

# Towards an Environmentally Friendly Corporate Stance

2003 Kyushu Electric Power Environment Action Report



Front cover

## Kikuchi Gorge

Kikuchi City, Kumamoto Prefecture

Kikuchi Gorge, which lies in a virgin forest of 1.180 ha, comprises the north-western sector of the outer rim of Mt. Aso. At an elevation of 500 to 800 meters, the area presents itself as a vast retreat for pleasure and relaxation. This wooded area within Aso National Park is rich with massive trees that are over several hundred years old and is home to a wide variety of alpine plants. The water streaking the deep woods creates mountain streams of various sizes and formations. The beauty of the woodlands woven with streams is superb, making the area "a scenery representative of Kyushu". Even in the summer, the average mean temperature holds steady at a low of 13 degrees. Some have come to know it as a "natural cooler". Come autumn, trees are set ablaze with color; in winter, their branches are silver frosted and frozen, while in spring, the trees burst into a vibrant green. Throughout the four seasons, the scenery of the gorge changes kaleidoscopically, providing blessings to the many creatures of the forest.

In common usage, the word 'sustainable' means continuing or steady. In 1987, since the World Commission on Environment and Development proposed 'Sustainable Development', the term has become a keyword in environmental preservation. In this relation, the term means "able to implement development in a way that both satisfies the needs of future generations and answers the demands of today". The objective is to reduce environmentally damaging emissions to the extent that the Earth's auto-purification capacity can deal with them and therefore stimulate economic and societal growth while keeping the global environment intact.

# Main features of the 2003 Kyushu Electric Power Environment Action Report

## Scope and editorial policies of the 2003 Kyushu Electric Power Environment Action Report

This report compiles the activities of Kyushu Electric Power Co., Inc. during Fiscal 2002 (April 1, 2002 - March 31, 2003), and covers the future plans and activities of the group companies. During compilation, reference was made to the Environmental Reporting Guidelines (Fiscal Year 2000 version) published by the Ministry of the Environment, and Environmental Reporting Guidelines 2001 with Focus on Stakeholders published by the Ministry of Economy, Trade and Industry. Since the 2001 report, topics on economic and societal aspects have been included based on our support of the concepts contained in the Sustainable Reporting Guidelines proposed by the Global Reporting Initiative (GRI). New or improved measures since the 2002 report are listed below.

### 【New items:】

2003 Environment Action Report highlight (p.4); Promotion of geothermal (binary cycle power generation) and hydroelectric power generation (pp.19, 51, 52); Measures against land pollution (p.25); Awareness and actions of mothers on environmental issues (p.36); Electromagnetic field (p.56); Working with employees (supporting self-development and survey of employees' attitude results) (pp.61-62); Kyushu Electric Power Group's environmental accounting (p.67)

### 【Improved items:】

In order to deepen the reader's understanding, we have created Columns which give information on environmental laws and regulations as well as the latest featured activities.

The next report is planned for publication in August 2004.

As a business entity, Kyushu Electric Power is dedicated to mitigating environmental impact caused by business activities. The company also realizes its mission to disclose information on such environmental impact and make efforts towards reducing the environmental impact, leading to further promotion of environmental activities. The Environment Action Report has been published since 1996 to summarize Kyushu Electric Power's environmental activities and make it widely open to the public.

## Easy-to-understand

To make a variety of information easily accessible to stakeholders with different backgrounds, the report consists of three sections: The "Main Section" is a concise summary of the company's comprehensive environmental activities; "Related Information" covers topical environmental issues, while providing further details about the information listed in the Main Section; "References" is a company profile of Kyushu Electric Power outlined from an environmental point of view.

## Enriched information on sustainability

Based on the "sustainable reporting" concept advocated by the Global Reporting Initiative (GRI)\*, a wide range of information including the status of the company's efforts towards "working with employees" and other social aspects are newly incorporated in the report.

\* GRI: an organization that aims to establish and disseminate global standard guidelines for companies' sustainable reports. GRI consists of United Nations Environment Program, accountant associations of each country and NGOs.

## Highly reliable

To ensure the reliability of the report contents, the company introduced auditing of the report by a third party\* in Fiscal 2002. For Fiscal 2002, auditing of the report contents and basic reference materials for related offices and divisions of the Head Office was conducted and, for Fiscal 2003, was extended to include thermal power stations.

\* The auditing was conducted by Tohatsu Environmental Quality Research Laboratory, a body spitted from Tohatsu Co. Environmental Division.

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# Part 1 Main Section

General features of the company's comprehensive environmental activities

## I Promotion of Environmental Management

Introduction of the environmental management framework providing the basis of the company's environmental activities, as well as details of the PDCA cycle, and costs and benefits of the environmental activities

1. Environmental Management Framework..... 8  
The environmental policy, promotional scheme, activities conducted by in-company/external committees, status of conformity to environmental regulations and emergency measures, as well as Fiscal 2003 Environment Action Plan
2. Environmental Accounting..... 12  
Results of environmental activity costs and benefits for Fiscal 2002

## II Addressing Environmental Activities

Indicating the progress and present status of environmental activities for achieving target values set by the company

1. Records and Targets of Environmental Load..... 16  
Fiscal 2006 target figures for main environmental activities and actual figures for the past three years, as well as notable points obtained by comparing achievements to those of previous fiscal years
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Promotion of the optimal combination of nuclear power and other energy sources as a measure for greenhouse gas reduction; promotion of renewable energy sources (wind and photovoltaic power generation); reduction of transmission and distribution loss as a measure for energy conservation; utilization of Kyoto Mechanism; ozone layer protection
3. Establishing a Recycling-Based Society..... 22  
Details of the company's challenges towards zero-waste and promotion of green procurement
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Status of environmental conservation activities including environmental impact assessment and prevention of air, water and noise pollution, as well as environmental protection management status including environmental monitoring and chemical substance control
5. Working with Society..... 29  
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as of March 31, 2003

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## Furthering Environmental Activities Resulting from Communication with You



Kyushu Electric Power Company Inc.

松尾新吾

Shingo Matsuo  
President

## Message from the President

Today's socio-economic system of mass production, mass consumption and mass disposal clearly has made possible various conveniences of everyday human life. However, on the other hand, this system has had a negative impact on the environment. The impact is that the environment's latent natural recuperative action is being threatened now. This is a "global crisis" and to both respond to this situation and find a balance between social development and the concerns of the environment, the conduct of society must be reviewed and a course for a "sustainable society" charted, which would ensure a sharing of the blessings that the environment can offer our future generations.

One of the breakthroughs is the "Kyoto Protocol" that has been designed to reduce greenhouse gases contributing to global warming. However, while activation of the protocol is delayed until its ratification by Russia, carbon dioxide emissions are on the increase. In Japan, for instance, reduction of heat trapping gases is currently a pressing concern. The duty for corporate, administration and private persons is to conserve energy, choose a different heat source, and promote the development of nuclear energy in one's own right.

**Kyushu Electric Power shall maintain close contact with the community at all times and act in pursuit of valuable social goals**

Kyushu Electric Power Co., Inc. carries out its business under the Corporate Philosophy: "Kyushu Electric Power shall maintain close contact with the community at all times and act in pur-



suit of valuable social goals." Until our company established the "Environment Charter" in February 2001, our environmental conservation activities have been carried out in accordance with regulatory mandates. Now, the charter promotes self-motivated environmental activities, specifically the disclosing of environment-related information, which is being carried out because of our realization that a rich environment results from the awareness of environmental conservation in doing business.

### **By expanding and improving environmental activities, the common goal to be attained with local communities is a recycling-based society**

In concrete terms, our goals are to:

- Develop the company-wide environment management system.  
①
- Reduce carbon dioxide emissions, while focusing on promotion of nuclear power development.  
②
- Promote a zero-emissions campaign aimed at ushering in a recycling-based society.  
③
- Promote environmental management throughout the Kyushu Electric Power Group Companies.  
④
- Drive the "Kyushu Homeland Forestation Program" in collaboration with local communities.  
⑤

Further expansion and improvement in environmental activities, along with cooperative efforts among individual company staff, are expected in the near future. Above all, with the guiding principle of the advancement of a recycling-based and sustainable society, we plan to implement energy and environmental education as well as concrete environmental work reflecting a consensus of local communities.

### **Furthering environmental activities resulting from communication with you**

This "Environment Action Report" is the seventh in the series. Opinions of outside experts and customers have been integrated in the report to make complete its contents and improve understanding on the part of readers. We hope to foster environmental activities through increased communication about the environment with a broader audience in the future. I look forward to hearing your opinions and suggestions.



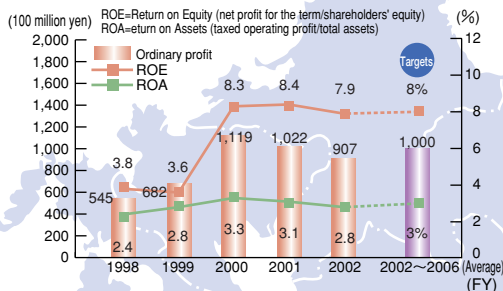
September, 2003

# 2003 Environment Action Report Highlights

## Management targets P42

In March 2002, a new medium-term management plan was drawn for a five-year period from Fiscal 2002 to 2006 to define higher business targets.

### Trend in ordinary profits, ROE and ROA



## Environmental management system P10

ISO 14001 certification has been acquired at the model office selected, such as branch offices, power stations, power system maintenance offices and customer service offices, to implement a company-wide ISO-based system.

## Economy

## Environment

## Compliance Management promotion P45

The company established the Compliance Committee in October 2002 and created the Compliance Guideline in December 2002 to ensure that business activities are conducted in a fair manner and in conformity with corporate ethics.

## Challenges towards "Zero-Waste" P22

The company endeavors to achieve zero-waste, reducing the volume of waste for final disposal to close to zero, by enhancing employees' awareness through distributing handbooks as well as displaying posters. The overall industrial waste recycling rate was recorded at 74%, the same level as Fiscal 2001, while almost 100% of paper was recycled.

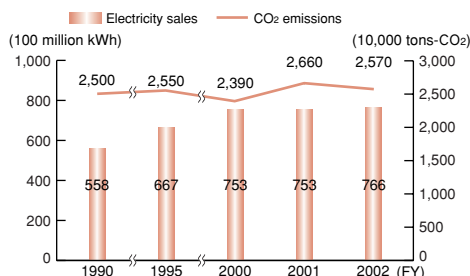
### Zero-waste promotion posters

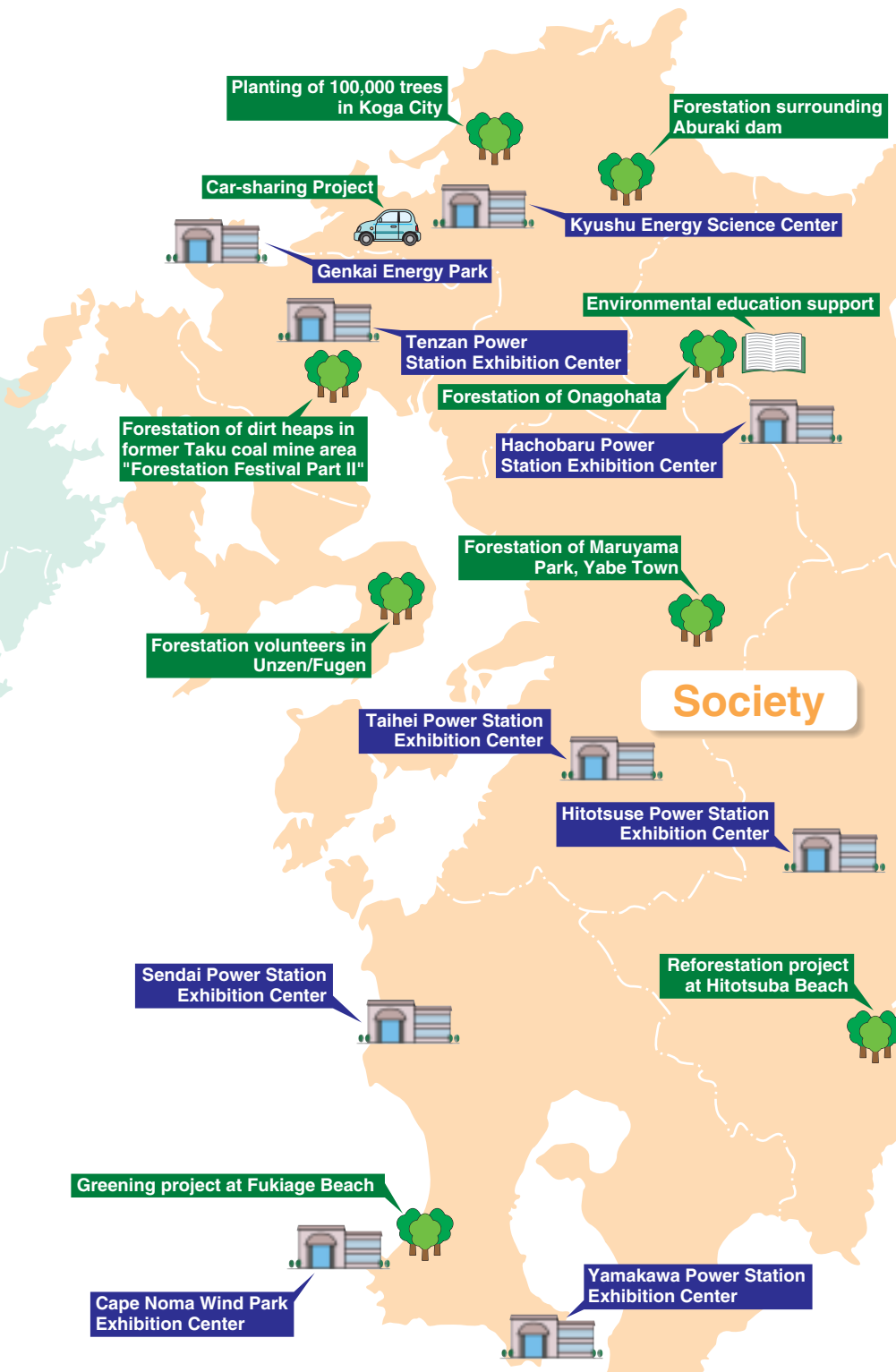


## CO<sub>2</sub> emission reductions P17

In Fiscal 2002, a reduction of 0.9 million tons of CO<sub>2</sub> emission was achieved compared to Fiscal 2001 due to the fact that the nuclear power capacity factor for Fiscal 2002 improved by 6.2 points from the previous year. Of the 6.2 points, 0.9 are attributed to the constant thermal output operation, resulting in a CO<sub>2</sub> emission reduction of about 330,000 tons.

### Electricity sales and CO<sub>2</sub> emissions





**Exhibition facilities**

Exhibition facilities are located all over Kyushu to provide information and knowledge on energy and electricity.

**Kyushu Homeland Forestation Program** PP30&57

As part of its celebration of 50 years since its foundation, the company began the Kyushu Homeland Forestation Program in Fiscal 2001, aiming to plant one million trees at sites throughout Kyushu over the next 10 years.

**Environmental education support** P58

Utilizing the rich natural environment, Kyushu Electric Power has hosted nature-related classes and programs in the forest surrounding Onagohata dam, Amagase, Oita Pref. to support environmental education.

**Car-sharing Project** PP31&59

In October 2002, Kyushu Electric Power started a car-sharing project in Fukuoka City by using electric and low-emission vehicles through collaboration with Fukuoka City and environmental NGOs.

**Kyushu Electric Power Group's environmental management** P63

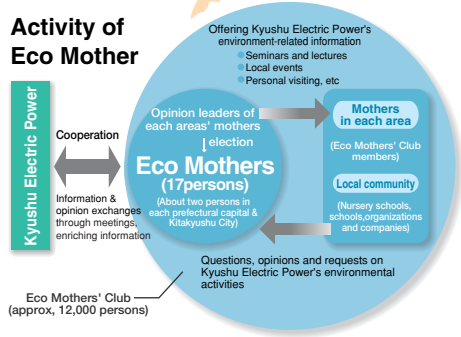
The Group has established an Environmental Philosophy and Environmental Policies and works together on environmental activities in all of these business areas. Since Fiscal 2003, the Group has been working toward the establishment of the Group's Environmental Activity Plan.



**Society**

**Enhancing communication on environmental issues** P29

A new environmental PR system by Eco Mothers, communicators on environment and energy issues, was started in Fiscal 2003, aiming to enhance awareness of environmental issues and contribute to environmental conservation as a community's task.







### **The Sea of Ariake**

To the twinkling of twilight, the Sea of Ariake presents infinite gleaming in calm, breathtaking beauty. This vast tidal area harbors diverse sea creatures including Mutsugoro or mudskippers. The area is also well known for products made with high quality seaweed. We have the responsibility to keep the sea as a treasure trove for future generations.



## Part 1

# Main Section

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# I Promotion of Environmental Management

Kyushu Electric Power is aware that dealing with environmental problems is a fundamental precondition of its own existence and business activities. In doing so, the company will execute corporate activities that help to build a sound environment while satisfying the social commitments expected of a corporation, as well as contribute to the community's well-being. For this purpose, the company has been promoting environmental manage-

ment in its entire business activities and implementing environmental activities based on the annual Environment Action Plan, results of which are publicized in the "Environment Action Report". This issue of the Report summarizes the environmental activities conducted in accordance with the Fiscal 2002 Environment Action Plan (formulated in March 2002) as well as their results and developments.

## 1 Environmental Management Framework

### 1 Environmental policy

Kyushu Electric Power has established the Kyushu Electric Power Environment Charter to define the stance and direction of environmental activities to be pursued. The Kyushu Electric Power Group Environment Philosophy has also been developed for group companies to set forth principles of their commitment

to environmental activities, as well as the Kyushu Electric Power Group Environment Policies, which set out specific guidelines for implementing such activities. Kyushu Electric Power shall actively implement environmental activities based on these policies to ensure outstanding environmental management.

### Corporate Philosophy

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

### Kyushu Electric Power Environment Charter

#### Towards an Environmentally Friendly Corporate Stance

##### 1 The company shall, in all its corporate activities, recognize the importance of maintaining awareness of environmental conservation needs.

◎ Kyushu Electric Power fully realizes that dealing with environmental problems is a fundamental precondition for its own existence and business activities.

##### 2 In all its corporate activities, the company shall make concerted efforts to contribute to a sound environment.

- ◎ Strive to prevent global warming and to conserve nature and the environment.
- ◎ Actively implement environmental conservation programs that contribute to the community's well-being.
- ◎ Reduce waste output and encourage use of waste as a resource, thus promoting a recycling-based society.

##### 3 The company shall, in all its corporate activities, promote the disclosure of environment-related information.

◎ Promote ease of public access to business-related environmental information and provide opportunities for communicating with many members of the general public.

February 15, 2001

President

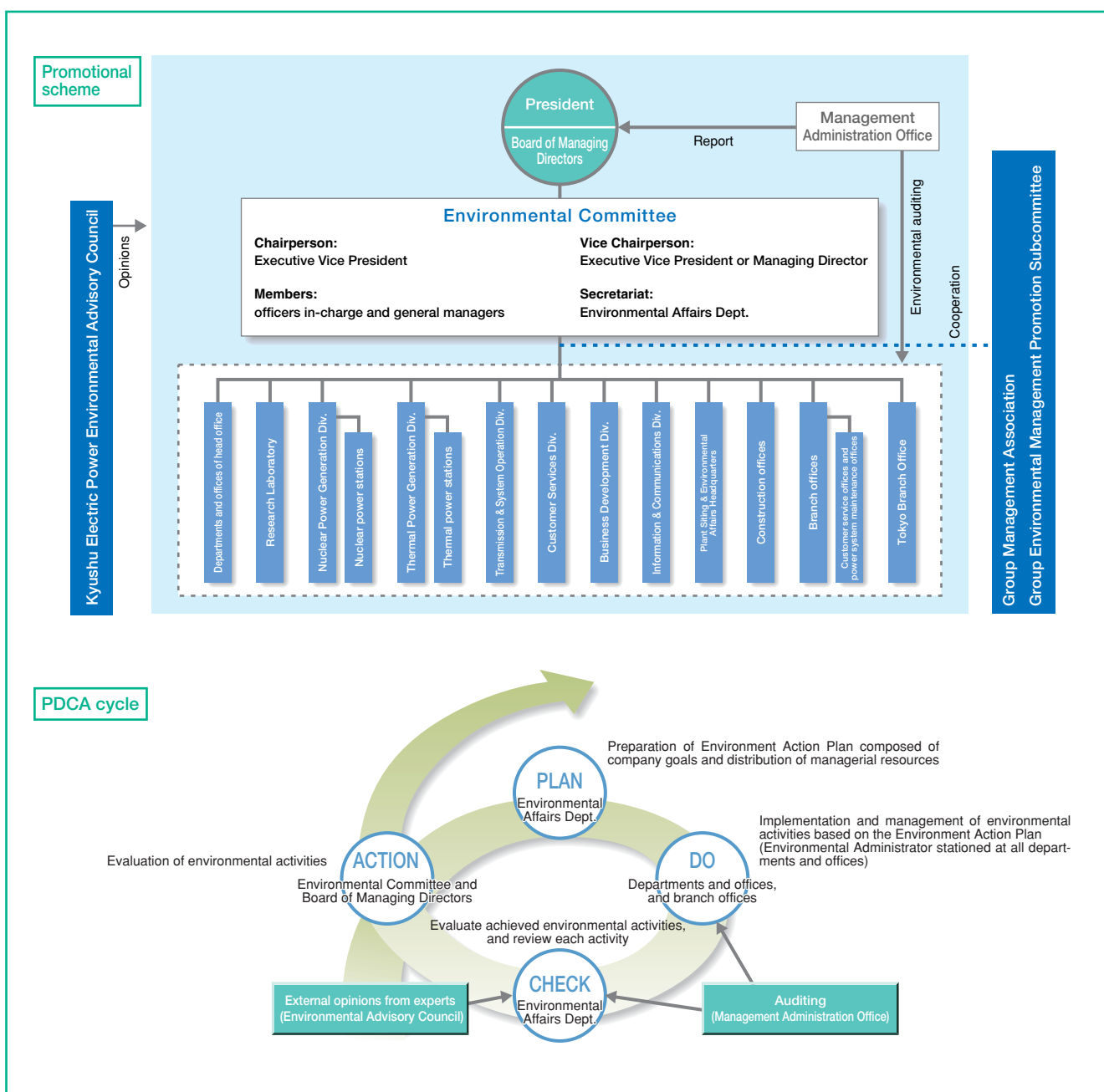
## 2 Promotional scheme

Kyushu Electric Power has structured a company-wide scheme to promote the implementation of environmental management.

- An Environmental Committee has been established to better review the environment activity strategies of Kyushu Electric Power as a whole. The committee's agenda is authorized by the Board of Managing Directors and will be adopted as the company's environmental management guidelines.
- The Kyushu Electric Power Environmental Advisory Council, composed of experts in various fields, has been established for external evaluation of our environmental activities. Internal evaluation is conducted by the Management Administration Office. We will ensure that the results of both internal

and external evaluations are reflected in future activities.

- Further, the Group Environmental Management Promotion Subcommittee of the Group Management Association (former Group Company Environmental Management Promotion Association, reorganized in May 2002) has been set up to promote the environmental management of the Kyushu Electric Power Group as a whole. The Subcommittee serves to discuss and draft common objectives for the Group as well as action plans. [See Related Information P63](#) Meanwhile, these activities are subject to evaluation by the Kyushu Electric Power Environmental Advisory Council.





## Environmental Committee

Kyushu Electric Power strongly promotes environmental management by building an environmentally conscious administrative system closely tied to company management.

