge of overall education was established in 2013, efforts to train future professionals have been further strengthened by the creation of a development task force team for professionals in 2015. In order to meet the increased demand in education, KHNP selected the 2nd training campus for professionals; created an education & training center for a hydropower plant; and designed a training plan. The company also upgraded a training facility for on-site education to strengthen practical training for NPP by using simulator and maintenance training facilities.

Performance of Education Infra Reinforcement 2014

Reinforced HRD
- Established Human Resource Training Team in Human Resources Division (Dec 2013)
- Founded 2nd Campus of Human Resource Training Institute (Feb 2014)
- Established OSSA Education Team (Apr 2014)

Improved On-the-Job Training Facilities
- Additional Simulators for NPP Practicians (10th unit 15th unit)
- Expanded Training Facilities for Maintenance Training

Expanded Training & Education Tools
- Developed Web-based 2D & 3D On-the-Job Training Contents for NPP Operation/Maintenance
- Developed Training Materials for OSSA Operators

Developing Employee's Capability

KHNP has been focusing on the improvement of duty competencies in order for employees to secure the necessary competency for duty performance, and thus to raise the quality competitiveness of KHNP and overall safety at NPPs. Moreover, KHNP trains intensively global nuclear energy specialists in preparation for the expansion of its international business.

Improvement of Job Competency

KHNP has been operating a customized professional training system for each competency development stage according to life cycle from employment through to the retirement of staff and employees. In particular, KHNP has promoted the share and expansion of core technologies inside the company by selecting 100 core duties among the fields of development, safety, machinery, measurement, and quality and by electing core duty professionals in charge of technical consultations and knowledge management, and so on. As of 2014, around 270 core task specialists and trainees are working at the company.

Fostering Global Professionals

In order to expand its international footprint, KHNP is making a concerted effort in training global professionals. In particular, the complete revision of training materials and staff has been conducted according to the global education and training process of Systematic Approach to Training (SAT). The Global Village for Professionals Development Center is a 24-hour language-learning center that was specifically established for language training. KHNP plans to expand education courses for overseas export oriented to meet not only the needs of the UAE business, but also for other countries that have adopted nuclear power.

INTERVIEW

Training of KHNP professionals at the present time, for a brighter future

KHNP has recently picked its own unique competency model. The model is a training system based on competency that was developed through exhaustive trials over a period of five years, and is broadly divided into areas closely related to core values such as common competencies, leadership competency by class and job competency comprising 56 classes and 234 responsibilities. In addition, detailed action indicators for each competency are included in the database and are being used right now in conjunction with the entire training process. Hiring and training NPP personnel will continue to be an important issue that can affect the future of the company's survival. KHNP plans to train integrated type professionals with professionalism, personality, integrity and problem solving ability. By continuously establishing a best-in-class training infrastructure for professionals, KHNP will continue to train world-class professionals.

Manpower Development Manager at Professionals Training Team of Personnel Division **Kim Haeng-seop**

Respect for our Partners

" As a leader in the nuclear power industry, we will construct a sound ecosystem and promote fruitful mutual growth. "

Our Performance

Financial Aids for SMEs (Low-interest loan, etc.)
KRW **91.7** Billion
(Increased by KRW 12.5 Billion from previous year)

Marketing Support for SMEs
• SME product purchase: KRW 579.3 billion (accounting for **50.3** of overall purchase)
• Support for business meetings and SME participation in exhibitions at home and abroad : **26** times

Support for Improved Competitiveness of SMEs
• Supports for Technical Certificates & Industrial Innovation 3.0 : **50.3** SMBs
• Human Resource Support (including Atom Mentor Program) : **25** SMEs

Business & Social Context

'The Third Mutual growth Basic Plan' announced by the government in 2014, contains the mandate to strengthen national industrial competitiveness by creating a more cooperative culture between large conglomerates and small and medium-sized enterprises (SMEs). The plan states that large companies must expand their range of support to secondary and tertiary suppliers and work to create 'a bridge of mutual growth' through the promotion of core tasks such as a mutual-growth payment system and multilateral performance sharing. These changes may be a burden to large companies in the short term, but from a long-term perspective, they could strengthen their technical competitiveness through the joint research and development of new products or technologies, which may become business opportunities. SMEs can expect not only an increase in sales from large companies, but also establish self-sufficiency by securing long-term contracts. KHNP is currently working with around 60,000 1st & 2nd tier suppliers in the manufacturing industry of NPPs and equipment. The purchasing amount for products from SMEs increased annually, and in 2014, it stood at about KRW 580 billion accounting for 50% of all purchases made by KHNP. The products purchased from SMEs include not only the items selected for development, but also items certified as new technology. This means that KHNP and SMEs are working together to develop core technologies. An active ecosystem of SMEs strengthens KHNP's competitiveness so that KHNP should realize suppliers as partners and focus on the improvement of competency in the entire supply network to induce mutual growth.

Our Progress

KHNP is moving away from the existing short-term and one-sided support system and is in the process of setting up a continuous and mutual developmental support business model. KHNP has been leading the change of the mutual growth paradigm with the vision of a global leader that creates a sound industrial ecosystem. In 2014, based on strong supports for mutual growth from the CEO and executives, KHNP reformed its overall mutual growth system of organization, policies and systems.
KHNP is not only supporting the actual competitiveness of SMEs through technology transfer and manpower support but also we are pursuing fruitful mutual growth by means of a supply chain management (SCM) system for the first time by the public enterprise.

Future Plan

KHNP plans to create a healthy and active ecosystem. To pursue this goal, KHNP will seek to create a vibrant atmosphere where each member can contribute to the growth by improving the competitiveness of the overall NPP supply chain and support the growth of hitherto obscure champions. KHNP will usher in a new era of mutual growth by continuously finding capable and suppliers and provide them with the right type of support.

Think TRUST 1 **T** echnology
Think TRUST 2 **R** espect
  Respect for our Employees
  Respect for our Partners
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Contributing to the Creation of a Healthy NPP Ecosystem

Mutual Growth Strategy System

KHNP has set 'Global leader KHNP, creating a healthy NPP ecosystem' as its vision of mutual growth and resolved to focus on promoting mutual growth based on SCM. Led personally by the CEO, KHNP is striving to bring fruitful mutual growth and is working with partners to realize 'the big dreams of SMEs'. In 2014, KHNP created the 'KHNP WITH' brand, with the goal of improving the presence of products made by SMEs in the international market.
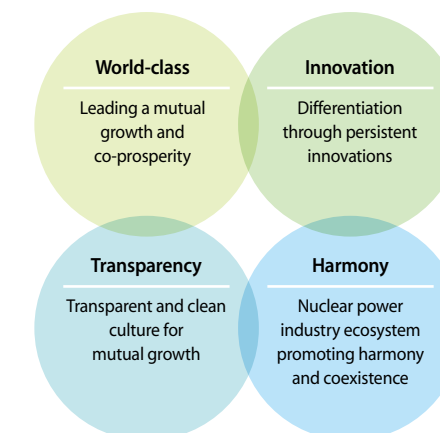
Vision ▶ Global leader KHNP, creating a healthy NPP ecosystem

Slogan ▶ KHNP helps SMEs realize their big dream

KHNP WITH

World-class
Leading a mutual growth and co-prosperity

Innovation
Differentiation through persistent innovations

Transparency
Transparent and clean culture for mutual growth

Harmony
Nuclear power industry ecosystem promoting harmony and coexistence

CEO's Will ▶
CEO leading a mutual growth
CEO communicating with SME partners
CEO who values fields

Orientation ▶
Strengthening the competitiveness of NPP ecosystem by mutual growth connected with SCM

SCM-connected, sound mutual growth
Improved effectiveness of mutual growth through package supports
Select-and-focus for tailored supports
Nuclear industry ecosystem in harmony and mutual growth

Creation and Improvement of a System for a Fair and Clean Trade Order

KHNP is striving to establish a fair trade order within the NPP industry. As part of the efforts, the company successfully eliminated manipulation during the bidding process by overhauling the purchase process and taking measures to strengthen the monitoring system.

Policy — Innovating procurement systems to foster fair and transparent tenders

• Prior declaration of private contracts via Internet, evaluation and prior opening of procurement → Improves transparency of contracts
• Further standardization/commercialization of nuclear plant compartments and ease of supplier qualifications → Lowers the entry barrier

System — Operating a system automating payments to subcontractors and detecting collusive tenders (from August 2014)

• Mandatory use of online payment check system for ensuring a timely payment to subcontractors (100% for construction contracts)
• Analysis of bidding patterns by submission phases → request an investigation for any doubtable cases to 'Fair Trade Commission of Korea' (Analysis of 146 tenders led to 22 warnings)

Process — Establishing a rational pricing model for determining proper prices (from September 2014)

• [Phase 1,'14] – commissioning a research for safety- and quality-oriented pricing model and demonstration of production cost calculation (2 items incl. axial sealing device)
• [Phase 2,'15~] – Enforcing a production cost in accordance with the research results and managing the outcomes

Expansion of the Organization and Vitalization of Headquarters for Mutual Growth

KHNP is operating a division dedicated to implement tasks related to mutual growth systematically. Operating under the direct control of the SCM team, this division holds regular meetings with directors from all divisions to review the results of mutual growth projects managed by each respective division. In 2014, the division reviewed strategies concerning mutual growth and went over the details of future projects to support SMEs.

Think TRUST 1	Think TRUST 2	Think TRUST 3	Think TRUST 4	Think TRUST 5
Technology	Respect	Ultimate Safety	Social Responsibility	Timeless Integrity

Respect for our Employees
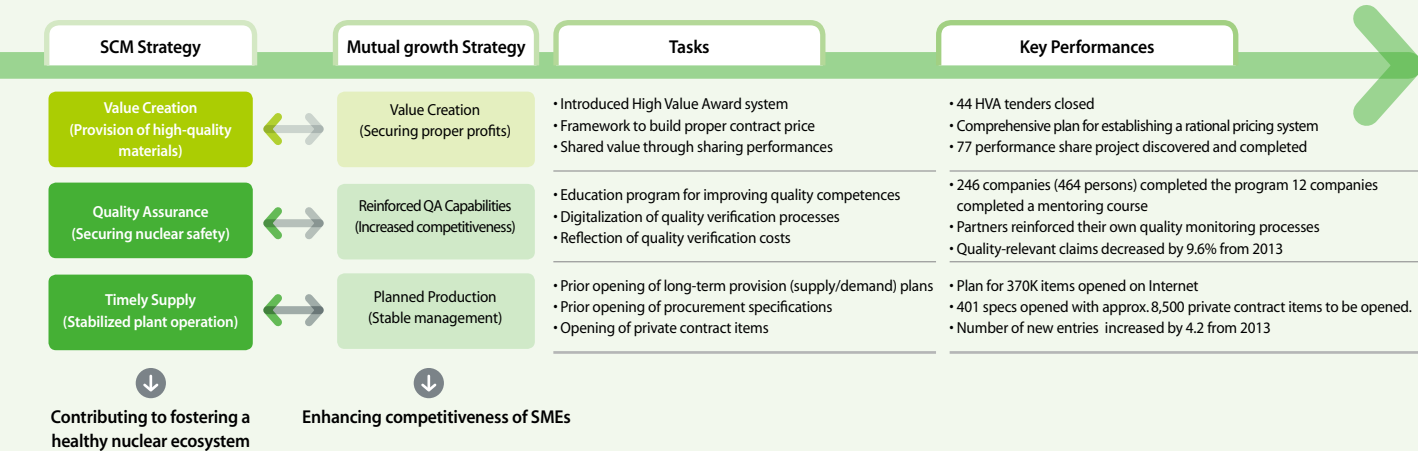Respect for our Partners

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Creation of SCM System and Changes to the Mutual Growth Paradigm

Promoting Strategically Mutual Growth Connected to SCM

In a bid to increase the competitiveness of the entire NPP industry and promote measurable mutual growth, KHNP is currently using the 'SCM system', the first such system among public entities. By effectively managing internal purchasing process and suppliers using SCM, it is now possible to ensure that the products meet the safety standards, and that they are delivered at a competitive price and on time. KHNP is also supporting SMEs to

become more self-sufficient and competitive by aligning three SCM strategies, 'creating value', 'quality guarantee' and 'on-time delivery', with our mutual growth initiatives.

> KHNP's SCM: a nuclear-centric supply channel management system that comprehensively manage partners and internal procurement processes (contracts, inventory control and material management), facilitating timely supply of products that comply with the requirements of NPP stability and are reasonably priced.

SCM Strategy	Mutual growth Strategy	Tasks	Key Performances
Value Creation (Provision of high-quality materials)	Value Creation (Securing proper profits)	• Introduced High Value Award system • Framework to build proper contract price • Shared value through sharing performances	• 44 HVA tenders closed • Comprehensive plan for establishing a rational pricing system • 77 performance share project discovered and completed
Quality Assurance (Securing nuclear safety)	Reinforced QA Capabilities (Increased competitiveness)	• Education program for improving quality competences • Digitalization of quality verification processes • Reflection of quality verification costs	• 246 companies (464 persons) completed the program 12 companies completed a mentoring course • Partners reinforced their own quality monitoring processes • Quality-relevant claims decreased by 9.6% from 2013
Timely Supply (Stabilized plant operation)	Planned Production (Stable management)	• Prior opening of long-term provision (supply/demand) plans • Prior opening of procurement specifications • Opening of private contract items	• Plan for 370K items opened on Internet • 401 specs opened with approx. 8,500 private contract items to be opened. • Number of new entries increased by 4.2 from 2013

Contributing to fostering a healthy nuclear ecosystem

Enhancing competitiveness of SMEs

Customized Support for SMEs at Every Step

In order to realize mutual growth, KHNP has, since 2014, been offering customized support to suppliers on areas such as technology, workforce management and training and access to markets. KHNP provides customized support by dividing suppliers into three groups of 2nd & 3rd tier cooperative small companies, SMEs specializing in general class materials and SMEs specializing in quality

class materials. KHNP's customized support covers areas such as improving self-sufficiency, efficient management and strengthening technical capabilities. Such support, which puts the cooperatives' needs first, is leading to increased profits, saved operating costs and enhanced international sales, helping the companies to expand and grow their business.

Category	2nd- & 3rd-Tier Partners (small)	General Material Partners (SMEs)	Quality Material Partners (SMEs)
Strategy	Promote Self-Reliant Companies (small but strong companies)	Improve Management Efficiency (small but strong companies)	Develop Technology (growing to medium business)
Performances	• Industrial Innovation Campaign 3.0 (31 companies) • Tech.transfer (11 companies, 18 technologies) • Support HR and marketing (86 companies)	• Jointly developed brand (KHNP WITH) and the overseas marketing support (30 companies) • Exhibitions at home and abroad (299 companies) • Support for global product liability (PL) insurance (17 companies)	• Support technology development projects (7 projects) • Preferential purchase of products derived from the developed technologies (KRW 24B) • Financial supports (ASME, etc.) (22 cases)

Supporting the Initiatives to Strengthen the Competitiveness of Suppliers

Performances of R&D Support for SMEs

Category	Activities & Descriptions
Reinforcement of R&D Support System	• Discovery of items to develop within 5 years, development plan for items, briefing session for the plans, etc. • Maximized the fund for collaborative R&D projects (KRW 0.8B to 10B) → Cumulative performance (by 2014): 105 cases (KRW 30.26B) • Additional government-private sector joint investment fund for technology development projects (KRW 60B) → Performance in 2014: 2 cases (KRW 0.66B) completed
Improvement of Technological Competence	• Partner education program for technology competence through Mutual growth Academy (1,320 persons)
Activation of R&D	• Transferred KHNP-owned technologies (including patents) (18 items in 2014) • Supported acquisitions of domestic/global technology certificates for nurtured technologies • Introduced Awards for Individuals & Groups of Collaborative R&D • Exhibited excellent R&D outcomes in Nu-Tech Conference 2014

Strengthening of Coexisting Financial System

In order to help suppliers to achieve financial stability, KHNP is providing necessary financial supports. Since 2013, in partnership with Industrial Bank of Korea (IBK), KHNP has been offering low interest rate loans and free consultations as part of its four management SMEs support programs. In 2014, in partnership with Korea Exchange Bank (KEB), KHNP has started to offer 'Grow Together Loan', that allows suppliers working with KHNP to receive a loan of up to 80% of a signed contract. KHNP has provided financial support of KRW 91.7 billion to its suppliers through various financial aids.

Support to Strengthen Technology Capabilities

SMEs face many difficulties with regard to R&D technologies that are vital to the NPP industry on their own. As such, KHNP supports initiatives to develop technologies at SMEs to enhance their competitiveness and to encourage the localization of equipment and development of new technologies.

Support for Finding Access to Domestic and Foreign Markets

Expanding the Amount of Products Purchased

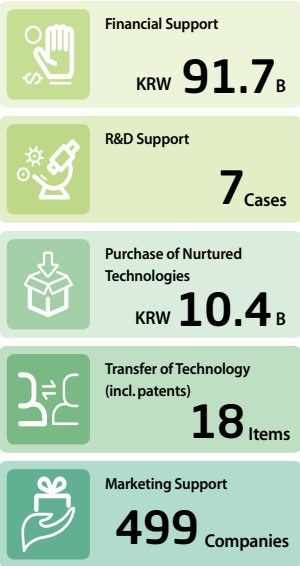|	
Financial Support	KRW **91.7**B
R&D Support	**7** Cases
Purchase of Nurtured Technologies	KRW **10.4**B
Transfer of Technology (incl. patents)	**18** Items
Marketing Support	**499** Companies

from SMEs

KHNP supports SMEs to gain access to the NPP market through our 'Touring Conferences' for sales consultation regarding products made by SMEs. KHNP also offers opportunities to suppliers to hold 1:1 meeting with potential buyers and thereby enhance both effectiveness and satisfaction with sale consultations. In order to revitalize the currently depressed NPP industry, KHNP plans to hold a sales conference annually and, in a bid to increase the overall size of industry, encourage start-up companies and women owned businesses to participate in these sales conferences.

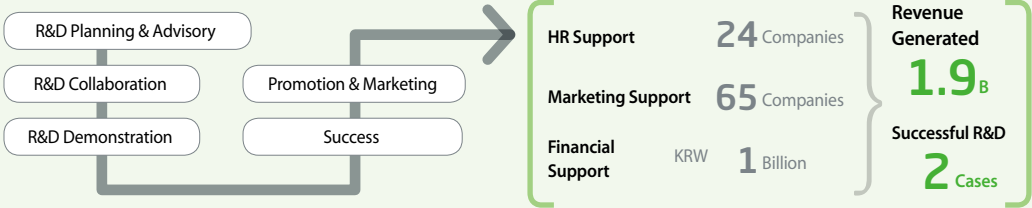### Discovering Hidden Champions

In order to help SMEs expand their business on the global stage, KHNP implements initiatives aimed at discovering and promoting hitherto obscure champions. For this purpose, KHNP helps SMEs to obtain certified qualifications and to purchase overseas product liability (PL) insurances and also offers customized support depending on their export capabilities.

Along with such efforts, KHNP is actively making use of its brand power and carrying out joint marketing campaigns, leveraging exposure for our suppliers in the marketplace. KHNP has, since September of 2014, been promoting 24 localized products, which include a solar water circulation system and a chromo radiometer as part of its 'Permanent Exhibit of Quality Products made by Suppliers' at the Kori HQs. From 2015, KHNP has established a separate subsidiary that will focus exclusively on supporting SMEs to break into foreign markets.

Creation of a One-stop Supporting System

KHNP is improving the effectiveness of the support system for SMEs by offering a 'One-stop support' system, which is consists of allocating trained personnel from KHNP to assist with R&D and expansion into overseas markets. KHNP transfers its technology and management

know-how and encourage active R&D by implementing programs such as the 'Junior Employee Exchange Program', 'Techno Doctor' (the system of sending workforce which has retired from KHNP) and 'Atom Mentor' (mentoring service from a panel of technicians which includes certified master technicians).

One-Stop Support System

R&D Planning & Advisory
R&D Collaboration — Promotion & Marketing
R&D Demonstration — Success

HR Support	**24** Companies	Revenue Generated **1.9**B
Marketing Support	**65** Companies	
Financial Support	KRW **1** Billion	Successful R&D **2** Cases

Ultimate Safety

Ultimate Safety,

"Most Important Value
and Utmost Value"

- **Safety above all**
- **Internalization of Safety**
- **Safety Systems and Processes**

Core Issues Consisting Core Aspects		
No.	**Core Issues**	**Significance**
Core 17	Safety and health management	High
Core 18	Disaster risk management	High
Core 22	Information security management	High
Core 7	Enhancement of quality competitiveness	Medium

Issues to Report Reflecting Core Issues
Think TRUST 3. Ultimate Safety

- Nuclear plant operation with top priority placed on the safety
- Improved credibility of nuclear facility operation
- Enhanced risk management capabilities to address citizens' concerns

Ultimate Safety

" KHNP will be the most trustworthy company by integrating safety into our actions. "

Our Performance

Reduced Failure & Shut-Down

0.22 Times/Unit
(Reduced by 0.06 from 2013)

Timely Implementation of Post-Fukushima Follow-Up Actions

39 Initiatives completed in 2014

Reduced No. of Safety Accidents (incl. Partners)

24 Cases
(Reduced by 11 from 2013)

Business & Social Context

Operation technology of NPP and safety of NPPs in Korea have been well recognized around the world. In 2014, the number of failure cases for each reactor in Korea was 0.22, this value is used to measure the safety of NPPs and the level of quality electricity. This value, which is lower than 0.82 cases recorded for US and 2.64 cases reported for France, clearly shows that the safety of NPPs in Korea is truly world class. Furthermore, the result of WANO PI for KHNP during the first quarter of 2015 was 89.4, ranking KHNP for the 2nd among nuclear power generation companies around the world which operate more than 10 NPPs. The unplanned loss factor of Korea NPPs was 0.80%, which is the highest among seven advanced countries of NPPs in US, Germany, England, France, and Canada. Despite the world-class level of NPP operation, the public's approval rate of the NPP in Korea was 48.6% and the reliability of nuclear energy was 12.4% as of late 2014. While around half of the general public realizes the need for NPPs, it seems that majority of population does not trust the safety of NPPs. Since the situation calls for expanding the number of NPPs to 35 by 2030 according to 7th Basic Plan for Electricity Supply and Demand of Korea, the trust of the general public is essential not only for managing operations of KHNP but also for stable supply of electricity and national energy security. In the future, KHNP will be the government entity entrusted by the general public by managing NPPs safely, and releasing the information in transparent manner.

