# Towards an Environmentally Friendly Corporate Stance

2005 Kyushu Electric Power Environment Action Report





2005 Kyushu Electric Power Environment Action Report

# **Editorial Policy**

Kyushu Electric Power Co., Inc. recognizes its corporate social responsibility and is dedicated to disclosing information on the environmental impacts attributable to our business operations as well as our efforts to mitigate such impacts. We also consider such communication is essential in promoting environmental activities. Thus, the Environment Action Reports have been published since 1996 to disclose the status of our environmental activities.

# $\Sigma$ Features

# For effective provision of environment-related information

The Environment Action Report covers information on our social and economic aspects (such as occupational safety and health, and an overview of our current business activities) as well as information on our environmental activities for the use as a sustainability report.

The following report format is adopted to facilitate easy access to information required by the broad range of stakeholders.



# Overview of our environmental activities

Descriptions of words used in this report and other basic environmental terms

· Book-in-book glossary can be detached from the main booklet and utilized separately.

# Enhanced reliability of report

To ensure the reliability of the report content, the information contained and basic reference materials have been reviewed by an independent organization.\*

Description of mark An "examination mark" indicates significant environment-related information reviewed by referring to the Standards for Environment Report Compilation.

In addition, significant environment-related information specified in the Standards for Environment Report Compilation issued by the

Ministry of the Environment, has been reviewed by referring to the said standards.

\*: The review was conduced by the Tohmatsu Environmental Research Institute Ltd., a separate corporate organization spin off from Environmental Department of Deloitte Touche Tohmatsu.

# $\Sigma$ Scope of the Report

Period	From April 1, 2004 to March 31, 2005 (Some future plans and activities are covered; and where possible updates of significant information up to the issue of this report are also included.)
Organizations	Kyushu Electric Power Co., Inc. and its group companies
Fields of focus	Environmental, social and economic aspects

# $\Sigma$ Referenced Guidelines

The Standards for Environment Report Compilation, [the Ministry of the Environment]

The Environmental Reporting Guidelines (FY2003 version) [the Ministry of the Environment]

The Environmental Reporting Guidelines 2001 with Focus on Stakeholders [the Ministry of Economy, Trade and Industry]

The 2002 Sustainability Reporting Guidelines [the Global Reporting Initiative]

# $\Sigma$ Date of Issue

Last issue: June 30, 2004 Next issue: planned for June 2006

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# Promotion of Environmental Management

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# Supplementary Materials

Glossary Gloss

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Glossary explains terms contained in this report and basic environment-related words or expressions.

Environmental terms described or defined in the attached glossary.



The photo on the front cover Sasebo City, Nagasaki Prefecture / Kujyukushima Covered by Fresh Green

The Kujyukushima islands are located within the Saikai National Park, which celebrated its 50th anniversary of the designation of the national park in 2005. Spanning 25 kilometers over the sea from Sasebo City to Hirado City, a cluster of 208 isles of the Kujyukushima islands create a beautiful seascape with one of the densest collection of islands in Japan. A diverse range of beautiful scenery can be enjoyed through the year and the seasons from many look-outs as well as from the Saikai Pearl Sea Resort and Kujyukushima islands cruising boats.

This ocean area is also well known as a prime location for water sports including sea kayaking and yacht sailing, and was selected as a model district for the promotion of ecotourism (by the Ministry of Environment) in 2004 to promote experience-based activities capitalizing on the rich seashore ecosystem.



This symbol mark, designed after a four-leaf clover, represents the four business areas in which Kyushu Electric Power Group is engaged: general energy business, information and telecommunications, environment and recycling, and lifestyle services. The "e" stem signifies energy and ecology. The mark expresses the stance the group takes in the promotion of environmental activities in its overall business activities.

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# Contributing to Building a Sustainable Society through Active Promotion of Environmental Management

# Message from the President

# **Together with our Stakeholders**

As a public utility entity responsible for the lifeline of the Kyushu region, Kyushu Electric Power Co., Inc. has devoted itself to conducting business honestly and fairly under its corporate philosophy, "An entity building a humane Kyushu," established in 1988.

The renewed mid-term management policy revised in March 2005 describes our business attitude toward "continuously improving corporate value through constant efforts to raise business quality as a whole by placing 'customers' at the very center of all business activities, thereby enhancing the satisfaction of customers, shareholders, investors, and employees."

To gain the trust and continued support of all our stakeholders including our customers, we are taking measures to further fulfill our corporate social responsibility (CSR) such as promoting compliance management, information disclosures to ensure the transparency of management, and environmental management.

# Environmental Conservation is our Social Responsibility

The Kyushu Electric Power Environmental Charter formulated in February 2001 states: "The company shall, in all its corporate activities, maintain awareness of environmental conservation, contribute to creating a sound environment, and promote the disclosure of environment-related information." In accordance with this charter, we are working towards building a "sustainable society."

As is well known, the Kyoto Protocol, which places the responsibility of reducing greenhouse gas emissions on developed countries, was enacted in February 2005. This is a big step towards major progress in preventing global warming. However, the road ahead is difficult, and the Kyoto Protocol alone will not solve the problem.

We cannot avoid producing environmental load including CO<sub>2</sub> emissions in the course of power generation. This is why we feel responsible for taking an active part in environmental conservation, especially in tackling environmental issues such as global warming.

To materialize our attitude of environmental protection, we will make steady efforts in both the mid- and long-term. For example, we will:

- Promote environmental management throughout the Kyushu Electric Power Group.
- Promote nuclear power generation based on safe operations while reducing CO<sub>2</sub> emission.
- Promote a zero emissions campaign aimed at ushering in a recycling society.
- Drive the "Kyushu Homeland Forestation Project" in collaboration with local communities.

# Fostering Environmental Awareness by Cooperating with Local Community

The "Kyushu Homeland Forestation Project," which has the goal of planting one million trees over the course of ten years with the cooperation of local communities, was originally started to heighten employee awareness of the importance of the environment and to appeal to the general public. I participate in the project as often as I can, and it is always a great pleasure for me to watch the children, covered with sweat and mud, planting saplings. I believe it is important to consciously nurture future generations and offer opportunities for hands-on experiences, and I strongly reconfirm our determination for this project.

# Promoting Environmental Communications

Each and every one of individual members of corporations, governments and the community can support eco-friendly ways of living in accordance with one's position. It goes without saying that is fundamental to help building a "sustainable society," so the blessings of the environment can be shared with future generations. To enhance the effect of such efforts, we believe it is significant to organically link the activities of these individual members.

"Communication" is the key.

We listen to our customers' "voice" at workshops and lectures on the environment and energy education, as well as through the "Eco Mothers' Project."

This is the 9th issue of the Kyushu Electric Power Environment Action Report as part of our communication efforts. We have worked to reflect the opinions and requests to enrich its content, giving more focus to "communication."

In the future, we hope to advance our environmental activities through increased environmental communication with a broader audience.

We would appreciate your candid opinions and suggestions, and look forward to hearing from you.

June 2005

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Shingo Matsuo President

Kyushu Electric Power Company Inc. Message from President



# **Company Profile**

Company name: Kyushu Electric Power Co., Inc. Date of establishment: May 1, 1951 Head Office: 1-82, Watanabedori 2-chome, Chuo-ku, Fukuoka, Japan

### Major organizational changes in FY2004

Company-wide introduction of call centers to enhance quality of customer service and operational efficiency

- Fickuoka Call Center (for Kitakyushu and Fukuoka Branch Offices) and Saga Call Center (for Saga and Nagasaki Branch Offices) started formal operation (May 18, 2004)
   Oita Call Center (for Oita and Kumamoto Branch Offices) and Kagoshima Call Center (for
- Miyazaki and Kagoshima Branch Offices) started formal operation (June 22, 2004) Closing and merger of customer service offices to promote sales enhancement and higher management efficiency Kitakyushu Branch Office: Buzen Customer Service Office was incorporated into the Yukuhashi
- Customer Service Office (October 18, 2004)

### Service area: Fukuoka, Saga, Nagasaki, Oita, Kumamoto, Miyazaki and Kagoshima Prefectures

Capital: 237.3 billion yen

Fukuoka Branch Office: Maebaru Customer Service Office was incorporated into the Fukuoka-nishi Customer Service Office (October 18, 2004)
 Kumamoto Branch Office: Minamata Customer Service Office was incorporated into the

Main business: Electric utility, district heating and cooling, telecommunications

- Yatsushiro Customer Service Office (January 24, 2005) Kagoshima Branch Office: Shibushi Customer Service Office was incorporated into the Kanoya Customer Service Office (January 24, 2005)

- Closing of aging thermal power stations having low efficiencies following the development of more advanced thermal power Minato Power Station [156,000 kW output, coal-fired power] (closed on April 1, 2004) Unit 1 and 2 at Shin Kokura Power Station [156,000 kW output each, LNG power] (closed on Output of 2001) October 1, 2004)

# FY 2004 Business Performance

Item	Unconsolidated	(Reference) Consolidated for financial accounting purposes*	Item	Unconsolidated	(Reference) Consolidated for financial accounting purposes*
Sales (100 million yen)	13,331	14,087	Net income per share (yen)	188.33	187.91
Electricity sales (100 million kWh)	802	—	Free cash flow: FCF (i) (100 million yen)	2,001	2,129
Ordinary profit (100 million yen)	1,529	1,599	Return on assets: ROA () (%)	3.4	3.3
Net income (100 million yen)	893	892	Return on equity: ROE ① (%)	10.0	9.4
Shareholders' equity (100 million yen)	9,293	9,792	Capital expenditures (100 million yen)	2,001	2,105
Total assets (100 million yen)	38,065	40,497	Number of employees (persons)	13,505	19,328
Shareholders' equity per share (yen)	1,961.19	2,067.54			

\*Scope of consolidation: 45 companies (21 consolidated subsidiaries and 24 associated companies accounted for using the equity method)







# Changes in total assets

1995

Changes in electricity sales

667

753

2000

766

2002

(100 million kWh)

558

1990

900

800

700

600

500

0



802

2004

(FY)

773

2003

# Changes in number of employees



# Corporate Social Responsibility (CSR) Measures

# **EXEMPTING TO A CONTRACT STATE ACTIVITY CHARTER**

To clarify the Kyushu Electric Power Group's unified approach towards CSR (1), the Kyushu Electric Power Group Corporate Activity Charter was established in January 2005 through revision of the Kyushu Electric Power Corporate Behavior Charter. The new charter provides detailed guidelines for conducting business activities based on the Kyushu Electric Power Group Management Vision formulated in February 2002.

# Kyushu Electric Power Group Management Vision (abstract)

# [Basic philosophy]

" Be more energetic to serve customers "

# [Kyushu Electric Power Group management approach]

We believe enhancing the satisfaction of customers, shareholders, investors, society and employees leads to improving the value of the Kyushu Electric Power Group.

# Kyushu Electric Power Group Corporate Activity Charter (abstract)

Kyushu Electric Power Group places "customers" at the center of all corporate activities to upgrade corporate value by providing energy, other related services and products and to achieve further development in step with society. Group companies are joining forces to promote business operations which respect human rights both nationally and globally and to contribute to the building of an enriched and comfortable society. To ensure the continued conduct of such business activities and gain the trust and understanding of society, the Kyushu Electric Power Group promotes compliance ① management based on the following principles:

- 1. Enhance customer satisfaction
- 5. Promote environmental management ()
- 9. Comply with laws and ordinances

- 2. Pursue honest and fair business activities 3. Develop a safety culture
- 6. Contribute to society and the local community 7. Develop an open and fair corporate culture
- 10. Value and practice the spirit of this charter and clarify top

- 4. Promote communication activities
- 8. Coordinate with international society
- management's responsibility

# $\Sigma$ Compliance and environmental management promotion structure shared by Kvushu Electric Power Group







05

# FY2005 to 2009 Mid-Term Management Policy under the Slogan: "Strengthen our Operating Foundations and Support Continued Growth"

Kyushu Electric Power Co., Inc. established a new mid-term management policy targeted for the five years between fiscal 2005 and 2009 based on probable accomplishment of objectives set forth in the previous management policy for fiscal 2002 to 2006. The new policy was drafted, keeping in mind forecasted increases in competition resulting from drastic changes in the business environment after April 2005, including the expanded deregulation of the power industry and the abolition of transfer supply charges.

# **Corporate Philosophy**

# An entity building a humane Kyushu

**Action Guidelines** 

Kyushu Electric Power Co., Inc. shall:

- 1. keep energy aglow forever.
- 2. maintain close contact with the community and act in pursuit of valuable social goals.
- 3. create a dynamic corporate culture by staging a step ahead of the times.

# FY2005 to 2009 Mid-Term Management Policy

# Basic concept

# Σ Business attitude

Continuously improve corporate value through constant efforts to raise business quality by placing "customers" at the center of all business activities thereby leading to the enhancement of the satisfaction of customers, shareholders, investors, society members and employees.

## $\Sigma$ Perception of the times

Position the targeted five years as a period to reinforce the foundation of Kyushu Electric Power Group companies' business, mainly total energy services, and to promote further growth with a strengthened basis.

# Direction for future business promotion

- Active promotion of total energy service as a core business, based on the know-how of management, and business practice as an electric utility.
- Respond to the needs of local customers by utilizing the company's tangible and intangible managerial resources in promoting information & telecommunications, environmentrelated and recycling businesses, and other services rooted in people's daily life.
- Improve efficiency and potentials for growth in every field of business focusing on profit performance.

# Business objectives

Σ Customer aspect					
Price	Offer competitive market price				
Quality	Respond promptly and maintain high reliability				
Service	Provide solutions to cater the various needs of customers				
Corporate image	Establish a brand image of "safe and reliable"				

### $\Sigma$ Financial aspect

		Tar	Target year				
		Consolidated	Unconsolidated	Target year			
	FCF ①	120 billion yen	100 billion yen	Average of five years between FY2005 and 2009			
	Ordinary profit	110 billion yen	100 billion yen				
	ROA 🛈	3%	3%	50110011112000 and 2000			
Profit performance/	Ratio of equity capital	30%	30%	By the end of FY2009			
financial stability	Use of FCF • Reduction of interest-bearing liabilities to achieve an equity capital ratio of 30% by the end of FY2009 • Investment and financial contribution according to the company's growth strategy (approx. 60 billion yen in five • Consecutive dividends						
Efficiency	-	Top level of the industry					
Growth	Newly created demand (electricity business)	2.5 billio (compare t	FY2009				
Growin	Sales to outside the group (except for electricity business)	100 billion y (compare t	- 112009				
Ordinary profit	Total energy services (except for electricity business)	4 billic					
by business	Information and telecommunications	4 billio	on yen	Average of five years between FY2005 and 2009			
category	Environment-related, recycling and other services rooted in people's daily life	2 billio					

# Main focus

# Strengthening the foundation of our business

- · Improve efficiency to achieve industry high levels
- · Establish a reliable business foundation
- Take measures to fulfill corporate social responsibility (CSR )
- Improve organizational ability

# Growth potential enhancement

- · Promote business activities based on customer needs
- · Enhance the ability and motivation of employees

# CSR measures in the mid-term management policy

- · Awareness of the issues of environment and energy, safety of products and service and the employment system has increased. Corporate brand values have fallen as a result of mismanagement by business entities and more investors are practicing socially responsible investment (SRI). Under these circumstances, attention is being drawn to measures that fulfill CSR.
- · Kyushu Electric Power has been active with information disclosure and making constant efforts to ensure the transparency of management and the fair conduct of business. As a part of such efforts, the Kyushu Electric Power Corporate Activity Charter (revised as "Kyushu Electric Power Group Corporate Activity Charter" in January 2005) was established in 1998 and made known company wide.
- The new mid-term management policy places special focus on measures for CSR as the core of Kyushu Electric Power's management policy in order to be a company supported and trusted by customers, shareholders and investors. This shows the company's determination to strive towards the fulfillment of its social responsibility by promoting environmental management () and compliance () management.

# Main measures for CSR

Promotion of compliance management	Safety first policy	Promotion of information disclosure to improve management transparency		
<ul> <li>Promote fair business activities in strict conformity with laws, ordinances and corporate ethics</li> <li>Reinforce the system to protect personal and other information</li> <li>Reinforce the legal work system</li> </ul>	<ul> <li>Prioritize the safety of facilities, equipment and their operation</li> <li>Improve the safety of products and services as well as provide information about the safe use of electric power</li> <li>Provide a safe and healthy working environment</li> </ul>	<ul> <li>Promote IR activities ① according to the investors' needs</li> <li>Dispatch nuclear power-related information timely and appropriately</li> </ul>		
Promotion of environmental management	Respecting human rights and realizing an ideal working environment	Cooperation with the local community and society		
<ul> <li>Reduce greenhouse gases ()</li> <li>Promote development of renewable energy sources () and zero emissions</li> <li>Encourage communications about the environment</li> <li>Promote environmental energy education</li> </ul>	<ul> <li>Promote gender equality</li> <li>Promote the employment of the aged and disabled</li> </ul>	<ul> <li>Participate in urban development and community building</li> <li>Continue to support the promotion of local culture, sports and voluntary activities</li> </ul>		



Kyushu Electric Power's CSR appeared in Newsweek magazine's "ranking of the world's 500 companies"

### Kyushu Electric Power ranked 110th globally (18th out of 121 companies in Japan) in Newsweek magazine's 2004 Fortune Global 500 (June 2, 2004 issue). Five hundred companies in Japan, the U.S. and Europe were surveyed to evaluate both financial performance and corporate social responsibility (CSR). Not content to rest on our laurels, we continue our endeavor to disperse CSR measures companywide.

# [Survey details]

Evaluation method: Total of financial ability (full mark: 60 points) and CSR (full mark: 60 points) Evaluation of financial ability: Total of financial ability (full mark: 60 points) and CSR (full mark: 60 points) Evaluation of CSR: Assess the following four items (full mark: 15 points) and cont (full mark to points)

Evaluation of CSR: Assess the following four items (full mark: 15 points each)

Corporate governance (independence of board of directors, laws and ordinances compliance system, ethical provisions)
Employees (provision of equal opportunities, health and safety, employment stability, ratio of union members,
education and support, ratio of female directors)
Society (human rights protection in developing countries, fair procurement, relationship with customers and business
partners, social contribution programs)
Environment (measures for environmental issues and their results, utilization of natural energy)

Kyushu Electric Power results:

	Items	Financial ability				Corporate social responsibility (CSR)				Grand total	
		Profit performance	Growth potential	Safety	Total	Corporate governance	Employees	Society	Environment	Total	Granu total
	Points	10	7	6	23	12.3	7.5	8.5	10.4	38.7	61.7





# 2005 Environment Action Report Highlights Measures for corporat



# 41.7% increase in ordinary profit

Ordinary profit for fiscal 2004 was 152.9 billion yen, marking a 41.7% increase from the previous year despite price reductions implemented in the vear.

This was mainly due to the reinforcement of efficient management and increased demand in an extremely hot summer.

# New mid-term management policy and business objectives formulated

New mid-term management policy and business objectives were formulated following the expanded liberalization of the power industry in April 2005 and in anticipation of achieving business objectives set forth in the mid-term management policy for fiscal 2002 to 2006. (See page 06)

# Environment Environment

# Budgeting for environmental activity

Effective fiscal 2004, the company started to implement future planning for allocation of the company's entire environmental activity costs in order to optimize the allocation of company's managerial resources, using the environmental accounting system. *(See page 21)* 

# Reinforced measures against global warming

The company's 2010 CO<sub>2</sub> emissions intensity target was set and emission amounts of five greenhouse gases (except for CO<sub>2</sub>) were calculated and made available to public. (*See pages 24-29*)

# Kyushu Electric Power Group's unified efforts towards environmental management

In fiscal 2005, the number of group companies selected for environmental management promotion increased from 40 to 44 in order to implement environmental activities at Kyushu Electric Power Group as a whole. (See pages 50-63)





The measures for CSR were designated in March 2005 as one of the focal points of the mid-term management policy for fiscal 2005 to 2009. This shows Kyushu Electric Power's determination to fulfill such responsibilities. The Kyushu Electric Power Group Corporate Activity Charter was established specifically for the corporate activities of Kyushu Electric Power and its group companies.

Genkai Nuclear Power Station

(See pages 05-07)

Change in ordinary profits

1,079

2003

1 529

2004

(FY)

(Unit: 100 million ye

2.000 г

1.500

1.000

500

0

# Plu-thermal (Plutonium-thermal) project promotion and nuclear power development

In preparation for the commencement of the plu-thermal project, open discussion on the project took place at Genkai Town, Saga Prefecture. To further solicit nuclear power generation, drafting of documents concerning methods for assessing environmental impact was started at Sendai Nuclear Power Station. (See pages 31 and 38)

Sendai Nuclear Power Station

# Acquisition of the EcoLeaf environmental label

In July 2004, the company acquired "EcoLeaf" environmental label certification, a third party's evaluation based on the life-cycle assessment method of product environmental loads including CO<sub>2</sub> emissions. (See page 25)

EcoLeaf certificate of registration

# Binary-cycle geothermal power generation facility approved by the RPS Law

In February 2005, the binary cycle geothermal power generation facility at Hatchobaru Geothermal Power Station became Japan's first power generation facility to be approved by the Renewable Portfolio Standard, or RPS Law. (See page 26)



Binary-cycle geothermal power generation facility at Hatchobaru Power Station

08

# Society Society

# Secure and safe operation at the time of the Fukuoka Earthquake

On March 20, 2005, Fukuoka was hit by an earthquake with a magnitude of seven on the Richter scale and in the days following, experienced repeated aftershocks. Despite the occurrence of such a strong earthquake, both Genkai and Sendai Nuclear Power Stations have been able to maintain safe operations.

# Forestation of Onagohata

aru Geotherma

Forest owned by Kyushu Electric Powe

# Environmental education support around Onagohata Power Station Dam

To support environmental education especially at schools, Kyushu Electric Power is hosting nature classes and nature watch programs in Onagohata Dam area. (*See page 44*)



Nature watch

# **Ongoing Kyushu Homeland Forestation Project**

The Kyushu Homeland Forestation Project has been underway since fiscal 2001, with a goal to plant one million trees at sites throughout the Kyushu region in a decade. About 440,000 trees have been planted over the last four years. *(See page 44)* 







Forestation volunteers in Unzen/Fugen

# **Eco Mothers Project**

Kyushu Electric Power conducts environmental PR activities with the help of Eco Mothers. In fiscal 2004, Eco Mothers performed 141 environment related picture card shows at kindergartens, nursery schools and children's meetings.





Encourage children to be involved in eco-friendly activities at home

# Acquisition of FSC Forest Management Certificates

In March 2005, the company-owned forest won the FSC Forest Management Certificate from the Forest Stewardship Council (FSC) for its appropriate management. (See page 45)



# Establishing a recycling society

Kyushu Electric Power challenges "zero emissions", reducing the volume of waste at final disposal to close to zero. The company has achieved an industrial waste recycling rate of 92% and a used paper recycling rate of 100%. New efforts were started in fiscal 2005 to reduce the annual volume of industrial waste to be placed in landfills outside the company to 1,000 tons or less. *(See pages 34-36)* 

Certificate of registration

# Shinyabakei

Shinyabakei Nakatsu City, Oita Prefecture Shinyabakei valley embraces the most scenic area of Yabakei called the "Hitome Hakkei," which means eight scenes at a glance. Literally, one can enjoy eight scenic spots of Kaiborei peaks, Senningaiwa rocks, Mt. Shoenzan, Meotoiwa rocks, Mt. Gunenzan, Eboshiiwa rocks, Oshikanagaonomine peaks and Mt. Tobinosuyama. The areas lead to Utsukushidani and Kinunkyo valleys and converge with gorges, falls and surrounding natural forest, and please visitors in the seasons of fresh green and red leaves.

# 2005 Environment Action Report

# Part I

# Promotion of Environmental Management



- 1. Promotion of Environmental Management ----- 12
- 2. Business Activities, Environmental Activity Benefits and Environmental Load (FY2004) --- 16
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4. Environmental Accounting

# Part I

# **Promotion of Environmental Management**

# 1 Promotion of Environmental Management

Kyushu Electric Power Group prioritizes environmental conservation in its management activities. We make concerted efforts to put into practice environmental management), which contributes to a productive environment through raising environmental consciousness in conducting all our corporate activities. Aiming to make our contribution to building a sustainable society), we strive to fulfill our social responsibility of promoting both environmental conservation and business activities based on the Kyushu Electric Power Environment Charter with the theme, "Towards an Environmentally Friendly Corporate Stance". Due to such efforts, Kyushu Electric Power Co., Inc. was for the second consecutive year ranked first in the Electricity and Gas segment of the 8th Corporate Environmental Management Level Survey conducted by Nihon Keizai Shimbun, Inc. in 2004. For survey result details, see page 69.

# Environmental Policy

The Kyushu Electric Power Environment Charter was established to define the stance and direction of environmental activities to be pursued. The Kyushu Electric Power Group Environment Philosophy was developed for group companies to set forth the principles of their commitment to environmental activities. The Kyushu Electric Power Group Environment Policies were developed to specify guidelines for implementing the environmental activities. Based on these principles and policies, environmental activities are enthusiastically pursued in the Kyushu Electric Power Group.

For Kyushu Electric Power Group Environment Philosophy and Policies, see page 55



# 2 Environment Action Plan

Kyushu Electric Power Group formulated the Environment Action Plan () as a guideline for all employees to participate in the implementation of environmental management. To continue the secure implementation of environmental activities, the Action Plan is revised and improved every year based on several factors, including the evaluation of current social conditions and needs, the company's mid-term management policies and internal and external evaluations related to the company's environmental activities during the previous year. The summary of environmental activities implemented and their results are publicized as the Kyushu Electric Power Environment Action Report.



# FY2005 Environment Action Plan

The FY2005 Environment Action Plan consists of five core environmental action policies: promoting environmental management, addressing global environmental issues, establishing a recycling society, maintaining harmony with the local environment, and working with society. Targets and detailed plans follow under those policies.



# **FY2005 Environment Action Plan Focal Points**

# 1. Promotion of environmental management on the Kyushu Electric Power Group basis

• To pursue environmental activities and reinforce compliance and other environmental management at all offices of Kyushu Electric Power Groupand its group companies as well as improve environmental efficiency.

# 2. Steady efforts to reduce greenhouse gas emissions

By effectively responding to international and domestic trends on global warming issues to achieve its own targets, to promote comprehensive measures on both aspects of supply and demand such as CO<sub>2</sub> reduction by safe and stable operation of nuclear power stations and development of heat storage systems
 and other energy-saving equipment, in addition to total management and reduction of six types\* of greenhouse gases ().

\*Greenhouse gases regulated by the Kyoto Protocol: Carbon dioxide (CO₂)⊕, Methane (CH₄)⊕, Dinitrogen monoxide (N₂O)⊕, Hydrofluorocarbon (HFC)⊕, Perfluorocarbon (PFC)⊕, Sulfur hexafluoride (SF₅)⊕

# 3. Effective and efficient promotion of zero emissions activities

• To utilize cooperative collection systems for industrial waste () to achieve the targets on recycling rate and the volume of industrial waste to be placed in landfills outside the company, newly set in 2005.

# 4. Safe and proper control of PCB

• To react to the detoxification of equipment containing high concentrations of PCBs() and ensure the proper storage of such equipment in accordance with applicable laws.

# 5. Active communications of environmental issues with parties concerned

• To expedite mutual communications with our customers through the publication of the Environment Action Report, Eco Mothers () Projects and other activities to satisfy stakeholder () needs related to the company's environmental management.





# **3** Promotional Scheme

Kyushu Electric Power Co., Inc. has structured a company-wide scheme for the implementation of environmental management().



# 4 Environmental Management System

All 142 operational sites have introduced efficient and effective environmental management systems (EMS)  $\oplus$  (as of the end of March fiscal 2004).

