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# Dreams as Big as the World

We have dreams as high as the sky.

We dream of competing shoulder to shoulder in the world market. We dream about happiness as clear as the eye of a child. We dream that every day will be filled with sunshine. Most of all, we dream of a sustainable future.



# About This Report KHNP 2008 Sustainability Report

This is Korea Hydro and Nuclear Power Company Limited's first-ever sustainability report. It contains information and data on the economic, social, and environmental performance of the company and its innovation and creative management activities. The accuracy of the data and information contained in it has been vetted by an objective third party. Published in both Korean and English, it is also available at our web site. From now on, we will publish sustainability reports every year.

### Features of this Report

- We consulted experts in the fields of economics, sociology, and the environment to ensure that the information in this report was accurate, correct, and written in an easy-to-understand manner.
- We also conducted a materiality test to identify and cover all the material aspects of KHNP activities in the report. This was done by canvassing stakeholders' opinions, analyzing media stories on the company, and benchmarking other sustainability reports.
- We gathered reviews and opinions from both domestic and overseas sustainability experts to guarantee that the report meets global standards.
- KHNP includes the general public-its indirect customers-in its stakeholder groups and always reflects the public interest in its decision-making.

### **Reporting Principles**

This report was prepared in accordance with the GRI Guideline 2006 (G3)\* and the BEST\*\* Guideline.

- \* GRI (Global Reporting Initiative): The GRI Sustainability Reporting Guideline was developed by the Coalition for Environmentally Responsible Economies (CERES) and UNEP in 1997. This report follows the recommendations of the revised G3 version, published in October 2006.
- \*\* BEST Guideline (B.E.S.T Sustainability Reporting Guideline): A sustainability report guideline developed by the Ministry of Knowledge and Economy, the Korea Chamber of Commerce and Industry, and the Institute for Industrial Policy Studies (IPS).

### **Reporting Scope and Period**

This report covers the company's activities from January 2005 to December 2007, thereby allowing for times series trends analyses. Since some data are not available for a given period, we have notified the readers and provided reasons for not reporting the businesses or projects that we launched after 2005. The main currency used in the report is the Korean won (KRW). The business activities and performances described herein apply to the company's head office and domestic business premises.

### **Contact information**

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### **GRI G3 Guidelines Application Level**

We declare this report achieved an A+ level of application of the G3 guidelines. We have had an objective third party check and confirm and the GRI authority verify that it meets the requirements of the A+ application level of the guideline.









# Future that KHNP is drawing,

# Sustainable World

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# The Energy of Hope

We dream about all kinds of energy. Energy and technologies that will propel us into a global leadership role. Energy that Koreans can use safely and cheaply. Energy that will keep the sky blue forever.

Above all, we dream about the energy of hope.





# Delivering dreams to

"With a vision of A world-leading electric power generation company that prioritizes people, the environment and technology. we are striving for sustainable growth through constant change and technological innovation."

Korea Hydro and Nuclear Power Co., Ltd. (KHNP) is a leading Korean electric power generation company, producing about 36% of the country's total electric power supply. The company has contributed dramatically to the development of the national economy by providing high-quality electric power at a modest price.

Beginning with Kori Unit 1 in 1978, we have built and operated 20 nuclear power plants over the past 30 years. Thanks to its efficiency and environmental friendliness, nuclear power is one of the world's most attractive alternative energy sources, making KHNP's role in the national economy all the more important.

In answer to the needs of the nation, KHNP developed the "Optimized Power Reactor 1000" (OPR1000), the first Korean standard nuclear power plant to utilize only domestic technologies. More recently, we produced a third-generation reactor called the "Advanced Power Reactor 1400" (APR1400). Capitalizing on our accumulated experience and technologies, we are actively carrying out global expansion initiatives for sustainable growth.

# help everyone build a brighter future

While working to satisfy the nation's need for electricity and fulfill our vision of becoming a world-leading electric power generation company, we have also been busy developing goals to ensure our continuing sustainability. These plans deal with the company's economic, social, and environmental responsibilities.

On the economic front, we will keep laying the groundwork for sustainable growth. While increasing our profitability through a stable supply of electric power and the timely construction of new nuclear plants, we will also deploy innovative technologies to identify and develop next-generation growth engines and markets.

In 2007, we joined the UN Global Compact to better meet its obligations as a caring and concerned corporate citizen and translate its commitment to ethical management into words. At the same time, we have taken many steps to establish a mutually beneficial relationship with our various stakeholders.

As an environmentally friendly energy company, we have established an environmental management system and strive to minimize the generation of pollutants. In a bid to address the problem of climate change, we are also involved in many new and renewable energy development projects. Through environmentally friendly management, we can conserve the environment while also contributing to the development of the national economy. The support and trust of its stakeholders is a primary necessity if KHNP is to realize its vision of sustainable growth. This was evidenced in 2007, when the company and its community partners were able to resolve two long-standing disagreements. After a long period of open and honest communications with local communities, KHNP finally broke ground for a disposal facility for low- and intermediate-level radioactive waste (LILW)-a 20-year-old project that had been held back by anti-nuclear sentiment. In addition, the company won the green light for the continued operation of Kori Unit 1, Korea's first nuclear plant, whose design life had expired. The company's commitment to transparent and ethical management was also rewarded when it was ranked number one among KEPCO subsidiaries in an anti-corruption evaluation.

Not content to rest on these laurels, we will continue with our efforts to win the public's trust. This report will allow stakeholders to assess both its reliability and its potential for sustainability.

President & CEO, Jong-Shin, Kim

# Company Overview Company Profile

# **History in Brief**

"The completion of Korea's first nuclear power plant, Kori Unit 1, represents a monumental moment in the modernization and restoration of our country. We are now ushering in a new era for Korea, as well as celebrating our scientific and technological expertise and accomplishments."

- From the President of Korea's congratulatory address to mark the completion of Kori Unit 1 in 1978



### Before 1965

- 1937 Completion of Boseong River hydropower plant
- 1943 Completion of Cheongpyeong hydropower plant
- 1965 Completion of Chuncheon hydropower plant; Han River hydropower site plant launched

### 1970~1980s

- 1978 Completion of Kori Unit 1, Korea's first nuclear power plant (NPP)
- 1983 Completion of Wolsong Unit 1 and Kori Unit 2
- 1985 Completion of Kori Unit 3
- 1986 Completion of Kori Unit 4 and Yonggwang Unit 1
- 1987
   Completion of Yonggwang Unit 2

   Total nuclear power generation by KHNP exceeds 100 billion kWh
- 1988 Completion of Ulchin Unit 1
- 1989 Completion of Ulchin Unit 2

### 1990s

- 1991 Completion of Gangneung hydropower plant
- 1995 Completion of Yonggwang Unit 3
- 1996 Completion of Yonggwang Unit 4
- 1997 Completion of Wolsong Unit 2
- 1998 Completion of Ulchin Unit 3—Korea's first standard nuclear power plant

First order from overseas (China Guangdong Nuclear Power) Completion of Wolsong Unit 3

1999 Completion of Wolsong Unit 4 and Ulchin Unit 4

# Apr. 2001 Incorporation of KHINP (spun-off from KEPCO)

- 2002 Total power generation at Wolsong Unit 1 reaches 100 billion kWh. Completion of Yonggwang Units 5 & 6 makes Korea world's sixth-largest nuclear power producer. Ethical management announcement ceremony
   2002 Total assume as a second state with the second state of the second st
- 2003 Total power generation at Ulchin Unit 2 reaches 100 billion kWh. Entered into agreement with Qinshan Nuclear Power Company of China for technological support of NPP operation
- 2004 Completion of ERP System Inauguration of KHNP Social Service Corps Completion of Ulchin Unit 5
- 2005 Completion of Ulchin Unit 6, Korea's 20<sup>th</sup> NPP Groundbreaking ceremony for Shin-Kori Units 1 & 2 Selection of Gyeongju as site for low- and intermediate-level radioactive waste management facility

Completion ceremony for KHNP's first 20kW-class solar power plant

- 2006 Acquired Korea's highest-ever rating by overseas credit agency (Moody's, A1) Announced 2015 Mid- to Long-Term Vision Total power generation at Ulchin power plant reaches 400 billion kWh Groundbreaking ceremony for Shin-Wolsong Units 1 & 2
- 2007 Completion of first stage of Yonggwang Solar Park Completion of world's second tritium removal facility Total power generation at Yonggwang Unit 3 reaches 100 billion kWh Groundbreaking for Wolsong Nuclear Power Environmental Management Center (low- and intermediate-level radioactive waste management facility) Groundbreaking ceremony for Shin-Kori Units 3 & 4 (APR1400) Design life of Kori Unit 1 expires; approval for continued operation acquired



• Agreement with Qinshan Nuclear Power Company of China, 2003





 Groundbreaking ceremony for Shin-Kori Units 1 & 2, 2005



• • • • Completion of Yonggwang Solar Park, 2007

### CORPORATE REVIEW

SUSTAINABLE MANAGEMENT ECONOMY SOCIETY ENVIRONMENT

# **Company Profile**

Korea Hydro and Nuclear Power Co., Ltd. (KHNP) was spun off from the Korea Electric Power Corporation (KEPCO) in April 2001 in accordance with the Korean government's Electric Power Industry Restructuring Measures Act. With a mandate to provide a stable supply of electric power through hydro and nuclear power generation, KHNP was operating facilities with a total capacity of 18,252 megawatts (MW), providing 144,271 gigawatt-hours (GWh), or 35.8% of the national power supply as of the end of 2007. By 2014, when six new nuclear power plants (NPP) will be completed, the company's total generation capacity will grow to 25,052MW, making it Korea's largest power supplier.

Our 7,767 employees work in both NPP construction and operations and in R&D. The company's headquarters houses sixteen departments and offices under the direction of four divisions. There are also four nuclear power sites, one hydro-power site, and six other departments. In 2007, KHNP had sales of KRW 5,508.3 billion, investments of KRW 2,853.5 billion, and KRW 784.5 billion in net income.



President & CEO	Jong-Shin, Kim
Location	411 Yeongdongdaero, Gangnam-gu, Seoul
Services	Electric Power Development / Generation and related businesses / R&D and related businesses
Date of Establishment	April 2, 2001 (spun-off from KEPCO)
Capital Stock	KRW 1,131.5 billion
Total Assets	KRW 23,470.4 billion
Total Sales	KRW 5,508.3 billion
Investments	KRW 2,853.5 billion
Net Income	KRW 784.5 billion
Credit Ratings	Moody's: A1 / S&P: A
Total Staff	7,767
Organization (Head Office)	16 departments and offices operating under 4 divisions
Organization (Business Division)	4 nuclear power sites, 1 hydro power site, 6 others
Generation Facilities Capacity	18,252MW (26.7% of country's total power generation capacity)
Electric Power Production (Generation)	144,271GWh (35.8% of country's total power generation)

(As of the end of December 2007)



# Organization

KHNP operates 4 nuclear power sites, 1 hydropower site, 6 other departments, and 2 overseas offices. As of the end of December 2007, our staff totaled 7,767 persons: 6 executive members, 682 officer workers, 5,744 engineers, 185 researchers, and 1,150 contract workers and security personnel.



\* The NY and Paris offices are charged with contract management and collecting overseas market information.



Kori Nuclear Power Site



• • Yonggwang Nuclear Power Site



• • • Wolsong Nuclear Power Site



• • • • Ulchin Nuclear Power Site

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# **Business** Profile

# Generation Facilities in Operation or Under Construction



As of the end of December 2007, KHNP was operating 20 nuclear power plants (NPP) with a total capacity of 17,716MW, 27 hydropower plants with a total capacity of 535MW, a solar power plant with a total capacity of 1MW, and was generating 26.7% of the total national supply of 68,268MW. Four 1,000MW-class and two 1,400MW-class NPPs are under construction, with two 1,400MW-class NPPs in the planning stage. All the electricity the company generates is sold to KEPCO via the Korea Power Exchange (KPX).

### Generation Facilities in Operation

(As of the end of December 2007)

Catagony	Nuclear					Color	Total	
Calegory -	Kori Yonggwang		Ulchin	Wolsong	- Hydro	20191	TOLAI	
Units	4	6	6	4	27	1	48	
Facility Capacity (MW)	3,137	5,900	5,900	2,779	535	1	18,252	
Total		17,716 (	97.1%)		535 (2.9%)	_		

### | Nuclear Power Plants under Construction |

Name	Reactor Type Capacity		Completion
Shin-Kori 1,2	Advanced OPR1000®		Unit 1: Dec. 2010
(under construction)	Auvanceu OFR 1000 -	1,0001010 × 2	Unit 2: Dec. 2011
Shin-Wolsong 1,2	Advanced OPP1000		Unit 1: Mar. 2012
(under construction)	Auvanceu OFN 1000	1,00010100 × 2	Unit 2: Jan. 2013
Shin-Kori 3,4	nin-Kori 3,4 1.400 MALV 0		Unit 3: Sep. 2013
(under construction)	AF N 1400 -	1,4001010 × 2	Unit 4: Sep. 2014
Shin-Ulchin 1,2			Unit 1: Dec. 2015
(in the planning stage)	AF N 1400	1,4001VIVV A Z	Unit 2: Dec. 2016

# Domestic Power Generation Capacity and Market Share

One of Korea's leading power suppliers, KHNP's mandate is to supply the country with modestly-priced electric power. Accounting for 26.7% of the nation's generation facilities and 35.8% of its power generation, the company is the largest power producer in Korea, where nuclear and soft coal-fired power generation are the main sources of energy.

### Korea's Power Generation Capacity and Market Share

(As of the end of De	cember 2007)
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Category	KHNP	А	В	С	D	Е	Other	Total
Facilities capacity (MW)	18,252	7,198	8,500	8,882	7,766	9,501	8,169	68,268
Percentage of total (%)	26.7	10.5	12.5	13.0	11.4	13.9	12.0	100
Generation capacity (GWh)	144,271	45,034	41,648	48,728	52,343	48,021	23,079	403,124
Percentage of total (%)	35.8	11.2	10.3	12.1	13.0	11.9	5.7	100

0

OPR1000 (Optimized Power Reactor 1000): A 10,00MW-class nuclear power plant equipped with a pressurized water reactor (PWR). Developed in 1984 in response to the central government's "Technology Independence Promotion Policy"

② APR1400 (Advanced Power Reactor 1400): A 1,400MW-class PWR nuclear power plant utilizing Korean-only technology, this long-term national R&D project was built to answer the need for an advanced-level NPP that could compete with those of other advanced nations.



# **Nuclear Power Generation**



Nuclear power generation is KHNP's main business, accounting for 97% of its facilities capacity and 98% of its revenues. The company has 20 nuclear power plants (NPP) with a total capacity of 17,716MW, and was generating 142,937GWh of electric power per annum as of 2007.

Korea's nuclear power industry started in the late 1970s, when an oil shock awakened the Korean government to the importance of securing alternative energy sources. Since Korea's first NPP, Kori Unit 1, started operations in 1978, nuclear power has become Korea's main energy source, with more plants being built over the following decades. KHNP, with its unparalleled market position in the domestic nuclear power industry, has added four more NPPs since its spin-off in 2001, helping to make Korea the world's sixth-largest nuclear power producer. The company also uses its home-grown NPP technologies to advance into overseas markets.

### | Nuclear Power Plants in Operation |

(As of the end of December 2007)

Name/Ur		Location	Capacity (MW)	Reactor Type
	#1		587	
Kori 4	#2	Kori, Jangan-eup,	650	
	#3	Gijang-gun, Busan	950	FVVN
	#4		950	
	#1		950	
	#2		950	
Yonggwang	#3	Kyema-ri, Hongnong-eup,	1,000	
	#4	Yonggwang-gun, Jeonnam	1,000	PVVK
	#5		1,000	
	#6		1,000	
	#1		678.7	
\\/oloong	#2	Naahli, Yangnam-myun,	700	
vvoisorig	#3	Gyeongju-si, Gyeongbuk	700	FUVN
	#4		700	
	#1		950	
	#2		950	
Lilabia	#3	Bugu-ri, Buk-myeon,	1,000	
UICHIIT	#4	Uljin-gun, Gyeongbuk	1,000	FVVN
	#5		1,000	
	#6		1,000	

※ PWR (Pressurized water reactor): Reactor that uses ordinary water under high pressure as a coolant and neutron moderator ※ PHWR (Pressurized heavy water reactor): Reactor that use heavy water (deuterium oxide, or D<sub>2</sub>O) as a coolant and neutron moderator

### **Hydropower Generation**



As of 2007, KHNP was generating 1,334GWh per annum from 27 hydropower plants with a total capacity of 535MW. Hydropower is pollution-free energy that results in dramatic substitution effects for imported fuels. However, while the construction of large-scale nuclear and coal-fired power plants in Korea has been expanding, the availability of sites for hydropower plants and dams is lessening. As a result, hydropower plants with multi-purpose dams have only a 20~30% rate of usage.

### | Hydropower Plants in Operation |

### (As of the end of December 2007)

Category	Hwacheon	Chuncheon	Uiam	Cheong-pyeong	Paldang	Seomjingang	Goesan	Boseonggang	Anheung	Gangneung	Total
Capacity (MW)	108	57.6	45	79.6	120	34.8	2.6	4.5	0.48	82	534.58
No. of units	4	2	2	3	4	3	2	2	3	2	27
Generation Method	Dam- and Tunnel-type	Dam- type	Dam- type	Dam- type	Dam- type	Pumping- type	Dam -type	Pumping- type	Dam-and Tunnel-type	Pumping- type	-
Year of Completion	1944	1965	1967	1943	1972	1945	1957	1937	1978	1991	-

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# Opportunities and Challenges at KHNP

Structure of Korea's Electric Power Industry

In April 2001, pursuant to the central government's electric power industry restructuring measures, KEPCO's power generation businesses were spun off into six independent power generation companies–ncluding KHNP. In addition, the Korea Power Exchange (KPX) was established to facilitate the efficient and stable operation of the industry, giving birth to a completely competitive market. All the electricity generated by these companies is sold to KEPCO through the KPX, where the sale price (totaling a market price for variable expenses plus a capacity price that compensates the companies for their fixed expenses) is determined every hour.



# Industry Characteristics

Electric power is essential for industrialized nations and their people's quality of life. Since electricity cannot be stored, an appropriate level of supply capacity must be available. This means that accurate demand estimates and well-prepared building plans are of the utmost importance, since the construction of production facilities consumes huge amounts of time and resources.

Nuclear power plants (NPP) require more resources and time to construct, operate, and decommission than other power generators, and anti-nuclear sentiment often plays a significant role in determining the success or failure of a country's nuclear industry. However, external factors such as the UNFCCC\*'s recommendations and wildly-fluctuating oil prices have raised the Korean government's interest in energy security, making the role played by the domestic nuclear industry all the more important.

\* UNFCCC: United Nations Framework Convention on Climate Change

# **Business Competitiveness**

KHNP has a long history of operating and constructing NPPs. Its nuclear power capacity factor–a prime indicator of an operator's operating capacity–has remained at or above the 90% level for seven straight years, far above the global average of 77.8%. In addition, the company's engineers have years of experience in the construction of NPPs, while most other industrialized nations have been suspending the construction of new facilities in reaction to the Chernobyl disaster of 1986. Finally, KHNP is working hard to establish a cooperative network with neighboring industry players, allowing for the enhanced competitive edge in technological R&D, design, maintenance, and nuclear fuel.







Cost Competitiveness among Power Generation Companies (Unit: KRW)



# **Future Challenges**







Over the past thirty years, KHNP has gained technological and business expertise from constructing and operating NPPs while helping Korea become the world's sixth-largest producer of nuclear power. The company's growth and development is now predicated on advancing into overseas markets, developing cutting-edge technologies, adding to its capacity, and enhancing the public's perception of NPPs.

### Expanding into Overseas Markets

One of KHNP's primary strategies is to actively pursue overseas markets. With the requirements of the Kyoto Protocol and high oil prices both raising global interest in nuclear power, current demand for new NPP construction is setting a blistering pace. KHNP plans to capitalize on its experience and technological acumen to enter into this market, allowing it to foster on next-generation growth engines and make its presence known throughout the world.

### **Developing Core Technologies**

Capitalizing on its global leading capabilities in construction and operation of NPPs, KHNP aims to become an industry leader in such areas as core codes for NPP designing, reactor coolant pumps (RCP), and the localization of other core equipment. Future plans call for the company to achieve sustainable growth by adding to its engineering capacity and core technologies and using them as a springboard for both domestic and international expansion.

### **Enhancing Public Acceptance of NPPs**

Despite KHNP's competitiveness in terms of technology and operating capacity, the public's acceptance of nuclear power is still low. Pressing issues, such as the need for new NPPs, adding to the capacity of existing ones, and finding interim storage facilities for spent nuclear fuel can only be addressed if more people come to believe that nuclear power is safe and non-threatening. One way that KHNP plans to deal with this problem is to increase its level of interaction and cooperation with local communities.

### CORPORATE REVIEW

SUSTAINABLE MANAGEMENT ECONOMY SOCIETY ENVIRONMENT





# KHNP Vision



# Corporate Philosophy and Vision

"Making Life Richer through the Provision of Environmentally Friendly Energy" is KHNP's basic operational credo. To achieve this goal, the company has committed itself to respecting the environment, pursuing positive and prosperous relationships with its stakeholders, and creating a happier and healthier society and world through the stable supply of environmentally friendly, high-quality energy. KHNP's overarching vision is to be "a world-leading electric power generation company that prioritizes people, the environment, and technology." It practices environmentally sensitive management based on nuclear and new and renewable energy and technologically-oriented management that guarantee the safety and efficiency of its operations. The company's overall goal is to become a fully competitive, world-leading power producer with an advanced management infrastructure.

# Six Mid-to Long-Term Strategies

In order to realize these goals and cope with a constantly changing business environment, KHNP has developed six mid-to long-term operational strategies. These are subdivided into 25 strategic tasks, 72 practical ones to put the operational strategies into practice, and a roadmap to facilitate feedback.



# **2015 Future Prospects**



# CORPORATE REVIEW

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# Corporate Governance

# Stockholders and Corporate Group

KHNP is 100% owned by KEPCO. The following is the membership list of the KEPCO group.

# | KEPCO Group |

Category	KEPCO Group
Group Members (12)	KEPCO, KHNP, EWP, KOSEP, KOMIPO, WP, KOSPO, KOPEC, KPS, KNFC, KDN, Garolim Tidal Power Co. Ltd.

# Composition of Board of Directors



KHNP's Board of Directors (BOD), the top decision-making body of the company, is comprised of five standing and six non-standing directors. Pursuant to the company's articles of incorporation, the president is also the chairperson. The total number of directors can range from three to fifteen, with non-standing directors always being in the majority.

### KHNP BOD Members

(As of the end of June 2008)

Category	Name	Current Position
I	Jong-Shin, Kim	President and CEO
Five Standing	Jong-Gun, Yoon	Director of Planning and Administrative Division
Five Standing	Myung-Jae, Song	Director of Power Generation Division
Directors	Woo-Bang, Lee	Director of Project Division
	Kee-Cheol, Park	Director of Radioactive Waste project Division
	Ho, Moon	Senior Vice President of KEPCO
	Soon-Jick, Hong	Consultant at Samsung SDI
Six Non-Standing	Chong-Jae, Lee	Economics editor, Hankook newspaper
Directors	Chan-Gyu, Lim	Advisor to National Assembly
	Hah-Zoong, Song	Professor at Kyunghee University
	Yang-Ho, Oh	Lawyer, Bae, Kim and Lee LLC

# BOD Authority and Responsibility

All matters pertaining to KHNP's business operations must be submitted to the BOD, with agenda issues only being voted on if a majority of the directors is present. Resolutions are passed only when a majority of the attendant directors vote for the agenda. Having non-standing directors forming the majority allows the BOD to avoid arbitrary actions and facilitates decision-making. The BOD's regulations and the company's articles of incorporation oblige directors to fulfill their duties in a sincere and open manner and hold them accountable for any losses arising from their negligence. Directors are not allowed to cast votes if they are in a conflict of interest. Members of management must sign an integrity pact, pledging to carry out their duties in an honest and transparent manner.



# Efforts to Strengthen the BOD's Role



The BOD operates independently of management, and the disclosure of management information and submission of agenda issues to non-standing members in advance facilitates the in-depth discussion of major issues. Mandatory attendance by experts with in-depth knowledge of each operational area encourages management involvement and allows the BOD to take advantage of their expertise.

# | Board of Directors Activities |

		Agenda	Average duration	Average attendance
2005	7	23	68 minutes	93.51%
2006	8	29	95 minutes	96.59%
2007	6	23	104 minutes	96.97%

### 2007 Major BOD Issues

O Balance sheet, Income statement, Statement of appropriations of retained earnings, Business report

O 2007 Contributions to Intra-Company Labor Welfare Fund

O Revisions to 2007 Budget, Personnel, and Organizational Regulations

O Revisions to Employee Compensation and Employment Regulations

O Diversion of contingency reserve

O 2008 Business objectives, Budget, Financial plans, R&D plans, etc.

# Selection of Executive Members

KHNP ensures the fair and transparent selection of its executive members through the Presidential Nominating Committee and the Standing Director Nominating Committee. These bodies review all documents that have been submitted by candidates and recommends nominees to the shareholders' meeting, which then selects the president and standing directors from the roster.

### | Executive Nominating Committees |

Committee	Membership	Remarks
Presidential Nominating Committee	6 non-standing directors, At least 7 outside members	Outside members selected by BOD
Standing Director Nominating Committee	5 standing and 6 non-standing directors, 3 outside members	Outside members designated by president

# Management Evaluations and Compensation

KHNP's president is responsible for the overall performance of the company. Under Paragraph 2 of Article 35 of the company's articles of incorporation, he or she is obliged to sign a contract with the president of KEPCO, the company's major shareholder, stating targets to be achieved during his or her term of office, with compensation being paid according to performance. Other standing directors sign contracts with the president of KHNP and are paid according to their performance. Non-standing directors are not entitled to compensation.

ECONOMY SOCIETY ENVIRONMENT

# Risk Management

Given such uncertainties as fluctuating oil prices and rapid changes in foreign exchange and interest rates, risk management (RM) is critical to a successful business operation. KHNP is continually strengthening its RM capacity while setting appropriate levels of risk tolerance.

### Corporate Value and Risk Management



KHNP is well aware of the need for RM in an era of rising uncertainties and rapidly changing business environments. As a result, it produced a "Company-Wide Risk Management Manual" in 2002 that identifies potential external and internal risk factors and implements proactive countermeasures to deal with them. Since 2003, the manual has been supplemented with case studies of other potential risk factors at its power plants and nuclear power sites to control for financial, operational, fuel, and disaster-related risks.

Financial risk usually arises from changes in foreign exchange (FX) and interest rates, electricity sales prices, and consumer prices. To avoid being unduly influenced by these factors and ensure the company's financial soundness and stability, the FX Risk Management Committee manages for FX risk in keeping with FX risk management guidelines enacted in 2002. The company also seeks advice from outside experts in the fields of managing financial risk and building optimal portfolios and has established an FX RM system and an integrated financial information desk.

Operational Risk Management

**Financial Risk** 

Management

KHNP operates a multi-tiered RM system to ensure the optimal operation of its facilities. Called RIMS<sup>®</sup>, it is based on the results of regular PSA<sup>®</sup> and ORION<sup>®</sup> assessments carried out during planned preventive maintenance activities (PPM). In addition, the company has switched from a system of dealing with risk "after the fact" to one based on prior analysis and prevention. This was done by establishing a preemptive prediction system based on failure signals at NPPs.

① RIMS (Risk Monitoring System): An IT system designed to predict, evaluate, monitor, and manage quantitative risk following changes in such operational conditions as maintenance or the testing of equipment during full-power operations

(2) PSA (Probabilistic Safety Assessment): Analyses made in both the design and operating stages of a nuclear plant to identify and study every possible situation and sequence of events that might result in damage to the core.

③ ORION (Outage Risk Indicator of Nuclear Power Plants): An IT system that allows for the qualitative analysis and management of safety barriers following changes in such operational conditions as temperature, pressure, or the level of the reactor cooling system during a shutdown or low power operations

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# Nuclear Fuel Risk Management

### **Disaster Risk Management**



KHNP calculates its nuclear fuel supply needs by dividing the process by phase and predicting demand and schedules at each plant. To minimize market risk arising from fuel price hikes, the company maintains an adequate level of reserves through diversified contracts and supply channels and obtains pricing advantages through long-term contracts.

As part of its safety-oriented management philosophy, KHNP carries out radiological disaster prevention drills with contingency groups organized in cooperation with local communities, governments, and businesses (please see page 97.) In particular with our technology to reduce radiation dosages, our NPP safety management was highly recognized by the IAEA<sup>®</sup> and WANO<sup>®</sup>. The company has also established a series of earthquake countermeasures, complete with new guidebooks and drill scenarios. In addition, it has developed a fully-functioning fire department, developed counter-terrorism guidebooks, and enhanced its handling capabilities by developing a standardized safety manual for NPPs.

### | Contingency Countermeasures System |



### **Human Risk Management**

Human risk arises from such factors as accidents caused by stress, increased job responsibilities, and/or personal problems. KHNP operates an RM system to deal with such risks, including an employee assistance program (EAP), an integrated health management system, and a labor information integration system. It also encourages the development of an open and honest labor–management system.