Our Progress

KHNP's core values are emphasized on safety, where the company puts all of its resources into creating a multiple-barrier safety system and strengthening safety awareness among all employees. KHNP is aiming to increase trust in NPPs and to strengthen risk management system. To become a trustworthy company, KHNP will ensure all employees have healthy awareness of safety as the top priority.

Future Plan

KHNP will make every effort to reform itself and earn back trust from the general public though systematic management of safety and incident free operation of NPPs. Above all, accident prevention and reaction capabilities will be strengthened to reduce the likelihood of NPP accident, and KHNP is committing resources to reinforce NPP cyber security systems. KHNP will continue to improve safety system and process by thoroughly following the 'Safety First' rule.

Operation of NPP that Puts the Priority On Safety

Enhancing NPP Safety Management System

KHNP has focused on disaster prevention in light of the recent accidents in Fukushima and Sewol ferry. Above all, the basis of NPP safety general management was established by organizing a safety management system and carrying out reorganization to create the perfect safety management system and prepare fundamental precautionary measures.

Reestablishment of Integrated Safety Management System

Multiple-barrier safety system was strengthened through consultation with an external expert and 31 improvement tasks in three fields were selected for the integrated safety management system, involving the whole process that consists of accident prevention, resolution, and management. By applying this system, capability of response toward disaster and severe accident was improved by strictly controlling 'accident prevention' within containment building, 'Accident Mitigation' on NPP site, and 'accident management' inside emergency planning zone.

Strategies		Action Items
Accident prevention	• World-class safety management system • Resolve concerns on nuclear safety	• Reinforce safety screening/assessment, real name safety system, practical safety culture, environmental management • Relieve Concerns Project, international safety inspection, safety communication
Accident Mitigation	• Reinforced countermeasures and responsiveness against critical accidents	• Safety evaluation for long-service plants • Reinforced accident-ready facilities • Establishment of accident mitigation force
Accident Management	• Reinforcements of comprehensive disaster responsiveness	• Disaster responsiveness and countermeasures • Emergency medical treatment and services • Improvements of disaster/emergency drill

Certification of Safety and Health Management System (OSHA) (KOSHA18001, OHSAS18001)

Certification of OSHA evaluates whether the 'Self-control safety management' of company is promoted systematically for preventing injuries and issues the certificate by judging the level of company's safe and healthy activities. When the certification is achieved, it is possible to assess whether the OSHA has been established in accordance with international standard. Through such effort, potential injuries and losses are prevented systematically, leading to both the protection of worker's safety and the increase in productivity and morale. KHNP procured both national

certificate KOSHA 18001 and international certificate OHSAS18001 for five offices (Kori, Hanbit, Wolsong, Hanul and Han river hydro power head office) including the head office and five hydropower plants (Simnyangjin, Cheong-song, Muju, Sancheong, Yecheon pumped storage power plant) and national certificate for pumped storage power plants in Yangyang and Cheongpyeong. The OSHA is continually strengthened by obtaining domestic and international certification for KHNP research center in 2014.

Raising the Efficiency of the Group In Charge

KHNP Nuclear Review Board (KNRB)

Nuclear Review Board (KNRB), KHNP's top safety committee, is composed of internal and external experts. This group independently deliberates issues related to safety policies. KNRB was divided into four departments, 'Operation & Management', 'Engineering', 'Structure & Site', and 'Safety' in 2014, and has expanded its scope from existing deliberation of 'licensing factor' to all pending safety issues. Furthermore, leveraging international safety experts and increasing the number of external experts in the board to 50% secured the effectiveness and independence of the board.

Operating Safety Supervision Group and Safety Culture Exclusive Group

Safety supervision group, composed of 24 on-site safety officers and one HQs safety inspector at four HQs of NPPs, has been operated since 2012 to eliminate safety blind spots. The on-site safety officer reports to the safety inspector after checking potential safety issues and the environment of safety culture. Through the action of safety supervision group, a safety oriented work atmosphere at the sites is created and the safety awareness of on-site workers has increased. Inspections were held 710 times in 2014 (9.7% increased over 2013) and 53 cases of safety weaknesses at business sites were discovered and improved. The level of safety culture in NPPs is also tested and evaluated, and safety culture countermeasure and practice guideline are established by focusing exclusively on safety culture. A total of ten cases of safety culture improvement tasks were discovered and managed in 2014, and the self-assessment of the safety culture of workers in 2014 resulted in the score of 83.1 (6.7% increase over 2012) and revealed that the awareness of safety had been increasing.

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SUSTAINABILITY ISSUES

Think TRUST 1 **T**echnology Think TRUST 2 **R**espect Think TRUST 3 **U**ltimate Safety Think TRUST 4 **S**ocial Responsibility Think TRUST 5 **T**imeless Integrity **41**

Reorganization of Safety Control System

Promoting Nuclear Safe Real-Name System

KHNP is operating nuclear safe real-name system in co-operation with external agencies to actively reflect the government 3.0 value of 'Open, share, communication, and cooperation'. Especially, efforts were made to allow real-time tracking and information searches, such as equipment, person in charge of parts, real name of part owners, and historical details of each part throughout the entire cycle of NPP from the 'Integrated Information Management System'. In the future, KHNP plans to manage the entire cycle and result of NPP safety control by using the internal real-name management system.

Distribution of Emergency Response Mission Card

In May 2014, KHNP has created emergency response cards and distributed them to all employees to avoid wasting precious minutes during emergency situations. On the emergency response card, position and contact information of individuals in different positions are listed, making safe response possible when an emergency takes place.

Establishment and Implementation of Safety Culture Practice Process

KHNP operates a safety culture practice process, based on Plan, Do, Check, Action (PDCA), which evaluates and takes actions in the establishment and implementation of safety culture enhancement plan. As a unique process to KHNP, the internalization of safety culture within all workers and the continuous practice of safety culture at NPPs are the goals of this process.

Perfecting Safety Culture Through Systematic Evaluation

KHNP operates a circular safety culture enhancing system
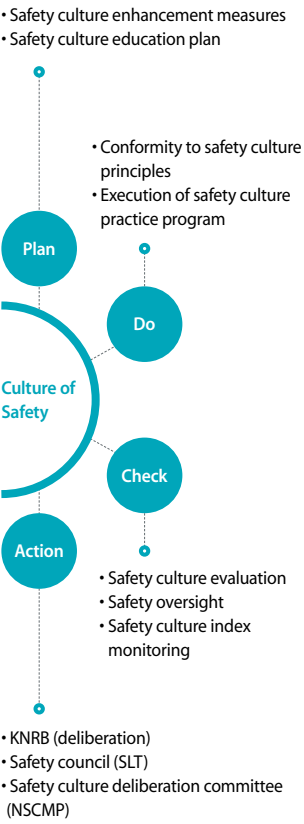
in the following manner: 'evaluation → drawing improvements → establishing and carrying out enhancement measures'. A unique evaluation standard of KHNP is set up and conducted according to international standard safety culture evaluation directive. In addition, improvements and best-in-class cases are discussed and shared between employees and experts from inside and outside of the company. Furthermore, the implementation system and status of KHNP's safety culture are objectively inspected by a third institution, the Korea Nuclear Safety Commission, and tasks drawn from the inspection are reflected in creating safety culture enhancement measures.

Strengthening Customized Safety Training

Safety trainings customized for each position and jobs are provided not only to employees but also to suppliers and best practices are shared. Through such effort, the capacity for execution is enhanced by broadening the safety culture. Partnerships are reinforced by sharing lessons to overcome implementation of safety culture and conflict resolution.

Target	Program	Contents	Performance (persons)	
			In-house	Partner
Managers	Safety Culture Expert Course	Safety management skills and understanding of safety culture	77	42
Practicians	e-Learning on Safety Culture	Improved awareness of safety culture and contribution to safety operation	3,010	1,024
	On-the-job Training	Inclusion of safety culture curriculums in OJT and offering professional knowledge and practice for all employees	2,605	602
	Special curriculum for overseas employees	Implementing Safety culture Training, localized for the UAE	500	-

Improving Practical Safety Culture at the Actual Work Place

Active participation of all employees to improve safety culture is vital in an effort to drive safety culture in the company. Accordingly, various programs aimed at improving safety culture have been created for the purpose of internalizing safety awareness of employees.

Culture of Safety — Plan, Do, Check, Action

- Safety culture enhancement measures
- Safety culture education plan

- Conformity to safety culture principles
- Execution of safety culture practice program

- Safety culture evaluation
- Safety oversight
- Safety culture index monitoring

- KNRB (deliberation)
- Safety council (SLT)
- Safety culture deliberation committee (NSCMP)

Category	Key Concepts	Performance in 2014
Safety Moment	Give brief safety speeches before any key meeting or event	24 messages developed → Safety-oriented work environment
Safety Suggestion System	Collect suggestions on safety hazards through hotline, fax or notification (CAP)	Screened ECP suggestions and responsive actions taken, suggestion boxes installed at partners' workplaces
Positive Objection System	Foster a culture and settings where positive objections or suggestions for safety issues can be freely made	Activate safety-related communication
Safety Culture Practice Indicator	Quantitatively represent the safety culture	5 indicators of safety culture developed → Suggestions for safety culture practices

Strengthening Information Security Management System

Establishing Long-Term Strategy of Information Security

The importance of NPP cyber security has been highlighted since recent cyber attacks on NPP facilities. Therefore, KHNP is establishing a long-term information security strategy for NPPs, and is enhancing cyber safety system according to its road map.

Cyber security plan for NPP was established in 2014, and the operation ability of cyber security control center was strengthened by implementing cyber security control, which is operated for 24 hours a day, 365 days per year. By 2016, KHNP is planning to complete the process of securing human resource competency and constructing an infrastructure to continuously probe and remediate weak points.

Target	Establish cyber security system for reinforced NPP safety
Strategic Roadmap	Reinforcement of Cyber Safety System (2014) → Reestablishment of Cyber Security System (2015) → Stabilization of Cyber Security System (2016)
Strategies	Acquire the int'l standard information security management system (ISO 27001) and reinforced the internal security systems · ISO27001 certification for the entire enterprise and implementation and further development of security governance/systems · Optimization of cyber security system and R&D projects for cyber security technologies for nuclear plants
Tasks	· Improved competences of cyber security monitoring center · Establishment of nuclear plant cyber security plan · ISO27001 enterprise-level certification · Implementation of PC-level integrated authentication system and document centralization system · Further development of cyber security monitoring level and security system optimization/reinforcement · Advanced R&D for nuclear plant cyber security

Strengthening Customized Information Security Education

Customized education is offered to employees, based on their work responsibilities, to increase the efficiency of information security education. Special lectures for board members have been held by an external specialist to inspire their security consciousness. Education designed to develop experts is provided to information security manager and general information security awareness education is provided to all employees.

※ Refer to the 2014 Information security training performance on page 73

Certification of Information Security Management System

KHNP's headquarters acquired the certification of information security management system (ISO27001*), the international standard of information security regulated by ISO in December 2014. This is the result of strengthening the information security policy by applying the international standard security process. Out of six key performance indicators, 'Information protection training' and 'Cyber simulation training action' were selected. By understanding detailed performance indicator of security enhancement, a score 86.7% was achieved and the certification was successfully acquired as the result. KHNP plans to enhance our information system by improving the areas of low assessment and to obtain a company-wide certification.

Foundation of 'Information Security Committee' Supervised by the CEO

To protect NPPs, one of the national core infrastructure, the 'management policies regarding information security' of CEO's mandate have been announced to the entire company and the 'Information Security Committee' supervised by the CEO was recently formed. The committee is composed of 10 experts and the CEO as the chairperson. It implements BOD policies regarding information security. Suggestions drawn from quarterly committee inspection are reflected in the action item list of long-term information security agenda.

Enhancing the Cyber Security System of NPP

KHNP has expanded and founded a cyber security division at the head offices of NPPs to enhance the capacity for action regarding cyber security. In addition, the security control system of NPPs, physical protection devices and emergency response devices have been strengthened by establishing a cyber security plan according to the international standard. Furthermore, managerial and technical security measures have been prepared to respond to cyber terrorism preemptively. KHNP is also preventing the threat of security incident by strengthening the information security of suppliers, which are commonly the blind spots of cyber security at NPPs.

*ISO27001 is an international standard established by ISO and International Electro-technical Commission (IEC) for information management systems. The certificate is issued to applicants who passed a rigid evaluation process covering 114 items in 14 categories.

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Think TRUST 1 **T**echnology — Think TRUST 2 **R**espect — Think TRUST 3 **U**ltimate Safety — Think TRUST 4 **S**ocial Responsibility — Think TRUST 5 **T**imeless Integrity
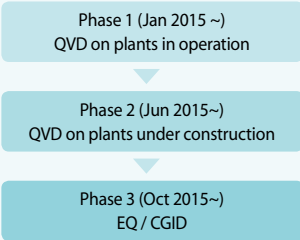
Improving Reliability of NPP Equipment

Strengthening Quality Competitiveness

KHNP is continuously implementing quality improvement activities to increase the safety of NPPs. In 2014, quality management system was reexamined in an effort to increase the quality of products and to remove blind spots within quality management system, and the quality system was examined for 'design - purchase - operation – maintenance'. Five fields of quality innovation and 15 items were selected from such examinations, and KHNP is making intensive efforts to introduce improvements to those fields. With such innovative efforts for the purpose of quality improvement, KHNP has won the top award (gold medal) in competition held by the International Convention for Quality Control Circles (ICQCC) where 216 teams from 14 companies around the world entered.

Promotion strategy of Quality Innovation

Quality Vision ▶	**Achieve the World's Best Quality**
Strategies ▶	Quality management covering the entire nuclear power lifecycle

Ensured Quality of Facilities	Reinforced Quality	Innovative Culture of Quality

Tasks (15 Items in 5 Sectors)	
System	4 tasks including improvement of quality assurance system
Supplier Mgt.	2 tasks including improvement of supplier quality
Facility Quality	2 tasks including reestablishment of quality units
Quality Competence	3 tasks including improve expertise of all employees
Organization	4 tasks including reinforcement and restructuring quality units

Quality Document Forgery Occurrence in 2014 **0** Case

Verification schedule for newly introduced tools and equipment

Phase 1 (Jan 2015 ~) QVD on plants in operation
▼
Phase 2 (Jun 2015~) QVD on plants under construction
▼
Phase 3 (Oct 2015~) EQ / CGID

※ QVD(Quality Verification Document)
EQ(Equipment Qualification)
CGID(Commercial Grade Item Dedication)

Strengthening verification for forgery and alteration of quality assurance documents

A quality verification center of NPP was established, which focuses exclusively on preventing the forgery and alteration of quality assurance documents, and the ability of verification was enhanced by securing professional manpower, 18 people. Furthermore, the 'verification checklist and guideline for the forgery and alteration of quality documents' were established, and the basis for verification designed to eradicate the forgery and alteration was established by constructing a multi-verification system of quality documents. A direct examination on 60,994 cases of Quality Verification Document (QVD) was conducted in 2014, targeting 23 reactors of operating NPP. Thorough efforts will be made to verify newly received equipment with respect to forgery and alteration in 2015.

Improving the Quality of Planned Preventive Maintenance

With a change in maintenance paradigm that places utmost importance on safety, KHNP has extended the period of preventive maintenance and has been focused on improving the safety of NPPs by securing enough time for quality maintenance service. As issues related to the forgery of quality verification document were resolved, problems also decreased. This resulted in the increase in the utilization rate of power plants.
KHNP will improve the quality of planned preventive maintenance by actively taking into account changes within maintenance environment, introducing advanced technologies and developing optimum method.

Planned Preventive Maintenance Period

2013 1,908 Days 121.9 Days/Unit → The planned preventive maintenance time reduced thanks to constant problem solving efforts → **2014** 1,036 Days 75.1 Days/Unit

Power Plant Usage Rate **75.5**%
Power Plant Usage Rate **85.0**%
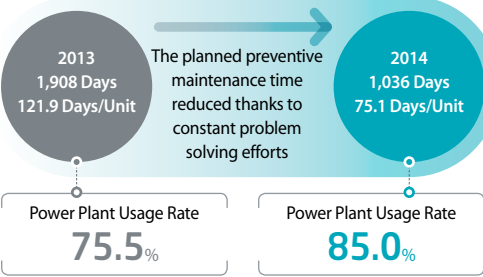
Anticipatory Replacement of Obsolete Equipment

KHNP is not only carrying out regular examination (15 months interval for heavy-water reactor, 18 months interval for light-water reactor) and safety evaluation (10 years interval) to secure the safety and reliability of operating NPPs, but also continuously examining and analyzing the equipment condition through preventive maintenance and aging management program. Especially, anticipatory replacement is carried out for core equipment of older NPPs and at the same time, if there should arise a need to make changes to large equipment such as steam generator and nuclear reactor vessel head, changes would occur with detailed pre-established plan in order to increase the safety of NPPs. In October 2014, steam generators of Hanul reactor 3 and 4 were successfully replaced. The newly applied equipment is the latest steam generator, which uses high quality heat pipe, and this change is meaningful because the technology was developed Korea. Each nuclear reactor vessel head of Hanbit reactor 3 and 4 is scheduled to be replaced in 2015.

Strengthening Anticipatory Safety Inspection

KHNP receives numerous inspections from different organizations within the country and from around the world. And we are voluntarily conducting self-assessments, which analyze the differences from world-class NPPs.
KHNP receives regular inspections from the World Association of Nuclear Operators (WANO) and the International Atomic Energy Agency (IAEA). If there is a need for any inspection due to safety management, KHNP receives a special safety inspection conducted by the Ministry of Trade, Industry and Energy and the Nuclear Safety and Security Commission. Furthermore, independent quality assurance team conducts inspections at regular intervals. Specifically, WANO safety inspection was held three times in 2013 and six times in 2014; it is scheduled to be conducted over six times annually starting from 2015. As the WANO safety inspection standard has been strengthened and the number of inspection has been increasing after the Fukushima nuclear accident, KHNP is training internal experts on international inspections in order to prepare for said inspections.

Types of Safety Inspection

Inspection Overseas		Peer Review (WANO)	OSART / SALTO (IAEA)
Inspection at Home	Internal	KNRB, PSR (Safety Agency)	Quality Assurance Audit (QA Division)
	External	Regular Inspection (NSSC / KINS)	Winter/Summer Check (MOTIE)
Safety Inspection		Regular	Frequent

Global NPP Safety Evaluation

The NPP operating level is diagnosed through WANO PI (World Association of Nuclear Operators Performance Index) and NPP operator is establishing improvement strategies by comparing results with top NPP operating countries. For the first quarter of 2015, Korea was ranked the 2nd on WANO PI evaluation targeting countries with more than 10 NPPs from the world. KHNP was ranked second among the entire group of NPP operators, which means the company has attained world-class safety standard.
Especially, three fields of 'unplanned loss rate', 'radiation exposure dose' and 'the number of unplanned nuclear reactor auto-stop' have been selected as the areas which received high scores compared to Exelon, and three fields of 'development available index', 'auxiliary water feeding system', and 'nuclear fuel reliability' have been selected as need improvement areas.
In order to preemptively deal with weak areas, such as unplanned long-term shutdown, KHNP will strengthen management, and by establishing additional improvement plan, such as a performance thorough operational maintenance, KHNP will work to bring changes to areas, which require improvements.

(Unit : %)

Operational Indicators for Major Countries

Nations	Performance as of 1Q, 2015
USA	91.3
Korea	89.4
China	88.4
Ukraine	84.7
France	74.9
Sweden	73.8
Canada	73.4
India	71.9

Operational Indicators by Operators

Operator	Performance as of 1Q, 2015
EXELON	94.9
KHNP	89.4
ENTERGY	89.1
NNEGC	84.7
EDF	74.9
OPG	72.7
NPCIL	71.9

Global Comparison of Nuclear Safety Operation Performances 2015

— Operational Indicators for Major Countries
— Operational Indicators by Operators

Sweden **73.8**

Canada **73.4** **72.7** OPG

USA **91.3** **94.9** EXELON **89.1** ENTERGY

France **74.9** **74.9** EDF

Ukraine **84.7** **84.7** NNEGC

China **88.4**

Korea **89.4** **89.4** KHNP

India **71.9** **71.9** NPCIL

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SUSTAINABILITY ISSUES

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Strengthening the Basis of Safety Control to Reassure the Public

Enhancing Disaster Safety Management System

KHNP came up with 'Fukushima follow-up' as the plan to strengthen NPP safety, and after the Sewol ferry disaster in 2014, it reexamined the disaster safety management system jointly with the Ministry of Trade, Industry and Energy and took steps to strengthen our overall safety management system.

Specifically, KHNP has enhanced emergency response capabilities by implementing plans for improving the capacity for response during times of emergency, such as 'the establishment of integrated emergency response system', 'the improvement of disaster countermeasure manual', 'the reinforcement of disaster safety facility and equipment', and 'the reinforcement of disaster and safety human resource'. Furthermore, 39 tasks out of a series of tasks from six different fields (59 tasks in all) were completed in 2014, which had been vigorously implemented after the Fukushima accident. Besides implementation of government initiatives, KHNP is also continuously trying to implement additional measures, such as 'reinforcing equipment', 'operating emergency response team', and 'securing the base of emergency response'.

Securing Capabilities to Respond During the Event of a Major Natural Disaster

Due to a record-breaking downpour of over 130mm per hour in Busan and Gyeongnam regions in August 2014, Kori #2 was stopped due to flooding that resulted in some equipment difficulties, such as communication and network. After the accident, KHNP investigated the reasons behind flooding at the power plant and made necessary adjustments to ensure that other natural disasters would not cause stoppage of any NPP in the future.

In addition, the problems related with natural disasters such as heavy rainfall, heavy snowfall, and strong wind were understood and the plan for improvement targeting all NPPs, hydro and pump storage power plants was established in order to ensure that accidents caused by natural disasters would not occur at other power stations. In the six fields including structural repair, hydro and pump storage power and info-communications, 23 tasks have been implemented with great efforts, From now on, the emergency management office will track the performance result of different tasks on a quarterly basis and manage accordingly.