- The Environmental Committee discusses and drafts environmental activity strategies and environment action plans, such as the extent of managerial resources to be distributed to environmental management.
- The Environmental Committee is chaired by the Executive Vice President and composed of officers in-charge and general managers.
- Matters deliberated by the Environmental Committee are first submitted to the Board of Managing Directors, then adopted within the business plans of each division, department and branch office, and implemented company-wide in the form of specific environmental activities.
- Environmental administrators (161 administrators as of June 2003) have been appointed for all departments and offices to supervise and fully enforce environmental activities.

## Kyushu Electric Power Environmental Advisory Council

Kyushu Electric Power attaches great importance to external evaluation from experts in promoting environmental management.

- The Kyushu Electric Power Environmental Advisory Council was established in April 2001 to evaluate the environmental management efforts of Kyushu Electric Power and the Group companies.
- The council is composed of nine experts in various fields and from each prefecture in Kyushu.
- The feedback for the 3<sup>rd</sup> Advisory Council is listed on p.35.

## Environmental management system

Kyushu Electric Power aims to build a company-wide environmental management system (EMS) that is both efficient and effective.

- ISO 14001 certification was acquired at the model office selected, taking into account the significantly different functions of the company's operational establishments, e.g. branch offices, power stations, power system maintenance offices and customer service offices.
- An ISO-based system has been applied to all thermal power stations by the end of Fiscal 2001.
- As for branch offices, customer service offices, power system maintenance offices and nuclear power stations, etc. based on the ISO-based system adopted by the model office, an ISO-based system is planned to cover all sites during Fiscal 2002 and 2003. Among them, the system was implemented at 51 sites in Fiscal 2002.
- As for the Head Office, an ISO-based system was established by the Environmental Affairs Dept. in April 2003, which is to be implemented at all departments and offices, the Education & Training Center and the Research Laboratory by the end of Fiscal 2003.



Environmental Committee (held on August 6, 2003)



Kyushu Electric Power Environmental Advisory Council (held on July 22, 2003)



Regular audit of ISO certification at Omarugawa Hydro Power Plant Construction Office

## ■ Status of ISO certification at selected model offices

Offices	Certificate acquisition	Operational status in FY 2002		
		Certificate acquisition	Regular audit	Renewal audit
Matsuura Thermal Power Station	July 1997		○	
Sendai Nuclear Power Station	Mar. 1999			○
Hitoyoshi Power System Maintenance Office	Mar. 2001		○	
Omarugawa Hydro Power Plant Construction Office	Aug. 2001		○	
Saga Customer Service Office	June 2002	○		
Nagasaki Branch Office	July 2002	○		

### Conformity to environmental regulations

Kyushu Electric Power focuses on "compliance management" to engage in fair business activities based on its corporate ethics, as well as conformity with ordinances. In addition, the company strictly conforms with environmental laws and ordinances, as well as agreements on environmental conservation with related local governments.

- Guidelines for environmental activities and environmental regulations have been established.

[See Related Information](#) **P45** 

- The company has committed no breaches of environmental laws, and no failures have occurred in the last five years. Currently, no legal actions regarding environmental issues are being filed against Kyushu Electric Power.

### Emergency measures

Accidents and facility failures resulting from natural disasters can affect the surrounding environment. Kyushu Electric Power prepares for such emergencies by installing and upgrading facilities for disaster prevention, implementing adequate education and training for its staff, and preparing manuals that help responsible staff to better deal with their duties.

- Power stations are under agreement to remain in close contact with their local governments.
- Both the Genkai and Sendai Nuclear Power Stations have a nuclear power training center on their premises. At both training centers, simulation equipment enables trainees to learn from a wide variety of potential dangers by simulating crises that have actually occurred, even outside Japan.
- Each year, the company participates in nuclear power disaster drills held by the local governments of Kagoshima and Saga Prefectures based on the local disaster preparedness plan.

## 3 FY 2003 Environment Action Plan

### Concept of Environmental Management

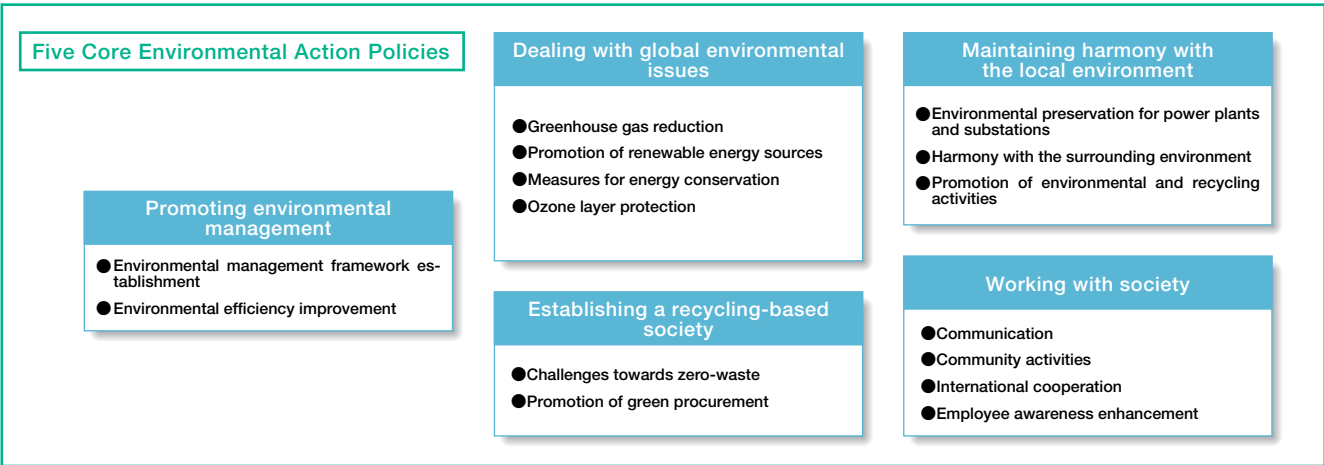
Building a sustainable society through cooperation with the local community is the fundamental aspect of environmental management. Accordingly, Kyushu Electric Power pursues environmental activities that satisfy society's needs, as well as active disclosure of information.

### Establishment of FY 2003 Environment Action Plan

The Fiscal 2003 Environment Action Plan was established in March 2003 based on the external and internal evaluations on the activities carried out under the above concept and the Fiscal 2002 Environment Action Plan. The Fiscal 2003 Action Plan focuses on the following three points.

### Three Focal Points for FY 2003 Environment Action Plan Establishment

- 1 Enhance employees' awareness of the importance of environmental activities; encourage them to participate in such activities to further improve corporate value.
- 2 Promote active information exchanges on environmental issues with customers and other stakeholders.
- 3 Promote environmental activities through unified efforts of Kyushu Electric Power Group companies.

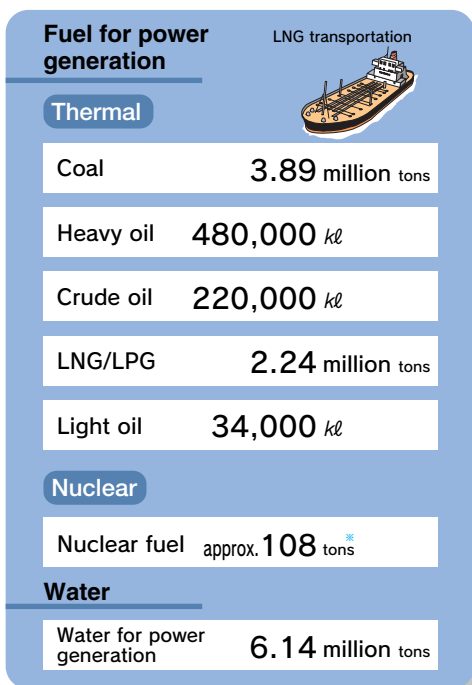


## 2 Environmental Accounting

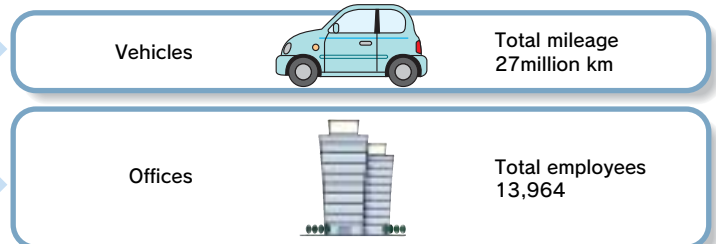
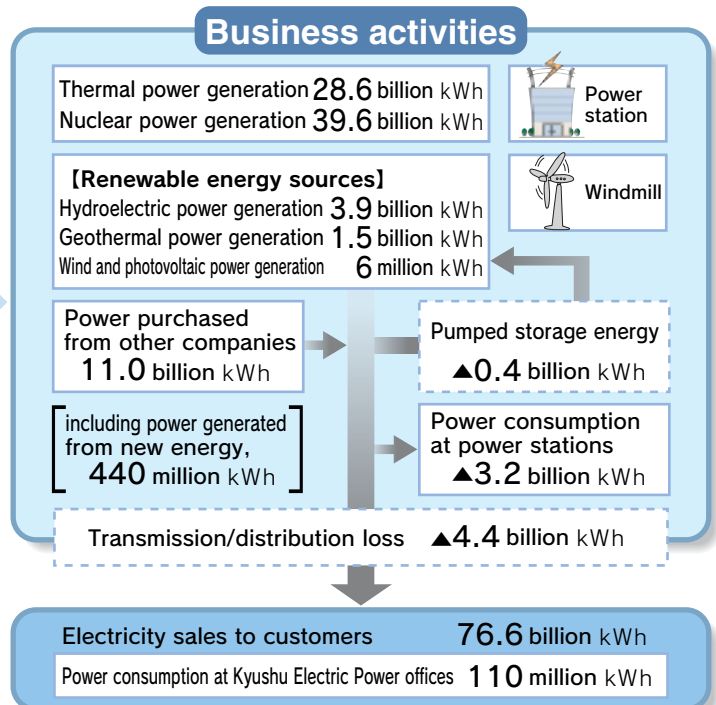
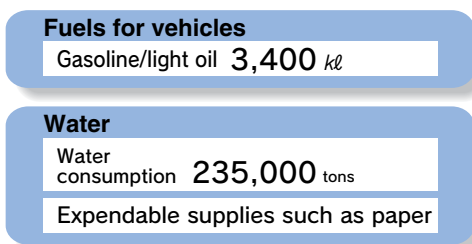
Kyushu Electric Power introduced environmental accounting in Fiscal 2000. The costs and benefits of environmental activities are taken into account in decision making regarding environmental activity deployment, and are disclosed to the public. For Fiscal 2002, changes made during the year are also listed to help in the understanding of the status of the company's activities in addition to the calculation of costs and benefits.

### 1 Business activities, environmental activity benefits and environmental load

#### Resources input



\*Weight of uranium



#### [Ref.: Records for FY 2001]

##### Resource input


Coal	4.09 million tons
Heavy oil	490,000 kl
Crude oil	220,000 kl
LNG/LPG	2.55 million tons
Light oil	30,000 kl
Nuclear fuel	Approx. 102 tons*
Water for power generation	6.5 million tons
Fuels for vehicles	4,000 kl
Water consumption	—

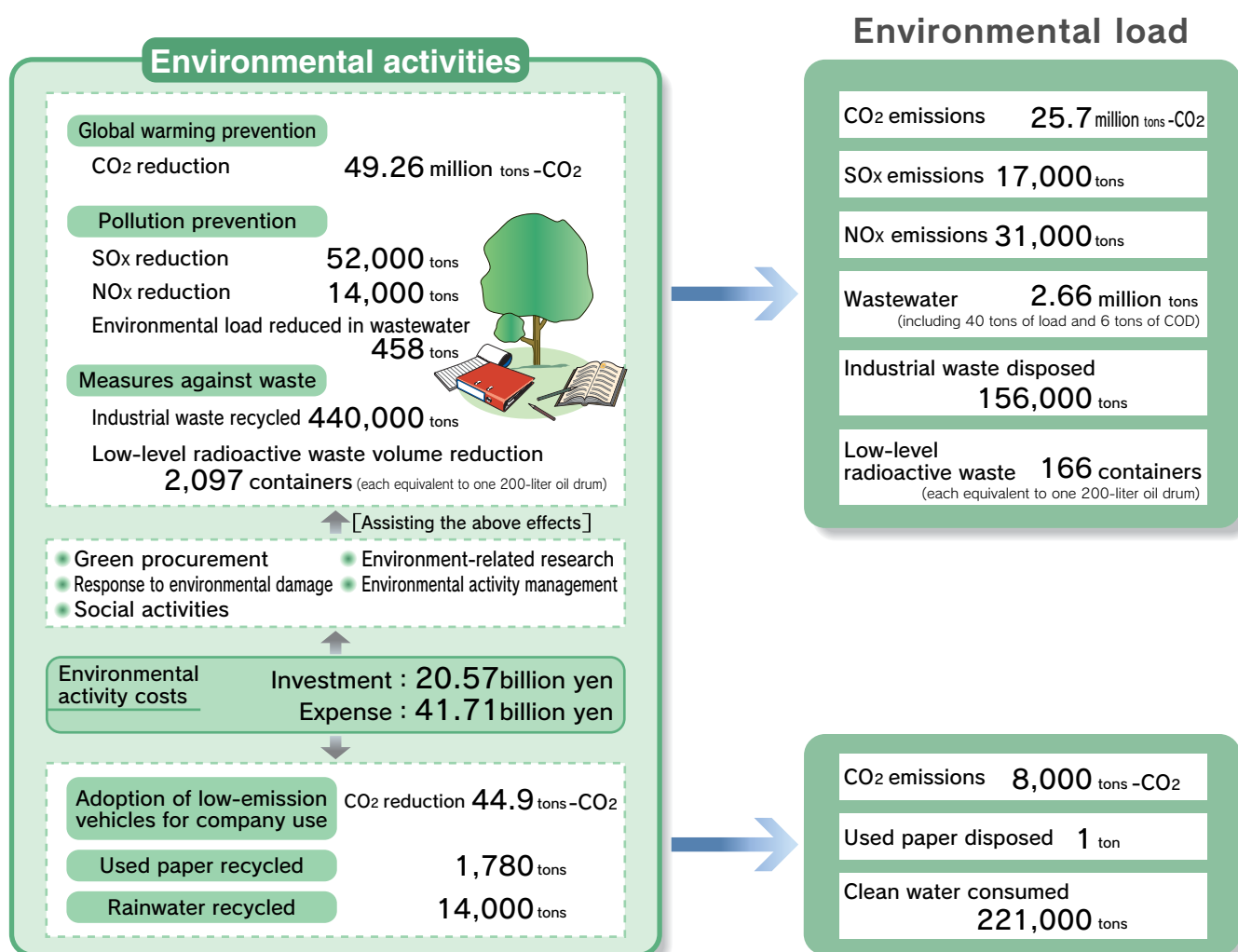
\*Weight of uranium

##### Business activities

Thermal power generation	30.9 billion kWh
Nuclear power generation	36.7 billion kWh
Hydroelectric power generation	3.6 billion kWh
Geothermal power generation	1.5 billion kWh
Wind and photovoltaic power generation	3 million kWh
Power purchased from other companies including power generated from new energy	10.5 billion kWh 0.39 billion kWh
Pumped storage energy	▲0.4 billion kWh
Power consumption at power stations	▲3.3 billion kWh
Transmission/distribution loss	▲4.2 billion kWh
Electricity sales to customers	75.3 billion kWh
Power consumption at Kyushu Electric Power offices	110 million kWh
Total mileage (vehicles)	29 million km
Total employees	14,191



For efficient, effective environmental activity deployment, the environmental accounting system must evolve as a tool for promoting environmental management. It must enable quantitative understanding of the environmental load caused by business activities, the costs and benefits of the environmental activities, as well as a thorough analysis that includes consideration of their relation to business activities. [See Related Information P46](#)  for a detailed view of the environmental accounting system and its use.



#### ■ Environmental activities

CO <sub>2</sub> reduction	47.96 million tons-CO <sub>2</sub>
SO <sub>x</sub> reduction	51,000 tons
NO <sub>x</sub> reduction	14,000 tons
Environmental load reduced in wastewater	538 tons
Industrial waste recycled	460,000 tons
Low-level radioactive waste volume reduction	1,629 containers*
Adoption of low-emission vehicles for company use	14.5 tons-CO <sub>2</sub>
Used paper recycled	895 tons
Rainwater used	—

\*Each equivalent to one 200-liter oil drum

#### ■ Environmental activity costs

Investment	23.27 billion yen
Costs	40.54 billion yen

#### ■ Environmental load

CO <sub>2</sub> emissions	2,660 tons-CO <sub>2</sub>
SO <sub>x</sub> emissions	16,000 tons
NO <sub>x</sub> emissions	31,000 tons
Waste water	3.26 million tons
Load	81 tons
COD	8 tons
Industrial waste disposed	157,000 tons
Low-level radioactive waste	2,155 containers*
CO <sub>2</sub> emissions (vehicle)	10,000 tons-CO <sub>2</sub>
Used paper disposed	Approx.900 ton
Clean water consumed	—

\*Each equivalent to one 200-liter oil drum

## 2 Change in environmental activity costs (Record for FY2001 and 2002)

Unit : 100 million yen (except for those specially indicated)

Environmental activity category		Main activities	2001		2002	
			Investment	Cost	Investment	Cost
Global environment preservation	Global warming prevention	Installation of power sources with low CO <sub>2</sub> emissions, thermal efficiency improvement at thermal power stations, introduction and support for new energy equipment, contribution to World Bank Prototype Carbon Fund, energy saving (including low-emission vehicles) and SF <sub>6</sub> emission control	6.0	44.3	6.0	49.3
	Ozone layer protection	Measures for Freon and Halon recovery	0.0	0.4	0.0	0.1
Local natural environment preservation	Air pollution prevention	Flue gas treatment (desulfurization, denitrification, particulate reduction equipment) and use of fuel with low sulfur content	93.4	87.2	68.4	82.7
	Water pollution prevention	Waste water treatment, measures against oil leaks and warm wastewater at power plants	14.4	28.3	11.6	28.6
	Noise and vibration prevention	Noise and vibration measures at power plants, substations and transmission facilities	8.8	0.0	15.4	0.7
Resource recycling	Industrial waste	Reduction and recycling of industrial waste	11.9	25.2	11.6	33.7
		Disposal of industrial waste, and PCB storage	13.8	9.3	14.7	4.1
	General waste	Reduction and recycling of general waste	0.5	1.3	1.6	2.8
		Disposal of general waste	0.0	1.8	0.0	6.8
Radioactive waste, and spent nuclear fuel <sup>*1</sup>	Disposal and other treatment of radioactive waste	4.7	67.5	0.4	71.1	
Green procurement	Purchase of office and stationery supplies as a rule (Additional costs incurred from green procurement)	—	—	—	0	
Environmental activity management	Environmental activity organization	Costs from environment-related license acquisition, education and training, and for personnel	0.0	0.5	0.0	1.7
	ISO and EMS application and maintenance	ISO14001 and EMS (ISO-based system) acquisition, application and maintenance	0.2	1.1	0.0	2.6
	Environmental load measurement and monitoring	Environmental impact assessment, monitoring and measurement of environmentally burdening substances, and PRTR measurements	2.7	15.9	2.9	16.9
Environment related research	Environmental preservation	Prevention of global warming, improvement of air and water quality and effective use of waste	0.0	3.9	3.0	6.1
	Environmental load control during transmission and distribution	Improvement in thermal efficiency and transmission/distribution loss factor	0.0	0.3	0.0	0.1
Social activities	Greening of sites	Greening, maintenance and management of Kyushu Electric power station sites	7.9	17.7	4.4	13.5
	Maintaining quality townscapes and surroundings	Measures to create harmony with surroundings such as tending to buildings with scenic care and installing underground transmission and distribution lines	68.2	89.4	65.5	85.6
	Environment Month	Environment Month and Kyushu Homeland Forestation Program	0.1	0.8	0.1	0.8
	Supporting local environmental activities	Support for local environmental activities and environmental organizations	0.0	0.3	0.0	0.7
	Environmental information disclosure	Environment Action Report, pamphlet and website preparation	0.0	0.2	0.0	0.4
Response to environmental impairment	Pollution load levy under the Pollution-related Health Damage Compensation Law	0.0	9.7	0.0	8.5	
Total			232.7	405.4	205.7	417.1
Reference	Percentage in Kyushu Electric Power total investments and costs		8%	3%	7%	3%
	Total investments		2,979		2,980	
	Total costs		12,902		12,716	

(N.B.) Listed are Kyushu Electric Power's costs in FY 2001 and 2002 and benefits from environmental activities in FY 2002. Figures are rounded, and may not add up to the total.

\*1: The figure does not include allowance for spent nuclear fuel reprocessing (refer to the reference table).

[Reference]

Main activities	2001		2002	
	Investment	Accrued	Investment	Accrued
Allowance for used nuclear fuel reprocessing <sup>*2</sup>	0.0	395.3	0.0	497.6

\*2: With respect to the used nuclear fuel which is stored at year-end, the costs required to reprocess such used nuclear fuel in the future are partially accrued at year-end in accordance with the applicable regulations.

### 3 Environmental activity benefits (Record for FY 2002)

See Related Information [P46](#)  for details of activity benefits calculation.

Environmental activity benefits		Extent of benefits, etc.
CO <sub>2</sub> reduction	Nuclear power generation	32.12 million tons-CO <sub>2</sub> /yr
	LNG power generation	5.72 million tons-CO <sub>2</sub> /yr
	Hydro, geothermal power generation	584 million tons-CO <sub>2</sub> /yr
	New energy power generation and purchase	340,000 tons-CO <sub>2</sub> /yr
	Improvement of facility efficiency	4.76 million tons-CO <sub>2</sub> /yr
	World Bank PCF	—
	Energy saving activities	108 tons-CO <sub>2</sub> /yr
	SF <sub>6</sub> emission reduction <sup>*1</sup>	480,000 tons-CO <sub>2</sub> /yr
	Freon emissions <sup>*2</sup>	0.1 ODP ton/yr
SOx reduction		51,860 tons/yr
NOx reduction		14,232 tons/yr
Particulate reduction		87,954 tons/yr
Environmental load reduced in wastewater		458 tons/yr
Managed properly in conformity with laws and ordinances		
Amount recycled		438,000 tons/yr
Proper final disposal amount		156,000 tons/yr
Used paper recycled		1,780 tons/yr
Used paper properly disposed		1 tons/yr
Volume reduction in low-level radioactive waste		2,097 containers/yr (each equivalent to one 200-liter oil drum)
Amount of used nuclear fuel stored		2,694 assemblies
Green procurement is applied for the purchase of office and stationery supplies as a rule.		
Participants in training and lectures (in-company)		21,262 people/yr
Personnel with environment-related licenses		1,452 people
Offices that acquired ISO certification		6 offices
Offices that introduced EMS		72 offices
No. of monitoring and measurement points	Continuous monitoring and measurement items <sup>*3</sup>	175 items
	Other monitoring and measurement points	22,577 points
Research cases in practical-use phase		3 cases
Total green area		47.10 million㎡
No. of buildings with scenic care		181 buildings
No. of steel towers with environmental care		82 units
Length of underground distribution lines <sup>*4</sup>		2,974km
No. of participants at lectures, etc.(outside the company)		2,007 people/yr
No. of trees and saplings planted		143,465/yr
No. of environment organizations supported		41 organizations
No. of reports published		40,000 copies/yr
Website access (environment-related)		198,392 hits/yr
—		—

\*1:SF<sub>6</sub> emission reduction is converted to the weight of CO<sub>2</sub> using the global warming potential for SF<sub>6</sub> (23,900). The amount of reduction includes that attained by equipment overhaul and dismantlement.

\*2:The emissions reduction for Freon is converted into a relative value taking ozone depletion potential (ODP) per unit weight of CFC-11 as 1.

\*3:Items for continuous monitoring and measurement, which was included in the "No. of monitoring and measurement locations" for the FY 2001 Report, are calculated separately.

\*4:The unit was changed from "distance" (used in the FY2001 Report) to "length" to reflect the status of installation more precisely by showing the total length of power lines.