For the status of EMS implementation at group companies, see page 53.

- Each operational site makes steady efforts to achieve energy saving and other own targets. We try to manage environmental risks by using a checklist for conformity to environmental regulations to expedite compliance management and conducting drills to better cope with environmental accidents or disasters.
- Associate Professor Mami Oku of Nagasaki University's Faculty of Environmental Studies (and Kyushu Electric Power Environmental Advisory Council member), participated in an internal environmental audit as an outside observer to confirm the adequate implementation of the EMS at Ainoura Thermal Power Station in December 2004.
- The company's Environmental Affairs Department supports each operational site and office in raising the operating levels of the EMS. In fiscal 2004, assistance was extended for the improvement of the internal environmental Audit system (60 sites), environmental activities (99 sites) and further enhancement of employees' environmental awareness (31 sites).

Group Management Association

• EMS related questions collected through on-site assistance programs are compiled in a Q&A list. The questions are made

available to all employees via the Environmental Affairs Department's intranet together with the successful operations of EMS in order to encourage the complete implementation of EMS and increase its operating levels.



Guidance for better EMS operation (at an internal-combustion power station)

# 5 Conformity to Environmental Regulations

- · We have received no recommendations, orders or penalties in connection with breaches of environmental laws and ordinances in the last five years. No legal actions regarding environmental issues have been filed against the company during this period.
- · We continue to pursue compliance () management to engage in fair business activities in accordance with our corporate ethics. We strictly abide by agreements on environmental conservation () concluded with local governments as well as laws and ordinances.
- · Following the fuel oil leakage at our internal-combustion power station in fiscal 2004, thorough and effective countermeasures were taken to minimize the impact on the surrounding environment. Stations concerned introduced effective measures to prevent similar incidents from recurring.

## $\Sigma$ Fuel oil leakage at an internal-combustion power station

In November 2004, heavy oil leakage occurred from a flange coupling on a fuel oil transfer pipe installed at Oronoshima Power Station (290kW) located in Oronoshima, Nishi-ku, Fukuoka. About 32kl of heavy oil leaked and infiltrated into the ground. The oil-polluted ground in and surrounding the power station was immediately removed, and the leaked oil was recovered using newly installed oil-water separating equipment. (As of the end of March 2004, about 50% (16kl) of the leaked oil was recovered.) A thin film of oil was seen within the area barred by the oil fence which was installed to prevent possible leakage into the sea. This oil was promptly removed and a new underground wall was installed to further prevent future leakage. Constant monitoring is being carried out to prevent further damage on the surrounding environment. All related operational systems have been reinforced following this incident to prevent the recurrence of the same or similar accidents.

# 6 Handling Inquiries and Complaints

Kyushu Electric Power Co., Inc. responds promptly to inquiries and complaints from outside the company.

· In fiscal 2004, a total of 63 environment-related inquiries were received at the Customers' Q&A on the company website, including those concerning the content of the Environment Action Report.

· The inquiries include opinions on the company's environmental management attitude, as well as complaints on unsatisfactory management of forestation activities the company joined.

CO

- · We contacted those who forwarded inquiries or questions to deal with individual cases.
- These opinions are fully reflected in the process of planning and improving future environmental activity.

# 7 Emergency Measures

Damage to Kyushu Electric Power Co., Inc.'s facilities resulting from accidents and natural disasters can affect the surrounding environment. In preparation for such emergencies, the company installed and upgraded facilities for disaster prevention, implemented adequate education and training for our employees, and prepared manuals that help employees to better deal with such emergencies.

# Emergency measures at nuclear power stations

- · Both Genkai and Sendai Nuclear Power Stations have a nuclear power training center on their premises. At both training centers, simulating equipment enables trainees to learn from a wide variety of potential dangers by replicating crises that have actually occurred even outside Japan.
- · Each year, the company participates in nuclear power disaster drills held by the local governments of Saga and Kagoshima Prefectures based on the Local Disaster Preparedness Plan.



Nuclear power disaster drill

· To ensure communications between nuclear power stations and national and related local governments during large-scale disasters, prioritized emergency phones (both fixed-line and mobile) have been set up. Public, private, mobile and house phones have also been improved. Further diversification of communications is underway following the troubles which occurred at the base station for prioritized emergency phones in the Fukuoka Earthquake.



### **EMS Efforts**

Planning Group,

Kajiki Customer Service Office Kagoshima Branch Office Junko Matsuzaki

I have been in charge of EMS implementation at Kajiki Customer Service Office, Kagoshima Branch Office since December 2003. I am delighted to be involved in this task because I have long been interested in environmental issues and my previous job (at the ISO) authorization office) was also related to EMS. Following the introduction of separate collection of general waste in Kajiki Town in April 2004, our office now focuses on resource recycling by strictly conducting separate collections as a part of our EMS activity program. Our staff members' awareness has been enhanced since the introduction of EMS three years ago. Each group cooperates together on the implementation of EMS and if waste is left unseparated in a collection box, we can hear somebody calling, "Who's done this? Separate your waste, please!" To survive in an era of tightening competition, our business operation has become even harder. Under such circumstances. I believe that our efforts on EMS operation and other environmental activities are something we can be proud of in and out of our company. We will continue our efforts into the future.









# **Environmental load**



\*2:Baseline refers to the case when SF6 is not recovered at equipment check \*3:Baseline refers to the case when no desulfurization is carried out or non-usage of

# 3 Records and Targets of Environmental Load

We set specific target values for our main environmental activities and endeavors to reduce environmental load ().

					Records		FY2004		
		Items	Unit	FY2002	FY2003	FY2004	targets		Evaluation
		CO <sub>2</sub> emissions reduced	_	-	_	-	-	_	(Subject newly introduced)
		CO <sub>2</sub> emissions intensity (end use electricity)	kg-CO2/kWh (10 thousand tons-CO2/ 100 million kWh)	0.336 (-)	0.309 (-)	0.331 (-)	Approx. 0.34		Safe and regulated operation of nuclear power stations led to
		CO <sub>2</sub> emissions	10 thousand tons-CO2	2,570	2,390	2,660	Approx. 2,600		<ol> <li>1.8 percentage points improvement in nuclear power capacity factor over the planned value.</li> <li>CO<sub>2</sub> emissions are slightly higher than the target due to a 2.4 billion kWh increase in electricity sales by in the summer when</li> </ol>
issues	้ร	Nuclear power operating factor	%	85.9	88.9	86.2	84.4		temperatures were higher than average.
Measures for global environmental issues ${\rm O}$		Generated thermal efficiency at thermal power stations $\oplus$ (sent-out thermal efficiency $\oplus$ )*^4 [Generation end efficiency $\oplus$ ]	%	39.0 [40.5]	39.2 [40.8]	39.3 [40.8]	Approx. 39 [Approx. 40]		The target was met through active utilization of highly-efficient power stations including the Unit 3 system of Shin Oita Power Station (sent-out thermal efficiency: 46.3%).
oal envirc		Utilization of power generated from new energy sources	Million kWh	_	391 or more	425 or more	425 or more		The target was met owing to the in-house development of binary cycle geothermal power generation $\oplus$ , a new power generation source authorized by the RPS Law $\oplus$ , as well as promotion of power purchases from customers and others.
s for glol		Transmission and distribution loss factor $\ensuremath{\mathfrak{I}}$	%	5.5	5.4	5.5	5.5		The target was met due to efforts to improve transmission and distribution facility efficiency such as the introduction of low-loss transformers, although electricity sales were higher than the planned value.
Measure		Office power consumption	Million kWh	108	106	105	103 or less	×	Marked 1% reduction from the value of FY2003 through rigorous energy- saving activities utilizing EMS⊙ operation. However, this value exceeded the target by 2 million kWh due to the addition of new offices. Future reduction is being pursued through the introduction of high-efficiency equipment.
	nption	Low-emission/fuel-efficient vehicle () introduction*6	%	5.0	11.8	21.6	20 or more		Fourteen hybrid vehicles $\oplus$ and 334 fuel-efficient vehicles $\oplus$ introduced as planned, led to achieving the target.
	Consumption	SF6 <sup>®</sup> recovery at equipment inspections	%	98	98	98	98 or more		The target was met by the use of vacuum SFe recovery equipment at the time of checkups ensured by facility management staff members' enhanced self-management awareness.
		Regulated freons  recovery at equipment checkups	%	-	99	100	100		The target was met due to the recovery of regulated freons meeting the required legal standards (legal pressures at the time of dismantlement) by facility management staff members' enhanced self-management awareness.
		Industrial waste $\oplus$ recycled $\oplus$	%	74	92	92	90 or more		The target was met through efforts such as promoting effective
ocietv()	6000	Coal ash () recycled	%	68	90	90	90 or more		and expanded utilization of coal ash as a construction material, and expanding distribution channels which meet users' various needs, as well as through measures of EMS to ensure the
Establishing a recycling societv0	o Brinno fo	Other waste recycled	%	97	99	98	98 or more		target recycling rate is met.
hing a re	5	Industrial waste landfilled outside company*7	Tons	1,420	1,160	1,040	_	_	(Subject newly introduced)
Establis		Used paper  recycled	%	100	100	100	100		The target was met due to continuous efforts towards recycling 100% of used paper by ensuring handover process to recycling businesses including Kyushu Environmental Management Corporation.
		Green procurement⊕* <sup>8</sup>	%	83	88	94	100		Although the target was not met, value improved by 6 percentage points from FY2003 due to intensive promotion via the company intranet and distribution of a green catalog. Future improvement is being pursued through efforts such as employee awareness enhancement.
ony with	nment	SOx <sup>®</sup> emissions intensity <sup>®</sup> per thermal power generated kWh	g/kWh	0.27	0.16	0.20	Approx. 0.2		The target was met by proper operation of desulfurization $\oplus$ and denitration facilities $\oplus$ although increased electricity sales raised
Maintaining harmony with	cal enviro	NOx <sup>®</sup> emissions intensity per thermal power generated kWh	g/kWh	0.22	0.18	0.18	Approx. 0.2		thermal power generated kWh, which has relatively high emissions intensity.
Maintair	the lot	Sievert calculation in radiation measurement on people living near nuclear power stations  per year	mSv⊕	Less than 0.001	Less than 0.001	Less than 0.001	Less than 0.001		The target was met by appropriately conducting nuclear power station operation and radioactive waste $\oplus$ management according to laws and ordinances.
oyee	ement	Number of Qualified Persons for Energy Management of Type 1 Designated Factory ()	Persons	783	870	960	500 or more		The target was met through our constant efforts to enhance qualification support program, aiming to promote proper
Employee awareness enhancement	enhanc	Number of Pollution Control Managers	Persons	486	490	507	500 or more		business operations in compliance with the related laws and ordinances.

\*1: The FY2004 achievement status against the FY2004 target is evaluated on a 3-level system: : fully achieved, : almost achieved (more than 80%), : x : yet to be achieved (less than 80%).

\*2: Target year and target values have been changed as the company established the mid-term 5-year management policy starting from FY2005.

\*3: Prospects based on FY2005 power supply plans

\*4: Target item changed in FY2004 from "generated thermal efficiency" to "sent-out thermal efficiency" to control power consumption including the reduction of electricity used for generation at power stations (auxiliary power ratio). Values for generated thermal efficiency are also given in brackets.

**/CO** 

Interim t	argets*2	Targets*2		Records and Targets						Page	
FY2005	FY2006	FY2009		Items	FY2002	Records FY2003	FY2004	FY2005	Targets FY2006	FY2009	i age
	electricity CO <sub>2</sub> emissi ox. 20% from the sta			-	_	_	_	-	_	_	
Approx. 0.34*3	Approx. 0.34*3	Approx. 0.35 <sup>*3</sup>		emissions intensity (end use tricity) (kg-CO <sub>2</sub> /kWh)	0.336	0.309	0.331	0.34	0.34	0.35	P24- 28
(Approx. 2,700/801)	(Approx. 2,700/808)	(Approx. 2,900/826)		CO <sub>2</sub> emissions (10 thousand tons-CO <sub>2</sub> )	2,570	2,390	2,660	2,700	2,700	2,900	
84.4*3	84.8*3	Approx. 85 <sup>*3</sup>		ear power operating factor (%)	85.9	88.9	86.2	84.4	84.8	85	P24
Approx. 40*3	Approx. 40 <sup>*3</sup>	Approx. 40 <sup>*3</sup>	at th	erated thermal efficiency ermal power stations t-out thermal efficiency) (%)	39.0	39.2	39.3	40	40	40	P26
445 <sup>*5</sup> or more	472 or more	834 or more	from	ation of power generated new energy sources on kWh)	_	391	425	445	472	834	P26- 27
5.4 <sup>*3</sup>	5.4*3	5.4 <sup>*3</sup>	1	smission and distribution factor (%)	5.5	5.4	5.5	5.4	5.4	5.4	P28
102 or less	101 or less	98 or less		e power consumption on kWh)	108	106	105	102	101	98	P29
25 or more	40 or more	60 or more	-	emission/fuel-efficient cle introduction (%)	5.0	11.8	21.6	25	40	60	P29
98 or more	98 or more	98 or more	SF6 recovery at equipment checkups (%)		98	98	98	98	98	98	P28
100	100	100	Regulated freons recovery at equipment checkups (%)		_	99	100	100	100	100	P29
90 or more	90 or more	90 or more	Indu	strial waste recycled (%)	74	92	92	90	90	90	
90 or more	90 or more	90 or more		Coal ash recycled (%)	68	90	90	90	90	90	P34- 35
98 or more	98 or more	98 or more		Other waste recycled (%)	97	99	98	98	98	98	
1,000 or less	1,000 or less	1,000 or less		strial waste landfilled outside pany (tons)	1,420	1,160	1,040	1,000	1,000	1,000	P35
100	100	100	Use	d paper recycled (%)	•	100	100	100	100	• 100	P36
100	100	100	Gree	Green procurement (%)		88	94	100	100	• 100	P37
Approx. 0.2	Approx. 0.2	Approx. 0.2	ther	SOx emissions intensity per thermal power generated kWh (g/kWh)		0.16	0.20	0.2	0.2	0.2	P39
Approx. 0.2	Approx. 0.2	Approx. 0.2	NOx emissions intensity per thermal power generated kWh (g/kWh)		0.22	0.18	0.18	0.2	0.2	0.2	1.29
Less than 0.001	Less than 0.001	Less than 0.001	Sievert calculation in radiation measurement on people living near nuclear power stations per year (mSv)		0.001	0.001	0.001	0.001	0.001	0.001	P32, 40
500 or more	500 or more	500 or more	Ene	ber of Qualified Persons for gy Management of Type 1 gnated Factory (persons)	783	870	960	500	500	500	P46
500 or more	500 or more	500 or more		ber of Pollution Control agers (persons)	486	490	507	500	500	500	1-40

\*5: This will be revised according to the standard utilization value for FY2005 to be newly determined based on the Law on Special Measures Concerning New Energy Use by Electric Utilities (RPS Law).

\*6: This is the percentage of clean-ergy vehicles (electric vehicles (hybrid cars )) and fuel-efficient vehicles that are in conformity with FY2010 fuel economy standards and that are low-emission vehicles approved by the Ministry of Land, Infrastructure and Transport in the company fleet.
 \*7: This item has been newly introduced to focus on the importance of measures to reduce waste from the point of shortage of final disposal sites.

\*8: Green procurement includes office and stationery supplies that are in conformity with socially-recognized standards.



# 4 Environmental Accounting

We introduced environmental accounting () in fiscal 2000 with the aim of acquiring quantitative understanding of the costs and benefits of the environmental activities. The resulting costs and benefits are disclosed to the stakeholders (), and also are analyzed to develop efficient and effective environmental activities. The results in fiscal 2004 are shown below.

# Environmental Activity Costs<sup>1</sup> and Benefits (FY2003 and FY2004 records)

		-					Unit: 100 mill		se specially indicated)
	Category	Main activities		2003		004	Items	FY2003	FY2004
		lastellation of accuracy with law	Investment	Cost	Investment	Cost	Nuclear second second second	Benefits	Benefits
Global environment conservation		Installation of power sources with low CO2 ① emissions, thermal efficiency ①					Nuclear power generation	33.33 million tons-CO <sub>2/yr</sub>	32.06 million tons-CO <sub>2</sub> /yr
erve		improvement at thermal power					LNG (1) power generation Hydro/geothermal power	5.59 million tons-CO <sub>2</sub> /yr	5.85 million tons-CO <sub>2</sub> /yr
suos		stations, introduction of and support					. deneration	6.66 million tons-CO2/yr	6.82 million tons-CO <sub>2</sub> /yr
ento	Global warming ()	for new energy () equipment/facilities,	0.6	70.2	0.8	85.5	New energy power generation and purchase Thermal efficiency improvement, transmission/	0.5 million tons-CO <sub>2</sub> /yr	0.59 million tons-CO <sub>2</sub> /yr
ume.	prevention	contribution to greenhouse gas reduction investment fund (1), energy						2.52 million tons-CO <sub>2</sub> /yr	2.64 million tons-CO <sub>2</sub> /yr
Jvirc		saving (incl. low-emission/fuel-efficient						4,512 tons-CO <sub>2</sub> /yr	0 tons-CO <sub>2</sub> /yr
al er		vehicles () and energy saving					Energy saving activities	217 tons-CO <sub>2</sub> /yr	238 tons-CO <sub>2</sub> /yr
gola		buildings), SF6  emission reduction					SF6 emission reduction*2	0.4 million tons-CO <sub>2</sub> /yr	0.55 million tons-CO <sub>2</sub> /yr
0	Ozone layer (1) protection	Measures for freons (1) and halon (1) recovery	0.8	0.3	0.3	0.5	Freon emissions*3	0.2 ODP tons/yr	1.6 ODP tons/yr
ent	Air nellution ()	Flue gas () treatment (desulfurization (),					SOx () reduction	33,270 tons/yr	46,043 tons/yr
Ű,	Air pollution (1) prevention	denitration (1), particulate (1) reduction equipment) and use of fuel of low sulfur	57.4	156.0	9.2	105.4	NOx <sup>®</sup> reduction	13,473 tons/yr	15,999 tons/yr
viro		content					Particulate reduction	97,567 tons/yr	135,351 tons/yr
Local environment conservation	Water pollution (1) prevention	Wastewater treatment and measures against oil leaks and warm wastewater (1) at power stations	16.4	28.9	7.4	29.0	Environmental load reduced in wastewater*4	498 tons/yr	727 tons/yr
oca	Noise and vibration prevention	Noise and vibration measures at power stations, substations	7 4	1.4	10	1.0	Managed appropriately in c	onformity with laws	Managed appropriately in conformity
0	Noise and vioration prevention	and transmission facilities, ground pollution (1) measures	7.4	1.4	4.3	1.0	and ordinances		with laws and ordinances
D	Industrial waste	Reduction and recycling of industrial waste	14.7	48.1	9.7	42.5	Amount recycled	543 thousand tons/yr	590 thousand tons/yr
clin		Disposal of industrial waste and PCB () storage*5	10.7	10.6	3.1	8.6	Proper final disposal amount	46 thousand tons/yr	53 thousand tons/yr
recy	General waste	Reduction and recycling of general waste	0.5	5.9	0.9	7.0	Used paper (), shells, driftwood recycled *6	7,657 tons/yr	11,290 tons/yr
Ce		Disposal of general waste	0.1	1.2	0.0	2.3	Used paper, shells, driftwood properly disposed*6	1,680 tons/yr	1,728 tons/yr
Resource recycling	Radioactive waste  and spent nuclear fuel* <sup>7</sup>	Disposal and other treatment of radioactive waste	0.6	6 60.6			Volume reduction in low-level radioactive waste	1,948 containers/yr (each equivalent to one 200-liter oil drum)	1,489 containers/yr (each equivalent to one 200-liter oil drum)
Be					12.7	57.1	Amount of used nuclear fuel	2,914 assemblies	2,996 assemblies
							stored	2,914 assemblies	2,550 assemblies
Green procurement   Additional costs incurred from green procurement			0.0		0.0	Green products <sup>①</sup> (power material and equipment) purchased through green procurement <sup>*6</sup>	-	10,430 items	
		Costs for environment-related license acquisition,						17 000 persons/yr	17 100 persons/yr
ent	Environmental	environmental education (1), training	0.0	3.2	0.0	3.2	Participants in training and lectures Personnel with environment-	17,820 persons/yr (gross)	17,133 (gross)
jem _	activity organization	and personnel employment				-	related licenses Sites acquired ISO 14001	1,669 persons	1,813 persons
enta anaç	EMS <sup>①</sup> application and maintenance	EMS (ISO 14001 (1) and ISO compliant systems (1)) acquisition, application and	0.0	3.6	0.0	1.3	certification Sites introduced ISO compliant	6 sites	6 sites
Environmental activity management		maintenance					systems	139 sites	136 sites
viro	Environmental load (1) measurement and	Environmental impact assessment, monitoring and measurement of environmental	1.3	3 13.9	1.5	13.5	and measurement items	194 items	188 items
act	monitoring	load substances, and PRTR <sup>®</sup> measures					Other monitoring and measurement points	27,641 points	29,945 points
÷	Environmental	Global warming prevention, air and					2.0		
nmer ch	Environmental conservation	water quality improvement and effective	0.0	1.7	0.0	1.5	Research cases underway towards practical	0	0
Environment- related research	Environmental load control	use of waste Improvement in thermal efficiency and	0.0	0.0	0.0	0.0	application*7	9 cases	9 cases
	during transmission and distribution	transmission/distribution loss factor Greening, maintenance and management	1						
	Greening of sites	of power stations and other sites	8.5	11.9	3.3	13.4	Total green area	47.05 million m <sup>2</sup>	46.99 million m <sup>2</sup>
	Maintaining quality	Measures to create harmony with surroundings including buildings with					Scenic care Number of steel towers with	182 buildings	190 buildings
ties	townscapes and surroundings	scenic care and installing underground	62.9	86.2	63.5	82.2	environmental care	82 units	83 units
ctivi	surroundings	transmission and distribution lines					Length of underground distribution lines	3,073 km	3,149 km
ala	Environment	Environment Month and Kyushu	0.0	0.9	0.0	1.2	Number of participants at lectures	1,337 <sup>persons/yr</sup> (gross)	3,084 persons/yr (gross)
Social activities	Month ()	Homeland Forestation Program					Number of trees and saplings planted	164,101 yr	140,362 yr
00	Supporting local environmental activities	Support for local environmental activities and environmental organizations ID	0.0	0.2	0.0	0.6	Number of environment organizations supported*6	39 organizations	36 organizations
	Environmental	Environment Action Report,	0.0	0.5	0.0	0.3	Number of reports published	34,300 yr	33,800 yr
	information disclosure	brochures and website construction		0.0		0.0	Website access (environment-related)	266,229 hits/yr	306,300 hits/yr
Response to	Response to environmental impairment Pollution load levy   and measures against oil leakage		0.0	7.8	0.0	7.1	-	-	-
	То	tal	181.9	513.2	116.6	463.3	*1: Benchmark year for benefit calcul		
		Percentage in Japan's total investments	9%	4%	6%	4%	*2: SF <sub>6</sub> emission reduction is conve SF <sub>6</sub> (23,900). The amount o		
	Reference	and costs Total investments		069		001	dismantlement. *3: The emissions reduction for freor	is was converted into a relativo	value taking the ozone deplotion
		Total costs	12,		11,8		potential (ODP) per unit weight of	CFC-11 <sup>®</sup> as 1.	
Note: Costs	include depreciation exp	ense. Figures are rounded and may no			<u> </u>		*4: Reduction of wastewater load is of wastewater, measured based on	etermined by converting weight in the environmental standards in	of each pollutant contained in the nto the weight based on CODO

Note: Costs include depreciation expense. Figures are rounded and may not add up to the total. Revisions were made to some items of the environmental activity costs for FY2003.

[Referenc

ce]		FY2003		FY2004		*
	Main activities	Investment	Cost	Investment	Cost	*
	Allowance for used nuclear fuel reprocessing*8, etc.	0.0	270.4	0.0	266.3	] ^

\*4: Reduction of wastewater load is determined by converting weight of each pollutant contained in the wastewater, measured based on the environmental standards, into the weight based on CODO standards. 0.

\*5: High concentration PCBD treatment costs, incurred and accrued in FY2004, are not included.

\*6: Some items and standards under the environmental activity benefits have been revised.

\*7: The figure does not include allowance for spent fuel reprocessing. (See the reference table).

\*\*\* The light does not include answare to spin to the telefoldessing, coefficiency addeption and the second and the spin to the telefoldessing (see the telefolde addept).
\*8: With respect to reprocessing the used nuclear fuel which is stored at the end of a fiscal year, the costs required in the future to reprocess such used nuclear fuel are partially accrued at each year-end in accordance with applicable regulations.

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# 2 Economic Effects from Environmental Activities (FY2003 and FY2004)

In fiscal 2004, our environmental activities brought about real economic effects, savings and income, of 15.24 billion ven.

			(Unit: 100 r	million yen)
0.00		Main pathilian	Benefits	
Category		Main activities		FY2004
Global environmental conservation	Global warming prevention*	Fuel cost savings from improvement of thermal efficiency and the transmission/ distribution loss factor; introduction of energy-saving, low-emission/fuel-efficient vehicles		93.4
Resource Waste measures		Income from sales of unneeded supplies	1.7	2.4
recycling	Waste reduction	Final disposal cost savings from recycling	37.4	36.6
Savings in statutory charges		Pollution load levy savings from SOx emissions reduction		20.0
Total				152.4

\* Figures are rounded and may not add up to the total. Benchmark year for benefit calculation has been revised to FY1990.

# FY2004 Calculation Results

Environmental activity investments and costs for fiscal 2004 were 11.66 billion yen and 46.33 billion yen respectively. Compared to fiscal 2003, environmental activity investments decreased by 6.53 billion ven and the costs decreased by 4.99 billion ven.

# **Σ Investments**

Engineering costs were newly incurred for facilitating Genkai Nuclear Power Station to deal with low-level radioactive waste. Overall investment decreased considerably, however, compared to fiscal 2003 since no capital investments in flue gas and wastewater treatment facilities were recorded after completion of the Unit 2 of Reihoku Thermal Power Station in fiscal 2003.

## $\Sigma$ Costs

Power purchase costs increased due to the dissemination and promotion of the use of new energy sources. However, a substantial cost reduction was achieved compared to fiscal 2003. This is because of the decrease in fixed costs and depreciation expense from the dismantlement of the Units 1 and 2 of Shin Kokura Thermal Power Station and Minato Thermal Power Station.

# Σ Effects of environmental activity

Other points that showed an increase/decrease from fiscal 2003 are: freon emissions due to inspection of fire control facilities installed at power stations; the amount of SOx and NOx reductions owing to the increase in power generation at thermal power stations.

# Budgeting for Environmental Activity

In fiscal 2004, we started to draft a future plan for the company's environmental activity costs allocation, which forms a part of our environmental accounting system. The future plan aims to realize an optimal allocation of the company's managerial resources. The plan is formulated through calculation of an optimal balance between activity costs and efficiency based on the criteria for environmental activity cost investments. Managerial resources are then allocated according to the plan.

We make further efforts to develop our environmental accounting system, aiming to achieve the best possible environmental efficiency (1) and environmental load reduction rate per cost in the industry.

# Environmental activity cost component ratio (FY2004)



# Environmental activity cost record and future plan



TOPIC

Towards the further development of optimal environmental accounting system

We actively take part in research activities for further utilization of environmental accounting system. Since fiscal 2003, the company has been taking part in a working group on an environmental budget matrix study set up under the surveys and studies on environmental business development and promotion commissioned by the Ministry of Economy, Trade and Industry. Research on potential application of the method was carried out with the guidance of Professor Yoshihiro Ito of Kobe University Graduate School (present Professor of Waseda University Graduate School of Commerce). Further studies will be conducted to establish an environmental accounting method that best suits our character of business.