Fukushima Follow-up Improvements

Sector (No. of Initiatives)	Completed (cases)
Earthquake (6)	5
Tsunami (4)	2
Flooding (15)	10
Critical Accident (10)	4
Emergency Response (11)	9
Aged Plants in Operation (10)	9
Total	**39**

(As of Dec, 2014)

Comprehensive Improvement Plan to Cope with Natural Disasters

23 Initiatives in **6** Sectors

Contents	→	Effects
Structural Repair/Hydro & Pumped Storage — Construction of anti-flooding facility	→	Nuclear plant integrity secured even under deluge
Information & Communication / Disaster Prevention Measures — Diversified communication channels for emergency control office	→	Integrity of communication facilities secured
Operational facilities / Safety against Disasters — Development of flood adaptation/prevention drill scenarios	→	Improve disaster-specific adaptiveness and responsiveness

Costal barrier 10m
Expanded coastal barrier of Kori NPP 7.5m → 10m

Waterproof gate
Installation of waterproof gate at the emergency diesel generator room

Passive Autocatalytic Recombiner (PAR)
Installed hydrogen removal facility that can work unpowered

Containment Filtered Venting System (CFVS)
Installed containment building pressure rising prevention and radioactive material filtering and ventilating facility

Nuclear reactor emergency cooler
Installation external injection oil route of emergency coolant at reactor and steam generator

Mobile generator vehicle
Secured mobile generator vehicle for each sit

EDG

SFP

Steam generator

Used fuel

Reactor

Waterproof drain pump
Secured Waterproof drain pump (portable diesel pump) secured for each plant

SFP emergency cooler
Used fuel storage emergency cooler Installation external injection oil route

Advancing Radiation Safety Management

Working days inside radiation control zone have increased due to the increase in the number of older NPPs and significant improvements of equipment. This has resulted in the increased possibility of radiation exposure for employees working at power plants. Each head office operates a radiation emergency assistance center, which manages the radiation safety and health of supplier workers, and radiation service management system is being improved by clearly outlining the range of radiation service work and introducing changes to how performance results are evaluated.

Furthermore, KHNP is strengthening its human resource capacity by adopting a company certification system that is equivalent to the professional radiation safety management license. At the same time, KHNP is also making an effort to reduce radioactive source terms* and decreasing the emission of radioactive waste by adopting the latest radiation control technology and continuously improving the radioactive waste processing system.

* Radioactive source terms: radioactive source emitted from nuclear facilities
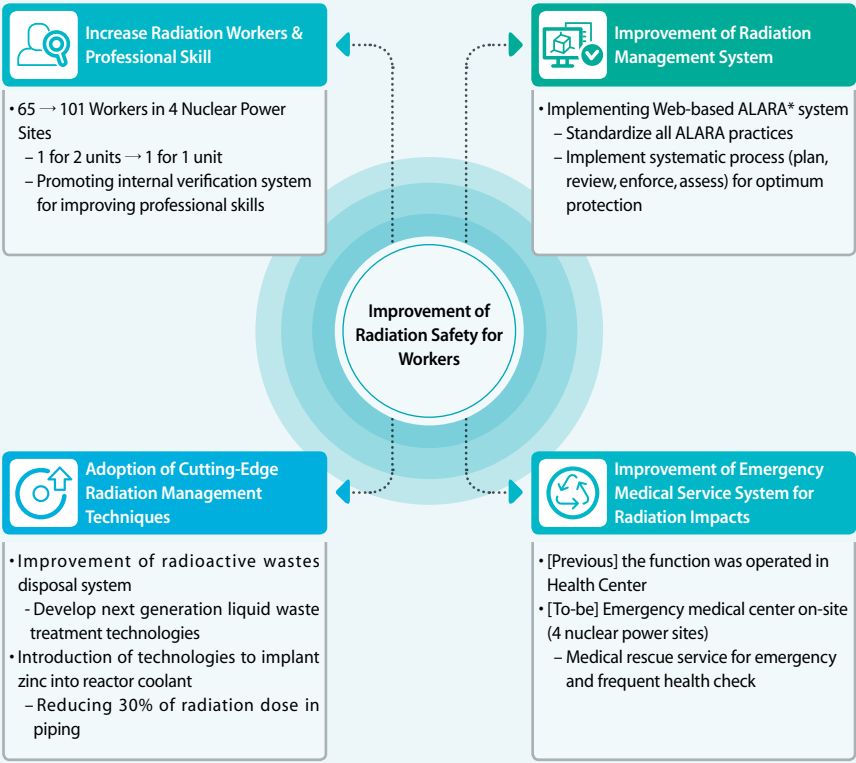
New Disaster Types and Conducting Response Training for Multiple Complex Disasters

KHNP has conducted a consolidated training, which inspects the disaster response system of NPPs, hydropower plants, and pumped storage power plants. In order to protect the lives of the public during the golden hour, simulations are used for training, which mimic the situations of different types of disasters, including the readiness to quickly respond to new types of emergency disaster and multiple disasters.

At the four head offices of NPPs (Kori, Hanbit, Wolsong, and Hanul), trainings have been carried out to simulate flooding and collapsing of structures due to extreme natural disasters such as typhoon, flood and earthquake. At hydropower plants, pumped storage power plants, and Han River hydropower head office, trainings have been carried out to prepare for collapsed dams due to heavy rain and dam damages due to earthquake or terrorist attack.

Improvement of Radiation Safety for Workers

Increase Radiation Workers & Professional Skill
- 65 → 101 Workers in 4 Nuclear Power Sites
  - 1 for 2 units → 1 for 1 unit
  - Promoting internal verification system for improving professional skills

Improvement of Radiation Management System
- Implementing Web-based ALARA* system
  - Standardize all ALARA practices
  - Implement systematic process (plan, review, enforce, assess) for optimum protection

Adoption of Cutting-Edge Radiation Management Techniques
- Improvement of radioactive wastes disposal system
  - Develop next generation liquid waste treatment technologies
- Introduction of technologies to implant zinc into reactor coolant
  - Reducing 30% of radiation dose in piping

Improvement of Emergency Medical Service System for Radiation Impacts
- [Previous] the function was operated in Health Center
- [To-be] Emergency medical center on-site (4 nuclear power sites)
  - Medical rescue service for emergency and frequent health check

* ALARA(As Low As Reasonably Achievable): Radiation management theory that reduce radiation as low as reasonably achievable

① Hanbit Unit #5 - a drill for post-earthquake firefighting and gas leak
② Wolsong Unit #4 - a radiation exposure drill co-hosted by Nuclear Safety and Security Commission

Social Responsibility

Social Responsibility,

"Musts and Basic Responsibilities for Public Enterprises"

- Public interest
- Communication with and satisfaction of stakeholders
- Eco-friendly management

Core Issues Consisting Core Aspects		
No.	Core Issues	Significance
Core 14	Radioactive waste management	High
Core 21	Community support for health protection and management	High
Core 19	Reinforced social contribution activities	Medium
Core 12	Adaptation to climate change	Medium
Core 15	Water pollutant management	Medium

Issues to Report Reflecting Core Issues

Think TRUST 4. Social Responsibility for our Planet

- Reinforced environmental management framework
- Minimized environmental impacts
- Responding to climate change
- Reinforced environmental ecological system protection activities

Think TRUST 4. Social Responsibility for our Community

- KHNP social contribution promotion system
- Community-oriented social contribution activities
- Social contribution activities reflecting the nature of power generation business

Think
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Social Responsibility for our Planet
Social Responsibility for our Community

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Social Responsibility for our Planet

" We will lead environmental conservation to pass down a more beautiful earth to future generations. "

Our Performance

Enterprise-wide ISO14001 Certificate (Environmental Management System) & Green Company Designation

Reduced Radioactive Wastes by Increased In-house Treatment of Non-pollutant Wastes
(39% reduction compared to the average of total waste in the last 5 years)

Green Product Purchase
KRW **16.3** Billion

Business & Social Context

The world is currently facing an environmental crisis due to climate change caused by greenhouse gas (GHG) emissions and other related environmental changes. The quantity of the world's GHG emission in 2014 was 32Gt which, although was the same level as the previous year, is nevertheless not a small value. The UNIPCC Fifth Assessment Report (Intergovernmental Panel on Climate Change) has warned that if nations around the world do not intensify efforts to conserve the Earth's environment, the survival of mankind will be threatened in the near future. Accordingly the pattern of global energy supply has been tended to gradually move to decarbonizing. Although the Korean government has taken initiatives to founding emission trading for GHG reduction; however, from 2020, the end-point of the Kyoto protocol, Korea will be designed to a carbon dioxide (CO_2) mandatory reduction country, so more active efforts for reduction are required.

Considering environmental and economic factors, NPP industry is receiving attention as a realistic alternative to solve the reduction issue. As the nation's representative company, KHNP will do its uphold its environmental responsibilities through actively researching CO_2 reduction methods and investing in renewable energy businesses. In addition, KHNP will improve the public trust in NPPs and minimize the environmental impact by carefully managing and treating nuclear wastes, which have received intense media coverage and public scrutiny.

Our Progress

KHNP has established an environmental management strategy and is conducting environmental management activities in top three strategic dimensions in order to be "the environment-friendly company trusted by the public". The company established environmental management system (ISO 14001) and operated it in all of its offices as a measure for strengthening environmental management. KHNP is making efforts to minimize its environmental impacts, including management of radioactive wastes and release of hazardous substances. KHNP is also gradually increasing the use of clean energies such as nuclear energy and water power, as well as renewable energies in line with the Korean government's climate change mandate. The company is also promoting various energy saving activities, including the use of high-energy efficiency equipment and car-free days of its employees.

Future Plan

KHNP will practice its environment-friendly management by placing environmental conservation as the top priority throughout the entire business process from design, construction, operation and maintenance to waste disposal, and by continuously maintaining environment certifications from domestic and international agencies. The company will not only improve prevention and response capabilities regarding chemical accidents by strengthening the safety control system for managing hazardous substances, as the nation's climate change leader, but also respond actively to domestic and international regulatory changes by taking actions in green purchase, energy saving and GHG reduction initiatives.
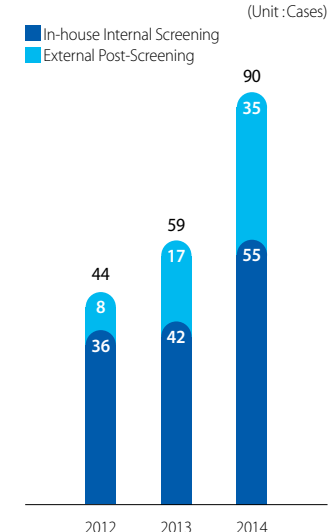
Strengthening Drives of Environmental Management

Environmental Management Strategy

KHNP has set an environmental vision as 'Environment-friendly company trusted by the public', and it is practicing its three environmental management strategies, which are 'strengthening the environment-friendly management system', 'producing zero environmental pollution', and 'strengthening activities for environmental conservation', for 'internalizing of Environment-friendly management centered on safety'. In addition, as a part of the code of conduct, the company has provided 'environmental Guidelines' to its employees for voluntary and active practices of environmental management.. This environmental policy governs not just the business decisions, but also the daily tasks of KHNP employees.

Vision ▶	The Environment-friendly Company Trusted by the Public
Target ▶	Internalizing of Environment-friendly Management Centered on Safety

Strategies ▶

Strengthening the Environment-Friendly Management System	Producing Zero Environmental Pollution	Strengthening Activities for Environmental Conservation

Key Tasks ▶

· Maintain enterprise-wide ISO14001 (environmental management system) certificate and green company designation · Continuous enhancement of environmental performances · Expand green product purchase	· Strengthen chemicals management system · Reduce the use of toxic materials · Reduce the release of water pollutant emissions · Increase recycling · Establish marine environment management infrastructure	· Ecosystem protection activities · Activities to protect fishery resources · Marine environment cleaning activities

Acquisition Green Certificates

For systematic environmental management, KHNP established an environmental management system based on the international standard (ISO 14001). The company has been following this management standard since 2006.

Furthermore, environmental performance is continuously monitored and improved by identifying and implementing new approaches through KHNP's own internal assessment and consultations with specialized organizations.

Since 2010, our designation as green business units, according to the 'Low-carbon Green Growth Act', has been widely recognized. Nine of our workplaces were designated as green companies and the status has been maintained up to now.
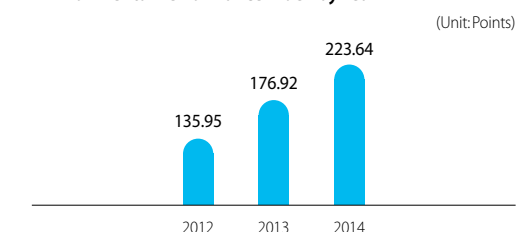
KHNP's Environmental Guidelines

✓ **Safety Prioritized Management**   Safety, including environmental protection and environmental safety, is considered as top priority at all processes from plant design, through construction, operations and maintenance.

✓ **Compliance with National & International Environmental Standards**   We strictly conform to environmental regulations and international conventions while endeavoring to achieve a higher level of environmental management..

✓ **Minimizing Pollutant Emission**   We reduce emission of pollutants through optimizing processes and improving operational systems, while saving resources and maximizing recycling.

✓ **Leading Environmental Protection Actions**   We establish an Environment-friendly supply network for promoting further environmental protection and take initiatives in purchasing green products, saving energy consumption and reducing GHG emissions.

✓ **Disclosing Environmental Information and Cooperating with Stakeholders**   We discuss freely environmental issues with local communities, disclose the relevant information to the public and actively participate in improving the local economy and environment.

Environmental Performance Index Based On International Standard

An environmental performance index, composed of 17 detailed indexes of 6 fields, was developed and is operated by actively reinforcing environmental demand level, responding to regulatory standards and conducting comparative evaluations through measuring the environmental performance for each NPP. The environmental performance index is evaluated by operational performance, including management performance such as environmental management and compliances, input and output. KHNP scored 223.64 on its environmental performance index in 2014, which is a 46.72 point increase compared to previous year.

Environmental Improvement Items Search and Treatment
(Unit : Cases)

■ In-house Internal Screening
■ External Post-Screening

	2012	2013	2014
External Post-Screening	8	17	35
In-house Internal Screening	36	42	55
Total	44	59	90

Environmental Performance Index by Year
(Unit: Points)

2012	2013	2014
135.95	176.92	223.64

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KHNP Material Balance in the Environmental Field

KHNP is the largest Environment-friendly power company, producing approximately 30% of Korea's electric power. The company is Environment-friendly management leader based on its enterprise GHG emission management and real-time water quality monitoring system for the operation of hydropower and pumped storage power plant.

Material Flow

INPUT

Fuel Consumption
(Unit: KgU)

Category		2012	2013	2014
Nuclear Fuel	Light-water reactor (enriched uranium)	411,216	380,222	373,523
	Heavy-water reactor (natural uranium)	381,934	291,143	359,617

Energy Management

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Energy Consumption
(Unit: 10xTJ)

Category	2012	2013	2014
Direct energy (fuel consumption)	65	27	16
Indirect energy (electric power consumption)	6,093	6,656	7,660
Total Energy Consumption	6,158	6,683	7,676

Energy Management

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Water Use
(Unit: 1000m²)

Category		2012	2013	2014
Nuclear Power Plants	Underground water	52	38	29
	Industrial water	2,959	2,686	2,772
	Municipal water	1,004	1,006	1,075
	Surface water	3,288	3,853	3,951
	Total Water Consumption	7,303	7,583	7,827

Water Management

p. 52
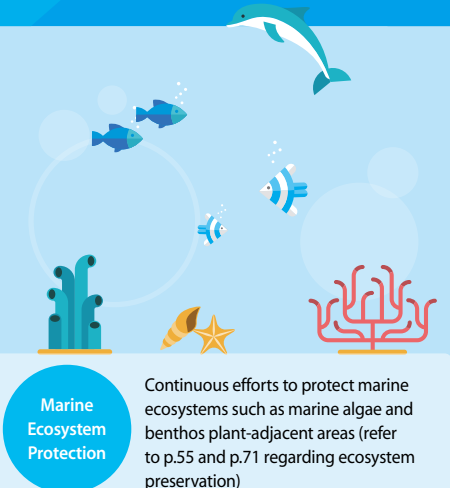
Marine Ecosystem Protection

Continuous efforts to protect marine ecosystems such as marine algae and benthos plant-adjacent areas (refer to p.55 and p.71 regarding ecosystem preservation)

Environmental Investments

Total Investment

KRW **7.8** Billion

Green Product Purchase

KRW **16.3** Billion

OUTPUT

Hazardous Chemical Substances Release
(Unit: Tons)

Category		2012	2013	2014
Nuclear power sites	Chemical substances use	6,826	6,673	7,537

The number of hazardous chemical substances release reached **0**

Reinforced management of hazardous substances

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Effluent emission
(Unit: kg)

Category		2012	2013	2014
Nuclear power sites	COD	20,514	19,918	18,566
	SS	5,255	4,968	4,667
	T-N	34,248	34,235	33,476

(Unit: 1000m²)

Category		2012	2013	2014
Nuclear power sites	Waste water discharge	3,992	3,845	3,642
	Recycled water	552	528	419
	Recycling rate (%)	13.8	13.7	11.5

Reduction of effluent emission

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Greenhouse Gas Emission
(Unit: 1000tCO₂eq)

Category	2012	2013	2014
Scope 1	105	64	33
Scope 2*	2,959	3,232	3,720
Total emission	3,064	3,296	3,753

* Usage of necessary external electric power for pumped storage & safe nuclear operations

Response to climate change

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Waste Discharge
(Unit: Ton)

Category		2012	2013	2014
Nuclear power sites	General waste	10,516	11,651	9,769
	Designated waste	1,121	1,561	571
	Total wastes	11,637	13,212	10,340
	Recycling rate* (%)	72.3	80.7	70.1

* Recycling rate compared to the amount of general waste

Workplace Waste Recycling rate Improvement

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Radioactive Waste Self-disposal
(Unit: Drum)

Category	2012	2013	2014
Self-disposal of radioactive waste	545	1,015	1,320

39 % reduction of radioactive waste compared to the amount of average of 5 years by increased In-house disposal of non(low)-pollutant wastes

Radioactive Waste Management

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※ Environmental Data Estimation Standards :
- 'NPP headquarters' aggregated data of energy input and water supply to operate power plants of Kori, Hanbit, Wolsong, Hanul, and environmental data in terms of released pollutants
- In terms of hydro and pumped storage power generation, facilities that do not cause pollution, we aggregated environmental data such as energy consumption, GHG emission quantity, etc. Hydropower includes 10 hydro power plants, including Cheongpyeong & Uiam, and pumped storage power includes 7 plants, including Muju & Samrangjin.

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Minimizing Environmental Impact

Strengthening Hazardous Substances Management

Hazardous chemical substances such as sulfuric acid, hydrochloric acid, caustic soda, and hydrazine are mostly used for rust proofing and water sealing inside the generation station system in NPP.

Thorough supervision and prevention of leakage of these substances are essential since it may come in contact with the human body and the environment in various ways during the entire process. Safety measures need to be in place during the various stages such as production, use, and disposal, as a full-scale chemical accident can be fatal. Therefore, KHNP has developed 'Nuclear Power Plant Customized Standard Emergency Response Guideline for Chemical Accidents' and applied it on the fields. This guideline contains control standards for chemical substances, emergency response processes, and emergency treatment protocols. It is fully complied with national and international guidelines and regulations, to prevent chemical accidents and strengthen response capabilities. In addition, the number of hazardous chemical substances managers per each NPP is increased from 6-7 personnel to 12-15 to reinforce the management.

In 2013, after conducting safety inspections of hazardous chemical substances storages in NPP jointly with experts, weak areas were identified and corrective actions were taken. Starting 2014, KHNP has introduced an environmental safety risk assessment system and created a comprehensive chemical accident prevention and response system. The company is also promoting an extended application of the system, which can be adapted to a NPP scenario, through testing and diagnosing.

Reduction of Water Pollutants Discharge

All sewage and wastewater released from NPPs are discharged after processing as per legal stipulations. Sewage and wastewater treatment equipment are managed under stricter criteria (35% higher than legal standards) than the effluent quality standard of water pollutants designated by law.

Wastewater Disposal Facilities

A physiochemical wastewater disposal facility, comprising four processes- neutralization, condensation/precipitation, dewatering, and drying- is operated inside KHNP NPPs. KHNP controls the quality of effluent water processed through the wastewater disposal facilities, by a remote monitoring system. The effluent water quality data (COD, SS, T-N) gathered from the system is sent to the Korea Environment Corporation in real-time.

Substances	Purpose
Sulfuric acid	Water treatment room : An ion exchange resin regeneration
Hydrochloric acid	Condensate polishing plan : An ion exchange resin regeneration
Sodium hydroxide	Waste water disposal plant : ph control
Hydrazine	Second system : Dissolved oxygen eradication
Ammonium hydroxide	Second system : pH control
Sodium nitrite	Sub system : Corrosion prevention
Hydrogen peroxide	Electricity dismantle facility : Residual chlorine eradication

KHNP's water treatment Standard

Category (㎎/L)	COD	SS	Total Nitrogen	Total phosphorus
Legal Discharge Standard	Below 70	Below 60	Below 60	Below 8
Self-management Standard	Below 20	Below 20	Below 20	Below 2

Water reuse management

A large amount of water is used as coolants and potable water for various machines along with water for the power generating plant. Kori power plant uses Ulsan and Busan water supplies; Yeonggwang power plant uses water from Gochang Ungok Dam; Wolsong uses Ulsan industrial water and Daejoncheon; and Uljin power plant uses water from Daesuho Dam. Each headquarters reuse some part of effluent water, processed by wastewater disposal devices, for filter cleansing, chemicals dilution, and road sprinkling. New NPPs are installing wastewater reclamation systems to reuse water and to increase water use efficiency.

Enhancing the Recycling Rate of Industrial Waste

Waste generated from NPPs is classified into various categories i.e. general waste, designated waste, and construction waste discharged from regions other than radiation-controlled areas. There are approximately 15 types of waste such as waste synthetic resin, waste oil, and waste wood. KHNP has a system for controlling the entire process from waste generation to final treatment.

Waste storage facilities are expanded and newly built in each NPP to minimize air pollution generated from incinerating waste. In addition, approximately 70.1% of combustible waste (domestic wastes, waste synthetic resin, and waste wood) is reused by sorting waste according to types, components, and process methods.

Purchasing of Green Products

KHNP has been actively participating in green product purchase system for saving resources and protecting the environment. KHNP has entered into a "Green Purchase Voluntary Agreement" with the Ministry of Environment. Accordingly, the company has not only established the base infrastructure for purchasing green products by revising related guidelines and contract provisions, and monitoring purchase records but it is also broadening the green product purchase activity base through regular employee trainings.