### FY 2002 calculation results

The environmental activity investments and costs for Fiscal 2002 totaled 20.57 billion yen and 41.71 billion yen, respectively. Compared to Fiscal 2001, the investments decreased by 2.7 billion yen, while the costs increased by 1.17 billion yen, mainly resulting from the following factors:

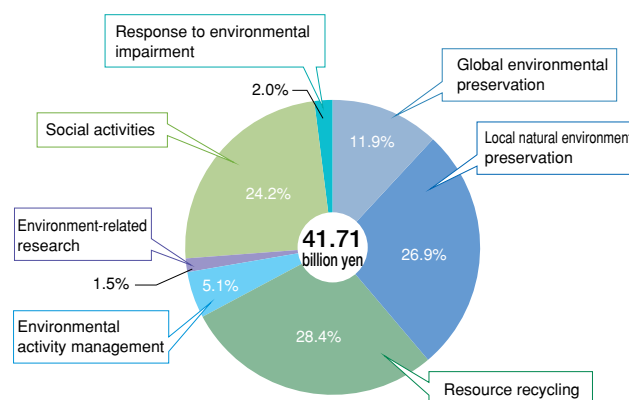
#### ◇Investments

Capital investment was reduced from Fiscal 2001 following the completion of air pollution prevention facilities installation at Unit 2 of Reihoku Thermal Power Station in Fiscal 2002.

#### ◇Costs

Costs for dealing with industrial and general waste increased due to the addition of the following costs: depreciation cost of the facilities for effective use of coal ash at Reihoku and Karita Power Stations; incinerator removal costs as a measure against dioxin emissions.

### ■ Environmental activity costs component ratio (FY 2002)



### 4 Economic effects from environmental activities

Among the environmental activities, the real economic effects that lead to savings and income are shown below:

Unit:100 million yen

Environmental activity category		Main activities	Quantity of benefits
Global environmental preservation	Global warming prevention	Fuel cost savings from improvement of thermal efficiency, the transmission/distribution loss factor, and introduction of energy-saving, fuel-efficient vehicles	219.6
Resource recycling	Waste measures	Income from sale of unneeded supplies	2.1
	Waste reduction	Final disposal cost savings from recycling	22.3
Savings in statutory charges		Pollution load levy savings from SOx emission reduction	24.0
Total			268.0



# II Addressing Environmental Activities

## 1 Records and Targets of Environmental Load

Kyushu Electric Power endeavors to reduce the environmental load by setting target values for the main environmental activities.

Item	Unit	Past record			Evaluation <sup>*1</sup>	Interim target <sup>*2</sup>		Target	Page	
		FY2000	FY2001	FY2002		FY2003	FY2004	FY2006		
Measures for global environmental issues	CO <sub>2</sub> emissions	10,000 tons-CO <sub>2</sub>	2,390	2,660	2,570	○	Approx. 2,400 <sup>*3</sup>	Approx. 2,50 <sup>*3</sup>	Approx. 2,600 <sup>*3</sup>	P 17
	CO <sub>2</sub> emissions intensity (end use electricity)	kg-CO <sub>2</sub> /kWh	0.317	0.353	0.336	△	Approx. 0.32 <sup>*3</sup>	Approx. 0.32 <sup>*3</sup>	Approx. 0.33 <sup>*3</sup>	P 17
	Nuclear power operating factor	%	85.8	79.7	85.9	○	86.2 <sup>*3</sup>	83.9 <sup>*3</sup>	Approx. 85 <sup>*3</sup>	P 17
	Thermal power production efficiency (power generating end)	%	40.4	40.5	40.5	○	Approx. 40 <sup>*3</sup>	Approx. 40 <sup>*3</sup>	Approx. 40 <sup>*3</sup>	P 18
	Utilization of power generated from new energy source (1)	million kWh	—	—	—	—	392 or more	418 or more	472 or more	P 18
	Transmission/distribution loss factor	%	5.4	5.2	5.5	○	5.5 <sup>*3</sup>	5.5 <sup>*3</sup>	5.5 <sup>*3</sup>	P 20
	Office power consumption	million kWh	108	108	108	△	104 or less	103 or less	101 or less	P 20
	SF <sub>6</sub> recovery at equipment checkups	%	95	98	98	○	98 or more	98 or more	98 or more	P 21
	Low-emission, fuel-efficient vehicle introduction <sup>*4</sup>	%	0.63	3.5	5.0	△	10 or more	20 or more	40 or more	P 21
	Regulated Freons collection at equipment checkups (2)	%	—	—	—	—	100	100	100	P 21
Establishing a recycling-based society	Industrial waste recycling	%	65	75	74	△	958 or more	958 or more	958 or more	P 22
	Coal ash recycling	%	59	68	68	△	948 or more	948 or more	948 or more	P 22
	Other waste recycling	%	87	96	97	△	988 or more	988 or more	988 or more	P 22
	Used paper collection and recycling	%	Approx. 40 <sup>*5</sup>	Approx. 50 <sup>*5</sup>	Approx. 100	○	100	100	100	P 23
	Green procurement	%	—	—	83 <sup>*6</sup>	△	100	100	100	P 24
Measures for maintaining harmony with the local environment	SO <sub>x</sub> emissions intensity per thermal power generated kWh	g/kWh	0.29	0.27	0.27	△	Approx. 0.2	Approx. 0.2	Approx. 0.2	P 25
	NO <sub>x</sub> emissions intensity per thermal power generated kWh	g/kWh	0.23	0.22	0.22	○	Approx. 0.2	Approx. 0.2	Approx. 0.2	P 25
	Dose evaluation value per year on people living near nuclear power stations	mSv	Less than 0.001	Less than 0.001	Less than 0.001	○	Less than 0.001	Less than 0.001	Less than 0.001	P 26
Employee awareness enhancement	No. of licensed energy managers	Persons	619	682	783	○	500 or more	500 or more	500 or more	P 32
	No. of pollution prevention managers	Persons	490	500	486	×	500 or more	500 or more	500 or more	P 32

\* 1: The FY 2002 status of achievement of the target set out for FY 2006 is evaluated as: ○: already achieved, △: will be achieved with continuous efforts, and ×: new measures are required for achievement. The decrease in "No. of pollution prevention managers" marked as × is due to retirement of employees who hold certification, etc.; measures including enhancing environmental education systems will be implemented.

\* 2: To confirm the degree of achievement in FY 2003 and 2004, targets for both years are listed as interim targets prior to FY 2006.

\* 3: Prospects are based on FY 2003 power supply plans.

\* 4: The ratio of clean energy vehicles (electric and hybrid cars) and fuel-efficient vehicles (vehicles that are in conformity with FY 2010 fuel economy standards and are low-emission vehicles as approved by the Ministry of Land, Infrastructure and Transport) among all company cars.

\* 5: Estimation based on the records of certain offices.

\* 6: Green procurement includes office and stationery supplies only.

N.B.1 Target changed from "Wind power installed capacity", "Photovoltaic power installed capacity" and "Power purchased from new energy sources" following Renewable Portfolio Standard implementation in FY 2003.

N.B.2 Newly set target with the previous target of "Emissions of specific Freons" being achieved as 0.

### Comparison of FY 2002 achievements to those of previous years

#### ◇Reasons for decrease in CO<sub>2</sub> emissions (0.9 million tons-CO<sub>2</sub>) and emissions intensity (0.017kg-CO<sub>2</sub>/kWh)

Due to the efforts for constant thermal output operation as well as no long-period inspection being carried out, the nuclear power operating factor increased from 79.7% to 85.9%, resulting in an increased share of nuclear power generation in generated electricity from 43% to 45%.

#### ◇Causes of used paper recycling rate improvement (50 points)

This was mainly due to all offices' concerted efforts to identify and secure the route for recycling used paper. As a result, company-wide used paper recycling began in April 2002.

#### ◇Cause of low-emission vehicle introduction rate improvement (1.5 points)

Introduction of 10 hybrid and 42 fuel-efficient vehicles resulted in the improvement.

	FY 2002 records	
	Comparison to previous year	Comparison to FY 1990
CO <sub>2</sub> emissions	90 million ton-CO <sub>2</sub> increase	3% up
CO <sub>2</sub> emissions intensity	0.017kg-CO <sub>2</sub> /kWh increase	25% down
Used paper recycling rate	Approx. 50-point increase	—
Low-emission vehicle introduction rate	1.5-point increase	—

## 2 Measures for Global Environmental Issues

### 1 Measures taken on the power supply side for greenhouse gas reduction

CO<sub>2</sub> comprises about 90% of the greenhouse gases emitted in Japan, and about 25% of this is attributable to the electric power industry.

- Kyushu Electric Power's CO<sub>2</sub> emissions in Fiscal 2002 amounted to 25.7 million tons-CO<sub>2</sub> or about 2% of the total in Japan.
- During the 12 years from Fiscal 1990, Kyushu Electric Power's electricity sales increased about 1.4 times; however, CO<sub>2</sub> emissions have remained around 103%.
- This was mainly due to the balanced development of nuclear power as the core, LNG thermal, hydroelectric, geothermal and other natural energy sources. CO<sub>2</sub> emissions per kWh has also been mitigated through efforts to enhance the nuclear power utilization rate and overall thermal efficiency by applying highly-efficient thermal power facilities. Above all, the development of two nuclear power stations (2.36 million kW) greatly contributed to the reduction.

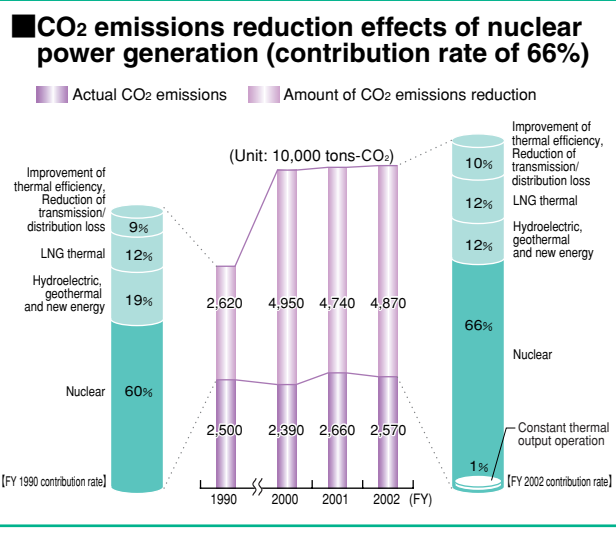
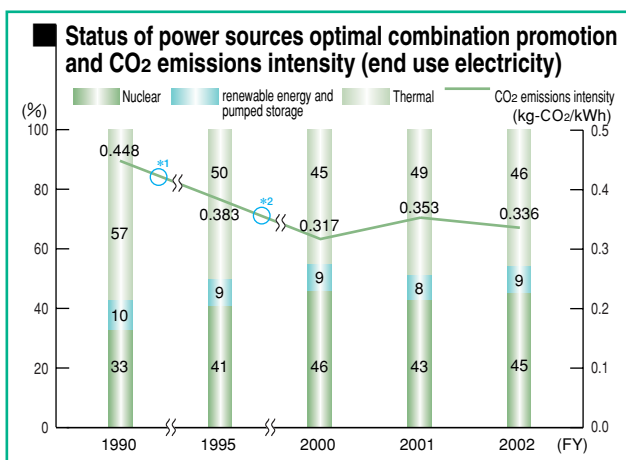
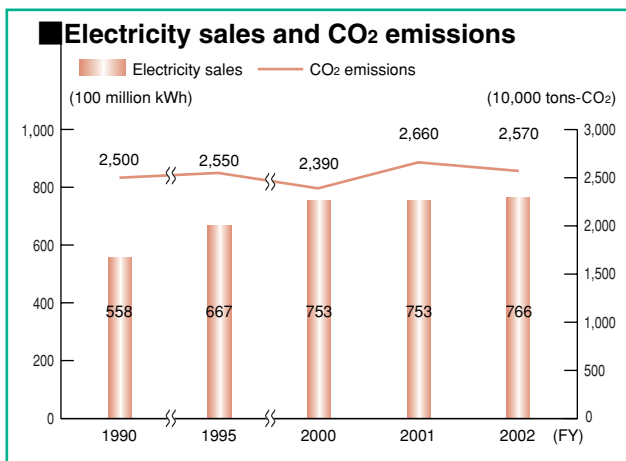
- Through these efforts, CO<sub>2</sub> emissions per kWh consumed by customers, i.e. CO<sub>2</sub> emissions intensity (end use electricity), decreased by 25% from the value in Fiscal 1990. This means that the CO<sub>2</sub> which was emitted from customers in regular households was reduced by approximately 380kg-CO<sub>2</sub> per year, from the Fiscal 1990 value.

N.B. the above figures are estimated on the assumption that the Kyushu's average power consumption of 285 kWh/month (Fiscal 2002 records) under lighting contracts (Residential Lighting A and B) equals the electric consumption of regular households.

#### Promotion of optimal combination of nuclear power and other energy sources

Kyushu Electric Power is committed to CO<sub>2</sub> emissions reduction through promoting balanced development of power sources to achieve the optimal combination of nuclear power, as a core, and other sources, placing the utmost emphasis on stability, economy and environmental conservation in power supply. In addition, the company works to develop and introduce new energy sources. Nuclear power generation, which contributes to 45% of the total power generated, is a CO<sub>2</sub> emission-free generation system and contributes greatly to reduction of CO<sub>2</sub> emissions. Improving the nuclear power capacity factor therefore leads to a reduction in the overall amount of CO<sub>2</sub> emitted from power supply. The nuclear power capacity factor for Fiscal 2002 improved by 6.2 points from the previous year, resulting in a reduction of 0.9 million tons of CO<sub>2</sub> emissions. This is mainly because measures were taken towards constant thermal output operation (improved by 0.9 points), and no long-period inspection was carried out\* during the year.

\*In Fiscal 2001, long-period inspection was carried out for Genkai Nuclear Unit 1 and 2 on replacing main equipment.



\*1: Genkai Nuclear Unit 3 commissioning (Mar. 1994) \*2: Genkai Nuclear Unit 4 commissioning (Jul. 1997)

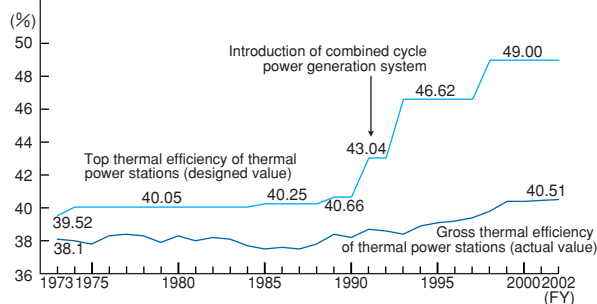
\*Policy of reduction amount calculation: this amount was calculated on the assumption that electricity generated from nuclear, hydroelectric, new energy and LNG was produced only with thermal power generation excluding LNG.

## Improvement of power generation facility efficiency

Kyushu Electric Power strives to improve the thermal efficiency of thermal power stations to effectively use energy resources.

- The thermal efficiency improvement of thermal power stations decreases the amount of fuel consumption, resulting in a reduction of CO<sub>2</sub>, SO<sub>x</sub> and NO<sub>x</sub> emissions.
- The gross thermal efficiency for thermal power stations in Fiscal 2002 was the same as Fiscal 2001 and recorded the highest level ever. This is attributed to greater use of power stations with high thermal efficiency such as the Shin-Oita Power Station, which features the combined cycle power generation system, and Karita Power Station New Unit 1, which applies the PFBC (Pressurized Fluidized Bed Combustion) system.
- If the gross thermal efficiency at Kyushu Electric Power's thermal power stations improves by one point, the company's annual emissions can be reduced by about 450 thousand tons of CO<sub>2</sub> equivalent.

### Changes in gross thermal efficiency at thermal power stations (generating end)



## 2 Promotion of use of renewable energy sources

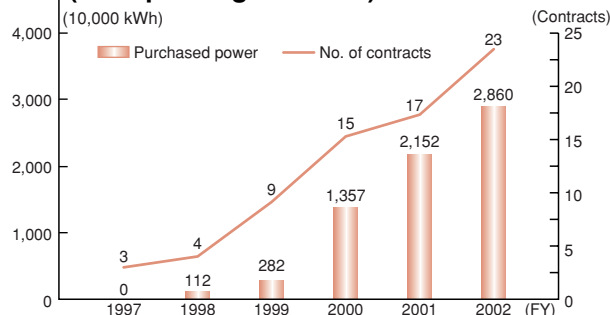
### Promotion of wind and photovoltaic power generation

New energy sources such as wind and photovoltaic power are clean and inexhaustible energy, although there are still hurdles to be cleared. Obstacles include high weather-dependence; low energy density; and high generation costs.

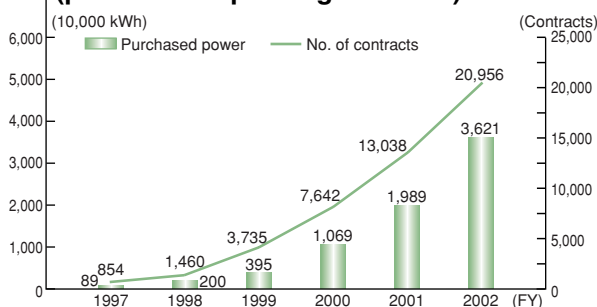
- Kyushu Electric Power has systematically installed new energy facilities company-wide. The company also purchases electricity generated by its customers, and offers subsidies to people who install new energy facilities in their homes.
- Through the above efforts, the company's power generation with new energy sources will achieve 390 million kWh, the Fiscal 2003's targeted value set out under Renewables Portfolio Standard (Renewable Portfolio Standard: fully implemented in April 2003)

[See Related Information P52](#) for the details of Renewable Portfolio Standard

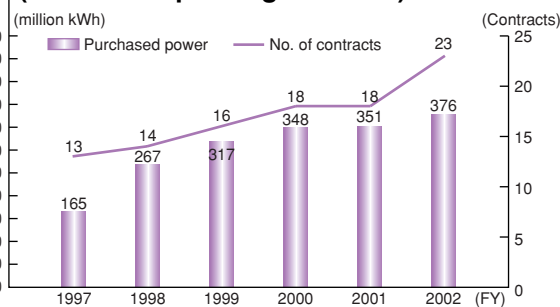
### Past record of power purchase (wind power generation)



### Past record of power purchase (photovoltaic power generation)



### Past record of power purchase (waste-fired power generation)



## C O L U M N

NO. 1

World record established at Karita Power Station New Unit 1 (PFBC) for its continuous run

Karita Power Station New Unit 1 established a world record for the length of PFBC unit's continuous run on April 3, 2003, when the boiler was stopped for a voluntary interim inspection. The number of operational hours since operation began on November 12, 2002 was recorded as

3,411 hours. This exceeded the previous world record of 2,000 hours. Karita Power Station New Unit 1 is the largest PFBC plant in the world. The steam turbine generator and gas turbine generator are 290,000kW and 75,000kW, respectively, with total output adjusted to 360,000kW.



Karita Power Station



### ◇ In-house installation of wind and photovoltaic power generation facilities

Kyushu Electric Power has installed power generation facilities utilizing wind and photovoltaic power within its premises. The total capacity at all facilities reached 3,575 kW by the end of Fiscal 2002.

#### ■ Wind and photovoltaic power generation

		Installed capacity (kW)	Power generated (thousandkWh)	Utilization rate (%)
Wind power	FY 2001	1,750 (6units)	2,599	17.0
	FY 2002	3,250 (11units)	6,148*	21.6*
Photovoltaic power	FY 2001	325 (21facilities)	253	9.5
	FY 2002	325 (21facilities)	229	8.2

\*The sum includes 1,500kW resulting from the trial run of five 300kW units, for which commercial operation started on March 20, 2003.

### ◇ Purchase of power from customers

Kyushu Electric Power purchases surplus power generated at customers' power generation facilities utilizing new energy sources, by considering its environmental value in addition to its value as electricity.

- Conditions for purchasing surplus power generated by new energy sources were reviewed on the full enforcement of Renewable Portfolio Standard.

(See the company website: [www.kyuden.co.jp/company/kigyo/elec\\_buy/index.html](http://www.kyuden.co.jp/company/kigyo/elec_buy/index.html) for details.)

- In Fiscal 2002, Kyushu Electric Power purchased 28.60 million kWh generated by wind (23 contracts), 36.21 million kWh generated by photovoltaic methods (20,956 contracts) and 376 million kWh generated by waste-fired power generation (23 contracts).

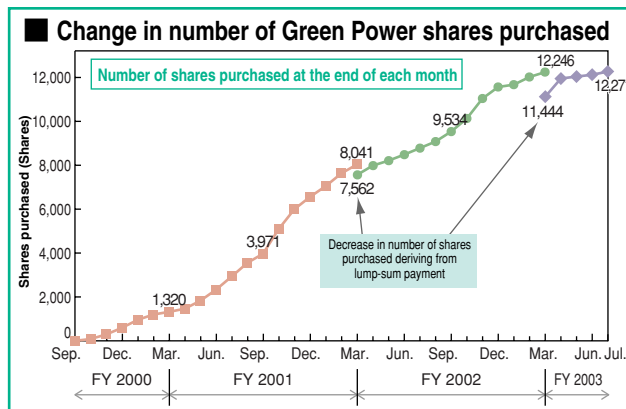
### ◇ Support and subsidy for wind and photovoltaic power generation Green Electric Power System (introduced in October 2000)

- This system enables customers to participate in the Kyushu Green Power Fund together with Kyushu Electric Power, thus contributing to the promotion of natural energy. Subsidies from the fund are offered to facilities employing photovoltaic or wind power generation, thereby encouraging further use of natural energy.

- The fund is managed by the Kyushu Industrial Advancement Center (KIAC).
- Kyushu Electric Power donates an amount equal to customer contributions (one share: 500 yen/month) in addition to promoting the system, receiving applications and drawing contributions from customer's bank accounts on behalf of KIAC.
- The system attracted 12,271 shares as of the end of July 2003.
- The company decided to subsidize 79,300kW from five wind power facilities and 629kW from 37 photovoltaic power facilities with a total of about 80 million yen for two years to Fiscal 2002.



Fukuro Elementary School, Minamata City (photovoltaic facility of 20kW subsidized in FY 2002)



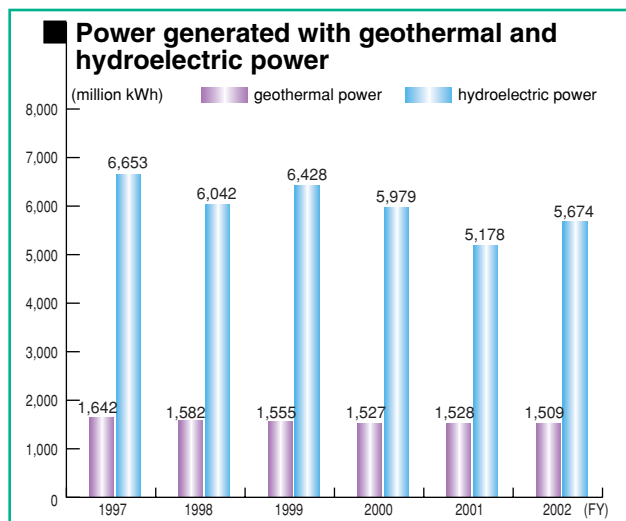
### Promotion of geothermal and hydroelectric power generation

Geothermal and hydroelectric power are valuable energy sources of Japan. Power generation from these sources is CO<sub>2</sub> emission-free, eco-friendly technology.

- Kyushu Electric Power pursues the development of geothermal and hydroelectric power generation technologies to effectively use such power sources, while focusing on conservation of natural landscapes and surrounding environments.

- Kyushu Electric Power's total installed capacity of geothermal generation facilities consists of 38% of the national capacity, taking advantage of Kyushu's rich geothermal energy. Demonstration tests of binary cycle power generation, which can generate power with steam or hot water of lower temperature than conventional systems, are planned to be started at Hacyobaru Power Station in Fiscal 2003 to fully utilize geothermal energy.