# Kamikawa Otaki Falls

Kamikawa Otaki Falls Kinko-cho, Kagoshima Prefecture The majestic Kamikawa Otaki falls, 35 meters wide and 25 meters high, are found in a natural park spanning both banks of the Kaminokawa River that flows east to west across the northern part of a town "Kinko-cho." In spring, blossoms of cherry, azalea and wisteria overlay one another, while, in summer, riversides of verdant foliage create a cool relaxing hideout for angling of sweetfishes, carps and rainbow trouts. In autumn, the Nanataki falls is tinted with autumn reds and presents dazzling beauty to please the eye.

# 2005 Environment Action Report



# Our Commitment to Environmental Activities



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# Part II

# **Our Commitment to Environmental Activities**

# 1 Measures for Global Environmental Issues

# **1** Reduction of Greenhouse Gases in Power Supply

The Kyoto Protocol Target Achievement Plan was adopted by cabinet decision on April 28, 2005. The plan is based on the Law Concerning the Promotion of the Measures to Cope with Global Warming and prescribes measures necessary to ensure the achievement of the targets for the reduction of greenhouse gas (GHG) in Japan.

The plan includes goals set under the Voluntary Action Plan on Environment in Electric Industry  $\oplus$  to be achieved by power companies, whose commitments form the basis for fulfilling the national obligations as a whole. Similar measures in the commercial, residential and transportation sectors are also required.

# Summary of the Kyoto Protocol Target Achievement Plan



# Additional measures incorporated in the Kyoto Protocol Target Achievement Plan (for power industry)

Item		Content
	Industry	Steady implementation of voluntary action plan
		<ul> <li>Introduction of integrated heat-electricity management system and increase in specified plants for energy conservation responsibility and management</li> </ul>
tors	Commercial and residential	Mandatory report of energy-saving measures to a competent administrator upon new or additional construction or remodeling of buildings or houses of a certain scale and up, or large-scale repairs
bysec	Transportation	<ul> <li>Mandatory preparation of energy-saving plan and report of energy consumption by consigners of a certain size and up</li> </ul>
Measuresbysectors		<ul> <li>Reduction in CO<sub>2</sub> emission intensity in electric power sector (20% reduction of end-use FY2010 CO<sub>2</sub> emission intensity<sup>①</sup> from FY1990)</li> </ul>
Mea	Energy supply	Further improving the capacity lator/O of nuclear power stations through scientific and rational operation management Further improving the thermal efficiency in thermal power stations Utilizing Kyoto Mechanisms
		<ul> <li>Promoting load leveling measures through diffusion of heat storage systems</li> <li>Actively offering information on energy conservation to consumers</li> </ul>
	em for calculating, reporting publishing GHG emissions	Mandatory reporting of emission amounts by businesses, facilities and institutions with GHG emissions of certain level or more to the national government; results to be calculated and published by the government

# Overall View of Kyushu Electric Power's Measures against Global Warming

We will contribute to the fulfillment of Japan's national commitments by controlling GHGs emitted in the course of business.

# $\Sigma\,\text{CO}_2$ emissions during power generation

- CO2  $\oplus$  emissions in fiscal 2004 were 26.6 million tons-CO2 or approximately 2% of that in Japan
- CO<sub>2</sub> emissions in 15 years since fiscal 1990 increased only by 6% while electricity sales increased by around 40%.



 Such results were achieved by promoting well-balanced power source development with nuclear power as a core source supplemented by LNG<sup>①</sup> thermal and the natural energy<sup>①</sup> of hydroelectric and geothermal power. Other contributors include the improvement of nuclear power capacity factors and the total thermal efficiency<sup>①</sup> of thermal power stations through the introduction of high-efficiency thermal power stations, which reduce CO<sub>2</sub> emissions per unit output.

The development of two nuclear plants (2.36 million kW) offered especially big benefits in achieving these results.

- CO<sub>2</sub> emissions increased from the previous year by 2.7 million tons-CO<sub>2</sub> or 11%. This was attributable mainly to higher electricity sales (+2.9 billion kWh) during hot weather, and to lower capacity factor 
   in nuclear power generation\*, which in the previous fiscal year reached a record high (from 88.9% to 86.2% or a 1.4 billion kWh decrease). This decrease was supplemented with thermal power generation, resulting in the higher CO<sub>2</sub> emission intensity of 0.022kg-CO<sub>2</sub>/kWh or a 7% increase.
  - \*: Due to the periodic inspection⊕ (once every 13 months) conducted on four out of six nuclear power facilities in fiscal 2004.

# End-use CO<sub>2</sub> emission intensity by hours (kg-CO<sub>2</sub>/kWh)

			• • •
	Daily average	Daytime average (8:00-22:00)	Nighttime average (22:00-8:00)
FY2003	0.309	0.333	0.267
FY2004	0.331	0.355	0.288



### Since implementation of the Kyoto Protocol

The Kyoto Protocol came into effect in February 2005. It is amazing to look back on the past 10 years from its conception with the Berlin Mandate in 1995, which triggered the planning and discussion of the Kyoto Protocol, and led to its adoption in 1997. Our Environmental Affairs Department is responsible for managing company wide measures for controlling and reducing GHGs. The department practices energy saving in its daily business, such as turning lights off during lunch breaks and turning computers off when leaving the desk for an extended time. With air conditioners set at a relatively high temperature in summer, staff members feel warm at times but go through summer wearing short-sleeved shirts and no ties. We hope to address environmental tasks while remembering the importance of every little effort for energy conservation.



Environmental Affairs Department Keizo Yamada



# $\Sigma$ Target for CO<sub>2</sub> emission reduction

The target for CO<sub>2</sub> emission reduction for fiscal 2005 was established in correspondence with the fiscal 2010 commitment set in the Kyoto Protocol. Various measures will be implemented to achieve this target.

Commitment: 20% reduction in FY2010 end-use CO<sub>2</sub> emission intensity from FY1990

# Items in FY2005 Environment Action Plan

	Items					
	Promotion of optimum combination of power sources <sup>®</sup> with nuclear power as a core promotion of nuclear power generation based on ensuring safety and recovering its reliability	25				
GHG	Improvement of thermal power facility efficiency	26				
reduction	Promotion of renewable energy (1)	26				
	Measures for utilizing the Kyoto Mechanisms	27				
	Measures for controlling GHG emissions other than CO2 from power generation	27				
Energy	Reduction of transmission and distribution losses	28				
conservation	Diffusion of energy-saving appliances, e.g. thermal storage systems					
measures	Energy conservation in daily business	29				

### Promotion of Optimal Combination of Power Sources Focusing on Nuclear Power

We are committed to CO<sub>2</sub> emission reduction through the optimal combination of power sources by promoting a balanced development of sources around our core source of nuclear power and through introduction of new energy sources, with comprehensive consideration of power supply stability, economic efficiency and environmental conservation.

Nuclear power accounts for 45% of total power generation and does not produce CO<sub>2</sub> during its power generation process, thus contributing to CO<sub>2</sub> emission reduction. Improving nuclear power capacity therefore leads to a reduction in the overall volume of CO<sub>2</sub> emissions from the power supply.

Since power demand grows slowly but constantly, we assume CO<sub>2</sub> emissions will increase in the future. To address this situation and secure a stable power supply, existing nuclear power stations must be utilized in the most efficient manner with the utmost priority on their safety while making continued efforts to develop next-phase nuclear power stations and plu-thermal utilization ().





\*1: Genkai Nuclear Unit 3 started operating in March 1994 \*2: Genkai Nuclear Unit 4 started operating in July 1997



Acquisition of environmental label "EcoLeaf"

Kyushu Electric Power Co., Inc. was granted certification of the environmental label "EcoLeaf" in July 2004. The EcoLeaf environmental label is designed to publish quantitative data certified by third-party organizations, calculated on the Life Cycle Assessment (LCA) in method of environmental load, such as CO<sub>2</sub> emissions, generated over product life cycle. We are the second power company to have been granted the certification in Japan.

We plan to disclose reliable data on environmental load while reducing such load. (EcoLeaf information may be found at the websites of Kyushu Electric Power Co., Inc. and the Japan Environmental Management Association for Industry. (http://www.jemai.or.jp/CACHE/ecoleaf\_news.cfm )

# CO<sub>2</sub> emission reduction effects of nuclear power generation (contribution rate of 67%)

CO



Note: Basic ideas for calculating the amount of CO<sub>2</sub> reduction: The amount was calculated on the assumption electricity generated from nuclear, hydroelectric, new energy and LNG was produced only with thermal power generation excluding LNG.

### Target ratio of power sources and FY2004 results

		Target power facility ratio	FY2004 results	Target power generation ratio	FY2004 results
	Nuclear	Approx. 30%	23%	45~50%	45%
(	newable energy geothermal, hydroelectric, id new energy (1)	Approx. 10%	9%	Approx. 10%	11%
Pumped storage (hydroelectric)		Approx. 10%	5%		
al	Coal	1/3	19%	Ratio	22%
Thermal	LNG	of the remaining	20%	changes based on	17%
È	Cil 50%		24%	fuel situations	5%

## Characteristics of power sources

Power source	Characteristics	Problems
Nuclear	<ul> <li>Superior in fuel supply stability and prices</li> <li>More efficient use of resources with nuclear fuel cycle⊕</li> <li>No CO₂ emissions during power generation</li> </ul>	level radioactive waste 1
Geothermal	Totally domestic energy     No CO <sub>2</sub> emissions during     power generation	<ul> <li>Development restrictions attributable to their rich natural surroundings</li> <li>Improvement in economical aspects</li> </ul>
Hydroelectric (including pumped storage)	Excellent load following capability     No CO <sub>2</sub> emissions during power     generation	Large environmental load incurred during dam construction     Limited developmental possibility
Wind and photovoltaic power	Renewable energy     No CO <sub>2</sub> emissions during power generation	<ul> <li>Low efficiency, high cost of power generation</li> <li>Output changes with weather conditions</li> </ul>
Coal-fired thermal	<ul> <li>Excellent fuel supply stability and economic efficiency due to large reserves</li> </ul>	<ul> <li>A volume of CO<sub>2</sub>, SOx⊕ and NOx⊕ emitted during power generation</li> <li>Large quantity of waste (ash from combustion)</li> </ul>
LNG-fired thermal	Available for wide supply range from peak to base load     Lower CO <sub>2</sub> emissions during power generation compared to other fossil fuels	Restriction in supply form (liquefied) and contract form (long-term)
Oil-fired thermal	<ul> <li>Easy transport and handling of fuel</li> </ul>	Limited reserves     Dependent on the Middle East for most of oil supply     A volume of CO2, SOx and NOx emitted during power generation

For detailed information on nuclear power, see pages 30-33.



Improvement of Thermal Power Generation Facility Efficiency Improved thermal efficiency  $\oplus$  of thermal power stations will lead to less fuel consumption, resulting in a reduction of CO<sub>2</sub> $\oplus$ , SO<sub>x</sub> $\oplus$  and NO<sub>x</sub> $\oplus$  emissions.

- In fiscal 2004, the total thermal efficiency of the company's thermal power stations maintained the highest level in our history. This is attributable to the operation of the new and advanced Reihoku Thermal Power Station Unit No.2 and the greater use of highly-efficient power stations employing the combined cycle<sup>①</sup> power generation method, such as Shin-Oita Power Station.
- If the total thermal efficiency of our thermal power stations improves by one point, CO<sub>2</sub> emissions can be reduced by 400 thousand tons annually.



### Promotion of Renewable Energy 1 Use

 $\Sigma$  Promotion of wind and photovoltaic power generation New energy ① sources such as wind and photovoltaic power provide clean and inexhaustible energy, although for sustained and regular use there are obstacles that remain to be cleared, such as their high weather dependency.

We have systematically installed wind and photovoltaic power facilities and conducted experimental studies while implementing research on solid oxide fuel cells ①. The company also purchases electricity from and offers monetary support to businesses and customers to promote new energy use.

In-house installation of wind and photovoltaic power generation facilities

• We have installed such facilities at our operational sites, with the total capacity reaching 3,575kW by the end of fiscal 2004.

Wind and photovoltaic power generation records

	Installed capacity ( kW )	Power generated (thousand kWh )	Capacity Factor (%)	
Wind power	3,250 11units	5,620	19.7	
Photovoltaic power	325 21locations	154	5.5	

 The largest wind power generation facilities -- output of 50,400kW: 2,400kW × 21 units -- in Japan will be developed in Nagashima-cho and Azuma-cho, Izumi-gun, Kagoshima Prefecture, and scheduled to start operations in fiscal 2008.

# $\Sigma$ Purchases of electricity from customers and businesses We purchase surplus electricity generated by new energy

sources such as wind from customers or businesses with consideration for their higher value to the environment.

Please refer to our website for surplus power D purchasing http://www.kyuden.co.jp/company\_liberal\_elec\_buy\_index





Record of contracts for surplus power purchases



Record of contracts for surplus power purchases (waste-fired power generation)



 $\Sigma$  Promotion of geothermal and hydroelectric power generation Geothermal and hydroelectric power generation are highly ecofriendly power generation methods that harness valuable energy sources available in Japan, and are CO<sub>2</sub> emission-free during the power generation process.

- Since utilization of such power sources is developed in rich natural environments, we pursue the effective use of such technology while paying close attention to the natural landscape and surrounding environment.
- Geothermal generation facilities located in Kyushu represents about 40% of national installed capacity, taking advantage of Kyushu's rich geothermal energy.
- In February 2005, the binary cycle power generation facility

   in Hatchobaru Power Station, with an output of 2,000kW,
   became the first geothermal power generation facility in Japan certified under the Renewable Portfolio Standard (RPS)



# $\Sigma$ Addressing the Renewable Portfolio Standard

Thanks to these measures, we have achieved 420 million kWh of electricity generated using new energy sources, or the standard amount of new energy utilization (minimum requirement) set under the Renewable Portfolio Standard.

Estimates of the standa	and amounts of new energy utilization
(minimum requirement)	Unit: 100 million kWb

•	•		• 🔛					
Fiscal Year	2003	2004	2005	2006	2007	2008	2009	2010
Japan	32.8	36.0	38.6	41.5	44.4	64.2	88.9	122.0
Kyushu Electric Power Co., Inc.	3.9	4.2	4.5	4.7	5.0	6.4	8.3	11.0

Note: Values for fiscal 2003 and 2004 are final values. Source: Data from Agency for Natural Resources and Energy

### $\Sigma$ Green Power System ()

We cooperate with the Kyushu Green Power Fund 1 in an effort to promote the use of natural energy . The Kyushu Green Power Fund was established in October 2000 to offer financial assistance towards the installation cost of wind or photovoltaic power generation facilities. The fund is managed by the Kyushu Industrial Advancement Center 1.

- · We donate an amount equal to customer contributions (one share: 500 yen/month) to the Kyushu Green Power Fund in addition to assisting in promoting the system and receiving applications.
- The Kyushu Green Power Fund has attracted 11,312 shares or 0.18% of electric light contracts as of the end of March 2005. This participation ratio\* is relatively high compared to other regions in Japan.
- \*: Participation ratio is calculated by dividing the number of shares by the number of electric light contracts.
- · Results from the four years through fiscal 2004 include 119 cases of subsidies with installed capacity of 198 thousand kW (wind: 19 cases, 196 thousand kW; photovoltaic: 100 cases, 2 thousand kW), and subsidies totaling 290 million yen.



Harukigaoka Wind Power Station (one of the subsidy recipients among wind power plants

# **Towards Kyoto Mechanism Utilization**

The Kyoto Mechanisms () are an international framework approved to fulfill the commitments under the Kyoto Protocol<sup>(1)</sup>, where countries jointly work to reduce GHG<sup>(1)</sup> emissions in a cost effective manner.

### **Outline of Kyoto Mechanisms**

Joint Implementation (JI)	Developed countries jointly implement projects to achieve more reductions or sequestration of GHG emissions, and share reduction targets.
Clean Development Mechanism (CDM)	Developed countries cooperate with developing countries in emission reduction projects to receive credits for GHG reductions.
Emissions Trading (ET)	Developed countries trade emissions limits.

We make investments in the World Bank's Prototype Carbon Fund (PCF) and Japan GHG Reduction Fund (JGRF) as part of Kyoto Mechanism utilization to attain GHG emission allowances, and gain knowledge regarding implementations of Kyoto Mechanisms.

### World Bank's Prototype Carbon Fund (PCF)

- The fund is managed by the World Bank to provide financing to GHG emission reduction projects and return GHG emission allowances to investors.
- Total fund scale: 180 million dollars (eight million dollars funded by Kyushu Electric Power Co., Inc.)
- · Investors: governments from six countries and 17 companies

### Japan GHG Reduction Fund (JGRF)

- The fund was established by the Development Bank of Japan and the Japan Bank for International Cooperation, in cooperation with Japanese companies, for the reduction of GHG emissions. It offers financing to GHG emission reduction projects and returns GHG emissions allowances to the investors
- Total fund scale: 141.5 million dollars (three million dollars funded by Kyushu Electric Power Co., Inc.)
- · Investors: Development Bank of Japan, Japan Bank for International Cooperation and 31 Japanese companies

# Controlling Greenhouse Gas Emissions other than CO<sub>2</sub> from Power Generation

CO.

Over 99% of GHG emissions are CO2 generated during power generation. Measures are provided to locate and reduce GHGs such as CO<sub>2</sub>, CH<sub>4</sub> (1) and N<sub>2</sub>O (1) emitted in the course of our business.

Trial calculation is performed based on the Guidelines for Greenhouse Gas Accounting and Reporting at Entity-level (tentative draft: version 1.5) released by the Ministry of the Environment, and discussion subjects (handling of intake gas correction) in the 1st meeting of a study team for GHG accounting and reporting at entity-level in fiscal 2004. Emissions from in-house energy consumption are calculated using the end-use CO2 emission intensity for each fiscal year.

CH4 and N2O emissions from thermal power stations = heat consumption [fuel used × fuel's calorific value] × emission factor for CH4 and N2O

CO2 emissions from in-house power consumption = in-house power consumption x end-use CO<sub>2</sub> emission intensity for the fiscal year

CO<sub>2</sub> emissions from in-house distribution = heat consumption [fuel used x fuel's calorific value] × CO2 emission factor

CH4 or N2O emissions from in-house distribution = travel distance × CH4 or N2O emission factor, respectively

SF6 emissions = emissions during inspection and dismantlement + natural leak amount HFC emissions = Leaked amount (or amount replenished to equipment)

### $\Sigma$ CH<sub>4</sub> and N<sub>2</sub>O during power generation

CH4 and N2O are emitted during the combustion of fuel at thermal power stations.

We work to minimize CH4 and N2O emissions by improving power generation efficiency.



 $\Sigma$  CO<sub>2</sub> emissions from in-house power consumption CO<sub>2</sub> emissions from power consumption at our head office. branch offices, customer service offices, power system maintenance offices and power station construction sites total 59 thousand tons.

A variety of energy conservation measures are taken to reduce power consumption at offices.

## $\Sigma$ Greenhouse gas emissions from in-house power consumption and distribution

Our company fleet consumed 3,600 kiloliters of fuel and emitted approximately 9,000 tons of CO2, 10 tons-CO2 of CH4 and 230 tons-CO2 of N2O.

To reduce fuel consumption, we have introduced clean energy vehicles () and fuel-efficient vehicles () and encouraged ecologically conscious driving manners.



### $\Sigma$ Sulfur hexafluoride (SF<sub>6</sub>) ①

We use SF<sub>6</sub>, one of the GHGs $\oplus$ , as an insulation material for some electrical equipment, and take precautions not to release SF<sub>6</sub> gas into the atmosphere when the equipment is overhauled or removed.

 SF6 is not only an excellent insulator, but is indispensable as there are no other effective insulating gases. Since the adoption of vacuum-type gas recovery equipment, the SF6 gas recovery rate during overhauls has improved from 40% in fiscal 1997 to over 98% in fiscal 2001 and after. As a result, 409 thousand tons of SF6 in CO2<sup>①</sup> equivalent were recovered in fiscal 2004.

The recovery rate during equipment dismantlement in fiscal 2004 was over 99% or 143 thousand tons in  $CO_2$  converted volume.

	SF6 gas reco	very record (FY2004)	Ų	Figures in parentheses show	w CO2 converted volume*1
ſ		SE <sub>6</sub> gas transaction	S	SE6 das recovery	Becovery rate*2

/	- · J · · · · · · · · · ·		
At equipment overhaul	17.40 tons (416 thousand tons)	17.12 tons (409 thousand tons)	98.4%
At equipment dismantlement	6.06 tons (145 thousand tons)	6.00 tons (143 thousand tons)	99.1%

\*1: Figures are obtained by converting the weight of SFe gas to the weight of CO<sub>2</sub> by applying the global warming potential
 (23,900) for SFe
 \*2: Recovery rate might not add up since gas amounts are rounded off.

### $\Sigma$ Hydrofluorocarbon (HFC) ①

HFC used as a coolant (1) in air conditioners is mostly recovered during inspection and removal, with very little released to the atmosphere.



### ∑Perfluorocarbon (PFC)①

PFC is utilized in some transformers as a coolant or as an insulation medium. Kyushu Electric Power Co., Inc. does not use PFC.

# CO<sub>2</sub> Sequestration by Forests

We own 4,448 hectares of company forests that are managed and maintained to protect water resources and 251 hectares of greenery area around power stations to create harmony with the surrounding environment. These forests together absorbed 26 thousand tons of CO<sub>2</sub> in fiscal 2004, 13 thousand tons of CO<sub>2</sub> after subtracting 13 thousand tons released from the forests (by logging and shipping of Japanese cedar and cypress for timber from artificial forests).



CO2 sequestered by company forests = planted forest area  $\times$  carbon conversion factor of the planted forest + natural forest area  $\times$  carbon conversion factor of the natural forest

(Carbon conversion factor is calculated using weighted average growth by species and age of trees in Japan.) CO2 released from company forests = looged amount x dry weight per volume x carbon content

CO2 sequestered by plant greenery area = greenery area based on Factory Location Law × carbon conversion factor of the natural forest CO2 released from plant greenery area = decreased greenery area based on Factory Location Law × carbon stored in 30-year old natural forests

# 2 Measures for Energy Conservation

Industry and energy conversion sectors account for the largest portion of national energy consumption. Therefore, we take aggressive measures for the improvement of energy efficiency and reduction of energy use.

## Reduction of Transmission and Distribution Losses

We strive to reduce the energy lost between power stations and customer premises, called transmission and distribution losses ①.

 The transmission and distribution loss factor for fiscal 2004 was 5.5%, a 0.1-point increase from fiscal 2003, maintained relatively low when compared internationally.





# Encouraging the Use of Energy-saving Equipment such as Heat Storage Systems

We work to promote the use of energy-saving equipment such as heat storage systems  $\oplus$  and heat-pump water heaters  $\oplus$ . Increased use of such equipment, which utilizes nighttime electricity with lower CO<sub>2</sub> emissions, contributes to a reduction in CO<sub>2</sub> emissions. It also helps to minimize the difference in power demand between daytime and nighttime hours (load leveling), resulting in improved thermal efficiency  $\oplus$  of power stations as well as a reduction in distribution and transmission losses. We also offer suggestions to our customers to promote energy conservation, including consultations on the efficient use of energy.







## $\Sigma$ Heat storage systems

In heat storage systems, the cold and thermal energy necessary for air conditioning in buildings and factories is stored in a heat storage tank in the form of ice or warm water by using more economical nighttime electricity, and then used during the daytime. The number of contracts for such heat storage systems as of the end of fiscal 2004 was 2,462 with a load installed capacity of 350 thousand kW.

### $\Sigma$ Heat-pump water heater

"Eco Cute" 1 is a high efficiency heat-pump type electric water heater that realizes better energy conservation and co-existence with nature. Eco Cute requires approximately 25% less energy than conventional combustion-type water heaters (calculated on a primary energy-base\*), offers economic benefits by utilizing less expensive nighttime electricity, and utilizes CO2 as a coolant, which is found in natural environment.

Energy-saving effect was calculated by converting electric energy to calorific value. For the conversion, we used the figure (9.31MJ/kWh) set by the Criteria for Clients on the Rationalization of Energy Use for Buildings (Notification No.1 of the Ministry of Economy, Trade and Industry and the Ministry of Land, Infrastructure and Transport, 2003).

Trial calculation of CO<sub>2</sub> reduction effect achieved by Eco Cute sales 4



- Note 1 Trial calculation of CO2 reduction effect: [hot water supply with Eco Cute (using the company's e ectricity)] - [hot wate onal combustion-type water heater (using municipal gas 13A) supply with conve
- Note 2 The calculated CO2 reduction effect was obtained by converting the amount of gas equivalent to the electricity cons by Eco Cute to calorific value (after loss correction). The result may vary depending on the area, equipment efficiency and conditions for use (electricity consumed by Eco Cute: 128kWh, gas used by conv
- Note 3 The CO2 emission intensity used for electricity was referred to the company's actual records (for one day) for each respective year, while that for gas was calculated based on the Guidelines for Gre Gas Accounting and Reporting at Entity-level (tentative draft: version 1.5).



Conventional combustion-type water heater Eco Cute

### **Conserving Energy in Daily Business Operations**

We work to engage in eco-friendly actions to reduce environmental load in our daily operations.

## $\Sigma$ Reducing power consumption in offices

Each employee aims for energy conservation in offices through EMS ().

- · We have set and are working to achieve energy-saving targets for each fiscal year through fiscal 2009 (aiming an annual reduction of 1%).
- Office energy consumption in fiscal 2004 was 105 million kWh (106 million kWh in fiscal 2003).

### $\Sigma$ Introduction of low-emission vehicles ()

We have been introducing clean-energy vehicles () and fuel-efficient vehicles 1.

- · We plan to increase the ratio of clean-energy and fuel-efficient vehicles to the total company fleet to 25% or more by fiscal 2005 and 75% or more by fiscal 2010.
- We also aim to achieve an introduction rate of 5% for clean-energy vehicles in the company fleet by fiscal 2010.
- · By fiscal 2004, 701 fuel-efficient vehicles were introduced, achieving an introduction rate of 19.3%; and 83 clean-energy vehicles (electric cars (1) and hybrid cars (1)) were introduced, for a rate of 2.3%. The combined introduction rate was 21.6%.



Note 1 The combined introduction rate is the percentage of the total number of vehicles (general-purpose and special-purpose vehicles combined) including 1,000 or so special-purpose vehicles

Note 2 The vehicle numbers for the future are planned figures as of fiscal 2004.

# 3 Ozone Layer Protection

Freons i used in air conditioners and refrigeration and freezer equipment deplete the ozone layer (1) and cause serious impact on global warming i) when released into atmosphere. We take every action to eliminate freon emissions.

- Emissions of specific freons () and carbon tetrachloride () have been zero since fiscal 2000, except for a minute amount of natural leakage. These achievements were made possible by thorough recovery of regulated freons () upon equipment inspections and removals.
- · We also install regulated freon-free equipment when replacing or installing new equipment.



Note 1 Specific freons refer to specific freons and carbon tetrachloride

- Volume released" is the amount actually used to replenish equipment
- Note 3 With regard to numerical values, "0" on the graph means no emis "0.0" means less than 0.05 tons contained or released
- Note 4 Natural leakage was calculated in the year when it was detected during inspections or when switching to alternative freons.

# No s

Worry-free, comfortable Eco Cute

In June 2004, a dream home of our own was finally completed. Since the early planning stage, my husband and I had decided on a totally electrified home. As we discussed the details, we figured that we might as well have various convenient functions and agreed on Eco Cute for its multifunctional features such as hot water supply, automatic bath water filling, floor heating, and drying and heating of the bathroom. One of the selling points for the electric water heater was that the slow heating of water with nighttime electricity reduces chlorine and makes water softer and gentler to the skin. I was skeptical at first, but the water ceased to have a tingling feel and my daughter's skin changed from being rough and reddish to nice and smooth. The bath fills surprisingly fast. The floor heating has helped me through winter without the use of a Kotatsu or heating table, despite my tendency to have a poor circulation during winter

I will suggest Eco Cute with confidence to anybody for its convenience, eco-friendliness, and energy-saving and economic benefits.