Radioactive Waste Control

KHNP transfers safely radioactive waste, which is inevitably generated during the operation of NPP, to a radioactive waste facility located in Gyeongju. This is safely stored in a secured warehouse located inside NPPs before it is segregated from the human residencial areas. Radioactive waste is classified into spent nuclear fuel - a high level waste, and low and intermediate level radioactive waste, and managed accordingly.

Low and Intermediate Level Radioactive Waste Control

Low and intermediate level radioactive waste* is packed inside drums that have guaranteed stability and then stored in a temporary storehouse located inside NPPs. KHNP disposes non-radioactive polluted waste or polluted waste below the legal standard level through methods such as incineration and landfill. KHNP disposed 1,320 drums of waste in 2014, a 30% increase compared to the previous year. KHNP will reduce systematically the occurrence of radioactive waste by introducing new technologies and vitalizing self-disposal, as the number of reactors operated in NPPs as well as the number of replacements of obsolete equipment are expected to increase in the future.

* Low and intermediate level radioactive waste: waste that has low radioactive intensity, such as working clothes & shoes used during work at NPP.

Safety Control of Spent Nuclear Fuel

Since nuclear fuel generates radioactive emissions and heat, fission products after use must be systematically disposed after being temporarily stored for a certain period in interim storage equipped with specific equipment. Reprocessing, permanent disposal, and storage are included in the total management plan of spent fuel. Most countries are using their interim storage plans, storing spent fuel in the periphery of the plant site. Korea has not yet finalized the comprehensive nuclear waste management plan. A recommendation proposal was submitted to the government in June 2015 according to the report published by the Public Engagement Commission on Spent Nuclear Fuel Management. The government will execute the management plan by the end of 2015 on the basis of the recommendations. The proposal contains recommendations on the site selezction of an underground research facility to be initiated by 2020, management of the underground research facility by 2030, and operation of a disposal facility to be set up by 2051.

Spent nuclear fuel storage statue (As of the end of Dec 2014)
(Unit : Rod)

HQ		*Storage capacity	Present storage	Saturation Year	
				Before expansion	**After expansion
Kori		6,494	5,322	2016	2028
Hanbit		9,017	5,413	2019	2024
Hanul		7,066	4,652	2021	2026
Wolsong	Light-water	523	64	2022	2038
	Heavy-water	499,632	391,872	2019	2026
Total		522,732	407,323		

* Excluding emergency core amount
** Expected saturation year after expansion, considered as below
- Kori : Shin-Kori #3, #4 construction completed
- Hanul : Shin-Hanul #1, #2 construction completed
- Hanbit : Hanbit #2 compact storage replacement installed
- Wolsong : Heavy-water reactor compact dry storage facility additionally installed
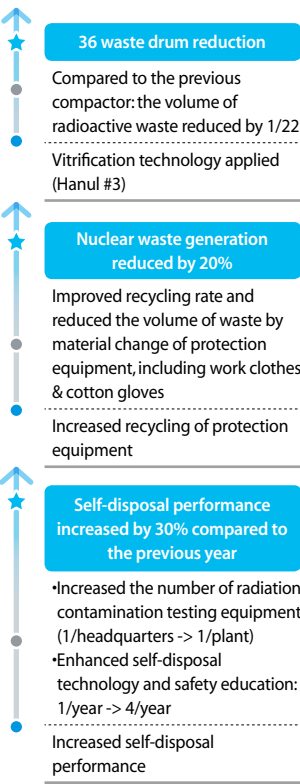
KHNP is making efforts to systematically control spent nuclear fuel until the interim storage facility is built as part of the final management plan. For light-water reactors, it has installed a high-density storage rack of wet storage system, which maximizes storage capacity by using materials with excellent neutron absorption function. Spent nuclear fuel in a NPP with low storage capacity is transferred, by carriers, and stored in a different reactor. Furthermore, temporary storage facilities are expanded by building additional dry storage facilities (Silo and MACSTAR) at heavy-water reactors.

Efforts to minimize nuclear waste generation

★ 2014 performance
● Progressing performance
● Reduction efforts

★ **36 waste drum reduction**
Compared to the previous compactor: the volume of radioactive waste reduced by 1/22
Vitrification technology applied (Hanul #3)

★ **Nuclear waste generation reduced by 20%**
Improved recycling rate and reduced the volume of waste by material change of protection equipment, including work clothes & cotton gloves
● Increased recycling of protection equipment

★ **Self-disposal performance increased by 30% compared to the previous year**
•Increased the number of radiation contamination testing equipment (1/headquarters -> 1/plant)
•Enhanced self-disposal technology and safety education: 1/year -> 4/year
● Increased self-disposal performance

Optimum Management of Worker's Exposure Dose

KHNP is maintaining radioactive exposure dose under the limit and is thoroughly managing exposure doses to protect workers from radiation. The worker's exposure doses in KHNP have been maintained at levels well below international average and efforts are on to further bring down the levels. Furthermore, there were no workers, who exceeded the 50man-SV, the annual legal dose limit for workers.

Although there were different reasons in 2014 for the increased radiation exposure like the increase in radiation-generating work, each NPP reactor recorded 0.36man-SV of exposure dose due to large-scale improvement of equipment such as replacement of steam generators and reactor vessel heads. These results were achieved by putting in a great deal of effort into the active implementation of mid-to long-term radiation dose reduction plan, and the positive reduction activity of ALARA committee. As a result, a 42% reduction in radiation exposure compared to the five year average.
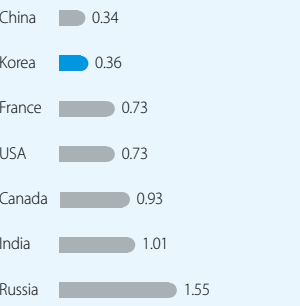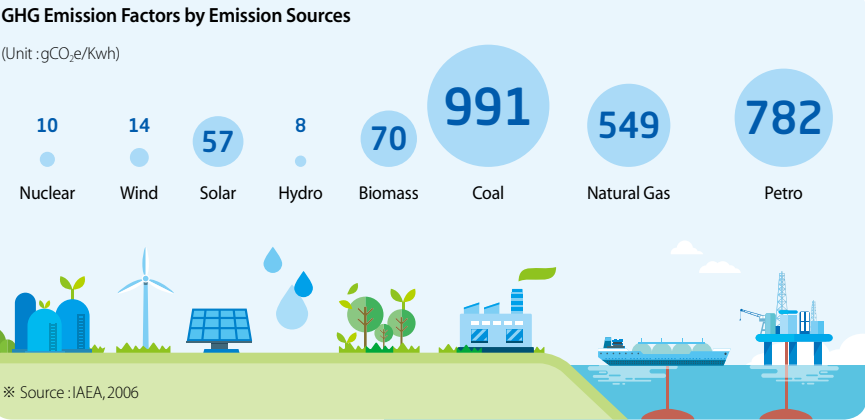
(Please refer to 'Radiation safety control advancement' for detailed information on radiation safety management policy with the purpose of reducing worker's exposure dose.)

Worker's radiation exposure dose rank by nation
(unit: man-Sv/unit)

China	0.34
Korea	0.36
France	0.73
USA	0.73
Canada	0.93
India	1.01
Russia	1.55

Worker's exposure dose
(unit: man-Sv/unit)

Category	2010	2011	2012	2013	2014
Average domestic NPP	0.79	0.53	0.45	0.52	0.36
Average international NPP	0.89	0.85	0.76	0.73	0.73

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Climate Change Response

GHG Emission Factors by Emission Sources

(Unit : gCO$_2$e/Kwh)

10	14	57	8	70	991	549	782
Nuclear	Wind	Solar	Hydro	Biomass	Coal	Natural Gas	Petro

※ Source : IAEA, 2006

Reduction of GHG Emission

Securing Proper Nuclear Power Proportion

Framework for Compliance with the Obligation of RPS Achievement

Responding GHG & Energy Target Management System

Improving Recycling Rate of NPP Waste

• Deciding 29% of nuclear proportion by 2035
• Gyeonggi Fuel Cell & Yeongwol Solar Plant (Dec 2013)
• GHG emission calculation & statement preparation/ verification
• Increased recycling rate of NPP waste

Climate Change Adaptation

Establishing & Enforcing Energy Saving Plan

Climate Change Expert Education and Further Development

Proactive Measures for Emission Trading System

Establishing KHNP Mid to Long-Term Roadmap for Climate Change Adaptation

• Enterprise-wide energy saving implementation check and assessment
• Participation in seminars & education programs on climate change (total 17 persons)
• Counter measures and participatory strategy for emission trading system

Establishment of Infra & New Drivers of Growth

Introducing Environment-friendly/High-energy efficient Buildings

Operating and improving Integrated Management System for GHG/Energy

Using and Promoting Hydro Power Plant

Promoting CDM Project for Renewable Energy Generation Facilities

• Expanding adoption/application of eco-friendly energy-saving buildings
• Improving inventory system (emission projection capabilities)
• Performance upgrade project for Cheongpyeong #1, #2 and active utilization of overseas resources
• CDM project for Kori Wind and Yecheon Solar power generation facilities

R&D and Cooperation

Enhanced Promotion for Improving Awareness

Expanding Green Product Purchase

Reinforcing Technology Competitiveness

Industry-Government-Research Cooperation on Climate Change

• Public relations (24 times) & press releases (7 times).
• Green product ratio reached 93.4%*
• New renewable field R&D expansion (Salinity gap generation)
• COP-20 industrial representatives participation (Dec 2014)

* Source and assessment standard: calculation is based on Korea Environmental Industry & Technology Institute's Green Product Purchase Information System (http://gd.greenproduct.go.kr), Public Procurement Service, and Green Market Purchasing price.

Opportunities of Climate Change for Nuclear Energy

Nuclear energy does not emit GHGs during the power generation process. Only a small amount of CO$_2$ is emitted during the process of uranium mining, enrichment, operation and dismantlement of NPP. The emission quantity of GHGs during the entire process of a nuclear power plant is lower than the ones from renewable energies and is similar to water-power generation. As mentioned, NPP does not emit any CO$_2$ during the generation process and this is why it is an essential power system, integral to achieving the goal of the nation's GHG reduction.

2014 KHNP's Climate Change Response Performance

All Employees' Practice of GHG Reduction

Activities for effective energy use and reduction in consumption are carried out from various angles to reduce direct and indirect GHG emissions caused by the use of fossil fuel or electricity. Transportation is a major source of GHG emissions, on account of the burning of fossil fuels. This can be reduced by the use of eco-friendly vehicles. KHNP has replaced 33.9% of office vehicles with eco-friendly cars to reduce carbon emissions. In addition, indirect GHG emission was reduced by 65% with new LED lights in the offices. In addition to these, direct and indirect energy consumption is reduced through use of renewable energy resources for equipment in the new buildings, office lights-out, rational operation of elevators, observing car free days, and designated compact car parking zones.

Response to Carbon Emission Trading

Starting in January 2015, Korea began carbon emission trading in accordance with the government policy. KHNP's nuclear and hydro power plants have low emission scores, but the pumped storage power plants that indirectly emit GHGs have not yet reached government assigned targets. The emission quantity of pumped storage power plants covered 80% of the total emission quantity of KHNP in 2014. To cope with this issue, KHNP has established a long-term strategy for reducing carbon emission and is putting the strategy into practice. Guidelines and company rules for emission trading have been legislated and an effective response system has been set up for emission trading. Additionally, a joint response system for emission trading with other power generating companies has been established. Exchange activities for GHG reduction such as developing GHG reduction technologies and joint participation in industrial development are promoted.

Strengthening activities for environmental ecosystem conservation

KHNP has been pursuing various efforts for conservation of the surrounding environment and ecosystem of the nuclear power plants. Environmental surveys of land and sea near the nuclear power plants are mandatorily conducted during construction and operation of the plants in accordance with the Environmental Impact Assessment Act. Environmental change is continuously monitored in accordance with the 'Environment Survey Guidelines for Surroundings of Nuclear Power Plants', established by KHNP, even after the duration of the legal performance period.

Marine Environment Monitoring System

A total of nine systems, belonging to three categories, have been established for monitoring marine environment changes in areas where new NPPs (Shin-Kori, Shin-Wolsong, and Shin-Hanul) are located, established and operated. Parameters such as marine environment, water temperature, salt, current direction and water flow, weather change, temperature, wind direction, wind speed, and atmospheric pressure are used for environmental measurement. The observed environmental data is recorded in the national monitoring system operated by the Korea Hydrographic and Oceanographic Agency and is available to the public.

Marine Environment Investigation and Marine Ecosystem Conservation

It is evaluated that no significant effect caused by operating NPPs since no special changes on the surrounding environment have been observed from surveys in the past 28 years. As a matter of fact, the surrounding environment is also showing similar community structure* with a near natural ecosystem.

However, NPPs have been using seawater for cooling high pressure steam, made to produce electricity, and the temperature of seawater raises by about 7~90°C when this water is emitted to the sea. To minimize impacts on marine life from the raised temperature and to conserve the marine environment and ecosystem, KHNP has selected submerged cooling technology ** for the new NPPs.

Use of Heated Effluents

KHNP has been promoting various businesses using heated effluents. An aquarium using these effluents is operated at Hanbit HQs. This is utilized as a learning place that demonstrates the safety of heated effluents to NPP visitors.

Furthermore, the Hanbit and Wolsong HQs are raising fish and shellfish by using hot wastewater discharged from NPPs. Cultivated fish and shellfish are released in the sea near the NPP around May 31st every year, on 'Marine Day', to build up fishery resources.

High-valued fish consisting of 8.9 million fish, 16.74 million abalones, 71 million crustaceans, 3.8 tons of shellfishes, and 0.83 million sea cucumbers and all matching with the characteristics of natural marine life in the sea have been released to contribute to the development of fishery resources and increase in fishermen's income.

Improving marine environment

KHNP is also contributing to the improvement of marine environment by building kelp forests by dropping artificial reefs. Activities for environment conservation and improvement of the fishing ground environment- such as beach cleansing near NPPs and removing harmful organisms (starfish, sea urchin, etc.)- are constantly held. Every year, members of the KHNP skin-scuba diving club along with local divers volunteer to collect and dispose garbage such as fish nets and gears thrown out into the sea near the NPP.

Operation state of observation buoy system

○ Shin-Hanul #3
○ Shin-Hanul #2
○ Shin-Hanul #1

○ Shin-Wolsong #3
○ Shin-Wolsong #2
○ Shin-Wolsong #1

○ ShinKori #3
○ ShinKori #2
○ ShinKori #1

* Seaweed cluster near nuclear facilities / marine publication
  Refer to page 71 for annual change of marine zoobenthos (mollusk)
** Submerged cooling technology under water: Unlike the conventional surface intake system, it intakes water at 15m below sea surface. Due to the lower ocean temperatures under water as compared to the surface, it has cooling effect during intake and dilution effect during drainage.

Farming organism release　　Ocean purification activity　　Artificial fishing banks business　　Marine forest creation

Social Responsibility for our Community

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" Through truthful activities for social contribution, we will grow together with the local community. "

Our Performance

Dandelion Spore Fund

KRW **5.2** Billion

(Increased 20% from the previous year)

Award Wins
• Citation from the Ministry of Health and Welfare at Share Korea Award (Oct 2014)
• Social Responsibility Award for Economic Leaders (Jun 2014)

Business & Social Context

To continue stable operations of a NPP, it is of paramount importance to maintain the trust of the public including the local community toward KHNP. The company has carried out a heavy responsibility as Korea's leading company in the electricity industry, a key aide in national progress. In spite of KHNP's safe operations, fulfilling social responsibilities must be actively pursued to restore the public's trust in the present situation where public confidence in NPPs has been seriously shaken after the Fukushima nuclear accident. KHNP has conducted extensive activities for social contribution at the national level in recent years. Now is the time to fully reflect the needs of the public and various interest groups, and do continuous social contribution activities to bring about the welfare of the local community and to improve the image of KHNP.

Special consideration needs to be given for social contribution activities in the surrounding areas of the NPP- the base of business- as this must be considered as an important part of operating KHNP's business. The understanding and cooperation of local residents form the foundation for all KHNP business processes from site selection, construction and operation to the dismantling process. Therefore, it is integral to intensively promote activities that create community shared values (CSV) rather than a simple beneficial support to surrounding areas. These measures can help in establishing the base for KHNP to grow together with the local community.

Our Progress

KHNP is promoting activities for social contribution, suitable for the four strategy directions i.e. 'Safety and Happiness, Loving Community, Human Resource Development and Global Voluntary Service'. These social contribution activities are guided by our vision of 'the World Where All of Us are Safe and Happy'. After the 'KHNP social service group' was officially launched on June 2004, activities for social contribution at a national level are promoted, centered on exclusive groups at the HQs and offices as well as unit volunteer groups of each function. The span of participation in social contribution has been expanded by launching a senior social volunteer group (SSVG) in 2014. KHNP is currently promoting activities for social contribution by measures such as providing safe streetlights and the use of condenser effluent from NPPs. KHNP is also practicing the value of sharing through various activities by supporting the vulnerable sections of society and fostering the youth.

Future Plan

KHNP has established a system for global social contribution to build the base of overseas business expansion and to improve the brand value of social contribution, unique to KHNP. To strengthen the capability and professionalism of employees' social contribution, the backbone of our social contribution system, KHNP will institute and expand employees' training programs that foster social awareness, responsibility and contribution. The social contribution that reflects the needs of stakeholders will be continuously rediscovered and practiced, enabling KHNP to become an organization trusted by the public for its high sense of duty and responsibility which have been duly demonstrated. KHNP will create shared values from the business and grow together with the local community.

KHNP Promotion System for Social Contribution

Strengthening the Strategy for Social Contribution

KHNP aims to pass on happiness and hope to the public by sharing the problems of neighbors and solving social issues by investing in the local community. Under a vision, "the World Where All of Us are Safe and Happy", various sharing activities i.e. 'People', 'Public Interest' and 'Public Responsibility' are practiced. Among many other social contributions, representative activities includes: 'Safety and Happiness' to protect the safety of the public and to create a happy world; 'Loving Community' to support and communicate with the communities around NPPs; 'Human Resource Development' to train local youth to develop their talents; and 'Global Voluntary Service' to solve social issues and to nurture education and culture of developing countries.

the past 10 years after it was officially launched in June 2004. Currently, about 10,000 members of SVG are offering about 160,000 hours of voluntary service annually. The SGV comprises of KHNP employees from HQs, regional offices, other offices and functional unit volunteer groups. A Senior Social Volunteer Group (SSVG), comprised of retired KHNP employees and their spouses, was launched in September 2014. SSVG is extending their experiences and knowledge to society through practice of sharing.

"The world Where all of us are safe and happy"

People	Public Interest	Public Responsibility
Safety & Happiness	Loving Community	HR Development	Global Voluntary Service

People
Safety & Happiness
• Solar safety street lighting
• Plus Happiness, Wings to Hope Project
• Hope sharing concert

Public Interest
Loving Community
• Investment on local communities
• Health keeper for farming/fishing communities
• Tailored social contributions

HR Development
• Einstein Class
• Junior Engineering School
• KHNP scholarships

Public Responsibility
Global Voluntary Service
• Environmental Improvement
• Medical/Health
• Culture/Education

Social Volunteer Group (Head: CEO)

Head office (HQs) — Local office (Each workplace)

Medical volunteer groups, Local volunteer groups, Global volunteer groups, and Senior volunteer groups

Spreading a Culture of Employee Participation

The culture of participation in social welfare activities is spread across the entire organization, with board members, including the CEO, leading by example in activities for social contribution. The corporate culture of sharing is built by members participating in practical volunteer activities such as 'Serving food (Bobpeo)' and 'Briquette delivery'. KHNP is paying attention to constructing a welfare system through social investment and helping underprivileged people to stand on their own feet. In addition, KHNP has developed an online course, 'The Understanding of Volunteer Work', to develop the spirit of service in employees and to provide more systematical tools for social contribution. Furthermore, employees' awareness and participation are encouraged through motivational steps such as sharing details of best cases of social contribution at workshops.
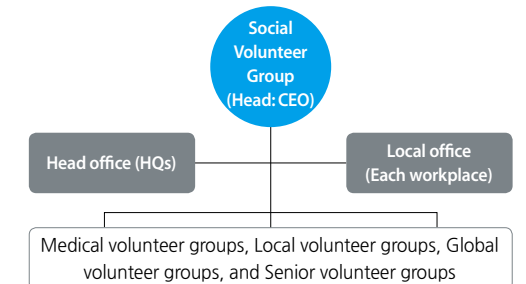
Expanding Funds for Social Contribution

Various funds such as 'Dandelion Spore Fund', 'Love Fund', 'Employees' Voluntary Donation', and 'Matching Grant*', sponsored by the company, have been created and operated. Approximately 91% of the total employee forces are participating in the Love Fund as of the end of 2014 and KRW 5.2 billion was raised for the Dandelion Spore Fund. The financial contributions gathered by employees are transparently used in supporting welfare facilities, supporting the vulnerable, promoting local culture, healthcare, sponsoring education and scholarships, and environmental protection. KHNP will increase the size of the funds for social contribution to KRW 9 billion in 2015.

* Matching Grant: a social fund raised by KHNP on a 1:1 matching basis

Dandelion Spore Fund
(Unit: KRW 100 Million)

2012	2013	2014
40.7	43.7	52

Reorganization of KHNP Social Volunteer Group

The KHNP Social Volunteer Group (SVG) has grown substantially in number and in terms of quality of services in

Joint labor and management, sharing love 'Bobpeo' volunteer service

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Local community engagement for social contribution

KHNP is working to fulfill its vision of social contribution, 'the World Where All of Us are Safe and Happy'. A social contribution model matching the strategy direction of 'Safety and Happiness', 'Loving community', and 'Human resource development' is promoted in all the local communities including the surrounding areas of NPPs. KHNP aims to be a company beloved by the public and pledges to carry out social duties as a public enterprise to the fullest through genuine activities for social contribution beyond simple donations.