See Related Information [P52](#)



N.B. The sum of hydroelectric power includes power purchased from other companies.

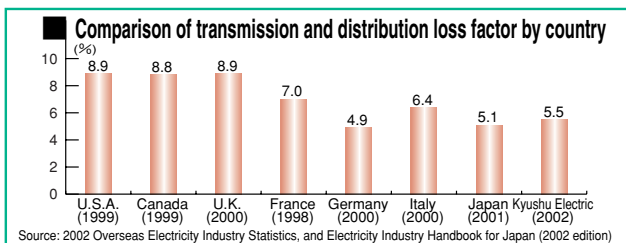
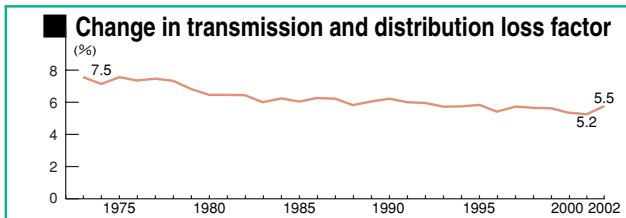
### 3 Measures for energy conservation

Kyushu Electric Power believes that energy conservation is not simply a matter of making choices about energy reduction, but of using energy efficiently and without waste.

#### Reduction of transmission and distribution loss

Kyushu Electric Power strives to conserve energy by reducing distribution and transmission loss, the energy lost, between power stations and customer premises.

- The transmission and distribution loss for Fiscal 2002 increased by 0.3 points from Fiscal 2001. However, it still maintains a high level of international standards.

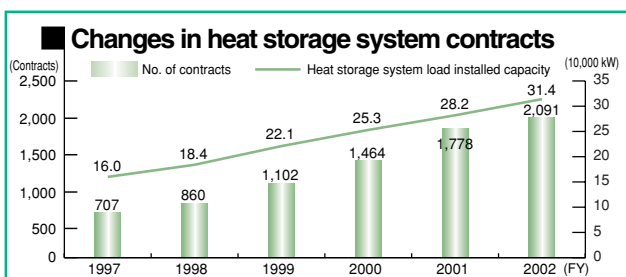


#### Encouragement of the use of heat storage systems and heat-pump water heaters

Kyushu Electric Power encourages the use of heat storage systems and heat-pump water heaters to make possible more efficient energy use. Increased use of the equipment, which utilizes nighttime electricity, contributes to improve operational efficiency of power stations as well as to reduce distribution and transmission loss.

#### Heat storage system

- Through heat storage systems, the cold and thermal energy necessary for air conditioning of buildings and factories is stored in a heat storage tank in the form of ice or warm water by using cost-effective nighttime electricity, and is used during the daytime. The number of contracts for such heat storage systems at the end of Fiscal 2002 was 2,091, with a total load installed capacity of 314,000 kW.



#### Heat-pump water heater and other equipment

- Kyushu Electric Power works towards promoting the widespread use of electric water heaters such as heat-pump types and multi-functional heat-pump types.
- "Eco-Cute", a heat-pump type electric water heater using CO<sub>2</sub> found in nature as a refrigerant, is a water heater in the 21st century which realizes energy conservation and coexistence with the natural environment. It provides three times better efficiency than conventional heaters, while achieving high economical efficiency by utilizing nighttime electricity.

#### Conserving energy in everyday business operations

As their contribution to reducing CO<sub>2</sub> emissions, all employees at Kyushu Electric Power practice energy saving in their everyday work practice.

#### Reducing power consumption in offices

Energy conservation activities include switching off unnecessary lights as well as improving office facilities to reduce energy consumption.

- Kyushu Electric Power has set energy savings targets for the end of Fiscal 2006 (with an annual reduction of 1%), and is working towards achieving those targets.
- Office energy consumption in Fiscal 2002 was 108 million kWh, the same level as the previous year.
- Kyushu Electric Power strives to implement measures to reduce energy consumption wherever possible. Such measures include the use of highly-efficient lighting, modification of air-conditioning equipment, and more energy-conscious use of air-conditioning. In Fiscal 2002, nine offices under Kumamoto Branch Office implemented such measures whereas 42 offices are also participating in Fiscal 2003 to enhance the effects of those measures.

#### Power consumption reduction achieved by offices under Kumamoto Branch Office

##### Power consumption reduced

Power consumption reduced (kWh)	Reduction rate (%)
188,758	1.8

\*Power consumption reduced for nine offices is estimated from the actual value at certain offices.  
 \*\*Reduction rate is calculated by reduced kWh / power consumption in the offices for FY 2001 (participated offices: 10,602,354kWh) x 100

##### Participated offices

Kumamoto Branch Office, Kumamoto-higashi Customer Service Office, Kumamoto Power System Maintenance Offices, Tamana, Ohtsu, Kumamoto-nishi, Hitoyoshi and Yatsushiro Customer Service Offices, Yatsushiro Power System Maintenance Offices

##### Outline of measures

Air-conditioning	Lighting
① Flow rate adjustment of 8H system cool/hot water pumps	① Replacing induction lighting
② Change of water temperature sent to refrigerating machine	② Replacing partial lighting system
③ Control of 24H system hot water pumps with inverters	③ Replacing downlight apparatus (at the counter)
④ Cut off ambient air on pre-cooling/heating air-conditioning apparatus	④ Attachment of a human sensor to WC
⑤ Control of ambient air volume with CO <sub>2</sub>	—

### ◇ Introduction of low-emission vehicles

Kyushu Electric Power encourages reductions in vehicle fuel consumption levels by introducing clean-energy and fuel-efficient vehicles.

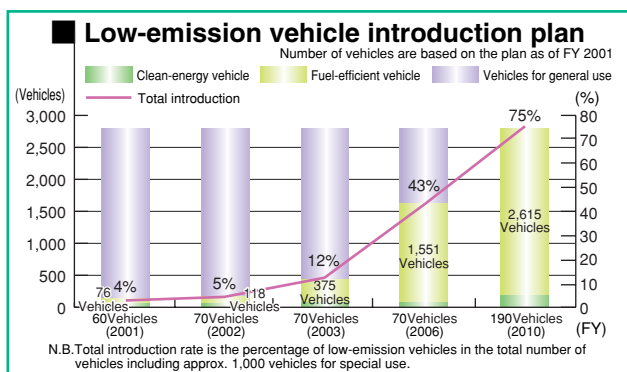
- Kyushu Electric Power plans to replace all general-use vehicles with fuel-efficient vehicles that feature both fuel savings and low emissions, by the end of Fiscal 2010. Approximately 5% of all vehicles will be clean-energy vehicles such as electric vehicles and hybrid gas-and-electric powered vehicles.
- Up to Fiscal 2002, a total of 60 electric vehicles and 10 hybrid vehicles have been introduced within the company. Among these, an electric bus designated for power-station tours developed in 1999 is one of the largest electric buses in Japan.
- In Fiscal 2002, the company started to examine CO<sub>2</sub> emission reductions of the hybrid vehicles in a variety of running conditions, such as urban and mountainous areas. Based on the data obtained, an effective introductory plan for clean-energy vehicles will be drafted in the second half of Fiscal 2003.

### ■ Examination results of hybrid and other vehicles

		Energy consumed per running distance (kcal/km)	CO <sub>2</sub> emissions intensity (kg-CO <sub>2</sub> /km)	CO <sub>2</sub> emissions reduction rate compared to gas-powered vehicle	Fuel efficiency (km/ℓ)
Urban area	Hybrid vehicle	420	0.115	45%	20.0
	Electric vehicle	248	0.102	52%	
	Gas-powered vehicle	769	0.211	—	10.9
Mountainous area	Hybrid vehicle	503	0.138	25%	16.7
	Electric vehicle	307	0.126	32%	
	Gas-powered vehicle	670	0.184	—	12.5
Long distance	Hybrid vehicle	271	0.075	63%	31.0
	Electric vehicle	263	0.108	46%	
	Gas-powered vehicle	726	0.200	—	11.6
Total	Hybrid vehicle	422	0.116	42%	19.9
	Electric vehicle	262	0.108	47%	
	Gas-powered vehicle	731	0.201	—	11.5

※ Calculated from the operational records between July 2002 and March 2003.

※ Gas-powered vehicles refer to small-sized passenger vehicles used by Kyushu Electric Power other than fuel-efficient and clean-energy vehicles.



### 4 Reduction of SF<sub>6</sub> (sulfur hexafluoride) gas emissions

Kyushu Electric Power uses the greenhouse gas SF<sub>6</sub> for insulation in some of its electric equipment, and takes care not to release this gas into the atmosphere when the equipment is overhauled.

- The use of SF<sub>6</sub>, which provides excellent insulation, is essential because there are no effective insulating gases that can be used as a substitute.

- Due to the introduction of gas recovery equipment, the SF<sub>6</sub> gas recovery rate (reutilization rate) during overhauls improved from 40% in Fiscal 1997 to 98% in Fiscal 2001 and 2002. In Fiscal 2002, SF<sub>6</sub> of the equivalent of 432,000 tons of CO<sub>2</sub> was recovered.
- The SF<sub>6</sub> gas recovery rate on the equipment dismantlement recorded 99% for Fiscal 2002, and SF<sub>6</sub> of the equivalent of 48,000 tons of CO<sub>2</sub> was recovered.

### ■ SF<sub>6</sub> gas recovery during overhauls in FY 2002 (CO<sub>2</sub> equivalent\*)

	Total SF <sub>6</sub> gas (CO <sub>2</sub> equivalent)	Recovered SF <sub>6</sub> gas (CO <sub>2</sub> equivalent)	Recovery rate
At equipment introduction	18.37tons (439,000 tons)	18.05tons (432,000 tons)	98%
At equipment dismantlement	2.0tons (49,000 tons)	2.0tons (48,000 tons)	99%

※ Figures are obtained by converting the weight of SF<sub>6</sub> gas to the weight of CO<sub>2</sub> by applying the global warming potential for SF<sub>6</sub> (23,900).

### 5 Towards Kyoto Mechanism utilization

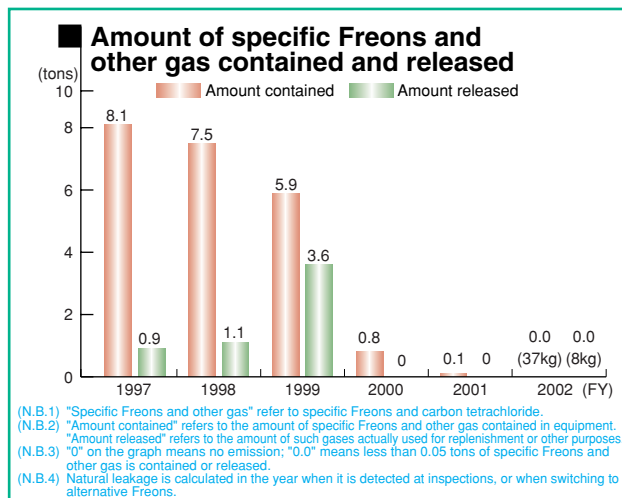
The Kyoto Mechanism is expected to complement greenhouse gas reduction measures in Japan. Kyushu Electric Power has joined the World Bank's Prototype Carbon Fund, aiming to obtain expertise in the use of the Kyoto Mechanism in advance.

[See Related Information P53](#)

### 6 Ozone layer protection

Kyushu Electric Power takes measures to avoid disruption of the ozone layer through reducing specific Freons emissions.

- Kyushu Electric Power's specific Freons and other emissions (specific Freons and carbon tetrachloride) have been zero, except for a minute amount of natural leakage, since Fiscal 2000. These achievements were made possible by measures such as washing work clothing with water instead of dry-cleaning, and changing generator refrigerant.
- Future tasks include ensuring the collection of regulated Freons upon equipment inspections and removals, as well as installing regulated Freon-free equipment upon replacing or newly introducing the equipment.





### 3 Establishing a Recycling-Based Society - Challenges towards 'Zero-Waste'

To establish a recycling-based society, Kyushu Electric Power addresses the challenge of 'zero-waste', reducing the volume of waste for final disposal to close to zero.

- The company is practicing the 'Three R's' (reduce, reuse and recycle) for general and industrial waste.
- Kyushu Electric Power's group companies also take measures to establish a recycling-based society. They actively promote waste recycling such as used paper, confidential documents and used fluorescent tubes, as well as the green procurement system.

[See Related Information P66](#)

#### 1 Enhancing employee awareness

Kyushu Electric Power endeavors to achieve zero-waste by enhancing awareness company-wide.

- The "Environment Handbook", which gives an easy-to-understand explanation for achieving zero-waste, is distributed to every employee. (March 2002)
- Four types of posters encouraging zero-waste are made for offices (Head/Branch Offices), Customer Service Offices and Power Stations. Posters targeted at customers are also made and displayed in the reception areas of each customer service office.



For Head Office and Branch Offices



For Customer Service Offices



For Customers



For Power Stations



For Power System Maintenance Offices

- Employees are encouraged to create slogans, which are displayed on promotional posters to enhance awareness regarding zero-waste. (1,212 slogans were collected and 2,406 employees voted electronically for the best slogans.)

#### Zero-waste slogans

Grand Prize	Don't throw it out! Your soul goes out with your garbage
First Prize	Rethink our precious resources and our planet's future
Excellence Prize	Good endeavor for all: separate garbage, cut waste, and keep the planet clean
	Properly separated garbage becomes a precious resource
	Let's recycle! Let's separate garbage! Let's cut waste! Keep it up!

#### 2 Industrial waste

The industrial waste generated by Kyushu Electric Power's operations includes coal ash, gypsum from desulfurization facilities, sludge from wastewater treatment, scrap metal and discarded concrete poles.

##### Measures for "Reduce"

At thermal and nuclear power stations, a longer period between each equipment inspection is applied to reduce the number of parts to be replaced (incl. seal, bearing and gasket). In addition, the period between the change of equipment lubricating oil is lengthened to reduce the amount of waste oil discharged.

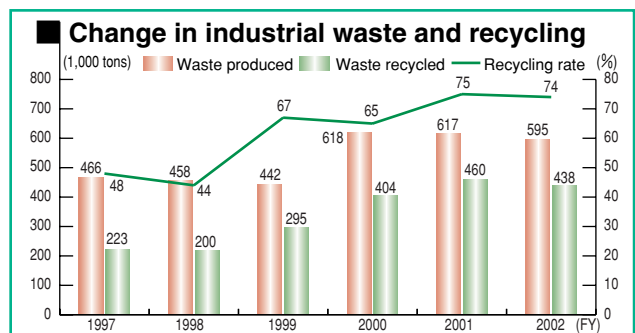
##### Measures for "Reuse"

For the materials and equipment removed during power distribution works, it is decided whether the materials have enough capability and quality to be reused based on the original criteria. Kyushu Electric Power promotes reuse of the reusable materials both as they are and after being repaired.

##### Measures for "Recycling"

The overall industrial waste generated in Fiscal 2002 was approximately 590,000 tons, keeping the same level since Fiscal 2000.

- The overall recycling rate was recorded at 74%, the same level as Fiscal 2001.
- The 440,000 tons recycled at Kyushu Electric Power in Fiscal 2002 are equivalent to 1% of the amount of annual waste for final disposal in Japan. (White Paper on the Environment for Fiscal 2003 shows that the amount of annual waste for final disposal in Japan totaled 45 million tons.)
- To achieve a total recycling rate of 95% or more in Fiscal 2003, the use of coal ash as a material for cement production will be expanded, while the recycling rate for sludge and waste plastic will also be improved.



### Industrial waste by category at Kyushu Electric Power (FY 2002)

	Waste produced (tons)	Amount recycled (tons)	Recycling rate (%)	
Coal ash	475,241	322,622	68%	
Other industrial waste	Heavy and clued oil ash	745	738	99%
	Gypsum	91,271	91,271	100%
	Sludge	4,849	2,557	53%
	Waste oil	1,908	1,846	97%
	Waste plastic	312	194	62%
	Scrap metal	9,041	8,724	96%
	Discarded concrete poles	10,411	10,411	100%
	Waste glass and ceramics	785	28	4%
	Industrial waste subject to special control	13	0	0%
	Other waste	87	32	37%
Subtotal	119,422	115,801	97%	
Industrial waste total	594,663	438,423	74%	

### 3 General waste

The general waste resulting from Kyushu Electric Power's operations includes used paper, empty cans and bottles, plastic bottles and kitchen garbage.

#### Measures for "Reduce"

The amount of used paper generated is minimized through using double-sided photocopy, avoiding miscopying and utilization of electrical documents, as well as reducing the use of paper cups.

#### Measures for "Reuse"

Reusing the blank-side of used paper, files and stationery is also conducted.

#### Measures for "Recycling"

##### ◇used paper

In Fiscal 2002, Kyushu Electric Power began to make company-wide efforts to achieve 100% used paper recycling by ensuring used paper recycling routes.

- A total of 1,781 tons of used paper was generated and collected during Fiscal 2002. Of this, 1,780 tons were recycled and the remaining ton was incinerated.

### Collection of used paper at Kyushu Electric Power (FY 2002)

Type of used paper	Amount collected (tons)
Newspapers	185
Magazines	74
Cardboard	105
Confidential documents	392
Others*	1,025
Total	1,781

\*Others include used photocopy paper and envelopes.

- Through the above efforts, the used paper recycling rate was improved from about 50% in Fiscal 2001 to about 100% in Fiscal 2002.
- Part of the collected used paper is recycled by Kyushu Environment Corporation to produce photocopy paper, paper string and toilet rolls with Kyushu Electric Power's corporate logo.



Products made from collected used paper

##### ◇Encouragement of other general waste recycling

Recycling of other general waste is actively encouraged:

- Bottles, cans and plastic bottles are collected separately.
- Shells collected at power stations and driftwood collected at dams are fully utilized; the volume of kitchen garbage discharged from cafeterias is reduced or composted.
- Old, worn work clothing is collected for recycling.



Composting facility installed at Education & Training Center

## 4 Organizing recycling as a business

With the cooperation of our group companies, Kyushu Electric Power actively promotes several waste recycling businesses.

### Fluorescent tube recycling group company

#### Japan Recycling Light Technology & System

- Used fluorescent tubes are collected, sorted, crushed and recycled as glass, metals, fluorescent phosphorous and other materials.
- Other group companies of Kyushu Electric Power also participate in the recycling of used fluorescent tubes; Japan Recycling Light Technology & System recycled about 80,000 fluorescent tubes in Fiscal 2002.

#### Materials crushed and recycled



### Confidential document recycling group company

#### Kyushu Environmental Management Corporation

- Under strict security, confidential documents are collected, stored for a limited duration and then their information is erased. The treated paper is then dissolved and recycled.
- Other group companies of Kyushu Electric Power also promote recycling of used confidential documents; Kyushu Environmental Management Corporation recycled about 1,300 tons of documents in Fiscal 2002.



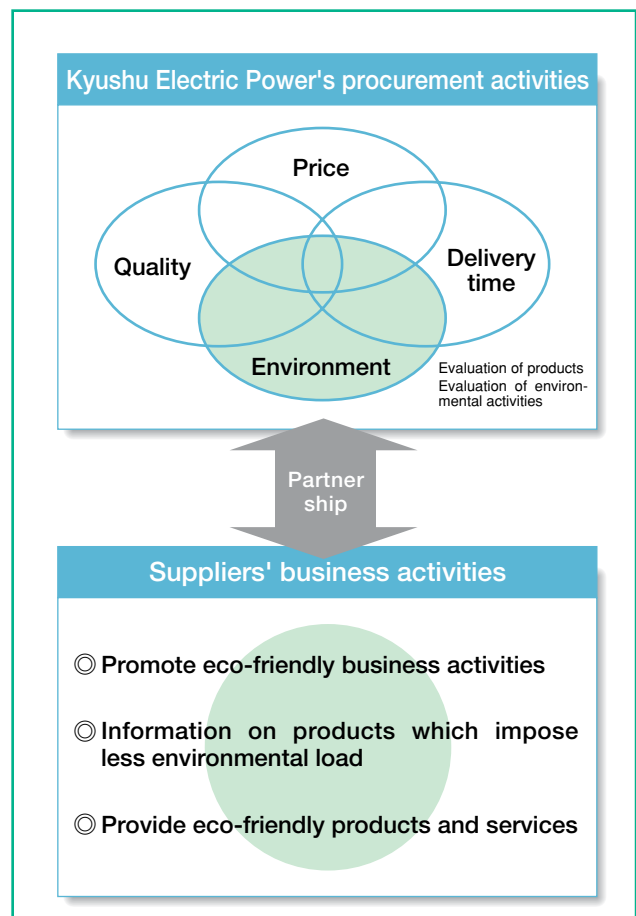
Used paper with confidential information being erased under strict security

## 5 Promotion of green procurement

Kyushu Electric Power has made a policy of choosing environmentally friendly goods when purchasing stationery; expendable office automation supplies and work clothing in order to promote the establishment of a recycling-based society. In Fiscal 2001, the company introduced the green procurement system to give greater priority to eco-friendly materials and suppliers.

[See Related Information P54](#)

- The green procurement system encourages the use of eco-friendly goods and cooperates with suppliers to promote environmental activities. In this system, environmental aspects are evaluated when purchasing goods, in addition to practical considerations of quality, price and delivery time.
- The company selectively purchases office and stationery supplies with EcoMark or other socially recognized environmental labeling. Guidelines for purchasing have already been established for eight categories: miscellaneous goods, fixtures and furniture, electric appliances, stationery, other expendables, printing, office equipment and clothing. More categories will be included in the future.
- Criteria was established in Fiscal 2002 for electricity related materials and equipment to help the company purchase materials and equipment that cause less environmental damage.





## 4 Maintaining Harmony with the Local Environment

Kyushu Electric Power takes positive measures to protect the environment of surrounding communities. Initiatives such as environmental impact assessments prior to construction of power stations, environmental conservation during power facility operation, and proper management of the facility itself are taken, as well as maintaining harmony with the local environment.

### 1 Environmental impact assessment

In accordance with the Environmental Impact Assessment Law, Kyushu Electric Power conducts a survey on the natural (sea, land and air) and social environment prior to the construction of power stations. Then, the environmental impact likely to be



Meteorological observation

caused by construction of the power station is estimated and evaluated, and appropriate measures are taken to protect the environment of the power station vicinity.

### 2 Prevention of air, water and noise pollution

In operating its power stations and other facilities, Kyushu Electric Power conforms not only to the laws and regulations, but also to the environmental conservation agreements, concluded with related local governments with regard to air, water and noise pollution as well as vibration.

#### Measures against air pollution

Using the best technology in the world, Kyushu Electric Power takes measures to address exhaust gas from thermal power stations.

- Kyushu Electric Power's Fiscal 2002 emissions intensity (emissions per kW thermal electric power production) was 0.27g/kWh for sulfur oxide (SOx), and 0.22g/kWh for nitrogen oxide (NOx).