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① IAEA (International Atomic Energy Agency): An international organization within the United Nations launched in 1957 for the peaceful uses of nuclear power

② WANO (World Association of Nuclear Operators): An international organization founded in 1989 after the Chernobyl disaster to foster international cooperation and professional excellence within the nuclear industry

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# Sustainable Management

# Sustainable Management System

In order to realize its vision of becoming a world-leading electric power generation company that prioritizes people, the environment, and technology, KHNP has established a set of goals and strategies for managing the economic, social, and environmental aspects of its operations in a responsible and sustainable manner. Any changes to these plans and programs will be based on continuing feedback from the company's stakeholders.

### | Sustainable Management System |



### Stakeholders (customers, stockholders, communities, employees, suppliers, etc.)

Sustainable Management KHNP's Strategy and Planning Department is charged with establishing the company's sustainable management goals and strategies, dealing with feedback from its stakeholders, and furthering cooperation among the company's departments and generation facilities. KHNP also used the services of external advisory agencies to assist in the development and publication of this report (please see pages 101~102).

# Sustainable Management Initiatives

In terms of economics, KHNP will contribute to the development of the nation and the Korean people by maintaining a sound financial structure, expanding into new markets and the new and renewable energy business sector, and developing new technologies and work processes. To do so, the company will maintain its excellent credit ratings, ensure a sound financial structure by controlling for risk, and invest in the development of new technologies.

KHNP obtained level six(highest) of innovation initiatives, further enhancing its competitiveness. Moving forward, the company will establish a corporate culture based on research and innovation, develop sustainable future growth engines, share a reasonable portion of its profits with the larger society, and continue making improvements to its systems and processes.

On the social front, KHNP pursues mutually beneficial relationships with its stakeholders in such ways as raising the public's acceptance of NPPs, balancing work and life issues for its employees, practicing ethical management, and dealing with its suppliers in a fair and transparent manner.

In order to raise the public's acceptance of the reliability and safety of its NPPs, KHNP discloses all information relating to their operations. The company is also committed to greater workplace safety, more cooperative labor-management relations, and achieving a better balance between work and life for its employees. In addition, its efforts towards ethical management were praised in 2007 anti-corruption evaluations. When dealing with suppliers, KHNP places a premium on development that encourages technology and management innovation, and insists on fairness in its transactions. In addition, its strategy of positive and cooperative interaction with local communities helps build trust and understanding among people living close to its facilities. KHNP will continue its sustainable management initiatives by dovetailing its social responsibilities with its business activities.

In terms of its environment, In order to minimize its impact on the environment, KHNP practices environmentally friendly management and maintains state-of-the-art radiation and radioactive waste control systems. As part of an environmental management system that includes strict monitoring and constant evaluations, the company has built fail-proof disposal sites for low-and intermediate-level radioactive waste (LILW). Although our hydro and nuclear power generation operations do not emit any greenhouse gas (GHG), we will strive further to minimize our environmental impact.

C	Category	Awards and Commendations	Agency	
		Korea Technology Innovation Management Awards	agement Awards Korea Economic Daily	
F	conomy	Korea Management Awards Korea Management Association, Consultin		2006
		Sixth grade-the highest in the Government Agencies'	Ministry of Stratogy and Einango	2007
		Innovation Evaluation Performance Review	winistry of Strategy and Finance	
	Public · Communities	Corporate Social Responsibility Award	Korea Economic Daily	2005
		Social Service Group Commendation	Gyeongju, Busan, and Ulsan cities and	2005/2006
			Gyeongsangbuk province	
		Beautiful Contributor Award	Jeonnam Branch of Community Chest	2006
		Prize for Supporters of National Sports Games	I llean City	2006
		for the Disabled	Usan City	2000
Society	Employee	Korea Labor-Management Culture Grand Prize	Ministry of Labor	2006
		Certificate for Excellent HR Development	Ministry of Education, Science, and Technology	2006
	Suppliers	Prize for Commercialization of New Technologies	Ministry of Knowledge Economy	2007
		Beautiful Partnership Prize	Ministry of Knowledge Economy	2007
		Large, Small, and Medium-Sized Enterprise	Endoration of Koroan Industrias	2007
		Cooperation Awards	rederation of Rolean industries	2007
En	vironment	Environmental Management System Certificate	Korea Productivity Center for Quality Assurance	2006

# Sustainable Management Awards and Commendations

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# Sustainable Management Performance

# **Performance Indicators and Results**

KHNP has established the following performance indicators to measure the results of its sustainable management goals and strategies in the economic, social, and environmental spheres.

Category	Sphere	Indicator	2006 Results	2007 Results	2008 Target	page
Economy		Sales (Billions of KRW )	5,560.7	5,580.3	5,236.8*	32, 34
	Economic Performance	Overseas Credit Ratings (Moody's, S&P)	A1/A	A1/A	A1/A	32, 36~37
		Power Generation (GWh)	149,902	144,271	146,838	12, 32
		Capacity Factor (%)	92.3	90.3	90.9	14, 32
	Innovative/Creative Management	New and renewable energy Investments (Billions of KRW)	6.9	14.7	25.9	32
		R&D Investment to Sales Ratio (%)	4.8	5.4	5.5	43
		Unplanned Shutdown Ratio (case/unit)	0.5	0.6	0.4	52~53
	Customers	Nuclear Plant Incidents and Accidents Rate (above level 1)	2	0	0	52~53
		Information Disclosure Ratio (%)	100	100	100	52, 54~55
	Employees	Education & Training Hours (hours/person)	138	142	145	56, 60
		Industrial Accidents Occurrences (cases)	11	7	5	56, 63~64
		Labor Disputes (cases)	0	0	0	56, 64
	Ethical Management	Education & Training Hours (hours/person)	8.4	10.8	11	67, 69
Society		Integrity Evaluations (on scale of 10)	9.2	9.8	9.8	67, 70
	Suppliers	Electronic Contracts Ratio (%)	99.6	99.8	100	71~72
		Purchases of Small- and Medium-Sized Enterprise Products (Billions of KRW)	152.9	170.2	190.0	71, 74
		Small- and Medium-Sized Enterprise Cooperation R&D (Billions of KRW)	2.6	4.5	5.0	71, 75
	Local Communities	Social Contributions (Billions of KRW)	44.5	48.2	56.7	76, 78
		Social Service Hours (hours/person)	7.8	8.6	9.7	76, 80~81
Environment	General Environment	Environmental Management Certificate (ISO 14001) (%)	100	100	100	86~87
		Green Purchases (Billions of KRW)	3.6	3.9	4.5	86
		Waste Recycling Ratio (%)	54.2	61.8	65	86, 90
	Nuclear Environment	Collective Dosages (man.Sv/unit)	0.55	0.64	0.60	86
		Radioactive Waste (m³/unit)	47.4	60.2	54	86, 93

 $\,$   $\,$  Sales target includes an adjustment for electricity sales prices in 2008  $\,$ 



# UN Global Compact





# **Compliance with UN Global Compact**

KHNP joined the UN Global Compact (UNGC) in March 2007, thereby certifying its commitment to ten major compact principles. These include protecting human rights, supporting labor and the environment, and combating corruption. The following table shows our levels of compliance with these principles.

Category	Principles	Applicable Regulations and Policies	GRI	BEST	page
Human Rights	<ol> <li>Businesses should support and respect the protection of internationally- proclaimed human rights; and</li> </ol>	<ul> <li>Management Guidelines (Harmonious Management)</li> <li>Article 9 of Employment Regulations (prevailing of laws)</li> <li>Article 7 of Employment Regulations (Job Security)</li> </ul>	HR1 HR5 HR9 HR2 HR6 HR3 HR7 HR4 HR8	PN2 EM9 CO2 PN3 EM10 EM7 EM30 EM8 EM31	57~58 60, 77 64~66
	2. make sure that they are not complicit in human rights abuses.	· Contracting Guidelines – Supplier Qualifications	HR1 HR8 HR2	PN2 EM31 PN3	60
Labor Standards	<ol> <li>Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining;</li> </ol>	<ul> <li>Article 1 of Collective Agreement (bargaining and interest groups)</li> <li>Paragraph 1 of Collective Agreement Guaranteeing Union Rights</li> </ul>	HR5 LA4 LA5	EM8 EM12 EM13	64~66
	4. the elimination of all forms of forced and compulsory labor;	<ul> <li>Article 7 of Collective Agreement</li> <li>(working hours, holidays, vacations, and leaves)</li> <li>Article 2 of Employment Regulations (service)</li> </ul>	HR7	EM10	58
	5. the effective abolition of child labor; and	<ul> <li>Article 7 of Human Resources Management Regulations</li> <li>Article 19–Specific Position-Holders Management Guidelines</li> </ul>	HR6	EM9	58
	<ol> <li>The elimination of discrimination in respect of employment and occupation.</li> </ol>	<ul> <li>7. Ethical Treatment of Employees in Code of Conduct and Code of Ethics</li> <li>Article 5 of Employment Regulations (Concerning Equality)</li> </ul>	HR4 LA13 LA2 LA14 LA10	EM2 EM7 EM3 EM17 EM5 EM27	57~58 60, 63
Environment	<ol> <li>Businesses should support a precautionary approach to environmental challenges;</li> </ol>	<ul> <li>2. b. Environmental Protection in the Code of Conduct and Code of Ethics</li> <li>Environmental Management Policies (Establishing and Implementing an Environmentally Friendly Management System)</li> </ul>	4.11	GR11	20~21
	8. undertake initiatives to promote greater environmental responsibility; and	<ul> <li>2.b. Environmental Protection in Code of Conduct and Code of Ethics</li> <li>Environmental Management Policies</li> <li>(Compliance with Domestic and Global Environmental Standards)</li> </ul>	EN2 EN13 EN26 EN5 EN14 EN27 EN6 EN18 EN30 EN7 EN21 EN10 EN22	EV1 EV17 EV2 EV23 EV3 EV24 EV4 EV27 EV16	87~92 106~108
	9. Encourage the development and diffusion of environmentally friendly technologies.	<ul> <li>2.b. Environmental Protection in the Code of Conduct and Code of Ethics</li> <li>Environmental Management Policies (leading in environmental protection activities)</li> <li>Environmental Vision</li> </ul>	EN2 EN10 EN5 EN18 EN6 EN26 EN7 EN27	EV4 EV5 EV18 EV23	87 88~91
Anti- corruption	10. Businesses should work against corruption in all its forms, including extortion and bribery.	<ul> <li>4.Mutual Prosperity with Suppliers in Code of Conduct and Code of Ethics</li> <li>Chapters 2 and 3 of supplement to Code of Conduct and Code of Ethics</li> </ul>	SO2 SO3 SO4	CO5 EM25 EM26	70 68~70

W UN Global Compact: proposed by former UN Secretary-General Kofi Anan during the World Economic Forum at Davos, Switzerland in January 1999, the compact contains ten principles regarding corporate social responsibilities and transparent management practices.

# KHNP Stakeholders

KHNP's stakeholders include governments, shareholders, customers, communities, suppliers, and employees. Since they exert both direct and indirect influences on the company's activities, KHNP has established a variety of communications channels to take account of their needs, allowing it to practice sustainable management while growing with them.

**Government** KHNP works with the central government to guarantee a stable supply of electricity. As a partner, the company participates in policy–building processes for the construction and operation of NPPs–including securing sites for new NPPs, acquiring necessary approvals, and security monitoring.

**Shareholders** KEPCO is KHNP's sole shareholder. It participates in the company's decision-making processes and receives dividends from it. KEPCO is also the company's sole client, purchasing electricity generated by KHNP and selling it to retail customers.

**Customers** Because the electricity generated by KHNP reaches the public through KEPCO, it follows that the company's customers consist of the general public. Electricity is different from other commodities, as it is characteristically difficult for consumers to distinguish its quality.

Local Communities Local communities include local residents, local governments, and environmental groups in areas where KHNP operate NPPs and hydropower plants. They have a direct influence on public acceptance.

**Suppliers** KHNP works with many outside businesses, such as nuclear fuel suppliers, equipment suppliers, and construction companies. Since the nuclear industry utilizes high technologies, close cooperation with suppliers is critical to our competitiveness.

**Employees** KHNP's employees are its most valuable asset. Since their performance at work can lead to the company's success or failure, employee satisfaction is essential to the maintenance of KHNP's competitiveness.

# External Expert Advisory Opinion on KHNP's 2008 Sustainability Report

Dr. Mika Kuisma, Helsinki School of Economics

(Interviewed September 15, 2008)

Sustainability reports have become an essential part of our global society, because corporations that fail to communicate with their stakeholders will soon lose their competitive edges. In this context, the Korea Hydro & Nuclear power Corporation's first sustainability report achieved both balance and inclusiveness in covering all the "triple bottom-line"—its economic, social, and environmental performances.

It is particularly notable that the report presents references relevant company bylaws and policies on the same page as the ten principles of the UN Global Compact and the GRI and BEST indicators, along with page numbers that provide ancillary information. KHNP was also sincere enough about writing this report to include a materiality test that reflects the interests of its stakeholders. The company effectively integrated the sections on "disclosure on management approach" with those describing its vision, strategies, major issues, and performance. This helps the reader to better understand the company's sustainability performance.

Many companies omit innovation management in the "economic" part of their sustainability reports, but it does not make the case with KHNP's sustainability report. Although the "social" section is usually the most challenging due to its need for qualitative data, KHNP was thoughtful enough to include both comparative and trend data. The "environment" section was especially interesting, since it was included two categories: general and nuclear. This was a nice try, given the industry's characteristics. Still, it might be better if KHNP provide its relative impact on the environment in comparison with international averages. Given the significant roles that climate change and carbon emissions should play in sustainability reports, it is highly recommended that indirect environmental impacts (such as those made by transportation) should be addressed more fully in future reports.

# **Communications with Stakeholders**

KHNP values its stakeholders and has established a wide variety of communications channels to listen to their opinions, as shown in the following diagram. The performance of each channel is described in relevant sections of this report.



# Sustainability Issues

# **Materiality Test**

Materiality tests are used to identify and prioritize issues of interest to an enterprise's stakeholders. KHNP used the IPS Materiality Test Model<sup>™®</sup> to analyze and prioritize sustainability issues for this report. The test consists of five steps: a survey of stakeholders, an internal analysis report, interviews with experts, the benchmarking of global players in similar fields, and a media analysis. When all the test results were in, the company classified the most important issues under the following categories: sustainable management, economic performance, social performance, and environmental performance.

**Stakeholders' Survey** KHNP carried out surveys to gather the opinions of its stakeholders regarding its corporate vision, business strategies, and future plans. The surveys, which were conducted in September 2007, were administered to company employees, people at KEPCO and in the central government, industry leaders, and local residents. The company also carried out an inspection of its suppliers in October of the same year to ferret out instances of corrupt activities.

Internal Analysis Report The company conducted an internal analysis of issues considered to be of material importance to it. By including the measurements of performance indicators in the materiality test process, it was able to determine a number of issues requiring intensive management in the future.

Interviews with Outside Experts KHNP also conducted individualized interviews with representatives from the central government, local communities, academia, environmental groups, and international sustainable management experts in June of 2008. The interviews helped the company specify its sustainable management visions and



strategies and sustainability reporting. The summaries have been inserted in each relevant section of the report, along with the company's response.

**Benchmarking** The company benchmarked the sustainability activities and reports of global nuclear energy leaders to identify major issues and see how they were dealt with. The results were reflected in the materiality test and will be used for planning future sustainability reports.

**Media Analysis** KHNP carried out a review of media coverage of its activities from January 2007 to May 2008, placing special emphasis on issues covered and their frequency. This allowed the company to better understand public sentiment toward KHNP and illustrated the importance of cooperating with its stakeholders.

① IPS Materiality Test Model<sup>™</sup>: A test developed by the Institute for Industrial Policy Studies in 2006 and utilized in sustainable management strategies and reports. Used to identify material issues in each company's management, it has been constructed to take the nature and characteristics of each enterprise into account.



# Interview with an Expert

Wan-Seon Shin, Professor, Seongkyunkwan University

(Interviewed June 9, 2008)

**Opinion** KHNP has played a formative role in fostering sustainable management mechanisms in Korea through its insistence on adopting global standards. However, sustainability must be measured against a company's entire management system—not just the activities of a handful of its members. Therefore, we expect KHNP will play a more important role in sustainable management by reporting its overall performance.

**KHNP Response** The nuclear power industry cannot prosper without balancing its "triple bottom line"—its economic, social, and environmental performances. KHNP has attempted to accomplish this, but realizes that there is still room for improvement. In the future, the company will ensure that its corporate vision is correctly aligned with every aspect of its sustainable management mechanisms.



# Major Issues in Each Area

KHNP categorizes each issue identified by the materiality test as a major sustainability issue and will include each one in its future management practices. All results will be disclosed in following sustainability reports.

Economy	Customers	Employees	Ethical Management	Suppliers	Communities	Environmental Management	
<ul> <li>Process innovation</li> <li>Exploring overseas markets</li> <li>Business results, competitiveness</li> <li>R&amp;D</li> </ul>	<ul> <li>Stable supply of electricity</li> <li>Satisfying public's right to know</li> <li>Public safety and health</li> </ul>	<ul> <li>Talent cultivation</li> <li>Workplace safety and health</li> </ul>		Fair transactions	<ul> <li>Development of local communities</li> <li>Social contributions</li> <li>Social agreements</li> </ul>	<ul> <li>Safety of facilities</li> <li>Radioactive waste management</li> <li>Environmental protection</li> </ul>	High
<ul> <li>New and renewable energy</li> <li>Developing new types of reactors</li> <li>Enhancing efficiency in building and operating NPPs</li> </ul>	<ul> <li>Operating efficiency of power plants</li> <li>Enhancing efficiency of energy use</li> </ul>	Job Satisfaction     Fair compensation	<ul> <li>Transparent management</li> <li>Ethical management system</li> </ul>	<ul> <li>Safe and secure working conditions</li> <li>R&amp;D and technology transition supports</li> </ul>	<ul> <li>Local community education</li> <li>Understanding local communities' needs</li> <li>Employees' volunteer hours</li> </ul>	<ul> <li>Countermeasures against climate change</li> <li>Management of environmental impacts</li> <li>Continued operation of NPPs</li> <li>Selecting new sites</li> </ul>	Medium
<ul> <li>Brand management</li> <li>Enhancing efficiency of generation facilities</li> <li>Innovation capacity</li> <li>CDM</li> <li>Job creation</li> <li>Distribution of economic values</li> </ul>		<ul> <li>Respecting diversity and protecting human rights</li> <li>Balance between work and life</li> <li>Labor-management relationships</li> </ul>	<ul> <li>Employee ethics</li> <li>Transparent disclosure of information</li> </ul>	<ul> <li>Mutual growth</li> <li>with suppliers</li> <li>Supplier safety</li> </ul>	Residents' participation     Partnerships with local     communities	<ul> <li>Reducing GHG emissions</li> <li>Building environmentally friendly generation facilities</li> <li>Protecting biodiversity</li> <li>Waste management</li> <li>Recycling</li> <li>Environmental Management</li> <li>System (ISO14001)</li> <li>Spent fuel management</li> </ul>	Emerging



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# Value Growth

Scarcity generates value.

We developed technologies to meet the challenge of making the best use of scarce resources. We worked hard to realize our dream of energy security. Now we can take advantage of it.

KHNP: committed to playing a leading role in Korea's economic prosperity.

# Economic Performance Management



# Disclosure on Management Approach



2006

2007

2006

2007

32 Sustainability Report 2008

2006

2007



# Financial Performance Economic Performance

# Value Generation and Distribution

In 2007, KHNP generated KRW 5,673.6 billion in earnings from the production and sale of electricity and KRW 784.5 billion in net

income. It distributed the earnings to the government, its shareholders and employees, local communities, and suppliers.



# Financial Highlights

Ever since its establishment, KHNP has enjoyed above-average growth potential, profitability, and stability. However, growth in both sales and net income has slowed over the past three years because the six NPPs under construction have yet to generate a profit. When completed in 2010, these new plants will make significant contributions to the company's growth.

### Growth

KHNP posted KRW 5,508.3 billion in sales for 2007, with net income going up by KRW 10.8 billion from the previous year to KRW 784.5 billion. There was a slight decline in sales due to increased planned preventive maintenance (PPM) activities, while net income grew in the wake of higher sales prices. Increases in capital expenditures resulted in a 3% rise in equity capital to KRW 13,645.0 billion, while total assets increased by 6% to KRW 23,470.4 billion.

# **Profitability**

Profitability in the power generation business depends on the amount of power being generated and its sales price. In 2007, KHNP's net income, net income to net sales ratio, and ratio of earnings to total capital remained the same as in 2006. This happened because the company's sales price remained unchanged for a second straight year and because NPPs under construction have yet to generate profits.

### **Stability**

KHNP enjoys a stable cash flow, a balanced debt load, and sound current ratios. In 2007, the company lowered its reliance on borrowings to 1.35%, adding to its financial soundness to access stable sources of funding for future NPP construction.







Profitability











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# Increasing Financial Soundness

# **Stable Funding System**

KHNP maintains a series of funding portfolios that allow it to secure needed funds in a timely manner while minimizing financial risk. In addition, two new processes are in the planning stages: a medium-term note (MTN) program, a system of issuing foreign currency bonds on demand, and domestic corporate bond batch-filing. The company also maintains overdraft accounts to guarantee its liquidity in the event of an unexpected financial crisis.

# **Management of Financial Risk**

KHNP's financial risk management system is designed to control for foreign exchange (FX), interest rate, and liquidity risk. The company attempts to anticipate sudden changes in financial markets through long-term target-setting and the consistent monitoring of its borrowings. KHNP established its FX risk management guidelines in 2001. It also has an FX Risk Management (RM) Committee, consisting of outside FX experts and FX-related working-level staffers in the fields of materials and nuclear fuels. In 2007, the company established an FX RM system to set FX risk exposures, calculate hedge ratios, and monitor the FX market. It manages for FX risk through systematic analyses performed by a series of integrated financial information desks.

# Enhancing Return on Capital Investments and Reducing Financing Expenses

KHNP uses surplus funds to optimize its security, liquidity, and profitability—always factoring in such variables as the characteristics, maturity, and operating conditions of the funds. During the past four years, the company has used its surplus funds to reduce its reliance on borrowings. As a result, the interest rate on its borrowings has decreased by 0.6% from 2006.



# **IR Activities: Maximizing Corporate Value**

In order to maximize its corporate value, KHNP carries out a wide range of investor relations (IR) activities to inform current and potential investors and credit rating agencies about its financial soundness and competitiveness. In addition, it has established a three-step "roadmap" for upgrading its IR capabilities. The following table summarizes the company's major IR activities in 2007.

### 2007 IR Activities

Regular meetings with credit rating agencies	S&P (May), Moody's (July), R&I (November), Fitch (December)			
IR Sessions	<ul> <li>Inviting domestic financial institutions to visit the Kori NPPs (October 2007)</li> </ul>			
Interactive Communications	<ul> <li>Cyber IR activities</li> <li>Q&amp;As with major financial institutions and credit rating agencies</li> <li>IR Library: brochures and other materials in both Korean and English</li> </ul>			
Management Disclosure	Disclosure via Web site     Electronic Disclosure System     Reports to the U.S. Securities and Exchange     Commission (SEC)			
CEO PR Activities	<ul> <li>Capitalizing on CEO's expertise and experience</li> <li>Appearing on major media, including Hankyung WOW (the Korea Economy Daily's TV show)</li> <li>PR on nuclear industry in daily newspapers</li> <li>Lectures</li> </ul>			



IR "Roadshow"

# **Korea's Highest Credit Ratings**

KHNP has earned AAAs—the highest credit rating possible—from Korea's three credit rating agencies. Moody's rated it at A1/Stable (one grade higher than its national credit ratings), S&P and Fitch at A/Stable (the highest for any Korean company), and Japan's R&I upgraded its rating to A+/Positive in 2006.

These ratings, which speak volumes about the world's recognition of KHNP's financial soundness, stable cash-generating power, and growth potential, aid greatly in facilitating the company's funding activities. KNHP will continue to add to its corporate value and maintain its excellent credit ratings through a host of ongoing IR activities.
#### Credit Rating Trends

Ratings Agency	2005	2006	2007
Moody's	A2/Stable	A1/Stable	A1/Stable
S&P	A/Stable	A/Stable	A/Stable
Fitch	A/Stable	A/Stable	A/Stable
R&I	A/Positive	A+/Stable	A+/Positive
Korea Information Servi Korea Ratings NICE Ratings	AAA	AAA	ΑΑΑ

# Upgrading Financial Structure

#### Mid-to Long-Term Financial Outlook

Although KHNP has always maintained a sound financial structure and stable cash flows, the construction of eight new NPPs currently underway will doubtless impact negatively on its cash flow. This capital shortage is expected to last until 2017.

Mid-to Long-Term Financial (Unit: Billions of KR)					
Category	2008	2010	2012	2014	2017
Sales	5,236.8	5,794.3	7,435.2	9,169.8	11,351.6
Net Income	316.7	182.4	275.2	819.9	1,273.9
Operating Profit Ratio	8.1%	4.5%	5.8%	13.3%	17.7%
Debt Ratio	77.6%	100.3%	120.2%	112.5%	78.3%
Capital Shortage	890.3	1,781.8	847.7	1,065.6	-744.6

Mid-to long-term financial outlook strategies (February 2008)
 2. Basic suppositions: consumer prices growth rate at 3%.

interest rate at 5%, sales price hike of 0.47%

#### **Enhancing Mid-to Long-Term Financial Structure**

#### Securing appropriate price levels

KHNP maintains the lowest prices among Korea's power generation companies thanks to the low cost of nuclear power generation (please see page 15). Despite this, the enormous capital expenditures needed to build and operate NPPs demand an appropriate rate of return in the form of sales prices. The company will continue to inform the central government and KEPCO about the necessity of raising its selling price to a reasonable level.

#### Optimizing capital expenditures and ordinary expenses

KHNP carries out various measures to maintain an optimal level of capital expenditures in order to deal with potential capital shortages and enhance its financial soundness. For example, it prioritizes its investments through feasibility tests and shortens the timelines for NPP construction periods by deploying state-of-the-art technologies. In addition, the company's balanced scorecard (BSC) and responsibility accounting systems identify non-essential costs by setting financial targets and providing feedback on operating performance.

#### Saving Fuel Costs

KHNP strives to purchase nuclear power fuel as economically as possible. It saves on fuel expenses by developing stable and diversified supply chains, signing long-term contracts, developing uranium mines, and augmenting its price forecasting capabilities.

### Indirect Economic Impacts

#### **Enhancing Brand Value**

KHNP engages in a wide variety of PR activities to reinforce its standing as the world's third-largest nuclear power generation company. These are designed to raise its reputation as an environmentally friendly energy company and add to the public's favorable impression of nuclear power. Its goal is to become a more trusted and respected corporate citizen through environmentally friendly management, enhancing its social contribution programs, and stressing the safety record of nuclear energy.



 $\,$   $\,$  1500 residents of five major cities, Serome Information & Statistics, October 2007

--(5) (E)

#### A Stable Power Supply at a Reasonable Price

In 2007, KHNP generated 144,271GWh of power, or 35.8% of the nation's electricity supply, contributing to a stable supply of electric power by providing it at the nation's lowest price: KRW 39.93/kWh. This contributed to raising the price of electricity by a mere 5.5% from 1982 to 2007—while consumer prices were rising by 207.0%. In addition, KNHP's highly efficient and extremely economical power generation has a very high import substitution effect, helping to reduce the nation's dependency on imported fuels.

#### | Import Substitution Effect |

Category	Import Substitution Effect
(against) Soft Coal	KRW 3,200.0 billion
(against) Heavy Oil	KRW 12,400.0 billion
(against) LNG	KRW 9,100.0 billion

\* Based on nuclear power generation in 2007

In terms of industrial production and the creation of added values, the nuclear power industry's GDP contribution is valued at 0.92%<sup>®</sup>. This compares extremely well with the 0.05~0.47% achieved by other power generation sources.

#### **Reducing Greenhouse Gas (GHG) Emissions**

The UN Framework Convention on Climate Change (UNFCCC) calls for global participation in efforts to reduce GHG emissions. Nuclear power generation contributes markedly to these initiatives, since it does not produce GHGs during production. In 2007 alone, this lessened CO<sub>2</sub> emissions by about 140 million tons compared to coal-fired power generation.

CO₂ Emi	ssions	by Energ	y Sourc	ce			(Unit: g/kWh
	Coal	Gas	Oil	Hydro	Solar	Wind	Nuclear
Amount	991	549	782	8	57	14	10

※ IAEA 2006

Given that CO<sub>2</sub> emission rights are traded at about  $\in$  20/tonCO<sub>2</sub> in those EU countries where trading is permitted, we expect further growth in demand for NPPs, since they achieve such large savings in environmental costs.

#### **Taxes and Government Subsidies**

KHNP paid KRW 714.8 billion in national taxes and KRW 136.8 billion in local taxes in 2007. Since 2006, it has been paying a regional development tax at a rate of KRW 0.5/kWh of total nuclear power production, amounting to KRW 76.0 billion per year. Under Restriction of Special Taxation Act, KHNP is entitled to tax credits for investments in R&D, HRD, productivity improvements, and energy-saving facilities.

Tax Credits			(Unit: Billions of KRW)
	2005	2006	2007
Amount	0.46	0.72	2.02

KHNP also receives R&D subsidies from the Electric Power Industry Fund under the terms of the Electric Power Industry R&D Guidelines and the Electric Utility Act. These subsidies are used to improve the safety of NPPs, optimize the construction of new ones and assist in their localization, and enhance the development of containers for the disposal of nuclear and radioactive waste.