Safety and Happiness

Plus Happiness, Wings to Hope Project

■ School buses support
■ Hope libraries support
■ Environmental improvement support

Support fund   (Unit : KRW billion)
1   1   3

40
60
16   16
16   25
15

2012   2013   2014

Ceremony of school bus support (Plus Happiness, Wings to Hope Project)

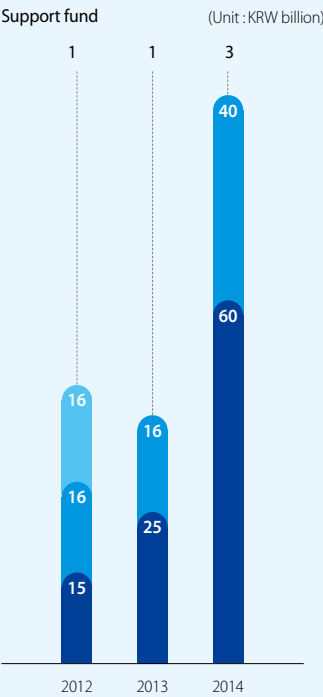### Plus Happiness, Wings to Hope

By means of the 'Dandelion Spore Fund', a social welfare fund has arranged by the board members and the company since 2012, and the 'Plus Happiness, Wings to Hope', activities such as supporting school buses and construction of the Hope libraries in local community child centers are intensively promoted throughout the nation. In 2014, the project budget was dramatically expanded to KRW 3 billion to support more areas in helping more children to study in a better environment. One 11-passenger van was provided to 60 community child centers to help children living in areas with inconvenient transportation so that they can safely commute to school. In addition, a total 40 of Hope libraries were constructed, and 600 books and a book data processing system were provided to each library. This project will be continuously expanded in the future to attach wings of dreams and hopes to children, and to build a safe and caring society.

Loving Community

Medical Check-Ups for Farming and Fishing Communities

Every year KHNP medical volunteer group members provide free high-quality medical check-ups and essential medicines to poor communities around NPPs. KHNP medical volunteer group plays an important role of a local community health support system by providing medical examinations and services such as blood tests, liver-function examinations, thyroid ultra-sonographies and bone density tests, consultations with physicians, surgeons and drug prescriptions. The total number of beneficiaries in 2014 was 2,307 and medical examinations, worth approximately KRW 330 million, were provided.

Activities of Health Keeper of Farming & Fishing Communities
(Unit: Persons, KRW Million)

Category	2012	2013	2014	Cumulative Total
Beneficiary	2,707	3,297	2,307	17,014
Fund	470	450	337	2,684

Emotional Engagement with Communities around NPPs

'Emotional engagement' activities have been developed to communicate with the communities near NPPs and to create a sense of unity with local residents. KHNP helps underprivileged citizens living in the adjacent areas through activities like 'house repair of love' and 'caring service for families headed by children and single senior citizens family'. Furthermore, KHNP's fellowship with the local communities was reinforced and partnership between 1 KHNP department and 1 sisterhood village covers now 301 villages near each NPP. KHNP purchases their products and helps farmers during high seasons.

Support Sports and Cultural Activities

Various cultural events such as 'local concert together with NPP', 'small love sharing concert for the underprivileged people', and sports events are held in farming and fishing communities where sports and cultural activities are relatively rare due to geographical conditions. KHNP is also supporting constructing sports centers and artificial lawns inside NPPs with free access to local residents and by organizing monthly film programs for free.

Performances of Strategic Projects in 2014

Safety & Happiness
• Solar safety street lighting:
  41 lightings installed at Hongjae-dong, Seodaemun-gu, Seoul
• Plus Happiness, Wings to Hope Project:
  60 school buses and 40 Hope libraries

Loving community
• Health Keeper for farming/fishing communities:
  2,307 beneficiaries/ Fund KRW 337 million
• House repairing project:
  KRW 110 million

HR Development
• Einstein Class:
  297 mentees with 90% satisfaction rate
• Junior Engineering School:
  2,308 mentees
• Scholarship for Youths:
  KRW 1.12 billion

Global Voluntary Service
• Dispatched 92 volunteers to Lao Cai in Vietnam / Fund KRW 450 million

First Prize in Social Responsibility Award 2014 for Economic Leaders of Korea

Prize of the Ministry of Health and Welfare in Share Korea Award 2014

First Prize of the Ministry of the Interior in Volunteer Award 2014

Human Resource Development

Einstein Class

A mentoring program, 'Einstein Class' has been held to minimize educational gap between urban and rural communities and develop human resources since 2010. College student mentors are selected via industry & academy cooperation program and help teenagers in rural areas to achieve their goals by guiding their studies and providing career counseling services. About 300 elementary, middle, and high school students received the services for one month during their winter vacation.

Through the Einstein Class the mentors are not only developing volunteer spirit but also easing their financial burden of university tuitions by receiving scholarship. The Einstein Class was first held in 2010 and the scale of the class has been continuously increased till 2015. Currently, the class is held at the HQs of 4 NPPs and for students living near the Han River Hydro Power Head Office. KHNP will foster outstanding individuals by providing various high-quality education endowment programs.

Junior Engineering Technology Class

KHNP is training youths interested in science through 'Junior Engineering Technology Class' together with the Korea Engineering Academy. The class targets students living near NPPs and is held twice annually. The mentor team comprised of KHNP employees who have completed teacher's training courses. They have successfully boosted students' interest in science by easy teaching scientific principles through interesting science classes and practice sessions. A total of 320 employees participated as mentors in 2014 and presented interesting technology classes to 2,308 students.

Launching of Einstein Class

Supporting Scholarship for Youth

Scholarships are provided to middle, high school, and university students coming from financially disadvantaged households. A total of KRW 1.12 billion of scholarship was granted to 2,454 students in 2014. KHNP is helping students to hold on to their dreams in spite of difficult circumstances and encouraging them to grow as outstanding individuals.

HR Development Performance

Category	2012	2013	2014
Einstein Class (persons)	240	239	297
Junior Engineering School (persons)	1,477	1,707	2,308
Scholarship for the Youth (KRW Million)	1,180	2,940	1,121

Social Contribution with Community Engagement in Areas of New HQs

KHNP is promoting various social contribution targeting local residents to form a bond with Gyeongju, the location of KHNP's new head office. 'Traditional Market Day' is held annually to promote the consumption of local products. One-to-one sisterhood partnership between each KHNP department and Gyeongju social welfare groups is being created through sharing value activities such as 'House Building of Love' for the underprivileged people in Gyeongju. KHNP is also supporting the cultural life of local residents and is contributing to revitalize local economy by holding 'KHNP's National Sports Soccer Championships' (April 2015) and 'Gyeongju Bonghwang-dae Pavi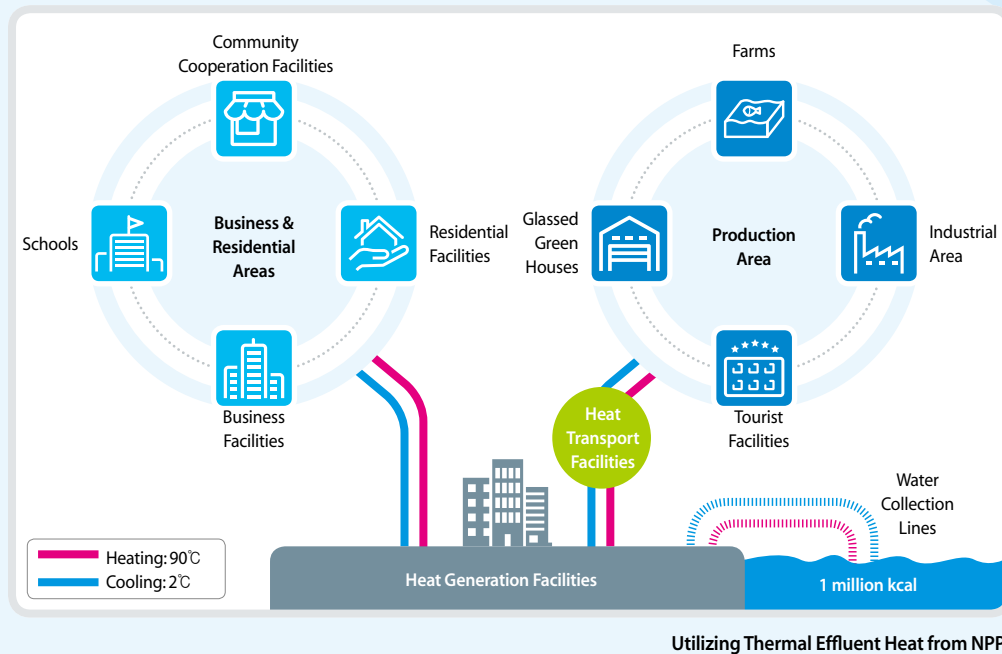lion Music Square' (August 2014), and sponsoring the music concert to celebrate the completion of Gyeongju Convention Center (May 2015).

House Repairing Project

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Activities for Social Contribution Reflecting Business Characteristics

Utilizing Thermal Effluent Heat from NPPs

Diagram labels: Community Cooperation Facilities; Farms; Schools; Business & Residential Areas; Residential Facilities; Glassed Green Houses; Production Area; Industrial Area; Business Facilities; Heat Transport Facilities; Tourist Facilities; Water Collection Lines; Heating: 90℃; Cooling: 2℃; Heat Generation Facilities; 1 million kcal

① Ceremony of installing safe solar street lighting at Gaemimaeul community
② Safe solar street lighting installed at Gaemimaeul community
③ 2015 Winter global voluntary service
④ 2015 winter global volunteer group
⑤ 2014 summer global volunteer group
⑥ Energy Farm cultural event
⑦ Energy Farm Book cafe
⑧ Energy Farm opening ceremony

Green House Using Thermal Effluent Heat of NPP

KHNP is promoting various business like green houses and aquaculture by supplying thermal effluent heat*, an unused energy resource. A high-tech greenhouse farming business using thermal effluent heat has been initiated in 2014 in a business agreement with Gyeongju for building an ecofriendly greenhouse complex. Greenhouses using recovered heat of thermal effluents have approximately 10 times higher productivity than plastic greenhouses and can save 70-80% of production costs as well on account of its excellent effects on reducing energy, heating costs, and CO_2 emissions. In addition, harvesting of agriculture products can be controlled so that can raise farm income. People's support and goodwill were drawn as a result of conducting training and information sessions on greenhouse farming by visiting interest groups. These measures helped to resolve the vague anxiety that local residents have toward thermal effluents from nuclear power plants and also educated them on the advantages of greenhouses using heat of thermal effluents. Through this business, KHNP is hoping to ultimately play a part in vitalizing the local economy, preparing a foundation for the coexistence of industry and environment and contributing towards creating local jobs and increasing income.

* Thermal effluent heat: Seawater used to cool down the turbine of NPPs. It is discharged to the sea after usage. Thermal effluents, discharged from NPP Unit 1, are released at a rate of 40t per second and total output is 4.46 billion ton annually. Since the output contains 25 million Gcal of thermal energy, it has high value as an energy source.

Solar LED Safe Streetlight

KHNP is promoting the 'Safe Streetlight Project' by installing streetlights using solar LED in areas vulnerable to crime all over the country. Safe streetlights are made with solar LED, are twice brighter than conventional streetlights and has excellent savings compared to public electricity fee since it consumes almost no generated power. As a pilot, 41 LED safe streetlights (37 solar streetlights and other 4 streetlights) were installed at Gaemimaeul, Hongje-dong and Seodaemun-gu, Seoul in 2014 by investing KRW 300 million from the company's budget. By reflecting the local residents' opinions in the project, the satisfaction of the residents was increased after the installation, and they could walk around the streets late at night without fear. KHNP will extend the enforcement of this project by securing additional budget of KRW 2 billion in 2015 and is currently promoting 'Solar Safety Streetlights' in 5 cities, including Yeongdeok in Gyeongbuk. The Solar LED Safety Streetlights project will contribute to improve the safety and happiness of the public and lighten up more areas, and will be promoted as a main project of KHNP's social contribution in the future.

Contributions to Global Social Welfare for Securing the Base of Overseas Expansions

KHNP is strengthening the basis of overseas expansion plans through social contributions targeting countries where the export of nuclear power plant is scheduled. Global activities for social contribution improve the image of KHNP in the eyes of local residents, leading to an indirect support for winning contracts of NPPs and hydropower business. KHNP is assisting developing countries in initiatives for improving the residential environment and supporting education and culture. The company is also resolving the social issues of developing countries.

'KHNP & Seoul National University (SNU) Global Voluntary Service Team', launched through industry-university cooperation, has been sent to remote towns of Vietnam twice every year since 2013. Ten employees of KHNP and 45 SNU students visited the Lao Cai in Vietnam in February and August of 2014, and volunteered their services in the fields of education, medicine, environment improvement, and culture. The camps were held for 12 days. Another service team, comprised of 11 KHNP employees and 39 SNU students, volunteered in the suburbs of Haophong, Cu Khe, Thanh Oai and Ha Noi in Vietnam for 14 days in January 2015. Additional service teams will be formed through industry-university cooperation with Ulsan University for similar activities such as educational service, labor sup port, and cultural exchanges in Kyrgyzstan, where the hydropower business is scheduled for promotion, in 2015.

The Opening of Energy Farm Cafe, a Public Service Place to Experience Energy

In November 2014, 'Energy Farm', an energy and culture experience cafe, was opened in YMCA building in Seoul in cooperation with CoffeeBean. Various experimental spaces have been organized to let visitors learn about energy in their daily lives. Inside the cafe, visitors can learn about energies through 'Energy table', showing the entire process of how electricity is supplied from a power plant through transmission towers and to homes. Visitors can experience energy generations through entertaining stories related to energy at game corners, a large screen that shows the present condition of energy across the world, and cell phone chargers. Opportunities for cultural experience are provided as well through award winning works of 'Dongri and Mogwol Literary Award', various cultural performance, and special lectures held by KHNP employees. A part of profits from Energy Farm is donated to Seoul YMCA and used as funds for youth development and scholarships.

Timeless Integrity

Management for Ethics,

"A Basic Mindset of Respected KHNP Members"

• Integrity
• Principle & Standards
• Transparent Process

Core Issues Consisting Core Aspects		
No.	Core Issues	Significance
Core 30	Strengthening Anti-Corruption Activities	High
Core 8	Transparent Information Disclosure	Medium
Core 31	Expanding Corruption Report System	Medium

Issues to Report Reflecting Core Issues
Think TRUST 5. Timeless Integrity
• Reinforce Ethical Management System • Foster a Culture of Integrity & Ethics

Think
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Timeless Integrity

" We will create rectitude and transparent KHNP by taking measures to prevent corruption and instilling a strict sense of ethics. "

Our Performance

Won the 2014 Korea Ethics Management Award (Public Enterprise Sector)
(Awarded by the Korea Ethics Society)

Ranked Up in the Evaluation of ACRC Korea
• 'Anti-Corruption Scheme' (Grade 3 in '13 → Grade 2 in '14)
• 'Integrity' (Grade 5 in '13 → Grade 3 in '14)
* ACRC : Anti-Corruption and Civil Rights Commission

Won the Award of Excellent Audit Practitioners of 2014 (Awarded by the Institute of Internal Auditors of Korea)

Business & Social Context

At the end of 2014, the 'Act on Management and Supervision of Nuclear Power Plant Operators for Preventing Nuclear Plant Mismanagement ('Nuclear Power Plant Supervision Law')' was legislated, legalizing the management's obligations and mandates for suppliers. This Law obliges on public institutions in charge of NPPs to perform management duties in a clean and safe manner and authorizes the government to manage and supervise the said institutions and to demand for rectifications and improvements when problems are discovered. The Law places special emphasis on harsh disciplinary action against employees working at public institution in control of NPPs if they are found holding an additional position at for-profit organizations, investing in related private companies or receiving bribes. The Law unequivocally shows the will to make a recommendation for dismissal of the chief engineer or executive director overseeing the institutions that do not comply with the demands for rectification coming from related departments.
After going through difficult times due to corruption cases in recent years, KHNP has galvanized its policies on the issue of corruption. The company has implemented sweeping reforms to its workforce and systems by taking stringent action against those involved in the scandal and by taking other necessary measures. Now, the employees are entrusted with the mission of plant seeds of integrity and reap an abundant harvest of trust. KHNP is now striving to create an even more stringent ethical management system. Our employees are expected to fully internalize and follow the newly established ethical management system and earn the trust of internal and external stakeholders.

Our Progress

With 'ethical management with voluntary employee participation for an upstanding KHNP' as its slogan, KHNP is endeavouring to create a culture of integrity where every employee follows the ethical code. Specifically, in order to become a 'company with the highest level of integrity and clean and transparent management', KHNP is implementing four projects: 'implementing policies aimed at rectifying corruption related issues', 'taking preventive measures for unethical activities', 'creating an environment which makes it possible to implement ethical management' and 'internalizing the code of ethics by employees'. In recognition of such efforts against corruption, KHNP's rank by the Anti-Corruption and Civil Rights Commission went up by two places. KHNP is also awarded amongst public enterprises at the 2014 Korea Ethical Management Award.

Future Plan

In order to become an ethical organization with the highest integrity, KHNP seeks to develop our ethical management (EM) system even further and make the culture of ethics and integrity the central part of the company. KHNP will develop various advanced EM programs aimed at allowing employees to freely participate in EM and contribute their ideas, and will improve EM system in order to monitor its performance indices systematically. KHNP will improve employees' understanding of integrity and organize ethical education programs and inspiration to instil ethical values within employees. Furthermore, we will strengthen the cooperation with related organizations to create an ethical network and spread the culture of integrity through the entire NPP industry.

Strengthening the ethical management system

Advancing Strategies for Implementing Ethical Management

KHNP has established 'realization of KHNP as a transparent and ethical organization known for the highest level of integrity' as its vision for EM. Every employee is making an effort to realize the ideal of an upstanding KHNP through adopting thought processes guided by ethical considerations and trying to act in an ethical manner. Systematic and intensive EM initiatives are focused on customized ethical education programs for the management and staff and pre-emptive measures when it comes to departments and responsibilities that carry a high degree of risk. In addition, in a bid to implement EM practices not just for our employees but also for suppliers, KHNP has for the first time ever for a government entity introduced the Code of Ethical Conduct for Suppliers.

Vision	Realization of KHNP as a transparent and ethical organization known for the highest level of integrity			
Slogan	Ethical management with voluntary employee participation for an upstanding KHNP			
Strategies	Further develop the ethical management regulations & systems		Foster culture of integrity and ethics across the enterprise	
Tasks	Implementing policies aimed at rectifying corruption related issues	Taking preventive measures for unethical activities	Creating an environment which makes it possible to implement EM	Internalizing the code of ethics by employees

Implementing changes to the EM system to eradicate corruption related to NPPs

KHNP implements three key initiatives of 'eradication of the misuse of connections', 'overhaul of purchasing processes and 'strengthening quality control' according to our comprehensive corrective action plan in order to systematically prevent corruption.
Eradication of the Misuse of Connections By preventing companies employing former KHNP employees from participating in bidding processes and expanding the types of positions affected by the limit, KHNP has enabled retired employees to find other works and prevented misuse of connections. Hiring 116 people of external talents is an example of KHNP's efforts to eradicate misuse of connections.
Improvement of Purchase System KHNP has strengthened the independence of the purchase system by establishing a SCM team and a production cost investigation team. The company has increased the bid transparency by announcing purchase plan earlier, employing pre-verification of purchase specifications about quality level equipment, and implementing a best value bid system.

As a result of these initiatives, the direct contract rate decreased to 25.4% by the end of 2014 (29.9% in 2012).
Strengthening Quality Control To enhance the transparency of quality control, KHNP implements measures such as 're-examination process by a third organization', 'assuming the responsibility for the cost of quality test' and 'establishing a NPP quality verification center within NPP industry'.

EM System Improvement

KHNP is building a KHNP of high integrity through introducing changes to various systems and preventing occurrence of corruption.
Anti-corruption Regulation The code of ethical conduct for government officials, reflecting the ethical standards they should follow, has been revised. Furthermore, regulations regarding preparation of charge sheet and requesting investigation guidelines for employees' job related crimes were revised by adding 'misuse of government funds' to the clauses for initiating legal action. Furthermore, for the first time ever for a government entity, KHNP has established 'guidelines for prohibiting job related business investment' and is operating voluntary reporting period for employees holding stocks in privately and publicly traded suppliers. In 2014, all 72 employees that voluntarily reported their share holdings sold their stocks.
Registration of Property for Employees over Level 2 The property registration mandate for employees at level 2 and above used to be voluntary but it became compulsory in July 2014. By now 933 employees at level 2 and above have reported their properties, and efforts are being made to implement transparent EM for the reported assets.
Registration System for Companies owned by Employee's relatives KHNP has established a system that stipulates reports to HR department are required when companies owned by employees' relatives register as suppliers. After the system was established, 64 employees reported to the HR department.
One-strike Out Policy The 'One-Strike Out System' was introduced to strictly manage job related corruption and accepting of bribery and other types of favours. The disciplinary action guideline has been strengthened by enabling dismissal for even minor corruption involving less than KRW 100,000.
Internal and External EM Online System The corporate groupware, an online-based system, which enables real-time communication amongst the employees, has been overhauled to help employees to understand and apply various ethical management contents. To encourage internal and external stakeholders to adopt EM guidelines, KHNP is sharing the notable EM initiatives through the restructured online

Strengthening the EM Monitoring and Reporting System

Whistle-blowing Program

In order to meet the need to detect corruption involving delivery and quality assurance before they happen and to vigorously implement the EM system, a reporting system named 'Red Whistle' has been commissioned since 2012. All reports are processed anonymously and whistleblower's online submission is untraceable. The access the reporting site was facilitated by allowing access through various types of medium such as PC, smartphone and Quick Response code. In 2014, a total of 27 cases were reported involving corruption, illegal activities, irrational practices, and unethical actions.

Red Whistle Report Process

Filling the report form
↓
Submission to Audit Office
↓
Review & investigation
↓
Notification to the whistle blower

※ Red Whistle, the operation agency has no access to the report or the investigation results.

Offering Fast Access and Accurate Release of Information through the Integrity Management Notice

KHNP operates numerous communication channels for sharing information related to operation and management of NPPs for the sake of the public's right to know. When making quarterly scheduled announcements, PR team leader directly verifies and signs confirmation papers. This has helped improve the accuracy of the announcements and created a system where personnel take responsibility for announcements being made. PR employees are regularly offered education and training programs regarding the nature and scope of communications in the nuclear power industry. A 'Day for Confirming Non-scheduled Announcements' is also held every Wednesday to avoid information being omitted or delayed and to improve the speed of conveying non-scheduled announcements. KHNP has improved the quality of management notices by establishing an index related to management notices within its internal management assessment system (an index for measuring the efforts made to implement tasks which are given priority by the government) as well. As a result, while KHNP received 126 penalty points in 2013 during management notice inspections carried out by relevant governmental agency, it managed to drastically reduce the amount of penalty points to only 5.3 points in 2014.