#### ◇SOx reduction measures

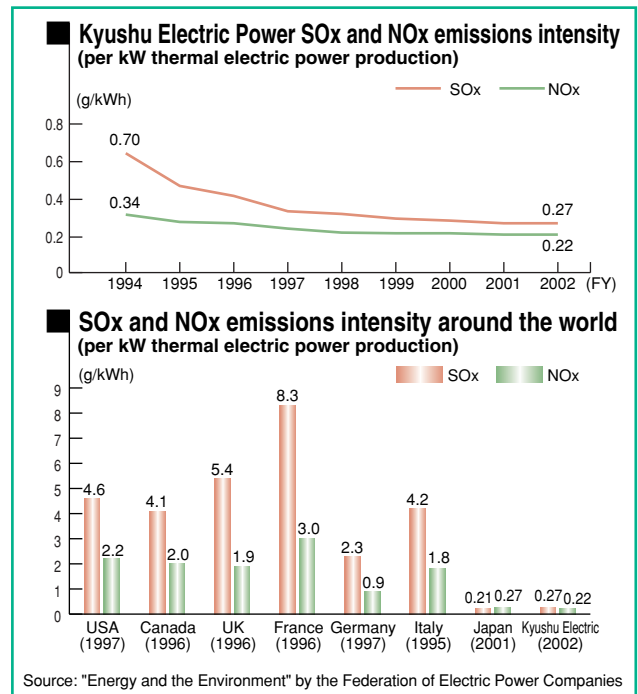
- Use of heavy and crude oil with a low sulfur content
- Promotion of LNG use, which does not contain sulfur
- Installation of desulfurization facilities which remove SOx from exhaust gas
- Adoption of the in-furnace desulfurization method, which removes SOx within the boiler

#### ◇NOx reduction measures

- Combustion method improvement including boilers
  - Adoption of the two-stage combustion method
  - Adoption of the exhaust gas re-circulation combustion method
  - Adoption of low NOx burners
- Installation of denitrification facilities, which remove NOx from exhaust gas

#### ◇Particulate reduction measures

- Promotion of LNG use, which does not generate particulate
- Installation of high efficiency precipitators, which remove particulate from exhaust gas



#### Water quality conservation

- Wastewater from facilities and sites is treated using special wastewater treatment systems at all of the company's thermal and nuclear power stations. It is then discharged once wastewater quality is confirmed.
- Quality analysis is conducted regularly for water in reservoirs at hydroelectric power stations. The water quality is maintained by measures including treating freshwater red tide with ultraviolet rays, selective water intake when water is turbid, and ensuring the health of neighboring forests.

#### Measures against noise and vibration

- Kyushu Electric Power addresses noise and vibration problems by adopting low-noise, low-vibration equipment, installing mufflers and soundproofing walls, and by installing noise-producing equipment indoors.

#### Measures against land pollution

- Kyushu Electric Power strictly abides by the laws and regulations on land pollution (the Soil Contamination Countermeasures Law, Water Pollution Control Law, Waste Disposal and Public Cleaning Law, Law Concerning Reporting, etc. of Releases to the Environment of Specific Chemical Substances and Promoting Improvements in Their Management, etc.) to avoid discharge and leakage of toxic substances into the ground.
- From Fiscal 2003, the company began to conduct voluntary surveys on soil contamination for sites sold or purchased by the company, aiming to avoid the risk of land pollution.

### 3 Environmental protection management

Kyushu Electric Power's power stations are strictly managed to ensure environmental protection by means of environmental monitoring and chemical substance control.

#### Environmental monitoring

- Continuous monitoring using environmental supervisory instruments
- Video camera monitoring
- Patrol monitoring
- Regular measurement and analysis
- Reporting environmental data to related authorities
- The environment surrounding the power stations is under strict control, cooperating with relevant municipalities and neighboring businesses.

#### ◇ Environmental monitoring for radioactivity around nuclear power stations

The radioactivity of air, seawater and environmental samples of agricultural and marine products is measured. Similar measurements are also performed in the prefectures where nuclear power stations are located.

- Kyushu Electric Power reports on the measurement results to the related prefectures. The prefectures in turn review and evaluate the reports under the guidance and advice of academic experts, and publicize the findings in public relations magazines.
- The radiation dosage for people living near power stations is less than 0.001mSv per year. This is much lower than the 1mSv per year statutory dosage limit, and also lower than the annual 0.05mSv target set by the Nuclear Safety Commission.

#### Radioactive waste management

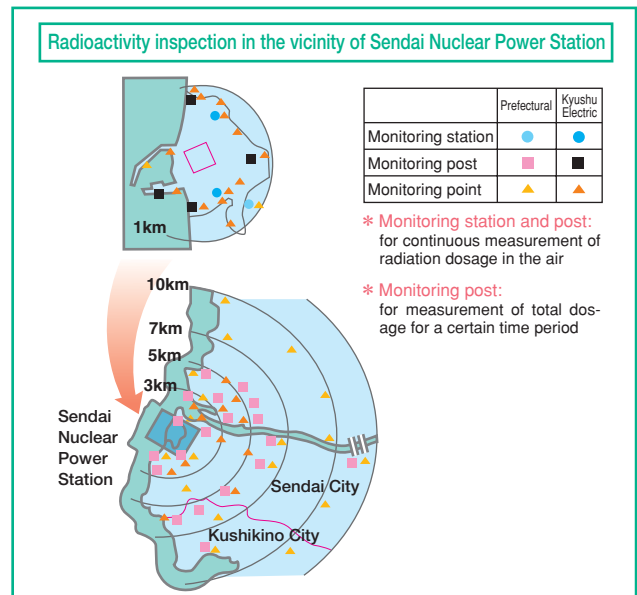
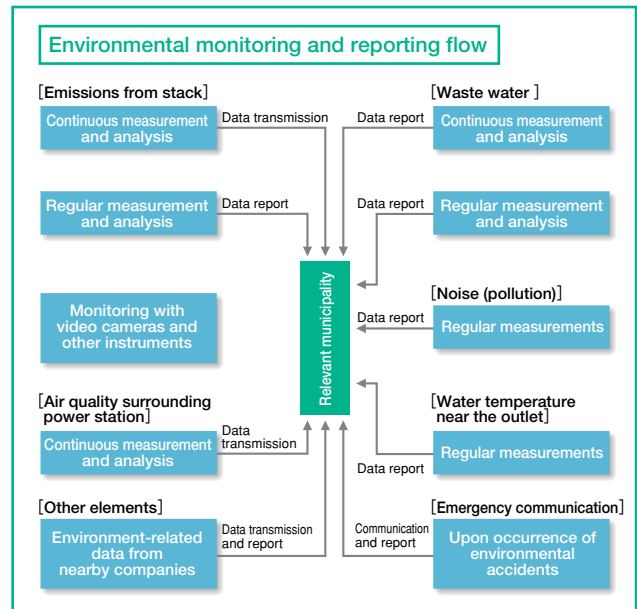
Radioactive waste includes low-level radioactive waste issued from nuclear power stations and high-level radioactive waste resulting from spent fuel reprocessing. Both require different management and disposal methods.

#### ■ Discharge status of radioactive gaseous waste and liquid waste

Unit: Bq

			Targeted value	FY1997	FY1998	FY1999	FY2000	FY2001	FY2002
Gaseous waste	Rare gases	Genkai N.P.S.	$2.2 \times 10^{15}$	$6.6 \times 10^{10}$	$3.1 \times 10^{11}$	$2.9 \times 10^{10}$	$1.1 \times 10^{10}$	$8.8 \times 10^9$	$1.2 \times 10^{10}$
		Sendai N.P.S.	$1.6 \times 10^{15}$	$3.4 \times 10^{10}$	$3.7 \times 10^{10}$	$6.7 \times 10^{10}$	$3.1 \times 10^{10}$	$1.5 \times 10^{10}$	$1.6 \times 10^{10}$
	Iodine	Genkai N.P.S.	$5.9 \times 10^{10}$	N.D.	$3.9 \times 10^6$	N.D.	N.D.	N.D.	N.D.
		Sendai N.P.S.	$6.2 \times 10^{10}$	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Liquid waste (excl. tritium)		Genkai N.P.S.	$1.4 \times 10^{11}$	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
		Sendai N.P.S.	$7.4 \times 10^{10}$	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.

※ N.P.S.: Nuclear Power Station  
 N.B. 1: Bq (becquerel) shows the concentration of radioactivity.  
 N.B. 2: N.D. stands for the values less than detectable critical concentration.



#### ◇ Management of low-level radioactive waste

- Waste in the form of gas or liquid is discharged into the air or sea after being treated, measured for radioactivity, and confirmed as safe. The influence of such discharge on power stations' surrounding environment is in the range of natural radiation.

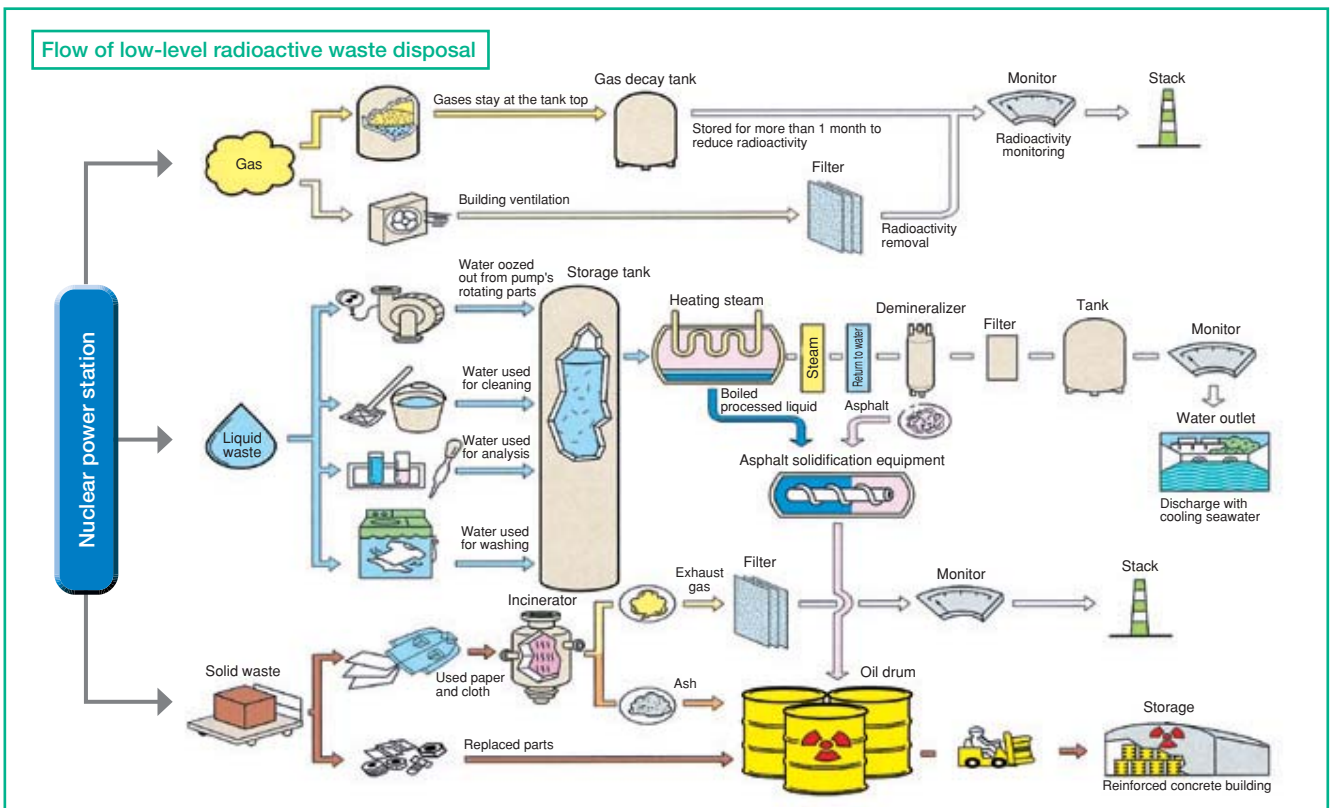
- Concentrated, treated wastewater is solidified with asphalt and sealed inside drums.
- Solid waste is first bulk-reduced by incineration and/or compression, and sealed inside drums. These drums are first stored stringently in the solid waste storage located within the power station site. The drums are then transferred to the Low-level Radioactive Waste Disposal Center of Japan Nuclear Fuel Limited in Rokkasho-mura, Aomori Prefecture. There,

they are buried and kept until the waste ceases to have any effect on the living environment.

**Radioactive solid waste storage status** (Unit: a 200-liter drum)

	Waste stored in power station sites	Waste transferred
Genkai Nuclear Power Station	19,934 (20,143)	6,536 (5,936)
Sendai Nuclear Power Station	10,150 ( 9,775)	—
<b>Total</b>	<b>30,084 (29,918)</b>	<b>6,536 (5,936)</b>

N.B. Figures are the cumulative totals as of end of FY 2002, and figures in parentheses are totals as of end of FY 2001.  
\*Amount transferred to the Low-level Radioactive Waste Disposal Center.



**COLUMN NO.2** Laws and regulations related to radioactive waste

Radioactive waste, discharged from nuclear power stations, is controlled by laws and regulations which are different from the ones applied to general waste. General waste, discharged from households and business entities, is to be recycled as much as possible from the point of effective use of resources and environmental conservation. All the waste generated within each nuclear power station's controlled areas (areas for which radioactivity influence, resulting from nuclear power reactor operation, is required to be managed) is categorized as low-level radioactive waste, while waste generated from reprocessing of spent fuel outside power stations is categorized as high-level radioactive waste. Disposal of high-level radioactive waste is regulated by the Law concerning the Regulations of Nuclear Material Substances,

Nuclear Fuel Substances and Nuclear Reactors which defines the method of storage, and locations for storage and disposal. Kyushu Electric Power makes every effort to reduce the generation of low-level radioactive waste and to minimize the volume of waste generated.

Waste type	Laws and regulations applied
Radioactive waste	The Law concerning the Regulations of Nuclear Material Substances, Nuclear Fuel Substances and Nuclear Reactors
General and industrial waste	Waste Disposal and Public Cleaning Law



## Chemical substance control

Most chemical substances handled by Kyushu Electric Power are for use at thermal or nuclear power stations, and are properly managed at each office in full accordance with related laws and regulations.

### ◇PRTR (Pollutant Release and Transfer Register) system

Kyushu Electric Power has taken the initiative in investigating, collecting and disclosing data on specific chemical substances' emissions and amounts transferred.

## ■ PRTR investigation results (FY2002)\*1

Index No.	Chemical substances	Applications	Unit	Amount handled	Amount released into environment				Amount transferred*2	FY 2001(reference)		
					Air	Water	Soil	Landfill		Amount handled	Amount released	Amount transferred
63	Xylene	Coating material for equipment	kg	5,600	5,600	0	0	0	0	4,800	4,800	0
179	Dioxin	Waste incinerator	mg-TEQ*3	—	54	0	0	0	34	—	40	14
253	Hydrazine	Feed water processing agent	kg	30,000	1.5	0	0	0	0	35,000	1.7	0
304	Boron and boron compounds	Reactivity control in nuclear reactors	kg	2,200	0	0	0	0	0	3,200	0	0
311	Manganese and manganese compounds	Desulfurization agent	kg	—*4	—	—	—	—	—	1,300	54	0
353	Tris phosphate (dimethyl phenyl)	Turbine control	kg	7,100	0	0	0	0	7,800	11,000	0	12,000

\* 1 : Calculated for 1 ton or more of Class 1 chemical substances, or 0.5 tons or more of specified Class 1 chemical substances handled by offices annually (Effective digit: 2). All dioxins are calculated regardless of the amount.

\* 2 : Amount transferred as waste

\* 3 : Since the toxicity of dioxins differs according to type, values are expressed in toxicity equivalent quantity (TEQ) in 2, 3, 7, 8-T4CDD.

\* 4 : Not calculated as the annual amount handled totaled under 1 ton.

N.B.1: Since FY 2002, under the Law Concerning Reporting, etc. of Releases to the Environment of Specific Chemical Substances and Promoting Improvements in Their Management (full enforcement in Apr. 2001), enterprises are required to report to the government records and management of the quantity of specified chemical substances that are emitted and transferred.

N.B.2: Under the PRTR (Pollutant Release and Transfer Register) system, operators keep track of the amount of each chemical substance subject to PRTR that is released during operational activities and of the amount transferred as waste. These results are then reported. This system serves to promote voluntary management efforts by operators together with society as a whole, fostering countermeasures against the environmental risks imposed by such chemical substances.

### ◇Dioxins

Kyushu Electric Power is reducing the use of waste incinerators, which are believed to emit dioxins. As for the boilers installed at thermal power stations, only small amounts of dioxins are emitted because fuel contains little chlorine and a high combustion temperature is secured by an appropriate management system.

- In Fiscal 2002, the company discontinued the use of 39 waste incinerators, leaving eight waste incinerators still in operation as of the end of Fiscal 2002.
- Currently, seven of the above eight incinerators are not being used. The remaining one incinerator's emission levels meet all

standards stipulated by the Dioxin Treatment Countermeasure Special Measures Law (enforced in Jan. 2000).

### ◇PCB (polychlorinated biphenyl)

- Equipment which utilizes PCB (1,512 high-voltage transformers, capacitors and others) is kept in special storage areas at Kyushu Electric Power under stringent surveillance.
- Kyushu Electric Power plans to treat the equipment and render it harmless by 2016, the deadline set by the Law Concerning Special Measures against PCB Waste, effective as of July 2001.

## 4 Harmony with the surrounding environment

When designing facilities, Kyushu Electric Power places a high priority on the natural and urban landscapes of their surrounding areas, and implements environmentally friendly measures such as tree planting, in addition to natural environment protection activities.

- Part of the section of 220kV Higashi-fukuoka new trunk line, which connects Kitakyushu Substation (Kitakyushu City) and Higashi-fukuoka Substation (Kasuya-gun, Fukuoka Pref.) crosses a part of the Kitakyushu Quasi-National Park which are designated as second and third class special areas. On installing the transmission line, an environmental impact assessment (park assessment), which took approximately one year, was carried out based on the guidance of local authorities, as the use, and activities conducted, in these areas are regulated by the Natural Parks Law.

- Based on the results, the installation was carried out by prioritizing the conservation of the scenic view from the observation deck, which attracts visitors. Steel towers were painted so as to be in harmony with the surrounding environment; and native trees were planted to revitalize the richness of the land.



Normal steel tower (unpainted)



Steel tower painted to be in harmony with the environment

## 5 Working with Society

Kyushu Electric Power cooperates with local communities through environmental activities such as promotional campaigns, environmental business in alliance with NGOs, as well as global-scale environmental activities including the provision of technical cooperation to developing countries.

### 1 Communication

Kyushu Electric Power makes concerted efforts to disclose environmental information to the public through its Environment Action Reports, study tours, lectures as well as through the media. The company also maintains communication with the public by listening to their opinions.

#### Lectures

Every year during Environment Month (June), and the communication promotion campaign (October), lectures and talks about the environment and energy issues are held for the general public. During Environment Month, lectures were held at three offices for the general public with an attendance of about 320 people. Kyushu Electric Power also sent lecturers at 17 different times to give lessons on the environment and energy at elementary and junior high schools, or to local municipality symposiums. These activities attracted approximately 1,000 people in total.



Lecture at Genyo Elementary School (Fukuoka City)

#### ◇ Let's think about recycling in our daily life (Miyazaki Branch Office)

Miyazaki Branch Office invited an outside expert to give a lecture on separating waste and recycling at home, which was attended by 82 participants.



Lecture at Miyazaki Branch Office

#### Study Tours

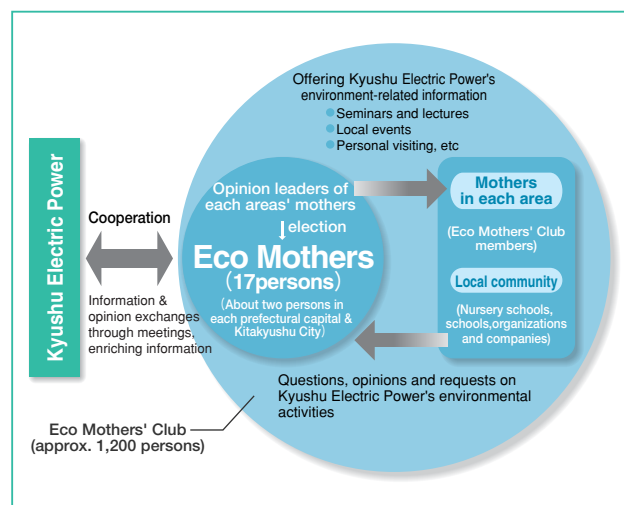
Kyushu Electric Power organizes study tours for the general public to introduce the company's efforts made to deal with environmental issues. The tours usually involve visits to observe facilities at power stations and PR facilities such as Genkai Energy Park. In Fiscal 2002, a total of approximately 150,000 people participated in the study tours to Genkai Nuclear Power Station and Sendai Nuclear Power Station, which were organized to help raise the general public's understanding of the effective use and development of nuclear power as a means of addressing global warming.

#### Promoting communication on environmental issues by the "Eco Mothers' Club"

Kyushu Electric Power places importance on the communication of environmental issues to mothers who are immediately concerned with such issues, and hold the role of teacher of environmental education at home. As part of this initiative, the company conducted a survey targeted at 1,000 mothers in Kyushu in November 2002. The survey focused on environmental issues and Kyushu Electric Power's environmental activities. As a result, requests were made for environment-related information disclosure, which is useful for pursuing energy saving and an environmentally friendly lifestyle.

See P36 for details

Based on the survey results, the new environmental Publicity system by "Eco Mothers", communicators on environment and energy issues, was started in Fiscal 2003. The "Eco Mothers' Club", with 17 Eco Mothers as its core members (about two persons in each prefectural capital and Kitakyushu City), is an interactive communication network between the company and mothers living in Kyushu. It aims to enhance awareness of environmental issues and contribute to environmental conservation as a community's task, by sharing information on energy and the environment. Kyushu Electric Power reflects the opinions of the club on its environmental activities.



## 2 Community activities

Kyushu Electric Power is dedicated to promoting environmental activities through the Kyushu Homeland Forestation Program and Car-sharing Project. At the same time, the company organizes Environment Month to support environmental activities through participation in various community programs.

### Planting one million trees under the Kyushu Homeland Forestation Program

To commemorate the 50<sup>th</sup> anniversary, Kyushu Electric Power began the Kyushu Homeland Forestation Program in Fiscal 2001 to plant one million trees at sites throughout Kyushu over the next 10 years. [See Related Information P57](#)

- As public interest on global warming and other environmental issues are increasing, forests' CO<sub>2</sub> absorbing function attracts attention. Other various aspects and functions of forests are also becoming a focal point, so as to ensure full utilization: land conservation (water source cultivation, sediment discharge prevention), species of wild fauna and flora conservation, and as a place for nature-based experiences.
- Under the circumstances, Kyushu Electric Power actively supports the Kyushu Homeland Forestation Program as a company-wide program, aiming to help the greening of the local environment as well as the enhancement of awareness of environmental issues. Under the program, 100,000 trees will be planted each year with the cooperation of local communities, to plant a total of one million trees in 10 years.
- The program is supported by the participation of Green Helpers, volunteers who have basic knowledge and skills on greening.

### Environmental education support

Following the intensive interests on environmental issues, there is an increasing need for environmental education, which is organized by cooperating educational institutes, local communities, and business entities. To satisfy such needs through sup-

porting environmental education in community and school activities, Kyushu Electric Power has hosted nature-related classes and programs in the forest surrounding Onagohata dam, Amagase, Oita Pref. [See Related Information P58](#)



Volunteers participating in Forestation of Onagohata



Bird's-eye view of Onagohata Power Station

### C O L U M N

### NO.3 "No!" to illegal waste dumping

#### Cooperation with local authority

Kyushu Electric Power cooperates with local authorities to pursue the efforts of building a recycling-based society. 21 offices of the company, with a total of 71 local authorities, have signed the agreement on illegal dumping. Under the agreement, if employees of the company find illegally dumped waste during their work, they report the fact to an appropriate local authority. This is a practical and effective measure to build a recycling-based society at a local level, as such waste can be found at an early stage and the extent of dumping can also be minimized through these efforts.



Company vehicle with a sticker calling for prevention of illegal waste dumping



### Environment Month in FY 2002

Kyushu Electric Power is actively promoting voluntary activities including tree planting and cleaning the community.

#### ◇Tree planting

As part of the greening activities, approximately 4,185 saplings were planted by 20 offices.

- Staff members of the Amagi Customer Service Office, Fukuoka Branch Office, planted 500 *Rhododendron scabrum* at Kogane-gawa nursery school (Amagi City) with the school toddlers.