R&D Subsidies			(Unit: Billions of KRW)
	2005	2006	2007
R&D Subsidies	11.4	9.9	11.0

#### **Hiring from Local Communities**

In order to build more positive relationships with local communities and contribute to regional economies, KHNP gives their residents first priority in its hiring practices. To this end, the company allots 12~15% of its recruitment needs to local residents and allows a further 5~10% advantage under Article 17 of the Act on Assistance to Electric Power Plants—Neighboring Areas. Security guards and other specific positions are assigned exclusively to local residents, contributing to enhanced job creation in their communities. As a result, local residents accounted for 25% of KNHP's total staff in 2007. In addition, businesses operating in the neighborhood of the company's plants have an exclusive right to bid for contracts under a certain value. This policy resulted in KRW 119.4 billion of purchases from local suppliers, with the total amount increasing every year.

1 2007 KAIST Nuclear Power Value Assessment and Studies of Measures to Enhance Competitiveness (based on results in 2003), KHNP, 2007



#### **Building Infrastructures in Local Communities**

KHNP operates a variety of culture and sports facilities in local communities as part of its program for local community support. For example, the Ulchin NPP Sports Center is the only large indoor sports center in the vicinity. Its facilities include a seawater swimming pool. Meanwhile, the Kori NPP Sports and culture Center combines sports facilities with cultural performance facilities and a park. We also built the Hanmaeum Park within the Yonggwang NPP to provide an environmentally friendly "green" space.

Sports Centers in	(Unit: persons)		
	Ulchin Sports Center	Kori Sports and Culture Center	Yonggwang Hanmaeum Park
Number of visitors (2007)	33,226	55,824	115,360

#### **Retirement Benefits**

KHNP pays retirement benefits<sup>®</sup> to its employees either as a lump sum or in the form of a continuing pension. Any employee who retires or dies after at least one year of service is eligible for this benefit. A minimum of 30% of the total reserve for retirement allowances is entrusted to 6 commercial financial institutions, guaranteeing the value of an employee's pension entitlement while freeing the company from funding pressures.

#### **Technology Transfers to Small Businesses**

KHNP provides information on its patents and other industrial property rights on its Web site to enhance accessibility for small-and mediumsized enterprises. This is part of our technology transition policy for mutually prosperous relationships with small business. We transferred 5 technologies in 2006 and 44 more in 2007.

# Financial Highlights

#### **Income Statements**

Category	2005	2006	2007
Sales	5,628,678	5,560,684	5,508,340
Cost of electric power	4,194,018	4,429,288	4,385,061
Gross profits	1,434,660	1,131,395	1,123,278
Selling and administrative expenses	89,388	94,925	107,950
Operating income	1,345,272	1,036,470	1,015,328
Non-operating income	106,639	160,549	165,248
Non-operating expenses	58,664	130,321	106,977
Income before income taxes	1,393,246	1,066,698	1,073,599
Income tax expenses	383,706	293,008	289,138
Net Income	1,009,539	773,690	784,460

#### **Balance Sheets**

(Unit: Millions of KRW)

(Unit: Millions of KRW)

Category	2005	2006	2007
Current assets	3,236,242	3,564,758	3,939,803
Non-current assets	18,783,006	18,557,212	19,530,615
Total assets	22,019,248	22,121,970	23,470,418
Current liabilities	1,179,694	813,226	1,063,881
Long-term liabilities	7,885,302	8,058,223	8,761,487
Total liabilities	9,064,996	8,871,449	9,825,368
Common stock	1,131,550	1,131,550	1,131,550
Capital surplus and other capital	8,233,248	8,233,248	8,233,248
Retained earnings	3,595,882	3,885,722	4,280,250
Total stockholders' equity	12,954,251	13,250,521	13,645,049
Total liabilities and stockholders' equity	22,019,248	22,121,970	23,470,418

※ Detailed financial information, including cash flow statements and retained earnings appropriateness statements, are available on our Web site: www.khnp.co.kr.



(1) Retirement benefit calculation = average wage x payment ratio (payment ratio: one month per year)

# Innovation Management Economic Performance

## Innovation Activities

KHNP deploys management innovation strategies to increase its operational capabilities and prepare itself for any and all changes in the domestic and global energy marketplace. We focused on establishing a management innovation system and culture until 2006. In 2007, We made great efforts for connecting them to management strategies and making upgrades to generate tangible results. These efforts resulted in a "level 6" rating—the highest score possible--during the 2007 evaluation of innovation perfomances in government agencies.

#### | Management Innovation Road map |



#### **Innovation Leadership**

KHNP shares its innovation goals with all its employees. An innovation sponsorship system and innovation leadership academy help disseminate innovation initiatives throughout the workplace, while the Management Innovation Committee and innovation strategy meetings provide opportunities to discuss issues with management.

#### | CEO's Innovation Philosophy |



#### **Innovation Goals and System**

KHNP uses the term "BEST 4Cs" to summarize its innovation goals. This refers to creativity, credibility, competitiveness, and capability, all of which are to be attained through four innovation strategies: performance-oriented, customer satisfaction, efficiency-oriented, and capability reinforcement. The company devised a complete set of plans for achieving these goals.

#### Framework of Innovation Strategies





#### **Promoting Innovation Tasks**

Innovation tasks are formulated from analyses of external and internal management environments, "top-down" applications of management's suggestions, work-out town meetings<sup>®</sup>, and customers' opinions and are put into development in consultation with the Management Innovation Committee. In 2007, the company devised a set of tasks to help it attain its long-term goals, as well as team-centered, company-wide, self-oriented innovation tasks and a set of work-out tasks. These activities had the overall goal of establishing an innovation culture and were put in place throughout the company. Work-out tasks are meant to reduce the need for unnecessary processes and spread an innovation culture through company-wide participation in innovation activities. Finally, KHNP devised an efficient task-practicing process.

#### **Strengthening Innovation Capabilities**

KHNP offers a host of leadership programs, such as an Innovation Specialist Course, an Innovation Sponsor Workshop, and a Leadership Academy to strengthen the innovation capabilities and mindsets of its employees. Work-out teams and other problem-solving "community of practice" (CoP) programs have similar goals. Monetary and other incentives lead to a greater level of participation at both the individual and group study levels.

#### **Monitoring and Feedback**

KHNP has established an innovation activities monitoring system to detect and resolve problems in a timely manner. Its balanced scorecard (BSC) and innovation task management systems help to monitor progress and performances and encourage progress in tasks that are falling behind. After a task is completed, rewards are offered in proportion to its results, which are then reflected in the company's future plans.



|Innovation Monitoring and Feedback System |

(1) Work-out town meeting: A management innovation method in which working-level group meetings are held to analyze problems and come up with solutions, which the management approve and put in place. The goal is to reduce inefficiencies in a process.

# Major Innovation Tasks and Performances

#### **DREAMS Upgrade**

In 2003, KHNP established an enterprise resource planning (ERP) system (we call it DREAMS, Digital Realtime Enterprise Asset Management System) and applied it to all its work processes, from power generation, construction, and operations to accounting, human resources management (HRM), and procurement. Following that, the company inaugurated an even more advanced working process to augment its future competencies.

#### |ERP Process |



KHNP concluded the first phase of upgrading the DREAMS system in 2007, reinforcing the platform and driving forces behind its innovation initiatives by developing tasks and upgrading its processes. This included strengthening opportunities for information sharing and cooperation by sharing operating information via integrated portals on a "real-time" basis and applying various innovation methods, such as RFID<sup>®</sup>-based materials management, BPM<sup>®</sup>, and a construction knowledge management system (KMS).

#### Work Process Innovation Results

Category	Performance Indicators	Before	After
	Settlement time-span	25 days	5 days
Management	Cost calculation time-span	10 days	2 days
	Accounting results handling	7 days	1 day
	Purchasing processes	15 steps	9 steps
	Electronic commerce ratio	0%	100%
Generation	Job directing and designing	1 month	1 week
	Equipment reliability analysis	1 month	Immediate
	Document inquiries	2 hours.	3 minutes
Construction	Percentage of process yield calculation	2 weeks (handwritten)	1 day (automated totaling)
	Construction cost calculations	2 weeks (handwritten)	"real-time" totaling
	Approval of inspection documents	3 days (handwritten)	1 day (electronic approval)

The company's ERP-based process innovations provided it with an integrated, standardized, and efficient work process, enabling the "real-time" provision of management information, strategic business management, and transparent management practices equal to any global standard. DREAMS, which has become a synonym for successful business innovation, has been benchmarked by the government and its agencies, other Korean companies, and nuclear industry players from China, Russia, and Vietnam. It is also included in the company's overseas business partnership program.

KHNP plans to carry out the second stage of upgrading DREAMS in 2008. This will include ERP system improvements, the addition of an enterprise information system and an online analytical processing tool (called Business Warehouse), and expanded applications of advanced IT and BPM.

#### **Encouraging Proposals and Suggestions**

KHNP encourages creative thinking on the part of its employees by providing them with optimal working conditions so that workplace improvements can be applied company-wide. In 2007, the company made dramatic improvements to its suggestion system and built an "idea plaza" to add to its employee's convenience and rate of usage. Ideas registered on the "idea plaza" go through a preliminary review at the departmental level before proceeding to the Idea Review Board for possible adoption. All ideas that are implemented are compensated for in proportion to their performance results. In 2008, the company is aiming at receiving 7,000 suggestions (or one per employee.)

#### |Suggestions and Rewards|



① RFID (Radio Frequency Identification): An advanced logistics methods utilizing an electronic tag called an RFID tag

(2) BPM (Business Process Management): A management approach used to enhance efficiencies in work processes by automating, integrating, and optimizing them.

#### **NPP Operational Innovations**

KHNP's competitiveness is determined by the safe and efficient operation of its NPPs. Even though the company possesses worldleading NPP operating capabilities, it is still striving to become a globally recognized best power generation company. That is why, in 2007, the company endeavored to augment the safety of its NPPs and enhance their operational performance by means of self-assessments (SAs), a corrective action program (CAP), and a peer group (PG) review.

The SA program evaluates the overall efficiency of a process by reviewing the differences between its current status and the desired target of each facet of its organization, while a CAP helps to prevent problems from recurring by identifying and analyzing their causes and instantly correcting them. Finally, the PG review process allows for horizontal communications within each organization and the development of a company-wide technology information exchange, thereby establishing a completely standardized working process.

The Web-based e-CAP system prevents serious accidents by issuing instant notifications of any small problems occurring during NPP operations and providing for immediate corrections. In 2007, the program resulted in 3,006 improvements, 2,508 of which (or 83.4%) were completed.

#### Upgrading NPP Construction Management Processes

KHNP is constantly upgrading its NPP construction processes in response to domestic electricity demands. This allows the company to retain leadership position in the NPP industry and facilitates its entry into global markets. By adopting new construction technologies and methodologies, KHNP can optimize these processes and shorten the time needed to build new NPPs.

#### | Comparison of NPP Construction Periods by Country |

Country	NPP	Type/Capacity	Period	Remarks (completion)
	Ulchin 3	OPR1000	61 months	In operation (1998)
Korea	Ulchin 6	OPR1000	55 months	In operation (2005)
	Shin-Kori 1	OPR1000	53 months	Under construction (2010)
China	Lingao II Unit 1	CP1000	60 months	Under construction (2010)
Japan	Domari 3	PWR(912MW)	65 months	Under construction (2009)
Finland	Olkiluoto 3	EPR1600	65~77 months	Under construction (2010~11)

\* "Construction period" spans the time from when concrete is first poured until completion

In 2007, KHNP implemented a variety of measures to optimize its NPP construction processes, including applying state-of-the-art IT technologies, a construction Knowledge Management System (KMS), and the standardization of its construction methods. By applying 4D CAD<sup>®</sup> to NPPs that are currently under construction, the company reduced the construction period. In 2007, KHNP implemented a variety of measures to optimize its NPP by one month with anticipated savings in the range of KRW 16.9 billion. The administration process was also streamlined through the application of integrated and standardized procedures, helping to eliminate unnecessary steps. KHNP also offered sixty-four domestically- and internationally-based training courses, covering such subjects as economical construction processes and new technologies and methodologies, to further the expertise of its construction corps.

#### R&D

KHNP is heavily involved in R&D. This guarantees the competitiveness needed to help the company realize its vision, cope with intensifying competition, and deal with ever-strengthening environmental regulations. As a result, R&D investments are constantly on the rise, with the R&D investment ratio to sales reaching 5.4% in 2007. KHNP has selected seven "next-generation" growth engine initiatives to develop state-of-the-art technologies for new NPPs, NPP operations, and power uprating. In addition, the company contributes to a nuclear power R&D fund as part of its membership in a central governmentdriven nuclear power R&D projects program to develop future reactor technologies. In preparation for overseas market expansion, KHNP is developing such original technologies as an NPP design core code and the core MMIS<sup>2</sup>, which is based on its NPP technology development plan, Nu-Tech 2015. It is also involved in securing advanced technologies through international joint research projects and full membership in the nuclear sector of the U.S. Electric Power Research Institute.

R&D Investments (Unit: Billions of KRV						
Category	2005	2006	2007			
Sales	5,628.7	5,560.7	5,508.3			
R&D Investments	226.4	266.6	297.7			
Ratio of R&D Investments to Sales(%)	4.0	4.8	5.4			
Research (cases)	132	164	180			

※ Including Nuclear R&D Fund

① 4D CAD (4-Dimensional Computer-Aided Design): A technology of adding a timeline (or schedule) to the 3-D CAD to optimize a construction process through visual simulations at each stage and time-period ② MMIS (Man-Machine Interface System): An instrumentation and control system that monitors, controls, and protects the operations of a nuclear power plant

#### Power Uprating of NPPs in Operation

The process called "power uprating of NPPs in operation" is a technology that utilizes existing redundancies to boost a unit's electric power output without having to make major changes to it. It adds to the economical operation of an NPP because there is no increase in maintenance costs and the unit's capacity can be increased quickly and at low cost, compared with the construction cost of a new KSNP unit (i.e., USD 300~500/kW vs. USD 2,000/kW). In addition, KHNP has enhanced its level of technological independence in its eight Westinghouse-type pressurized water reactors (PWR) currently in operation. This is expected to contribute dramatically to the reliability of the company's NPP operations while augmenting its domestic technologies.

#### Developing the Core Code of NPP Design

KHNP achieved a higher level of independence in NPP design technology by gaining approval for the standard design of its advanced power reactor 1400 (APR1400), which is used in its Shin-Kori units 3 & 4. This will also help the company pursuing global NPP markets. However, since exports of NPP technologies require both original technologies and core technologies and equipment, KHNP is also developing a core code of NPP design to secure original ownership. It is presently at the first stage of three (developing a safety analysis and core design codes for a light-water reactor NPP), with the securing of the original ownership targeted for completion by 2010.



Vitrification technology R&D conference

#### Vitrification Technology of Radioactive Wastes

The term "vitrification" refers to locking radioactive wastes in a vitreous structure and insulating them against extreme conditions. Besides adding to nuclear safety, this technology reduces the amount of waste by 75%. The Ulchin Vitrification Facility (UVF) of KHNP will be the world's first commercial vitrification facility using the Cold Crucible Induction Melter (CCIM). This advanced technology has received positive response from global markets—so much so that the company has signed an agreement to provide it to the Savannah River nuclear Soilution (SRNS), the U.S. DOE affliction. More opportunities to export this technology are expected in the future.

Major R&D Projects
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(Unit:	Bill	ions	01	KRW)	
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Project	Period	Amount of Investment
Development of power uprating technology of NPPs in operation	2004. 10 ~ 2008. 03	45.1
Development of prototype vitrification plant for treatment of low- and intermediate-level radioactive wastes	2002. 09 ~ 2008. 03	47.9
Wolsong Unit 1 lifetime management study	2004. 10 ~ 2007. 03	3.0
The Periodic safety review of Ulchin Units 1 & 2	2005. 03 ~ 2007. 12	3.1
Development of integrated steam generator management system	2005. 03 ~ 2008. 02	3.6
Development of material reliability program in NPPs	2005.06 ~ 2008.05	4.5

As a result of its R&D activities, KHNP has applied for 88 intellectual property rights, including 85 patents and 3 utility models. A further 196 applications are currently under review.

Intellectual Property Rights Applications	(Unit: cases)

	2005	2006	2007
Patents	37	79	85
Utility Models	0	4	3
Total	37	83	88

\* Including patents jointly owned with the Korea Atomic Energy Research Institute (KAERI)



# Creative Management Economic Performance

# Creative Management Initiatives

In order to better realize its corporate vision, KHNP has worked hard to create new overseas markets and expanded its environmentally friendly energy sources through the development of new and renewable energies. At the same time, the company is reinforcing its competitiveness and coping with a constantly changing business environment by developing new types of nuclear reactors—including a "next-generation" reactors.



# Entering New Markets by Exporting NPPs

KHNP is creating new growth engines by using its thirty-year history of constructing and operating NPPs to enter the global marketplace. To assist in this expansion, the company deploys a "choice and focus" strategy to focus its resources and offers

#### | NPP Global Projects |

(Unit: cases,	USD	10,000)	
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	-		
Nation	Project	Order Intakes (cases)	Amount (USD 10,000)
	NPP Construction Technical Support Services	6	2,286
China	NPP Operational Maintenance Technical Support Services	7	254
	Education and Training Services	8	76
Rumania	Process Management Consulting Services, etc.	2	17
Canada	Sale of Materials that are out of use and Technical Operational Support	4	75
	Total	27	2,708

customized services that will meet the business conditions of each market. These can range from turnkey projects and plant exports attached to capital investments to technical support services.

#### NPP Exports: A "Next-Generation" Growth Engine

In response to strengthened regulations governing GHG emissions and dramatic energy price hikes since the mid-2000s, many countries have turned to nuclear power as their "next-generation" energy source, resulting in a rebirth of the nuclear industry. About 300 new NPPs orders, worth KRW 1,000 trillion, are forecast by 2030. Since the export of two 1,000MW-class NPPs creates 55,000 jobs per annum and is worth about USD 4.0 billion (with follow-up exports valued at about USD 50 million)\*, the Korean government has chosen NPPs exports as a major "next-generation" growth engine project. Because of this support, KHNP is promoting its overseas business all the more.

\* Nuclear Power Plant exporting comprehensive strategies, KEPCO, 2007

CORPORATE REVIEW SUSTAINABLE MANAGEMENT

#### ECONOMY

SOCIETY ENVIRONMENT



Starting in 2008, KHNP plans to extend its global interests from China, Rumania, Indonesia, and Vietnam to Morocco, Turkey, Thailand, the Middle East, and the Ukraine. Based on its "choice and focus" strategy, which considers both the potential of a targeted country and the company's own capabilities, these markets are classified into "focus," "long-term," or "foundation-building" projects.

#### **Focus Projects**

This includes countries with a high potential and/or where plant projects are already underway. Rumanian, Moroccan, Turkish, and Finnish plant projects and China's technical support services fall in this category.

#### | Project Process by Nation |

Nation	Project Type	Details
Rumania	Plant Construction	Collaborating with Canada's AECL for plant construction orders
Morocco	Capital Investments and Plant Construction	Part of a KEPCO Group consortium for plant construction orders
Turkey	Capital Investments and Plant Construction	Bidding in cooperation with a local company for three APR1400 orders
Finland	Plant Construction	Entered APR1400 in feasibility test for candidate reactor types
China	Technical Support	Focusing on service projects involving technology support and training
Unina	Services	Hoping to enter into NPP projects based on technology service projects

#### Long-Term Projects

KHNP's long-term projects take place in countries that require mid- to long-term approaches, such as Indonesia and Vietnam. Given current market conditions, the company has taken a long-term approach to these markets. It plans to focus on building interest through exhibitions, local sessions, forging networks with local industry players, and flexibly responding to market changes.

#### Foundation-Building Projects

The purpose of foundation-building projects is to build partnerships for future projects, such as NPP construction projects in African and Middle Eastern countries, where nuclear industry is in the beginning stage. These can include "package" sales involving the Korea's worldleading desalination facilities.

#### Obtaining a Stable Supply of Fuel Through Overseas Uranium Resources Developments

In order to secure a stable supply of uranium and participate in the Korean government's policy of developing overseas uranium mines, KHNP is participating in an international mine development project in partnership with the Korea Resources Corporation (KORES) and KEPCO. In August 2007, the company, in collaboration with KEPCO and KNFC, organized the "KEPCO Group Overseas Uranium Development Council" to implement the project by encouraging cooperation among all the KEPCO affiliates. In January 2008, the KEPCO Consortium undertook a three-year exploration program called the Canada Waterbury Lake Exploration Project. KEPCO's share is 20% and KHNP's is 15%, while KNFC, Hanwha, and Gravis each have a 5% stake. KHNP also conducted an onsite inspection with KEPCO and KORES in April 2008 to acquire an interest in the Budennovskoye mine in Kazakhstan, and the three parties are now working on a business proposal. The consortium is also looking at the Kuriskova mine in Slovakia and the Beck mine in the U.S.A., where on-the-spot joint inspections have also taken place.



# Expanding Environmentally Friendly Power Sources through the New and Renewable Energy Business

KHNP is promoting the development of new and renewable energy sources as a primary future growth engine. This will help the company become a leader in the growing new and renewable energy market while burnishing its image as an environmentally friendly enterprise.

# 1,930 MW of New and Renewable Energy Facilities by 2015

As part of its plan to develop an advanced energy industry structure, the Korean government has set a target for expanding the country's current new and renewable energy usage ratio from 1.4% to 5% (or 7% of its total power production) by 2011. In 2005, KHNP signed an agreement (RPA<sup>-(1)</sup>) with the Korean government to increase its production of new and renewable energy. Under it, the company pledged to build a total of 6,050kW new and renewable energy facilities by 2008. These include the 3,000kW-class Yonggwang solar park, the 750kW-class Kori wind power plant, and expanding the Chuncheon hydropower plant 2. From 2009 to 2015, KHNP will add a fourth 60,000kW unit at the Cheongpyeong hydropower plant and a 1,440,000kW tidal power plant at Incheon Gulf, raising its new and renewable energy facilities ratio to 7%. The company is also planning to link its clean development mechanism (CDM) with the new and renewable energy business.

#### Building New and Renewable Generation Facilities Yonggwang Solar Park

KHNP's first new and renewable energy project was the Yonggwang solar park–a 3,000kW-class solar power plant at the Yonggwang Nuclear Power Site. The project was started in July 2006, with 1,250kW of capacity being built by May 2007 and a further 1,750kW in March 2008, when construction ended.

#### Kori Wind Power Plant

The building of the 750kW-class Kori wind power generation facility at the Kori nuclear power site, which took place from March to June 2008, marked Korea's first large-scale utilization of wind power technology. The company hopes that this will provide a further impetus for the development and implementation of wind generating technology.

#### Expanding the Cheongpyeong Hydropower Plant

The building of a fourth unit at the Cheongpyeong hydropower plant was KHNP's biggest new and renewable energy sector project involving water resources. It began in August 2008, with the addition of a 60,000kW-class generator to the old Cheongpyeong Dam. When completed in June 2011, its total capacity will rise from the current 79,600kW to 139,600kW.

#### Revamping Chuncheon Hydropower Units 1 and 2

The goal of this project is to modernize the forty-year-old Chuncheon hydropower plant and extend its use over the next thirty years. Started in December 2006, it involves replacing old water turbines and generators to add another 4,600kW in output, boosting total capacity to 62,200kW by the completion date of June 2009.

# New and Renewable Energy Generation Facilities Construction Projects Overview

Project	Capacity	Completion	Remarks
Yonggwang Solar Park (stage 1)	1,250kW	May 2007	On site of Yonggwang Nuclear
Yonggwang Solar Park (stage 2)	1,750kW	March 2008	Power Plant
Kori Wind Power Plant Construction	750kW	June 2008	On site of Kori Nuclear Power Plant
Cheongpyeong Hydropower Plant Expansion	60,000kW	June 2011	Current 79,600kW $\rightarrow$ expansion to 139,600kW
Expansion of Chuncheon Hydropower Unit 2	2,300kW	June 2008	Replacement of water turbines,
Expansion of Chuncheon Hvdropower Unit 1	2,300kW	June 2009	generators, and other equipment

#### | New and Renewable Energy Projects |





Yonggwang Solar Park





Goesan Hydropower

① RPA (Renewable Portfolio Agreement): A new and renewable energy investment agreement between Korea's Ministry of Knowledge Economy and nine of the country's energy suppliers, including KEPCO and the Korea District Heating Corporation. It involves building an advanced-level, environmentally friendly energy supply system costing around KRW 1.1 trillion from 2006 to 2008

Paldang Hydropowe

# Promoting CDM Projects in Preparation for the Kyoto Protocol

The Clean Development Mechanism (CDM) is an arrangement under the Kyoto Protocol that allows industrialized countries with a GHG reduction commitment to invest in projects that reduce emissions in developing countries as an alternative to more expensive emission reductions in their own countries. KHNP plans to take advantage of this program as part of its new and renewable energy business. With the help of an external agency, the company will phase in CDM-related technologies to acquire 32,760,000 tons of certified emission reductions (CER). The first stage will involve acquiring 340,000 tons of CER for the 68.35MW of production at the Yonggwang solar park (3MW) and the Kori wind power plant (0.75MW), as well as the Cheongpyeong hydropower expansion (60MW) and the Chuncheon hydropower renovations (4.6MW).

#### | Certified Emission Reductions Plan |

Steps	1 ("07~"08)	2 ('09~'11)	3 ('12~'15)
Performer	Outside expert	KHNP and outside advisor	KHNP
Subject	Yonggwang Solar, etc. 68MW	Paldang Hydropower Expansion, etc. 87MW	Incheon Gulf Tidal Power, etc. 1,252MW
Certified Emission Reductions (over entire project period)	380,000 tons	1,280,000 tons	31,140,000 tons
Earnings (over entire project period)	KRW 5.2 billion	KRW 17.6 billion	KRW 428.2 billion

# Enhancing Business Competitiveness with the APR1400

#### **Developing the APR1400**

In response to increasing demands for more safety features than those offered by the KSNP, KHNP developed a new, third-generation main reactor type that also boasts dramatic economic advantages over other energy generators. As part of its 1992 G-7 Project, the Korean government, in tandem with industry, academic, and research players, pledged to work to develop new energy technologies. After ten years of work involving 2,000 researchers and technicians and an investment of KRW 234.0 billion, the advanced power reactor 1400 (APR1400) was developed, with all technologies originating in Korea. It will replace the old main reactor type standard and become the cornerstone for KHNP's NPP exports.

# The APR1400: Enhancing Safety, Producing Savings

The APR1400 is a cost-effective, globally competitive reactor type with significantly improved safety features. Boasting a state-of-the-art reactor design, its operating capacity was increased to 1,400MW to meet both current and future demand. It includes a furnace-cooling system and a host of other safety features.

#### **Building the APR1400**

The APR1400 was first used in the construction of the Shin-Kori units 3 and 4, which started in September 2007 and are slated to be completed in 2013 and 2014, respectively. With more installations underway (including the Shin-Ulchin units 1 and 2, to be completed in 2015 and 2016, respectively), the APR1400 will become the main reactor for all new NPPs. KHNP is committed to finding new technologies and methods that will reduce the construction period for new NPPs to 48 months, helping it to secure a competitive edge in global markets. The company will also continue making its designs even safer and more economical.

#### APR1400 vs. OPR1000 (KSNP)

Item	APR1400 (Shin-Kori 3&4)	OPR1000 (Shin-Kori 1&2)
Capacity	1,400,000kW	1,000,000kW
Design life	60 years	40 years
Earthquake- resistance design	0.3g	0.2g
Costs	Construction cost: KRW 1,950,000/kW	Construction cost: KRW 2,390,000/kW
Safety (Core Damage Frequency)	2.4x10-6/RY (3 times reduced)	8.3x10-6/RY
Environmentally Friendliness	Korea's first deep-water intake and discharge system	-
Main Control Tower	Digital Workstation	Analogue + Digital

#### | APR1400 |



Shin-Kori Units 3 and 4 construction site

Photo of APR1400 prototype



# Developing Future-Oriented Nuclear Technologies

KHNP will continue developing future-oriented nuclear technologies to cope with high oil prices, the UNFCCC's environmental requirements, and increasing demand for nuclear power. This will also help the company augment its global competitiveness.

#### **Developing the APR+**

Using the APR1400 as its base, KHNP is developing an improved, "nextgeneration" reactor type to respond to anticipated nuclear power demand over the next ten to twenty years. Part of the Ministry of Knowledge Economy's mid- to long-term energy initiatives, KHNP hopes to have design work and feasibility testing finished by 2008. Boasting a power output of 1,500MW and significantly improved safety and cost-saving features, the APR+ will compete against similar reactors produced by other global players. The company plans to apply this domestic reactor type to all its new NPPs as soon as it has completed standardized design details and acquired domestic certification. Hopefully this will occur by 2015.

#### APR+ Development Schedule



# International Research to Develop a Generation 4 NPP

KHNP is also engaged in an international initiative to develop "Generation 4" (G4) technologies for the 2030s. Focusing on a sodiumcooled fast reactor (SFR) to recycle spent fuels and a very-hightemperature reactor (VHTR) that will take advantage of hydrogen-based energy, Korea has been developing core technologies for these reactors since the early 2000s. Once the base technologies have been developed, KNHP will proceed with feasibility tests and start the development of design technologies.

#### "Next-Generation" Reactor Project

Korea has become the world's sixth-largest nuclear power generation player by developing the KSNP and APR1400 reactors with its own technologies, garnering world-wide plaudits for their safety features and economy of operation. In the future, KHNP will develop nextgeneration NPP technologies with even better safety and cost-savings features, featuring reactors that will produce less radioactive waste and utilize nuclear fuels more efficiently.