In-stock
- Assign a serial number for each stock
- Attach electronic tags (material ID)
- Record and manage stock transaction history

Installation
- Remove electronic tag (RFID)
- Register maintenance and usage records to the work order
- Transmit the usage histories

Take In/Out Control
- Transmit material issuance records to portable devices (PDA)
- Verify take-out items using portable reader and transmit the results

Repair & Disposal
- Request disposal of waste materials
- Transport approved materials and transmit the disposal results

Equipment Management System · Sustainment Maintenance System · Access Control System · Waste Management System → Integrated Database for History Management (Materials Master, Facilities Master, Suppliers Master, SAP ERP) → Equipment Tracking Management System

KHNP Ethics Ombudsman

Since June 2014, KHNP has been operating the 'KHNP Ethics ombudsman' system, a revamped version the previous ombudsman(grievance settlement committee) system. The system is expected to aid in planning for sustainable growth as a government entity and building an even higher level of trust with stakeholders within and outside of the organization. Composed of experts from all fields, five ombudsman members are scheduled to hold regular meetings in each quarter during their three-year term as well as hold field meetings, visiting the locations mentioned in civil complaints once a year.

In 2014, the jurisdiction range for ombudsman was expanded from issues concerning civic complaints to include issues that deal with integrity and other critical issues as a way to promote a vigorous and Ethics Ombudsman System. Proposals made by ombudsman system were vigorously pursued and a total of seven cases were implemented, allowing KHNP to receive perfect scores on the 'Ethics Civil Audit System' index of the Anti-Corruption and Civil Rights Commission. Starting in 2015, KHNP is planning to adopt and operate an even more transparent 'Ethics Civil Audit System' by forming a consultation group with 19 government entities in accordance with government policies.

Appointment Ceremony for the KHNP Ethics Ombudsmen

Establishment and Operation of Equipment Tracking Management System

In order to prevent delivery corruption and carry out effective management of inventory assets by eliminating blind spots within equipment management, KHNP has established and has been operating an equipment tracking system. This is an IT-based system, which integrates and combines 'equipment management system', 'maintenance management system', 'general waste management system', and 'NPP control system' and, by attaching RFID tag and QR code for each equipment, tracks equipment throughout its lifecycle from its arrival at the warehouse to disposal. KHNP will fundamentally block the possibility of delivery corruption, an area that was shown to have problems in the past, and regain the trust of the public through transparent and thorough management of equipment made possible by using the IT-enabled equipment tracking management system.
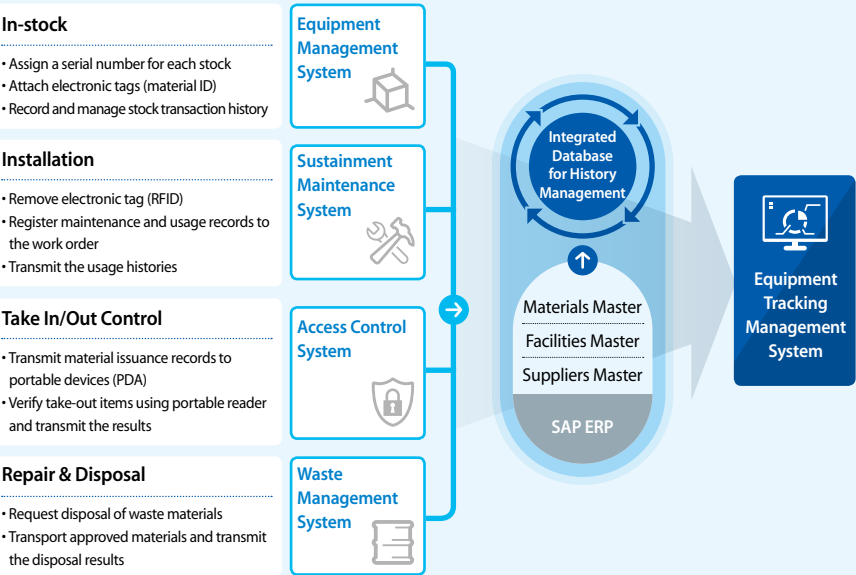
Making an Ethical Culture an Integral Part of KHNP

Creating the Environment that allows Participation in EM

EM not only needs the will for creating an ethical organization amongst board members; rather, it takes voluntary participation of every single employee.

As such, KHNP has created an environment that makes it possible to proactively pursue ethical management and satisfy the prerequisites needed to inculcate an ethical culture with high integrity.

EM Instructors

Since 2012, EM instructors have been trained to instil an ethical culture by extending ethical education to suppliers. EM instructors are specialists with in-depth knowledge in EM. They offer consultation and coaching services to handle tasks related to ethical issues through education classes for suppliers. Chosen from among employees who either have been recognized by KHNP for exemplary ethical conduct or completed the EM course, the instructors hold meetings targeted suppliers working with different branches of KHNP and help suppliers better understand the concept of an ethical corporate culture through suitable educational contents. In 2014, 21 EM instructors were trained and these instructors held a total of 56 meetings (once per quarter) at 14 different suppliers.

Vitalization of the ethical mileage system

The 'Ethical Mileage System' has been applied and operated from 2010 to promote the spirit of rectitude among employees. Employees receive mileage based on the list of evaluated items, which include ethical activity performance and awards from within and outside of the organization, and outstanding employees with the highest scores are certified as ethical employees by KHNP. When selected as an ethical employee, a seal of certification is shown on the personal information page on the intranet portal showing the employee's integrity.

In 2014, 44 employees were chosen as ethical employees and starting from 2015, efforts will be made to invigorate the Ethical Mileage System even further by bringing changes to the list of evaluated items.

Number of Ethical Management Instructors (Unit: Persons)
2012: 21 | 2013: 16 | 2014: 21

High-ranking Employees Holding Integrity Oath Ceremony

Fifty employees ranging from the executive director, administrator and section chiefs from headquarters and managers at 1st level office participated in the Integrity Oath ceremonies. In the oath, five rules concerning implementation of an ethical culture such as 'prohibition of abusing power and authority' and 'prohibition of accepting bribery and special treatment' were outlined alongside other rules. Through the integrity oath, high-ranking employees made a commitment to live an ethical and frugal life as an employee of a government entity in order to eradicate corruption and serve as a role model in the efforts to create a fair society.
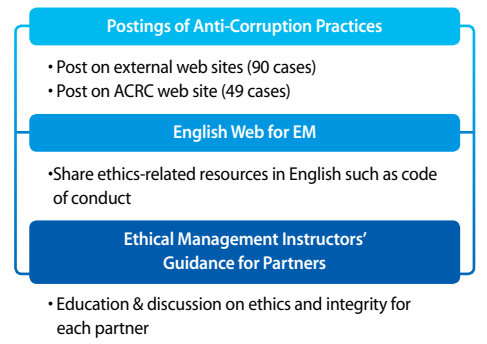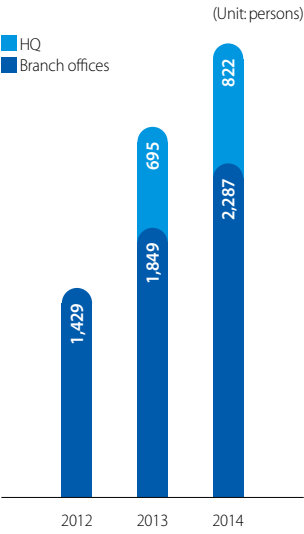
2015 Integrity Oath ceremony

2015 Integrity Oath Ceremony

Strengthening the ethical management network and spreading information about outstanding cases KHNP is strengthening cooperation with related organizations to spread EM awareness. In 2014, KHNP held 'NPP Safety and Integrity Workshop (March)' and 'Integrity Pledge Contest' (April), through efforts by the CEO and suppliers, and joined the 'Creating Transparent Society Network' as a founding member for the unity of an ethical network throughout the industry. Furthermore, KHNP is sharing and promoting information about outstanding cases of EM to strengthen the DNA of integrity throughout the NPP industry and improve on the ethical image of KHNP.

Ethical DNA Propagation Campaigns

Postings of Anti-Corruption Practices
- Post on external web sites (90 cases)
- Post on ACRC web site (49 cases)

English Web for EM
- Share ethics-related resources in English such as code of conduct

Ethical Management Instructors' Guidance for Partners
- Education & discussion on ethics and integrity for each partner

Improvements in the Ethical Mileage System

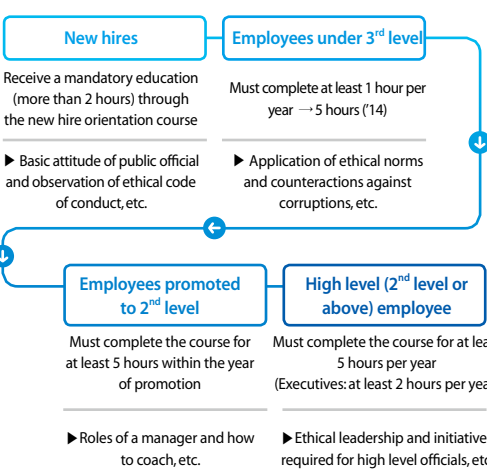| Items	Previous (2014)	Improvements (2015~)
Social activities (max. 20 points)	Point starts at 10th hour of service	1 point for an hour
Ethical educations (max. 30 points)	Offline courses only (15 points)	Includes ACRC cyber course (6 points)
Ethics-related award wins (max. 10 points)	Points to awards winners (5 points per each win)	Additional points to KHNP Ethics Ombudsmen

Internalization of Ethics within Employees

KHNP is continuously implementing various integrity education initiatives such as customized ethical education for employees and group education classes targeted at employees of its regional offices located throughout the country. Especially, by moving away from the traditional format of lectures and offering participatory education through plays and discussions about the issues related to integrity, KHNP is making efforts to ensure that its employees actually enjoy attending ethical education classes.

Implementation of Public Office Lifecycle Ethical Education

From newly hired employees to board members, every employee working at KHNP has to complete ethical education without exception. KHNP enables new employees internalize an ethical culture where people lead by examples and develop their ethical character and knowledge. Various courses, including 'Basic Attitude of the Public Official' and 'Observation of the Ethical Code of Conduct' for junior employees and programs such as 'Ethics Leadership' for high-ranking officials are regularly organized. In 2014, 236 employees completed 3 specialized courses including 'Ethical Leader' (took place four times) and 'Ethical Decision Making Skills' (took place eight times) and 6,686 employees completed courses offered online.
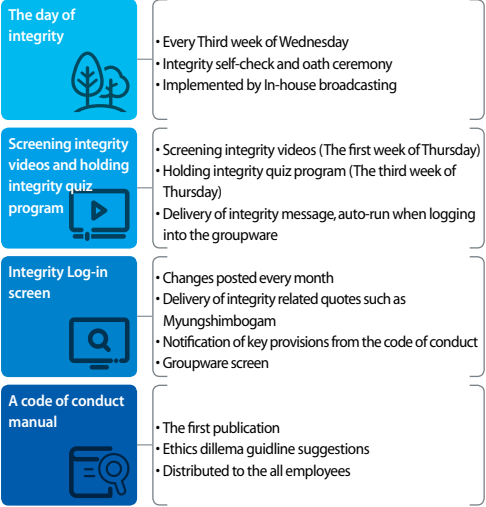
Bringing Ethical Education to Employees

KHNP is offering ethical education classes held by one of the executive auditor for personnel at the HQs and offices throughout the country. During these ethical education classes, the direction of policies regarding integrity and examples of actual corruption cases are introduced and presented for discussions of among the attendees. Through such efforts, KHNP is creating more effective ethical policies that reflect the opinions of employees actually working in the field. In 2014, ethical education was offered to a total of 3,109 employees.

Encouraging Employee Participation in EM

By operating various ethical programs aimed at creating an ethical culture and facilitating employee participation in these programs, efforts are being made to form a consensus on the concepts of integrity and an ethical culture. The slogan for the ethical management drive was selected by holding a contest open to employees, and "Integrity! The seed for a clean KHNP" and six other items were selected in 2014. Moreover, through 'Rumble about Integrity Board' at its intranet portal and having employees post about their experience of wearing integrity bracelet on the 'Integrity Bracelet Relay' section, KHNP has opened a pathway through which employees can directly participate in ethical management.

Employees completed the Integrity Circuit Education Courses

(Unit: persons)

- ■ HQ
- ■ Branch offices

Year	HQ	Branch offices
2012	1,429	
2013	1,849	695
2014	2,287	822

Structure of Public Office Lifecycle Ethical Education

New hires	Employees under 3rd level
Receive a mandatory education (more than 2 hours) through the new hire orientation course	Must complete at least 1 hour per year → 5 hours ('14)
▶ Basic attitude of public official and observation of ethical code of conduct, etc.	▶ Application of ethical norms and counteractions against corruptions, etc.

Employees promoted to 2nd level	High level (2nd level or above) employee
Must complete the course for at least 5 hours within the year of promotion	Must complete the course for at least 5 hours per year (Executives: at least 2 hours per year)
▶ Roles of a manager and how to coach, etc.	▶ Ethical leadership and initiatives required for high level officials, etc.

The day of integrity	• Every Third week of Wednesday • Integrity self-check and oath ceremony • Implemented by In-house broadcasting
Screening integrity videos and holding integrity quiz program	• Screening integrity videos (The first week of Thursday) • Holding integrity quiz program (The third week of Thursday) • Delivery of integrity message, auto-run when logging into the groupware
Integrity Log-in screen	• Changes posted every month • Delivery of integrity related quotes such as Myungshimbogam • Notification of key provisions from the code of conduct • Groupware screen
A code of conduct manual	• The first publication • Ethics dillema guidline suggestions • Distributed to the all employees

Organizing Plays and Other Forms of Emotional Ethical Education

By not relying on a dry, factual and lecturing style of ethical education and instead offering emotionally oriented contents through plays; KHNP has been able to let employees relate to values at a deeper level. Within the form of a play filled with laughter and inspiration that at once defines the meaning of rectitude and ethics, discusses actual corruption cases, analyzes the reasons behind corruption and talks about possible corrective action once corruption cases are discovered, KHNP enables employees to easily understand the concepts behind an ethical culture and integrity and internalize such values.

Total 8 business locations (Including HQs)

815 employees completed (2015)

Appendix

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APPENDIX

Other Sustainability Performances — Third-party Assurance Statements — SR10 Certificate — GRI Index — Membership and Participating Principles   71

Other Sustainability Performances

Economy

Major Financial Performances

With the new NPP construction and partial cash saving from decommission cost, KHNP's asset in 2014 increased by 5.33% compared to the previous year. Debt ratio improved from 132.1% to 128.7% by the promotion of debt reduction, and the capital increased by 6.91% compared to the previous year due to the generation of net profit.
While sales of KHNP has increased with the increase of profit in the UAE NPP business and the rise of electricity sales volume and sale price of electricity, current net income drastically increased compared to the previous year thanks to the re-operation of NPP #3 and the stable operation of the NPP.

Key Financial Performances

(Unit: 100 Million KRW)

Items	2012	2013	2014
Revenue	67,173	63,984	95,035
Operating profit	4,175	2,610	25,206
Net profit	1,250	(1,883)	14,405

Financial Statements

(Unit: 100 Million KRW)

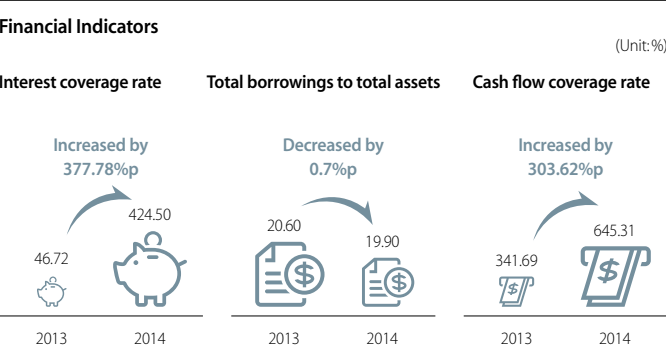| Items		2012	2013	2014
Assets	Current	29,601	36,424	42,402
	Noncurrent	421,694	433,380	452,433
	Total Assets	451,295	469,804	494,835
Liability	Current	24,856	29,465	25,940
	Noncurrent	222,223	237,968	252,545
	Total Liabilities	247,079	267,433	278,485
Capital	Capital	107,045	107,045	107,045
	Surplus	97,631	95,639	109,757
	Other capital	-460	-313	-452
	Total Capital	204,2126	202,371	216,350

Research & Development (R&D) Investment Cost

KHNP promotes R&D for 13 representative technologies and is successfully entering the global market based on them. KHNP is also contributing to the mutual growth through the technology support for co-operating SMEs.

(Unit: 100 Million KRW)

Items	2012	2013	2014
R&D investment	3,316	3,369	3,031

Financial Stability Assessment

Financial Indicators

(Unit: %)

Interest coverage rate	Total borrowings to total assets	Cash flow coverage rate
Increased by 377.78%p	Decreased by 0.7%p	Increased by 303.62%p
46.72 → 424.50	20.60 → 19.90	341.69 → 645.31
2013 2014	2013 2014	2013 2014

Credit Rating

STANDARD & POOR'S	MOODY'S
A+	Aa3

Major Management Performance

KHNP has achieved an excellent management performance in comparison with global competitors. The utilization rate of the NPP in 2014 increased largely due to the decreased number of failure stop per reactor and the re-operation of 3 reactors compared to that in 2013.

Category	Unit	2012	2013	2014
NPP usage	%	82.3	75.5	85
Failures	Cases (cases/units)	9 (0.39)	6 (0.26)	5 (0.22)
Power sales	Billion kWh	148.52	138.02	155.01
Investment on plant construction	KRW 100 million	23,742	17,629	21,312
Construction progress	%	79.67	81.07	83.86

Economical Value Distribution

KHNP is distributing economical values created through operations to its stakeholders via corporate tax payment, wages and benefits & welfare, and social contribution cost.

Category	Items	Unit	2012	2013	2014
Government	Corporate tax	KRW 1,000	223,704,712	18,183	590,687,272
Employees	Avg. compensation per capita	KRW 1,000	78,945	76,272	79,947
Communities	Social contribution expenditures*	KRW million	40.7	43.7	52

* Dandelion Spore Fund (enforced amount)

Environment

Energy Consumption & Greenhouse Gas Emission

Energy Consumption by Business Units

(Unit: 10×TJ)

Business Units	2012	2013	2014
Nuclear power HQ	1,534	1,464	1,268
Pumped storage plant	4,604	5,201	6,388
Hydro power plant	5	4	5
Other special business units	15	14	15
Total	6,158	6,683	7,676

Greenhouse Gas Emission by Business Units

(Unit: 1,000tCO$_2$eq)

Business Units	2012	2013	2014
Nuclear power HQ	818	761	641
Pumped storage plant	2,237	2,526	3,103
Hydro power plant	2	2	2
Other special business units	7	7	7
Total	3,064	3,296	3,753

Waste Treatment

(Unit: tons)

Types of Waste	2012	2013	2014
Recycling	7,598	9,404	6,843
Combustion	913	1,081	815
Land-fill	3,076	2,622	2,581
Others	50	105	101
Total waste amount	11,637	13,212	10,340

※ Source: Cumulated amount of treated wastes of Nuclear Power HQ

Purchase of Green Products

Category	Unit	2012	2013	2014
Total purchase	KRW 1,000	12,665,521	16,971,170	17,399,575
Green product purchase	KRW 1,000	12,436,445	16,332,413	16,252,203
Green product purchase ratio	%	98.2	96.2	93.4

※ Source & calculation basis: Green Purchase Information System of Korea Environmental Industry & Technology Institute (http://gd.greenproduct.go.kr), Public Procurement Service of Korea, Green Market purchase data.

Environmental Preservation

Changes in Algae Clusters around NPPs

(Unit: algae population/m³)

Category		2012	2013	2014
Captured species	Kori	46	48	48
	Wolsong	49	49	52
	Hanbit	28	23	27
	Hanul	199	77	87
Average standing species	Kori	305	199	211
	Wolsong	208	189	204
	Hanbit	7	4	4
	Hanul	111	86	101

Marine Zoobenthos around NPPs

(Unit: algae population/m³)

Category		2012	2013	2014
Captured species	Kori	126	134	155
	Wolsong	128	142	141
	Hanbit	58	83	102
	Hanul	343	286	304
Average standing species	Kori	668	687	823
	Wolsong	689	683	695
	Hanbit	106	159	174
	Hanul	2,481	1,952	1,948

Environment-friendly Power Generation Plan

(Unit: MWh)

Category		2014	2015 Schedule	2018 Mid-term Plan
Mandatory supply (A)		2,523,871	2,662,760	4,091,710
Carry-over (B)		165,790	315,291	442,811
Implementation Performance	Solar	193,898	313,743	521,938
	Hydro	738,647	517,053	1,342,664
	Fuel-cell	798,467	798,467	2,278,767
	Wind	-	-	240,900
	Geothermal	-	-	86,502
	Biomass	-	-	234,155
	External purchase	246,481	819,359	219,359
	Total (C)	1,997,493	2,448,622	4,924,285
Total amount	Implementation Rate ((C-B)/A)	71.78%	80.12%	109.53%

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APPENDIX

Other Sustainability Performances | Third-party Assurance Statements | SR10 Certificate | GRI Index | Membership and Participating Principles | 73

Other Sustainability Performances

Society

Status of executives and employees and recruitment

KHNP is calculating the demand for manpower by reflecting various drives of business environment on domestic NPP construction and overseas expansion of NPPs according to the 2nd Basic Energy Plan. The mid and long-term forecasting of labor demands until 2025 has been prepared, and the company supplies manpower flexibly reflecting the change of business environment. Currently, KHNP is preemptively increasing the number of workers based on the guideline of expanding manpower to 12,781 people until 2025.