Marketing Group, Goto Customer Service Office, Nagasaki Branch Tsuyomi Okeguchi

# Nuclear Power-Related Information - Part 1 of 2 -

In this section, information regarding current topics on the operation of nuclear power stations such as our plu-thermal utilization (1) and radioactive waste (1) disposal is summarized.

## Summary of Research on Pipe Thinning Conditions

After the piping rupture accident in Mihama Nuclear Power Station Unit 3 of Kansai Electric Power Co., Inc. in August 2004, we checked secondary piping in our nuclear power stations to see whether pipe thickness control had been conducted. The results revealed that there was no leakage in the locations inspected, thus we concluded pipe thickness control is managed properly.



## **Outline of Plu-thermal Project**

### $\Sigma$ Plan for plu-thermal project

Uranium ① fuel used at nuclear power stations contains new fuel called plutonium ①. The plu-thermal project is a plan to call for recovery, recycling and utilization of plutonium in nuclear power stations.

### $\Sigma$ Necessity of plu-thermal project

When the scarcity of Japan's resources is considered, the establishment of a nuclear fuel cycle ① is essential to secure stable energy over a long period of time. Thus, it is important to implement the plu-thermal project, where plutonium recovered by reprocessing ① spent fuel can be used in the existing nuclear power stations.

Note: The term "plu-thermal" is a combination of the terms "plutonium" and "thermal reactor". Kyushu Electric Power Co., Inc. already possesses 3.2 tons of plutonium as of the end of March 2005, which was recovered and reprocessed from spent fuel incurred at nuclear power stations. In the view of nuclear non-proliferation which proclaims that excess plutonium should not be retained for no intended use, we are required to use them steadily in a peaceful manner, that is, in the form of plu-thermal utilization.



### $\Sigma$ Benefits of plu-thermal utilization

Uranium fuel used in nuclear power stations (spent fuel) still contains uranium and plutonium that are usable as fuel, amounts of which are around 94% and 1% respectively. Thus, approximately 95% of spent fuel is recyclable.

About 25% of the spent fuel is regenerated into new fuel (eight fuel assemblies of spent fuel yield one uranium fuel and one MOX fuel ① assembly) and the remaining 70% or so is stored as resources for future use, which will be converted to plutonium in fast breeder reactors (FBR) ①. (An example of trial calculations).

Were spent fuel not recycled (in the case of once-through cycle), all the spent fuel must be processed as high-level radioactive waste ①. Recycling enables us to reuse approximately 95% of spent fuel, and therefore, it will greatly contribute to limiting discharge of high-level radioactive waste.

## Recycling with plu-thermal utilization and reduction of high-level radioactive waste (an example of trial calculations)



### $\Sigma$ Uranium fuel and MOX fuel

Two types of fuel are used in the plu-thermal utilization, uranium fuel and MOX fuel. MOX stands for <u>Mixed Oxide</u> Fuel, and is a fuel consisting of a mixture of plutonium, recovered from spent uranium fuel, and non-fissionable uranium. MOX fuel is sealed into fuel-cladding after densification like pottery is fired, and then fabricated into a fuel assembly for use. Uranium fuel and MOX fuel have exactly same shape and size.



# $\Sigma$ Safety

In current nuclear power generation using only uranium fuel, some uranium transforms into plutonium in the nuclear reactor, which is utilized as fuel in power generation. The ratio of power generation attributable to this transformed plutonium accounts for about 30%. In the case of the plu-thermal utilization, the ratio goes up to about 50%, since the fuel already contains plutonium from the beginning.



According to the Nuclear Safety Commission of Japan, MOX fuel has characteristics similar to those of uranium fuel under the condition that the ratio of MOX fuel used in the nuclear reactor is one third or less, thus the current safety design and evaluation method can be applied.

In the plu-thermal utilization planned by Kyushu Electric Power Co., Inc., the ratio of MOX fuel containing plutonium will be around 25%. Our plu-thermal project can be implemented safely by properly understanding and addressing the characteristics of plu-thermal utilization. For example, plutonium has a tendency to absorb more neutrons ① than uranium, slightly lowering the effect of the control rod that adjusts and suspends the nuclear reactor's output. However, it will cause no impact since the function of the control rod will be secured through proper fuel placement and other methods.

# $\boldsymbol{\Sigma}$ Status of plu-thermal utilization worldwide

CO

Nuclear power plants (55 units) around the world, especially in Europe, have over 40 years of experience in loading about 4,400 MOX fuel assemblies cumulatively.

Currently, MOX fuel is used in France, Germany, Belgium and Switzerland without problems, and the ratio of MOX fuel against the total fuel loaded in these countries is about one third at maximum. There has been no reported case of fuel damage or power plant troubles attributable to characteristics particular to MOX fuel.

### MOX fuel used in light-water reactors in various countries



Source: Nuclear Power 2004 by the Agency for Natural Resources and Energy

In Japan, MOX fuel was introduced in Mihama and Tsuruga Nuclear Power Stations on a trial basis, where its safety was confirmed.

### $\Sigma$ Plu-thermal project by Kyushu Electric Power Co., Inc.

Considering above mentioned aspects, we submitted a prior consent request based on the safety agreement to Saga Prefecture and Genkai Town in May 2004, to implement a plu-thermal project in Genkai Nuclear Power Station Unit 3 targeted by fiscal 2010. We also submitted an application for nuclear reactor installation and alteration approval to the Japanese government as set forth in the Nuclear Reactor Regulation Law.

The subject plant was selected for its capacity that loads more fuel and its large work area for handling fuel.

We are committed to every effort to gain people's understanding towards the plu-thermal project by making safety our first priority.



### Open Discussion on Plu-thermal Project Kyushu Electric Power Co., Inc. holds explanatory meetings and lectures and places newspaper

advertisements to promote understanding of local residents for the plu-thermal utilization. In fiscal 2004, an open discussion was held on the plu-thermal project to gain further understanding. Such efforts in offering information disclosures and easy explanations shall be continued in the future to gain trust from and create a sense of security among the local people. [A case of open discussion]

Date: February 20, 2005 (Sunday), Place: Cultural Hall of the Genkai Town Center Number of attendees: 574



# Nuclear Power-Related Information - Part 2 of 2 -



Environmental Radiation (i) Monitoring around Nuclear Power Stations

At nuclear power stations, the ambient radiation (1) dose and the level of radioactivity in the environmental samples of seawater and agricultural and marine products are measured in addition to regular environmental monitoring. Similar measurements are also performed in prefectures where nuclear power stations are located. *For regular environmental monitoring, see page 40.* 

- We have been reporting the results of measurement to relevant prefectures. The prefectures in turn review and evaluate the reports under guidance and with advice of academic experts, and publicize the findings periodically in their public relations magazines.
- The radiation dose on people living near power stations is less than 0.001 milisievert (mSv) ① per year, which is much lower than the statutory dose limit of the 1mSv per year and the annual 0.05mSv target set by the Nuclear Safety Commission.

### Management and Disposal of Radioactive Waste

Radioactive waste includes low-level radioactive waste incurred at nuclear power stations and high-level radioactive waste incurred in the process of spent fuel reprocessing, each requiring different management and disposal methods.

### $\Sigma$ Low-level radioactive waste management

- Gas waste is treated to attenuate its level of radioactivity, measured for radioactivity to confirm its safety, and then released into the air.
- Liquid waste is separated into concentrated wastewater and distilled water in processing equipment. Distilled water is discharged to the sea after being measured for radioactivity and confirmed its safety.
- Treated concentrated wastewater is solidified with asphalt and sealed inside drums.



 Solid waste is first bulk-reduced by incineration and/or compression, and sealed inside drums.

These drums are first stored stringently in the solid waste storage located within power station sites. They are then transferred to the Low-level Radioactive Waste Disposal Center ① of Japan Nuclear Fuel Limited ① (located in Rokkasho-mura, Aomori Prefecture) where they are buried and stored until the waste ceases to have any effect on the human living environment.

Accun	nulate	d amo	unt of

radioactive solid waste stored 🖉 (each equivalent to a 200-liter drum							
Waste stored in power station sites Waste transferred							
Genkai Nuclear Power Station	23,495 (20,480)	6,536 (6,536)					
Sendai Nuclear Power Station							
Total 35,235 (31,653) 6,536 (6,536)							
Nata Cause an according a							

Unit:contain

Linit: Becauerel (Ba.)

the end of fiscal 2003)
\* Waste transferred to the Low-level Radioactive Waste Disposal Center

# Status of radioactive gaseous or liquid waste discharged 🖉

			Targeted discharge management	FY1999	FY2000	FY2001	FY2002	FY2003	FY2004
R	Rare	Genkai NPS*	2.2 × 10 <sup>15</sup>	2.9 × 10 <sup>10</sup>	1.1 × 10 <sup>10</sup>	8.8 × 10 <sup>°</sup>	1.2 × 10 <sup>10</sup>	9.9 × 10 <sup>°</sup>	1.6 × 10 <sup>10</sup>
Gaseous	gases (j)	Sendai NPS*	1.6 × 10 <sup>15</sup>	6.7 × 10 <sup>10</sup>	3.1 × 10 <sup>10</sup>	1.5 × 10 <sup>10</sup>	1.6 × 10 <sup>10</sup>	3.1 × 10 <sup>10</sup>	$4.4 \times 10^{10}$
waste	lodine 🛈	Genkai NPS*	5.9 × 10 <sup>10</sup>	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
		Sendai NPS*	6.2 × 10 <sup>10</sup>	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Liquid waste (excluding tritium)		Genkai NPS*	1.4 × 10 <sup>11</sup>	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
		Sendai NPS*	7.4 × 10 <sup>10</sup>	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Note 1: The unit Reconversel indicates the level of radioactivity. Note 2: N.D. indicates concentration levels less than the detection limit									

Note 1: The unit Becquerel indicates the level of radioactivity. Note 2: N.D. indicates concentration levels less than the detection limit.





## $\Sigma$ Disposal of high-level radioactive waste

In Japan, fuel used in nuclear power stations (spent fuel) is put to reuse as nuclear fuel through reprocessing.

The high-level radioactive liquid waste generated in the process of spent fuel reprocessing is mixed with glass matrix and encapsulated and solidified in stainless steel containers called canisters. This product is called high-level radioactive waste.

Guidelines set by the Japanese government require that high-level radioactive waste be stored in High-level Waste Storage Management Center in Rokkasho-mura, Aomori Prefecture for cooling storage for 30 to 50 years, and then finally disposed of in a stable geological formation at more than 300 meters below ground.

**/CO** 

In October 2000, the Nuclear Waste Management Organization of Japan (NUMO) ① was established for the purpose of implementing final disposal of high-level radioactive waste in accordance with the Specified Radioactive Waste Final Disposal Act (promulgated in June 2000.)

Final disposal is intended to start sometime in the late 2030s. Applications for preliminary survey sites have been opened since December 2002 to all the local municipalities across Japan for selection of a final disposal.



## **Miscellaneous Items**

### $\Sigma$ Effective utilization of nuclear power stations

Kyushu Electric Power Co., Inc. implements measures to increase the capacity factor of nuclear power generation which is highly effective in reducing  $CO_2$  (1) emissions.

Constant cycling at rated thermal output (i)

To constantly operate reactors at rated thermal output (100%), which was certified by the government, allowed a 1.5-point increase in nuclear power capacity factor in fiscal 2004, which is equivalent to a reduction of 550 thousand tons-CO<sub>2</sub>.

## ΣReducing the use of fuel assemblies

The use of high burn-up fuel ① (55,000 MWd/t), which has a higher concentration level of uranium ① 235, was started in the Unit 1 and 2 of Genkai Nuclear Power Station and contributed to extending the duration of fuel use, and as a result, reducing the amount of spent fuel produced.

# Status of spent fuel storage as of the end of FY2004 🖉 Unit: pieces

	Accumulated	Accumulated	Amount stored		
	generation emission		Amount stored as of the end of FY2004	Storage capacity	
Genkai NPS	2,631	1,105	1,526	3,278	
Sendai NPS	1,844	374	1,470	2,374	
Total	4,475	1,479	2,996	5,652	



# 2 Establishing a Recycling Society - A Challenge towards "Zero Emission"

Toward the development of a recycling society 1, we endeavor to achieve zero emission 1, that is, to minimize the amount of final disposal waste as close to zero.

- We practice the 3Rs ① (Reduce, Reuse and Recycle) for industrial waste ① and general waste ①.
- Our group companies also take measures to promote waste recycling of such items as used paper ①, confidential documents ① and used fluorescent tubes, while employing green procurement ①.

# Industrial Waste

Industrial waste generated during the course of our business operation includes coal ash ①, gypsum ① from desulfurization facilities ①, sludge ① from wastewater treatment, scrap metal and discarded concrete poles.

# "Reduce" Measures

At thermal and nuclear power stations, intervals between equipment inspections are extended to reduce the number of parts (seals, bearings and gaskets) to be replaced with the proviso that safety and soundness of equipment are first secured. Intervals for changing lubricating oil in equipment are also extended to reduce waste oil.

# "Reuse" Measures

For electricity-related materials and equipment removed during power distribution works or other engineering works, we reasonably determine whether they are reusable based on our criteria to see if they have sufficient capability and quality for reuse. We put those materials to reuse either as they are or after repair.

### Status of reused equipment and material for power distribution such as poles, wires and transformers for FY2004

	Number of object material and equipment	Number of reused material and equipment	Reuse ratio
Pole transformers (units)	32,211	32,211	100%
Pole-mounted gas switches (units)	2,036	1,843	90.5%
Low-voltage (LV) watt-hour meters (units)	1,004,035	989,158	98.5%
Concrete poles (pieces)	18,173	18,173	100%
High-voltage (HV) wires (km)	2,041	2,041	100%
LV wires (km)	3,673	3,673	100%

### "Recycle" Measures

The overall industrial waste generated in fiscal 2004 was approximately 640,000 tons, maintaining the same level since fiscal 2000. We recycled approximately 590,000 tons of waste in fiscal 2004, which was equivalent to approximately 1% of the total amount of final disposal waste in Japan.

VOICE No.

Further improvement of industrial waste recycling rate

Currently, Kyushu Electric Power Co., Inc. promotes the "3Rs" company wide, setting a goal of "A Challenge Towards Zero-Emission."

However, due to lack of recycling facilities available in the vicinity, some of our operational sites have no choice but to discard what otherwise could be recycled.

In this context, and to further improve the recycling rate and move towards our new goal of reducing waste disposed at landfills outside the company, we are currently examining proposals for an aggregated arrangement in which industrial waste generated company-wide on a constant basis will be collected and recycled by area.

We will continue to make the examination, and promote further promote the reduction and recycling of waste.

(Per the 2004 White Paper of the Recycling Society, the volume of annual final disposal waste in Japan totaled approximately 53 million tons.)



### Status of industrial waste generation by category (FY2004)

		Amount produced (tons)	Amount recycled (tons)	Recycling rate (%)	Main use after recycling
Co	oal ash	522,251	471,782	90%	Cement material (1), soil conditioner
	Heavy and crude oil ash ()	334	332	Approx. 100%	Vanadium recovery
	Gypsum	89,934	89,934	100%	Cement material
te	Sludge	4,370	3,304	76%	Cement material
waste	Waste oil	2,520	2,455	97%	Heat recovery, recycled as fuel oil
rial	Waste plastic	356	232	65%	Combustion improver
lst	Scrap metal	11,098	10,690	96%	Metal materials
Other industrial	Discarded concrete poles	11,616	11,610	Approx. 100%	Concrete products, roadbed material
Othe	Waste glass and ceramics	481	94	20%	Material for glass products (e.g. fluorescent tubes)
	Specially Controlled Industrial Waste (1)	7	4	62%	Cement material
	Other	143	42	29%	Combustion improver
	Subtotal	120,859	118,697	98%	
Inc	lustrial waste total	643,110	590,479	92%	

# $\Sigma$ Coal ash

We effectively utilize coal ash generated at coal-fired thermal power stations by taking advantage of its properties.

 The paving block "Cool Tone" made from recycled clinker ash ①, a type of coal ash, is used for sidewalks in certain company's service areas in Kyushu.





Environmental Affairs Department Kakuei Hirukawa


### $\Sigma$ Other industrial waste

 Coating of wires no longer needed is recycled into plastic wire drums.



 We developed recycled aluminum wires using waste aluminum wires from our electric works, which have been employed since fiscal 2005.



 Industrial waste is generated from electric works that are under direct management of customer service offices, etc. Certain types of waste are generated constantly and across the board. Currently, a system is under consideration to collect such industrial waste items by area and deliver them to a recycling company for recycling.



 Applying these measures, we will control the annual targeted amount of landfill waste disposed outside the company to be 1,000 tons or less.



**Special Efforts in Operational Sites under Saga Branch Office** Operational sites under Saga Branch Office are promoting unique undertaking to achieve a high recycling rate. For example, they manually disassemble the industrial waste from electrical works under their direct management, and achieve highly effective waste separation.

<u>,CO</u>



### 2 General Waste

The general waste resulting from our operation includes used paper, empty bottles and cans, plastic bottles and kitchen garbage from cafeterias, along with shells from power stations and driftwood from dams. They are recycled and used in paper or fertilizer.

### "Reduce" Measures

The amount of used paper is minimized through doublesided photocopying, avoidance of miscopying and utilization of digital documents. Further, "erasable toners" have been introduced in the Environmental Affairs Department on a trial basis to evaluate their operational and economical aspects and effect for environmental load  $\textcircled$  reduction.



#### "Reuse" Measures

We utilize the blank side of used paper as well as used stationery including document files.

# CE 5 A Challenge towards Zero-emission

I work in the Saga Branch Office building (Saga Branch Office, Saga Customer Service Office and Saga Power System Maintenance Office), where industrial waste from business activities is sorted by type. However, waste was not always put in the designated containers nor sorted properly. To enhance awareness towards recycling, staff members started sorting waste by themselves once a month. Through the process of sorting, we realize that we do not simply dispose waste, but we can recycle them again into resources such as plastic or metal. As a company that introduced the environmental management system (1), each employee must work together to recycle waste, minimize final disposal waste, and challenge towards zero-emission that is to minimize the amount of final disposal waste as close to zero.



General Affairs Group, General Affairs Department, Saga Branch Office Toshiyuki Ishii



### Measures for "Recycling"

### $\Sigma$ Used paper

In April 2002, we began to make company-wide efforts to achieve a used paper ① recycling rate ① of 100% upon checking and securing recycling routes.

· A total of 2,083 tons of used paper generated and collected from operational sites was fully recycled during fiscal 2004.

### Collection of used paper (FY2004)

	Amount collected (tons)	Main use after recycling
Newspapers*1	251	Paper for copying and catalogs, newspapers
Magazines	75	Base for cardboard, paper string
Cardboard	73	Base for cardboard
Confidential documents (i)	626	Paper for copying and catalogs, toilet paper, base for cardboard
Others*2	1,058	Paper for copying and catalogs, toilet paper, base for cardboard, paper string
Total	2,083	

\*1: The amounts reported from some offices include the volume of magazines and

\*2: Others include used photocopy paper and envelopes.

· A portion of collected used paper is recycled by Kyushu Environmental Management Corporation to produce photocopy paper, paper string and toilet rolls with the corporate logo of Kyushu Electric Power Co., Inc.



Products made from collected used paper

### $\Sigma$ Other general waste

Recycling of general waste () other than used paper is actively encouraged.

- Bottles, cans and plastic bottles are collected separately.
- · Driftwood from dams and shells such as barnacles collected during periodic inspections (1) of power stations are crushed and efficiently utilized as fertilizer.

Recycling of shells and driftwood from dams 🧖							
	Amount generated (tons)	Amount recycled (tons)	Recycling rate	Main use after recycling			
Shells	1,124	690	61%	Material for compost			
Driftwoods	9,811	8,517	87%	Substitute goods for straws, gardening compost			

#### . . .. . . . .



TOPIC







· All used work clothes of our employees are recycled in principle. In fiscal 2004, 30,729 pieces of expendable clothing (work clothes: 16,313; antistatic clothing: 1,816; and female office wear: 12,600) were recycled and made into felt material for auto use and work gloves.

Eco work gloves that are commercially offered as Kyushu Electric Power's original goods are used at our operational sites.

### Flow of used work cloth recycling





No. In fiscal 2004, Sendai Nuclear Power Stations won the Chairman's Prize hosted by the Reduce, Reuse and Recycle ① Promotion Conference as part of their official commendation program for Reduce, Reuse and Recycle Promotion Contributors. This commendation program is intended to acknowledge the efforts of individuals, groups and schools for "reduce, reuse and recycle" that produced significant outcomes through continuous effort to promote a recycling society (). We were honored three consecutive years following the award granted to Omarugawa Hydro Power Station Construction Office in fiscal 2002 and 2003.

## Challenges in Recycling Activities

Kyushu Electric Power Co., Inc. operates waste recycling business with the cooperation of its group companies. For details of recycling business of our group companies, see page 62.

### **Fluorescent Tube Recycling Business**

Japan Recycling Light Technology & System

- Currently most used fluorescent tubes are incinerated or disposed of in landfills. However, fluorescent tubes contain a very small amount of hazardous mercury and require proper collection, processing and recycling. Japan Recycling Light Technology & System collects used fluorescent tubes from companies, schools, local governments and households, and recycles them into recycling resources including glass, metals, phosphor and mercury in an effort to reduce waste and environmental load ①.
- In fiscal 2004, the Company treated 6.33 million fluorescent tubes, contributing to reducing emissions of approximately 230 tons-CO<sub>2</sub> compared to disposal at landfills, and other environmental loads such as mercury.
- · The company also manufactures (by outsourcing) and

### Confidential Document Recycling Business

Kyushu Environmental Management Corporation

- Kyushu Environmental Management Corporation collects confidential documents that are usually shredded and burned, and transports, shreds, compresses and recycles them into material for green products ① at the rate of 100% under strict security control.
- The company sells recycled paper products such as private-label photocopy paper and toilet paper, and offers document storage services.

## Promotion of Green Procurement

The green procurement ① system was introduced in fiscal 2002 as a measure towards the establishment of a recycling society. Under the system, the company promotes green procurement by placing a greater priority on purchasing eco-friendly goods and encouraging the cooperation of suppliers.

- The company employs comprehensive criteria for procurement. Environmental assessment is additionally included when purchasing goods, besides conventional economic considerations (such as quality, price and delivery time).
- When purchasing commodities such as office supplies, the company selects eco-friendly products ① that meet the respective purchase standards of Kyushu Electric Power Co., Inc. The rate of green procurement ① in fiscal 2004 reached 94% thanks to awareness enhancement through distribution of the Green Catalog, which contains information on eco-friendly products.
- For electricity-related materials and equipment, we established criteria for assessing the level of environmental load reduction by product category, and

sells fluorescent tubes made from recycled material ① with around 70,000 such fluorescent tubes manufactured and sold in fiscal 2004.

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In fiscal 2004, they recycled approximately 3,227 tons of confidential documents, and sold green products including photocopy paper (approximately 62,000 boxes) and toilet paper (approximately. 9,600 boxes).







designated qualified products as Green Products, and actively promote their procurement. In fiscal 2004, we added three items, optical transmission equipment, microwave radio equipment and eco work gloves, increasing the designated items to five.

• We enhanced cooperation with oursuppliers through environment related-seminars in fiscal 2004, and registered additional 121 Green Suppliers that proactively tackle environmental issues, increasing the registered total to 155. The lists of Green Products and Green Suppliers are released on website of Kyushu Electric Power Co., Inc.

( http://www.kyuden.co.jp/company\_procurement\_provide\_green\_index )

# 3 Maintaining Harmony with the Local Environment

We take active measures conserving and coexisting with the local environment, such as conducting environmental impact assessments ① prior to the construction of our power stations, and practicing environmental conservation and management during our facility operation.

## Environmental Impact Assessment

Three types of environmental surveys are conducted on the premises of Sendai Nuclear Power Station towards the development of new nuclear power facilities. The surveys include an environmental impact assessment ①, geological survey<sup>\*1</sup> to examine the geologic structure and faults inside and outside the premises, and meteorological survey<sup>\*2</sup> to examine wind direction and speed above the premises.

#### Status of environmental surveys

Oct. 2003	Geological survey inside the power station premises started
Apr. 2004	Meteorological survey started
May 2004	(Terrestrial) Geological survey outside the power station premises started
Feb. 2005	Preparation of environmental assessment scoping document started
May 2005	(Marine) Geological survey outside the power station premises started

### Specifications for the surveys

Location	Gumizaki-cho, Satsuma-sendai City, Kagoshima (inside the premises of Sendai Nuclear Power Station)
No. of units	One unit
Output	1.5 million kW-class
Nuclear reactor type	Advanced pressurized water reactor



\*2 Meteorological survey



Performed to confirm the rock mass has enough seismic stability as a foundation for a nuclear reactor building.

dose and spread changes in and around the power station in the case of accidents, as well as the method to ensure safety against radiation.

### Status of Environmental Impact Assessment

In February 2005, we started examining assessment items, and methods of implementation, forecast and survey for the environmental impact assessment (EIA) based on the outline of the power station construction plan and conditions around the planned site required for EIA implementation. These contents are being compiled within the scoping document.

 The scoping document is submitted to the national and local governments according to the Environmental Impact Assessment Law ① and Electric Utilities Industry Law, offered to local communities for inspection, and subjected to review by the national government after input from community members.

### Main items in the scoping document

Purpose and content of the targeted project

Environment in and around the area of the targeted project 1. Natural environment 2. Social environment

Items of the environmental impact assessment

Methods of survey, forecast and assessment



 Survey of existing conditions is conducted based on the scoping document through literature and field surveys.
 Environmental impact is forecasted and assessed, and necessary environmental conservation measures are examined.

### Main items of the survey for the current situation

Items	Content	
Atmospheric environment	Nitrogen oxides ( ), noise, vibration, etc.	
Water environment	Water temperature and quality, etc.	
Marine organisms	Marine algae and seaweed, fish, plankton, etc	
Terrestrial organisms	Plants, animals and ecosystem	
Social environment (literature study)	Status of population, industry and land use	





Survey on water environment (quality)

Survey on terrestrial organisms (animals)

- The results of the existing conditions survey are compiled as a draft assessment, and submitted for review to the national government after soliciting opinions from local residents through inspection and explanatory meetings.
- The assessment document is prepared by revising the draft assessment based on various opinions and review results from the national government. This is then submitted to the national government for review followed by an inspection by the local communities.

This assessment document shall be treated as one of the approval requirements for an application for a power station construction plan, accepted based on the results of the environmental impact assessment.

## 2 Prevention of Air, Water and Noise Pollution

In operating our power stations and other facilities, we conform not only to laws and regulations, but also to environmental conservation agreements ① concluded with related local governments with regard to air pollution ① and water pollution ① as well as noise and vibration.

### **Air Pollution Measures**

We adopt the world highest-level measures to address smoke (i) emissions from our thermal power stations.