#### ◇Voluntary activities

Kyushu Electric Power was involved in various voluntary activities such as cleaning local communities, stocking rivers with fry, and opening community farms at its power station premises to the public.

- 90 offices cleaned roads, rivers and coasts around their offices. 42 offices also joined cleanups led by local governments.



Tree planting (Kogane-gawa nursery school, Amagi City, Fukuoka Pref.)



Cleanup of Kumamoto Branch Office surroundings



Fry releasing (Mimikawa River, Hyuga City, Miyazaki Pref.)



Planting potatoes (Genkai Nuclear Power Station)

Kumamoto Higashi Customer Service Office and Kumamoto Power System Maintenance Office, Kumamoto Branch Office, jointly conducted cleaning of the surrounding area of the office buildings.

- Four offices stocked rivers with fry. This included the release of 4,500 carps and eels into the Mimikawa River by the Hyuga Power System Maintenance Office, Miyazaki Branch Office.
- Community farms and greenhouses at our premises were opened to the public at three offices. Genkai Nuclear Power Station invited 110 nursery school toddlers of Futaba nursery school and Aoba nursery school (Genkai Town) to pick tomatoes grown in its greenhouse that uses waste heat from the plant, and to experience planting potatoes.

### Car-sharing Project

In October 2002, Kyushu Electric Power started a car-sharing project in Fukuoka City by using electric and low-emission vehicles through collaboration with Fukuoka City and environmental NGOs.

[See Related Information P59](#)

Under the car-sharing scheme, people share a car, instead of possessing their own cars, by becoming a member of the organization that takes charge of management and operation of cars. The scheme can help by reducing emissions and relaxing traffic jams. Kyushu Electric Power supports the scheme by covering the cost of introducing approximately 20 vehicles and developing an unattended hiring out system, as well as offering knowl-

edge accumulated through experimental studies on electric vehicles, and conducting analysis of running data of vehicles.



Test run (Research Laboratory)

### C O L U M N

NO.4

Awarded by Fukuoka City for distinguished efforts in environmental conservation

Kyushu Electric Power won the Fiscal 2003 Fukuoka City Environmental Conservation Awards. The awarding system, established by Fukuoka City in Fiscal 1998, is aimed to award persons and organizations for their distinguished contribution to pursuing environment-related activities and promotion of nature conservation and greening. The award also focuses on encouraging the citizens to voluntary participation in environmental conservation activities. The award resulted from the positive evaluation of Kyushu Electric Power's concerted efforts within the community, including promotion of environmental education at the Kyushu Energy Hall and through organizing lectures on environmental conservation, Kyushu Homeland Forestation Program, Car-sharing Project and Green Electric Power System.



Awarding ceremony



### 3 International cooperation

Kyushu Electric Power supports offshore environmental conservation activities through international cooperation efforts with overseas electric utilities, including information exchanges, sending of specialists, receiving trainees here, and through technical support.

#### Technical cooperation through international exchange agreements

Kyushu Electric Power has entered into exchange agreements with overseas electric utilities aiming to exchange information and opinions on common issues: global environmental problems, development and safety assurance of nuclear power, efficient management, and deregulation. The shared information and opinions are helpful to business operation.

- In September 2002, Kyushu Electric Power entered into a new exchange agreement in the field of transmission system management with Electricité de France (EDF), with which the company has been promoting personnel exchanges since 1996. The two companies share common technical issues on power transmission, including the influence of widespread use of dispersed power sources such as wind and photovoltaic power on transmission systems. The new agreement therefore will help the companies to study the future of power transmission through exchanges of technical information by specialists and joint research.

#### International exchange agreements

Country	Company/organization	Date of agreement
Korea	Korea Electric Power Corp.	Jan. 1969
China	Szechwan Electric Power Test & research Institute	Apr. 1991
China	Shandong Electric Power Corp.	Apr. 1992
U.K.	Scottish Power Co., Ltd.	Aug. 1993
Australia	Western Power Co., Ltd.	Dec. 1994
France	Electricite de France	Oct. 1996
Thailand	Provincial Electricity Authority	Feb. 2000
Philippines	National Power Corporation	Oct. 2000
Vietnam	Electricity of Vietnam <sup>*1</sup>	Jun. 2001
France	Power Transmission and System Management Dept. Electricité de France	Sep. 2002
Taiwan	Taiwan Power Company <sup>*2</sup>	Apr. 2003

※1:Entered into an agreement for personnel training program with Electricity of Vietnam.  
 ※2:Entered into an agreement for technical exchange in the field of civil engineering with Taiwan Power Company.

#### International cooperation through JICA and other organizations

Kyushu Electric Power contributes to the transfer of technology and knowledge to developing countries in Asia and the world by sending personnel and receiving trainees through JICA and other organizations.

- In Fiscal 2002, 13 employees were sent to China, Laos and Malaysia, while 68 trainees were received from China, Thailand and Vietnam.

### 4 Employee Awareness Enhancement

Kyushu Electric Power trains employees and provides varied information on environmental activities to enhance the environmental awareness of each employee.

#### Training and lectures

In-house training programs are held for employees. The programs feature lectures or talks on environmental issues by lecturers invited from within and outside the company.

- In Fiscal 2002, a total of 151 employees joined three environmental-training programs tailored to different needs in each

department and career.

- A total of 219 employees joined lectures given by the Environmental Affairs Dept. and held at five offices.
- During Environment Month, special lecturers were invited at 21 offices, to which 1,253 employees attended.
- A lecture with the theme of "What we can do for the future generation" was given by an academic expert to 158 employees of the Kumamoto Branch Office.
- At the Head Office, an outside expert gave a lecture under the theme "Environmental management promotion and social evaluation", which 207 employees attended.



Lecture at the Kumamoto Branch Office



Lecture at the Head Office

#### Fostering specialists for environmental measures

The company helps employees obtain qualifications such as Energy Manager and Pollution Control Manager by establishing systems to assist with correspondence education fees, or by providing allowances for employees who obtain publicly-recognized licenses and qualifications.

- A total of 783 employees were qualified as Energy Managers as of the end of Fiscal 2002, 101 more managers than the previous year.
- The company encourages its employees to obtain the internal qualification of environmental auditor, who monitors whether each office's environmental management system is appropriately operated and maintained, and reports the results and issues to be improved to the management of each office. In Fiscal 2002, 210 employees obtained the internal qualification of environmental auditor by participating in seven training programs. These training programs are offered by lectures dispatched from Kyushu ISO Certification/Registration Organization, which is a group company served as an organization certifying/registering ISO 14001 (environmental management system).

#### No. of qualified employees (cumulative total)

	FY 2001	FY 2002
Energy Manager	682	783
Pollution Control Manager	500	486
Industrial Waste Intermediate Treatment Facility Engineering Controller	132	131
Industrial Waste Final Disposal Site Engineering Controller	54	52
Internal Environmental Auditor	—	210

### Providing information

The company provides employees with environment related information regularly by broadcasting domestic and international environmental news through company televisions, newsletters, and by making full use of the intranet.

#### ◇ Providing information through a newsletter, "Environment Digest"

Contents of the monthly newsletter are as follows:

- Social trends and news on environmental issues
- Information on measures held by the company and other organizers
- Information on environmental events which are newly introduced by the company
- Essays from people engaged in environmental activities



#### ◇ Environmental Affairs Dept. website

The website is utilized as a communication tool with employees to enhance personnel's awareness on environmental issues and to promote environmental activities, as well as to support management and guidance of environmental managers.

- Information on compliance
- Environmental activities conducted
- Enquiry
- Information on environmental issues



### Award system

Kyushu Electric Power has established an award system for employees who devote themselves to the local community. The system aims to encourage employees' active commitment to local communities and communication with them.

- In Fiscal 2002, 27 employees received awards. The award-winning contributions included translating correspondences between foster parents and children for the Foster Parents Plan of Japan, a voluntary body dealing with overseas foster parent programs, as well as coaching the Japanese art of archery to boost local sports activities.

### Supporting social contribution

Kyushu Electric Power encourages employees' social contribution by setting up a volunteer leave system.

- In Fiscal 2002, an increased number of 345 volunteer leave days were taken company wide, compared to 191.5 days in the previous year. This increase is due to the utilization of the system during the period of the World Cup Soccer Tournament.

#### ■ Use of volunteer leave (FY 2002)

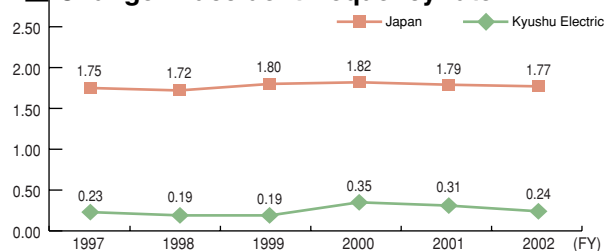
	Social service	Community activities	Sports and cultural activities	Donor (bone marrow donor registry)	Total
No. of people	61	27	49	3	140
No. of days	134	83	119.5	8.5	345

### Safety and health

Safety and health of all employees are two fundamental elements for active and sustainable business activities, including environmental activities. Kyushu Electric Power works to create a safe and healthy working environment with the aim of achieving 'zero-accident challenge and individual health management'. The company mainly focuses on the following points:

- ① Preventing operational accidents
- ② Preventing traffic accidents
- ③ Improving the working environment
- ④ Preventing disasters at subsidiary firms and contractor operations
- ⑤ Improving measures for comprehensive health management

#### ■ Change in accident frequency rate\*



\* Accident frequency rate (AFR) is the number of injuries leading to one or more days off work in 1 million man-hours worked.

## C O L U M N NO.5 2002 Kyushu Electric Power Environment Action Report won the Green Reporting Award

Kyushu Electric Power's Environment Action Report, published last year, won the Excellence Prix at the 6th Green Reporting Award hosted by Toyo Keizai Inc. Green Reporting Forum. The Awards were established with the aim of enriching both the quality and volume of environmental reports by enhancing companies' awareness on environment-related information disclosure. Kyushu Electric Power is the third to win the Excellence Prix in the power industry following Kansai Electric Power and Chubu Electric Power. Judges made comments that the Report showed efforts to explain the company's general activities on environment preservation in simple



Awarding ceremony



Cover of 2002 Kyushu Electric Power Environment Action Report

# Opinions from Outside the Company

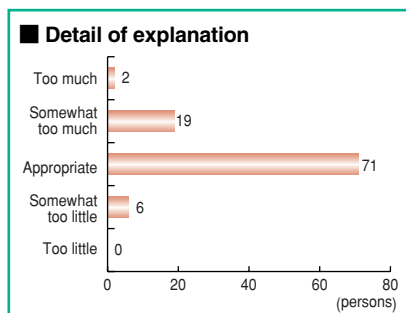
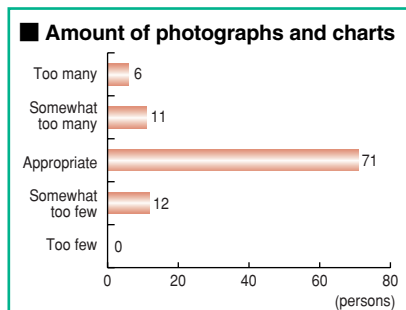
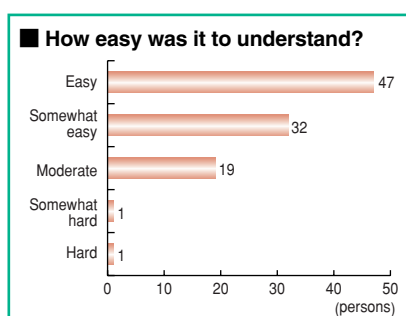
## - Third-Party Evaluation -

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

The "Fiscal 2002 Kyushu Electric Power Environment Action Report" was published in September 2002. Through the questionnaire, invaluable opinions were offered regarding the implementation of Kyushu Electric Power's environmental activities from local governments, environmental NGOs, people in the education field, and the general public. 103 replies were gratefully received as of June 25, 2003, and 85 responses were received for the separate abridged version.

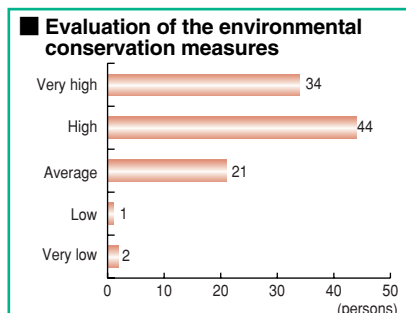
#### Q1

What was your impression of the Fiscal 2002 Environment Action Report? (Choose one)



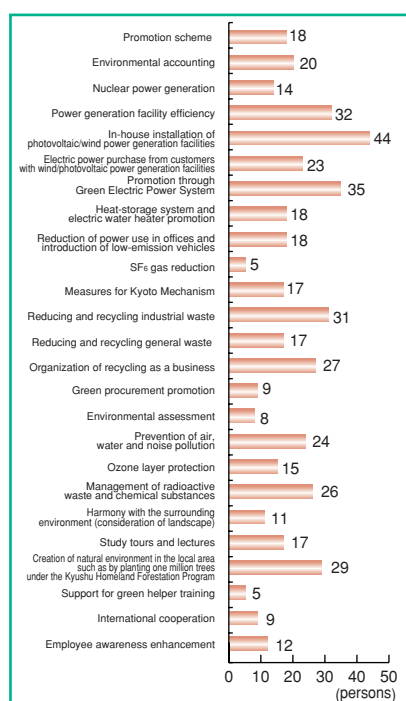
#### Q2

What is your evaluation of Kyushu Electric Power's environmental conservation measures?



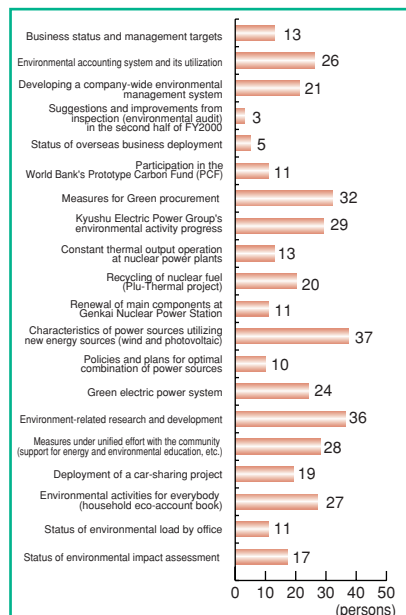
#### Q3

Chose five activities that Kyushu Electric Power should focus on.



#### Q4

List any information in the report that proved to be useful (choose all applicable answers)



#### Q5

List any opinions or requests regarding Kyushu Electric Power's environmental conservation measures, or the content of the Environment Action Report.

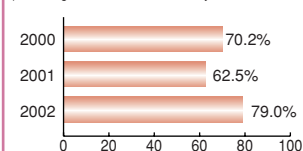
#### Opinions and requests

- Editing and contents**
  - The coloring is too subdued.
  - The report might be more informative with more pictures.
  - It gives a rather rigid impression.
  - The explanation of the terms was thorough and helpful.
- Report content**
  - Could the environmental accounting data be listed for each office? The explanation of the benefits of the environmental activities is not clear.
  - Information regarding the effect of electromagnetic waves on humans is requested.
  - An article on the environmental accidents is requested.
  - The information regarding environment-related research and development was useful.
  - The activity progress could not be evaluated since the target values were not listed for the fiscal year.
- Environmental activities**
  - More effort should be made for the prevention of global warming through tree planting, forests which function as green dam and car-sharing.
  - New energy sources should be more actively promoted.
  - I have a keen interest in the Plu-thermal project.
  - It would be wonderful if the household eco-accounting book was more widely used.
  - Reportedly, there is a plan to construct a transmission line in the Ayanomori Forest in Miyazaki Prefecture. I suggest Kyushu Electric Power incorporates the opinions of experts in this plan.

#### Change in opinions over the years

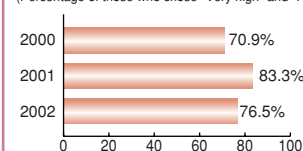
##### How easy was the report to understand?

(Percentage of those who chose "Easy" and "Somewhat easy")



##### Evaluation of the environmental conservation measures

(Percentage of those who chose "Very high" and "High")



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

The 3rd Kyushu Electric Power Environmental Advisory Council was held on July 22, 2003. Various views on Kyushu Electric Power's measures for environmental issues, and the "Fiscal 2003 Kyushu Electric Power Environment Action Report" were discussed. The following are some of the principal opinions of the Council.

### 1 Environmental management promotion

#### Environmental management policies

- As the leading company in Kyushu, Kyushu Electric Power should set strong policies regarding its expectations of how Kyushu's environment should be. This may encourage the participation of other companies and citizens.

#### EMS

- What is the status of activities towards ISO9000 series? As a total energy company, Kyushu Electric Power must develop an environmental management system that encompasses the ISO14000 series.

#### Environmental Publicity

- Regarding the "Eco Mothers' Club," the activities of eco mothers are understandable, however, the way in which the mothers in the area communicate and spread the information is not. More specific content of their activities should be explained.
- As revealed in "Awareness and Actions of Mothers on Environmental Issues", why 40% of mothers don't find Kyushu Electric Power to be an environment-conscious company? Kyushu Electric Power should listen to voices of the silent majority.

#### Measures for global warming

- When CO<sub>2</sub> emission from the non-industrial (commercial) sector is rapidly increasing, electric utilities must take measures to encourage CO<sub>2</sub> emission control on the demand side, since they have a close connection with the demand side (e.g. supporting customers' efficiency improvement through discounting electric bills of companies that are working on CO<sub>2</sub> reduction).
- Measures for new energy sources might be able to include support for biomass power generation. Especially in Kyushu, where there seems to be a strong potential for biomass, such measures might appeal to the public as something unique to Kyushu.

#### Nuclear Power issues

- The total investigation is mentioned with regard to ensuring the appropriateness of the voluntary inspection for the nuclear power facilities. The background behind the implementation of such investigation should be explained clearly.

#### Forestation

- Kyushu Electric Power might want to reinforce measures that take advantage of the company-owned land. How about creating a "sink" or forest on the final disposal site of coal ash. Activities in conformity with "Nature Rehabilitation Act" that became effective earlier are requested as actions that follow the planting of 1 million trees.

#### Environmental education

- Kyushu Electric Power owns many facilities that can be used for environmental education other than that in Onagohata. For example the Noma Wind Power Station could be prepared to serve as a base for environmental and energy education.

### 2 Environment Action Report

- The inclusion of negative information such as results of an internal audit and an employee attitude survey deserves appreciation.
- Due to its volume and technical terms, the report may be hard for the general public to understand. It is necessary to offer environmental information to people in an easier and more familiar form.
- Natural landscape pictures, scenes from people's lives and performing arts of the area could be included to emphasize Kyushu's distinct characteristics. Also, a map of Kyushu marked with activities such as forestation might be helpful.
- How the "new energy sources" are placed in the concept of optical combination of power sources should be clearly stated, such as RPS target figure, etc.

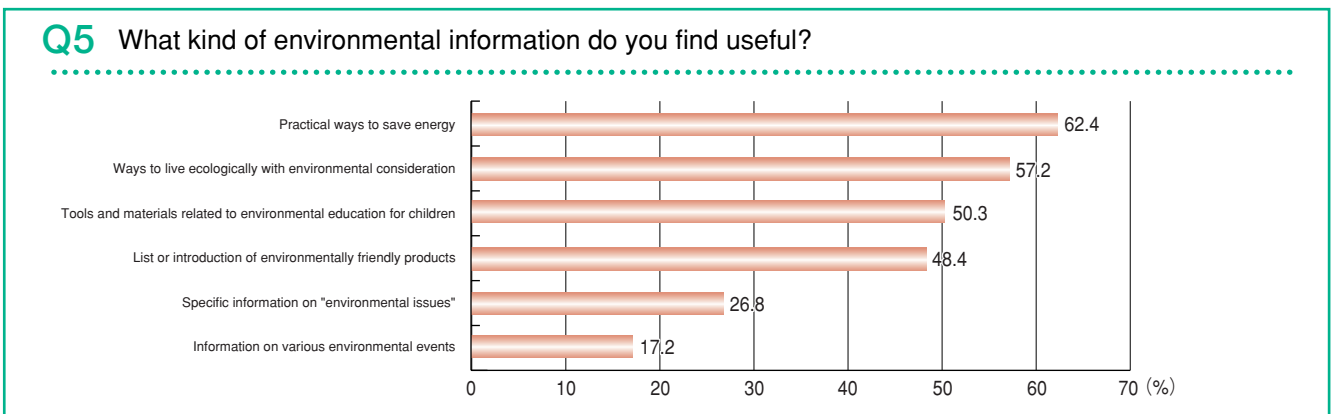
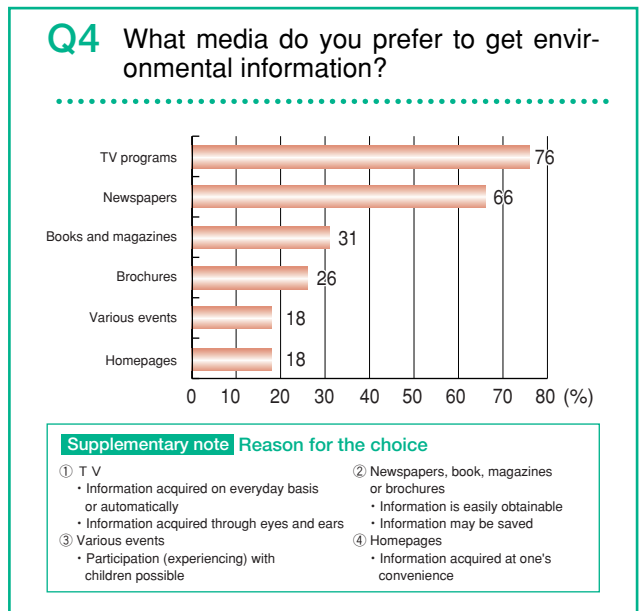
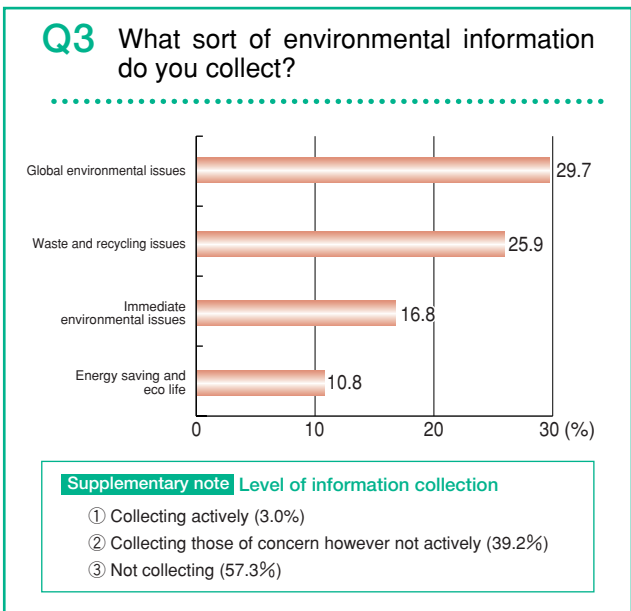
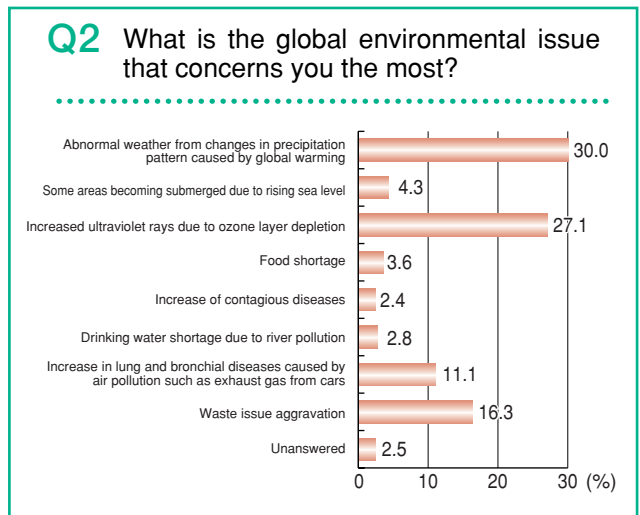
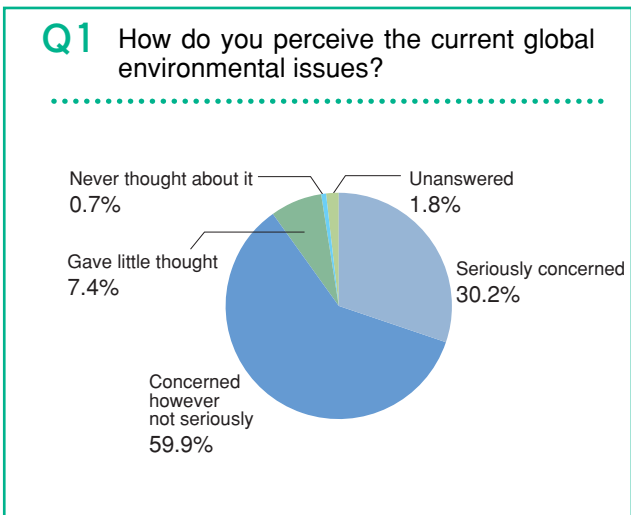
These valuable opinions will be incorporated into Kyushu Electric Power's environmental activities of the future.