#### | Nuclear Reactor Technology Development and Strategies |





#### Interview with an Expert

Jae-Young Park, Creative Planning Division Officer, Ministry of Knowledge Economy

(Interviewed June 17, 2008)

**Opinion** Due to high oil prices, nuclear power is in the limelight in such countries as China and India, which are both facing skyrocketing energy demands. This means good opportunities for Korea and KHNP, since we continued building and operating NPPs while other industrialized countries were suspending those operations. As a result, KHNP should focus on NPP exports, developing world-leading technologies, international cooperation, and overseas investments. We expect KHNP will become a globally-recognized energy company by reinforcing its external and internal capabilities. This will also add to its domestic competitiveness.

KHNP's Answer Based on its accumulated expertise in constructing and operating NPPs over the past thirty years, KHNP has selected NPP exports as its primary next-generation growth engine. The company has also expanded its business scope from technological support to businesses with greater added value, such as exporting NPPs. To this end, we have created an Overseas Project Department and are fostering experts by enrolling them in various training programs. We will continue reinforcing our NPP exporting capabilities as part of our quest to become a world-leading energy company.

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# Happy Communities

In children's eyes, the world is full of laughter and love. We dream of a happier and healthier society. We help to build safer and happier homes, no matter where we are.

Filling the world with light of happiness, KHNP



# Responsibilities to Customers



# Disclosure on Management Approach



#### Stakeholders' Survey



※ 1,500 responses, Serome Information & Statistics, October 2007



# Customers Social Performance

# A Stable Supply of Electric Power

Electric power is essential to a modern industrialized society, where a break in the electricity supply for even a single second can lead to catastrophic results. As a public enterprise, KHNP is obliged to provide a stable supply of electricity to the nation and its people. It has done so in an efficient and effective manner, generating 35% of the country's total electric supply. Everyone at KHNP works hard to guarantee Korea a secure, stable, supply of power.

#### **Building New Plants On Schedule**

KHNP builds nuclear power plants (NPPs) pursuant to the central government's Basic Plan for Long-Term Electricity Supply and Demand. The latest basic plan calls for eight new NPPs to be built by 2020, meaning that nuclear power generation will then supply about 43% of the nation's electricity needs.

2020 Generation	Facilities	Portfolio	and	Outlook
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Category	Nuclear	Coal	LNG	Oil	Hydro	Other	Total
Capacity	2,732	2,642	2,615	233	629	578	9,429
(10,000 kW,%)	(29.0)	(28.0)	(27.7)	(2.5)	(6.7)	(6.1)	(100)
Generation Amount	2,251	2,045	776	33	53	25	5,183
(100 million kWh,%)	(43.4)	(39.5)	(15.0)	(0.6)	(1.0)	(0.5)	(100)

\*\* The Third Basic Plan for Long-Term Electricity Supply and Demand, Korea Ministry of Knowledge Economy, December 2006

Since the Basic Plan is based on forecasts of future electricity demand, the failure to build power plants in a timely manner can result in supply

shortages. In order to build power plants as and when they are needed, KHNP is continually optimizing its construction methods, innovating its construction processes, reinforcing its project management capabilities, and working to guarantee the timely procurement of construction materials.

#### **Minimizing Unplanned Shutdowns**

Although power plants occasionally stop operating due to failures or for maintenance reasons, shutdowns can be controlled and minimized through efficient management. As part of its world-leading operational strategies, KHNP can deploy a series of systematic shutdown prevention programs to guarantee the pubilc a stable supply of electricity. After benchmarking a number of foreign nuclear companies, KHNP established a human performance evaluation system and a process that intensively manages equipment whose failure can lead to shutdowns. The latter program has already detected 6,011 such equipment, with all of them being addressed and remediated. KHNP has also established an emergency plan to handle NPP failures on an immediate basis, minimizing the length of time that a plant is shut down.

#### One-Cycle Trouble-Free (OCTF)

2005	2006	2007
4 NPPs	6 NPPs	7 NPPs

× One-Cycle Trouble-Free: Failure-free operations for 14~16 months between regular maintenance

#### | NPP Incidents/Accidents Above Level 1 |

2005	2006	2007
1 time (Level 1)	2 times (Level 1)	Zero

- Leveling: 0 to 7 (0~3: incidents; 4~7: accidents) Level 0 (minor incidents): incident without safety issue

Level 1 (trivial incidents): break away from permitted operation scope.

#### | R&D Investments in On-Site Plant Technologies | (Unit: KRW Billions)



#### **Failure-Free Operation During Peak Season**

Power plants must operate without unplanned shutdowns, especially during the peak summer season. Due to high electricity demand then, the nation's electricity reserve rate is at its lowest point, so a problem at a single NPP can cause widespread power losses across the whole country. To prevent such accidents, KHNP has established a special countermeasures group to provide a stable electricity supply from July 16 to August 31. As a result, KHNP achieved failure-free operations at all its NPPs in 2007.

#### **Training NPP Operating Experts**

An excellent workforce is integral to providing a stable electricity supply, and KHNP uses an evaluation and certification system to measure the expertise of each member of its plants' operating staff. In addition, KHNP offers all its employees a series of systemized training courses at its own training center and outside institutes to cultivate excellent operating expertise, while its engineers are encouraged to attend onthe-job training at other nuclear companies.



\* Cumulative number each year; predictive maintenance qualification was first issued in 2007.

# Customer's Right to Know

KHNP upholds the public's right to know through the proactive and transparent disclosure of information on its business operations. Through the transparent disclosure, we will be able to enhance public acceptance of nuclear energy and reliance in the company as well as public sentiment.

#### **Providing Information Upon Request**

KHNP discloses all statutorily-allowed information upon request. It has established an automated response system (ARS) to guarantee the fast and accurate provision of customer information, and informs them about the progress of each request. The company has also established a "happy call" system to calculate the level of satisfaction with its disclosure processes.

#### |Information Disclosure "Happy Call" Flowchart |



In 2007, the company received 35 requests for information disclosures and provided the information in accordance with government regulations.

Information Disc	losures		(Units: cases, %)
Category	2005	2006	2007
Disclosures	11	16	35
Disclosure Rate	100	100	100

#### **Disclosure of Information on Web Site**

KHNP provides information on its business operations and nuclear energy in general on its Web site, www.khnp.co.kr. General information on nuclear energy, company information, financial information and job opening are available via our website all the time. 2.74 million people visited the site in 2007, and we provided information on 857 items, up 24% from 2006.





# On-site Visits, PR Exhibitions, and Media Activities

Many members of the public have a negative image of NPPs, such as nuclear explosions or radiation leaks. KHNP endeavors to allay these anxieties by providing the public with honest and accurate information regarding its operations.

The best way to provide information on nuclear energy is through firsthand experience. As a result, KHNP offers both the public and opinion leaders on-site tours of its facilities, as well as regular and special PR exhibitions.

On-Site Tours			(Unit: persons, times
Category	2005	2006	2007
NPP Visitors (persons)	287,745	360,677	402,820
PR Exhibitions (times)	8	14	17

The company also utilizes the mass media to help improve the public's understanding of nuclear energy. This is done through regular

contributions to newspapers and magazines and by media tours. All of these PR activities comply with regulations guaranteeing the provision of correct and accurate information.

2007 Media	PR Activities			(Unit: times)
Category	Special Articles	Contributions	Special Broadcasts	Media Tour
Times	55	22	20	133

#### **Publishing Newsletters and Magazines**

KHNP also publishes newsletters and magazines to provide information that its customers need. For example, the biweekly, online KHNP Newsletter provides information to 135,000 Web subscribers, 28,000 contractors, and 495 opinion leaders, while its community newspaper is targeted at local residents. Both publications provide their readers with information about nuclear energy, major issues affecting the company, and news about the company's plants.

#### | Publishing Newsletters and Magazines |

Category	Publication	Period
Contractoro	Contractors' magazine	Biweekly
Contractors	(n) Power	Monthly
Web subscribers	KHNP Newsletter	Biweekly
Opinion Leaders	Nuclear policies and trends	Weekly
	KHNP Newsletter	Biweekly
Local community	NPP notice Short message service (SMS), Community newspaper	Real-time







# Responsibilities to Employees

# Disclosure on Management Approach



※ Surveys of KHNP employees, September 2007



# Employees Social Performance

### Workforce

Competent human resources will be the decisive factor in realizing KHNP's vision of becoming a world-leading power service provider. KHNP is enhancing its competitiveness through educational programs designed to foster future leaders in global expansion and development of alternative energy source.

#### **Workforce Composition**

As of the end of December 2007, KHNP's workforce totaled 7,767, up by 9.2% from 2005. 6,080 of these were engineers in the mechanical, electric, or nuclear areas, and 5,660, or 73% of the total staff, were working at the company's four nuclear power sites. The number of workers is expected to increase as KHNP expands into new business areas.

Human	Resources		(Ur	nits: persons, years
С	ategory	2005	2006	2007
Num	nber of Employees	7,181	7,393	7,767
_	Executives	6	6	6
By position	Managers	2,130	2,220	2,343
	Staff	5,045	5,167	5,418
	Head office	812(11.3%)	841(11.4%)	897(11.5%)
Ву	Nuclear power sites	5,428(75.6%)	5,456(73.8%)	5,660(73%)
workplace	Hydro Power Plants and other branch offices	941(13.1%)	1,096(14.8%)	1,210(15.5%)
Ave	rage years served	15.04	15.06	15.13

#### **Respecting Human Rights and Prohibiting Discrimination**

KHNP upholds and respects basic human rights in all its business operations. As stipulated in the Code of Conduct, KHNP provides equal opportunities to all its employees according to their capabilities. It also offers fair compensation in proportion to work performance and does not discriminate in terms of gender, academic history, age, religion, regional background, or physical disability. As a result, the company has always been in total compliance with the ILO's Convention against Discrimination (Employment and Occupation), 1958 (No. 111).

#### **Gender Equality**

KHNP prohibits all forms of gender-based discrimination, encourages female employment, and operates a female hiring quota system. As a result, fifty-six women were hired in 2007 and ten more were promoted to managers. In recognition of these achievements, KHNP was named the best performer in the area of affirmative action by the Korean Ministry of Labor.

Female Workforce			(Units: persons, %)
Category	2005	2006	2007
Female staff	424	441	497
Female staff ratio	5.9	5.9	6.4
Female managers	8	11	21
Female managers ratio	0.37	0.50	0.90

#### **Maternity Policy**

Pursuant to the Gender and Equal Employment Act and other regulations, KHNP offers various types of maternity leave, as stipulated in the company's employment regulations and the collective agreement. KHNP's maternity policy also includes maternity subsidies, educational subsidies for infants, and daycare centers.

Maternity Policy	(Unit: persons)		
Category	2005	2006	2007
Staff on maternity leave	47	45	51
Daycare center users	529	503	465

#### **Job Creation**

KHNP has been operating the skills-based employment program since 2004. In 2007, the number of new hires was 514, up 51% from the previous year. KHNP's wages are above the average paid by Korea's 100 largest companies (KRW 50.45 million, 2007 Financial Supervisory Service Announcement).

#### Job Creation

(Units: persons,	%)
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Category	2005	2006	2007
New employment	302	341	514
Job creation rate	1.27	1.39	1.64

#### Expanding employment for the disabled

As of 2007, 139 of KHNP's employees, or 1.79%, were physically challenged. This ratio is growing every year, thanks to a quota-based system and other employment advantages. The company prohibits all forms of discrimination against the disabled in terms of pay and job promotions.

Disabled Employment   (Units: persons,				
Category	2005	2006	2007	
Disabled employees (persons)	94	119	139	
Disabled employee ratio (%)	1.31	1.61	1.79	

#### **Regionally-Based Employment**

In accordance with the government's employment regulations, KHNP prohibits all forms of discrimination due to regional background. In 2007, 340 of the company's new employees, or 66.1%, were graduates from universities out of Seoul. The company also grants recruitment advantages to people living near an NPP, thereby contributing to local economic development.

Regional Employment   (Units: persons, %)						
Category	2005	2006	2007			
Employment	215	242	340			
Percentage	71.2	70.9	66.1			

#### **Prohibition Against Forced and Child Labor**

In compliance with the ILO's Worst Forms of Child Labor Convention #182, KHNP prohibits child labor and enforces a minimum hiring age of eighteen. The company also opposes all forms of forced and compulsory labor, according to the labor standards contained in the UN Global Compact.

#### | Prohibition Against Child Labor |

Position	Age Limit	Regulations
Regular Staff	above 18	Article 7 of Human Resources Management Rules
Special Positions	18~39	Article 19 of Specific Position-Holders Management Guidelines
Security Guards	18~49	Article 3 of Enforcement Decree of the Police Assigned for Special Guards Act

#### **Supporting Retirees**

In 2007, 144 employees left the company. This separation rate of 1.8% has remained unchanged over the past three years. Eighty-one of them, or 56.3%, were retirees, and the average age of the retirees was forty-nine.

Number of Retire	(Units: person, %)		
Category	2005	2006	2007
Retirees	129	135	144
Separation Rate	1.7	1.8	1.8

KHNP operates the Outplacement Service<sup>®</sup> to assist retirees with their retirement. It also took back three retired workers under contract to take advantage of their expertise and experience.

Outplacement Service Record   (Units: persons, %)						
Classification	2005	2006	2007			
Number of Participants	27	30	34			
Participation Rate	20.9	22.2	23.6			

# Employee Training and Performance–Based HRM

#### **Increasing Employees' Capabilities**

Nuclear energy has recently come under the spotlight as an alternative energy source that can help to address the problems of high oil prices and GHG emissions. To capitalize on this opportunity, KHNP has created the "Right Person" program to further its vision for sustainable growth. This includes systematic training programs and the HRM system that fosters skills development.

#### | Vision for Human Resources Skills Development |



① Outplacement Services: an educational and consulting service provided to employees intending to retire to assist them in their future planning

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#### **Educational and Training Programs**

O

KHNP encourages its employees' self-development and the upgrade of their capabilities. These efforts are supported through the customized training programs that are based on the results of a yearly survey of educational needs.

In 2007, the company revamped its training system by realigning its programs and training centers, with competencies being classified

through a competency model analysis in terms of organization, class, and job. Utilizing a program called the "Systematic Approach to Training<sup>®</sup>," it developed training programs, prepared and implemented a job accomplishment certification system, revamped its educational and training materials, and constructed an integrated educational and training management system.

KHNP Edu	KHNP Educational and Training Program									De	tailed	Educ	ationa	al Sys	tem b	y Area		Traini	ng C	ours	es		
	Organiz	ational	CI	ass compo trainir	etencies Ig						Job o	ompe	tencie	s train	ing								
Category	Compet Train (Group/So	ing elective)	Mandatory	Optional	Advanced (Selective/ commissioned)	Ge	neric j (oj	ob app otional	licatio	on	J	lob Sp Frainin Do	ecialti g Cen mesti	esEdu ter, Fie cComr	catior d Ed nissio	i Cent ucatio ning	er, n,	Advanc (commi	ed Jobs ssioned	s -d	Se evelo	elf opme	nt
1st-2nd classes	Corporate Culture	Innovation • Han Ov	Senior manager development program		Executive course     CEO course     Manager development     course     Overseas management     course																		
3rd class	grams to share vision and core v ical Management Training (e-Lea mmissioned training at KEPCO's	vn meetings and change manage monious labor-management rela arseas commissioned training	Performance Drive Leadership	Management Leadership Program	Commissioned MBA cou					Conflict managemen	*Business N	Quality Assura	Plant Mainten	Engineering S	Safe Technolo	Project Manag		Short- and long	Domestic and c				
4th class	values rming) Central Education Institute (CE	ement program Itions program	Management Skill for New Manager	The Coach	irses at home and abroad	Problem-solving capabilities cc	Time management	Presentations	Communications	14	Management Specialist Training	ance Specialist Training Road M	ance Specialist Training Road M	pecialist Training Road Map	ogy Specialist Training Road Ma	gement Specialist Training Roac	e-Learning Technology Traini	-term overseas training courses	overseas degree courses by spe	e-Leanning general ennoun		Language courses	Experience program
5th/6th class	=		New Start	Self Leadership		Jurse					Road Map	ap	1ap		0	I Мар	ng	by specialty	scialty				
7th class			Func	tional com	petencies t course										0								
Specific Positions			Fund	ctional com evelopmen	petencies t course							F	unctior	nal Job	Cours	e							

\* Business management specialists in office/business management, auditing, PR, and business planning

() Systematic Approach to Training: a method of organizing training programs according to standardized procedures by phase. It includes designing, developing, applying and assessing programs to develop qualified workers and assure the quality of their training

# Educational and Training Results and Performance Management

As of 2007, KHNP had 750 training courses in operation. 12,098 training hours were devoted to completing domestically-based courses, and 427 employees completed eighty-one overseas training courses such as long term delegation of system engineers to foreign companies and the courses on system design of NPPs in operation. The company utilizes the BSC KPI system to assess the results of its training courses against strategic goals for each plant. This includes the completion ratio and field applications. Individual accomplishments are calculated in terms of position, job, and mandatory courses, and are reflected in the company's HRM programs. The company also offers trainees the opportunity to give presentations on their accomplishments and to share their acquired knowledge and technical expertise with their colleagues.

#### Ratio of Educational and Training Costs to Sales (Units: Millions of KRW, %)

Category	2005	2006	2007
Company-level	4,432	5,414	5,765
Domestic	2,747	3,443	3,346
Overseas	3,548	4,630	5,352
Total	10,727	13,487	14,463
Ratio to Sales	0.21	0.24	0.26

#### **Human Rights Training**

Employees at KHNP attend sexual harassment prevention courses at least once a year pursuant to the Act on Prohibitions Against and Remedies for Sexual Discrimination. These are designed to protect female workers, who form a minority within the company. A human rights

#### **Technicians Management Process**

#### | Developing Experts Program |

#### 2007 Educational and Training Courses Completed | (Units: persons, %)

	Courses	Trainees	Ratio
	Basic Courses	1,799	14.4
	Operator re-education	3,520	28.2
	Job Training	945	7.5
KHNP Courses	Specialty Training	1,120	8.9
	Executive Training	856	6.8
	Other	397	3.2
	Subtotal	8,637	69.0
	Domestic	3,461	27.6
Commissioned Courses	Overseas	427	3.4
	Subtotal	3,888	31.0
	Total	12,525	100.0

\* Online courses have been excluded.

(Unit: hours)

#### Per Capita Average Training Hours by Position

Category	2005	2006	2007
1 <sup>st</sup> ~2 <sup>nd</sup> classes	27.0	68.2	69.3
3rd~4th classes	132.3	137.2	141.1
5th~6th classes	171.6	163.3	169.0
unctional	1.9	3.6	5.9
Special Positions	6.5	5.1	6.1
Average Hours	140.0	137.5	142.2

protection course is included in the company's e-Learning Ethics Training Program. In line with provisions contained within the Police Assigned for Special Guards Act, KHNP offers training courses to its 544 security guards to prevent the occurrence of human rights violations in the course of their duties. This involves four hours of instruction a month.





KHNP also operates the expert training system to develop adept operators for its NPPs and "next-generation" growth engines, with programs being offered at its own educational centers and at outside facilities. In 2007, the company introduced the "Job Qualification Card<sup>®</sup>" to encourage NPP workers and maintenance engineers to add to their expertise. It is planning to expand the system to other areas, such as guality assurance and safety control.

Skilled Engineers at KHNP (Unit: persons				
Licenses/Certificates	2005	2006	2007	
Technical Experts	355	367	364	
Engineers (nuclear, mechanical, electric, environmental, etc.)	2,206	2,232	2,335	
Reactor Operator License	1,739	1,895	2,007	
Radiation Operator License	254	334	355	
Nuclear Fuel Handler License	33	35	35	
Total	4,587	4,863	5,096	

#### **Performance-Based HRM**

KHNP reinforces its employees' abilities through promotions and compensation that are based on their performance. It also deploys various consulting programs to add to their level of satisfaction with their job performance and career development goals.

#### Fair Evaluation System

KHNP conducts biannual evaluations of all employees' aptitudes, capabilities, and work situation, and reflects the results in its training, promotion, and rewards systems. The company has adopted a multiple raters system to encourage communications among departments and colleagues and to reduce the incidence of unilateral decision-making.

#### Assigning the Right Person to the Right Place

KHNP attempts to match the "right" person with the "right" job through its Position Shifting Review Board. If a position requires specialized training and/or experience, those requirements are stated clearly to ensure fairness and transparency in the hiring process.

#### Performance-Based Rewards System

An employee's work-related accomplishments are appraised in line with the results of the company's performance evaluations and his or her self-assessment. The results are used to decide on the level of incentives, which vary according to the worker's accomplishments, and are reflected in promotions.

#### Employees Consultations on Career Development

KHNP operates a consulting program for its employees to assist them with their career development, and encourages networking and open communications. New employees meet with instructors at the Nuclear Power Education Institute of KHNP to identify the right position for them and to enroll in appropriate training courses. The company also operates a mentoring program to assist workers in adapting to new jobs and to enhance their job skills and problem-solving abilities. Workers can apply to change of their jobs once a year. In addition, the company's managers undergo biannual performance assessments with their supervisors to determine if their positions dovetail with their aptitudes and career goals.

## Great Workplace

#### **Employee Benefits: Vision and Goals**

Echoing his belief that the quality of a worker's life has a direct bearing on his or her job productivity, KHNP's president, Mr. Kim Jong-Shin, stressed the importance of developing a "great workplace" in his inaugural speech in April 2007. Since then, KHNP has worked hard to become a company at which labor and management can work and develop in a spirit of mutual trust and respect. To put Mr. Kim's words into action, KHNP has developed a performance-based employee benefits program, including a life-cycle planning mechanism to enhance the quality of life of employees and their families.

#### **Family Friendly Management**

KHNP practices the Family Friendly Management (FFM) to enhance the quality of life of its employees and to improve their work performance. In October 2007, as part of the Ministry of Women's Affairs FFM program, the company conducted a series of surveys to evaluate its family friendliness indicators. A month later, it participated in sessions designed to develop an FFM workplace model. Finally, the company offers an assortment of FFM-oriented employee benefits programs to help its workers develop a better balance between work and life.

<sup>(1)</sup> Job Qualification Card: a system of granting certificates to workers who have the ability to independently carry out the core duties of their specialties. Qualifications are classified into knowledge-based and performance-based competencies.

#### **Great Workplace Benefit Programs**

Category	Programs
Housing	Company housing within plants and dormitories for single workers     Subsidized lease deposits and housing loans. Company boarding house in Seoul
Health Management	<ul> <li>Comprehensive Health Management Program (Please see "Health and Hygiene" on page 64)</li> </ul>
Employee Consultation Program	• One-on-one consulting program to resolve conflicts between private and work life 🗶 In 2007, 597 persons took part, with 85% of them being satisfied with the result.
Children's Education	Loans for middle school, high school, and university studies
Employee Benefits Options	<ul> <li>Benefits points vary with years of service and family size</li> <li>Benefits cards are used for family health check-ups and self-development programs</li> </ul>
Social Security	<ul> <li>Subsidizing cost of enrolment in Korea's four major insurance programs: National Pension Fund, National Health Insurance, Employment Insurance, and Industrial Accident Insurance</li> <li>Electricity Contribution Fund subsidizes the living and educational expenses of families of employees who have died or been injured on the job</li> </ul>
Labor Benefits Fund	<ul> <li>5% of net income before tax is deducted for company's Labor Benefits Fund</li> <li>Subsidizing family affairs, such as weddings, funerals, children's education, and housing</li> </ul>
Supporting Culture and Sports Activities	Supporting clubs, sports, and cultural activities at local communities
Other	<ul> <li>Incentives for long-time service and meal and commuting subsidies</li> </ul>

# Employee Safety and Health

Work safety is KHNP's overriding concern. The company's management policies and principles are built on the belief that its employees' safety and health must take primacy over everything else.

#### **Safety and Health Management**

# Occupational Safety and Health (OSH) Management and Regulationer

The OSH Management Regulation stipulates that all work must be based on optimal health and safety conditions and that disaster prevention measures have first priority in all the company's operations. The regulation apply to KHNP's own employees and its suppliers.

#### Occupational Safety and Health (OSH) Committee

The OSH Committee, which comprises an equal number of representatives from the company and its labor union, makes decisions on OSH issues at each plant and the company's head office, as per the collective agreement. It holds quarterly or ad-hoc meetings to deal with OSH issues. KHNP has published the Standardized Industrial Safety Manual outlining the committee's basic responsibilities.

#### Case Study

#### Standardized Industrial Safety Manual

KHNP had been utilizing KEPCO's safety manual after its spin-off in 2001. The company's own industrial safety management master plan was developed in 2007, with the Standardized Industrial Safety Manual being written to outline basic guidelines for all the company's safety procedures. To encourage its use at all the company's workplaces, the manual includes reader-friendly guidelines on industrial safety and disaster prevention activities. It also describes the risk factors of each job and recommends safe working procedures.

# Compliance with International Principles and Regulations

KHNP's bylaws, the collective agreement, and the OSH Management Regulation are all in compliance with the ILO Promotional Framework for OSH Convention (No.187).





# Compliance with ILO Promotional Framework for Occupational Safety and Health (OSH) Convention (No.187)

Category	Applicable	Applicable Details
Compensation for occupational diseases	s 0	Please see "Social Security" under "Great Workplace" on page 62
Limit on working hours	0	<ul> <li>Five-day, 40-hour workweek, six group shifts</li> <li>Overtime/holidays/night work</li> </ul>
Handling of hazardou materials	s <sub>O</sub>	<ul> <li>Radiation dosages: Please see "Radiation Workers Safety" on page 63</li> <li>Handling of chemicals: purchasing of and approval for use only after safety checks, mandatory training, and documentation re: transport/handling/disposal</li> </ul>
General Health /Cancer Check-ups	0	Please see "Comprehensive Integrated Health Management Programs" under "Health and Hygiene" on page 64
Hygienic Conditions at Workplaces	0	Please see "Improving Working Conditions" under "Health and Hygiene" on page 64
Notification of Check- up Results	. 0	Please see "Comprehensive Integrated Health Management Programs" under "Health and Hygiene" on page 64
Health Management Reminders	0	<ul> <li>Annual reminders to check for diabetes, blood pressure, liver disorders, and hyperlipidemias</li> </ul>
Other	_	Health offices at each site

#### **Radiation Worker Safety**

KHNP's goal is to ensure that the level of exposure of its radiation workers is kept "as low as reasonably achievable (ALARA)" in accordance with ICRP<sup>®</sup> recommendations and as stipulated in the government's regulations concerning nuclear safety. The company has put a variety of safety control measures in place to evaluate the effectiveness of these procedures.

#### Radiation Worker Dosage Limit Controls

Dosage limits are applied to cap radiation levels and to limit individual dosages of workers in radiation-controlled areas. All workers at these sites must have a medical check-up before being admitted to them and must undergo subsequent testing once a year. They also have to enroll in regular radio-protective training courses to augment their knowledge of the company's emergency guidelines and to ensure that they are in compliance with all radiation safety measures. Only those who have passed these courses will be admitted to a work area.

Radiatior	(Units: mSv/year			
Workers of Regular Type Radiation Workers Admissions and Transporters			Public	
Effective Dosage Limit®		100 over 5-year period, within 50 per annum limit	12	1
Equivalent	Eye lenses	150	15	15
Dosage Limit®	Hands, feet, and skin	500	50	50

#### **Radiation Workers Safety Measures**

KHNP has developed a variety of safety facilities to protect its radiation workers. These include an air purification system, radiation monitoring processes, radiation shields, and radioactive waste disposal facilities. The company further ensures the safety of its radiation workers through radiation work permits, entrance controls guarding radiation-controlled areas, radiation work management, and emergency plans. In addition, all workers in these areas must wear radio-protective equipment before entering the workplace.

#### |Radio-Protective Equipment |

Personal protective gear	gowns, protective clothing, vinyl clothing, socks, safety shoes, shoe covers, gloves, rubber gloves, hoods, etc.
Respiratory equipment	half-face masks, full-face masks, air-supplying uniforms, portable respiratory devices
Radiation shields	lead vests, lead blankets

#### **Accident Prevention Initiatives**

#### Constructing an Advanced OSH System

KHNP has developed a mid- to long-term OSH development roadmap to facilitate the development of an advanced safety system and to establish new safety practices. The roadmap is based on an OSH analysis performed by the Industrial Safety Promotion Committee, which is comprised of industry, academic, and research experts. Pursuant to this roadmap, KHNP will establish a three-pronged safety control system by 2010, with the ultimate goal of having zero industrial accidents.

#### OSH Mid- to Long-Term Development Roadmap



① ICRP (International Commission on Radiological Protection): An international advisory body founded in 1928 that offers recommendations and guidance on radiation protection and safety guidelines ② Effective Dosage Limit: Radiation dosages in consideration of damage to a person's body, measured in mSv. Equivalent dosages suffered by each bodily organ are combined to calculate the overall risk to an

individual's system. ③ Equivalent Dosage Limit: Radiation dosage that varies with the type of radiation in consideration of the amount of damage to each bodily organ, measured in mSv. Radiation sensitivity varies with the type of radiation and the organ in question.

<sup>0</sup> 

Injury, Absentee, and Disease Rates (Units: persons, days, %)						
Category	2005		2006		2007	
Number of injuries/ratio	3	0.04	10	0.13	5	0.06
Loss days due to injury/ratio	195	0.010	650	0.033	325	0.017
Number of Accidents/ratio	2	0.03	1	0.01	1	0.01
Accident-related loss days/ratio	130	0.006	65	0.003	65	0.003
Absentee rate	0.023		0.041		0.024	
Number of occupational diseases/ratio	0	0	0	0	0	0
Number of disease cases/ratio	2	0.03	1	0.01	1	0.01
Disease-related loss days/ratio	130	0.006	65	0.003	65	0.003

#### **Health and Hygiene**

#### Comprehensive Integrated Health Management Programs

Since a healthy employee is its valuable asset, KHNP has established a comprehensive health management program for all its workers and their families.