Measures for reducing sulfur oxide (SOx) (j)	<ul> <li>Use of heavy and crude oil with a low sulfur content</li> <li>Promotion of the use of sulfur-free liquefied natural gas (LNG) (1)</li> <li>Installation of desulfurization facilities (1) that remove SOx from exhaust gas</li> <li>Adoption of the in-furnace desulfurization (1) method, which removes SOx within the boiler.</li> </ul>
Measures for reducing nitrogen oxide (NOx) (j)	<ul> <li>Combustion method improvement for boilers, etc.</li> <li>Adoption of the two-stage combustion method ①</li> <li>Adoption of the exhaust gas recirculation combustion method ①</li> <li>Adoption of low NOx burner ① and combustors</li> <li>Installation of denitration facilities ① that remove NOx from exhaust gas</li> </ul>
Measure for reducing particulates ①	<ul> <li>Promotion of LNG use that does not generate particulates</li> <li>Installation of high-efficiency precipitators ① that remove particulates from exhaust gas</li> </ul>

### Water Quality Control

- · Wastewater from equipment and facilities is processed using wastewater treatment systems at all of the company's thermal and nuclear power stations, and is discharged after quality confirmation.
- · Quality analysis is conducted regularly for reservoir water at hydroelectric power stations. The water quality is maintained by implementing measures against eutrophication (), the treatment of freshwater red tide () with ultraviolet rays, and selective water intake () when water gets turbid, as well as supporting projects for improving devastated neighboring forests.

### **Measures against Noise and Vibration**

· We address noise and vibration problems by adopting low-noise, low-vibration equipment, employing mufflers • Emissions intensity ① -- emissions per kWh thermal electric power produced -- for fiscal 2004 was 0.20g/kWh for SOx and 0.18/kWh for NOx. The reason for the SOx emissions intensity increase from fiscal 2003 is the increase in electricity production at power stations with high emissions intensity due to higher demand.

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and soundproofing walls, and installing noise-producing equipment indoors.

### **Measures against Land Pollution**

- We strictly comply with laws and regulations related to land pollution () to prevent discharge and leakage of toxic substances into the ground. We conduct voluntary surveys on soil contamination for sites sold or purchased, to avoid the risks from land pollution.
- In fiscal 2004, as a preventative measure following fiscal 2003 practice, a groundwater contamination survey was conducted based on government survey results in possibly contaminated areas in the vicinity of companyowned land. The findings revealed there was no groundwater contamination attributable to Kyushu Electric Power Co., Inc.



#### Implementation of a water-bloom measure in Yamashitaike Dam

In Yamashitaike Dam of the Hata Power Station in Yufuin-cho, Oita Prefecture, bypass construction was undertaken as a measure to waterbloom from eutrophication, extending discharge pipes across a 500m section of the dam and connecting pipes to the discharge channel (in March 2005.) This helps control the inflow of nitrogen and phosphorus, which are causes of

Significant environment-related information

eviewed by referring to the Standards for Environment Report Compilation

eutrophication, from locations where they are constantly supplied. Yamashitaike Dam is a man-made lake constructed in 1918 in the Aso-Kuju National Park. The area around

the dam is developed to cater to tourism, including fish farms, hotel and golf course facilities. The dam serves as a supplemental water source for irrigation and tourism resource incidental to the hotels. The problem of water-bloom during summer has started since around 1975 due to eutrophication.

Though treated with dredging, water-bloom occurred every year and drastic measures were needed. A thorough survey was conducted, and construction work was carried out to solve eutrophication. Future tasks include testing of dam water quality and confirming the effectiveness of this countermeasure construction.



# 3 Environmental Protection Management

Environmental monitoring and chemical substance control are strictly managed to ensure environmental protection at our power stations.

### Environmental Monitoring ()

The environment surrounding our power stations are rigorously managed in cooperation with relevant municipalities and neighboring businesses.



### **Chemical Substance Control**

Chemical substances we use at power stations are properly managed at each site in full accordance with related laws and regulations.

 $\Sigma$  Pollution Release and Transfer Register (PRTR) system ()

· We take the initiative in investigating, collecting and voluntarily disclosing data on the amounts of designated chemical substances () emissions and transfers.

Index No.	Chemical substance	Applications	Amount of transaction	Amount released into the air	Amount transferred
30	Bisphenol A type epoxy resin (j)	Coating material for equipment	2,100	42	0
40	Ethylbenzene 🛈	Coating material for equipment	4,700	4,700	0
63	Xylene 🛈	Coating material for equipment	17,300	17,300	0
177	Styrene (1)	Coating material for equipment, solvent	6,900	6,900	0
179	Dioxins 🛈	Waste incinerator		21	29
227	Toluene 🛈	Coating material for equipment	3,000	3,000	0
253	Hydrazine 🛈	Feed water processing agent	31,900	1.5	0
304	Boron and boron compounds ①	Reactivity control in nuclear reactors	8,200	0	0
353	Tris phosphate (dimethyl phenyl) (	Turbine control oil	14,100	0	14,100

### PRTR investigation results (FY2004) // Unit: kg [dioxins: mg-TEQ 1]

e: Aggregated the data for one ton or more of Class 1 De and 0.5 tons or more of Specific Class 1 Designated Chemical Substances handled by operat sites annually (effective digits: 2 digits). All dioxins are calculated regardless of the amount.

### $\Sigma$ **Dioxins**

- · We have been reducing the use of waste incinerators which are considered contributing to dioxin emissions. We possess three incinerators as of the end of fiscal 2004.
- · Of these three incinerators, two units are not in use and remaining one unit is operating with emissions level below the emission regulation index set forth in the Law Concerning Special Measures against Dioxins ().
- · As for the boilers installed at thermal power stations, dioxins are almost never emitted since the boilers operate at high combustion temperature under an appropriate management system with fuel containing little chlorine.

### Σ Polychlorinated biphenyl (PCBs) ①

- · Equipment utilizing PCBs (1,513 units of high-voltage transformers, capacitors and others) is kept in special storage areas at Kyushu Electric Power Co., Inc. under strict surveillance according to the Waste Disposal and Public Cleaning Law.
- We plan to treat the equipment and render it harmless between 2007 and 2013 in the PCB waste treatment facilities established under the control of the national government.
- · The national investigation committee has been discussing basic policies for the issue of minute amounts of PCBs that enters into insulation oil of heavy electrical equipment such as transformers. Since equipment with traces of PCBs (1) has not been specified vet, the company conducts PCB examinations to detect the presence of PCBs when handling insulation oil such as in equipment dismantlement. Dismantled equipment in which PCB traces have been detected is kept in a designated storage area under strict control.

## 4 Harmony with the Surrounding Environment

When designing facilities, we take into consideration the natural environment and urban landscapes of the surroundings areas, and implement environmental measures such as tree planting.

- · Since fiscal 1986, we have been promoting the underground power distribution system for the benefit of urban landscape, safe and pedestrian-friendly pavement, and vitalization of local communities. The installation of such a distribution system has been in progress based on the Underground Distribution System Installation Plan (FY1986-1998), New Underground Distribution System Installation Plan (FY1999-2003) and Pole-free Power Distribution Promotion Plan (FY2004-2008). It has been a systematic undertaking with the close cooperation of related road administrators, other local parties involved and distribution line administrators.
- Through these efforts, underground distribution lines with the total length of approximately 530km (as of the end of fiscal 2004) have been installed mostly along trunk roads and other main roads in urban areas of the company's service area.
- We are committed to the future expansion of the underground distribution system by working together with related authorities based on the Pole-free Power Distribution Promotion Plan to create harmony with the surrounding environment.

### Underground distribution system installation status 🕖

Underground distribution line installed (km)	Undergrou In:	rground Distribution System Dist Installation Plan			Pole-free Power Distribution Promotion Plan	Cumulative
	1st phase (1986-1990)	2nd phase (1991-1994)	3rd phase (1995-1998)	4th phase (1999-2003)	5th phase* (2004)	total
	97	73	117	210	33	530
* The planned value for FY2004 through 2008 is 257km.						

### Landscape before/after system installation (Fukuoka Prefecture)







### Kamishiiba Dam designated as TOP 100 Dam Reservoirs

In March 2005, Kamishiiba Dam (Shiibason, Higashiusuki-gun, Miyazaki Prefecture) was selected and recognized as one of the TOP 100 Dam Reservoirs of Japan.

The Water Resources Environment Technology Center -- an affiliated organization of the Ministry of Land, Infrastructure and Transport -- has been identifying the TOP 100 Dam Reservoirs based on recommendations by mayors of respective municipalities with such dam reservoirs. The selection is made through comprehensive evaluation of the dam reservoirs for their contributions to landscaping, local ecology, and educational opportunities. Thus far, 65 dam reservoirs wereselected and recognized in Japan for offering precious assets to the local communities.



# 5 Environment-related Research and Development

**Research on Environmental Restoration of Seas** It is generally known that algae forms a community and functions to purify water, sequester  $CO_2$  (1) and foster the growth of marine animals. However, due to various reasons including global warming (1), a decrease of algae communities known as rockyshore denudation (1) has become a grave issue. Kyushu is one of the areas where severe damage from this problem has been observed.

We are conducting research on technologies for the rehabilitation of the natural environment to address this situation. The technology utilizes a cultivation plate made of coal ash () from coal-fired thermal power stations for the cultivation of young algae and creation of an algae community.



0.0

### Research on CO<sub>2</sub> Sequestration by Trees

The CO<sub>2</sub> absorption and sequestration (1) method using the photosynthesis of plants (trees) is a preventative measure against global warming. Research to date on chinaberry (1) -- a tree species with excellent CO<sub>2</sub> absorption ability found in temperate environments -- includes the selection of superior family lines (1), the development of technology for mass propagation by a tissue culture method (1) and trial planting on the company premises using tissue culture seedling (1). Based on their growth, their high CO<sub>2</sub> (1) absorption ability was confirmed (average growth in height in five years was approximately 1.5m/year/tree).

In fiscal 2003, we started to build on these research results to establish technology for environmental forestation at home and abroad that would bring about CO<sub>2</sub> sequestration contributing to the implementation of the Kyoto Mechanisms ①.

As part of such endeavors, we work on the development of technology and know-how for forestation projects abroad, particularly forestation in Loess Plateau in Shanxi Province, China, located in a range of latitude similar to Japan.

Growth status of chinaberry forest in Du Ling, Xi'an City, Shanxi Province, China in 2004

### **Research on Eco-materials**

We have developed production technology for environmentally friendly, recycled composite building material (tiles) and are conducting research towards its commercialization. The material utilizes coal ash from coal-fired thermal power stations, sludge ① from wastewater treatment facilities and cullet ① from used fluorescent tubes.





Recycled composite building material (tiles)



### Protecting the beautiful sea of Kyushu

Our research group focuses on environment-related research such as technology for reducing environmental load and on power plant maintenance and operation. In our research on oceanic environmental restoration, which is introduced in this page, we work to establish algae cultivation methods, with an attempt to incorporate coal ash that will help protect and restore marine environments. The research is still at the trial stage and there's a number of problems remain to be solved. However, seeing seaweed grow and attract many marine animals gave us a sense of gratification in contributing to the environmental conservation and restoration. There will be more research and studies conducted on this matter to fully establish the technology.



Engineering Group, Research Laboratory Terunobu Tsubota



### **Research on the Gasification of Wood Biomass**

Biomass () refers to renewable energy () that is originated from organic substances of plant or animal other than fossil fuels that may be utilized as energy resources, and is carbon-neutral ().

Biomass energy utilization can help reduce CO<sub>2</sub> (1), contributing to the prevention of global warming () and the effective use of waste.



We are engaged in research and development of smallscale wood biomass gasification equipment, which effectively utilizes untapped wood biomass such as waste from lumber sawing, dam driftwood, and tree debris left in forests or lumber from thinning as energy sources.



Test equipment for wood biomass gasification

### **Research on Water Purification with Magnetic Separation Technology**

When phytoplankton becomes overgrown in highly eutrophied () lakes, dams and reservoirs, the water environment may be adversely affected. To address such circumstances, water purification technologies are needed to quickly and effectively remove causative agents from the eutrophied water.

In order to develop the circulation of water resource, we conduct research on magnetic separation () technologies to separate and remove the causative agents from polluted water (1), applying superconductors (1) for their high magnetic properties.

Currently, the performance evaluations of such equipment have been conducted using water purification tests held at lakes, marshes and regulating reservoirs in industrial parks.





Water purification mechanism using magnetic separation Absorption and collection part (Impurities are absorbed a lected with magnetic separa Rotating filter



#### Research on Rare Plant (i) and Native Plant (i) Cultivation

There are 1.4 million species of known living organisms on this earth. When those species unknown to us are included, the estimated total extends to 3 million to 30 million species. Among them, approximately 40,000 species are said to become extinct every year, which

makes the preservation of threatened wild species an urgent issue requiring worldwide attention.

We survey existing rare plants in the company-owned forests and research technology for their cultivation and propagation for the purpose of species

preservation.

We also collect and cultivate acorns from native trees found in Kyushu, and offers the seedlings for tree planting activities.



Orchis graminifolia blooming in forests



Calanthe discolor seen in forests

# 4 Working with Society

We cooperate with communities through environmental activities such as the promotion of environment PR (1), environmental projects in alliance with environmental NGOs (i), as well as global environmental activities such as providing technical cooperation to developing countries.

### Communication

We make a proactive effort to disclose environmental information to the public through the Environment Action Report, lectures and study tours, as well as the media. We also maintain communication with the public and listen carefully to their opinions.

### Lectures

Lectures on the environment and energy issues are held for the benefit of the general public.

- During the June Environment Month (), lectures were held at three operational sites for the general public with a total of 497 attendees.
- A lecture titled "Living with Forests, Learning from Forests"
- was organized by inviting Mr. Hiroshi Yagyu, an actor and the chairman of the Wild Bird Society of Japan. Approximately 400 people attended the lecture.



· We also sent lecturers on 27 separate occasions to give lessons on the environment and energy at elementary and junior high schools or to deliver lectures at local municipal symposiums. A total of about 2,100 people listened to these lectures.

Lecture by Mr. Hiroshi Yagyu



### **Study Tours**

We organize study tours at our facilities, including power stations and Genkai Energy Park to enhance the public's understanding of our environmental initiatives as well as the development and use of nuclear power as a means of effectively addressing global warming ().

• In fiscal 2004, a total of about 110,000 people participated in the study tours of our facilities, including Genkai Nuclear Power Station and Sendai Nuclear Power Station. For details of our exhibition facilities, see page 75.

### **Environment Action Report**

Kyushu Electric Power Co., Inc. has issued the Environment Action Report since fiscal 1996 to open the company's environmental efforts to the public. The report is distributed to municipalities and educational institutions in our Kyushu

> Shall we start thinking about environmental issues from here? No

Genkai Energy Park, has over 30 staff members to offer information on the mechanism and the safety features of nuclear power generation.

Visitors arrive with different needs and schedules, from those dropping by from nearby tourist spots such as Hatomisaki Promontory and Yobuko, to specialists and study tour groups.

In this situation, I commit myself to emphasize communication with visitors. As there are many people who see nuclear power stations as dangerous or too hard to comprehend, I try to make them feel relaxed and comfortable. I would like to cherish opportunities to meet visitors, and to make their visit to our facility a touching experience. There are people who don't feel accustomed to nuclear power generation. I encourage them and everyone to drop by Genkai Energy Park. We welcome you all.

Significant environment-related information

eviewed by referring to the Standards for Environment Report Compilation



Tomomi Tokiwa



Lecture on energy (Oita Branch Office)

service areas.

· In fiscal 2003, we began publishing the Site Report to build close communication with communities neighboring operational sites.

CO

· Our websites obtained approximately 140,000 total hits in fiscal 2004.

### Ratio of 2004 Environment Action Report distribution



### Number of Environment Action Reports issued

	FY2002	FY2003	FY2004	FY2005*
Environment Action Report	17,000	8,000	8,000	8,000
Environmental Action Report Digest	22,000	24,000	24,000	24,000
English version	1,000	1,000	500	400
Site Report		1,300 (Matsuura Power Station)	1,300 (Sendai Nuclear Power Station)	1,000 (Omarugawa Hydro Power Station Construction Office)

\* Number of copies planned to be issued

### **Eco Mothers Activities**

We aim to promote environment-related communication with mothers responsible for environmental education () at home. We pay visits to places where children and parents gather to provide information on environmental issues to raise awareness, while we promote Eco Mothers activities to seek opinions and requests about our environmental activities. Eco Mothers activities attract local interest and were picked up by TV, radio and newspapers. For details on

questionnaires, see page 68.

Records of Eco Mothers' activities					
FY2003 FY2004					
Number. of visits (times)	61	141			
Number. of participants (persons)	2,840	7,097			
Questionnaires returned (%)	32.2	32.2			



Narrated environmental picture-card-sho

### **TV Commercials**

Since March 2005, our TV commercial has been on the air to illustrate our corporate image addressing environmental initiatives. This commercial was produced focusing on the Kyushu Homeland Forestation Program, in which our staff

members planted trees with local residents in various parts of Kyushu. The commercial conveys our desire to work together with people to realize people's hopes to pass on our natural environment to the future.



Environmental terms described or defined in the attached glossary



# 2 Community Activities

We cooperate with local communities in environmental activities through the Kyushu Homeland Forestation Program, through assistance towards environmental education (1) and car-sharing (1) projects, and through participation in and support of environmental activities, especially during Environment Month ().

### Planting One Million Trees under the Kyushu Homeland Forestation Program

To commemorate our 50th anniversary, we began the Kyushu Homeland Forestation Program to plant one million trees throughout Kyushu in 10 years (100,000 trees/year) starting fiscal 2001 in cooperation with local people. In fiscal 2004, approximately 110,000 trees were planted in 55 locations, bringing the 4-year total to about 440.000 trees.

- · Considering multi-functional aspects of forests such as land conservation (water source cultivation, sediment discharge prevention) and protection of wild fauna and flora, and as a place for experiencing nature, we work to promote "Hometown forest development with regional indigenous trees," planting the native tree species in their respective regions.
- · As an activity during the seedlings' cultivation period, undergrowth is cut and thinned (as maintenance and management activity) with the people who took part in their planting.
- These activities for the program are supported by Green Helpers (i), -- volunteer activists who have basic knowledge and skills on greening.

### Σ Supporting Green Helper training

We have been supporting training of Green Helpers since fiscal 1998 through an NPO (), the Interchange Association for Promoting Forestation.

- · In fiscal 2004, training sessions were held in Kitakyushu and Miyazaki areas, with 108 participants, increasing the total number of participants in Kyushu area by the end of fiscal 2004 to 658.
- · We also support the Forestation Program for 100 Years, a citizen's activity to restore forests in urban areas, led by the Interchange Association for Promoting Forestation.



Cutting the undergrowth underbrush in Koga Green Park in Koga City, Fukuok Prefecture (organized twice a year)



"Forestation for Water Source Cultivation in Tano-cho" with the participation of our President Matsuo

### Supporting the Environmental Education

In fiscal 2002, we launched environmental education support activities, including nature watch and classes in forests, to utilize our abundant natural environment in the Onagohata Recreation Forest located near the dam of the Onagohata Power Station in Hita City, Oita Prefecture. In fiscal 2004, we received four groups of 115 participants, with a total of 19 groups or 602 participants as of the end of this fiscal year.

- · The hydroelectric Onagohata Power Station was constructed in the early part of the 20th century, with a minimum development level. Thus, the surrounding environment has been properly maintained, with many existing wild birds, insects and plants. In fiscal 2000 through 2003, we implemented planting activities with local people under the instruction of Dr. Akira Miyawaki, Professor emeritus at Yokohama National University, to restore the forest to its natural state. People can now observe the growth of those trees.
- It is essential for each entity including an educational institution, community and enterprise to first cooperate in offering environmental education in order for citizens to recognize and understand the importance of global environmental issues (), and relate such understandings to practical actions in their daily lives. As a member of society, we will continue to support citizens' activities and environmental education at schools.



When I attended this nature watch, I got on the bus recalling the walks I took in the



Asami Yamauchi

fields and mountains when I was young. During the activity given after our arrival, every single explanation by the expert on plants and trees gave me new insight. The forest in wintertime was quiet, and we could not see any objects like nuts. However, we could observe frost columns particular to the season. Forests change over the seasons, yet I only know Onagohata in winter. I wish to take part in nature watches throughout the year and experience the nature of Onagohata in all seasons. The forest's trail of steel towers led us to a scene of hydroelectric power generation, utilizing water from the mountain. I felt that it was a true bounty of nature. I was able to have a close look at the process of creating something essential in our lives from nature. I became aware of how awesome nature really is. It is said that children these days don't have much opportunity to experience nature. Surrounded by abundant nature, Onagohata is just a short distance away from cities, and various programs are offered there to help us think about the relationship between energy given from nature and our affluent lives. I feel that it is beneficial and necessary for more people to know and take advantage of them.

### Programs during Environment Month in FY2004

The Basic Environment Law ① designates June 5 as Environment Day ①, and the month of June as Environment Month, during which time various environment-related events take place nation-wide.

We consider June to be a time to recognize anew the necessity and importance of environmental preservation activities. Activities during the month include tree planting and community services such as cleanup activities.

### $\Sigma$ Tree planting

A total of 5,780 tree seedlings and trees were planted at 24 operational sites.

 At Kanoya Power System Maintenance Office under Kagoshima Branch Office, 215 Hirado Azalea and other seedlings are planted by seven students from the Shinju Gakuen in Koyama-cho, Kimotsuki, together with our staff members.

### $\Sigma$ Voluntary activities

We are involved in activities such as cleaning local communities, placing birdhouses and inviting the community to *fureai* farms on our power station premises.

CO

- Ninety operational sites organized the cleanup of roads, parks and coasts around their premises, while 38 sites joined cleanups led by local governments. Goto Customer Service Office under Nagasaki Branch Office, together with Kyudenko Co., Inc., one of the group companies, cleaned traffic lights in Fukue City.
- The staff from Izuka Customer Service Office under Kitakyushu Branch Office helped ten students from Namazuda Elementary School put up ten birdhouses on trees in the school grounds.
- Community farms and greenhouses were opened to the public at five operational sites. Shin Oita Power Station in Oita Prefecture invited 45 children from Ozai Nursery School in Oita City to the farm on its premises to plant sweet potatoes. In fall, the community is invited to harvest those sweet potatoes.







Community farm (Shin Oita Power Station)

### **Supporting Car Sharing Project**

TOPIC

In October 2002, we started supporting a car-sharing project using electric and low-emission vehicles in Fukuoka City, which was organized as a collaboration project of Fukuoka City, environmental NGOs and Kansai Electric Power Co., Inc. (a pilot project ending in September 2005).

- Car- sharing ① is a scheme, in which individuals do not own automobiles, but instead subscribe to memberships in cooperative organizations that own and manage a fleet of automobiles for joint-use of its cars. The scheme is expected to reduce exhaust gas emissions and ease traffic congestion. We support the scheme by covering the cost of vehicles and developing an unattended hiring out system, as well as by analyzing the status of vehicles use and supporting promotional activities.
- In fiscal 2005, we plan to evaluate the project with the NPO responsible for the implementation based on the results of our three-year collaboration.

water, producing and timber, absorbing CO<sub>2</sub> and supporting biological diversity.



Electric vehicle at the Hakozaki-Kyudaimae Station, Fukuoka City

### Cooperation for the Creation of Recycling Society

Our 27 operational sites concluded and implemented agreements with 98 local governments on measures against illegal dumping of waste, which require a person who witnesses

illegal dumping of waste during patrol or other occasions to inform the respective local government. Other activities for the benefit of local communities include cleaning of the area.



Sticker on a company vehicle to promote elimination of illegal dumping

### Acquisition of FSC Certification for the company forest (first Japanese power company) In March 2005, we became the first power company in Japan to be granted Forest Stewardship

No. Certification ① (certification No. SA-FM/COC-1412) by the Forest Stewardship Council (FSC), which certified our proper management of the company-owned forest (4,447.66 ha) in Kokonoe-and Yufuin-cho in Oita Prefecture. The company forest was first developed in plains along the mountain ridge of Kyushu to secure a water source for hydroelectric power generation. The forest now has multiple functions including providing

We believe that the continuous reviews by outside organizations will lead to enhancing the reliability of forest management and the maintenance and improvement of various functions and benefits that our forests can offer, while contributing to harmonious coexistence with local communities.



Staff of Kyushu Rinsan Co., Inc.\*giving explanation to the examiners \* Our group company, responsible for the management of the company forest



# International Cooperation

We actively develop overseas projects and consulting business mainly including specialist dispatches and trainee acceptance through Japan International Cooperation Agency (JICA) (1) and other organizations, information exchange with overseas electric suppliers and independent power producer (IPP) (1) projects.

- We give consideration to environmental issues as evidenced by the construction of a high-efficiency thermal power station using natural gas ① as fuel to control CO2① emissions.
- As part of our efforts to contribute to environmental protection, we have been conducting research and transfer of technologies that contribute to the reduction of CO<sub>2</sub> emissions.

### **Overseas IPP projects**

Project name (country)	Power generation method (fuel)	Output (10 thousand kW)	Start of commercial operation
Tuxpan Unit No. 2 IPP (Mexico)		49.5	Dec. 2001
Ilijan IPP (Philippines)	Gas combined cycle①	120.0	Jun. 2002
Phu My Unit No. 3 IPP (Vietnam)	gas)	71.7	Mar. 2004
Tuxpan Unit No. 5 IPP (Mexico)		49.5	Sep. 2006 (planned)

Form	Country/region	Content	Entity accepting bids
Hydroelectric power	Taiwan	Feasibility study for the construction project of Qing Shui Xi small-scale hydroelectric power station	METI
Hydroelectric power	Philippines	Feasibility study for the planning of Sicopong conduit-type power station	JETRO <sup>®</sup>
Thermal power Indonesia Development of		Development of small-scale distributed generation system with Jatropha curcas oil	NEDO
Transmission, Taiwan		Consultation for the substation construction by Taiwan Power Company	Taiwan Power Company
distribution	Thailand	Consultation for the substation construction by Thai Provincial Electricity Authority	Thai Provincial Electricity Authority
Kyoto Mechanisms®	China	Efficiency Service Company (ESCO) () project using Clean Development Mechanism (CDM) () scheme	NEDO

### Achievements of consulting business (FY2004)

## 4 Employee Awareness Enhancement

We work to train employees and provide varied information on environmental activities to enhance the environmental awareness of each employee.

### Training, Lecture and Survey on Awareness

We actively organize environmental training and lectures on the environment by internal and external lecturers, and conduct surveys of employee awareness.

- The Environmental Affairs Department held four training sessions on such topics as environmental compliance 

   and proper waste disposal for 230 staff members including new employees, managers and staff in charge of environmental tasks at operational sites.
- A total of 311 employees from 32 operational sites attended environment-related training and lectures organized by outside organizations.
- During Environment Month (1), in-house lectures were given by internal and external instructors at eight operational sites, attended by 511 employees.
- The Head Office invited Mr. Jiro Hirano, a broadcast journalist and former news commentator for NHK -- the Japan Broadcasting Corporation -- and hosted a lecture entitled "World inside Japan -Considering the Global Environment,"attended by 129 employees.
- Since fiscal 2003, we have conducted employee awareness surveys annually to raise environment-consciousness and further enhance our environmental activities.

For the summary of FY2005 survey, see page 70.



### Fostering Specialists on Environment

We help our employees to obtain environment-related qualifications such as Qualified Person for Energy Management of Type 1 Designated Factory (1) and Pollution Control Manager (1). To this end, various systems are established to assist with correspondence education fees, and to provide allowances to employees who obtain publicly-recognized licenses and qualifications (1).

• We train internal environmental auditors (1), who monitor whether the environmental management system (1) at each operational site is appropriately administered and maintained, and report to the management the results and the tasks for improvement.

In fiscal 2004, we invited lecturers from West Japan Engineering Consultations, Inc., a group company that assists with the acquisition of ISO14001 ① certification, to hold four training sessions, and trained 161 employees.

Number of accredited employees (cumulative total as of the end of FY2004)

	(onit: persons)
Qualified Person for Energy Management of Type 1 Designated Factory	960
Pollution Control Manager	507
Engineering Manager for Waste Disposal Facilities	196
Specially Controlled Industrial Waste Manager	152
Internal Environmental Auditor	525

### Support for Employees' Community Services

 $\Sigma$  Award system for Local Community Contributors We have established an Award System for Local Community Contributors  $\oplus$  to encourage employee momentum to actively promote local community services, and to communicate with and make contributions to our communities.