Employment Type & Human Resources by Regions

(Unit: persons)

Category		2012	2013	2014
Total employee		9,337	9,533	9,816
Position	Executive	6	4	6
	Middle manager	3,090	3,193	3,404
	Staff	6,241	6,356	6,406
Region	HQs	1,326	1,194	1,290
	Nuclear Power HQs	6,602	6,919	6,789
	Hydro & pumped storage	810	771	763
	Other units	599	669	974
Average tenure (years)		15.3	15.2	15.1

Retires & New Hires

(Unit: persons)

Category		2012	2013	2014
Regular retire		185	196	204
Voluntary retire		14	13	11
Permanent Hire	Female	118	125	114
	Disabled	18	7	3
	Native locals	448	409	453
	High school diploma	132	189	196
	Engineering major	585	561	349
	Sub total	697	627	678
Temporary Hire	Internship	606	686	939
	Short-term	151	232	230
	Sub total	757	918	1,169

Females & Disabled People

(Unit: persons)

Category	Unit	2012	2013	2014
Female	Population	Persons	798	899	971
	Proportion	%	8.5	9.4	9.9
Female team leader or in higher positions	Population	Persons	4	7	7
	Proportion	%	0.5	0.78	0.72
% of Disabled	Proportion	%	3.1	3.1	3.07

Expansion of Professional Manpower

As of 2014, employees with tenure under 5 years made up 27% of the total employees. The percentage of new hires has continuously increased due to the expansion policy of hiring new recruits. The recruitment of experienced workers is also expanding to solve the lack of experienced manpower in the technology field. In 2014, 118 people were employed as field specialists with long-term experience in NPP maintenance including professionals of machine and design verification, purchasing techniques, lawyers, and accountants. Reward systems and HR systems have been organized to attract outstanding people.

Creation of Jobs in The Private Sector

KHNP is contributing to create domestic jobs through non-core task outsourcing, investment business orders, partnership with private sectors, fostering of functional and professional manpower, and social contribution with the goal of creating sustainable high quality jobs. Although the performance of job creation in 2014 fell compared to the previous year, high quality jobs were created due to the 2% increase in the area of regular permanent position.

(Unit: persons)

Category		2012	2013	2014
Outsourcing	Permanent	4,153	4,131	3,314
	Temporary	688	723	728
Investment project	Permanent	733	103	263
	Temporary	2,579	589	543
Partnership (private sector)	Permanent	100	133	26
	Temporary	75	780	38
Skilled manpower employment	Permanent	45	12	17
	Temporary	655	75	37
Social contribution	Permanent	68	184	6
	Temporary	407	739	793
Total	Permanent	5,099	4,563	3,626
	Temporary	4,404	2,926	2,139

Human Resources Development

KHNP is conducting customized training for each job category, position, and level to strengthen the capabilities of employees according to the human resources development strategy. The company optimized basic training system in 2014 to strengthen the capabilities of entry level employees, and has expanded a leadership training to respond to the changes in business environment with the goal of training integrated business leaders.

Average Training Budget per Person

The total training budget was KRW 31.7 billion in 2014, and KRW 2.7 billion was spent more compared to the previous year, and the training budget per person was KRW 3.41 million.

(Unit: KRW million)

Category	2012	2013	2014
In-house training	2.15	2.29	2.32
External training	1.09	1.01	1.01
Online training	0.14	0.1	0.08
Total	3.38	3.4	3.41

Training Performance by Courses in 2014

Category	Unit	Common	Leadership	Vocation	Global	Total
Course	Courses	37	47	1,206	47	1,337
Person	Persons	1,523	1,319	16,065	540	19,447

Fostering Job Experts

KHNP trains job experts for the safe operation of NPPs. Through introducing 'Job performance ability certification system', certificates are issued to KHNP employees, who passed an assessment requirements of knowledge and skill for each job. Certified employees are acknowledged for their unique capability of job performance. Applying the expansion of this system in 2014, it was mandatory for new recruits to acquire the certification before they were assigned to positions. The entire development team in NPPs was required to acquire the certification. As a result, the secured rate of job experts with internal job performing ability certification or RO/SRO increased by 2.5% to 63.7% compared to 2013.

Sexual Harassment Prevention Training

KHNP conducts sexual harassment preventive training at the HQs and 14 business offices at workplaces. For providing a more professional training, the company invites external instructors and the CEO also attends the training.

(Unit: Times)

Category	2014 Number of training
HQ	4
Plants	36
Total	40

IT Security Education

(Unit: Persons)

Category	Method	Course	2013	2014
IT Security Manager	Collective	Education of Enterprise-wide cyber security practitioners	-	21
		Education of infrastructure manager	-	45
		Education of PII** manager (HQs)	66	66
	Commissioned (MOTIE*)	On-the-job training for information security practitioners	67	31
General Staff	e-Learning	Information security training	3,384	3,384
		Understanding PII and information security	-	7,267
	Collective	Special lecture on information security and PII (HQs)	66	719
		Training on information security and infrastructure (plants)	756	163
		Security education for new entry and careers (Human Development Center)	-	876
Total			4,339	12,572

* Ministry of Trade, Industry & Energy of Korea (Increased by 290% from the previous year)
** Personally Identifiable Information

Support for Executives and Employees

KHNP operates family-friendly programs per lifecycle to support both work and family of employees. Flexible working is expanded and applied by understanding the needs of KHNP employees to improve the constraints of nuclear power industry. In this industry, a work-life balance is difficult to keep as there are many field workers and a long-time work is required.

The Status of Flexible Work

Alternative work schedule has been conducted in the company since 2013, and the operational method of this system was diversified in 2014. The system was expanded to 5 days from Monday to Friday and allowed employees to freely select working hours between 7am to 8pm. The alternative work schedule is 15-30 hours work/week, which is possible to work less than 5 days/week, and it is operated by freely selecting working hours for each day of a week. KHNP settles stably flexible work by prohibiting discrimination in wages, working conditions, evaluation, and promotion against employees using this system.

(Unit: Persons)

Category	2012	2013	2014
Work hour selection	21	32	33
Alternative work schedule	1,957	2,910	3,196

Status of Maternity and Paternity Leave

To encourage childbirth, KHNP provides the period of childcare leave up to 3 years. For the third child, the entire period of maternity leave is included in tenure. In addition, a working hour reduction system is also operated to allow those who replace childcare leave to a shorter working hour.

Category	Unit	2012	2013	2014
Maternity leave	Persons	58	72	78
Return after maternity leave	%	100	100	100
Childcare leave	Persons	49	59	121

Other Sustainability Performances

Status of Labor Relation Advancement and Labor Union

KHNP labor union, established in August 10, 2001, is consisted of a central labor union, 7 headquarters, and 41 branch offices. As of the 2nd quarter of 2015, 6,227 out of total 10,130 employees (61.47%) have joined the labor union. KHNP signed a Time-off contract with the labor union in August 2011. On the basis of the Time-off system, 24,200 time-off hours corresponding to 13 employees are acknowledged and 2 unpaid predecessors are additionally acknowledged.

(Unit: Persons)

Name of offices	Number of union members
Headquarters	407
Nuclear HQ	4,860
Hangang Hydro HQ	214
Pumped Storage Plant	332
R&D Centers and Education Institutes	414
Total	6,227

Labor-management Relationship

KHNP has re-established an advanced strategy of labor-management relations responding to the change of business environment. To increase the execution power of the labor-management relation strategy, KHNP increased 39% of the labor group in HQs to 25 people and expanded 200% of the labor group in branch offices to 24 people in 2014. In addition, based on a result of employees' satisfaction in 'efforts to reflect members' opinions' and 'labor union's trust in the management' on November 2014, a tension between labor and management is considered to eased due to value creation and business performance that are achieved by the co-operation of labor and management.

(5 Point Scale)

Category	2012	2013	2014
Labor union's trust in the management	3.39	3.10	3.21
Labor-management relationship	3.17	3.03	3.13

Singing of Collective Agreement to Correct Irrational Labor Practices

KHNP has set a rational improvement system of collective agreement and agreed to provide rational compensation and welfare system in compliance with the Korean government's guide. The period of general meeting and working-level meetings for collective agreement was shortened by reestablishing the negotiation procedures. KHNP has contributed the advancement of collective agreement and improving rationally labor-management relation.

Communication Between Labor and Management

Various grievance settlement channels, including K-PACS (personnel grievance consultation system), labor-management counsel, and 'Invitation', a program for constant conversation between labor representatives and the management have been prepared to pre-emptively respond to labor-management conflicts. Opinions of executives and employees are collected through these channels.

Employees' difficulties are resolved and work satisfaction is improved by actively handling collected opinions.

(Unit: Cases)

Category	2012	2013	2014
No. of grievance reports accepted	238	263	217
No. of corrective actions taken by the reports accepted	209	237	195
Action rate to grievance acceptance (%)	88	90	89.9

Executives and employees Health & Safety

Injuries & Occupational disease rate

Category	Unit	2012	2013	2014
No. of employees with injury & disease	persons	0	1	0
Rate of employees with injury & disease	%	0	0.01	0
Loss days due to injury and disease	days	0	19	0
Rate of loss days related to injury & disease	%	0	0.001	0
No. of job related death	persons	0	0	0
Absence rate	%	0.053	0.023	0.028
No. of employees with occupational disease	persons	0	0	0
Rate of employees with occupation disease	%	0	0	0

Strengthening Communication with Buppliers

KHNP practices mutual growth by conforming to needs through two-way communications with suppliers. KHNP canvasses opinions of suppliers by expanding communication channels of mutual growth meeting supervised by the CEO, Voice of Customer collection by each branch office, and visiting suppliers.

Category	Performance
CEO-hosted discussion on mutual growth	• Regular meetings with suppliers' CEOs (25 companies)
Visiting discussion with the management	• KHNP management visits suppliers (5 companies)
Discussions at plant sites	• Discussion with suppliers of each Nuclear/Hydro HQs and plant (Twice a year)
Atom Mentor	• 24/7 consulting for suppliers (31 companies)
MOU with women-owned venture companies Tech. transfer MOU MOU with venture companies	• Declared mutual growth with SMEs and ventures and accepting discuss suggestions (15/4/17 companies)
Alleviating Grievances through Supplier Support System	• Hotline for contract managers • 24/7 report channel for corruption reports (5 cases accepted and resolved) • Online channels; e-Customer Center (151 cases), e-SMEs Support Center (12 cases), Fair Trade Shinmungo (3 cases), Mutual Growth News Letter (monthly) • Purchase Consulting Center and SMEs Support Center are in operation

Support and Communication with Local Communities

Status of Stakeholders Related with Infrastructure at Facility Construction Area

KHNP has actively communicated with local residents to expand the acceptance of new NPPs in Yeongdeok and Samcheok. At Yeongdeok area, meetings with local residents for resolving civil affairs, additional transfer of remaining area of Nomul-ri Yeongdeok-eup and compensation of civil complaints were actively conducted. Opportunity and scale of communication were expanded through meetings and medical services. In addition, at Samcheok area, the understanding by local residents was enhanced by holding a briefing session about compensation work, law, and taxation to actively communicate with pro-NPP groups and purchase enquirers.

Regional limit bidding

Regional limit bidding has been applied for purchasing construction parts and manufacture or service to activate the regional economy around NPPs. According to the estimated purchasing price, eligibility for participating in bidding is limited to business operators in a certain administrative area where a KHNP business office is located.

Participation Restriction Criteria

(Unit: KRW Million)

Level of Tenders	Criteria
National	210 or above
Province-wide	Lesser than 210
City-wide	Lesser than 10
Town	50 or lesser

Relocation policy and management policy

In accordance with 'Article 78, Act On Acquisition of And Compensation For Land, Etc., for Public Works', KHNP supports the creation of a settlement complex and the measures of migrating residents coordinated by 'Compensation Council' in which local government, residents, and local influential people are participating.

Plant Units	Project Period	Migrants (Households)	Migration Period
Shin-Kori #3 & #4	2007.9 ~ 2017.2	20	2007 ~
Shin-Hanul #1 & #2	2010.4 ~ 2019.2	68	2008 ~ 2011

Terminology

Terms	Description
International Energy Agency (IEA)	Established in the framework of OECD, the organization is dedicated to responding to the risk of supply of oil as well as research and analysis about the international energy sector and resources.
Unplanned loss & Unplanned loss rate	Unplanned loss is the loss of electricity, calculated by deducting possible power generation capacity and planned loss from facility capacity, meaning the electricity that was generated due to failure of the generator or accident during operation, and unplanned loss rate is unplanned loss compared to facility.
Renewable Energy Certificate (REC)	A certificate that the electricity has been produced using renewable energy facility wherein the certifying organization verifies the renewable energy facility and power generation of power generator and based on this distributes the certificate according to power generation
Renewable energy Portfolio Standard (RPS)	A standard that requires to convert certain proportion of total power generation to renewable energy
Vitrification technique	This technology chemically locks the radioactive waste from a nuclear power plant permanently in a glass structure in the melting furnace. It can perfectly prevent radioactive materials from being exposed, and drastically reduces the volume to less than 1/33 as compared to conventional technology.
Radiation dose	Total exposure dose (dose equivalent) of a person exposed to radiation (excluding the exposure of the skin or limbs)
CSV (Creating Shared Value)	It is not that a corporate does social contribution activity after generating profit, but the corporate activity itself is generating social value and at the same time pursuing economic profit
SR10 SRMS	Composed of requirements that a corporate recognizes the influence on stakeholders and society and checks if the management system to manage it is practically setup and operating. SR10 is developed by an international certificate network, IQNet and includes ISO26000 (social responsibility), ISO9001 (quality management), ISO14001 (environmental management), OHSAS18001 (occupational health and safety), Includes SA8000 and other management system standards.
WANO Index (World Association of Nuclear Operations Index)	A global index published by the WANO Index that makes it possible to evaluate NPPs of co-operating countries, and compare NPP operations and safety between different NPP operators. Ten items including the productivity of the power plant, shutdowns and the wholesomeness of fuel are quantified to evaluate the safety performance.

Verification Statement of KOREA HYDRO & NUCLEAR POWER Co., LTD 2015 Sustainability Report

Preface

KOREA HYDRO & NUCLEAR POWER Co., LTD (Hereinafter 'KHNP') has the responsibility to establish compilation criteria including content of this Sustainability Report (Hereinafter 'the Report'). KFQ's (Korean Foundation for Quality) responsibility is to provide a verification conclusion of KHNP 2015 Sustainability Report based on its verification procedures in accordance with the selected standards and criteria.

Sustainability Reporting Guidelines G4.0 (Hereinafter 'GRI G4.0) and Electricity Utilities Sector Supplement G4.0 (Hereinafter 'EUSS G4.0) are accepted as global guidelines and those are applied as reporting criteria.

This Sustainability Report is intended for various stakeholders of KHNP.

Independence

KFQ was not involved in the preparation of any part of the Report, other than providing a verification statement, and there has been no conflict of interest between KHNP and KFQ. Further to this, KFQ has no biased opinion on stakeholders of KHNP.

Verification standards

Assurance/verification standards
- AA 1000 Assurance Standard 2008
- AA 1000 Accountability Principles Standard 2008
- GRI G4.0 Sustainability Reporting Guidelines
- GRI G4.0 Electricity Utilities Sector Supplement
- ISO 26000: Social Responsibility Standard

Verification scope

The following are included in the scope of this verification.
- Report contents in relation to the headquarters, all local nuclear power plants and hydropower plants, overseas businesses and construction of new nuclear power plants of KNHP
- Application of GRI 4.0 Core option for the Report preparation
- Application of GRI G4.0 EUSS
- GRI G4.0 Compliance assessment regarding contents of the Report and assurance principles of reporting quality
- Application of Type 1 verification approach according to AA 1000 and AA1000 AS 2008 to assess compliance with inclusiveness, materiality and responsiveness principles and reliability of sustainability performance information
- Core subjects in ISO 26000

Verification procedure

KFQ considered the procedures to achieve reasonable assurance of any apparent misstatements or material inconsistencies with the sustainability information, as well as internal process and system of data collection to have reliability of sustainability performance information provided in the Report.

- **Desk review**
  KFQ has performed GAP analysis of key issues and sustainability performance information provided in the Report against GRI guidelines and information acquired through media survey.
  With regard to the financial data included in the Report, our procedures were limited to verifying that they were correctly derived from the KHNP's audited 2015 statement of accounts for the first half year.

- **Site visit**
  KFQ visited KHNP headquarters, two nuclear power plants in operation (Kori and Wolsong) and three hydroelectric power plants in operation (Chuncheon, Uiam, Cheongpyeong) to understand and assess the systems and processes in place for managing and reporting the sustainability data. KFQ reviewed internal documents selected under sampling technique considering materiality and interviewed interested persons to confirm contents of the Report. Also, KFQ closely reviewed KHNP internal data controlling system and the Report compilation process.

- **Resolution of findings**
  KFQ reviewed the final report to check the errors and issues identified during the above process to provide correct and reliable sustainability performance information, and conducted an independent assessment of the Report in relation to GRI Guidelines Application Level.

- **Consideration and limitation**
  Competence of verification team
  KFQ has been performing various verifications tasks, and has qualifications to perform independent verification activity. KFQ's verification team for KHNP 2015 Sustainability Report is comprised of competent experts, who have in-depth experiences in sustainable management and its verification.

Verification opinion

Based on the verification activity stated herein, KFQ confirmed that this Report meets the GRI G4.0 'Core' option. According to the three principles of AA 1000 AS, namely, inclusiveness, materiality and responsiveness, sustainability performance information was assessed and KFQ could secure reasonable evidences to provide Type 1 level of assurance through the following.

1. KHNP implements the process of stakeholder engagement, accepts a variety of stakeholders' opinion, and works to reflect them in its sustainability policy.

2. KHNP has a process to define stakeholder group by materiality analysis and to identify key issues through communication with each group to set priorities on stakeholder surveys and feedback.

3. KHNP connected key issues identified by stakeholders to long-term sustainability strategy and vision and its performance is clearly improved sustainably, and its activities and performance were appropriately reported.

4. KHNP has effective internal systems and procedures of data creation, gathering and analysis for sustainability performance information. KFQ could confirm reliability of reported information through interviews, comparison of internal and external data and could not find any biased data and information.

Recommendation for improvement

KFQ was able to identify that KHNP puts a lot of efforts to communicate with various interested parties and listens to their concerns and expectations through KFQ's sustainability report verification.
For more developed communication with interested parties, KFQ proposes KHNP to supplement its internal sustainability performance management system. Furthermore, in the next sustainability report, KFQ expects KHNP to show more active response effort by holding a variety of channels for feedback of interested parties' concerns.

Competence of verification team

KFQ has been performing various verifications tasks, and has qualifications to perform independent verification activity. KFQ's verification team for KHNP 2015 Sustainability Report is comprised of competent experts, who have in-depth experiences in sustainable management and its verification.

October 2015
Seoul, Korea

CEO **Dae hyun Nam**
Korean Foundation for Quality (KFQ)

AA1000
Licensed Assurance Provider
000-80

kfq 한국품질재단
Korean Foundation for Quality

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Other Sustainability Performances Third-party Assurance Statements SR10 Certificate GRI Index Membership and Participating Principles 79

SR10 Certificate

®

IQNet

THE INTERNATIONAL CERTIFICATION NETWORK

CERTIFICATE

IQNet and
KFQ
hereby certify that the organization

KOREA HYDRO & NUCLEAR POWER CO.,LTD.

• HEAD OFFICE : #520 Yeong Dong Dae-Ro, Gangnam-Gu,
Seoul, 135-881, Korea

for the following field of activities

HYDRO & NUCLEAR ELECTRIC POWER GENERATION

has implemented and maintain a

Social Responsibility Management System
which fulfills the requirements of the following standard

IQNet SR 10 : 2011
Issued on : 2014. 10. 08
Validity date : 2017. 10. 07
Registration Number : RC - 00001-SR

Michael Drechsel
President of IQNet

Dae Hyeoun Nam
President & CEO of KFQ

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GRI Index

GRI G4.0 General Standard Disclosures

● :Full ◑ :Half ○ :Not N/A :Not Applicable

Aspcet	G4	Indicators	ISO 26000: 2010 CLAUSES	Level of report	Refer to	remarks / note
Strategy and Analysis	G4-1	Statement from the most senior decision-maker of the organization (such as CEO, chair, or equivalent senior position) about the relevance of sustainability to the organization and the organization's strategy for addressing sustainability.	4.7, 6.2, 7.4.2	●	2~3	
	G4-2	Description of key impacts, risks, and opportunities.		●	22, 28, 32, 38, 48, 56, 64	
Organiza-tional Profile	G4-3	Name of the organization.		●	4	
	G4-4	Primary brands, products, and services.		●	4, 6	
	G4-5	Location of the organization's headquarters.		●	4	
	G4-6	Number of countries where the organization operates, and names of countries where either the organization has significant operations or that are specifically relevant to the sustainability topics covered in the report.		●	6, 24	
	G4-7	Nature of ownership and legal form.		●	4	
	G4-8	Markets served (including geographic breakdown, sectors served, and types of customers and beneficiaries).		●	6, 24	
	G4-9	Scale of the organization.		●	4	
	G4-10	Total number of employees.		●	4, 72	
	EU1	Installed capacity, broken down by primary energy source and by regulatory regime		●	6	
	EU2	Net energy output broken down by primary energy source and by regulatory regime		●	6	
	EU3	Number of residential, industrial, institutional and commercial customer accounts	6.3.10, 6.4.1-6.4.2, 6.4.3, 6.4.4, 6.4.5, 6.8.5, 7.8	N/A		No direct power sales to end customers
	EU4	Length of above and underground transmission and distribution lines by regulatory regime		N/A		No power transmission facility that is owned and managed
	EU5	Allocation of CO_2e emissions allowances or equivalent, broken down by carbon trading framework		●	54	No emission trade has been made, but the countermeasures and plans are being prepared, and some of them have been made open to the public through reports
	G4-11	Percentage of total employees covered by collective bargaining agreements.		●	74	
	G4-12	Describe the organization's supply chain.		●	32, 34	
	G4-13	Significant changes during the reporting period regarding the organization's size, structure, ownership, or its supply chain.		●	6, 7	No significance change in organization and ownership has been made during the report year, but the overall power generation capacity has been increased since the commercial operation of Shin-Wolsong #2 from July 2015 (Operation of Kori #1 is scheduled on June 2017)
	G4-14	Whether and how the precautionary approach or principle is addressed by the organization.		●	48~55	
	G4-15	Externally developed economic, environmental and social charters, principles, or other initiatives to which the organization subscribes or which it endorses.		●	78~84	
	G4-16	Memberships of associations (such as industry associations) and national or international advocacy organizations.		●	84	
Identified Material Aspects and Boundaries	G4-17	• List all entities included in the organization's consolidated financial statements or equivalent documents. • Whether any entity included in the organization's consolidated financial statements or equivalent documents is not covered by the report.	5.2, 7.3.2, 7.3.3, 7.3.4	●	14~15	
	G4-18	• Process for defining the report content and the Aspect Boundaries. • Explain how the organization has implemented the Reporting Principles for Defining Report Content.		●	18~19	
	G4-19	Material Aspects identified in the process for defining report content.		●	19	
	G4-20	Aspect Boundary within the organization.		●	19	
	G4-21	Aspect Boundary outside the organization.		●	19	
	G4-22	Effect of any restatements of information provided in previous reports, and the reasons for such restatements.		●	11	
	G4-23	Significant changes from previous reporting periods in the Scope and Aspect Boundaries.		●		No significant change from the previous report year
Stakeholder Engagement	G4-24	List of stakeholder groups engaged by the organization.	5.3	●	14~15	
	G4-25	Basis for identification and selection of stakeholders with whom to engage.		●	14~15	
	G4-26	Organization's approach to stakeholder engagement, including frequency of engagement by type and by stakeholder group, and an indication of whether any of the engagement was undertaken specifically as part of the report preparation process.		●	14~18	
	G4-27	Key topics and concerns that have been raised through stakeholder engagement, and how the organization has responded to those key topics and concerns, including through its reporting. Report the stakeholder groups that raised each of the key topics and concerns.		●	19	