#### | Health Management Program |

Туре	Subject	Period	Check-up items	
	All employees	Annual	. Evesight hearing color blindness urine	
General Health Check-ups	Spouses aged forty and over	Biannual	sugar, urine protein blood pressure, cholesterol, chest radiatio	
Special Check-Ups	Workers handling hazardous materials	Annual	General checkup plus noise, special checkups to detect chemical and organic solvents	
	All employees	Annual		
Special Examination/ Cancer Check-Ups	Spouses aged forty and over	Biannual	Thyroid cancer, gastric cancer (endoscope), abdominal ultrasound, body fat check, etc.	
Disorders Check-Ups	Radiation Workers	Annual	Skin, eyes, peripheral blood	
Substance Abuse/Mental Illnesses	Reactor Operators	Annual	Interviews regarding substance abuse or mental illnesses	
Optional Check-Ups	All employees and their families	Anytime	Comprehensive health check-ups at Hanil Hospital, etc.	

In partnership with the Hanil Hospital of KEPCO, KHNP offers discounts on the medical expenses of its employees and their families, installment and/or deferred payments, and free PET/CT (Positron Emission Tomography/Computerized Tomography) examinations at the Radiation Health Research Center (RHRC). Check-up results can be accessed through the company's Integrated Health Management System, while "real-time" consultations are offered to facilitate the prevention of occupational diseases.

#### Improving Working Conditions

KHNP is committed to providing its workers with healthy and safe working conditions. In 2007, the company supplied its workers with ergonomically designed chairs and computer monitors to protect them from musculoskeletal and/or eye problems, and established a computerbased documentation system to create convenient, efficient and agreeable working conditions. In addition, labor and management representatives at each plant carry out regular check-ups of working conditions. The results are reflected in future measures to improve employee health and prevent accidents.

#### Working Conditions Check-Ups: Periods and Subjects

Hazardous Factors	Period	Subject
Noise, dust, etc.	2 times/year	Shift workers and power plants
Specific chemicals and organic solvents	1 time/year	Research Center workers and organic solvent handlers

# Towards a Harmonious Labor-Management Relationship

#### **Building a Mutually-Prosperous Partnership**

Open and honest communications among company members and stable labor relations are imperative if KHNP is to fulfill its basic obligation of providing a stable electricity supply. The company, which has maintained a positive labor-management relationship ever since its inception, recently celebrated its seventh straight year with no labor disputes or violations of labor regulations.

#### **Labor Union**

KHNP recognizes its workers' right to organize and engage in undertaking collective bargaining and action, and upholds the union shop system, which obliges its employees to join the union upon hire. Excluding executives and security guards, 4,730 people, representing 60.8% of the company's total workforce of 7,767, were union members as of the end of 2007. Established in July 2001, the union has thirty branches operating out of seven divisions and a central headquarters.

#### |Labor Union Organization |



#### **Labor Union Activities**

The labor union works to improve wages and working conditions for its members, and involves itself in various activities to enhance the political, economic, social, and cultural life of its members. These activities include joint OSH activities, job consultations with employees, and supporting events and programs that promote a cooperative and harmonious labor-management relationship. It also participates in a quarterly labor-management council, offers suggestions for improving employees' rights, and monitors unfair labor practices, such as forced and child labor.

#### Mutually Beneficial Labor-Management Relationship

KHNP has established three major labor-management relationship goals: strengthening preventative, cooperative, and scientific labormanagement relations to prevent labor disputes.

#### Preventative labor management practices

KHNP maintains effective and efficient communications channels with the union to enhance employee satisfaction and to share information on all its operations. In addition, The Labor-Management Council meets every quarter to discuss the company's business plans, HRM program, and financial status. In 2007, the council met four times and dealt with forty-three agenda items. The company also consults with the union on other issues of interest to its employees.

A joint taskforce team can be convened to deal with pending issues as and when necessary. In 2007, the company and union organized TFTs on the Ulchin plant employee benefits program and moving of the company's head office. The two sides also agreed to improve the incentive, to adopt an individualized performance points program and to expand the employee's level of engagement in management issues through idea suggestion schemes and by segmental evaluation units.

#### Cooperative labor-management relations

Because KHNP's labor union is its partner in achieving sustainable growth, the company is committed to building a cooperative labormanagement relationship. KHNP supports such union activities as the anniversary of its foundation ceremony, Representative conventions, and Central Committee and Central Executive Committee. It also reflects the performances of the cooperative labor-management programs in the internal management evaluation indicators. At the plant level, the harmonious labor-management program includes a New Year's Day sunrise event, spring and autumn sports festivals, a "turtle marathon," community club events, and soccer tournaments.





Labor-Management Joint Industrial Accident Prevention Convention



Labor Union "Free Ddokguk with Love" event



Yonggwang Fall Sports Festival



Mountaineering school for local residents

#### Scientific labor management

In 2007, the company undertook a study of its labor-management practices with the assistance of an external agency. Based on the results, it took measures to reinforce its systematic and qualitative labor-management capacity. In addition, it is building the Labor Information Integrated System, a basic infrastructure for understanding and improving labor conditions. It is slated to launch in September 2008.

#### |Case Study |

#### Additional boarding houses in Seoul

KHNP operates boarding houses in Seoul in tandem with KEPCO and other power generation companies. Due to a shortage of available housing, the company asked for ideas at the second labormanagement council in 2007. The problem was resolved when the company secured twenty of one-bedroom residences for lease in June 2007.

#### **Ombudsperson**

KHNP appoints an ombudsperson to handle employee grievances at every workplace that has at least thirty regular workers. The ombudsperson listens to employee complaints and offers solutions. The issues that require consideration at a higher level are referred to the head office or the labor-management council.

Main problems that was actually addressed were include housing issues, work shifts, and loans. In 2007, the ombudsperson provided solutions for 113 out of 139 cases.

#### Ombudsperson Flowchart



# Challenges and Issues in the Labor-Management Relationship

KHNP has enjoyed a dispute-free labor-management relationship for seven years in a row. However, labor union conditions will change dramatically in 2010. For example, more than one union will be allowed to operate at the same business, while members who work exclusively on union matters can no longer be paid by their employers. In order to cope with these changes, KHNP set up a joint task force team for "agreement on essential services<sup>®</sup>" with the union in January 2008. Six meetings had been held as of the end of June, demonstrating the company's desire to reach a mutually satisfactory agreement with the union of these issues. The company is also collaborating with the union to secure its financial independence.



① Agreement on essential services: services that can endanger the public's safety, health, and/or daily life if they are suspended.

# Ethical Management

# h

# Disclosure on Management Approach



Performance
Highlights

Indicator	2005	2006	2007
Per capita ethical management training hours			
- on-line courses (persons/hours)	1.88	2.75	3.56
- off-line courses (persons/hours)	3.82	5.68	7.26
Participation ratio (%)	100%	100%	100%
Anti-corruption self-assessments (on scale of 10)	9.2	9.2	9.8

#### Stakeholders' Survey





× 1,000 contractors, TNS Korea, October 2007

# Ethical Management Social Performance

# Ethical Management Mechanisms

#### **Ethical Management Initiatives**

The company defines ethical management as complying with all its responsibilities to society, seeing it as the ultimate basis of all its management activities.

"I believe that ethical management has become essential to guaranteeing the sustainability of a company. As a result, I will put it at the top of my priority list during my term of office, and promise to adhere to all its principles."

(Presidential inaugural address, April 2, 2007)

#### **Ethical Management Goals**

In 2007, KHNP benchmarked the ethical management models of other global industry leaders as a means of assessing its own ethical management performance. Based on the results, the company declared that its ethical management vision was to become "KHNP beloved by people." By utilizing a mid- to long-term roadmap, it developed measures to facilitate the establishment of company-wide ethical management practices.

#### Ethical Management Vision and Roadmap



#### **Ethics Standards**

KHNP's ethical practices and beliefs are enshrined in the Code of Ethics, the Code of Conduct, and the Supplements to the Code of Conduct. The Code of Ethics enunciates the company's fundamental principles regarding its decision-making and operational practices, while the Code of Conduct stipulates the duties and responsibilities of both labor and management in abiding by the Code of Ethics. The supplements to the Code of Conduct provide detailed guidelines on how to apply these responsibilities and duties.

#### | Ethical Management Organization |



#### **Ethical Management Organization**

#### **Ethical Management Committee**

KHNP's Ethical Management Committee is the highest decision-making body regarding ethical management policies. Comprised of the president and four standing directors, the committee establishes and amends the company's ethical management promotion plans and standards, and evaluates ethical management performances once every quarter. There are sub-committees in each department and at each plant.

#### **Ethical Management Promotion Bureau**

The Ethical Management Promotion Bureau (hereinafter the Ethics Bureau) oversees ethical management practices at the company's head office and each plant. The head office bureau is composed of five managers and two staff persons, while those at each plant include one manager and two staff members. Their major responsibilities include



devising detailed action plans for developing ethical mindsets, carrying out evaluations and ethics training, and enhancing the integrity levels of the company's employees.

#### Ethics Officer

An Ethics Officer is assigned to the head office and each plant. He or she is in charge of training, consulting, reporting, protecting whistle blowers, and receiving notices of violations and dealing with them. The officer also advises employees on issues relating to ethical behavior.

#### **Ethical Management Practice Manager**

Ethical Management Practice Managers (hereinafter the managers) work at the head office and each plant. They are responsible for the ethics mission of each department and the implementation of anticorruption activities. Each manager is also a sub-committee member at the departmental and plant level, and works in close cooperation with the Ethics Bureau and Ethics Officers.

# Establishing Ethical Management Practices

#### **Training in Ethical Management**

In order to ensure that ethical management practices become established as an integral part of its corporate culture, KHNP has established a comprehensive ethical management training program. This includes general-level training at the Nuclear Power Education Institute (NPEI), specialized instruction by the Ethics Bureau and Compliance Office, and voluntary training. The general-level component is mandatory and includes at least one to two hours of ethics training, while the online basic and advanced courses, and the special course on combating corruption are available on the "NPEI e-campus." In 2007, the company added specialized customer satisfaction (CS) programs for each class to enhance the company's service and anti-corruption capabilities.

KHNP carries out annual surveys of its employees' ethical attitudes to measure the effectiveness of these programs. As a result of this training, KHNP was the leader in the KEPCO Group's anti-corruption evaluations and was named an "Excellent Company" in the 2007 Korean Business Ethics Index Survey.

#### Ethical Management Training Program





Special Lecture on Customer Relations



Special Lecture on Ethical Management by Chairperson of Korea Independent Commission Against Corruption



Special Lecture on Answering Telephone Calls

위전 사외감사 초향 전렬



#### **Ethical Management in Practice**

KHNP's 2007 ethical management motto was "Do the right things in the right way." In order to evaluate the degree of ethical thinking and behavior of its employees, the company requires them to carry out self-assessments before and after they participate in online advanced courses. Other initiatives include establishing on-the-job guidelines to develop open and honest relationships with suppliers and establishing a center where unsolicited gifts can be returned.



Ethical management practices meeting

Oath to practice ethical management

#### **Anti-Corruption Initiatives**

#### Whistle-blowing system

In 2002, KHNP established guidelines to protect and reward whistleblowers. To guarantee a whistle-blower's anonymity, the company has established a Web-based "reporting center." In 2005, it instituted a rewards system for employees reporting unethical behavior and/or instances of malfeasance.

#### Anti-corruption system

KHNP has also established a series of guidelines governing job rotations to prevent malfeasance in job-related transactions with its suppliers. All employees who sign the company's integrity pact must promise to act with honesty and respect in the fulfillment of their duties. Before entering into a contract, KHNP insists that each supplier signs an integrity pact.

Rotation and Integrity Pact   (Units: persons, case)					
Yea	ar	2005	2006	2007	
Number of Employees Rotated		-	63	199	
	Purchases	6,149	5,387	5,590	
Integrity Pacts	Projects	613	537	628	
Suppliers	Services	540	658	764	
	Total	7,302	6,582	6,982	

#### **Ethics Auditing System**

KHNP evaluates its company-wide anti-corruption levels and reflects the results in its future integrity enhancement plans, while plants that fall short of established standards are subject to more thorough audits. Based on the audit results, the company may also apply individual punishments. For example, employees who give or receive money or other articles or accept entertainments valued at KRW 3 million or more may be subject to extreme penalties, such as pay cuts and even dismissal. Punishments for giving or receiving money, malfeasance, embezzlement, or the misappropriation of funds can not be reduced.

#### | Handling of Bribery and Corruption Cases | (Unit: cases)

Category	2006	2007
Number of punishments or dismissals for corruption	3 cases (Censures, 6-month pay cuts, 3-month suspensions from duty)	1 case (4-month suspension from duty)



#### Self-assesments and investigations of anti-corruption flowchart



# Responsibilities to Suppliers

# Disclosure on Management Approach



# Stakeholders' Survey



Cooperative R&D (Billions of KRW)

Technology Transfers (cases)



2.64

5

4.53

44

1.18

3

CORPORATE REVIEW SUSTAINABLE MANAGEMENT ECONOMY SOCIETY ENVIRONMENT

# Suppliers Social Performance

# Fair Transactions with Suppliers

KHNP prepared and implement detailed initiatives in terms of the system, its regulations, and involved parties, and is continuing to improve the system based on feedback from its suppliers.

#### | Transparent Contract Initiatives |



#### **Computerizing the Whole Process of Contract**

#### **Contract Process**

KHNP established real-time ARS of the overall procedures of contract via SMS or e-mail in March 2007. Request for examination and completion inspection and the performance certificate can be issued online. The subject organizations of online payment on Performance Bonds expanded to 11 institutes including Mutual Aid Associations, enhancing transparency in contracts and customer satisfaction.



#### Electronic Bidding

We have considerably reduced the negotiated contract ratio and realized 100% electronic contract ratio, enhancing transparency in contract process.

E-cont	tract and Neg		(Unit: case, %)			
Year	Total Contract —	E-cor	E-contract		Negotiated	
		cases	%	cases	%	
2005	5,397	5,314	98.8	3,236	60.2	
2006	5,280	5,257	99.6	1,490	28.2	
2007	4,492	4,485	99.8	1,069	23.8	

#### **Improving Transaction Practices with Suppliers**

#### Intensifying competition among suppliers

KHNP expanded its advance notice of placing orders in January 2007 to real time basis. The contract limits lowered to KRW 100 million for purchase and service, KRW 3 billion for projects and KRW 300 million for others. Since April 2007, we automated the process of supplier registration, increasing convenience for suppliers and encouraging more bidders to participate. Bidding announcement on KHNP's ecommerce system automatically synchronizes on the Nara Jangteo bulletin board of the Public Procurement Service. These changes effectively encouraged competition among suppliers while enhancing transparency and economics in the contracts.

#### Improving internal work process

Separating the contracting duties from price surveys, transparency significantly enhanced in the contracting procedures. At the same time, we added "enhancement of contract-related anti-corruption" to the duties for the contracting departments, establishing fair and transparent contracting platform. We also revamped systems to enhance transparency and fairness in contracting procedures.


#### Contract and Process Improvement Results

- Shorter warranty period required when deposits and guarantees against defective products are paid
- Increased exemption level for guarantees on purchase contracts (KRW 30 million → less than KRW 670 million)
- $\odot$  Faster payments: within 14 days from billing  $\rightarrow$  within 7 days
- Applying multiple pricing policy for contracts, subject to audits for appropriateness
- Excluding projects from bidding qualifications previews if they only utilize generalized technologies

#### Feedback from suppliers

KHNP strives to enhance its supplier's satisfaction with and the transparency of its contracting practices. The company encourages feedback from its suppliers to enhance the transparency of its transaction practices and determine their level of satisfaction with improvements to them. It also publishes a newsletter with information on its contracting processes for all its suppliers.





### Mutual Prosperity with Suppliers

KHNP is committed to building mutually beneficial partnerships with its suppliers to enhance its corporate value and secure "nextgeneration" growth engines. In addition to enhancing its profitability through the localization of equipment technologies and carrying out cost-savings campaigns, the company supports suppliers who have core nuclear technologies to further its entry into the global market along with them.

#### **Initiatives and Roadmap**

As part of its initiatives for achieving mutual prosperity with its suppliers, KHNP has established a set of initiatives to reinforce the long-term growth potential of its suppliers. This includes a roadmap for establishing mutually beneficial partnerships. It includes revamping partnerships (carried out in 2005), laying the foundations for mutual prosperity through R&D supports, policies to support sales channels, and a multi-dimensional support system (carried out in 2006 and 2007) and sharing the benefits with suppliers by advancing into global markets as partners (from 2008 and beyond).

#### | Mutually Beneficial Partnership Vision and Strategies |



#### **Supplier Qualifications**

With the assistance of expert groups, KHNP evaluates potential business partners based on their contributions to the nuclear industry, technological competence, and financial status, and selects those with a competitive edge in NPP equipment technologies and with whom it can exchange technologies. To verify the effectiveness of the program, the company has established a comprehensive feedback system, including performance analyses, an "excellent performers certificate," and evaluations of product functions and requests for improvements.

#### **Mutually Beneficial Partnership Program**

This program is designed to assist KHNP in selecting suppliers with proven growth potential and support them in developing technologies, sales channels, and business management strategies.

#### Supporting Sales Channel Expansion

KHNP is expanding its purchases of items that have new technology certificates and R&D products. This includes programs to identify and purchase products having new technology certificates and making purchases that surpass the government's recommendations of 50% small- and medium-sized enterprise products and 5% technology R&D products. This helps KHNP's suppliers secure stable sales channels, while the company benefits from a more reliable supply chain.



KHNP capitalizes on its brand power to advance beyond the domestic market and assist suppliers' global expansion plans while lessening their R&D investment risks. It also promotes exports by its suppliers through a variety of supports, including assisting their registration with suppliers' networks operated by overseas nuclear companies, dispatching overseas market frontiers team, participating in international exhibitions, and informing them of overseas bidding opportunities. In 2007, 92 suppliers participated in these programs and had export sales worth USD 25.46 million. Our local overseas cyber office facilitates and supports these programs through product Q&A, contracting, and supplying.

#### 2007 Overseas Marketing Supports

Supports	Results
Assisting their registration with suppliers' networks of overseas nuclear companies	18 suppliers, including Moojin Keeyeon, entered into export contracts worth USD 7.8 million
Dispatching overseas market frontiers team	68 suppliers, including Vitzrotech, entered into export contracts worth USD 6.14 million and opened 37 overseas offices
Informing suppliers of overseas bidding opportunities	Supported 3 suppliers, including Bumwoo E&G, with exports worth USD 11.52 million
Opening Joint Cyber Office	Established cyber office in Indonesia (36 suppliers participated)

#### Supporting Technology Strategies

KHNP values products and core technologies that generate long-term added values. By combining its capital, technology, information, and equipment with the production facilities and technologies of suppliers, the company seeks to secure next-generation growth engines through R&D projects. This includes support for up to 75% of R&D expenses per project, to a maximum of KRW 500 million. In order to increase the success and usage rates of R&D projects, we constructed a comprehensive support system ranging from R&D to commercialization. The system also includes a technology coaching pool consisting of KHNP experts. Project beneficiaries are selected and evaluated in close consultation with industrial, academic, and research circles. We also dispatched retired technicians to Coir Net, one of our suppliers, to support technology R&D and develop 2 technologies, including the "core protection calculator's safety-related class control module." As a result, the supplier realized KRW 830 million in growth in sales and KHNP saved KRW 340 million.

#### | Partnership R&D Participation System |



KHNP has continued to expand its technology innovation support program and has funded KRW 4.5 billion to 48 R&D projects, including the "Single Stud Tensioner Localization" in 2007. To date, the company has transferred 44 industrial property rights to suppliers, contributing to upgrading their technology competitiveness.



#### | Partnership R&D Case: Localization of Single Stud Tensioner |



 Period: From Oct. 2005 to Mar. 2008 O Cost: KRW1.07 billion Purpose: Localization of imported equipment technologies

 Usage: Nuclear reactor vessel stud vault tension and relax

Plan: Purchased for Shin-Kori Units 3 and 4

#### Supporting Management Innovations

KHNP offers financial aid to suppliers suffering shortages of fund. The "Network Loan" is extended in consideration of contract records, while the "KHNP New Power Loan" is a KRW 50.0 billion credit loan program. In 2007, KHNP established a supplier support system to provide business information, including overseas bidding. KHNP conducted surveys on the educational needs of its suppliers and developed training courses customized to their business characteristics, level, and education conditions, expanding educational opportunities for suppliers' employees. The program includes 24 e-Learning courses on the nuclear industry in general and 4 off-line courses in nuclear quality assurance and radiation control.

Suppliers' Employee T	(Unit: persons)		
Courses	2005	2006	2007
Off-line course	122	282	309
e-Learning course	_	114	267

In addition, KHNP has jointly implemented innovation programs with suppliers since 2006 to reduce costs, improve quality, and develop new products, sharing the results with them. In 2007, the program was expanded to include joint R&D products and the commercialization of transferred technologies. KHNP purchased 9 items from this program worth KRW17.6 billion.

### Supporting Suppliers' Safety Initiatives

#### **Industrial Safety Inspectors**

Industrial safety inspectors work to ensure the welfare of suppliers' employees who are involved in the maintenance of KHNP's NPPs. They inspect all NPPs to identify and correct danger factors, warn of safety guidelines violations, suggest better safety measures, and issue safety guidelines.

#### 2007 Industrial Safety Inspectors Activities

Plant	Period (accumulated days)
Kori (1,2,4 units)	Mar. 5 ~ Sep. 30, 2007 (159)
Yonggwang (2,6 units)	Apr. 9 ~ Jun. 29, 2007 (31)
Wolsong (1~4 units)	Mar. 5 ~ Dec. 1, 2007 (96)
Ulchin (4,6 units)	Jun. 4 ~ 28, 2007 (54)

#### **Radioprotective Activities**

KHNP's radioprotective activities follow the guidelines of the International Commission on Radiological Protection. They include various safety measures to protect employees of KHNP's suppliers from radiation. (Please see pages 62~63)

# Responsibilities to Local Communities

## Disclosure on Management Approach



Contributions	2005	2006	2007
Community support programs	Management for Co-Prosperity with Local Communities	Commencement of regional support program	Regional landmark projects
Community investments (Billions of KRW)	-	44.5	48.2
Volunteers (persons)	16,625	13,589	15,641
Volunteer hours (person-hours)	12.3	7.8	8.57



× 400 residents near power plants, Ace Research, October 2007



## Local Communities Social Performance

# Management for Co-Prosperity with Local Communities

While contributing to the national economy through a stable supply of electric power, KHNP implements various measures to develop and grow along with the communities in which it operates.

#### **Sustainability Issues of Local Communities**

KHNP's NPPs are located far from metropolitan areas, in places where economic, social, and cultural infrastructures are relatively underdeveloped. Accordingly, KHNP is committed to contributing to the economic development of these communities and overseeing the environmental impact of its operations. In answer to the social call for the active engagement of KHNP in social issues, the company promotes measures for mutual prosperity with local communities while satisfying various regional needs. To further effective communications with local communities, KHNP operates exclusive channels within departments at all its NPPs. It has also established comprehensive procedures to deal with local communities' grievances. Requests received via our Web site are answered as quickly as possible.

Community Grievances (Unit: cases)					
Cases	2005	2006	2007		
Received	36	42	63		
Handled	33	33	55		
Handling ratio (%)	91.7	78.6	87.3		

#### Process of Co-Prosperity Management

## Management for Co-Prosperity with Local Communities

Maintaining trusting relationship with communities is integral to the sustainability of a company. Therefore, KHNP has developed a policy of mutual prosperity with the community. It focuses on long-term regional development projects to develop the economies and the cultural life of local communities. By allotting tasks to the company and local communities, we identify projects that can benefit the majority of their residents and make intensive investments in them. Each plant operates a Community Committee to get advice on these activities and ensure that they include all issues of interest to the community. We also hold regular meetings with community representatives.



KHNP Social Service Corps



# Contributing to the Economic Development of Local Communities

KHNP operates various programs and systems to contribute to local economies. Since the enactment of the Act on Assistance to Electric Power Plants-Neighboring Areas in 1989, we had contributed about KRW 1,015.0 billion to the neighborhoods of its plants through funding programs as of 2007. KHNP expanded the amount of our contributions in 2006 and launched a separate program for regional supports. In addition to direct support of regional projects, the company pay regional development taxes in accordance with the Local Tax Law.

#### NPP Neighborhood Supports

Category		Am	nount		
	1990~2004	2005	2006	2007	Total
Funding project	597.4	34.6	84.2*	48.1	764.3
Regional support program	-	-	44.5	48.2	92.7
Regional development tax	-	5.2	76.7	76.1	158.0
Total	597.4	39.8	205.4	172.4	1,015.0

% The funding project amount was increased in 2006 due to special subsidies for NPP construction projects.

(Unit: Billions of KRW)

#### **Regional Support Program**

KHNP has set up a fund to identify and implement business projects that residents need. The programs include scholarships, regional economic cooperation, environmental protection, and promoting local welfare and culture.

#### Regional Support Program Initiatives



We ensure the effectiveness of these programs through in-depth discussions with local communities. The program began with projects that local residents demanded. In the future, we will prepare mid- to long-term business plans. We are also building an assessment system to get feedback and check the effectiveness of the programs.

Regional Support Programs				(Unit: Billions of KRW)
Plant	S	Subsidie	S	Programs
i idiit.	2006	2007	Total	Подгатть
Kori	10.2	12.5	22.7	Providing native English instructors, etc.
Yonggwang	10.4	11.9	22.3	Constructing wild berry processing factory, etc.
Wolsong	9.6	9.8	19.4	Constructing facilities for teenagers, etc.
Ulchin	11.8	11.6	23.4	Improving Ulchin Library facilities, etc.
Hangang Hydro	2.5	2.4	4.9	Subsidizing elementary and middle school     English camps, etc.
Total	44.5	48.2	92.7	

#### **Regional Landmark Projects**

To further the efficient and effective operation of our regional support programs, we select and promote regional landmark projects in consideration of the characteristics and conditions of the community. As a result of the "select and focus policy," the Kori Nuclear Power Site cooperates with Busan city on education and scholarship programs, the Yonggwang Nuclear Power Site promotes projects to develop underdeveloped neighborhoods, the Wolsong Nuclear Power Site implements sports and cultural programs in line with the Gyeongju Tourism Business project, and the Ulchin Nuclear Power Site picked tour businesses as its landmark project.

### Community Engagement

#### 1-department 1-sister village

Each Nuclear Power Site encourages their departments to form sisterhood relationships with a local village. As a result, 220 departments are in partnership with 251 villages and held 1,262 events in 2007.

#### | 1 Department-1 Village Sisterhood |

Nuclear Power Site	Department	Village	Activities
Kori	44	73	355 events (2,700 employees participated)
Yonggwang	56	57	161 events (1,165 employees participated)
Wolsong	63	63	516 events (3,612 employees participated)
Ulchin	57	58	230 events (1,305 employees participated)
Total	220	251	1,262 events (8,782 employees participated)

KHNP is actively involved in events held in NPP neighborhoods by local organizations. Among the 1,209 events in 2007 were the moonwelcoming festival and Gijang anchovy festival at Gijang-gun, near the Kori NPP, the Beopseongpo Dano Festival and Hongnong Hanmaeum cherry blossom festivals near the Yonggwang NPP, the Yangbuk Herb Festival and King Munmu Spring Grand Festival near the Wolsong NPP, and the 4.13 Heungbu Manse Festival and Namdaecheon Dano Festival.

#### **Energy Farm**

While our sports complex centers help local residents lead healthy and quality lives, the energy farms–our PR exhibition centers in Kori and Ulchin–provide them with opportunities to experience nuclear energy hands-on. They also function as a good PR tool for regional brands, since their advertising is placed on advertising towers, at information centers, and on leaflets.



#### **NPP Recreational Facilities**

We share our sports assets with local residents. Our exhibition centers are provided for wedding ceremonies, and the playgrounds and sport facilities at our boarding houses are open to local sports activities.

#### |Welfare Facilities Usage |

Category	2006	2007	Change
Grassed playgrounds at boarding houses	92 times (6,100 persons)	335 times (30,865 persons)	406% †
Wedding spaces in the Exhibition Center	44 weddings	63 weddings	43% †
Sports Center and Parks	46,000 persons	115,360 persons	150% †
		× The 2005 fig	iros aro not availablo

% The 2005 figures are not available

#### **Job Generation for Communities**

We provide advantages to local residents and apply a resident quota system to our recruitment policies. We also offer advantages to companies employing local residents for such positions as daily labor jobs and construction work.

NPP	Neighborhood	Resident	Emplo	vment
 	- toiginbointood	noonaonie	Emplo	y

(01110.1 0100110, /0		(Units:	Persons,	%
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Category	2005	2006	2007
New hires	302	341	514
Residents employed	75	105	134
Ratio	24.8	30.8	26

# Love for Neighbors, Hope for Society

KHNP organized a Social Service Corps by combining our social volunteer, medical volunteer, and regional volunteer groups in June 2004. In 2007, this evolved into the KHNP Social Service Corps. At the same time, we reinforced our partnerships with external experts and volunteer groups to provide timely and practical supports to the needy.



KHNP Labor-Management Joint Response to West Coast Oil Spill Damage

Under the themes of "a future full of hope," "sharing love," and "a clean environment," we operate various programs to facilitate our employees' volunteerism. A "Love Fund" is funded by payroll contributions from workers, with the company contributing an equivalent amount. In 2007, 95% of our workers participated, raising KRW 860 million.