 In fiscal 2004, 21 employees were awarded for teaching life saving skills to further increase the rate of survival in the area, promoting softball through coaching and refereeing, and supporting the sound growth of our youth.

#### $\Sigma$ Volunteer leave system ()

A volunteer leave system  ${\rm las}\,$  has been established to support employees' social contributions.

#### Use of volunteer leave (FY2004)

	Social services	Community services	Sports and cultural activities for communities	Donors (bone marrow donor registry)	Total
Number of people	116	25	45	1	187
Number of days	146.5	40.0	74.5	0.5	261.5

**Our Commitment to Environmental Activities** 

### **Providing Information**

Domestic and international news on environmental issues have been provided through company broadcasting and in-house newsletters while the use of the intranet is under way.

### Σ"Environmental Digest"newsletter

Environmental information is provided monthly to our employees, including:

social trends and news on environmental issues, measures newly introduced by the company, and information held by the company and external organizations.



### Σ Environmental Affairs Department intranet

The intranet is utilized as a communication tool with employees to enhance their awareness of environmental issues and to practice environmental activities, as well as to support management and guidance

provided by those in charge of

environmental management ①.

Information on compliance (1) Case examples of environmental activities conducted EMS education-related materials Environment Questions & Answers

Environment Questions & Answers Environment-related glossary



### Internally Seek the Unified Slogan for the Environment Month

CO

In the June Environment Month, we surveyed our employees for a unified slogan for the Environment Month<sup>①</sup> of June, and selected one through internal voting to further enhance their environmental awareness, while we recognize anew the necessity and importance of environmental activities.

### FY2005 Unified Slogan for Environment Month

### "There must be something you can do for earth."

This slogan implies that whenever we do something for our earth, it always benefits our planet no matter how small the action may seem, and that there are many such "somethings" if you only look.



Entered by Kayo Fukushima, Public Relations Group, General Affairs Dept., Kitakyushu Branch Office

#### Household Eco-account Book

We encourage the use of household eco-account book (1) as a tool to help employees and their families to review their lifestyles and to enhance environmental understanding.



Consignment Contract Section Purchasing & Materials Center, Materials & Fuels Department

Yuichi Takeshita

I act for the Fukuoka Forest Volunteers Association organized by volunteers as an intermediary support organization for conservation organization of satoyama or

mountain areas utilized by communities and closely related to human lives. Our activities include "satoyama experience relay" where activities of various groups are introduced and experienced, "group leader sessions for forestation activities" to seek more enjoyable and safer activities, "Fukuoka satoyama workshop" where we discussed problems of forestation and satoyama conservation activities and solutions, and "satoyama photo exhibition." Through such undertakings, a network has been formed among people of different social positions such as citizens, administration, universities or companies. Being a first-aid instructor (certified by the Japanese Red Cross Society and the fire department), I taught people cardiopulmonary resuscitation (CPR), automatic external defibrillator (AED) and lifesaving skills and first aid for emergency cases including heat stroke. One of our activities is the Green Helper Training led by an NPO, the Interchange Association for Promoting Forestation, in which we learned safety management and first aid for outdoor activities. It is very nice to run into people whom I first met at lectures in various parts of Kyushu in forest-related volunteer activities or on mountain trails. I hope to transform our ideas to something real, and to preserve the nature and culture that we are entrusted with for the benefit of future generations. I would also like to see our ideas and thoughts inspire more people.



### Nijinomatsubara Karatsu City, Saga Prefecture

Nijinomatsubara is a pine grove located in Karatsu City, covering an area of 240 hectares with a width of 400 to 700 meters and a length of about four kilometers. It is commonly known as a grove of "one million black pines." Some 360 years ago or in the early Edo era, the then feudal lord, Terasawa Shimanokami Hirotaka, is said to have begun the forestation to form a shelter belt against strong salty wind and sand primarily for rice paddies newly developed from backland. The beautiful and natural contrast of the blue sea, the white sandy beaches and the green pine groves is beyond description and counted as one of the three most appealing pine groves of Japan.

## 2005 Environment Action Report



# Environmental Management of Kyushu Electric Power Group



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# **Environmental Management of Kyushu Electric Power Group**

The Kyushu Electric Power Group (the "Group") engages in the general energy business as a mainstay, while developing a wide range of businesses including information and telecommunications, environment and recycling, and lifestyle services, utilizing its technology and expertise. Realizing environmental conservation is our social responsibility, and the Group is working together to promote environmental management.

# 1 Main Businesses of Kyushu Electric Power Group For more information on the Group, visit our website at: http://www.kyuden.co.jp/company\_outline\_group\_index

**General Energy Business** Facility construction and maintenance Materials and equipment procurement KYUKI CORPORATION Kyushu Rinsan Co., Inc. · Greening construction at power stations and other facilities · Manufacture and sale of electrical machinery and equipment NISHI NIPPON AIRLINES CO., LTD. Nishinippon Plant Engineering and Consultation Co., Ltd. · Construction and repair of power stations · Air cargo transportation Kyuden Sangyo Co., Inc. Kyushu Meter & Relay Engineering Corp. · Environmental conservation-related work for power stations · Repair and adjustment of electric instruments Koyo Denki Kogyo Co., Ltd. West Japan Engineering Consultants, Inc. · Survey and design of civil engineering and construction work Manufacture and sale of HV and LV insulators and other items KYUHEN Co., Inc. Kyudenko Co., Inc. Electrical work · Manufacture and sale of electrical machinery and equipment Nishikyushu Kyodo Kowan Co., Ltd. Kyushu Koatsu Concrete Industries Co., Ltd. · Maintenance, management and operation of coal loading and handling facilities · Manufacture and sale of concrete poles and other items SEISHIN Corporation Kyuken Co., Ltd. · Sale of electrical machinery and equipment · Construction and repair of transmission lines Nishigi Kogyo Co., Inc. Nishi Nihon Denki Tekkou Co., Ltd. · Conduit maintenance for hydroelectric power stations · Design, manufacture and sale of steel towers, structures and other items Nishiai Engineering Co., Inc. · Examination, design and construction management of electrical and mechanical facilities Wholesale electricity business and energy business TOBATA CO-OPERATIVE THERMAL POWER COMPANY, INC. Nishigi Surveying and Design Company, Inc. · Examination, survey, design and drafting for civil engineering and construction work · Electricity wholesale supply Oita Co-operative Thermal Power Company Inc. · Electricity wholesale supply Oita Liquefied Natural Gas Co., Inc. · Receipt, storage, gasification and delivery of LNG Nishinippon Environmental Energy Co., Inc. · Thermal supply business, dispersed power source operation business and consultation on energy use KITAKYUSHU LIQUEFIED NATURAL GAS CO., INC. · Receipt, storage, gasification and delivery of LNG

KYUSHU CRYOGENICS CO., LTD.

Manufacture and sale of liquid oxygen, liquid nitrogen and liquid argon

Fukuoka Clean Energy Corporation

General waste incineration and power generation business

# Information and telecommunication business



 Kyushu Telecommunication Network Co., Inc

 • Provision of telecommunication lines (private, phone, and broadband lines, etc.)

Kyuden Infocom Company Inc.

• IT-related planning and consultation, and data center business

Nishimu Electronics Industries Co., Ltd.

• Manufacture, sale, installation and maintenance of telecommunication devices

Kyuden Business Solutions, Co., Inc.

Development, operation and maintenance of information systems

# Environment and recycling business



Kyushu Environmental Management Corporation

Recycling of confidential documents

Japan Recycling Light Technology & System

Recycling of fluorescent tubes

# Lifestyle services business

CO



### DENKI BLDG. CO., LTD.

- · Real-estate management and rental business
- Shinrintoshi Co., Ltd.
- Real estate rental and land-related work
- Kyuden Good Life Kumamoto Company, Inc.
- · Paid elderly nursing home management and nursing services
- Kyuden Business Front, Inc
- · Temporary personnel services and paid job placements
- Kyushu Housing Guarantee Corporation

Building performance assessments

- Kyuden Good Life Kagoshima Company, Inc.
- · Paid elderly nursing home management and nursing services
- Kyuden Shared Business Corporation
- Accounting, human resources and labor-related work
- Kyuden Good Life Company, Inc.
- · Paid elderly nursing home management and nursing services
- Kyushu Captioning Co-Production Center Inc.
- Subtitle production for broadcasting
- Reihoku Salt Co., Ltd.
- · Manufacture and sale of natural sea salt
- Kyushu Highlands Development Co., Ltd.
- · Management of hotels and golf courses
- Ito Golf Co., Ltd.
- · Golf course management
- Medical Support Kyushu Co., Ltd.
- Rental and lease of medical equipment, and managerial support for a diagnostic imaging clinic.

# 2 Promotion of Environmental Management

## Environmental Management Promotional Scheme

Environmental management () is currently pursued by 44 group companies of Kyushu Electric Power Co., Inc. (as of April 2005) that joined the Group Management Association.

The Group Management Association is comprised of all related companies\* of Kyushu Electric Power Co., Inc. except for those whose head offices are located outside Kyushu. The association examines and discusses various issues regarding the management of the group.

The association employs subcommittees, which deliberate specific issues for the association and report to the association for approval.

\* As of April 2005, there are 62 related companies (including subsidiaries and associated companies) based on the financial statements regulations

The Group Environmental Management Promotion Subcommittee was established to propel environmental management for the Group, and serves as the principal forum to push forward with environmental management for the Group.



The 2nd meeting of the Group Environmental Management Promotion Subcommittee held on January 20, 2005





Japan Recycling Light Technology & System DENKI BLDG. CO., LTD.

Kyuden Business Front, Inc. Kyushu Housing Guarantee Corporation Kyuden Good Life Kagoshima Company, Inc.\* Kyuden Shared Business Corporation \* Kyuden Good Life Company, Inc. Kyushu Captioning Co-Production Center Inc. \* Kyushu Highlands Development Co., Ltd. Medical Support Kyushu Co., Ltd.\*

Administrative companies Companies newly joined the Group Environmental Management Promotion Subcommittee in fiscal 2005

# 2 Environmental Management Framework

The environmental management ① framework utilizes the PDCA Cycle ① based on the environmental management system (EMS) ① to improve environmental management with group-wide efforts.

A company joining the Group Management Association and Group Environmental Management Promotion Subcommittee is required to establish its EMS, devise procedures for obtaining environment-related data, and subsequently implement the Kyushu Electric Power Group Environmental Activity Plan.

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## **3** Status of Environmental Management System (EMS) Implementation at Group Companies

The Group has introduced unified standards, Kyushu Electric Power Group Standards for the Implementation of EMS, that divide the EMS development into six levels to help each company to move towards ISO14001 ① certification acquisition in stages.

For Kyushu Electric Power Group Standards for the Implementation of EMS, visit: http://www.kyuden.co.jp/environment\_plan\_ems\_index

As a rule, the Group companies are required to implement at least the first level EMS, and proceed to the 2nd level and higher EMS based on their respective conditions.

In fiscal 2004, two companies, namely KITAKYUSHU LIQUEFIED NATURAL GAS CO., INC. and West Japan Engineering Consultants, Inc., worked to raise their EMS levels.

### **EMS implementation status**

EMS de	evelopment star	Idards	EMS development status		
Develo	oment level	Development scope	Company name	Date of establishment	
			Nishinippon Environmental Energy Co., Inc.	Oct. 2000	
			KYUKI CORPORATION	Mar. 2003	
6th level		Company wide	Kyushu Environmental Management Corporation	Sep.2003	
	ISO14001 certification acquisition		KITAKYUSHU LIQUEFIED NATURAL GAS CO., INC.	Dec.2004	
			West Japan Engineering Consultants, Inc.	Mar. 2005	
		Head office	Kyudenko Co., Inc.* (head office only)	Dec. 1999	
5th level			Kyuden Sangyo Co., Inc.* (Environment Department only)	Dec.2002	
			SEISHIN Corporation* (head office only)	Jan. 2004	
4th level	ISO-14001 based system development	and operational sites	Oita Liquefied Natural Gas Co., Inc. (company wide)	Dec.2003	
3r	3rd level 2nd level		-	-	
2n			-	-	
1s	1st level		34 group companies	Sequentially upon joining the subcommittee	

Note: Regarding the 2nd through 5th levels of development, the highest development level for each company is used as its development level for listing (for the three companies marked with "\*"). The 34 companies in the first level of development include these three companies.



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### Companies that raised EMS () levels (acquisition of ISO14001 () certification)

### KITAKYUSHU LIQUEFIED NATURAL GAS CO., INC.

# Contributing to environmental conservation through company wide EMS development

KITAKYUSHU LIQUEFIED NATURAL GAS CO., INC. was established in 1974 mainly to receive, store, gasify and deliver liquefied natural gas (LNG)  $(\rm I\!O$  purchased from Indonesia.

In 1999, the company prepared environmental management rules, set up an environmental management committee, and started taking environmental measures closely related to its business activities based on the 4Rs\*.

Requirements of the ISO14001 were incorporated into the existing environmental management rules, and the EMS was developed with the unified effort of all employees. As a result, the company acquired ISO14001 certification in December 2004. Transition to the 2004 version of ISO 14001 was completed in March 2005 and has commenced its operations. We will be dedicated to the reduction of environmental load (1) substances in our business activities, and to the environmental conservation of the local area as well as on a global-scale.

\*4Rs: Reduce (reduction of products); Reuse (reuse of products); Recycle (recycle of products); and Refuse (prevent receiving unnecessary items)

### West Japan Engineering Consultants, Inc.

# ISO 14001 certification acquired for company wide and all business activities

Since its establishment in 1967, as a comprehensive construction consultant, West Japan Engineering Consultants, Inc. has served the power industry as well as public enterprises by responding to their wide ranging needs. People demand that energy be developed and used efficiently in consideration of the protection of our nature and environment. It is time that we reconsider the balance between nature and industries on a global scale.

In this context, the company prepared environmental policies in December 2003 to promote environmental activities more effectively and also set up a project team for ISO 14001 certification acquisition in April 2004 to start building an EMS. Upon establishment of the EMS, the company started operating the system in October 2004. In March 2005, ISO 14001 certification was granted for the company wide business activities of the entire company, including those taking place at business offices and operational sites in all prefectures of Kyushu and in Yamaguchi Prefecture.

The company will work to implement environmental activities by making use of the effort of all employees to fulfill our environmental policies, and continue to enhance our EMS.

### Main environmental activities •

Conserving power used in offices (turning lights off during lunch breaks) Reducing the amount of photocopy paper purchase (5% reduction from fiscal 2003) Reducing gasoline consumption (encouraging eco-efficient driving practices) Suggesting and promoting energy saving and the use of new energy sources to its customers (target of 17 contracts or more) Suggesting and promoting the improvement of the natural and living environment to its customers (target of 14 contracts or more)

Promoting the sorting of general waste (i) (preparation of guidelines and implementation of actual sorting)

#### ----• Main environmental activities •----

Reducing the emissions of environmental load substances, such as coolant  $\oplus$  and methane  $\oplus$ , into the atmosphere Promoting zero emissions  $\oplus$  (by encouraging the purchase of more eco and

green products and less photocopy paper) Promoting energy conservation and improving the efficiency of cryogenic power generation  $\oplus$  facilities

# Actively participating in environmental conservation activities

### Basic philosophy

KITAKYUSHU LIQUEFIED NATURAL GAS CO., INC. regards the stable supply and diffusion of liquefied natural gas, a clean energy, to be its mission and aims to contribute to the creation of a society that emphasizes environmental conservation, by achieving harmony with the environment and efficient energy use through its operations.

### Activity guidelines

- Guideline 1: Reduction of environmental load in its operations We will work towards:
- 1. continual improvement of the EMS.
- 2. the reduction of environmental load such as GHGs  $\oplus$  and substances causing ozone layer  $\oplus$  depletion.
- 3. the improvement of energy use efficiency and the creation of a recycling society  ${\scriptstyle (\!\!\!\!\text{I})}$  .
- Guideline 2: Contribution to environmental conservation of the local area and on a global scale 1. We will contribute to environmental conservation by promoting natural gas. 2. We will contribute to environmental conservation activities in the local area.
- We will contribute to environmental conservation activities in the local area.
   We will work to enhance employee awareness of global environmental
- conservation through environmental education activities. 4. We will comply with laws and regulations and other requirements for environmental conservation.

Kazunobu Matsuo, President,

KITAKYUSHU LIQUEFIED NATURAL GAS CO., INC. June 1, 2004

#### --- Environmental policies ---

#### Towards harmony between humans and the environment

Under the corporate philosophy "Establish harmony between humans and the environment, create a more affluent society," West Japan Engineering Consultants, Inc. will give consideration to the environmental conservation of the earth and the community and contribute to society through our business operation, including surveys, planning and design of civil engineering, construction facilities and energy plant construction, as well as surveys of the natural and living environment. The following policies wil be observed:

#### Environmental guidelines

- Establish, implement and constantly improve the EMS The company will establish an EMS, set environmental objectives and targets to realize environmental policies, and make company wide efforts towards their implementation. The company also continues to improve the EMS through review by management.
- Comply with laws and regulations
   In its business activities, the company will comply with environmental laws
   and regulations as well as other requirements agreed upon by the company,
   and work for environmental conservation and pollution prevention.
- 3. Conduct business activities while caring for the environment In its business activities, the company will take into consideration environmental conservation, environmental load reduction and the creation of an environmentally-harmonicus society, while actively offering technological advice to its customers.
- Promote resource and energy conservation
   Each employee of the company will work to conserve resources and energy and take pro-environment actions including "Reduce, Reuse and Recycle" initiatives.
- 5. Promote environmental education ① for employees and related companies The company will provide education on environmental matters to all employees to enhance their awareness on the importance of environmental consideration in business activities. The proper environmental education is also offered to companies related to our operations to seek their understanding on our environmental undertakings.

Kazumi Takedomi, President West Japan Engineering Consultants, Inc. December 26, 2003

### **4** Compliance with Environment-related Laws and Regulations and Compliance Management by Group Companies

The Group companies will ensure strict compliance with environment-related laws and regulations as well as environmental conservation agreements ① concluded with local governments, while promoting compliance management that develops fair business activities according to corporate ethics.

The companies also establish their respective guidelines based on the Kyushu Electric Power Group's Guidelines for Environmental Activities and pursue environmental activities in accordance with such guidelines.

Kyushu Electric Power Group's Guidelines for Environmental Activities
Guidelines for:
1. Waste management
2. Green procurement (i)
3. PRTR Law 🛈
4. Countermeasures for soil pollution (1)

## 5 Environmental Philosophy and Environmental Policies

The Kyushu Electric Power Group Environmental Philosophy was established stating the principle of the Group's commitments to environmental activities. The Kyushu Electric Power Group Environmental Policies were also established prescribing attitudes towards practical implementation of such activities.



No. 10 Environmental management

The businesses of the Group companies vary widely, and include the general energy business, information and

telecommunication business, environment and recycling business, and lifestyle services business – each having a different impact on the environment. Under these circumstances, each company's contributions to the development and implementation of an EMS based on its conditions will help reduce its environmental load to achieve the overall reduction of environmental load for the whole group.

I will do my best to support the companies' environmental activities as a member of secretariat and wish to learn more about their business activities and to promote environmental management under the Kyushu Electric Power Group Environmental Philosophy through our unified efforts.



Environmental Activities Support Group, Environmental Affairs Department

Shigeru Masuda



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# 6 FY2005 Environmental Activity Plan

In March 2005, the Group Management Association passed the FY2005 Kyushu Electric Power Group Environmental Activity Plan, which was drafted, discussed and developed by the Group Environmental Management Promotion Subcommittee. The plan was prepared based on the Kyushu Electric Power Group's Environment Philosophy and Environment Policies. After the Group Environmental Management Promotion Subcommittee analyzed and evaluated the actual activities of fiscal 2004 and the Group Management Association incorporated the items for improvement to upgrade the plan.

The aim for fiscal 2005 is to maintain and build on the content of the fiscal 2004 activities.

Since fiscal 2003, the Group has set unified targets for the Group and been working towards the reduction of environmental load ①.

### FY2005 Kyushu Electric Power Group's Environmental Activity Plan

### I. Group promotion of the environmental management ()

- 1 Establishment and reinforcement of Group's environmental management promotional scheme •To comply with laws and regulations.
  - •To familiarize and reinforce the EMS.
- 2 Establishment and enhancement of the environmental accounting () system
  - $\bullet To ensure an accurate understanding of environmental activity costs ( ).$
  - •To deploy measures for understanding the effect of environmental activity.
- 3 Enhancement and reinforcement of environmental target management
  - •To ensure an accurate understanding of environment-related data.
  - •To deploy measures to increase establishment rate for the Group unified targets and voluntary targets for individual companies.
  - •To deploy measures to increase achievement rate for the Group unified targets and voluntary targets for individual companies.

### 4 Implementation of environmental education (i) and sharing of environment-related information

- •To provide and participate in various environmental education programs.
- •To ensure sharing of environment-related information among the Group companies.

### II. Measures for global environmental issues 🛈

### 1 Steady measures for reduction of GHG () emissions

- •To obtain GHG emission records.
- •To ensure SF6 () collection.
- •To further promote energy saving activities in offices (reduction of power consumption).
- 2 Steady measures for reduction of regulated freon () emissions
  - •To ensure the collection of regulated freons.

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III. Measures for the creation of recycling society ()
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### 1 Promotion of recycling

- •To further promote recycling of confidential documents (i) and used fluorescent tubes.
- •To further improve recycling rates () of used paper () and industrial waste ().
- 2 Promotion of green procurement ()
  - •To further improve usage rates of recycled photocopy paper and toilet tissue ().
  - •To ensure the purchase of eco-friendly commodities\*<sup>2</sup> having an equivalent cost\*<sup>1</sup> as a rule and to expand such practices to supplies other than commodities within the means of each company.

### IV. Coordination with society

1 Thorough disclosure of environment-related information and expansion of the scope of disclosure
 •To continuously report the Group's measures in the Environment Action Report to facilitate a year-to-year comparison, and to increase the items to be reported

\*1: Equivalent costs between eco-friendly or green products (1) and regular products

\*2: Commercially available products such as office supplies

### FY2005 Kyushu Electric Power Group's unified targets

Items (Target)	Content
Power consumption at offices [1% year-by-year reduction]	<ul> <li>A 3% decrease from FY2002 levels by FY 2005</li> <li>1% year-by-year reduction based on FY2002 levels</li> </ul>
$SF_6$ collection rate during equipment inspection [98% or over] $SF_6$ collection rate during equipment dismantlement [99% or over]	<ul> <li>Ensure collection by the strict use of the recovery system during equipment inspection and dismantlement</li> </ul>
Regulated freon collection rate* during equipment inspection [100%]	<ul> <li>Ensure collection by the strict use of the recovery system during equipment inspection</li> <li>Install equipment requiring no regulated freons when replacing or installing equipment</li> </ul>
Used paper recycling rate [100%]	Recycle all used paper by collecting used paper by type
Usage rate of recycled photocopy paper [100%]	Promote 100% usage of recycled paper through green procurement
Usage rate of recycled toilet tissue [100%]	Promote 100% usage of recycled paper through green procurement

Note: In case the establishment of the Group's unified targets is difficult (due to differences in individual companies' situation), voluntary targets are set separately by the respective companies. Once these voluntary targets are achieved, the companies may then strive to reach the Group's unified targets. \* Rate of equipment whose gas collection during inspection met the mandatory reference level (or mandatory pressure level in the case of equipment dismantlement).

<u>,CO</u>





- emitting smoke (boiler, etc.), and only in the case emissions reduction effect was confirmed.
- \*6: Calculated assuming the baseline to be the case without denitration procedures in facilities emitting smoke (boiler, etc.), and only in the case emissions reduction effect was confirmed.



Significant environment-related information reviewed by referring to the Standards for Environment Report Compilation.



# 2 Records and Targets of Environmental Load

Efforts are made to reduce environmental load ① in order to realize the group's unified targets, and use and manage regulated chemical substances based on the related laws and regulations.

### FY2004 Kyushu Electric Power Group's unified targets and records

We strive to reduce environmental load in order to meet the group's unified targets.

Unified targets for FY2004	Records	Unified targets for FY2004	Records				
Power consumption at offices [1% decrease from prior yea]	2.8% increase	Used paper () recycling rate () [100%]	74%				
Collection percentage of SFe ① collected at the inspection of equipment [97% or more]	(no inspection)	Usage rate of recycled copy paper ① [100%]	84%				
Regulated freons ① collection Percentage at the inspection of equipment [100%]	100%	Usage rate of recycled toilet tissue [100%]	93%				
Note 1: Calculations are based on data from the 40 companies that joined the Group Environmental Management Promotion Subcommittee (hereinafter referred to as the Subcommittee) by fiscal 2004. Certain unavailable data have not been provided.							

Note 2: Figures may not add to the totals due to rounding.

### **Records of Environmental Load**

### Energy use

The Group companies strive to reduce energy consumption in order to achieve both the Group's unified targets and initiatively determined targets.

	Types of energy and resources		FY2002 records		FY2003 records		FY2004 records	
			No. of companies	Quantity consumed	No. of companies	Quantity consumed	No. of companies	Quantity consumed
power	Offices (million kWh)		20	30.6	31	31.5	32	32.4
tric po	Plants	(million kWh)	14	116.0	21	140.4	25	172.3
Electric	In-house use at power stations (million kWh)		2	337.6	3	338.1	3	338.8
	Heaters and air conditioners (thousand $k\ell$ )		7	0.06	12	0.4	13	0.4
Fuel*	Vehicles	(thousand $k\ell$ )	19	2.5	22	2.6	34	9.1
교	Industrial	A-heavy oil (thousand $k\ell$ )	4	1.7	3	2.3	5	2.5
	use	LNG (1), LPG (1) (thousand tons)	3	2.5	4	2.8	6	2.4
Water	Offices	(thousand tons)	15	186.3	15	186.6	18	180.1
Na	Plants	(thousand tons)	11	515.8	14	644.2	19	725.4
Note		re based on data from the 40 companie FY2003 are based on data from the 4						

power used in FY2003 are based on data from the 40 companies). Certain unavailable data have not been provided. "As for fuel information, each "quantity consumed" is the total of the consumed quantit of fuels which are measured by the same units.

### Greenhouse gases

The Kyushu Electric Power Group takes every measure to collect the required level of GHG such as SF<sub>6</sub> and HFC ① from equipment at the time of inspection and also tries to reduce GHG emissions by curbing the consumption of various types of energies.

Creanbauga rassa	FY2002 records		F١	/2003 records	FY2004 records	
Greenhouse gases	No. of companies	Quantity emitted	No. of companies	Quantity emitted	No. of companies	Quantity emitted
Carbon dioxide $(CO_2)$ (thousand tons-CO <sub>2</sub> )	24	66.9	38	74.0	40	104.5
Methane (CH <sub>4</sub> ) (1) (thousand tons-CO <sub>2</sub> )	1	0.04	4	0.4	4	0.3
Nitrous oxide (N2O) (1) (thousand tons-CO2)						
Hydrofluorocarbon (HFC) (thousand tons-CO <sub>2</sub> )	1	70.2	1	73.3	1	40.4
Perfluorocarbon (PFC) (1) (thousand tons-CO <sub>2</sub> )						
$Sulfur \ hexafluoride \ (SF_6) \qquad (thousand \ tons-CO_2)$			2	0.2	1	0.02
Total (thousand tons-CO <sub>2</sub> )	24	137.1	39	147.9	40	145.2
Note 1: Calculations are based on data from the 40 compared	nine that ining th	o Subcommittoo by EV2004 (figu	roc for EV2002 or	ad 2002 are based on data from th	no 26 original mor	nhor companies: como figuros for

CO<sub>2</sub> emitted in FY2003 are based on data from the 40 companies that pointed the Subcommitted by F12004 (tigtles for F12002 and 2003 are based on data from the 20 digital men CO<sub>2</sub> emitted in FY2003 are based on data from the 40 companies). Certain unavailable data have not been provided. Note 2: Methane and nitrous oxide emitted during combustion and methane emitted from biochemical treatment of industrial and domestic wastewater are not included.