Members of the Kyushu Electric Power Environmental Advisory Council	Ei Akagi	writer
	Naohito Asano	Professor, Faculty of Law, Fukuoka University, and member of the Central Environment Council
	Nahomi Ishikubo	lifestyle journalist
	Mami Oku	Associate Professor, Faculty of Environmental Studies, Nagasaki University, and member of Nagasaki Prefectural Environmental Council
	Takao Sawada	Deputy Managing Editor, Yomiuri Shimbun Western Head Office
	Satoshi Tsuruta	Executive director, Japan Environmental Measurement & Chemical Analysis Association
	Akira Fukuizumi	Teacher, Fukuoka Prefectural Shuyukan High School
	Kan Yoshida	copywriter
	Junko Yoshida	Representative director, NPO Moshimoshi Tikyu

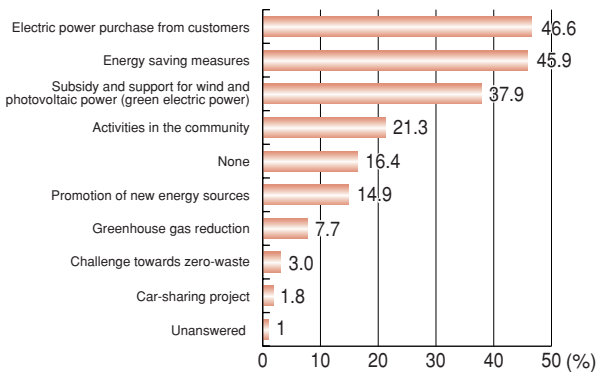


# 3 Awareness and Actions of Mothers on Environmental Issues

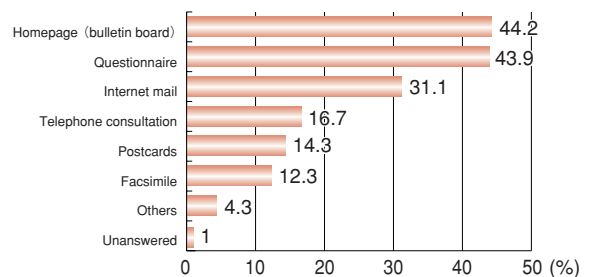
Kyushu Electric Power conducted a survey on mothers living in Kyushu in November 2002, and received valuable opinions. 1,000 questionnaires were sent out, 676 of them have been returned (response rate of 67.6%). The main results are as shown below.



### Q6 Which of Kyushu Electric Power's activities were you aware of?



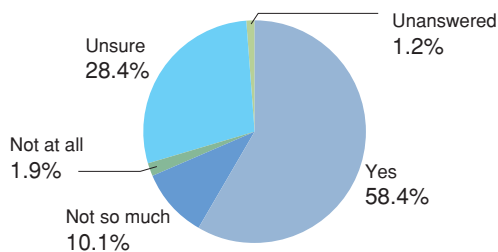
### Q7 Which method do you want enhanced for communicating opinions and questions on environmental activities?



#### Supplementary note

- |   |  |
|---|--|
| ① Homepages   | ② Questionnaires   |
| • It can be accessed anywhere, anytime.                           | • A questionnaire encourages respondents to think of more questions. |
| • Communication is simple, easy and immediate.                    | • It is easier to accept even without interest                       |
| ③ E mail  | ④ Telephone  |
| • Access is simple and easy and can be made from cellular phones. | • It is easier to communicate one's thoughts through conversation.   |

### Q8 Do you think that Kyushu Electric Power is an environment-conscious company?



#### Supplementary note

- Half of those who answered, "Yes" did so after reading the enclosed brochure.
- Most of those who answered "Not so much" or "Not at all" did so due to concern or mistrust towards nuclear power generation or the impact on the environment from power plant constructions.

#### Reason for choosing mothers for the questionnaire

- Mothers are usually the ones responsible for children's environmental education in the household.
- Mothers feel more involved in environmental issues.
- Mothers have various opinions which they hear by word of mouth.

#### Findings from the questionnaire

- Environmental information must be offered so that recipients can easily obtain.
- The improvement of simple communication tools is needed.
- The keywords for information are "connected to the area", "simple" and "easy to understand".
- Examples of activities for immediate environmental issues are requested.
- In order to enhance people's interest and corporate image, it is essential to "inform" people how Kyushu Electric Power tackles the measures.

## C O L U M N NO.6 1<sup>st</sup> Meeting of Kyushu Electric Power Eco Mothers' Club

The Eco Mothers' Club network is considered to be one of the pillars of the future activities for environmental public relations. Upon establishment of the network, a meeting with eco mothers from the respective area was held on July 12, 2003. This being the first such experience, voices of mothers expressed mixed feelings including anxiety and aspiration, such as, "We don't know what will happen (with the club) until we actually start the activities", and "We must first acquaint ourselves with the matter". Some other opinions are listed below.



1st Meeting held on July 12, 2003

- There are many aspects to "ecology". We hope to engage in undertakings that lead our children to ecological activities.
- People should be informed that both mothers and children could get involved in activities. We would start from familiar activities such as kitchen garbage disposal and recycling news and build on them to broaden our view to global environment.
- While conveying information on environmental issues, we want to let people know what we can do in our immediate

surroundings.

- We want to send a message that we cannot survive without learning to live in harmony with the natural environment.
- We are the pipeline between Kyushu Electric Power and children and their families. We hope to convey messages from both sides and think together.
- Today's activities had me thinking what we can pass onto the next generation.

Kyushu Electric Power plans to implement environmental activities that are closely connected to the local area by thinking together with Eco Mothers.

# 4 Main Opinions from Customers Survey

Kyushu Electric Power conducts a customer survey annually to listen to the opinions of our customers and incorporate them into its corporate management. The opinions below are those concerning Kyushu Electric Power's environmental activities from the Fiscal 2002 survey.

## 1 Outline of the survey

### Survey area

Service area of Kyushu Electric Power (excluding isolated islands)

### Survey population

Men and women from 20 to 64 years old

For the main survey: 3,100 persons

For the follow-up survey: 1,550 persons

### Survey method

The main survey through interview and questionnaire and the follow-up survey by phone

### Survey period

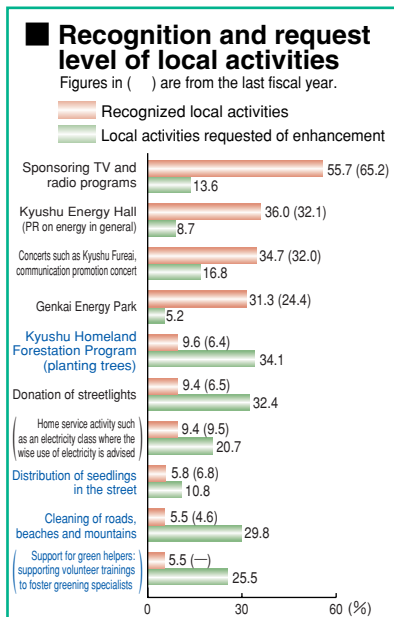
July-August 2002 (main survey)

November-December 2002 (follow-up survey)

## 2 Environment-related opinions

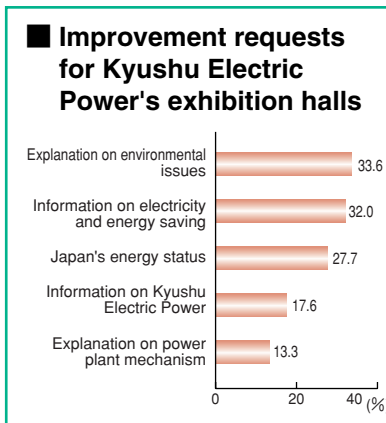
### Evaluation of Local activities

Although the environmental activities are relatively unrecognized compared to other local activities that Kyushu Electric Power is involved in, further enhancement of these activities is strongly requested.



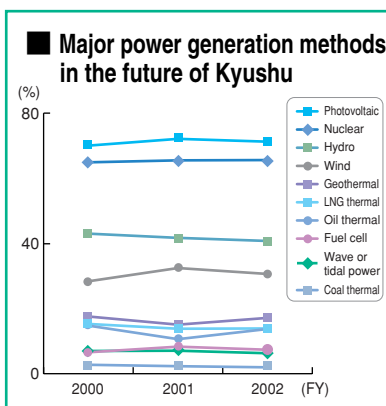
### Evaluation of Exhibition halls

The most requested improvements for Kyushu Electric Power's exhibition halls are "explanation on environmental issues", followed by "information on electricity and energy saving" and "Japan's energy status".



### Recognition of the major power generation method

More than half of the survey population was aware that the main power generation method in Kyushu is nuclear power, and those who expect photovoltaic power generation to become the major source of power 10 years from now lead the charts as they did last year.

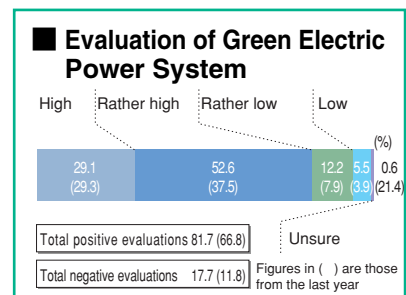


### Evaluation of Green Electric Power System

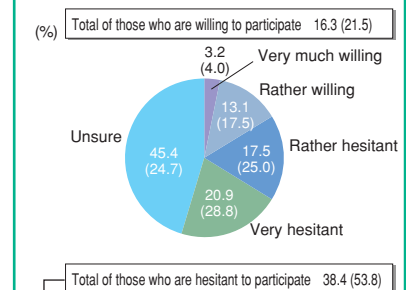
While over 80 percent of the survey population responded favorably toward the Green Electric Power System, those who were willing to participate re-

mained at 16.3%. The main reasons for nonparticipation are listed below:

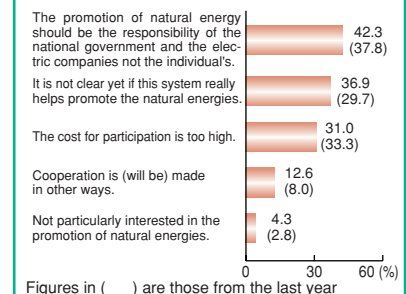
- The promotion for natural energies should be the responsibility of the national government and the electric companies not individuals.
- It is not clear yet if the Green Electric Power System helps promote natural energies.
- The cost for participation is too high.



### Willingness for Green Electric Power System participation



### Reasons for nonparticipation in Green Electric Power System



## 3 General comments

The customers' interest in environmental activities is generally high. This indicates the need for promoting the social recognition for items that are currently addressed, as well as great demand for information regarding environmental issues and energy saving.

## 5 Items Reflecting Opinions

The opinions and requests from customers and the Kyushu Electric Power Environmental Advisory Council in regard to Kyushu Electric Power's environmental activities and the Environment Action Report are reflected in the content of the Environment Action Report and environmental activities:

	Summary of opinion	Items reflecting the opinions
Environment Action Report	<b>【For easier reading】</b> <ul style="list-style-type: none"> <li>Better charts and colors</li> </ul>	<ul style="list-style-type: none"> <li>Report was made using charts as much as possible and charts are in color (last year's version had blue-based color scheme for charts).</li> </ul>
	<b>【Pursuit of Kyushu colors】</b> <ul style="list-style-type: none"> <li>Insertion of Kyushu map</li> </ul>	<ul style="list-style-type: none"> <li>The map of Kyushu was included to indicate the activity status such as forestation (p5), and photos with Kyushu's natural scenery are used on front cover and chapter covers (pp.7, 41,87).</li> </ul>
	<b>【Target years for measures】</b> <ul style="list-style-type: none"> <li>List target figures for the fiscal year</li> </ul>	<ul style="list-style-type: none"> <li>The activities of this fiscal year will be evaluated starting next fiscal year, targets were set for fiscal year (2003), Fiscal 2004 and mid- to long-term (2006).  <a href="#">See Related Information P16</a> </li> </ul>
	<b>【New energy】</b> <ul style="list-style-type: none"> <li>Clarify how new energy is placed</li> </ul>	<ul style="list-style-type: none"> <li>More explanation of how the new energy is placed is included in the "Optimal combination of Power Sources and New Energy Sources".  <a href="#">See Related Information P51</a> </li> </ul>
	<b>【Electromagnetic waves】</b> <ul style="list-style-type: none"> <li>Information on the effect on humans</li> </ul>	<ul style="list-style-type: none"> <li>Explanation on electromagnetic field such as how electromagnetic waves differ from electromagnetic field is added.  <a href="#">See Related Information P56</a> </li> </ul>
	<b>【Benefit of environmental activity】</b> <ul style="list-style-type: none"> <li>The benefit of activities is not clearly expressed</li> </ul>	<ul style="list-style-type: none"> <li>The explanation of terms is added in "Terminology" for expressions that might be hard to understand.  <a href="#">See Related Information P48</a> </li> </ul>
Environmental activities	<b>【Environmental management policies】</b> <ul style="list-style-type: none"> <li>Clarify Kyushu Electric Power's attitude as a leading company in Kyushu</li> </ul>	<ul style="list-style-type: none"> <li>Kyushu Electric Power plans to conduct environmental activities on a continuous basis for the environmental preservation of the whole of Kyushu, by working together with citizens' groups, other companies and local governments.</li> </ul>
	<b>【Environmental publicity】</b> <ul style="list-style-type: none"> <li>Further analysis of "Awareness and actions of mothers on environmental issues"</li> </ul>	<ul style="list-style-type: none"> <li>The reason of those who don't find Kyushu Electric Power to be environment-conscious (40% of the respondents) is mostly the concern and mistrust towards nuclear power generation. The PR activities for nuclear power will be enhanced with the cooperation of related departments.</li> </ul>
	<b>【Global warming measures】</b> <ul style="list-style-type: none"> <li>Implement measures to encourage the CO<sub>2</sub> emission control on the demand side</li> </ul>	<ul style="list-style-type: none"> <li>The implementation of further business activities will be examined together with departments concerned, including the promotion of a system with a high-energy utility efficiency, which takes environment into account.</li> </ul>
	<b>【Environmental education】</b> <ul style="list-style-type: none"> <li>Creation of basis for supporting the environmental and energy education</li> </ul>	<ul style="list-style-type: none"> <li>Exhibit halls are added to main power generation facilities and receiving visitors from environmental education and other organizations. Further utilization will be examined for environmental and energy educational use based on the opinions from the visitors.</li> </ul>





**Uchinari (Beppu City, Oita Prefecture)**

The sight of terraced paddies, in deepening hues of gold, never fail to invoke Japanese nostalgia for the good old days. Rice cultivation in Uchinari is noted for its long history, appearing in antique documents of the Kamakura Period. The rice grown with spring water from Sekijoji Temple enjoys an outstanding reputation for its fine taste. This terraced paddy epitomizes all the priceless wisdom of old Japan, beautiful scenery, and the importance of food, all to be handed down to generations to come.



## Part 2

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# I Environmental Management

## 1 Business Status and Management Targets

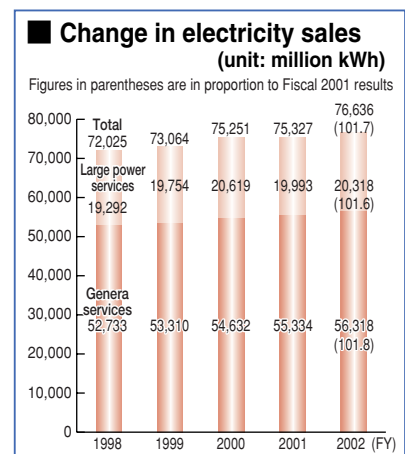
The situation surrounding electric utilities has been unfavorable due to increasing competition in the power market caused by its partial liberalization, and rigorous evaluation of electric utilities by the capital market. Kyushu Electric Power is engaged in a

company-wide managerial reform such as the enhancement of its competitiveness in all aspects including price, quality and services, improvement of its financial standing and establishment of new profit bases.

### 1 Sales status

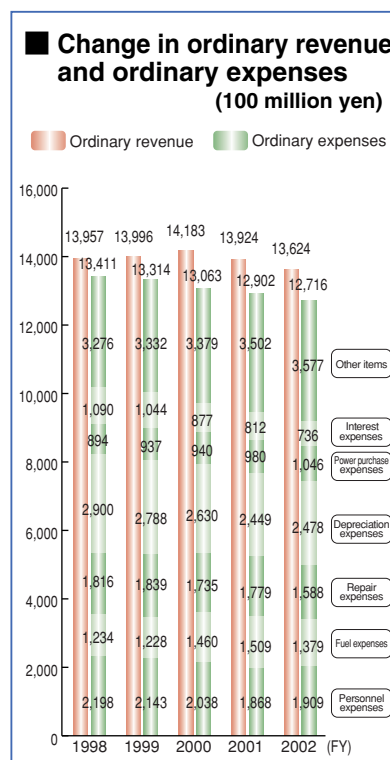
In Fiscal 2002 the Japanese economy saw some improvement such as recovery in production, attributable to increased exports. However, the trend of the recovery slowed down toward the second half of the fiscal year, due to sluggish personal consumption from the severe employment situation and uncertainty surrounding the prospect of the world economy. In this economic situation, Kyushu Electric Power's electricity sales for services from large industrial

power contracts were 1.6% higher than the previous fiscal year due to increased production in key industries such as steel and machinery. Sales for general services such as residential lighting and commercial power contracts also increased by 1.8% over Fiscal 2001 due to higher heating demands. As a result, total electricity sales for Fiscal 2002 were 76.63 billion kWh, an increase of 1.7% over Fiscal 2001.

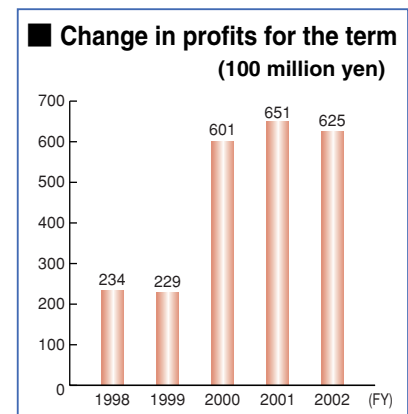


### 2 Revenue and expenses

Despite electricity sales increasing in Fiscal 2002, the operating revenue was 1,358.6 billion yen, and ordinary revenue was 2.2% less than that from Fiscal 2001 at 1,362.4 billion yen. This was because of an average electricity rate reduction of 5.21% which started in October 2002. As for expenses, there was an increase in depreciation expenses from the commencement of the trial run of the Reihoku Power Station Unit 2. However, with a reduction in fuel expense attributable to increased nuclear power production and efficiency improvement efforts throughout the business such as that for repair expenses, total ordinary expense came to 1,271.6 billion yen, or a 1.4% decrease from Fiscal 2001. Thus the Fiscal 2002 ordinary profit was 90.7 billion yen, or an 11.2% decrease from Fiscal 2001.



The profit for the term decreased from the last term by 4.0% to 62.5 billion yen. This was caused by reporting as extraordinary profit the profit of 23.1 billion yen from sales of securities and reporting as extraordinary loss the estimated loss of 15.4 billion yen from the share of our affiliated company Kyushu Telecommunication Network Co., Inc.

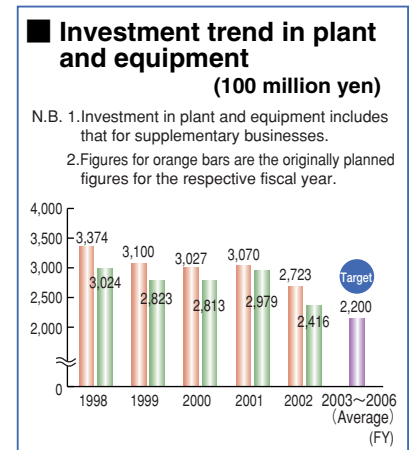


### 3 Measures for improved management efficiency

#### [1] Efficient investment in plant and equipment

Investment in plants and equipment for Fiscal 2002 was 241.6 billion yen, 30.7 billion yen less than originally planned. This was due to efficiency improvement efforts such as cost reduction in aspects of design, construction and material orders. Kyushu Electric Power plans to keep its investment in plants and equipment for Fiscal 2003-2006 down to an average of 220 billion yen a year by responding accurately to the change in demand and further improving efficiency.

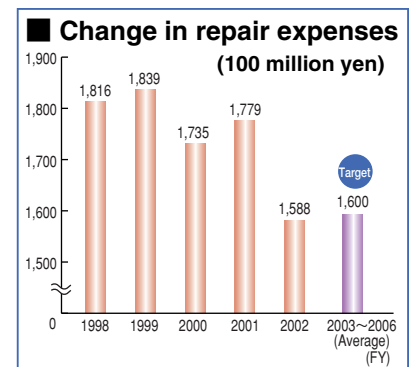
The target investment amount for Fiscal 2003 will be 226.6 billion yen, a 38.1 billion yen reduction from the previous year's plan.



#### [2] Efficient plants and equipment maintenance

Repair expenses for Fiscal 2002 were 158.8 billion yen, less than 19.1 billion yen from the previous fiscal year. This was achieved through overall efficiency improvement on inspection and repair by reviewing the content of and prolonging the cycles for inspection and component replacement. Repair expenses are increasing due to the expansion and aging of power facilities. However,

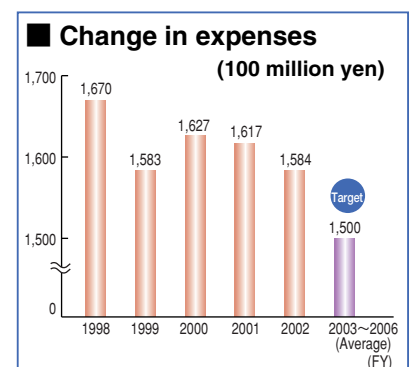
we hope to keep the repair expenses for Fiscal 2003-2006 to an average of 160 billion yen per year through further efficiency improvement for the maintenance of plants and equipment by the introduction of risk management and other methods.



#### [3] Reduction of expenses

Kyushu Electric Power has promoted its efficiency improvement with an aim to lower expenses to an average of 150 billion yen per year in a five-year period starting in Fiscal 2002. Expenses for Fiscal 2002 totaled 158.4 billion yen, a 3.3 billion yen reduction from that of the previous fiscal year, thanks to efforts towards simpler and more efficient business operation such as the reduction of

expenses for expendable supplies and rent. We are committed to furthering such efficiency and reducing expenses more.