#### | Social Contributions Performance |

Catagony	Participants (persons)				Volunteer Hours			Contribution Amount (KRW 1,000)		
Calegory –	2005	2006	2007	2005	2006	2007	2005	2006	2007	
Charity Supports	3,533	1,936	2,063	16,866	8,788	9,113	245,749	284,236	214,771	
Helping the Marginalized	4,640	7,509	8,544	20,763	28,003	36,060	212,318	333,098	489,708	
Health and Medical services	88	35	203	1,364	840	922	59,654	181,027	380,608	
Cultural Activities	430	673	1,862	1,884	4,856	7,721	5,779	-	45,364	
Education Consulting	573	603	798	4,591	1,790	2,315	411	-	1,765	
Environmental Protection	5,934	2,302	2,171	29,071	9,865	8,301	-	-	9,935	
Other	1,427	531	_	13,693	2,472	-	94,107	-	_	
Total	16,625	13,589	15,641	88,232	56,614	64,432	618,018	798,361	1,142,151	

**Future Full of Hope** 

We operate evening schools, youth soccer classes, native English classes, energy classes, and camp programs. Our mentoring program provides life consulting and career consulting classes and cultural activities.

#### Science Classes

We offer "Junior Engineering Classes," "Nuclear Science Classes," and "KHNP Energy Camps" to elementary and middle school students in the neighborhoods of our NPPs to cultivate an interest in science. Other classes provide them with opportunities to understand the benefits of nuclear energy.

#### 1 Company 1 High School Sisterhood Relationships

We entered into a sisterhood relationship with the Gyeongnam Technical High School to foster technicians and help the school through field trips and scholarship programs.

#### Afterschool Program

We offer various afterschool programs to underprivileged students in the vicinity of NPPs. They include outdoor field classes, life guidance, homework assistance, and afterschool programs in English, Chinese characters, computers, and reading classes. We also started evening schools in English and mathematics in 2004. We plan to expand the program.

#### **Sharing Love**

KHNP practices "sharing love" principles to further mutual prosperity with communities and become a respected corporate citizen.

\* Contribution amount refers to employees amount.

#### "Happy Okdanggol" for the Elderly

Yonggwang Nuclear Power Site operates a program called "Happy Okdanggol" to provide recreation activities, health check-ups, physical therapy, haircutting services, and birthday parties to local seniors. KHNP also provides assistance with housework and bathing and offers free meals to senior citizens and underprivileged families.

#### "Love House Campaign"

The Kori Nuclear Power Site's "love house campaign" assists lowincome families and senior citizens living alone with papering, paper floor renewing, sink renovations, leakage care, and roof renovations. In addition, the Hangang Hydro Power Plant operates "Love Housekeeping" to protect the severely disabled living in Chuncheon and Hongcheon against potential dangers.

#### **Medical Services**

The medical volunteer group pays regular visits to villages near NPPs to provide free medical checkups and medicine. The medical checkups include blood, liver function, thyroid ultrasonic checks, bone mineral density checks and treatments, and prescriptions. As of 2007, 48,000 residents had benefited from the service.



#### **Clean Environment**

We strives to protect and conserve the environment in all its\ daily business operations.

#### Protecting the ocean

Our scuba diving club members help clean up the coastline. We grow fish and shellfish in our own water farms utilizing discharged cooling water from our NPPs, and stock nearby waters with them. Since 1997, a total of 25,380,000 fish were stocked, contributing to an increase in local fishermen's incomes.

#### Purifying the ecology of rivers

We protect the quality of water through various activities, including cleaning Paldang Lake Jangansa Valley, and the Yuseongcheon and Gapcheon riversides.

#### Mountain keeping/cultural property cleaning

We preserve mountains and forests to prevent forest fires, pick up litter around mountain areas, and clean paths and valleys. We also clean around cultural assets, such as the Gameun Temple site and Igyeondae.

# Sponsoring Culture and Art Activities

KHNP is also devoted to the Mecenat campaign-the corporate support of cultural, artistic, and academic activities. We hold various cultural events, including musical tour concerts, at our plants.

#### 2007 Major Mecenat Activities

Program	Time	Participants	Events
NPP Music Tour Concerts	Twice in October	About 800 persons	Touring orchestra concerts at NPPs' neighborhoods
Kimyujeong Literary Prize	October	About 200 persons	Discovering prospective writers
Sharing Concerts	Year-round (11 times)	948 persons	Musical and theatrical performances for underprivileged children
Korea Musical Concours	August	80 persons	Classical music concerts for middle and high school students
Chuncheon Mime Festival	May~June	About 130,000 persons	Mime performances, exhibitions

#### NPP Neighborhoods Musical Touring Concerts

Offered in partnership with the Seoul Oratorio and the Korea Culture and Art Committee, these musical touring concerts provides residents of culturally underdeveloped areas with high- quality cultural services. We operate events such as "Shiwolae" and "Classic Feast." We also foster talented music players through the "Wolsong Kids' Orchestra."

#### **Kimyujeong Literary Prize**

In memory of this renowned Korean writer, KHNP established the Kimyujeong Literary Prize to discover prospective new writers.



Kimyujeong Literary Awards

#### **Protecting History and Culture**

As part of a joint project with the Gyeongju National Museum alled "History meets Science," we run a video room under the theme of "The Shilla People and Fire" where we introduce the advanced science and technology of ancient Korea (or Shilla) and help visitors understand our cultural assets related to fire. "Regional History and Culture Travelog" is a campaign to advertise regional cultures and history.

#### **Chuncheon Mime Festival**

We are also committed to promoting underdeveloped regional cultures. For example, we have been sponsoring the Chuncheon Mime Festival—a representative culture festival of Chuncheon that is making its name in the world—since 2006. CORPORATE REVIEW SUSTAINABLE MANAGEMENT ECONOMY SOCIETY ENVIRONMENT

## "Love for Neighbors, Hope for Society"

KHNP grows with the community through various social contribution activities, cultural sponsorships, and educational supports.



#### Summer Night Festival — Ulchin Music Farm Festival

••• The Ulchin Music Farm Festival is part of our efforts to provide Ulchin residents with highquality cultural reources. This event also provides good opportunities to advertise Ulchin and its tourist resources. The three-day program includes wind surfing, MTB, marathons, nightly concerts, and other events.



(1) power August 2007



## Shin-Kori's future is on our shoulders. "Can't wait to start working."

Mr. Choi, from Busan, is a fourth-class trainee at the welding school at Shin-Kori's construction site. He says, "Time flies. I was busy studying and practicing. I was nervous and uncertain about myself when I started this training, but now it is fun and I find it worth being here."

Mr. Jeong, another trainee from Busan, come to class at 7:30 every morning and works hard, with sweat running down his face in beads. The welding school at the Shin-Kori construction site runs vocational training classes for local residents, helping them realize their dreams. It trains local residents to become welders and construction engineers, generating jobs for the community. To date, 50 people have completed the eight-week training course.

#### **Fun Science!**

••• Each NPP holds "Junior Engineering Classes" for elementary students from its neighborhoods twice a year. These offer children opportunities to understand complicated science theories through fun experiments and cultivates a interest in science in them. Employees complete applicable training courses at the Hanyang Academy of Engineering before they can volunteer as teachers.

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Installation ceremony of solar power generation equipment at Yeongbo Senior Citizens Nursing Home

#### **Equipping Charities with Solar Powered Generation Facilities**

••• In partnership with the Korea Energy Management Corporation (KEMC), KHNP equips local charitable institutions with solar power generation facilities. In addition, we cooperate with various local institutes, including NGOs, local civic groups, and residents in practical programs to give a helping hand to the needy.

- Four 15kW-class solar power generation facilities at four facilities, including the Yeongbo Silver Citizen Nursing Home (Dec. 2005)
- 50kW-class solar power generation and 200RT terrestrial heat facilities at "Woorimaeul," a vocational rehabilitation institution for the disabled in Ganghwa (Aug. 2006)
- KHNP's Hangang Hydropower Plant started a new and renewable energy small hydro power A/S Center (July 2007)



Installation ceremony of solar power generation equipment at Woorimaeul



Inaugural ceremony for small hydropower A/S Center



#### Interview with an Expert

Hyo-Sun Nam, Member of the Ulchin Civic Environment Audit Committee

(Interviewed June 19, 2008)

**Opinion** Corporate social responsibilities include building mutual trust with communities and encouraging its employees to volunteer at social service activities, as well as contributing to the quality of life for the community. To that effect, we welcome the recent program that the Ulchin Nuclear Power Site has implemented. It established the practice of local residents' participation in selecting social contributions programs and regional support projects. This helped ensure the effective implementation of the projects. We hope this practice spread to other NPPs.

KHNP Response KHNP actively promotes open communications with communities and hope that they will accept KHNP with open minds and a spirit of trust. Through its activities for reaching out to the marginalized, KHNP will continue to improve the quality of life for communities in its role as a responsible corporate citizen.





## Greener World



When our nights are lit up, somewhere else is in darkness.We treasure our light and nature's.KHNP is generating clean and environmentally friendly energy.

Blue Skies, Clean Energy – Hope for tomorrow, from KHNP



## Environmental Performance

## Disclosure on Management Approach





## Environmental Policy and Management Environment Performance

### **Environmental Management Policy**

#### **NPP Environmental Impacts**

Nuclear power plants (NPP) and fossil-fired power plants both produce steam to drive a turbine that generates electricity. Although the operating theory is the same, the two types of plants use different energy sources. NPP utilizes nuclear fission inside a nuclear reactor core, while fossil-fired power plants use fossil fuels, such as gas, coal, or oil, to run the boiler.

From fuel mining to waste disposal, NPP produces the same amount of carbon dioxide (CO<sub>2</sub>) emissions as hydropower or other natural energy. However, it does generate radiation and radioactive wastes. Therefore, environmental management in the nuclear industry is all about ensuring safety against radiation.

#### **Environmental Vision and Goals**

To realize its vision of becoming a "trusted environmental corporate model," KHNP implements environmental management to minimize its environmental impacts and protect the natural environment.

#### Environmental Vision and Action Plan



We have also established two action plans: a "2015 mid- to long-term environmental management plan," and a "mid- to long-term environmental management plan for becoming a corporate environmental model."

#### **Environmental Policies**

- Environmentally Friendly Management System We continue to make improvements in the course of our business activities through a global-standard environmental management system.
- Compliance with Domestic and Global Environmental Guidelines In compliance with environmental regulations and conventions, we are striving to achieve a higher level of environmental management.
- Minimizing Level of Emissions
   We minimize emissions by optimizing processes and improving our facilities and operational skills.
- A Leader in Environmental Conservation Activities To conserve the environment, we maximize savings and recycling resources while developing new and renewable energy sources.
- Transparent Disclosure of Environmental Information We transparently disclose environmental information while cooperating with community efforts to improve environment.

#### **Environmental Management System**

KHNP has adopted a world-standard environmental management system, ISO 4001, to minimize its environmental impacts and improve its environmental performance. Our nine branch offices and the head office acquired these certificates from the Korea Productivity Center for Quality Assurance in October 2006.

In a bid to minimize its environmental impacts, KHNP applies strict selfcontrol guidelines regarding discharges of air and water pollutants and wastes from all its business premises. It has never been subject to sanctions or fines.

#### **Environmental Monitoring System**

KHNP conducts regular inspections of the environmental impacts of its power plant operations by checking meteorological data, environmental radiation dose in the vicinity of NPPs, the density of water pollutants from its wastewater treatment facilities, and seawater temperature and salinity. The data are then sent to the NPP operational information server for round-the-clock monitoring, accessible anytime via our Web site. CORPORATE REVIEW SUSTAINABLE MANAGEMENT ECONOMY SOCIETY ENVIRONMENT

KHNP has been consistently improving its environmental data management system to efficiently manage inspection results, its overall performance, and ancillary information. Since 2007, we have put in place a Web-based management system of data on the general environment near NPPs and plan to complete an integrated information management system by the end of 2008. Employing the SAP EC Module<sup>®</sup>, the new system facilitates a comprehensive and systematic management of chemical usage, a greenhouse gas (GHG) inventory, environmental accounting, and our business activities.

#### **Countermeasures against Environmental Accidents**

KHNP is monitoring its wastewater and sewage treatment facilities and the pollutant densities of discharged water and stops discharges when it exceeds its guidelines.

In order to prevent the accidental leakage of chemicals or oil from storage tanks, we have equipped each tank with bumps and current interceptors<sup>®</sup> and linked the outlet of current interceptors with wastewater treatment facilities. In addition, KHNP has installed discharge prevention devices at the end of the Ulchin plants' discharge gates.

In order to prevent environmental accidents and quickly take over control of the situation in such events, all of our NPPs operate an organized prevention network and conduct environmental accident drills. To date, we have had no chemical or oil leakage accidents.

#### | Environmental Pollutant Prevention Network (Ulchin Hazardous Materials Leakage Prevention Network) |



## Energy Usage and Emissions Control

#### **Fuel Usage**

As of the end of 2007, KHNP was operating 16 pressured water reactors (PWR) and four pressured heavy water reactors (PHWR). The PWR plants utilize low enriched uranium (LEU) (about 2~5% of U235) as fuel, one-third of which is replaced after sixteen months of operation. The PHWR uses natural uranium (about 0.7% of U235), a certain amount of which is replaced daily. The PWRs used less fuel in 2006 because increasing number of units became subject to PPM. The Kori Unit 1 suspended operations for about seven months in 2007 to prepare to qualify for "continued operation," consequently using less fuel than in 2006.

#### | Nuclear Power Plant Fuel Usage |

	Pressured	Water Reactor	Pressured Heavy Water Reactor			
Year	Fuel Amount (U ton)	Generation Amount (GWh)	Fuel Amount (U ton)	Generation Amount (GWh)		
2005	320	123,705	412	23,074		
2006	299	124,968	425	23,780		
2007	288	120,247	406	22,790		

#### Water Usage

Conventional thermal power plants heat water to produce high temperature, high-pressure steam to drive a turbine or generator that generates electricity. Since this process consumes a large amount of water, high-quality water is integral to a plant's operation.

Each nuclear power site uses different water sources: the Ulchin Nuclear Power Site uses Daesuho Dam, the Kori Nuclear Power Site gets water from the Ulsan and Busan Water Service, Yonggwang Nuclear Power Site's water comes from the Ungok Dam at Gochang, and the Wolsong Nuclear Power Site uses the Ulsan Industrial Water Service and the Daejongcheon river. All water used at the plants is purified and used in generating electricity and cooling equipment.

#### |Water Usage and Wastewater Reuse |

(Units: 1,000 tons, %)

Water			Wastewater	
rear -	Usage	Treated amount	Reuse	Reuse ratio (%)
2005	3,343	2,802	224	8.0
2006	3,269	2,721	249	9.2
2007	3,209	2,359	288	12.2

#### C

① SAP-EC (Environment-Compliance) Module: An environmental management module of the Enterprise Resource Planning (ERP) system

2 Current interceptors: A water bath installed underneath a hazardous materials storage tank to collect pollutants and prevent the accidental release of pollutants into the environment



#### **Air Pollutants**

KHNP does not emit sulfur oxides (SOx), nitric oxides (NOx), dust, or other air pollutants because it utilizes environmentally friendly nuclear and hydropower.

#### Wastewater Treatment and Recycling

Wastewater from power plants contains chemicals and oils. Therefore, we treat all wastewater within our own treatment facilities before discharging it. We installed electrolysis systems at the Kori and Ulchin plants in 2005 and 2007, respectively, to reduce water pollutant emissions. In the longer run, we have set a target of 2013 for cutting our pollutant emissions to fewer than 50% of statutory regulations. We plan to complete improvements to our environmental facilities by 2010.

Some of the discharged water from these treatment facilities is reused to backwash filters at the facilities, dilute chemicals, and as spray on roads. The Ulchin NPP installed a water reclamation and reusing system<sup>®</sup> to reuse discharged water for power generation and improve the ion exchange resin regeneration process.

Waste	ewater D	ischarg	jes by P	ower P	lant		(Units: to	n, g/MWh)
		K	ori			Yong	gwang	
	CO	D <sup>2</sup>	SS	SS <sup>®</sup>		D	SS	
Year	Emissions Amount	Per unit	Emissions Amount	Per unit	Emissions Amount	Per unit	Emissions Amount	Per unit
2005	6.9	0.57	1.6	0.13	7.4	0.31	1.1	0.05
2006	6.9	0.27	1.6	0.06	14.9	0.30	1.8	0.04
2007	3.3	0.14	1.0	0.04	14.6	0.31	1.2	0.02
		Wol	song			Ul	chin	
	CC	D	S	S	CC	D	S	S
Year	Emissions Amount	Per unit	Emissions Amount	Per unit	Emissions Amount	Per unit	Emissions Amount	Per unit
2005	0.7	0.06	0.5	0.04	17.4	0.44	13.1	0.56
2006	1.5	0.06	0.9	0.04	16.1	0.33	5.1	0.10
2007	2.8	0.13	1.4	0.06	7.3	0.15	1.0	0.02

#### **Discharged Cooling Water Controls**

We use seawater as cooling water to condense the steam used in power generation. Called discharged cooling water, its temperature rises by about 7~9°C when discharged into the sea. A 1,000MW-class plant discharges about 50~60 tons of cooling water per second. We operate a variety of systems to monitor the environmental impact of this discharged cooling water.

The Korea Electric Power Research Institute (KEPRI) conducts regular inspections and publishes annual reports on environmental conditions near NPPs in tandem with universities and other research centers. Reports published over the past twenty years observed no significant changes in the environment due to our water usage and discharges, as the vicinity demonstrated similar ecologies to those in other areas. However, some impact was observed on seaweed at low temperatures. We investigated this and paid appropriate compensations. In addition, we will apply deep-water sourcing and discharging methods to new plants to minimize the marine impacts of discharged cooling water.

Yearly Discharged Cooling Water Amounts By Plant (Unit: millions of tons)

Plant	2005	2006	2007
Kori	4,682	4,313	4,236
Yonggwang	7,991	7,944	7,771
Wolsong	4,785	4,868	4,590
Ulchin	8,429	8,888	9,285
Total	25,887	26,013	25,882

#### **Chemicals Usage**

KHNP utilizes chemical materials to produce water for power generation, prevent equipment deterioration, and treat wastewater.

Che	mical Mate	erials Us	age				(Unit: tons)
Year	Hydrochloric acid	Sulfuric acid	Caustic soda	Hydrazine	Ammonia	Other	Total
2005	168	2,242	2,885	120	96	11	5,522
2006	130	2,167	2,455	120	84	52	5,008
2007	89	1,976	2,283	114	117	76	4,655

KHNP plans to adopt ethanolamine (secondary system pH regulator) reclamation facilities that will enable the recapturing and reuse of spent chemicals. Aiming to install it at our NPPs by 2009, we have been conducting feasibility tests since 2007, and will be able to reclaim about 85~90% of the ethanolamine. In addition, we have changed our operating methods to reduce chemicals usage and are using alternative chemicals to minimize their environmental impacts.

(3) SS: Suspended Solids

① Water reclamation and reusing system: a collective system of treatment, water discharge, and usage facilities enabling the reuse of wastewater as industrial water, etc.

② COD: Chemical Oxygen Demand

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#### **Noise Control**

We use sound-absorbing materials in plant buildings and install sound attenuators and sound blocks at the source to minimize noise emissions and impacts.

#### **Soil Pollution Control**

In order to prevent the accidental discharge of pollutants, we have installed discharge prevention blocks at facilities that are subject to soil pollution. We also carry out annual inspections of soil pollution in surrounding areas, utilizing a total petroleum hydrocarbons (TPH)<sup>®</sup> analysis. No cases of discharges or leakage of soil pollutants had been observed up to December 2007.

#### Waste Treatment

#### |Wastes Discharged From Plants |

General Waste	Waste synthetic resin, wastewater sludge, waste concrete, slag, abandoned metals, waste shells, waste wood, waste sand filters, waste glass, waste absorbents, etc.
Specified Waste	Waste organic solvents, waste paint, wasted storage batteries, etc.

NPP wastes are classified as general, specified, and construction wastes. We keep complete control of wastes throughout the whole process from generation to reatment.

In order to reduce waste and enhance the recycling rate, we categorize wastes and operate facilities for the fermented drying of marine wastes and a waste reduction system. Consequently, our recycling rate is on the rise. We aim to raise the plant waste recycling rate to above 80% by 2015.

#### |Recycling Wastes|

	Category	2005	2006	2007
Concrated	General wastes (tons)	6,174	7,713	12,358
Generated	Specified wastes (tons)	585	929	1,037
Regulad	Recycling amount (tons)	3,391	4,688	8,275
necycleu	Recycling rate (%)	50.2	54.2	61.8

Foods

Above 30%

Above 50%

#### | Waste Recycling Targets | Category

2007~2009

2010~2015

#### PCBs (Polychlorinated Biphenyls)

We control PCB<sup>@</sup>-containing insulating oil and electric equipment pursuant to the central government's "Persistent Organic Pollutants Control Act." We also plan to gradually dispose of the 1,100 tons of PCB-containing insulating oil that was in use as of the end of 2007 by 2015. This will be done by following our "PCB-containing insulating oil and equipment treatment" scheme.

#### **Environmental Impacts of Transportation**

All materials that KHNP purchases for NPP maintenance and construction purposes are brand-new products transported in accordance with appropriate packing and transportation conditions, barely generating any environmental impact. The international transportation of nuclear fuels is only allowed by strictly abiding to procedures and conditions stipulated in the Atomic Energy Act and the conventions and agreements of IAEA and the International Maritime Organization<sup>®</sup>. Environmental impacts from the transportationare very unlikely, as the fuels are sealed in special shock-resistant containers built to U.S. Nuclear Regulatory Commission standards. Under the Nuclear Damage Compensation Act, we carry Atomic Energy Transportation Liability Insurance, ensuring third-party liability in the case of transportation accidents.

#### **Energy Savings Efforts**

We control the amount of electric power and heating and cooling oil fuels consumed for purposes other than power generation. The energy usage target for 2008 is 5,560 TOE<sup>@</sup>.

We implement various measures to rationalize energy usage and save energy in order to reduce costs and reduce the wastage of resources. To that effect, we have devised individual energy saving initiatives for each plant and set yearly targets for saving energy. In 2007, we saved 5% more energy than in 2006. The company-wide energy saving campaign includes the mandatory use of high-energy-efficient equipment and the economical use of electric equipment and heating and cooling facilities. We also cultivate energy-saving mind-sets in our employees through regular energy saving training courses.

Energy Usa	age							(Ur	nit: TOE)
Category		2005			2006			2007	
Category	Electricity	Oil	Total	Electricity	Oil	Total	Electricity	Oil	Total
Usage Amounts	4,730	357	5,087	5,174	416	5,590	4,945	370	5,315

Target

① Total Petroleum Hydrocarbons (TPH): a measurement used in soil pollution inspections of facilities containing oils with a high boiling point (150°C-500°C), such as jet fuel, kerosene, diesel, heavy oil, lubricants, and crude oil ② Polychlorinated Biphenyls (PCB): chlorinated organic compounds with thermal-proof, non-volatile, acid- and alkali-resistant and electric insulation properties. PCBs used to be used as transformer insulation oils and olasticizers. but those uses are now banned due to their extremely negative impacts on the humanendocrine system and the environment.

(3) International Maritime Organization (IMO): a specialized UN agency providing international standards on marine routes, transportation regulations, harbor facilities, etc.

Plant Wastes

Above 75%

Above 80%

(4) TOE (Ton of Oil Equivalent): a standardized unit based on the calories that one ton of crude oil produces. 107Kcal of heat produced by 1 ton of crude oil is 1 TOE.

O



## Addressing Climate Change

#### **Climate Change and the Nuclear Industry**

The world is strengthening environmental regulations to protect the global environment. With the Kyoto Protocol taking effect in 1992, all industrialized nations, including those in Europe and Japan, mounted campaigns to reduce GHG emissions.

International conferences are now underway to reduce GHG emissions when the Kyoto Protocol takes effect. It is highly likely that Korea will be obliged to reduce its GHG emissions. This will cause many difficulties, since the nation has yet to complete preparations for these changes. According to statistics prepared by the IAEA, as of the end of 2006, 429 nuclear reactors were in operation around the world, generating million kW of electricity or about 16% of global electricity generation. This was saving about 2.3 billion tons, or 10%, of global CO<sub>2</sub> emissions.

Given that fossil fuels account for 85% of Korea's energy, its worldleading CO<sub>2</sub> emissions growth rate poses serious problems. Although the power generation industry takes up only 30% the amount of CO<sub>2</sub> that Korea emits, it will grow with increasing electric power demand. Against this backdrop, nuclear energy will play an increasingly important role due to its CO<sub>2</sub>-free efficiency and economics.

#### **KHNP's Climate Change Policy**

While constructing a joint network with the KEPCO Group, KHNP prepared a comprehensive set of countermeasures to deal with climate change and set up a task force team in 2005. We devised a long-term roadmap to realize our corporate philosophy of "enriching life through environmentally friendly energy" by 2017.

Spanning 2005 to 2007, the first phase began with comprehensive measures to reinforce our competencies in addressing climate change. In addition to PR activities on the environmental friendliness of nuclear energy, we educated our employees in the importance of climate change issues through online courses and cultivated their expertise through outside institute courses.

Spanning 2008 to 2012, the second phase aims at enhancing nuclear power generation. In line with the central government's climate change policy, we are implementing climate change countermeasures for twenty-one items selected from four categories—GHG reductions, climate change adaptation, infrastructure-building, and R&D and external cooperation.

#### **GHG Emissions: Status Quo**

Greenhouse gases (GHG) that contribute to global warming are CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, HFCs, PFCs, and SF<sub>6</sub>. Since KHNP uses environmentally friendly nuclear and hydropower as its energy sources, its fuel combustion does not emit GHGs. However, its operations do emit some. We have been measuring our GHG emissions amounts since 2007. In 2007, we discharged 598 tons of CO<sub>2</sub>, including direct-stationary<sup>®</sup> and mobile combustion<sup>®</sup> and fugitive emissions<sup>®</sup> and indirect emissions from utilizing external electric power.

GHG Emissions (Unit: Tons of CO2 as								as of 2007)
Emissions			Dire	ct			Indirect (using external	Total
LITIOSIONS	CO <sub>2</sub>	CH4	N <sub>2</sub> O	HFCs	PFCs	SF6gas	electricity)	amount
	6,646	43	-	-	_	78,870	512,599	598,158

% Indirect emissions are calculated by multiplying external electricity use by a CO<sub>2</sub> conversion factor (0.424kg- CO<sub>2</sub> /kWh)

#### **GHG Reduction Initiative and CDM Project**

KHNP contributes to the national drive for GHG reductions by supplying environmentally friendly energy. As an environmentally friendly energy company that is committed to protecting the environment, we are planning to build new and renewable energy facilities with a capacity of 1,935MW, or 7% of our NPP capacity, by 2013. A total of 540MW of new and renewable energy facilities—including the 3,000kW-class Yonggwang Solar Park—will be installed by 2008. We also plan to connect our new and renewable energy business to the clean development mechanism (CDM).

① Stationary combustion: combustion at stationary equipment, such as boilers and incineration plants

<sup>(2)</sup> Mobile combustion: combustion by transportation equipment, including cars

③ Fugitive emissions: gas emissions arising from beginning of operations-the mining to end use

# Achievement Other Environmental Performances

#### **Green Purchases**

KHNP is committed to preventing resources waste and environmental pollution. To this end, it practices green purchasing under the "Voluntary Agreement on Green Purchasing" with the Ministry of the Environment. The contracting guidelines of our bylaws also encourage buying green products. In 2007, we purchased 128 types of green products. We plan green purchase worth KRW 4.5 billion in 2008.

#### Green Purchases

Year	2005	2006	2007
No. of items	47	112	128
Purchase amount (Billions of KRW)	2.5	3.6	3.9

#### **Cherishing Fish Resources**

We stock the near coast with fish every year on Maritime Day. We grow them in our own fishery farm utilizing discharged cooling water and select the fish to be stocked through consultations with local fishermen. We also drop artificial fish reefs to form underwater seaweed forests, contributing to income growth for local fishermen and improving the ocean environment. The table below shows the amount of young fish we stocked on Maritime Day in 2007. We have discharged similar amounts each year since 1997.

#### 2007 Young Fish Stocking

NPP	Number		
Kori	30,000 7~8cm-long young flatfish, 30,000 4.0~4.5cm-long young ormer, 100,000 7~8cm-long young porgy		
Wolsong	30,000 8cm-long young flatfish, 80,000 4cm-long young ormer, 20,000 8cm-long young porgy		
Yonggwang	1.5 tons of 2~7cm-long young white clam, 15 million 7~8cm-long young fleshy prawn, 30,000 2~3cm-long young Kuruma shrimp, 15,000 15~18cm-long young flatfish		
Ulchin	10,000 7~8cm-long young flatfish, 35,000 3~4cm-long young ormer, 100,000 7~8cm-long young porgy		

We also released 135.1 tons of Myeongji shellfish and 330,000 young ormers in 2007. In addition, we cleaned up the beaches around our NPPs and removed starfish from nearby fishery farms.

#### **Protecting Regional Biodiversity**



KHNP calculates the environmental impacts of NPP construction and operations in the vicinity and prepares measures to reduce their impact prior to construction and during operations.

In August 2004, Kori salamanders were discovered at Shin-Kori Units 1 and 2. Representatives from the

government, environmental groups, and the local community conducted an on-the-spot survey of the impact of plant construction on their habitat. Based on the results, we devised plans to protect the salamanders and moved them from the site. We then implemented follow-up measures to check on how they were adapting to the new habitat.