### Substances contributing to ozone layer (i) depletion

The Group companies ensure the recovery of substances that cause ozone layer depletion such as freons ① during the inspection of equipment containing such substances, and thereby, reduce their emissions.

		FY2002 records			FY2003 record	ds	FY2004 records				
Ozone-destroying substances	No. of companies	Quantity contained	Quantity emitted	No. of companies	Quantity contained	Quantity emitted	No. of companies	Quantity contained	Quantity emitted		
Specified freons ()*1 (tons)	2	4.3	0	2	8.1	0.05	3	15.7	0.5		
Alternative freons (i) (designated)*2 (tons)	12	41.1	4.3	22	46.0	4.10	25	51.2	3.3		
Halons ()* (tons)	8	5.1	0	6	5.2	0	7	12.3	0		
Note: Calculations are based on data from t	Note: Calculations are based on data from the 40 companies that joined the Subcommittee by FY2004 (figures for FY2002 and 2003 are based on data from the 26 original member companies). Certain										

Calculations are based on data from the 40 companies that joined the subcommittee by FY2004 (figures for FY2002 and 2003 are based on data from the 26 orginal membe unavailable data have not been provided froms; CFCs (chiorofluorocarbons), "2: Alternative (froms (designated), HCFCs (hydrochiorofluorocarbons)

### Waste (recycling, etc.)

The Kyushu Electric Power Group strives to reduce waste and also increase recycling rates based on both the Group's unified targets and initiatively determined targets.

Waste		FY2002 records		F١	/2003 records	FY2004 records	
	waste		Achievement	No. of companies	Achievement	No. of companies	Achievement
Industrial	Quantity generated (thousand tons)	21	40.2	23	38.2	27	55.9
waste (i)	Recycling rate (%)		73	23	77		85
	Quantity generated (thousand tons)	10	0.7	25	0.8	- 40	0.8
Used paper	Recycling rate (%)	19	48		56		74

Note 1: Calculations are based on data from the 40 companies that joined the Subcommittee by FY2004 (figures for FY2002 and 2003 are based on data from the 26 original member companies). Certain unavailable data have not been provided. Note 2: Figures may not add up to the totals due to rounding.

### Paper products (green procurement ①, etc.)

The Group companies strive to reduce the consumption of paper products and improve green procurement rates (recycled paper use rate) based on both the Group's unified targets and initiatively determined targets.

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Paper products		FY2002 records		F	Y2003 records	FY2004 records	
		No. of companies	Achievement	No. of companies Achievement		No. of companies	Achievement
Photocopy	Quantity consumed (million pieces)		84.2	- 26 -	91.2	10	96.3
paper	Usage rate of recycled paper (%)	26	60		72	40	84
Teilet tissus	Quantity consumed (thousand rolls)	16	135.0	10	137.9	07	147.5
Toilet tissue	Usage rate of recycled paper (%)	10	86	18	93	- 27	93

Note 1: Calculations are based on data from the 40 companies that joined the Subcommittee by FY2004 (figures for FY2002 and 2003 are based on data from the 26 original member companies). Certain unavailable data have not been provided. Note 2: Figures may not add up to the totals due to rounding.

### Chemical substances specified under PRTR Law ()

The Group companies are committed to the proper use and management of chemical substances ① covered by PRTR Law in accordance with the related laws and regulations.

Cher	nical substances specified	under PRTR Law		FY200	02 records	;		FY20	03 records	5		FY200	)4 records	
Index No	Chemical substances	Major application	No. of companies	Quantity handled	Quantity released	Quantity transferred	No. of companies	Quantity handled	Quantity released	Quantity transferred	No. of companies	Quantity handled		Quantity transferred
1	Water-soluble zinc compounds ()	Hot dip galvanizing ① (kg)	1	1,280	72	88,995	1	1,405	72	73,003	1	1,432	72	82,004
40	Ethyl benzene 🛈	Coating (kg)	1	1,453	1,453	0	1	1,087	1,087	0	1	1,200	1,200	0
43	Ethylene glycol (j)	Coolant (i) (kg)	1	6,263	6,263	0	1	4,992	4,992	0	1	8,342	6,038	2,304
63	Xylene (i)	Coating (kg)	2	7,713	7,713	0	2	6,871	6,871	0	2	7,363	7,363	0
144	Dichloropentafluoropropane (	Parts cleaning (kg)					1	2,475	2,475	0	1	2,400	2,400	0
227	Toluene (j)	Coating(kg)	1	5,698	5,698	0	1	4,289	4,289	0	1	4,720	4,720	0
230	Lead and its compounds (	Hot dip galvanizing and soldering (kg)	2	6,080	46	1,627	1	3,942	0	88	1	5,188	0	97
311	Manganese and its compounds (1)	Welding (kg)					1	1,000	0	60				

Note 1: Calculations are based on data from the 40 companies that joined the Subcommittee by FY2004 (figures for FY2002 and 2003 are based on data from the 26 original member companies). Note 2: The information displayed in the table is related to Group companies which handled Class I Designated Chemical Substances () to or more a year at each operating site (in case of Specified Class I Designated Chemical Substances, 0.5 tho or more).

### Waste containing PCBs (i), etc.

Waste containing PCBs and other chemical substances are properly stored and controlled according to the related laws and regulations. This type of waste is slated to be treated and rendered harmless by the mandatory deadline of 2016 as set forth in the Law Concerning Special Measures against PCB Waste ①. Certain Group companies have started to implement such treatment.

Waste containing	FY	2002 records	FY	2003 records		FY2004 re	ecords	
PCBs, etc.	No. of companies	Quantity contained	No. of companies	Quantity contained	No. of companies	Quantity contained	No. of companies	Quantity detoxified
Transformers	4	46 units	4	46 units	4	40 units	1	6
Capacitors	13	92 units	14	93 units	13	73 units	2	20
Stabilizers	5	493 units	6	531 units	6	575 units		
Others	4	1 units 369ℓ,27 kg	4	1 units 369ℓ,27 kg	4	1 units 369ℓ,27 kg		

Note 1: Calculations are based on data from the 40 companies that joined the Subcommittee by FY2004 (figures for FY2002 and 2003 are based on data from the 26 original member comp Note 2: Waste containing trace amount of (confirmed) PCB () is excluded.

### Air pollutants (j)

Fair effort is made by companies to control air pollutants including SOx (1) and NOx (1) according to the related laws and regulations.

A	FY2002 records		F	Y2003 records	FY2004 records		
Air pollutants	No. of companies	Quantity emitted	No. of companies	Quantity emitted	No. of companies	Quantity emitted	
Sulfur oxides (SOx) (thousand tons)	0	1.5	2	0.7		1.3	
Nitrogen oxides (NOx) (thousand tons)	2	1.3	3	1.8	3	1.8	

Note 1: Calculations are based on data from the 40 companies that joined the Subcommittee by FY2004 (figures for FY2002 and 2003 are based on data from the 26 original member companies). Note 2: SOx and NOx emissions data were obtained from Group companies required to conduct mandatory measurement of SOx emissions.



# Environmental Accounting

onmontal activity acata

Environmental activity costs ① calculated at each Group company are summed on a Group basis in accordance with the Environmental Accounting ① Standards for the Kyushu Electric Power Group.

			FY2	002	FY2	003	(Unit: m	2004			
Classification of environmental activities		Main activities	environmenta	environmental activity costs Investments Expenses		activity costs	environmenta Investments	l activity costs			
Global environmental	Global warming (i) prevention	Thermal efficiency $\oplus$ improvement, introduction and support for new energy $\oplus$ facilities, energy conservation (including low-emission vehicles $\oplus$ ) and SF <sub>6</sub> $\oplus$ emission control		6.8	8.7	24.3	26.7	48.6			
conservation	Ozone layer (i) protection	Measures for freon and halon recovery	0.1	10.5	1.2	9.8	6.9	10.6			
Local	Air pollution (i) prevention	Flue gas ${\rm treatment}$ (desulfurization ${\rm treatment}$ , denitration ${\rm treatment}$ , particulate ${\rm treatment}$ reduction equipment) and use of fuel with low sulfur content	0.9	80.0	1,146.6	118.0	17.6	482.8			
environmental conservation	Water pollution () prevention	Wastewater treatment, counter measures for oil leaks	2.9	91.8	245.1	61.6	0.7	143.6			
	Noise and vibration prevention	Counter measures for noise and vibration at facilities	0	0.9	0	4.3	3.8	34.7			
	Counter measures	Reduction and recycling of industrial waste	0	36.3	0	29.1	0	186.1			
Resource	for industrial waste ①	Disposal of industrial waste and PCB ① storage	22.0	91.3	33.0	247.2 17.7 76.0	5.6	271.7			
recycling	Counter measures	Reduction and recycling of general waste	0	13.9	0.2	17.7	0	19.2			
	for general waste (j)	Disposal of general waste	0	63.9	0	76.0	0	75.1			
Green procurement ①		Additional costs incurred by green procurement		0.2	0	0.7	0	1.0			
Environmental	Planning for environmental activities	Expenses for environment-related qualification acquisition, education $$ and training, and personnel	0	47.5	0	43.3	0	67.9			
activity management	Introduction and maintenance of EMS ()	Acquisition, implementation and maintenance of EMS (ISO14001 $\oplus,$ ISO-based system $\oplus)$	0	32.1	0	31.4	0	34.9			
	Environmental load (i) measurement and monitoring	Monitoring and measurement of substances having environmental load	0	10.6	0	38.5	1.0	47.2			
Environment- related research	Environmental conservation	Effective use of waste	0	40.5	1.2	6.8	0	18.0			
	Greening of sites	Greening of company-owned land and facilities, and their maintenance and management	0	70.5	8.4	67.1	6.7	68.2			
	Maintaining quality townscapes and surroundings	Measures to keep buildings in harmony with the landscape of their surrounding environment	0	0	0	0	0.2	0			
Social activities	Environment Month (i) and others	Environment Month, planting activities	0	0.1	0	0.5	0	0.4			
	Supporting local environmental activities	Support for local environmental activities and environmental organizations ()	0	0.7	0	0.4	0	0.2			
	Environmental information disclosure	Creation of website related to the environment	0	0.1	0	0.2	0	0.2			
Penalty for enviror	nmental damage	Pollution load levy $$ set by Law concerning Pollution-related Health Damage Compensation and Other Measures $$	0	235.8	0	198.4	0	145.0			
		Total	281.4	833.5	Total 281.4 833.5 1.444.4 975.3 69.2 1.655.4						

Note: Calculations are based on data collected from the 40 companies that joined the Subcommittee by FY2004 (those for FY2002 are based on data collected from the 26 original member companies). The FYs 2002 and 2003 amounts were estimated by Group companies and summed on a Group basis.

## 4 Environmental Education and Sharing of Environmental Information

### **Environmental Education**

For further promotion of environmental management  $\oplus$ , joint seminars on environmental management, study tours to environmentally advanced model entities and lectures on the environment were organized to offer environmental education to the whole Group. These activities will be continued to ensure our progress.

### $\Sigma$ Joint seminars on environmental management

In the first half, we had a seminar with a speaker from Mitsubishi Electric Corporation, Fukuyama Works in Fukuyama City, Hiroshima Prefecture. He introduced energy conservation and other environmental activities Mitsubishi Electric Corporation is involved in. In the second half, we had a workshop with personnel from the Environmental Affairs Department of Kyushu Electric Power to discuss Environmental Accounting Standards for the Kyushu Electric Power Group (held in November 2004 with 42 attendants from 36 Group companies).

 $\boldsymbol{\Sigma}$  Study tours to environmentally advanced model entities

Personnel from the Group companies visited Toyota Motors Kyushu, Inc. in Miyata, Fukuoka Prefecture to learn how environmental activities including zeroemission ① and acquisition of ISO14001 certification were being implemented as well as a tour of their factories (held in August 2004 with 32 personnel from 30 companies).

### $\Sigma$ Environmental lectures

Two Group companies, Kyuden Sangyo Co., Inc. and Kyushu Telecommunication Network Co., Inc. held a lecture with a speaker from the Environmental Affairs Department of Kyushu Electric Power under the theme "Kyushu Electric Power Group's efforts for environmental management" (Approximately 90 attendants from the two companies).

In Environment Month, Kyushu Electric Power organized a lecture about "World inside Japan – Consider the Global Environment" with a speaker Mr. Jiro Hirano, a broadcast journalist and a former commentator for NHK (Japan Broadcasting Corporation). Many people attended the lecture from Kyushu Electric Power and other Group companies (held in June 2004 with 61 attendants from 31 companies).

### Sharing of Environmental Information

Kyushu Electric Power Group's Environmental Information is available on Kyushu Electric Power Group's Information Network website, accessible by most Group companies. This is aimed to have environmental information shared among all Group companies in order to help environmental activities take root and be promoted in each Group company. Efforts will be made to improve the content in the future.

# Measures for Global Environmental Issues

The Kyushu Electric Power Group implements various environmental measures to cope with global environmental issues ①. The measures include ensuring SF<sub>6</sub> gas recovery for the prevention of global warming, reduction of electricity use in offices and complete recovery of regulated freons ① to protect the ozone layer, all of which are aggressively tackled, aiming for the unified targets of the Group.

Other measures taken to address the global environmental issues include the development and provision of eco-friendly products () and services. Examples of such endeavors are introduced in specific cases below:

### Kyushu Rinsan Co., Inc.

### Contribution to GHG ① Emission Reduction by Managing Kyushu Electric Power's Forests

Kyushu Rinsan Co., Inc. is responsible for maintaining and managing Kyushu Electric Power's forests of approximately 4,450 hectares and 6.57 million trees (as of April 2002).

Properly managed forests or trees absorb  $CO_2$  (1) in the air and store it in the form of carbon compounds with the help of solar energy. If trees are cut down, the felled trees cease to absorb  $CO_2$  anymore, but continue to retain absorbed carbon unless they are burned. Following the principle "plant new trees when trees are cut down," the overall amount of  $CO_2$  absorbed will remain equal since the amount of  $CO_2$  that would have been absorbed by the felled trees is made up for. The longer the use of felled trees lasts, such as for housing material, the longer contained carbon will be retained. Thus, trees are extremely ecofriendly resources that can be reproduced (reference books: "Recycling society (1) and timber – one more forest in each city" and "Timbers protect environment and our health," written by Takanori Arima).

Forests owned by Kyushu Electric Power have about 6.57 million trees with a timber volume of 705 thousand  $\mathbb{m}^3$  or so. Approximately 290

Nishinippon Plant Engineering and Construction Co., Ltd.

### Introduction of Wind Power Generation Seeking for CO<sub>2</sub> Emission Reduction

Nishinippon Plant Engineering and Construction Co., Ltd. is engaged in the construction of wind power generation facilities, and completed a wind power generation station in Karatsu City, Saga Prefecture to start commercial operation in March 2005 (1,500kW × 8 units from General Electric Wind Energy Corp. with total output of 12,000kW).

Wind energy is clean and inexhaustible, and produces no  $CO_2$  emissions in power generation, though it has a few drawbacks such as weather dependency, low energy density and higher generation costs. If quantity equal to the annual volume of power produced in the wind power station were produced in a thermal power station<sup>\*</sup>, the wind power station can reduce  $CO_2$  emissions by approximately 17,000 tons compared to a thermal power station. The company is currently considering the

### Nishimu Electronics Industries Co., Ltd.

# Sale of the Remote Energy Management Service System to Support Customers' Energy Conservation Activities

Since the Kyoto Protocol  $\oplus$  came into effect, fulfillment of the greenhouse gas reduction commitments became an urgent matter. One of the effective measures for such an endeavor is energy conservation.

Nishimu Electronics Industries Co., Ltd. offers support to customers in their energy saving activities by taking advantage of its accumulated control and telecommunication technologies as well as know-how in its 24-hour monitoring system at its maintenance centers.

The remote energy management service system developed is used for the company and its customers to control energyrelated information including the status of electricity and fuel used by its customers via the Internet.

The customer's energy-related information is stored in the company's "data collection server" and sent to the customer as

thousand tons of carbon (equal to 1.06 million tons of  $CO_2$ ) are estimated to be retained in the trees and approximately 8,000 tons of carbon (equal to approximately 30 thousand tons of  $CO_2$ ) are absorbed from the air annually.

<u>,CO</u>

The forests owned by Kyushu Electric Power have 85 years of history, supplying water for hydroelectric power generation and materials for utility poles. The forests have been adequately managed, and have played a part in preventing global warming by absorbing CO<sub>2</sub> from the air. As a result, our company-owned forests were recognized to be

properly managed and were awarded the Forest Management Certification ① by the Forest Stewardship Council (certification No.SA-FM/COC-1412) in March 2005. We will be devoted to caring for and increasing the number of functions and effects provided by forests.



Japanese cedar grove in Kyushu Electric Power's forest in Yamashitaike, Yufuin, Oita Prefecture

possibility of constructing a wind power station on the ocean (sea area), which provides more advantageous conditions for wind (i.e. high average wind speed and constant wind).

Our vision for the future includes power generation projectsin addition to the construction of wind power stations. The company also plans to develop a combined system using new energy such as wind and photovoltaic power generation in order to offer an energy supply system that is eco-friendly and suitable for each region.

## \*:A one million kW-class oil-fired thermal power station assumed

Hizen Wind Power Station under construction Hub (tower) height: approx. 65 meters Rotor (blade part) diameter: approx. 71 meters



needed, and is used to prepare an energy management report regarding the operating status of energy equipment. The energy management report stored on a Web server is accessible by the customers through the Internet at any time. These services enable customers to see the effect of energy conservation achieved by each customer and encourage them to continue energy saving efforts effectively. The company also offers a service to monitor energy equipment, and communicates malfunctions to the customer, when identified.



## 6 Measures for the Creation of a Recycling Society

The Kyushu Electric Power Group implements a variety of environmental activities to construct a recycling society ①. Particularly, aggressive efforts are continued in order to raise the recycling rate ① of used paper ① and the rate of recycled paper use ① for photocopy paper and toilet tissue and promote green procurement ① based on the Group's unified targets. The group, as a rule, practices green procurement for commodities such as commercially available office supplies if there is no price difference between eco-friendly products ① and regular goods.

Another measure taken to create a recycling society is to develop and provide eco-friendly products and services. Some examples describing our measures for realizing a recycling society are introduced below:

### Koyo Denki Kogyo Co., Ltd.

# Promoting Research Activity to Recycle Used Insulators

Koyo Denki Kogyo Co., Ltd. manufactures distribution insulators\* using Amakusa pottery stone as a main raw material. Pottery stone and clay are among natural minerals. High quality pottery stone and clay used in ceramic industries including insulator manufacturers are recently in a shortage situation. Recycling is required to address this issue, and will contribute to waste reduction.

Defective insulators identified in or after the manufacturing process are used as raw material for refractory bricks since such defective insulators are all porcelain quality. However, insulators used in distribution equipment are difficult to recycle because of to the porcelain area of the used insulator, and are mostly disposed of as industrial waste  $\oplus$ .

Given the above situation, the company now cooperates with Distribution Department of Kyushu Electric Power to research and develop the following:

1. Method to implement efficient separation and sorting of porcelain area and metal parts,

Japan Recycling Light Technology & System

### Creating Lamps from Lamps: Challenge of Recycling Material for Fluorescent Tubes

Japan Recycling Light Technology & System recycles used fluorescent tubes collected from companies, schools, local governments and households. After the used fluorescent tubes are reverted to original materials such as glass, metal, phosphor and mercury, recycled fluorescent tubes are made using such original materials for sale (by outsourcing).

In three years since the start of its operation, the company concluded agreements for treatment with 252 local governments\*1 as well as many companies and schools.

In November 2002, the company started selling recycled fluorescent tubes, manufactured using recycled phosphor. The sale was the first attempt in Japan. Also the company manufactured recycled fluorescent tubes "Yoka-Lamp" using recycled glass to market them in June 2004. The new endeavor pursued in June 2005 was sales of another recycled fluorescent tubes "Top Star" which satisfy the requirement under the Law on Promoting Green Purchasing ①. The "Top Star" product line is a three-wavelength\*2, energy-saving

### Kyushu Environmental Management Corporation

### Contributing to the Realization of a Recycling Society by Recycling Confidential Documents

Kyushu Environmental Management Corporation is engaged in eliminating secret information from and recycling confidential documents that used to be shredded and burned. The company also sells recycled photocopy paper and toilet tissue under a private brand, as well as stores the document.

In the recycling of confidential documents, an integrated system is used, which covers the collection, transportation, shredding, compressing, recycling (dissolving) for the production of paper products by affiliated paper manufacturers, and the sale of produced recycled paper products.

The company applies the best possible measures to ensure the security of the confidential documents it handles by using collection boxes that guard secrets and special vehicles equipped with functions to prevent the theft or scattering of documents. Its treatment facility meets the safety and confidentiality criteria of Japan Quality Assurance Organization (JQA) and was the first facility in Kyushu to receive a certification for conformity to safety measures as a recycling

2. Method to implement efficient crushing of the porcelain area, and 3. New usage of the crushed porcelain area.

We will endeavor to develop a method to recycle used insulators, as a material for ceramic products or as a material with new functions for other products in order to contribute to the building of a recycling society.

\*Products (mostly made of porcelain) used to electrically insulate electric wires from a supporting structure.





(stick-type metal parts are fixed in the middle)

fluorescent tube (Hf fluorescent tube) and is manufactured using recycled glass and phosphor as well as the Yoka-Lamp.

The company plans to recycle even more fluorescent tubes, improve the percentage of recycled materials used<sup>•3</sup> in its products, and broaden its product range. Its ultimate goal is to establish a recycling system in which fluorescent tube materials are recycled based on "lamps" conception.

\*1: It indicates the number of local governments before the recent, large-scale merrer

\*2: It illuminates better and provides vivid colors due to appropriate blending of the phosphors of three primary colors; blue, green and red.

'3: İt indicates a percentage of recycled materials used in fluorescent tubes. Percentage of recycled glass and phosphor used are roughly 1% and 30%, respectively.



New fluorescent tube product "Top Star"

and treatment center. The entrance into and exit from the treatment facility are controlled by an ID card and monitored using a security system employing surveillance cameras and temperature sensors, which operates 24 hours a day, seven days a week.

The company will address waste reduction, the prevention of air pollution  $\oplus$  and resource depletion (deforestation) by recycling confidential documents in order to help create a recycling society.

JQS-certified confidential document treatment facility Fukuoka Security Center



## 7 Environmental Activities in Cooperation with Local Communities

### Participation in Kyushu Homeland Forestation Program

The Kyushu Homeland Forestation Program was started in fiscal 2001 to commemorate the 50th anniversary of Kyushu Electric Power under a concept that one million trees should be planted in ten years. Personnel from each Group company participate in the program as a voluntary activity. In fiscal 2004, a total of 925 employees from 24 Group companies joined the program and planted trees with local residents in the communities.



Tree planting in Fukiagehama, Hioki City, Kagoshima Prefecture

### **Tree Planting Activity Overseas**

Kitakyushu Liquefied Natural Gas Co., Inc. implements tree planting and greening activities in Indonesia for the protection of tropical rain forests.

PT Badak Natural Gas Liquefaction Company (based in Jakarta), which supplies Kitakyushu Liquefied Natural Gas with LNG ①, has a liquefaction base in Bontang City in the eastern part of Kalimantan Island (Borneo) of Indonesia. Kitakyushu Liquefied Natural Gas Co., Inc. plants seedlings of trees native to Bontang such as Kandis and Nam-Nam in the Kitakyushu Liquefied Natural Gas Park constructed in the site of the liquefaction base.

The tree planting was suggested by the company's former president Ono. Since 1995, a total of 13 employees paid eight visits to the park to plant trees by themselves. So far, approximately 1,000 tree seedlings have been planted with growing appreciation from the local people.

The company plans to continue tree planting activity to assist local greening at home and abroad.



A tree planted by President Matsuo (right) of Kitakyushu Liquefied Natural Gas Co., Inc. in May 2001

### **Cleaning of Communities**

KYUKI CORPORATION and Kyushu Meter & Relay Engineering Corp. voluntarily clean local areas together with the Kyushu Branch Office of the Japan Electric Meters Inspection Corporation and the Research Laboratory of Kyushu Electric Power in September and October every year.

0.0

The four companies described above are located close to each other, and cooperated to launch this cleaning program in fiscal 2003 to contribute to the local community. Cleanings have taken place twice so far. The four companies take turns acting as secretariat. Usually, about 180 employees clean roads scattered with empty cans and bottles and burnable trash in two hours.

The companies will continue the cleaning to restore local environment.



Cleaning by the four companies in Minami Ward, Fukuoka City

### 8 Active Disclosure of Environmental Information

The records of various environmental activities are disclosed in the Environment Action Report and on Kyushu Electric Power's website. The Kyushu Electric Power Group is committed to promoting environmental management for the Group as a whole and further disclosing related information.



### Hiraodai Kitakyushu City, Fukuoka Prefecture

**Kitakyushu City, Fukuoka Prefecture** Hiraodai is one of the three major karst plateaus and designated as the Kitakyushu Quasi-National Park, extending from Kitakyushu City across Kanda-cho, Yukuhashi City, and Katsuyama-cho to Kawara-cho, Fukuoka Prefecture. Hiraodai is made of limestone tableland formed from sea bottom biotic reefs about 250 to 200 million years ago. Now on the limestone plateau, grass fields stretches out, and some forests have grown and scattered in dolines and spring heads. There are also many caves particular to limestone zones, such as the Senbutsu and Mejiro limestone caves.

### 2005 Environment Action Report



# Opinions on Environmental Activities



- 1. Results of the Questionnaire from the Previous Report
- 2. Principal Opinions of the Kyushu Electric Power Environmental Advisory Council 67

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- 6. Items Reflecting Opinions, Evaluations and Commendations from Outside the Company 71

### Part IV

# **Opinions on Environmental Activities**

# **1** Results of the Questionnaire from the Previous Report

We received invaluable opinions regarding the implementation of our environmental activities through the questionnaire attached in the "Fiscal 2004 Kyushu Electric Power Environment Action Report" (and the Digest) published in June 2004. As of March 31 2005, we received 120 responses from local governments, environmental NGOs (), people in the education field, and the general public. We greatly appreciate your kind cooperation.



- convenient to use.
  - · The Environment Action Report Digest with kana readings is very easy to understand even for elementary school children.



- The forestation is helpful for preventing global warming and also promotes cleaner water environments.
- · Raising people's awareness of the environment is important for solving environmental problems. Environmental education, particularly for children, is the key to higher awareness.

Environmental accounting (11)

- · It is helpful that actual costs for environmental activities were well illustrated.
- I was surprised to see how much the company spent on environmental costs.

Promotion of renewable energy sources () [10]

- · Although it is costly to generate power with unlimited energy sources, I think further emphasis should be placed on the spread and promotion of wind and photovoltaic power generation facilities.
- · I could truly understand that the company has been proactively introducing renewable energy sources



# 2 Principal Opinions of the Kyushu Electric Power Environmental Advisory Council

The 5th Kyushu Electric Power Environmental Advisory Council was held on May 17, 2005. The council members discussed and presented various views on Kyushu Electric Power Co., Inc. and the Kyushu Electric Power Group's measures for environmental issues and the "2005 Kyushu Electric Power Environment Action Report". The following are some of the principal opinions of the Council. For related activities and improvements reflected in the Environment Action Report, see page 71

# Environmental Activities

#### **Environmental management**

- The "Working with Society" article in the Environment Action Plan shows the company's passive (inward looking)
- stance. With the mid-21st century in view, such an attitude is insufficient as an advanced company. The company needs to consider the general public not only as customers but also as partners in jointly addressing environmental issues



Measures against earthquakes

be disclosed proactively.