GRI Index

● : Full   ◑ : Half   ○ : Not   N/A : Not Applicable

Aspcet	G4	Indicators	ISO 26000: 2010 CLAUSES	Level of report	Refer to	remarks / note
Report Profile	G4-28	Reporting period for information provided.		●	0	
	G4-29	Date of most recent previous report.		●	0	
	G4-30	Reporting cycle.		●	0	
	G4-31	Provide the contact point for questions regarding the report or its contents.		●	0	
	G4-32	• 'in accordance' option the organization has chosen. • GRI Content Index for the chosen option. • Reference to the External Assurance Report, if the report has been externally assured. GRI recommends the use of external assurance but it is not a requirement to be 'in accordance' with the Guidelines.	7.5.3, 7.6.2	●	79~83	Reported with all Core Option requirements of GRI G4.0 Guideline satisfied
	G4-33	• Organization's policy and current practice with regard to seeking external assurance for the report. • If not included in the assurance report accompanying the sustainability report, report the scope and basis of any external assurance provided. • Relationship between the organization and the assurance providers. • Whether the highest governance body or senior executives are involved in seeking assurance for the organization's sustainability report.		●	76~77	
Governance	G4-34	Governance structure of the organization, including committees of the highest governance body. Identify any committees responsible for decision-making on economic, environmental and social impacts.	6.2, 7.4.3, 7.7.5	●	12~13	
	G4-38	Composition of the highest governance body and its committees.		●	12~13	
	G4-39	Whether the Chair of the highest governance body is also an executive officer (and, if so, his or her function within the organization's management and the reasons for this arrangement).		●	12~13	
	G4-40	Nomination and selection processes for the highest governance body and its committees, and the criteria used for nominating and selecting highest governance body members.		●	13	
Ethics and Integrity	G4-56	Organization's values, principles, standards and norms of behavior such as codes of conduct and codes of ethics.	4.4, 6.6.3	●	65	
	G4-57	Internal and external mechanisms for seeking advice on ethical and lawful behavior, and matters related to organizational integrity, such as helplines or advice lines.		●	66~68	
	G4-58	Internal and external mechanisms for reporting concerns about unethical or unlawful behavior, and matters related to organizational integrity, such as escalation through line management, whistleblowing mechanisms or hotlines.		●	66	

GRI G4.0 Specific Standard Disclosures

● : Full   ◑ : Half   ○ : Not   N/A : Not Applicable

Aspcet	G4	Indicators	ISO 26000: 2010 CLAUSES	Level of report	Refer to	remarks / note
Economic						
Procurement Practices	DMA			●	32	
	EC9	Proportion of spending on local suppliers at significant locations of operation	6.4.3, 6.6.6, 6.8.1-6.8.2, 6.8.7	●	32~35, 75	
Research and Development	EU8 (DMA)	Research and development activity and expenditure aimed at providing reliable electricity and promoting sustainable development	6.8.6	●	11, 22, 23, 70	
Plant Decommissioning	EU9 (DMA)	Provisions for decommissioning of nuclear power sites	6.5.3, 6.8.8	●	7, 22, 23	
Environmental						
Emissions	DMA			●	48	
	EN15	Direct greenhouse gas (GHG) emissions (Scope 1)	6.5.5	●	51, 71	
	EN16	Energy indirect greenhouse gas (GHG) emissions (Scope 2)	6.5.5	●	51, 71	
	EN17	Other indirect greenhouse gas (GHG) emissions (Scope 3)	6.5.5	◑	54	
	EN19	Reduction of greenhouse gas (GHG) emissions	6.5.5	●	54	
	EN20	Emissions of ozone-depleting substances (ODS)	6.5.3, 6.5.5	N/A		No emission of materials that may destroy ozone layer
	EN21	NOₓ, SOₓ, and other significant air emissions	6.5.3	N/A		No emission of air pollutant materials

GRI G4.0 Specific Standard Disclosures

● : Full   ◑ : Half   ○ : Not   N/A : Not Applicable

Aspcet	G4	Indicators	ISO 26000: 2010 CLAUSES	Level of report	Refer to	remarks / note
Effluents and Waste	DMA			●	48	
	EN22	Total water discharge by quality and destination	6.5.3, 6.5.4	●	51, 52	
	EN23	Total weight of waste by type and disposal method	6.5.3	●	51, 52, 71	
	EN24	Total number and volume of significant spills	6.5.3	●	51, 52	
	EN25	Weight of transported, imported, exported, or treated waste deemed hazardous under the terms of the basel convention2 annexl, II, III, and VIII, and percentage of transported waste shipped internationally6.5.3	6.5.3	●		No wastes transported or exported overseas
	EN26	Identity, size, protected status, and biodiversity value of water bodies and related habitats significantly affected by the organization's discharges of water and runoff	6.5.3, 6.5.4, 6.5.6	●	52, 55	
Social						
Occupational Health and Safety	DMA			●	38	
	LA5	Percentage of total workforce represented in formal joint management–worker health and safety committees that help monitor and advise on occupational health and safety programs	6.4.6	●		Labor-management Occupational Health Committee consists of 10 or less representatives of labor union and the management
	LA6	Type of injury and rates of injury, occupational diseases, lost days, and absenteeism, and total number of work-related fatalities, by region and by gender	6.4.6, 6.8.8	●	74	
	LA7	Workers with high incidence or high risk of diseases related to their occupation	6.4.6, 6.8.8	●	45, 53	
	LA8	Health and safety topics covered in formal agreements with trade unions	6.4.6	●	74	
Training and Education	DMA			●	28	
	LA9	Average hours of training per year per employee by gender, and by employee category	6.4.7	●	11, 31, 73	
	LA10	Programs for skills management and lifelong learning that support the continued employability of employees and assist them in managing career endings	6.4.7, 6.8.5	●	31, 73	
Local Communities	DMA			●	56	
	SO1	Percentage of operations with implemented local community engagement, impact assessments, and development programs	6.3.9, 6.5.1-6.5.2, 6.5.3, 6.8	●	56~61	
	SO2	Operations with significant actual and potential negative impacts on local communities	6.3.9, 6.5.3, 6.8	●	38~45, 48~55	
	EU19 (DMA)	Stakeholder participation in decision making processes related to energy planning and infrastructure development	6.8, 6.8.3	●	75	
	EU20 (DMA)	Approach to managing the impacts of displacement	6.3.3, 6.3.4, 6.3.6, 6.3.8, 6.3.9,	●	75	
	EU22	Number of people physically or economically displaced and compensation, broken down by type of project	6.3.3, 6.3.4, 6.3.6, 6.3.8, 6.3.9,	●	75	
Disaster/ Emergency Planning and Response	EU21 (DMA)	Contingency planning measures, disaster/emergency management plan and training programs, and recovery/restoration plans		●	38, 40, 44~45	
Anti-corruption	DMA			●	64	
	SO3	Total number and percentage of operations assessed for risks related to corruption and the significant risks identified	6.6.1-6.6.2, 6.6.3	●	64~68	
	SO4	Communication and training on anti-corruption policies and procedures	6.6.1-6.6.2, 6.6.3, 6.6.6	●	68	
Customer Health and Safety	DMA			●	38	
	PR1	Percentage of significant product and service categories for which health and safety impacts are assessed for improvement	6.7.1-6.7.2, 6.7.4, 6.7.5, 6.8.8	●	42~43	
Product and Service Labeling	DMA			●	64	
	PR3	Type of product and service information required by the organization's procedures for product and service information and labeling, and percentage of significant product and service categories subject to such information requirements	6.7.1-6.7.2, 6.7.3, 6.7.4, 6.7.5, 6.7.9	●	66	
	PR4	Total number of incidents of non-compliance with regulations and voluntary codes concerning product and service information and labeling, by type of outcomes	4.6, 6.7.1-6.7.2, 6.7.3, 6.7.4, 6.7.5, 6.7.9	●		No violations
Customer Privacy	DMA			●	38	
	PR8	Total number of substantiated complaints regarding breaches of customer privacy and losses of customer data	6.7.1-6.7.2, 6.7.7	●	41	The customer is Korean Electric Power Corporation (KEPCO). No information leak has been made

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APPENDIX

Other Sustainability Performances — Third-party Assurance Statements — SR10 Certificate — GRI Index — Membership and Participating Principles

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GRI Index

GRI G4.0 Specific Standard Disclosures - Other Disclosures

● : Full   ◑ : Half   ○ : Not   N/A : Not Applicable

Aspcet	G4	Indicators	ISO 26000: 2010 CLAUSES	Level of report	Refer to remarks / note
Economic					
Economic Performance	EC1	Direct economic value generated and distributed	6.8.1-6.8.2, 6.8.3, 6.8.7, 6.8.9	●	70
	EC2	Financial implications and other risks and opportunities for the organization's activities due to climate change	6.5.5	●	48, 54
Indirect Economic Impacts	EC7	Development and impact of infrastructure investments and services supported	6.3.9, 6.8.1-6.8.2, 6.8.7, 6.8.9	●	42~45, 58~61
	EC8	Significant indirect economic impacts, including the extent of impacts	6.3.9, 6.6.6, 6.6.7, 6.7.8, 6.8.1-6.8.2, 6.8.5, 6.8.7, 6.8.9	●	34, 58~61, 72
Availability and Reliability	EU6	Management approach to ensure short and long-term electricity availability and reliability	6.3.3, 6.5.4, 6.7.8, 6.8.3, 6.8.6	●	5~6
	EU10	Planned capacity against projected electricity demand over the long term, broken down by energy source and regulatory regime	6.3.3, 6.7.5	●	5, 42
Demand-Side Management	EU7	Demand-side management programs including residential, commercial, institutional and industrial programs	6.3.3, 6.5.4, 6.7.8, 6.8.3, 6.8.6	N/A	No responsibilities of managing power demands
System Efficiency	EU11	Average generation efficiency of thermal plants by energy source and by regulatory regime		N/A	No thermal/steam power sites under operation
	EU12	Transmission and distribution losses as a percentage of total energy		N/A	No power transmission and distribution facilities owned and no responsibilities of power transmission and distribution
Environmental					
Materials	EN1	Materials used by weight or volume	6.5.4	●	50
	EN2	Percentage of materials used that are recycled input materials	6.5.4	●	No relevant reprocessing practices are in place
Energy	EN3	Energy consumption within the organization	6.5.4	●	50, 71
	EN6	Reduction of energy consumption	6.5.4, 6.5.5	●	54
	EN7	Reductions in energy requirements of products and services	6.5.4, 6.5.5	●	25, 54
Water	EN8	Total water withdrawal by source	6.5.4	●	50
	EN9	Water sources significantly affected by withdrawal of water	6.5.4	●	52
	EN10	Percentage and total volume of water recycled and reused	6.5.4	●	50, 52
Biodiversity	EN11	Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas	6.5.6	●	55
	EN12	Description of significant impacts of activities, products, and services on biodiversity in protected areas and areas of high biodiversity value outside protected areas	6.5.6	●	55
	EN13	Habitats protected or restored	6.5.6	●	55
	EU13	Biodiversity of offset habitats compared to the biodiversity of the affected areas	6.5.6	●	55, 71
	EN14	Total number of IUCN red list species and national conservation list species with habitats in areas affected by operations, by level of extinction risk	6.5.6	◑	55, 71
Products and Services	EN27	Extent of impact mitigation of environmental impacts of products and services	6.5.3, 6.5.4, 6.5.5, 6.7.5	●	52~55
	EN28	Percentage of products sold and their packaging materials that are reclaimed by category compliance	6.5.3, 6.5.4, 6.7.5	N/A	Not applicable
Compliance	EN29	Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with environmental laws and regulations	4.6	●	No violation of environmental regulations
Transport	EN30	Significant environmental impacts of transporting products and other goods and materials for the organization's operations, and transporting members of the workforce	6.5.4, 6.6.6	◑	53, 54
Overall	EN31	Total environmental protection expenditures and investments by type	6.5.1-6.5.2	◑	50
Social					
Labor Practices and Decent Work					
Employment	LA1	Total number and rates of new employee hires and employee turnover by age group, gender and region	6.4.1-6.4.2	●	72
	LA3	Return to work and retention rates after parental leave, by gender	6.4.4	◑	73
	EU14	Programs and processes to ensure the availability of a skilled workforce	6.4.7	●	31, 73
	EU16	Policies and requirements regarding health and safety of employees and employees of contractors and subcontractors	6.3.3, 6.3.5, 6.4.6, 6.6.6	●	39~41, 45
	EU17	Days worked by contractor and subcontractor employees involved in construction, operation & maintenance activities	6.3.3, 6.4.3, 6.4.4, 6.4.6, 6.6.6	●	All partners involved in the construction, operation and maintenance of NPPs are operating on a legitimate work schedule (max. 8 hours a day)
	EU18	Percentage of contractor and subcontractor employees that have undergone relevant health and safety training	6.3.3, 6.3.5, 6.4.6, 6.6.6	●	40

GRI G4.0 Specific Standard Disclosures - Other Disclosures

● : Full   ◑ : Half   ○ : Not   N/A : Not Applicable

Aspcet	G4	Indicators	ISO 26000: 2010 CLAUSES	Level of report	Refer to remarks / note
Labor/Management Relations	LA4	Minimum notice periods regarding operational changes, including whether these are specified in collective agreements	6.4.3, 6.4.5	●	Any significance change in the management is communicated 90 days before the expected occurrence for negotiations and agreements
Diversity and Equal Opportunity	LA12	Composition of governance bodies and breakdown of employees per employee category according to gender, age group, minority group membership, and other indicators of diversity	6.2.3, 6.3.7, 6.3.10, 6.4.3	●	12, 72
Equal remuneration for women and men	LA13	Ratio of basic salary and remuneration of women to men by employee category, by significant locations of operation	6.3.7, 6.3.10, 6.4.3, 6.4.4	●	Compensation is made based on the minimum wage stipulated in the relevant regulations, with no discrimination against genders
Labor Practice Grievance Mechanisms	LA16	Number of grievances about labor practices filed, addressed, and resolved through formal grievance mechanisms	6.3.6	●	74
Human Rights					
Investment	HR1	Total number and percentage of significant investment agreements and contracts that include human rights clauses or that underwent human rights screening	6.3.3, 6.3.5, 6.6.6	◑	Investment contracts are closed with a full and comprehensive consideration of the possibilities of any human right abuse or violation. All contracts with construction companies and other suppliers are subject to the 10 Principles of UN Global Compact and compliance with the relevant requirements are strictly monitored. However, there is no investment agreement that explicitly includes provisions requiring human rights protection.
	HR2	Total hours of employee training on human rights policies or procedures concerning aspects of human rights that are relevant to operations, including the percentage of employees trained	6.3.5	◑	73
Non-discrimination	HR3	Total number of incidents of discrimination and corrective actions taken	6.3.6, 6.3.7, 6.3.10, 6.4.3	●	Opportunities for promotion are fairly given to all employees, depending on the competence and qualification, while performances and achievements are assessed and compensated fair and square. Also, as stipulated in the Code of Conduct, no discrimination against gender, educational background, age, race, region of origin or physical disability is allowed. No legally-bound penalty or lockdown attributed to KHNP due to discrimination has been made in 2014.
Freedom of Association and Collective Bargaining	HR4	Operations and suppliers identified in which the right to exercise freedom of association and collective bargaining may be violated or at significant risk, and measures taken to support these rights	6.3.3, 6.3.4, 6.3.5, 6.3.8, 6.3.10, 6.4.5, 6.6.6	●	74
Child Labor	HR5	Operations and suppliers identified as having significant risk for incidents of child labor, and measures taken to contribute to the effective abolition of child labor	6.3.3, 6.3.4, 6.3.5, 6.3.7, 6.6.6, 6.8.4	●	Compliant with ILO's convention on the prohibition of child labor and the UNGC's labor standards. No forced labor or child labor violations have been made since the foundation
Forced of Compulsory Labor	HR6	Operations and suppliers identified as having significant risk for incidents of forced or compulsory labor, and measures to contribute to the elimination of all forms of forced or compulsory labor	6.3.3, 6.3.4, 6.3.5, 6.3.10, 6.6.6	●	
Indigenous Rights	HR8	Total number of incidents of violations involving rights of indigenous peoples and actions taken	6.3.4, 6.3.6, 6.3.7, 6.3.8, 6.6.7, 6.8.3	◑	75
Assessment	HR9	Total number and percentage of operations that have been subject to human rights reviews or impact assessments	6.3.3, 6.3.4, 6.3.5	◑	
Society					
Public Policy	SO6	Total value of political contributions by country and recipient/beneficiary	6.6.1-6.6.2, 6.6.4	●	Compliant with the Political Funds Act of Korea that prohibits illegal political funds
Product Responsibility					
Marketing Communications	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	●	Compliant with the local regulations pertaining to the promotion and information disclosures in enterprises. Conformity to the Prime Minister's Directive 120 ("Regulations for Promotional Advertisement of Government") is maintained with no violations of the relevant regulations.
Compliance	PR9	Monetary value of significant fines for non-compliance with laws and regulations concerning the provision and use of products and services	4.6, 6.7.1-6.7.2, 6.7.6	●	No violations of the relevant regulations
Access	EU23 (DMA)	Programs, including those in partnership with government, to improve or maintain access to electricity and customer support services	6.7.8, 6.7.1-6.7.2 6.7.6	N/A	No power sales to end customers
	EU26	Percentage of population unserved in licensed distribution or service areas	6.7.8	N/A	No power transmission and distribution facilities
	EU27	Number of residential disconnections for non-payment, broken down by duration of disconnection and by regulatory regime	6.3.7, 6.7.8	N/A	No power sales to end customers
	EU28	Power outage frequency		●	70
	EU29	Average power outage duration		●	70
	EU30	Average plant availability factor by energy source and by regulatory regime		●	70
Provision of Information	EU24 (DMA)	Practices to address language, cultural, low literacy and disability related barriers to access and safely use electricity and customer support services	6.3.7, 6.7.8	N/A	No power sales to end customers

Membership and participating principles

Joining and support the UN Global Compact

After KHNP joined the UN Global Compact, an international convention on corporate social responsibilities in March 2007, it has complied with UNGC 10 principles in 4 sectors of human rights, labor, environment and anti-corruption.

Human rights
Principle 1. Businesses should support and respect the protection of internationally proclaimed human rights.
Principle 2. Businesses should make ensure that they are not complicit in human rights abuses.

Labor
Principle 3. Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining.
Principle 4. Businesses should support the elimination of all forms of forced and compulsory labor.
Principle 5. Businesses should support the effective abolition of child labor.
Principle 6. Businesses should support the elimination of discrimination in respect of employment and occupation.

Environment
Principle 7. Businesses should support a precautionary approach to environmental challenges.
Principle 8. Businesses should undertake initiatives to promote greater environmental responsibility.
Principle 9. Businesses should encourage the development and diffusion of environmentally friendly technologies.

Anti-corruption
Principle 10. Businesses should work against corruption in all its forms, including extortion and bribery.

Membership

Domestic	
Korea Atomic Industrial Forum	Korea Environmental Preservation Association
Korea Association of Standards Testing Organizations	Korea Suggestion System Association
Korea Fusion Industry and Technology Association	Korean Society for New and Renewable Energy
Korea Society of Innovation	Korea Management Association
Korean Association for Radiation Protection	Korean New and Renewable Energy Association
Korean Society for Quality Management	Korea Smart Grid Association
Korean Committee of Northeast Asia Economic Forum	Korea Photovoltaic Industry Association
The Korea Chamber of Commerce & Industry	Corrosion Science Society of Korea
Korean Nuclear Society	Earthquake Engineering Society of Korea
Korean Institute of Electrical Engineers	Korean Society of Mechanical Engineers
Korean Radioactive Waste Society	Korea Forum for Progress
Korean Society of Radiation Bioscience	Women in Nuclear Korea
Korean Association for Radiation Application	Korean Standards Association
Korea Electric Association	Forum on Climate Change and Energy
Korean Society of Pressure Vessel and Piping	Korea Energy Foundation
Korea Employers Federation	Korean Resource Economics Association
Korea Industrial Safety Association	Korean Institute of Internal Auditors
Korea National Committee on Large Dam	Korea Productivity Association
Korea Nuclear Equipment Qualifi¬cation Association	Institute of Public Corporation Internal Auditors of Korea
Korean Society of Public Enterprise	Korea Plant Industries Association
Korea Project Management Association (KPMA)	Korea Network on Anti-Corruption & Transparency
Korea Society for Nondestructive Testing	Korea Nuclear Association for International Cooperation
Korean Society of Energy & Climate Change	Korea Institute of Plant Engineering and Construction
Korea Academy of Nuclear Safety	Korea Society for Conflict Management

International
Pressurized Water Reactor Owners Group (PWROG)
Nuclear Energy Institute (NEI)
Institute of Nuclear Power Operations (INPO)
CANDU Owners Group Inc. (COG)
World Nuclear Association (WNA)
World Association of Nuclear Operators (WANO)
Framatome Owners Group (FROG)
Nuclear Procurement Issues Committee (NUPIC)
Electric Power Research Institute (EPRI)
American Society for Quality (ASQ)
Radiation Emergency Medical Preparedness and Assistance Network (REMPAN)
World Nuclear Fuel Market (WNFM)
COMPSIS Working Group (OECD/NEA)
Romanian Atomic Forum (ROMATOM)
CANDU Procurement Audit Committee (CANPAC)
CEA Technologies Inc. Hydraulic Power Life Interest Group (CEATI HPLIG)

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