#### **Preventing Water Pollution By Dams**

The Gangneung Hydropower Plant's Doam dam has a capacity of 82MW. In 2001, after learning that the plant was causing water pollution, KHNP stopped operations there. The main culprit was muddy water containing fertilizers from the high lands at the upper reaches of the dam. This, along with muddy water from the construction sites in the vicinity, had been causing water pollution

To deal with this, we met with the local community to develop solutions. Since May 2007, state-of-the-art water quality improvement facilities began on a pilot run, revealing that muddy water can be made as clean as high-quality water. New equipment made it possible to show solution on Doam dam problem. We will continue ensuring that the Doam dam produces an environmentally friendly and stable supply of water.



(Unit: %)

## Nuclear Environmental Management Environment Performance

## Low-and Intermediate-Level Radioactive Waste (LILW) Management

LILW management involves the insulation, treatment and disposal of radioactive wastes while protecting human life and the environment from potential risks. KHNP operates safe and efficient LILW management under the three following principles.



#### **Definition and Classification of Radioactive Waste**

Radioactive waste refers to waste contaminated with radioactivity that is generated during the operation of nuclear power plant. Radioactive waste is classified as high-level radioactive waste (HLW) and low- and intermediate-level radioactive waste (LILW).

LILW refers to waste containing relatively low doses of radiation such as work uniform, overshoes, syringe, used filter and resins. It is usually generated at NPPs, hospitals, research centers and similar institutions. HLW refers to spent fuel or waste produced by reprocessing spent fuels.

#### LILW Management Policy

KHNP is currently constructing disposal facility for LILWs to safely control them. Residents of candidate sites voted on the selection of an LILWs disposal facility site in November 2005 and Gyeongju city was selected as the disposal site. The construction of the disposal facility started in January 2008. The new rock cavern-type disposal site will be completed in December 2009. The total expenses of the construction is KRW 1,522.8 billion. By 2007, KRW 496.9 billion had been spent.

	Gyeongju	Gunsan	Yeongdeok	Pohang
Voting rate	70.8	70.2	80.2	47.7
Aye	89.5	84.4	79.3	67.5

All LILWs generated by KHNP will be transferred to the new disposal facility site when it is completed in December 2009. The new site has been named the Wolsong Low- and Intermediate-Level Radioactive Waste Disposal Center.

Since it requires long-term planning, radioactive waste management is supervised by the central government. KHNP has devised the following master plans to ensure safe and efficient radioactive waste controls and contribute to the sustainability of the nuclear industry.

#### Radioactive Waste Management Master Plan

Safety is first priority	<ul> <li>Preventing risks to people's health and the environment through ecologically and environmentally safe management of LILWs</li> <li>Complying with international standards on safety controls</li> </ul>
Minimizing the generation of radioactive waste	<ul> <li>Minimizing the amount of radioactive waste generated from nuclear power plant operations and utilizing radioactive isotopes</li> </ul>
Costs are at the owner's expense	<ul> <li>Radioactive waste management costs are at the owner's expenses at the time of generation. This avoids transferring the burden to the next generation</li> </ul>
Proceeding in the public trust	<ul> <li>Promoting public understanding and trust through transparent and open radioactive waste control</li> <li>Contributing to regional development</li> </ul>

#### **Temporary Storage of LILWs**

LILWs are safely stored in temporary storage facilities, undergoing different disposal methods according to their type, such as volume reduction stabilization of shape, etc. This method maximizes the efficiency of the storage facilities by reducing disposal expenses, stabilizing the final LILW's properties, and reducing workers' radiation dose.

#### LILW Storage Status

Category	Kori	Yonggwang	Wolsong	Ulchin	Total
2007 generation	2,417	1,792	717	1,092	6,018
Cumulative Volume	37,977	18,246	6,752	13,506	76,481
Storage capacity	50,200	23,300	9,000	17,400	99,900

 $\, \times \,$  As of the end of December 2007

(Unit: drums)

CORPORATE REVIEW SUSTAINABLE MANAGEMENT ECONOMY SOCIETY ENVIRONMENT

## Constructing rock cavern-method LILW disposal facility sites

Generally, there are two methods for disposing of LILW: near-surface disposal<sup>®</sup> and rock cavern-type disposal. Our Disposal Method Selection Committee is comprised of a technology team and a community environment team. The Committee reviewed all data collected from on-the-spot surveys, consultations with overseas experts, facilities location and safety assessments, and preliminary safety review of structures. After doing so, the team found that the site at Bonggil-ri fits either method.

In June, the Committee held a general meeting and decided on rock cavern-type disposal. This method, which involves digging as deep as 100~300m into the rock bed, utilizes the natural barrier provided by rocks to insulate radioactive wastes from human life. This method has been adopted in Sweden, Finland, and other countries.

KHNP applied the rock cavern-type method to its step 1 construction for the disposal of 100,000 drums. Started in January 2008, construction is completed in December 2009. The disposal method for the remaining 700,000 drums will be decided upon after additional on-the-spot surveys, considering technological changes, and so on.

#### | Aerial View of Radioactive Waste Repository |



#### **Triple Barrier Management of Radioactive Waste**

The key to successful managing radioactive waste lies in how well we keep it under control. The goal of radioactive waste disposal is to eliminate any radiation damage by completely insulating it.

LILW are insulated with three barriers to prevent any leakage on human

life and Nature. Since underground water is highly likely to carry radioactive materials, we strive to completely separate and insulate LILW from any water routes.

#### | Triple-Barrier LILW Disposal Facility |



1 <sup>st</sup> Barrier	LILW drum and concrete disposal container		
	Solidified LILW are packed into 10cm-thick concrete containers		
	and drums.		
2 <sup>nd</sup> Barrier	Disposal Cave (Silo)		
	A 60cm-thick concrete disposal structure (silo).		
3 <sup>rd</sup> Barrier	Natural rock bed		
	Granite with good absorption capabilities and		
	other natural rock beds.		



Temporary storage facilities for LILW

① Near-Surface Disposal: a LILW disposal method involving the construction of a concrete disposal structure on the surface, placing the disposal container inside, filling it with grout or aggregates, casting the top with concrete, and covering it with many layers of soil.

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## Spent Fuel Management

KHNP strives to ensure the safety control of the spent fuel at all its NPPs. The term "spent fuel" refers to nuclear fuel materials that have been used as fuel at NPPs. Paragraph 18 of Article 2 of the Atomic Energy Act defines spent fuel as a form of radioactive waste. Since spent fuel contains nuclear fission products, it produces radiation and heat even after it has been removed from a nuclear reactor. Therefore, it must be stored in the spent fuel pool equipped with special facilities long enough to remove the radiation and heat.

#### **Spent Fuels**

The NPP fuels are mined as uranium, reprocessed or reused after being used for nuclear fuel, and disposed of as radioactive waste. The PWRs in Korea generate about 19 tons of spent fuel per unit every year and 95 tons of PHWR. Enriched with such materials as Uranium235 and Plutonium-239, the spent fuel can be reprocessed and recycled as new nuclear fuel. Therefore, spent fuel is stored for the interim storage using such methods as high density storage racks, dry storage, and inter-unit transfers.

Spent Fuel Storage Status (Unit: U ton)					
As of Dec. 2007			Expansion Plan		
Storage capacity	Cumulative amount	Storable year	Expanded amount	Storage capacity	Storable year
2,253	1,623	2016	0	2,253	2016
2,686	1,491	2016	0	2,686	2016
5,980	5,092	2009	3,175	9,155 (2009)	2017
1,642	1,214	2008	684	2,326 (2008)	2017
12,561	9,420	_	3,859	16,420	-
	A           Storage           Capacity           2,253           2,686           5,980           1,642           12,561	As of Dec. 200           Storage capacity         Cumulative amount           2,253         1,623           2,686         1,491           5,980         5,092           1,642         1,214           12,561         9,420	As of Dec. 2007           Storage         Cumulative amount         Storable year           2,253         1,623         2016           2,686         1,491         2016           5,980         5,092         2009           1,642         1,214         2008           12,561         9,420         –	As of Dec. 2007         E           Storage         Cumulative amount         Storable amount         Expanded amount           2,253         1,623         2016         0           2,686         1,491         2016         0           5,980         5,092         2009         3,175           1,642         1,214         2008         684           12,561         9,420         –         3,859	As of Dec. 2007         Expansion Pla           Storage Cumulative amount         Storable year         Expanded amount         Storage a

#### | Nuclear Fuel Cycle |



#### **Spent Fuel Management Plan**

Interim storage facilities are operated at each NPP. Each nation manages spent fuel either by reprocessing it or through the deep geological disposal. Most nations operate interim storage facilities either within or outside their NPPs. In Korea, the Atomic Energy Commission<sup>®</sup> has resolved to make the decision on a spent fuel control plan based on the public consensus. The Commission is currently preparing management measures.

#### Overseas Spent Fuel Management

Measures	Details	Nation
Direct disposal	Deep geological disposal of spent fuel	US, Canada, Sweden, etc.
Reprocessing	Reprocessing for reuse	France, UK, Japan, etc.
Temporary and intermediate storage	Intermediate storage until a policy is decided upon	Spain, Mexico

## Decommissioning and Continued Operation of Nuclear Facilities

NPPs that are approaching the end of their design life undergo a comprehensive review regarding their continued operation or decommissioning. Criteria for continued operation are stipulated in Article 23-3 of the Atomic Energy Act (the Act), Article 42 of the enforcement decree of the Act, Article 19 of the enforcement regulations of the Act (the Regulations), and Notification No. 2005-31 of the Ministry of Science and Technology. Decommissioning criteria are stipulated in Article 31 of the Act, Article 20 of the Regulations, Article 94 of the Electricity Business Act (EBA), and Article 61 of the enforcement decree of the EBA.

Decision-Making Process for Continued Operation or Decommissioning of NPPs



#### **Policies on Decommissioning of NPPs**

KHNP budgets for decommissioning of NPPs in accordance with the governing regulations and will maintain R&D activities for the decommissioning of NPPs and benchmarks overseas decommissioning technologies. We are currently implementing the "NPP Decommissioning Control Program Development Project" (March 2007 ~ May 2009). Based on the results, we will prepare decommissioning policies in consideration of the waste amounts and expenses of decommissioning.

#### **Continued Operation of NPPs**

NPPs that are approaching their design life<sup>®</sup> must be reviewed against criteria outlined in Article 42 of the Enforcement Decree of the Atomic Energy Act. The feasibility of operating plants beyond the end of their design life and the safety of such continued operations have already been proven in many countries. For instance, the US has had forty-eight units in continued operation for more than thirty years, Japan has thirteen, and the UK has four. In these countries, NPPs approaching their design life or beyond the expiration of their existing licenses have undergone safety reviews and gotten approvals for their continued operations. Applications for the continued operation of a nuclear power plant must include the life span of major equipment during the continued operating period and an assessment of changes in radiation impacts during the NPP's operation. The regulatory authority<sup>®</sup> must apply technical standards reflecting the latest operational data and research results to feasibility tests of the plant's continued operation. Safety reviews for continued operations, including the on-the-spot inspections, must be completed within eighteen months of the application.

#### **Continued Operation of Kori Unit 1**

Korea's first NPP, Kori Unit 1 reached its thirty-year design life in June 2007. Accordingly, we had to determine the feasibility of its continued operation. Considering the waste reductions that would result from using the existing plant and the substitution effects of a new NPP, we concluded on continued operation. After grand facilities replacements and a safety review of the plant, we won governmental approval for continued operations in December 2007. Throughout the process, we maintained constant communications and discussions with local residents and won their agreement by relieving their anxieties about the continued operation. This makes the first case of operating an NPP beyond its design life in Korea. It provided a basis for future safety reviews and diagnoses, and major equipment replacements, enabling the safer operation of all our NPPs.

① Atomic Energy Commission: comprised of nine to eleven members and chaired by the prime minister, it is responsible for dealing with nuclear energy use issues.

② Design Life: the durability target of an NPP. Calculated at the time of designing, it refers to the operable period that will satisfy the integrity and functional criteria of NPPs. Actual operable periods vary with operational and environmental conditions, such as maintenance, repairs and management and the failure history of equipment or the facility

③ Regulatory authority: The Nuclear Energy Safety Commission enacts regulations dealing with safety issues raised by nuclear power use. The Korea Institute of Nuclear Safety ensures technological safety by reviewing the site selection, design, construction and operation of NPPs.

#### | NPPs Approaching Design Life |

Year	NPP
2010 ~ 2015	Wolsong Unit 1
2016 ~ 2020	Kori Unit 1
2021 ~ 2025	Kori Units 2, 3, 4/Yonggwang Unit 1
2026 ~ 2030	Yonggwang Unit 2/Ulchin Units 1, 2/Wolsong Units 2, 3, 4



Ceremony to celebrate continued operation of Kori Unit 1

### Radiological Emergency Preparedness

Safety is KHNP's top priority throughout the process of designing, constructing and operating NPPs. Given their performance records to date, NPPs have proven to be safe in both technical and structural terms. In preparation for unexpected accidents, however, the government has put nation-wide countermeasures in place. KHNP also develops emergency plans and implements procedures at each NPP pursuant to legislation and regulations. They include emergency organizations and duties, the classification and notification of emergencies, initial emergency procedures, protective actions for the public, cooperation and support networks with related organizations, and training and drills. In addition, we operate dedicated facilities and task force teams to take control in the event of a radiation emergency.

#### **Radiological Emergencies**

Although NPPs are safe, emergency plans have been prepared and implemented in preparation for the accidental leakage of radioactive materials. Radiological emergencies are categorized into three classes, according to the scope of the impact.

#### Emergency Classes

Alert	Events are in process or have occurred which involve the actual or substantial potential degradation of the level of safety at a plant (any releases expected are limited to on-plant).
Site Area Emergency	Events are in process or have occurred which involve actual or likely major failures of plant functions needed for protection of the public (Any releases are expected to be limited to on-site).
General Emergency	Events are in process or have occurred which involve actual or imminent substantial core degradation or melting, with potential loss of containment integrity.

#### **Emergency Countermeasures**

The radiological emergency response scheme is composed of the National Emergency Management Committee (NEMC), which is chaired by the Minister of Education, Science, and Technology (MEST), an off-site emergency management center (OEMC), the local emergency management center (LEMC) and KHNP's emergency response facilities. These organizations take the first steps to control a situation and protect the public.

In addition, KHNP operates emergency operations facility at each site and emergency response facilities. Their functions are to control a situation, prevent the expansion of radiological accidents and minimize damage to workers and the public.

#### | Emergency Response Organization |



#### | Emergency Operations Facilities (EOF) |

Category	Function	Remarks
Emergency Operations Facility (EOF)	Management of overall site emergency response activities	division
Technical Support Center (TSC)	Performing EOF functions for emergency classes of Alert/Site Area Emergency/General Emergency until the EOF becomes functional	plant
Operational Support Center (OSC)	Providing locations where logistical supports can be coordinated during an emergency	plant
Main Control Room	Emergency response controls until the launch of an emergency technical support office	unit
Environmental Lab	Analyses and measurements of environmental radiation	division

#### **Emergency Preparedness Exercises**

Emergency exercises include full-participation, off-site exercises by the Ministry of MEST Central Administration every five years, on- and offsite exercises by KHNP and local governments every four years and KHNP's own drills. Joint drills are conducted once every four years, annual company-wide drills are conducted at each plant, and quarterly division-level exercises by KHNP's emergency response organization are conducted annually at each plant.

#### 2007 Radiological Disaster Prevention Drills Record

Sites	Times	Residents' participation (evacuation, indoor shelter, etc.)	Emergency staff participation	
Kori	On-site exercises (2)			
Yonggwang	On-site exercise (3)			
Wolsong	Full participation off-site exercise (1)	Full participation off-site	1,300 persons (130 per unit)	
	On-site exercise (1)	exercise. 0, 170 persons		
Ulchin	On-site exercise (3)			

Video phones, hot-lines, fax machines, and LAN phones have been installed at each emergency headquarters of related organizations to facilitate the rapid and accurate delivery of orders and information about necessary measures. Safety parameter display systems have been installed at the main control room, emergency operational facilities, and technical support centers at each NPP to enable emergency workers to quickly understand and take control of a situation. The major data are also available at the Korea Institute of Nuclear Safety.

#### **Protecting actions for the Public**

Our NPPs maintain an emergency warning system to notify the public within a 2km radius and has a stock of potassium iodide–a medicine that protects the thyroid from radioactive iodine<sup>®</sup>. We also post notices and videos on our Web site to help residents make organized

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① Radioactive Iodine: a product of nuclear fission, I-123, I-125, I-129 and I-131

evacuations and distribute calendars with information about NPP radiological disaster prevention. We have designated areas within a 8~10km radius as emergency planning zones (EPZ), where we take intensive emergency measures of protecting. Local governments designate and operate shelters within these zones.

#### | Potassium lodide as a Thyroid Blocking Agent | (Units: tablets, persons)

Category	Amount	Population	Remarks		
		Within EPZ			
Kori	610,000	57,108	Required amount =		
Yonggwang	282,600	25,549	[Population within EPZ X maximum intake		
Wolsong	181,600	14,890	(10 tablets/person)] + surplus		
Ulchin	210,400	17,925	(* Surpluses are calculated for population		
Total	1,284,600	115,472	growth, emergency workers, visitors, etc.)		

Shelters		(U	Inits: persons)
Near Sites	Number of shelters	Number of persons	Capacity
Kori	35 places (Gijang Elementary School, etc.)	56,803	82,600
Yonggwang	27 places (Yonggwang Vocational School, etc.)	20,996	25,257
Wolsong	11 places (Gimpo Elementary School, etc.)	11,733	15,750
Ulchin	33 places (Ulchin Elementary School, etc.)	17,432	22,400

## Environmental Radiation Management

KHNP monitors environmental radiation around its NPPs. To guarantee the reliability and objectivity of the results, we cooperate with the central government, regulatory authorities, and local universities. A civic environmental inspection group, consisting of local residents, academic experts, and representatives from the National Assembly, also conducts regular evaluations of environmental safety around NPPs.

#### | NPP Civic Environmental Inspection Group |

NPP	Launch	Local government	Subject	Results (2007)
Kori	Dec. 1998	Gijang-gun	Surface water (Jwacheon), etc., 329 cases	No problems observed
Yonggwang	Mar. 1999	Yonggwang-gun	rainwater (Yonggwang), etc.,280 cases	"
Wolsong	Jan. 2007	Gyeongju-si	(Recently launched)	"
Ulchin	Oct. 2003	Ulchin-gun	Surface soil (Buk-myeon), etc.,411 cases	"
Shin-Kori	Feb. 2006	Ulju-gun	Surface water (Hwasan), etc., 102 cases	"



An environmental radiation<sup>®</sup> survey is conducted to check radiation dose near NPPs and radioactivity concentrations in various land and marine samples. The land dose measuring and sampling points are located within five km of our plants, while marine samples are collected from around the discharge gates of each plant. In addition, samples are also collected from sites at least sixteen km away from a plant to compare results.



#### | Measurements and Surveys of Environmental Radiation Dose |

To date, the NPP's environmental radiation amounts have been the same as natural radiation and no significant changes has been observed compared to the past or at other areas. 2007 survey results show that our NPPs' environmental radiation is adequately safe, with environmental radiation controls being used to secure and verify residents' and the environment's safety. We endeavor to secure community safety through the operation of a watertight environmental radiation monitoring system and survey. At the same time, we will increase the reliability of our environmental management operations through continued improvement to the monitoring technology and system.



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① Environmental Radiation: It refers to all radiations both natural and artificial. Natural radiation comes from the sky, the earth, and the air, while artificial radiation comes from human activities, including nuclear power generation.



#### Interview with an Expert

Ji-Ae, Lim, Chief of Korean Federation of Environmental Movements

(Interviewed July 4, 2008)

**Opinion** Communications between KHNP and the community is integral to earning the public's appreciation of KHNP's social contributions. Therefore, we hope that KHNP and local civic groups can maintain responsible discussions based on mutual trust. Mutual trust is built on transparent disclosures of information. We expect KHNP to communicate positively with its stakeholders and offer them full information. We also hope that we can discuss desirable uses of existing facilities, such as NPPs, operating dams with water quality controls.

**KHNP Response** We are fully aware that the transparent disclosure of information and building trust with stakeholders is imperative to realizing our vision of becoming a world-leading electric power company that values people, the environment and technology. Therefore, we spare no efforts in achieving this objective. However, from the stakeholders' point of view, there may be room for improvements. We will continue listening to stakeholders' opinions and making constant improvements in the future.

		A I'
		Appendix
		Third Party's Assurance Statement
		Code of Conduct
		Associations and Memberships



## Third Party's Assurance Statement

#### To the Management of the KHNP Sustainability Report 2008 :

The Institute for Industrial Policy Studies<sup>®</sup> (The Auditor) was engaged by the Korea Hydro & Nuclear Power Co., LTD (KHNP) to review information specified in its 2008 Sustainability Management Report (The Report) to provide independent third-party assurance on its contents. KHNP is responsible for the collection and presentation of all information within The Report as well as the maintenance of the underlying data collection system and internal controls. The key objective of our review is to provide independent assurance that all statements and data cited in The Report are free of material misstatement or bias and that the data collection systems used are robust. On the basis of the above, The Auditor presents the following third-party statement of assurance.

#### **Context and Scope**

In its 2008 Sustainability Management Report, KHNP describes efforts and progress made toward sustainability management as well as its plans for the future. The Auditor's review examined the following.

**Reasonable assurance on whether**: the financial data specified under "Economic Performance" is properly derived from KHNP's audited Annual Report for 2007;

Limited assurance on whether : the data specified under "Sustainability Management", "Social Performance", "Environmental Performance", and "Appendix" of The Report are stated adequately and in full and are free of material misstatement or bias.

\*Reasonable assurance constitutes a higher level of assurance than limited.

#### Independence

The Auditor was not involved in the preparation of any part of The Report, and with the exception of this work has no other affiliation with KHNP that might compromise our independence or autonomy or place The Auditor under its influence, therefore ruling out any possible conflicts of interest. The Auditor has no relationship with KHNP regarding any of its for-profit operations and activities.

#### Criteria

The Auditor reviewed whether The Report was written in accordance with the following reporting guidelines:

- The AA1000 Assurance Standard's (AA1000 AS)\* three core principles of Materiality, Completeness and Responsiveness;
- (2) The BEST Sustainability Reporting Guidelines\*\*; and
- (3) The Global Reporting Initiative's (GRI) G3 Sustainability Reporting Guidelines Version 3.0\*\*\*

\* AA1000AS is an assurance standard for social and sustainable reporting developed by the U.K.based Institute of Social and Ethical Account Ability in November 1999. A nonprofit organization that promotes corporate social responsibility, business ethics and responsible business practices, AccountAbility aims to improve the quality of social and ethical accounting, auditing and reporting through the AA1000AS.

\*\* The BEST Sustainability Reporting Guideline was jointly developed by the Ministry of Knowledge Economy (MKE), the Korea Chamber of Commerce and Industry (KCCI), and the Institute for Industrial Policy Studies (IPS) and provides for five levels of reporting rigor (Level 1 ~ 5).

\*\*\* The Global Reporting Initiative (GRII)'s Sustainability Reporting Guideline was jointly convened by the Coalition for Environmentally Responsible Economies (CERES) and UNEP in 1997. The newly revised G3 version was launched in October 2006.

#### Work Undertaken and Scope

The Auditor reviewed the Materiality, Completeness, and Responsiveness of The Report through the process outlined below:

- a review of media reports relating to KHNP
- a review of information contained in The Report as well as the underlying data collection system (validation of internal sustainability-related organizations, systems, and activities)
- data sampling and assessment of high-risk areas to support intensive review of key statements in The Report, internal policies, documentation, and information systems
- on-site reviews of the Headquarter office and the Yonggwang Nuclear Power Plant (period: July 23 to July 25, 2008)
- interviews with managers and staff in charge of sustainability management and reporting, as well as persons responsible for The Report's source information
- a reconciliation of financial data stated in The Report against the audited Annual Report

#### Conclusions

On the basis of the above we provide the following conclusions.

The Auditor did not find The Report to contain any material misstatements or bias. However, The Auditor is able to provide only limited assurance on the social and environmental performance data as stated in The Report due to the unique limitations inherent in the definitions, calculations, and estimation methods used therein as well as their resultant characteristics. As such, these conclusions may be subject to change in the event that additional assurance procedures are undertaken at a later point.

① The Institute for Industrial Policy Studies (IPS)

Established in 1993, the Institute for Industrial Policy Studies has accumulated broad expertise in the area of sustainability management since 2002. "The Auditor" is composed of five individuals (Cheol-ho Shin, Seok-young Lee, Dong-won Lee, Ji-yeon Ahn, Jeong-ah Son) who are professors at Korea's top universities or practitioners with professional accreditation and extensive experience in sustainability management after majoring in business management, accounting, environmental science etc.

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All material findings of The Auditor are included herein, and detailed review results and follow-up recommendations have been submitted to the management of KHNP, which has agreed to make necessary improvements.

### Materiality : Does The Report cover economic, social and environmental issues of the greatest importance to KHNP?

The Auditor does not believe that KHNP has omitted or excluded any information of the greatest importance to its stakeholders. We were able to verify efforts by KHNP to carry out segment-specific materiality assessments (stakeholder engagement, examination of internal analytical reports, expert interviews, media reviews, benchmarking) to identify matters of the greatest importance to its stakeholders in each of the three economic, social, and environmental dimensions central to sustainability management. Going forward, The Auditor recommends that KHNP further refine its materiality assessments to reflect the interests of its internal and external stakeholders more evenly, while providing more focused reporting on issues identified to be highly material.

## Completeness : How reliable is the information and data stated in The Report, and is the underlying information and data collection system complete and robust?

The Auditor confirmed that the underlying information collection system, which measures KHNP's sustainability management performance was sound, and found the data contained in The Report to be reliable as well. The Auditor affirmed coherence between KHNP's management vision and its sustainability management initiatives. The Auditor noted that the major issues identified to be material through materiality testing were predominately consistent with KHNP's main indicators for sustainability management performance. However, the organization in charge of sustainability management must be strengthened to enhance reliability of the data as well as reporting efficiency, and The Auditor recommends that the data collection and management system be reinforced further.

## Responsiveness : How well does The Report address information of importance to KHNP stakeholders?

The Auditor determined efforts by KHNP to collect the views of its stakeholders through regular surveys of its executives and employees, suppliers, the nuclear industry, local community, and government, while trying to identify material issues through targeted focus group interviews. Also by disclosing the results from its local community poll, asking local community residents to vote on a possible site for a nuclear waste treatment plant, KHNP revealed a transparent and consensus-based decision making process. In the interest of public awareness and social consent toward nuclear power, The Auditor suggests providing more detailed information such as the input of resources, plans, and results etc. as it was identified to be a material issue.

Relative to the BEST Guidelines, in view of the level of reporting rigor and intensity of information provided, The Auditor finds The Report to fulfill 95.6% of the reporting requirements necessary to qualify for a Level 4 Report (from among Level  $1 \sim 5$ ).

#### **Issues for Future Consideration**

As the first sustainability report by KHNP, The Report represents its efforts to provide a full account of its performance and achievements to comply with local and global reporting guidelines on sustainability reporting.

In the interest of continued qualitative improvements in sustainability management performance and reporting, however, The Auditor recommends the following.

• Further refine materiality assessment methods in a way that takes into account the levels of risk and impact so that issues of the most material interest are accurately identified, while ensuring that the interests of KHNP's internal and external stakeholders are fully reflected.

• Go beyond standardized stakeholder surveys or interviews and diversify means of stakeholder engagement for deeper insight into their views for reporting purposes.

• Regarding main performance indicators listed in The Report, provide rates of achievement against stated targets next to short or mid-to-long term targets going forward, to enhance the quality of reporting.

• Make future reports as transparent and honest as possible by providing a balanced and proactive account of not only positive achievements but negative setbacks as well.

• Reinforce the internal organization in charge of sustainability management as well as the data collection and management system to enhance the reliability of data and reporting efficiency.

Based upon the above review and recommendations, The Auditor suggests that KHNP establish a more systematic program of sustainability management and reporting, and continue to follow up with ongoing improvements going forward.