· In the event of the Fukuoka Earthquake, I worried about the condition of the nuclear power plant (since I live in Kumamoto prefecture.) I assume that this worried everyone living in Kyushu. Explaining measures to an earthquake can relieve our anxiety.

· I say the greatest environmental pollution may

not be caused by CO2 but the environmental load resulting from an accident at a nuclear power plant. Thus, related information should Mr Marumoto

Mr. Nakamura

### Promotion of nuclear power generation

· It is understandable to emphasize the effects of CO2 emissions reduction achieved by nuclear power generation and the necessity of the pluthermal use ). However, nuclear power generation is promoted on the premise that the optimal combination of power sources () is to be applied. Since this means finding the best combination based on merits of different energy sources, both the merits and demerits of each source should be objectively presented.

· General public tend to idealized wind and

photovoltaic power generation. The company should explain the reason why such types of

power generation account for a small portion in

total electricity sales as well as the difficulty in





Mr. Tsutsu

promoting their application. **Global warming issues** 

- . The company should go back to its basic standpoint that the company takes a part in public utility business. The company is required not only to fulfill its social role by supplying high quality electricity, but at the same time ask its customers to cooperate with their electricity use, such as reducing electricity consumption during the peak load time.
- · A higher supply of electricity inevitably increases CO2 emissions. Thus, it is necessary to consider curbing electricity sales which are generated from resources with high emissions intensity ().
- Considering that the company acquired EcoLeaf certification, I suggest gas meter inspection sheets to include the amount of CO2 emissions from the prior year together with the meter readings to inform customers of their share of CO2 emissions.
- · CO2 absorption by the company-owned forests should be more aggressively publicized.

#### **Environmental education**

· The company-owned forest in Oita Prefecture is well maintained and useful for environmental education. I suggest posting notice boards that describe plants and animals in the forest (e.g. wild birds and a local variety of Rhododendron kiusianum called Miyamakirishima).



· I want the company to take a leadership role in

Mr. Fukuizum

environmental education. One way is to take time for human resource development as part of its effort for environmental education such as sponsoring a research program for student applicants at its facilities.

CO

#### **Environmental communication**

 Eco Mothers' activities are very good. They should be further promoted through making collaboration with municipal programs or providing a system for municipalities, so that they will help enhance the reputation of not only Kyushu Electric Power Co., Inc. but also local municipalities and NPOs<sup>(1)</sup>

# Environment Action Report

### **Environment Action Report**

provided.

decreased.

The report says that a lower utilization ratio of nuclear power plants i resulted in higher CO2 emissions intensity. But it would facilitate understanding if specific figures for CO<sub>2</sub> emissions intensity for thermal and nuclear power generation were

· Also there should be an explanation for the

reason why the use of nuclear power plants

· It would be easier to understand if the report

had descriptions of the company's overall

situation, including the amount of output

generated with each energy source, as well as

anticipated improvement in CO2 issues based

· The applied baselines should be given to clarify

· Details of complaints and responses to them

· It is better to give a more detailed description of

· The Eco Action section in the CD-ROM would

be better if it had a description of an approach

for purchasing products such as by using a

Eco Mothers' Club activities for their future

environmental load reduction effects in the

on the company's 3 and 5 year plans.

material flow diagrams.

development and collaboration.

should be included.



Mr. Sawada



Mr. Tsuruta



Ms. Ishikubo



- Mr. Akagi
- · I suggest that energy-saving measures taken at home be introduced, say, under the title of "My Energy Conservation.

labeling system to indicate energy savings.

#### Environment Action Report Digest

· In order to make more people aware of the Environment Action Report, it is important that copies of the Environment Action Report Digest are always available in a booklet form at customer service offices offices so that customers can easily pick one up and read it.



uncil	Ei Akagi	Writer			
Members of the Kyushu Electric Power Environmental Advisory Council	Naohito Asano	Professor, Faculty of Law, Fukuoka University and a provisional member of the Central Environmental Council			
al Advi	Nahomi Ishikubo	Lifestyle journalist			
nment	Masao Otsuka	Environmental counselor, Ministry of the Environment			
Erwiro	Mami Oku	Associate Professor, Faculty of Environmental Studies, Nagasaki Univer			
Power	Takao Sawada	Deputy managing editor, Yomiuri Shimbun Western Head Office			
lectric	Yasuhiko Tsutsui	Essayist			
ushu E	Satoshi Tsuruta	Vice Chairman, Kyushu Recycle and Environmental Industry Plaza			
the Ky	Hidetaka Nakamura	President & CEO, Onga Shinkin Bank			
bers of	Akira Fukuizumi	Teacher, Fukuoka Prefectural Shuyukan High School			
Mem.	Fuminori Marumoto	President, Kenmin Dept.Store Co.,Ltd. Kumamoto Hanshin			
	(In the order of the Japanese syllabary: titles and prefixes omitte				



# 3 Results of Survey on Mother's Awareness and Behavior on Environmental Issues

We conducted surveys on participants in Eco Mothers' activities (or guardians when such activities were held for children). All received opinions are valuable for improving the activities of Eco Mothers and other environmental projects. We distributed 7,553 guestionnaires and received 2,434 responses (a response rate of 32.2%).



### Questionnaire Results and How They Were Reflected in Our Activities

The results of the fiscal 2003 questionnaire showed significant understanding of environmental information provided by companies (Q6) and high expectations for activities carried out from a familiar perspective such as Eco Mothers' activities (Q4). Thus, in fiscal 2004, we continued the picture-card show and reading to children, while we strived to provide more participatory and experience-oriented activities by improving panel (paper puppet) theater on waste separation, power generation experiments and environmental quizzes.

#### General comments

Interest in global warming grew considerably partly due to mounting social concerns about the Kyoto Protocol () having come into effect. (Q2 41.2 49.5%) All answers show lower percentages in Q3: "Is there any activity you want to try at home?" This can be attributable to the listed activities activities already pursued at home.

People are even more agreeable to environmental information provision by companies. (Q6 99.2 99.8%)

Improved participatory and experience-oriented activities led to a slightly lower figure of children who showed interest in the picture-card show. (Q5 87.1 84.7%) For the activities through Eco Mothers, the majority answered that they were better and more accessible than those conducted by Kyushu Electric Power's employees (Q7). However, some people answered that the activities were better conducted by our employees, because our employees:

### ·have expertise.

- ·make the activities more realistic and convincing.
- ·can answer questions from children.
- These indicate requests for more technical communication

Reflecting opinions in the Eco Mothers' activities

In fiscal 2004, in response to the above opinions, the staff of our Environmental Affairs Department joined in an activity for children of all grades at an elementary school that required more technical knowledge, and gave guizzes in collaboration with Eco Mothers. This participation was guite well received.

In fiscal 2005, we will consider collaborating with educational institutions as well as making use of our specialized expertise, while striving to help Eco Mothers improve their skills.

To bring activities closer to people, we will widely publicize them and try to elaborate on them to meet diversified needs

### Watching an Eco Mothers activity with children

I had an opportunity to enjoy a picture-card show by Eco Mothers. Honestly speaking, I felt hesitant about writing a comment like this, because I realized how ignorant I was. I was taught the chemical symbol CO2<sup>®</sup> when I was a student, but I learned so little about it. Being a mother, I was impressed by the activities and easy-to-understand reading facilitated our understanding of natural law, and found them convincing in many ways. Previously, I used an energy-saving tap at home and tried not to use too much water, but I did so simply for economic reasons and not for the natural environment. We living creatures can lead a comfortable life thanks to the proper functions of nature, but we never appreciate it. A

Take Soccer Club, Kagoshima City Mrs. Harada

and her son

proverb says, "One good turn deserves another." It is also true about nature. I believe if each person can face nature with the spirit of this proverb, we can help reduce, even if only a little, CO2 emissions, which are a major contributor to global warming. A good deed brings a good outcome and a bad deed threatens our lifestyle. I praise the activities of Eco Mothers for bringing this fact to more people and I appreciate the opportunity I was given to learn. I would like to convey this to children, our treasures, who support our future.



# 4 The Result of the "8th Nikkei Environmental Management Survey" Conducted by Nihon Keizai Shimbun, Inc. - First place in the electricity and gas sector-

The "8th Nikkei Environmental Management Survey" was conducted in September 2004. As in the previous year, Kyushu Electric Power Co., Inc. ranked first among 17 companies in the electricity and gas sector.

### Outline of the Survey

The purpose of this survey is to evaluate and rank companies based on their commitment to environmental management. It has been conducted every year since 1997.

The results are announced in the Nihon Keizai Shimbun and the Nikkei Sangyo Shimbun, gaining growing public interest.

The feature of this year's survey was a new category added to evaluate environmental activities at offices, which have more room for improvement than factories or plants, for instance, by reducing greenhouse gases.

### **Outline of the Environmental Management Survey**

	Period	From September through October 2004
Survey method		<ul> <li>Sending questionnaire by mail and reviewing environmental reports, etc.</li> <li>Survey participants include listed companies: 1,778 manufacturers and 2,240 non-manufactures (including those in the construction and electricity &amp; gas sectors).</li> <li>The valid response rates were 33.2% for manufacturers and 21.0% for non-manufacturers.</li> </ul>
Evaluation method		Each question (total 52 questions excluding supplemental questions) was categorized and scored in the following 7 areas. The companies were ranked based on the total score of each company by its respective sector such as manufacturing, non-manufacturing and electricity & gas sectors.
	Management structure	A structure or a system for an environmental accounting $\oplus$ system, information disclosure and environmental education
lation	Long-term goals	Development of long-term goals for continuous improvements in the area of environment
categories for evaluation	Measures against pollution	Conditions of air pollutant⊕ emissions; chemical substance management and measures against soil contamination⊕
ories 1	Resources recycling	Commitment to waste reduction and recycling; waste management
7 catego	Eco-friendly products	Environmental measures taken in all through product lifecycle from design to manufacture and disposal; CO <sub>2</sub> emissions in the energy transfer process
	Measures against global warming	Recognizing the company's greenhouse gas emissions; setting reduction targets; activities to achieve the targets
	Offices	Environmental measures implemented at offices

## 2 Kyushu Electric Power's Environmental Management as Seen in the Survey Results

Kyushu Electric Power Group has resulted in wellestablished environmental management, reducing SOx<sup>①</sup> and NOx<sup>①</sup> emissions and raising the industrial waste<sup>①</sup> recycling rate<sup>①</sup>. Also a higher utilization rate of nuclear energy contributed to a lower  $CO_2$  emission intensity<sup>①</sup>. These are all highly evaluated in the survey. (Nikkei Sangyo Shimbun on December 6, 2004, etc.)

### Kyushu Electric Power's scores



The above figures show the relative evaluation of Kyushu Electric Power Co., Inc. in the electricity and gas division. (To reflect the scores in a graph, the highest score in each category is converted into 100 and the lowest into 10.)

We obtained the highest evaluation in 5 categories: management structure, long-term goals, measures against pollution, recycling, and offices.

The company ranked fifth among 17 companies in measures against global warming and sixth in eco-friendly products. Our analysis showed room for improvement in grasping and announcing data on environmental load  $\oplus$ , which is enhanced in this report.

(Specific improvements)

In addition to data on CO<sub>2</sub>, data on other gases (CH<sub>4</sub>①, N<sub>2</sub>O①, HFC①, PFC① and SF<sub>6</sub>①)subjected to the Kyoto Protocol reduction targets is listed.

see pages 27-28.

• The report has additional information on the environmental load reduction effect of eco-friendly products that Kyushu Electric Power Co., Inc. and its group companies promote and sell (e.g. EcoCute), recycled fluorescent tubes, etc.).

See pages 29 and 37

 Also added is the data on environmental load at an office under construction (Omarugawa Power Station Construction Office). (An on-site report will be issued by Omarugawa Power Station in fiscal 2005.)

Considering the activities of our entire group will be subject to future evaluations, and the number of group companies engaged in environmental management promotion has increased from the initial 26 to 44. Thus, we will further strive to raise standards of the entire group's environmental activities.

Specifically, we will jointly work to fulfill the action items (the measurement and publication of greenhouse gas emissions, etc.) set under the Kyoto Protocol and the Kyoto Protocol Target Achievement Plan () which was compiled by the Japanese government after the protocol took effect.



# 5 Results of Employees' Environmental Awareness Survey

For thorough implementation of corporate environmental activities, it is essential for each employee to have high and constant environmental awareness. In discussing how to improve our environmental activities, Kyushu Electric Power Co., Inc. utilizes what it has learned about employees' awareness and understanding of environmental activities, their involvement in the activities, needs, and changes in these aspects over the years.

### Improvements in Environmental Activities Resulting from Findings of FY2004 Survey

### Support Activities for Branch Offices by the Environmental Affairs Department, Head Office

The environmental management system () was newly applied on a company wide basis, and the environmental affairs department was requested to give support and instructions to branch offices, serving as an external monitoring function. Therefore, the department has:

- enhanced internal environmental audit bodies (at 60 offices).
- assisted environmental activities improvements (at 99 offices).
- provided support to further raise employees' environmental awareness (at 31 offices).

### Training Programs for Employees to Acquire Expertise and Daily Engagement in Environmental Activities

In order to meet the needs for practical training to ensure appropriate implementation of environmental activities and to incorporate such activities into daily practices at each office, the following tasks were implemented:

- Recognizing and answering the need for environmental training (taken by 230 employees)
- •Education focusing mainly on issues insufficiently understood or deemed highly necessary
- •Training courses by function, offered in consideration that members with different functions have different levels of awareness or understanding
- Fostering internal environmental auditors of the environmental management system (161 employees)

### Development of Standards and Manuals for Proper Waste Treatment

While developing waste treatment standards and manuals, Kyushu Electric Power Co., Inc. offered practical training including training at the environment-related section. In order to enhance our self-checking function under the environmental management system, we prepared and utilized a "Legal compliance checklist" as well as an "Environmental audit checklist" which supplements the legal compliance checklists in reviewing our operations and compliance conditions at the time of internal audits.

# 2 Outline of the FY2005 Survey

Subjects: 12,571 employees

(All employees except executives and directors at the head office) • Responses: 7,386 (response rate: 59%)

- [Response rate of the previous survey (FY2004): 56%]
- Period: May 23 (Monday) through June 3 (Friday), 2005
- Method and contents:

Questionnaire via e-mail using the intranet (anonymous survey)

The purpose of this survey was to understand employees' awareness and understanding levels of and involvement in each environmental activity. It focused mainly on activities that were less recognized or showed poor performance in the previous survey, and introduced measures to improve them.

### Summary of the survey results

• Employees have a better understanding of the environmental management system due to support activities for offices. (The environmental management system is effective: 79.4% 74.7% 78.1%) About half of those who answered that the system is not effective believe that the system needs to be further improved.

Furthermore, we received many opinions arguing that deeper understanding of the system is essential to solidify understanding and thus requires continuous support and guidance by the Environment Affairs Department of the head office.

- Understanding of environmental management has also deepened. A solid increase is seen in the recognition that environmental management is important for corporate administration. (77.3% 85.6%)
- The level of proper waste treatment remains high (98.4% 98.4% 98.8%). However, some answers showed that some respondents don't know to what extent they should separate waste, and requested OJT (1) and other practical education as well as the development or the revision of related manuals.
- Thanks to the results of the Nikkei Environmental Management Survey, in which the company ranked first for two consecutive years, the awareness of environmental ratings rose drastically. (42.2% 62.8%)
- The intranet of the Environment Affairs Department, which was developed as a tool to share information, gained higher recognition (66.3% 74.6%). However, its utilization rate remains noticeably low. (15.0% 12.2%)

### Environmental Activities Reflecting the Results

The results indicate that employees are actively engaged in environmental activities and they highly evaluated measures taken to make improvements based on the findings of fiscal 2004 survey. However, further efforts are required for continuous improvement and also to respond to the Kyoto Protocol Target Achievement Plan ().

Considering the above and based on the findings from the latest survey, the company will continue to:

- provide direct support to branch offices supported by the Environment Affairs Department, while seeking further improvement by adding technical training programs to appropriately operate the environmental management system and regularly engage in environmental activities;
- identify needs and review the contents of the intranet to boost its use and share information without delay; and
- understand employee awareness to make improvements.



# 6 Items Reflecting Opinions, Evaluations and Commendations from Outside the Company

## **Items Reflecting Opinions**

The opinions and requests from customers and the Kyushu Electric Power Environmental Advisory Council with regard to environmental activities and the Environment Action Report of the Kyushu Electric Power Co., Inc. will be reflected in the content of future environmental activities and Environment Action Reports.

	Summary of opinions	Response items reflecting the opinions
	<ul> <li>Environmental management</li> <li>The activities described in the "Working with Society" section are inward-looking. The company should regard the general public not only as customers but also partners in jointly addressing global environmental issues ①.</li> </ul>	• The importance of collaboration among different industries and social strata is pointed out in the Kyoto Protocol Target Achievement Plan. Such social needs will be considered in working out the 2006 Environment Action Plan ().
	<ul> <li>Global warming issues</li> <li>The company should provide customers with information on the efficient use of electricity including a call for cutting electricity consumption during peak hours.</li> </ul>	<ul> <li>We continue to encourage customers to cut back electricity consumption during peak hours by promoting the use of electrical load leveling devices or systems and through consultations on saving energy.</li> </ul>
tivities	<ul> <li>It is necessary to heighten customers' environmental awareness by printing their CO<sub>2</sub> () emissions on electricity meter readings.</li> </ul>	• With due consideration to the revised Energy Conservation Law (1), we will devise a more effective means of PR within fiscal 2005 for the prevention of global warming (1) in collaboration with customers.
Environmental activities	<ul> <li>Energetic PR is required regarding CO<sub>2</sub> absorption by the company owned forests.</li> </ul>	<ul> <li>The relevant information will be included in the Environment Action Report Digest, a version for the general public. Also we actively promote PR such as by utilizing reporters' workshops.</li> </ul>
Enviro	<ul> <li>It is requested to make use of the company's facilities and their natural surroundings in addition to the area around the Onagohata Dam in providing education in energy and the environment.</li> </ul>	<ul> <li>Based on the achievements produced through previous activities, we will discuss using such facilities to make our support for environmental education</li></ul>
	<ul> <li>Environmental communication</li> <li>Eco Mothers ① activities need to be conducted also for the betterment of municipalities and NPOs ①. One way to do this is through collaboration with municipal programs.</li> </ul>	<ul> <li>Such collaboration already started with some municipalities and will expand to other areas.</li> </ul>
	<ul> <li>Conditions of a nuclear power station at the time of earthquakes</li> <li>The company should have provided information on the nuclear power station's conditions at the time of the Fukuoka Earthquake.</li> </ul>	• We have offered and will continue to offer press releases as required. We also added relevant information in the Environment Action Report Highlights along with measures taken at power plants against an earthquake. (See page 8.)
	Concept of the calculation of environmental load ① reduction effect • A baseline for an environmental load reduction effect should be provided.	"Concept of Baseline" has been added to the material flow diagrams.     (See page 17.)
	Evaluation of the environmental target achievement level • There should be some description of the target achievement level and measures for the future.	<ul> <li>We added an evaluation section, and described evaluation of the target achievement level and measures for the future in the report. (See page 18.)</li> </ul>
	Factors behind higher CO <sub>2</sub> emissions intensity ① • It is necessary to explain why the nuclear power stations' utilization rate ① decreased.	The report contains additional information on factors for a lower rate of nuclear power station     use, and the emission intensity by fuel type we use for thermal power generation. (See page 24.)
Report	Concept of the optimal combination of power sources ① • There should be objective descriptions about the merits and demerits of different energy sources.	The report contains a list of features and issues of various power sources. (See page 25.)
Action	<ul> <li>Kyushu Homeland Forestation Project</li> <li>There should be a description of maintenance and management after planting trees.</li> </ul>	The relevant information about tree maintenance has been added to the report. (See page 44.)
ment /	Publication of negative information <ul> <li>There should be a description of complaints received and responses to those complaints.</li> </ul>	The report includes a "Mail Box" system diagram and information regarding the individual response cases in FY2004.
Environment Action Report	<ul> <li>Heat pump water heater ①</li> <li>A description of its working principle is requested.</li> </ul>	The working principle of EcoCute (CO <sub>2</sub> refrigerant heat pump water heater) is explained in the report.
ш	<i>Eco Mothers' activities</i> • There should be a detailed description of Eco Mothers' activities.	The report contains specific examples of Eco Mothers' activities.
	<ul> <li>How customers can save energy</li> <li>The report should provide examples of specific energy-saving activities and a purchasing standpoint such as a labeling system on saving energy.</li> </ul>	• The report contains more examples of energy-saving activities, information on the labeling system, and advice in choosing energy-saving appliances (source: the Energy Conservation Center, Japan: ECCJ) as well as activities by individual Eco Mothers.

### **Evaluations from Outside the Company**

Name Sponsor		Time	Kyushu Electric Power' Evaluation
Fortune Global 500	Newsweek	Announced in Newsweek in June 2004	110th (18th among domestic companies)
The 8th Nikkei Environment Management Survey	Nihon Keizai Shimbun	October 2004	First among 17 companies (in the electricity and gas division)
FY 2004 "Companies of Excellence" Ranking PRISM Nihon Keizai Shimbun, Inc.		October 2004	199th among 1,140 companies
Environmental Rating	Tohmatsu Evaluation and Certification Organization	March 2005	BBB (Fourth among ninth rating)

### **Commendations from Outside the Company**

Recipient	Awards	Presenter	Date awarded
Nagasaki Branch Office	Nagasaki Branch Office A letter of appreciation for planting trees		May 2004
Sendai Nuclear Power Station Chairman's Prize at Reduce Reuse Recycle Promotion Conference		Reduce Reuse Recycle Promotion Conference	October 2004
Karita Power Station	Karita Power Station Prize of Excellence: Successful Case of Energy Conservation in Factories & Buildings award		February 2005
Staff of Shin Kokura Power Station Chairman's Prize: Excellent Technician of Energy Conservation award		ECCJ	February 2005
Staff of Matsuura	Director General Prize of Kyushu Bureau of Economy, Trade and Industry: Excellent Energy Conservation Manager award	Ministry of Economy, Trade and Industry	February 2005
Power Station	Chairman's Prize: Excellent Engineer of Energy Conservation award	ECCJ	February 2005
Staff of Hatchobaru Power Station	Director General Prize of Kyushu Bureau of Economy, Trade and Industry: Excellent Energy Conservation Manager award	Ministry of Economy, Trade and Industry	February 2005
Staff of Shin Arkawa Power Station Chairman's Prize: Excellent Technician of Energy Conservation award		ECCJ	February 2005
Staff of Shin Tokunoshima Power Station	Chairman's Prize: Excellent Technician of Energy Conservation award	ECCJ	February 2005



# **Independent Review of the Environment Action Report**

Since fiscal 2002, the Environment Action Report (the "Action Report") of Kyushu Electric Power Co., Inc (the "Company") has been subject to independent reviews by Tohmatsu Environmental Research Institute Ltd. Both the Environmental Affairs Department of the Head Office and branch offices has been reviewed to improve the reliability of the Action Report.



Review at a branch office (Sendai Nuclear Power Station)

## Report on the Review Results

### Report on the Review of the 2005 Action Report

Tohmatsu Environmental Research Institute Ltd. conducted an independent review on the accuracy of significant environmental information contained in the 2005 Kyushu Electric Power Environment Action Report ("Action Report") of the Kyushu Electric Power Co., Inc (the "Company").

Findings identified in the review process are described below, aside from those stated on the Independent Review Report of the Action Report.

The number in parentheses included in the descriptions below represents the page number in the Action Report.

### 1. Matters Appreciated

(1) Cost plan for environmental activities

The Company developed a plan for cost allocation related to environmental activities this fiscal year with the view of optimal allocation of management resources. This allows the proactive use of environmental accounting to optimize investment costs determined based on effect and relevant investment criteria. We are convinced this is an excellent effort to facilitate the efficient allocation of management resources and to provide environmental information to its stakeholders (see page 21.)

(2) Communication with stakeholders

Part IV of the Action Report contains substantial information on internal and external evaluation results of the Action Report as well as environmental preservation activities and measures taken. This demonstrates the Company's constructive attitude to its stakeholders.

### 2. Matters to be Addressed

(1) Securing accuracy of environmental information

In environmental accounting, we found some data omissions at certain offices in totaling depreciation costs related to this fiscal year's investment. Operation flows are being reviewed to develop conditions that prevent mistakes to facilitate the early compilation of the Action Report. However, it is recommended that the development and implementation of internal controls be seriously considered to improve the accuracy of environmental information.

## 2 Independent Opinions on the Environment Action Report



### Main Offices and Facilities (as of March 31, 2005)



## Main Offices

	Address	TEL
Kitakyushu Branch Office	3-1, Komemachi 2-chome, Kokurakita-ku, Kitakyushu 802-8521	+81-93-531-1180
Fukuoka Branch Office	1-82, Watanabedori 2-chome, Chuo-ku, Fukuoka 810-0004	+81-92-761-6381
Saga Branch Office	3-6, Kono-higashi 2-chome, Saga 840-0804	+81-952-33-1123
Nagasaki Branch Office	3-19, Shiroyamamachi, Nagasaki 852-8509	+81-95-864-1810
Oita Branch Office	3-4, Kanaikemachi 2-chome, Oita 870-0026	+81-97-536-4130
Kumamoto Branch Office	6-36, Kamisuizenji 1-chome, Kumamoto 862-0951	+81-96-386-2200
Miyazaki Branch Office	2-23, Tachibanadori-nishi 4-chome, Miyazaki 880-8544	+81-985-24-2140
Kagoshima Branch Office	6-16, Yojiro 2-chome, Kagoshima 890-8558	+81-99-253-1120
Tokyo Branch Office	7-1, Yurakucho 1-chome, Chiyoda-ku, Tokyo 100-0006	+81-3-3281-4931

## **Environment and Energy Related Materials**

	Title	Content		
	Kyushu Electric Power Environment Action Report	Environmental activities of Kyushu Electric Power Co., Inc. (Action Report Digest, English version of the report, and on-site reports are available.)		
	Kyushu Electric Power 2004	State of affairs and business activities of Kyushu Electric Power Co., Inc.		
Pamphlets	Saguru-kun's Case File on Electricity	Mechanism of power generation and environmental issues; explanation for elementary and junior high school students		
Å.	Nuclear Power Generation: 10 Points for Easy Understanding	Mechanism of nuclear power generation and differences from an atomic bomb		
	Nuclear Energy: Can It Be Possible?	Safety of nuclear power generation		
	About Plu-thermal Use	Necessity and safety of plu-thermal project		
	Let's Save Energy!	How to save energy at home		
	For Tomorrow: New Energy Sources Pursued by Kyushu Electric Power	Present state of new energy sources, challenges they pose, and what Kyushu Electric Power Co., Inc. is doing		
	Eco-friendly Tour of Kyushu Electric Power Co., Inc. with Kurume Arisaka	Environmental preservation activities by Kyushu Electric Power Co., Inc.		
apes	What are <i>Mirai-kun's</i> Environmental Studies?	Environmental research conducted at Sendai Nuclear Power Station is explained using CG image to facilitate understanding.		
Video tapes	Secret of Energy	Nuclear fuel cycle and plu-thermal use; familiar examples are used for comparison.		
	Save the <i>Oidon</i> Kingdom	Various methods of power generation with focus on environmental issues and nuclear power generation; easy explanation for elementary and junior high school students		
	Kyushu Electric Power's website http://www.kyuden.co.jp/	Website of Kyushu Electric Power Co., Inc., engaging in environmental conservation activities		

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