Sept. 25, 2008 Cho, Dong-Sung Director, Center for Sustainability Management, IPS Professor, College of Business Administration, Seoul National University

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\* This Statement of Third Party Assurance is based on the Korean version of KHNP's 2008 Report

## GRI / BEST Index

Profile Disclosure	Description	Reference	Reporting level	B.E.S.T Guideline					
1. Strategy and Analysis									
1.1	Statement from the most senior decision-maker of the organization	6~7		A_1					
1.2	Description of key impacts, risks, and opportunities	14~15		A_2					
	2. Organizational Profile								
2.1	Name of the organization	10		A_3					
2.2	Primary brands, products, and/or services	12~13		A_4					
2.3	Operational structure of the organization, including main divisions, operating companies, subsidiaries, and joint ventures	11		A_5					
2.4	Location of organization is neadqualities	11		A_7					
2.5	specifically relevant to the sustainability issues covered in the report	11		A_7					
2.6	Nature of ownership and legal form	18		A 8					
2.7	Markets served (including geographic breakdown, sectors served, and types of customers/beneficiaries)	14		A 9					
2.8	Scale of the reporting organization	10		A 10					
2.9	Significant changes during the reporting period regarding size, structure, or ownership	12~13		B 8					
2.10	Awards received in the reporting period	23		CO8					
	3. Report Parameters								
	Report Profile								
3.1	Reporting period (e.g., fiscal/calendar year) for information provided	2		B_3					
3.2	Date of most recent previous report (if any)	N/A	N/A	B_8					
3.3	Reporting cycle (annual, biennial, etc)	2		B_6					
3.4	Contact point for questions regarding the report or its contents.	2		B_9					
	Report Scope and Boundary								
3.5	Process for defining report content	28~29		B_4					
	Boundary of the report (e.g., countries, divisions, subsidiaries, leased facilities, joint ventures, suppliers) See GRI Boundary	0		D 1					
3.6	Protocol for further guidance	Z	-	D_I					
3.7	State any specific limitations on the scope or boundary of the report (see completeness principle for explanation of scope)	2		B_2					
20	Basis for reporting on joint ventures, subsidiaries, leased facilities, outsourced operations, and other entities that can	11 10	-	A 6					
3.0	significantly affect comparability from period to period and/or between organizations	11~15		A_0					
	Data measurement techniques and the bases of calculations, including assumptions and techniques underlying estimations								
3.9	applied to the compilation of the Indicators and other information in the report. Explain any decisions not to apply, or to	28~29		B_4					
	substantially diverge from, the GRI Indicator Protocols								
3 10	Explanation of the effect of any re-statements of information provided in earlier reports, and the reasons for such re-statement	N/A	N/A	B 5					
0.10	(e.g.,mergers/acquisitions, change of base years/periods, nature of business, measurement methods)	14/7 1	14/7 (	5_0					
3.11	Significant changes from previous reporting periods in the scope, boundary, or measurement methods applied in the report	N/A	N/A	B_5					
GRI Content Index									
3.12	Table identifying the location of the Standard Disclosures in the report	103~105		B_10					
	ASSURANCE								
3.13	Policy and current practice with regard to seeking external assurance for the report	101	-	B_/					
	4. Governance, Commitments, and Engagement								
	Governance								
4.1	Governance structure of the organization, including committees under the highest governance body responsible for specific tech.	18		GR1					
4.0	lacks, such as setting strategy of organizational oversigni	10		CP1 CP2					
4.2	For organizations that have a unitary board structure, state the number of members of the highest geverages body that are	10	-	GNT, GNS					
4.3	independent and/or non-executive members	18	•	GR2					
4.4	Mechanisms for shareholders and employees to provide recommendations or direction to the highest governance body	1910		GB12					
4.4	Linkage between compensation for members of the highest governance body senior managers and executives lincluding	10~13		GITIZ					
4.5	departure arrangements), and the organization's performance (including social and environmental performance)	19		GR7					
4.6	Processes in place for the highest governance body to ensure conflicts of interest are avoided	18		GB13					
4.0	Process for determining the gualifications and expertise of the members of the highest governance body for guiding the	10		GITIO					
4.7	organization's strategy on economic, environmental, and social topics	19		GR4					
	Internally developed statements of mission or values, codes of conduct, and principles relevant to economic, environmental,								
4.8	and social performance and the status of their implementation	25, 106~108	•	GR10					
	Procedures of the highest governance body for overseeing the organization's identification and management of economic,								
4.9	environmental, and social performance, including relevant risks and opportunities, and adherence or compliance with	18~19		GR5					
	internationally agreed standards, codes of conduct, and principles								
	Processes for evaluating the highest governance body's own performance, particularly with respect to economic,	20		0.00					
4.10	environmental, and social performance	22	-	GR6					
Commitments to External Initiatives									
4.11	Explanation of whether and how the precautionary approach or principle is addressed by the organization.	20~21		GR11					
4.10	Externally developed economic, environmental, and social charters, principles, or other initiatives to which the organization	22.25 106 100	-	CB12					
4.12	subscribes or endorses	22~20, 100~108		Uniz					
	Memberships in associations (such as industry associations) and/or national/international advocacy organizations in which the								
4.13	organization: * Has positions in governance bodies; * Participates in projects or committees; * Provides substantive funding	109~110		A_11					
	beyond routine membership dues; or * Views membership as strategic								

Profile Disclosure	Description	Reference	Reporting level	B.E.S.T Guideline
	Stakeholder Engagement			
4.14	List of stakeholder groups engaged by the organization	26		C 1
4.15	Basis for identification and selection of stakeholders with whom to engage	26		C 1
4.16	Approaches to stakeholder engagement, including frequency of engagement by type and by stakeholder group	27		C 2
	Key topics and concerns that have been raised through stakeholder engagement, and how the organization has responded to	26,28,49,52,56,67,		
4.17	those key topics and concerns, including through its reporting	73,76,83,86,99	•	C_3
	5. Management Approach and Performance Indicators			
	Economic			
F.C1	Direct economic value generated and distributed, including revenues, operating costs, employee compensation, donations and	33		EC1
ECT	other community investments, retained earnings, and payments to capital providers and governments	55		LUI
EC2	Financial implications and other risks and opportunities for the organization's activities due to climate change	38, 47~49		EC2
EC3	Coverage of the organization's defined benefit plan obligations	39	•	EC3
EC4	Significant financial assistance received from government	38		EC5
EC5	Range of ratios of standard entry level wage compared to local minimum wage at significant locations of operation	57	•	EM4
EC6	Policy, practices, and proportion of spending on locally-based suppliers at significant locations of operation	38		EC4
EC7	Procedures for local hiring and proportion of senior management hired from the local community at significant locations of operation	38	•	EC4
EC8	Development and impact of infrastructure investments and services provided primarily for public benefit through commercial, in-kind, or probono engagement	39	•	EC6
EC9	Understanding and describing significant indirect economic impacts, including the extent of impacts	37~39		EC7
	Environmental			
EN1	Materials used by weight or volume	88~89	•	EV10
EN2	Percentage of materials used that are recycled input materials	N/A	N/A	EV11
EN3	Direct energy consumption by primary energy source	88	•	EV7
EN4	Indirect energy consumption by primary source	90		EV8
EN5	Energy saved due to conservation and efficiency improvements	90		EV5
EN6	Initiatives to provide energy-efficient or renewable energy based products and services, and reductions in energy requirements as a result of these initiatives	90	•	EV5
FN7	Initiatives to reduce indirect energy consumption and reductions achieved	90		EV5. EV25
EN8	Total water withdrawal by source	88		EV9
EN9	Water sources significantly affected by withdrawal of water	89		EV20
EN10	Percentage and total volume of water recycled and reused	88~89	•	EV18
EN11	Location and size of land owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas	92	•	EV22 EV22
EN12	Description of significant impacts of activities, products, and services on biodiversity in protected areas and areas of high biodiversity value outside protected areas	92	•	EV26
EN12	Habitats protected or restored	92		F\/27
EN14	Strategies, current actions, and future plans for managing impacts on biodiversity	92		EV6 EV26
LINIA	Number of IUCN Red List species and national conservation list species with habitats in areas affected by operations, by level	52		LV0, LV20
EN15	of extinction risk	92		EV28
EN16	I otal direct and indirect greenhouse gas emissions by weight	91	•	EV12
EN17	Other relevant indirect greenhouse gas emissions by weight	91		EV13
EN18	Initiatives to reduce greenhouse gas emissions and reductions achieved	91		EV4
EN19	Emissions of ozone-depleting substances by weight	N/A	N/A	EV14
EN20	INUX, SUX, and other significant air emissions by type and weight.	89	•	EV15
EN21	Total watch discharge by quality and destination	89		EV17
EINZZ	Total number and volume of significant spills	90		EV10
EINZ3	Weight of transported imported experted entrated waste deemed bazardous upday the terms of the Recel Convention	89	-	EVZI
EN24	Annex I, II, III, and VIII, and percentage of transported waste deemed hazardous under the terms of the Basel Convention Annex I, II, III, and VIII, and percentage of transported waste shipped internationally	90	•	EV29
EN25	Identity, size, protected status, and biodiversity value of water bodies and related habitats significantly affected by the reporting organization's discharges of water and runoff	89	•	EV19
EN26	Initiatives to mitigate environmental impacts of products and services, and extent of impact mitigation	87		EV23
EN27	Percentage of products sold and their packaging materials that are reclaimed by category	N/A	N/A	EV24
EN28	Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with environmental laws and regulations	87	•	EV31
EN29	Significant environmental impacts of transporting products and other goods and materials used for the organization's operations, and transporting members of the workforce	90	•	EV30
EN30	Total environmental protection expenditures and investments by type	_	0	EV1
	Social : Labor Practices and Decent Work			
LA1	Total workforce by employment type, employment contract, and region	57		EM1
LA2	Total number and rate of employee turnover by age group, gender, and region	57~58		EM5
LA3	Benefits provided to full-time employees that are not provided to temporary or part-time employees, by major operations	61~62		EM20
LA4	Percentage of employees covered by collective bargaining agreements	64		EM12
LA5	Minimum notice period(s) regarding significant operational changes, including whether it is specified in collective agreements	65~66		EM13

#### Reported Partially reported NA

Profile Disclosure	Description	Reference	Reporting level	B.E.S.T Guideline				
Social : Labor Practices and Decent Work								
LA6	Percentage of total workforce represented in formal joint management-worker health and safety committees that help monitor	62		FM14				
	and advise on occupational health and safety programs	02						
LA7	Rates of injury, occupational diseases, lost days, and absenteeism, and number of work-related fatalities by region	64		EM19				
LA8	Education, training, counseling, prevention, and risk-control programs in place to assist workforce members, their families, or	64		EM18				
1.40	community members regarding serious diseases	00.04		EN 44 E				
LA9	Average have of training per very per employee by employee extenses	62~64		EIVI 15				
LATU	Average hours or italining per year per employee by employee category Programs for skills management and lifelong learning that support the continued employability of employees and assist them	00		EIVIZ7				
LA11	in managing career endings	59	•	EM28				
Ι Δ12	Percentage of employees receiving regular performance and career development reviews	59~60		FM29				
	Composition of governance bodies and breakdown of employees per category according to gender, age group, minority group	00 00	-	LIVILO				
LA13	membership, and other indicators of diversity	57	•	EM2				
LA14	Ratio of basic salary of men to women by employee category	57		EM3				
	Social : Human Rights							
LID1	Percentage and total number of significant investment agreements that include human rights clauses or that have undergone		0	DN12				
HRI	human rights screening	_	$\cup$	FINZ				
HR2	Percentage of significant suppliers and contractors that have undergone screening on human rights and actions taken	-	$\bigcirc$	PN3				
HB3	Total hours of employee training on policies and procedures concerning aspects of human rights that are relevant to	60		FM30				
1110	operations, including the percentage of employees trained	00	-					
HR4	Total number of incidents of discrimination and actions taken	57		EM7				
HB5	Operations identified in which the right to exercise freedom of association and collective bargaining may be at significant risk,	64~66		EM8				
	and actions taken to support these rights							
HR6	Operations identified as having significant risk for incidents of child labor, and measures taken to contribute to the elimination	58	•	EM9				
	OF CHILD Jabor							
HR7	operations identified as having significant risk for incidents of forced or compaisory labor, and measures to contribute to the	58		EM10				
	Percentage of security personnel trained in the organization's policies or procedures concerning aspects of human rights that							
HR8	are relevant to operations	60		EM31				
HB9	Total number of incidents of violations involving rights of indigenous people and actions taken	77		CO2				
1110	Social : Society							
	Nature, scope, and effectiveness of any programs and practices that assess and manage the impacts of operations on							
SO1	communities, including entering, operating, and exiting	/6~//	-	CO2				
SO2	Percentage and total number of business units analyzed for risks related to corruption	70		CO5				
SO3	Percentage of employees trained in organization's anti-corruption policies and procedures	70		CO5				
SO4	Actions taken in response to incidents of corruption	70		CO5				
SO5	Public policy positions and participation in public policy development and lobbying	106		CO6				
SO6	Total value of financial and in-kind contributions to political parties, politicians, and related institutions by country	107		C07				
SO7	Total number of legal actions for anti-competitive behavior, anti-trust, and monopoly practices and their outcomes	N/A	N/A	CS3				
SO8	Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with laws and regulations	N/A	N/A	CO9				
	Social : Product Responsibility							
PR1	Life cycle stages in which health and safety impacts of products and services are assessed for improvement, and percentage	53~54, 93~98		CS4				
	or significant products and services categories subject to such procedures							
PR2	roducts and services during their life cycle, by type of outcomes	N/A	N/A	CS11				
	Type of products and services during their me cycle, by type of outcomes Type of products and services information required by procedures, and percentage of significant products and services subject to							
PR3	such information requirements	54~55		CS5				
	Total number of incidents of non-compliance with regulations and voluntary codes concerning product and service information							
PR4	and labeling, by type of outcomes	55		CS12				
PR5	Practices related to customer satisfaction, including results of surveys measuring customer satisfaction	93		CS9				
	Programs for adherence to laws, standards, and voluntary codes related to marketing communications, including advertising,			0010				
PR6	promotion, and sponsorship	55		CS13				
	Total number of incidents of non-compliance with regulations and voluntary codes concerning marketing communications,	N1/A	51/0	0014				
PR7	including advertising, promotion, and sponsorship by type of outcomes	N/A	N/A	CS14				
PR8	Total number of substantiated complaints regarding breaches of customer privacy and losses of customer data	N/A	N/A	CS15				
DDO	Monetary value of significant fines for non-compliance with laws and regulations concerning the provision and use of products	Ν/Δ	NI/A	CS12				
гпэ 	and services	14/17	11//~	0012				
	Disclosure on Management Approach							
DMA EC	Disclosure on Management Approach EC	32						
DMA EN	Disclosure on Management Approach EN	86						
DMA LA	Disclosure on Ivianagement Approach LA	56						
DMA HR	Disclosure on Management Approach HM	56						
DIMA SO	Disclosure on Management Approach PR	/6						
UIVIA PK		52						

## Code of Ethics

We play a pivotal role in improving the public's quality of life by providing electric power, a prime necessity for a developed society. The safety of nuclear power is our top priority. With a corporate philosophy of enriching life through environmentally friendly energy, we are devoting our efforts to realizing our vision of becoming a world-leading electric power generation company. To this end, we have promulgated a Code of Ethics to elucidate the principles that all employees of the company shall abide by and pledge to practice.

- 1. We should provide the public with maximum satisfaction by supplying economical and high-quality electric power.
- 1. We should make constant efforts to enhance the safety and technology of our nuclear power plants and disclose safety information in a fast and transparent manner.
- 1. We should contribute to support programs for the communities in the vicinity of our nuclear plants.
- 1. We should pursue environmentally friendly management practices and prevent environmental pollution.

## Code of Conduct

#### All employees should abide by the following articles.

#### 1. Responsibilities to the Public

#### A. Stable Supply of Electric Power

- We should provide the public a stable supply of economical and high-quality electric power.
- (2) We should always respect and accept public opinion and handle grievances in a fast and accurate manner.
- (3) We should consider our promises to the public as being inviolate and do everything in our power to keep them.

#### B. Ensuring Safety and Reliability of Nuclear Power Plants

- (1) We should consistently endeavor to improve the safety and technologies of our nuclear power plants.
- (2) We should disclose all information concerning the construction and operation of our nuclear power plants to earn the public's trust.

#### 2. Responsibilities to Society

#### A. Social Contributions

- (1) As a public corporation, we should strive to fulfill our social responsibilities and duties and participate in social contribution and disaster restoration activities.
- (2) We should build solidarity with the communities in the vicinity of our nuclear power plants and implement support programs for them.

- 1. We should reduce and/or eliminate inefficient business practices and earn the public's trust.
- 1. We should fulfill our responsibilities as a public corporation and neither pursue unjust interests nor abuse our positions.
- Both labor and management should take pride as owners of the company and build a partnership based on mutual trust and harmony. We shall build partnerships based on trust and harmony, giving all our employees the pride of ownership.

(3) The company should encourage its employees to engage in volunteer activities and further the cultural and economic development of local communities.

#### **B. Environmental Protection**

- (1) We should pursue environmentally friendly operations and strive to preserve and protect the global environment.
- (2) We should abide by all environmental regulations and prevent pollution.

#### C. Political Non-Intervention

- (1) We should respect the political opinions and rights of employees and not force them to support or oppose any particular party. We should not become involved in election campaigns or join or support any political party.
- (2) We should declare our position regarding the formulation of policies or enactment of laws related to our company.

#### 3. Compliance and Fair Competition

#### A. Compliance

- (1) We should abide by all applicable regulations and laws in our business activities and act according to our conscience.
- (2) We should abide by all applicable international conventions and regulations on international investments and transactions,

including the Convention on Combating Bribery in International Business Transactions. We should not interfere with local commercial customs. We should respect local laws and cultures, thereby contributing to local economic development.

#### **B.** Fair Competition

- (1) We should practice fair competition and respect its principles.
- (2) We should not engage in unethical behavior or pursue our own interests by taking advantage of our competitors' weaknesses.

#### 4. Mutual Prosperity with Suppliers

#### A. Fair Transactions

- We should give all qualified companies an equal opportunity to participate in bidding for contracts.
- (2) We should execute all transactions with our suppliers in equality in an open and transparent manner and not take advantage of our position or authority.
- (3) We should engage in quality improvements through technological cooperation with our suppliers.
- (4) We should insist that all our suppliers sign integrity pacts and abide by them.

#### **B.** Bribes and Entertainments

- (1) We should not give or receive money, other articles, or entertainments in the course of our duties.
- (2) We should not receive any personal advantages from our personal dealings with suppliers.
- (3) We should not take advantage of information garnered from suppliers to acquire directly or stocks or property in unusual manners.

#### C. Other Unfair Behaviors

- (1) We should not form liabilities with suppliers, including borrowings and guarantees.
- (2) Employees of our company (hereinafter "the employees") must not engage in transactions with companies that they have a personal relationship with by family or marriage, unless it is reported the company beforehand and approved.
- (3) We should not register as the employee of any other company.

#### 5. Basic Duties of Employees

#### A. Fair Execution of Duties

 Employees should conduct their tasks based on the principle of combating corruption while endeavoring to build a sound corporate culture.

- (2) Employees should not engage in any immoral or unethical behavior.
- (3) Employees should maintain a sound lifestyle according to their income and financial status.
- (4) Employees should distinguish between company business and personal affairs at work and should not use the company's assets or funds for private purposes.
- (5) Employees should oppose all privileges based on regional, academic, or family connections. They should neither give nor seek favors in personnel matters or offer or receive excessive gifts and/or monetary favors.
- (6) In the event of a conflict of interest, employees should follow their conscience.
- (7) In the event of a conflict of interest between the company and employees or among departments, the company's interest prevails.
- (8) In the event of actual or potential accidents in the course of fulfilling their tasks, employees should report them, follow appropriate procedures, and endeavor to solve the problem without covering up any defects.
- (9) Supervisors should not make unjust orders to their staffs. If necessary, the worker shall enunciate the reason for not following the order and request that it be retracted or changed.
- (10) Employees should not disadvantage whistleblowers who report any actual or potential violations of this Code.
- (11) Employees should not release information on the company or use or leak confidential information that they have acquired while on duty.
- (12) Employees should uphold and protect the company's intellectual property rights.
- (13) Employees should be polite while online.
- (14) Employees should share the goals, values, and vision of the company and fulfill their responsibilities in a creative and honest manner.
- (15) Employees should be polite and respectful while performing their job duties and refrain from arrogant or abuse behavior towards their colleagues.

#### B. Openness and Transparency

- (1) We should acquire and manage all information in a fair and transparent manner and keep the company's accounts and financial statements in accordance with accepted accounting principles.
- (2) We should not make imaginary or false report on the fulfillment of our tasks. We should manage the company's funds in an open and transparent manner.
- (3) Employees should not commit any violations of regulations.

- (4) Employees should not make any false or exaggerated reports to advance the interest of any individual or department and should not conceal any important information or keep it to themselves.
- (5) All management information should be disclosed in accordance with applicable regulations and orders to enhance the transparency and reliability of the company's business operations.

#### C. Self-Development

- (1) Employees should establish a self-vision as a competent person in the globalized era and endeavor to achieve it through continuous self-development.
- (2) Employees should endeavor to become expert at their jobs.

#### D. Clean and Safe Workplace

- (1) Employees should strive for their own safety and abide by all safety regulations.
- (2) Employees should keep their workplaces clean and neat.
- (3) Employees should refrain from using words and deeds that might constitute sexual harassment.

#### E. Sound Lifestyles

- (1) Employees should be aware of any possibilities of corruption and take corrective action when necessary.
- (2) Employees should not go into debt beyond their financial capability. In case of standing surety to someone's debt, it should be within one's own financial capability.
- (3) Employees should not gamble.
- (4) Employees should work in an open manner and allow access to their work by any other party.
- (5) Employees should endeavor to establish a sound culture of congratulations and condolences and refrain from discussing such events while on duty. They should also ensure that congratulation and condolence monies do not exceed normal levels.

#### 6. Labor-Management Harmony

- (1) Both labor and management should take pride as owners of the company and build a partnership based on mutual trust and harmony.
- (2) The company should permit any and all legal labor union activities, and the union should cooperate to further the development of the company.
- (3) Labor and management should endeavor to improve the quality of life for all employees.

#### 7. Ethical Behavior Towards Employees

- (1) The company should respect the dignity and the religious and political beliefs of its employees.
- (2) The company should provide equal opportunities for education and promotions to all employees according to their capabilities and dispositions. It should compensate them on the basis of fair evaluations and should not discriminate in terms of gender, academic background, age, religion, regional background, or physical disabilities.
- (3) The company should actively support career development of all its employees and provide an environment in which its employees can freely make suggestions and offer opinions.
- (4) The company should enable its employees to fulfill their duties in an efficient manner, give them a feeling of pride, and reward them based on their performance.
- (5) The company should provide its workers with safe working conditions and implement health, education, and employee benefits programs to improve the quality of life of them and their families.

#### 8. Application of Regulations

#### A. Compliance and Obligations

- (1) Employees should be aware of and comply with the Codes and take full responsibility for any violations.
- (2) Heads of departments and plants are responsible for ensuring said compliance.

#### B. Rewards and Disciplines

(1) Employees who abide by the Codes and contribute to the establishment of ethical management practices shall be fairly rewarded, including performance evaluations.

(2) Employees whose behavior conflicts with the Codes shall be subject to discipline in accordance with the rules.

#### C. Supplements to Regulations, etc.

- (1) The regulations shall be changed and amended to keep in step with changes in the work environment and the development of the company.
- (2) All details regarding standards, measures, and procedures are stipulated in the supplements to the Code of Conduct.
# Associations and Memberships

	Association	Year	Purpose		
	Korea Atomic Industrial Forum	1975	Technology and information exchanges with domestic and overseas nuclear companies		
	The Korean Association for Radiation Protection	1978	Radiation protection technologies and information exchanges		
	Korean Nuclear Society	1985	Academic nuclear activities and technology and information exchanges		
	Korea Radioisotope Association	1986	Radioisotope usage and safety		
	Korea Industrial Safety Association	1987	Research into, training in, and analyses of industrial safety		
	Korea Project Management Association (KPMA)	1991	Enhancing project management technologies and technology exchanges		
	Korea Environmental Preservation Association	1996	Environmental preservation surveys, research, and education		
	Earthquake Engineering Society of Korea	1997	Access to earthquake-resistant technologies and database		
	Korean Standards Association	1999	Industrial standards and quality management supports		
	The Korean Institute of Internal Auditors	2001	Audit information		
	Korea Association of Standards and Testing Organizations	2001	Test-related information exchanges and equipment tests		
	The Korean Society for Quality Management	2002	Quality management ,academic activities, and information exchanges		
	The Korean Institute of Electric Engineers	2002	Information exchanges and cooperation in electric energy usage		
Koroo	Korea Electric Association	2002	Electricity business information exchanges		
Korea	Korea National Committee on Large Dams	2002	Information exchanges on dam safety		
	The Korean Society for Nondestructive Testing	2002	Nondestructive testing-related research and academic activities and information exchanges		
	Korea Academy of Nuclear Safety	2002	Promoting public acceptance of nuclear energy and establishing a safety culture		
	Korea Management Association	2003	Management information exchanges		
	The Corrosion Science Society of Korea	2003	Information exchanges on power plant corrosion prevention and testing		
	Korean Federation of Women's Science & Technology Associations	2003	Enhancing women's positions in nuclear industry		
	Korean Resource Economics Association	2003	Research into resources and environment policies and systems		
	Korea Plant Industries Association	2003	Supporting feasibility tests of overseas plants		
	Korea Fusion Industry and Technology Association	2003	Nuclear fusion energy technologies, policy development, and human resources development		
	Korean Committee of Northeast Asia Economic Forum	2004	International cooperation between northeast Asian countries and policy-making		
	Korean Radioactive Waste Society	2004	Information exchanges on management and disposal of, research into, and education on radioactive waste		
	Korean Society of Pressure Vessel and Piping	2004	Information exchanges on design and production of pressure vessels and piping		

# Associations and Memberships

	Association	Year	Purpose			
Korea	Korea Nuclear Equipment Qualification Association	2004	Information exchanges and cooperation on nuclear equipment qualification			
	Korean Society of Energy & Climate Change	2005	Climate Change Convention research and technology information exchanges			
	The Korean Society for New and Renewable Energy	2005	New and new and renewable energy research and technology information exchanges			
	Korea Forum for Progress	2006	Research into Korea's progress strategies			
	Korea Energy Foundation	2006	Energy welfare and promotion			
	Korea Institute of Plant Engineering and Construction	2006	Construction technology exchanges			
	Korea Society of Innovation	2006	Innovation issues and policy-making			
	The Korea Chamber of Commerce & Industry	2007	Information collection and education on business and management			
	Korean Society of Radiation Bioscience	2007	Radiation bioscience research and academic development and generalization			
	Seoul Economists Club	2007	Analyses of and solutions to economic and management issues			
	Korea Employers Federation	2007	Establishing cooperation through enhanced labor-management understanding			
	Korean Society of Public Enterprise	2007	Public corporation restructuring, policy development			
	Pressurized Water Reactor Owners Group (PWROG)	1980	Information exchanges between the owners of PWR			
	Nuclear Energy Institute (NEI)	1980	US nuclear industry technology and information exchanges			
	Institute of Nuclear Power Operation (INPO)	1983	Information exchanges on the safety of nuclear power plant operations			
	CANDU Owners Group Inc. (COG)	1986	Information exchanges among CANDU owners			
	World Nuclear Association (WNA)	1989	Technology and information exchanges on nuclear fuel policies			
	World Association of Nuclear Operators (WANO)	1989	Information exchanges among global nuclear companies			
	Framatome Owners Group (FROG)	1991	Information exchanges among framatome owners			
	Nuclear Procurement Issues Committee (NUPIC)	2001	Joint audits and evaluations of suppliers			
Inter-	Electric Power Research Institute (EPRI)	2002	Integrated management of steam generators and nondestructive testing technologies			
national	American Society for Quality (ASQ)	2003	Information exchanges on quality control			
	WHO: Radiation Emergency Medical Preparedness and Assistance Network (REMPAN)	2004	Data-sharing on radiation emergency preparedness			
	World Nuclear Fuel Market (WNFM)	2004	Information on nuclear fuel suppliers			
	COMPSIS Working Group (OECD/NEA)	2005	Technology exchanges on digital control devise operations and improvements			
	Forumul Atomic Roman/ Romanian Atomic Forum (ROMATOM)	2006	Promoting business in Romania			
	CANDU Procurement Audit Committee (CANPAC)	2007	Joint audits and supplier evaluations			

# Survey of Reader's Opinions

We welcome your opinions for imp	provement on future repor	t. Please ir	volve in improving our next Sustaina	ability Report. Fill the followir	ng questionnaire and mail or fax it to	
Address: 411 Yeongdongdaero, Gangnam-gu, Seoul, Korea			Fax: +82 - 2 - 3456 - 2219	e-mail: sustainability@khnp.co.kr		
		1				
1. Which of the following stake	holder group do you be	long to?				
Customers	Customers Employees		Shareholders	Investors	Suppliers	
Government/ public service	Nuclear industry		NGOs, civic & social groups	🗌 Academia	Press	
Community	Sustainability Experts		None above			
2. How much did this report he	elp you better understar	nd our sus	stainability activities?			
Very much	much	enough	not enough	Very little		
3. Which of the following section	on did you find most int	eresting?	(one or more)			
Company Profile	Sustainable Manager	nent	Economic Performance	Innovation & Creative N	Nanagement	
Responsibilities to Customer	rs and Community		Responsibilities to Employees	Responsibilities to Sup	oliers & Ethical Management	
Environmental Performance Communications with Stakehol			ders	None above		
4. Which of the following section	on did satisfy your intere	est the mo	ost?			
Company Profile	Sustainable Manager	nent	Economic Performance	Innovation & Creative N	Nanagement	
Responsibilities to Customer	rs and Community		Responsibilities to Employees	Responsibilities to Sup	oliers & Ethical Management	
Environmental Performance Communications with Stakehol			ders	None above		

5. How much useful was the following information in this report?

	Very much	Much	Enough	Not enough	Useless
Company Profile					
Sustainable Management					
Economic Performance					
Social Performance					
Environmental Performance					

### 6. Please tick in the box you agree.

	Very much	Much	Enough	Not enough	Useless
This report is easy to understand.					
This report is well structured.					
This report provides sufficient and enough information on material issues.					
All information in this report looks reliable.					
This report is well constructed and designed, easy to find information.					

7. How did your perception of KHNP change after reading this report?

Positively
No change
Negatively

8. Please feel free to give us your opinion on this report.

Thank you for the valuable opinions.





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## Dreams as Big as the World

Growing towards a better world, Hoping for a happier society, Trying to protect the environment:

KHNP, dreaming of sustainable growth.

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