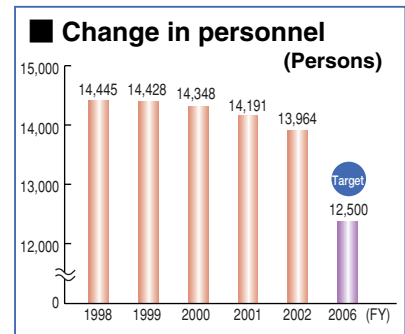




#### [4] Efficient business operation

The number of personnel, as of the end of Fiscal 2002, was 13,964. This is 227 less than that from the end of the previous fiscal year in spite of such factors for increase as businesses becoming more diversified and advanced, as well as the strengthening of the sales force and the starting of new businesses. This resulted from efficiency improvement in business operation by concentrating dis-

tribution work of customer service offices into branch offices, and reviewing the operation and maintenance system of thermal power plants. The reform of business processes will be continued with the utilization of IT technology, and tasks will be concentrated or simplified towards further efficiency improvement and reduction of personnel to 12,500 by the end of Fiscal 2006.



#### [5] Reduction of fuel expenses

The utilization factor of nuclear power plants in Fiscal 2002 was 85.9%, 2.8 points higher than the originally planned figure of 83.1%. This is the result of smooth and continuous operation of nuclear power plants and the introduction of the constant thermal output operation. Kyushu Electric Power will concentrate its effort to continue the safe

and reliable operation of nuclear power plants and to increase the utilization factor.

The (net) thermal efficiency for all thermal power plants for Fiscal 2002 was 39.0%, 0.3 points above the originally planned figure of 38.7%, due to the high operating ratio of high-efficiency power plants such as Reihoku Power Station

which achieved high thermal efficiency by increasing the steam temperature. Our effort for thermal efficiency improvement will continue by maintaining the high operating ratio of high-efficiency power plants such as Shin-Oita Power Station, and increasing the steam temperature of thermal power plants that are under development.

### 4 Management Targets

Kyushu Electric Power established a medium-term management plan in March 1999 to run the company from a long-term perspective. The plan clearly described the target corporate image and set main policies of management to achieve it. New management targets were added in March 2000, including ROA and a reduction in interest-bearing debt. In March 2002, a new medium-term management plan was drawn for a five-year period from Fiscal 2002 to 2006 to define higher business targets (targets for electricity rates and financial affairs).

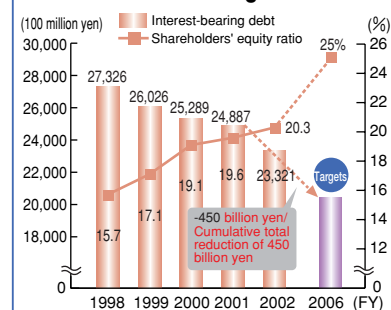
#### Targets for electricity rates

Realization of an electricity rate system that can compete against PPS (power producers and suppliers), operators of dispersed power sources and other electric utilities.

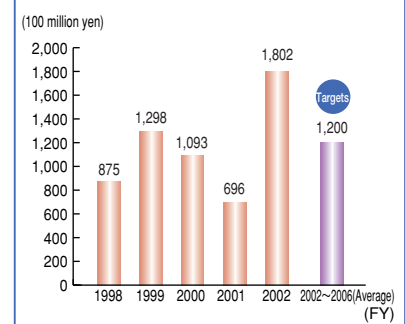
#### Targets for financial affairs

	Management targets (Fiscal 2002-2006)
Shareholders' equity ratio	25% at the end of Fiscal 2006
Reduction in interest-bearing debt	Cumulative total reduction of 450 billion yen
FCF (free cash flow)	Average of 120 billion yen
Ordinary profit	Average of 100 billion yen
ROA (return on assets)	Average of 3% (taxed operating profit/total assets)
ROE (return on equity)	Average of 8%

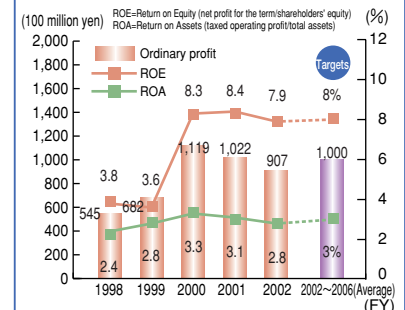
#### Change in shareholders' equity ratio and interest-bearing debt



#### Change in FCF (free cash flow)



#### Change in ordinary profits, ROE and ROA





# 3 The Environmental Accounting System and its Utilization

Kyushu Electric Power proceeds with systematic improvement of environmental accounting to promote efficient and effective environmental activities and understanding of such activities by society.

## 1 Environmental accounting system

### Fiscal 2002 environmental accounting

#### ◇System's basic guidelines

The system is based on the "Fiscal 2002 Guidelines for Environmental Accounting" (March 2002 by the Ministry of the Environment). However, environmental activities are divided in Kyushu Electric Power's own unique way into small categories so that the content may be easily understood.

#### ◇Accounting period

April 1, 2002 to March 31, 2003 (same as the business year)

#### ◇Scope of accounting application

Kyushu Electric Power Co., Inc.

See page P67 for application of the environmental accounting to the Kyushu Electric Power Group companies

#### ◇Scope of activities for the accounting application

The prevention, control, removal or reparation of any action that significantly hampers the environment, caused by business or non-business activities, and problems that might hinder efforts to support the environment.

#### Supplementary definition

● The above activities exclude those related to safety and sanitation (e.g. measures against particulates at workplaces) within the company and other activities that are deemed to be social conventions (e.g. low-noise transformers and electric motors).

#### ◇Environmental activity costs

Investment and expenses in environmental activity costs are defined as follows:

##### ● Investments:

expenditures for the fiscal year for items capitalized as assets such as investment in plant and equipment, and other financing for the purpose of environmental conservation

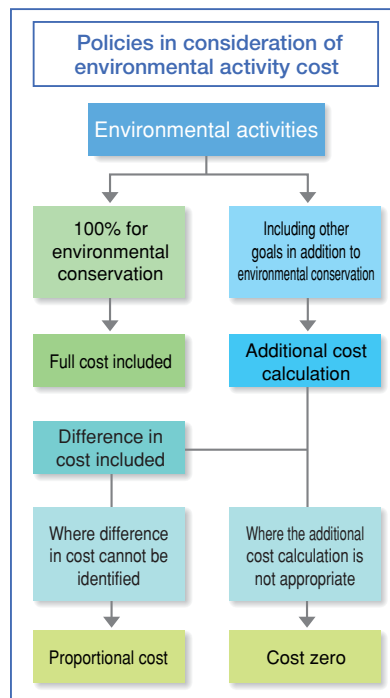
##### ● Expenses:

expenditure for the purpose of environmental conservation, e.g. depreciation

expenses, lease expenses, repair expenses, maintenance and management expenses, commissioning expenses and personnel expenses

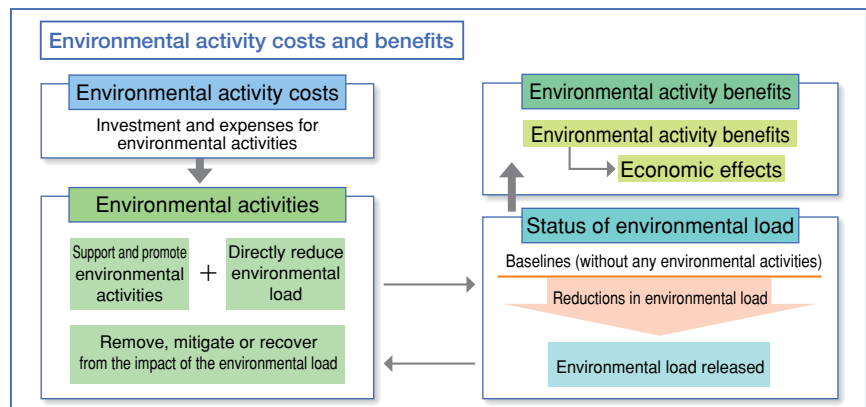
(N.B. Depreciation expenses are applicable for items equivalent to environmental activity facilities, and are calculated and added according to the service life and depreciation method of the financial and accounting practices.)

The full costs and differences in cost are used in the cost calculation as a principle; however, proportional costs are used where the differences in cost are difficult to identify.



#### ◇Benefits of environmental activities

Benefits from environmental activities will be calculated as the effect of such activities, based on the amount of substances, and are defined according to the types of activities as follows:



#### ● Activities that directly reduce the environmental load

Amount of environmental load reduction from the baseline\* (conditions which would have occurred had there been no environmental targets) attributable to environmental activities. However, for items for which calculation of the environmental load reduction is difficult, the amount of influence on the environmental load reduction is posted.

\*Baselines are set for their respective environmental activities. For example, the baseline for CO<sub>2</sub> reduction calculations is a situation where the electricity generated by all power generation methods was produced only by oil and coal-fired thermal generation; and that for SO<sub>x</sub> reduction calculation is a situation where no desulfurization facility is installed.

#### ● Activities for the removal, mitigation or reparation of the impact of the environmental load

Amount of environmental load to which impact removal and other activities are implemented

#### ● Activities that support and promote environmental load reduction (two items above)

Amount of activities that are required for support and promotion

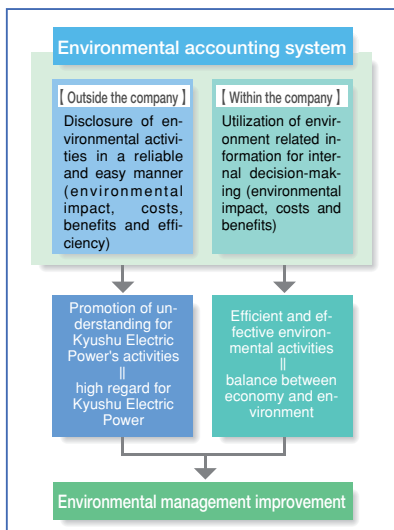
#### ○Economic effects of environmental activities

Items of economic effect include cost reductions, savings and sales of unneeded supplies (i.e. real effects only) attendant on the reduction of environmental load that incurs costs whenever used or treated. However, estimated effects such as costs avoided from the reparation of environmental damages are not included.

**For improvement of environmental accounting**

**◇Improvement of environmental management through environmental accounting**

Kyushu Electric Power is proceeding with the systematic improvement of its environmental accounting system and more transparent environmental information disclosure. It also strives to utilize the system as a tool to further promote environmental management by incorporating the result from such accounting in internal decision-making.



**◇Comprehensive understanding of environmental load (integration)**

Environmental load and environmental activity benefits are expressed as the amount of CO<sub>2</sub>, SO<sub>x</sub>, NO<sub>x</sub>, particulates and waste, and in different units. To comprehensively understand and announce the environmental load released in the course of business activities, trial calculations are made for the integration of environmental load categories.

$$\text{Integrated environmental load categories (benefits)} = \text{Environmental activity benefits} \times \text{integration coefficient}^*$$

\*: The integration coefficient used is of the ELP method (developed by the Nagata Laboratory of Waseda University).

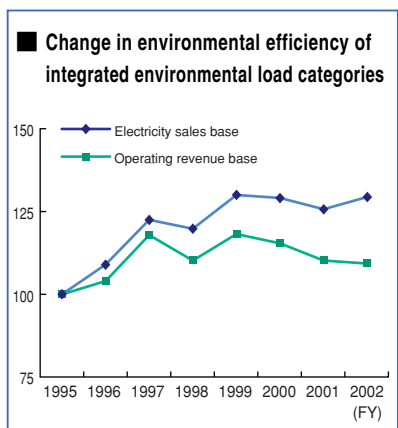
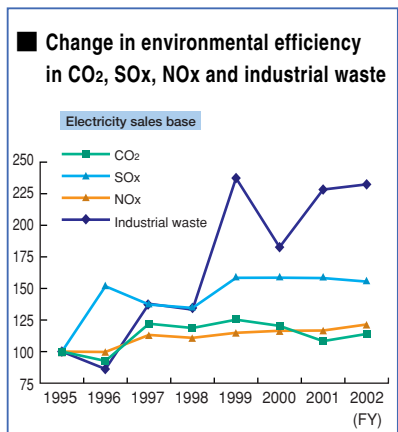
**◇Environmental efficiency**

For the realization of sustainable society, we must achieve the efficient use of resources and energy and reduce the environmental load per business activity. This attitude is based on the idea called "environmental efficiency", which was proposed in 1992 by the World Business Council for Sustainable Development

and can be expressed by the index below.

$$\text{Environmental efficiency} = \frac{\text{value of goods or services}}{\text{Amount of environmental load}}$$

Kyushu Electric Power started the trial calculation of environmental efficiency last fiscal year to use as a yardstick in determining and announcing the level of achievements in environmental management.



N.B. Environmental efficiency = Electricity sales (or operating revenue) ÷ each environmental load. However, all data used is based on Fiscal 1995 as a baseline of 100.

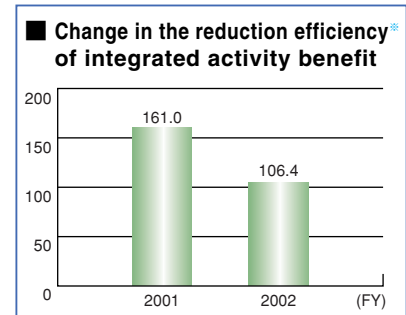
**◇Environmental load reduction efficiency**

For a company to improve environmental efficiency while achieving both growth and environmental friendliness, it is essential to improve the reduction efficiency of environmental load. This idea is expressed with the index below.

$$\text{Environmental load reduction efficiency} = \frac{\text{Environmental load reductions}}{\text{Environmental activity cost}}$$

Here, we have calculated the integrated environmental benefit (environmental

load reductions) for activities that directly reduce the environmental load, and divided it by the cost, thus obtaining the reduction efficiency.



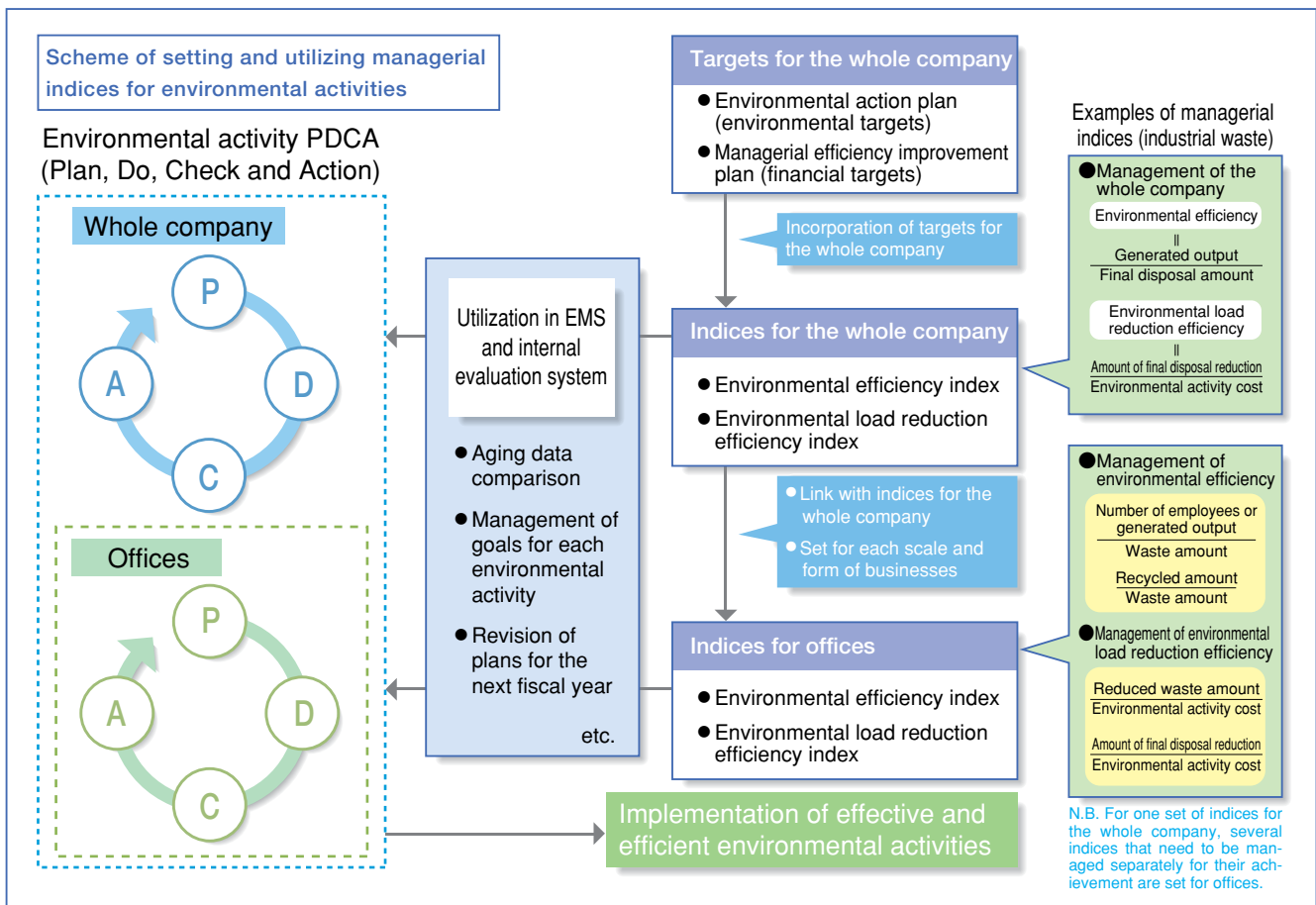
\*Reduction efficiency=integrated environmental activity benefit (CO<sub>2</sub>, SO<sub>x</sub>, NO<sub>x</sub> and particulates, wastewater, industrial waste and general waste) ÷ environmental activity costs and expenses

The trial calculation revealed that the reduction efficiency was lower by 30% compared to that of last fiscal year. This is mainly due to the facts that we have included the depreciation of the environmental facilities such as coal ash disposal facility in the expenses, and that more power was purchased from new energy sources with lower reduction efficiency. As seen here, the impact from individual activity is different, and as a result, the reduction efficiency calculated this time does not allow for appropriate overall evaluation. The effort for improved evaluation methods will continue into the future.

**Utilization in the environmental activity management**

Indices for environmental efficiency and environmental load reduction efficiency are useful in measuring the achievement level of company-wide environmental management. However, it is more important to utilize them in actual business operation. Kyushu Electric Power is considering a system which allows each office to utilize the environmental activity costs and the amount of reductions calculated in environmental accounting in actual environmental activity management. More specifically, we are considering the introduction of a system in which we set attainable managerial indices for the whole company or offices based on their scale and form of business, and encourage voluntary management from the aspects of environmental efficiency and environmental load reduction efficiency.





### Development of computerized environmental accounting system

Kyushu Electric Power is actively engaged in the development of a more organized environmental accounting system. Based on the understanding of the environmental activity costs from Fiscal 2002, application of the newly developed computerized environmental accounting system was started in order to operate more efficiently. Kyushu Electric Power will keep working on improved management and more efficient business operation through software development such as the development of a comprehensive system that facilitates further cooperation with other departments.

### Plans for the future

For the disclosure of more reliable and transparent environmental information, our environmental accounting system will be improved for better accuracy. Also, with the aim of establishing so-called internal environmental accounting, we will examine a method to utilize the environmental accounting system in environmental management, such as in the allocation of managerial resources to environmental activities.

## C O L U M N NO.7 Understand More about Environmental Accounting

### Terms used in Environmental Accounting

- [Wastewater load] P13,15**  
Pollutants in wastewater, which are examined for their significance according to the environmental criteria (impact on the environment) and converted into weight, based on COD (chemical oxygen demand)
- [Proper final disposal amount] P15**  
The amount of waste that could not be reused or recycled and was disposed (by incineration or storage) properly according to the rules and regulations
- [Volume reduction of low-level radioactive waste] P13,15**  
The volume of radioactive waste is reduced through incinerating, compressing or fusing solid waste at the power plants, or sending it to the Low-level Radioactive Waste Disposal Center of Japan Nuclear Fuel Limited in Rokkasho-mura, Aomori Prefecture. Volume reduction refers to the amount reduced by the above procedures, expressed in the number of 200-liter oil drums.
- [No. of monitoring and measurement items] P15**  
Regarding the status of monitoring and measurement of each environmental load (SOx, NOx, turbidity, radiation, etc.), continuous monitoring and measurement items refer to "items for continuous monitoring and measurement." The other monitoring and measurement items refer to the cumulative total of "monitoring and measurement items × the number of times monitoring and measurements were conducted in a year".
- [Buildings with scenic care] P14,15**  
Buildings that are constructed, after study and examination, in harmony with the surrounding environment, as well as with consideration for style, coloring and finishing material for the buildings
- [Steel towers with scenic care] P15**  
Steel towers constructed with style and colors which blend well with the surrounding environment, and would not spoil or mismatch the scenery in city areas and parks

### Policy in calculating the environmental activity benefit (baselines)

The benefits from environmental activities that directly reduce the environmental load are calculated and reported as differences between the actual amount released and the amounts assumed in the baseline below.

Items	Baseline	
CO <sub>2</sub> reductions	Nuclear, LNG, hydro and geothermal generation, and generation and purchase of power from new energy sources	Cases where electricity generated from such power sources was generated by thermal power generation except for that with LNG (based on the actual CO <sub>2</sub> emission intensity of oil and coal-fired thermal power generation for the fiscal year)
	Efficiency improvement of power generation facilities	Cases where no improvements were made in transmission/distribution loss and thermal power production efficiency (based on the records from Fiscal 1970)
	Energy conservation activities	Cases where the introduction of equipment and facilities that lead to energy conservation, or vehicles that are fuel efficient or use clean energy were not made, thus no reduction in electricity or fuel consumption was achieved (based on the actual CO <sub>2</sub> emission intensity for regular gasoline cars for the fiscal year)
	SF <sub>6</sub> emissions reduction	Cases where no SF <sub>6</sub> was recovered from equipment upon its overhaul and removal
SOx reductions	Cases where no desulfurization treatment or use of fuel with low sulfur content were pursued at power plants (based on the desulfurization efficiency and sulfur content of the fuel for the fiscal year)	
NOx reductions	Cases where no denitrification treatment was pursued at power plants (based on the denitrification efficiency for the fiscal year)	
Particulate reductions	Cases where no particulate collection was done at power plants (based on the particulate collection efficiency for the fiscal year)	
Wastewater load reductions	Cases where no wastewater treatment was pursued at power plants (based on the actual records for the fiscal year or wastewater load prior to designed treatment)	

# 4 Environment-Related Research and Development

## Research on the CO<sub>2</sub> fixation and water purification by algae community

It is generally known that algae forms a community and functions to purify water, adjust CO<sub>2</sub> levels and foster the growth of marine animals. However, due to various reasons such as global warming, rocky-shore denudation or a sudden decrease in algae communities has become a grave issue. Kyushu is one of the areas where severe damage from this problem has been observed. Kyushu Electric Power is conducting research on sea grass cultivation technology as a possible solution for this problem. The technology utilizes a cultivation plate that is made of coal ash from coal-fired thermal power plants, and aims for the rehabilitation of the natural environment through reparation and creation of an algae bed.



Cultivation plate (coal ash content over 60%)



Cultivation progress

## Research on CO<sub>2</sub> fixation by trees

Absorption and fixation of CO<sub>2</sub> through photosynthesis of plants (trees) is one measure against global warming. The research to date on *Melia azedarah*, one of the tree species with excellent CO<sub>2</sub> absorption ability, involved the selection of superior lines, development of technology for mass propagation by tissue culture, and trial planting of the saplings obtained through tissue culture on the company land. Based on their growth, their CO<sub>2</sub> absorption ability was confirmed (average tree growth in height in three years was approximately 2m/year/tree).

Kyushu Electric Power plans to build on these research results and establish technology for environmental forestation for home and abroad, which would bring about CO<sub>2</sub> fixation contributing to Kyoto Mechanism implementation. Examples of such endeavors are the participation in the greening of Loess Plateau in

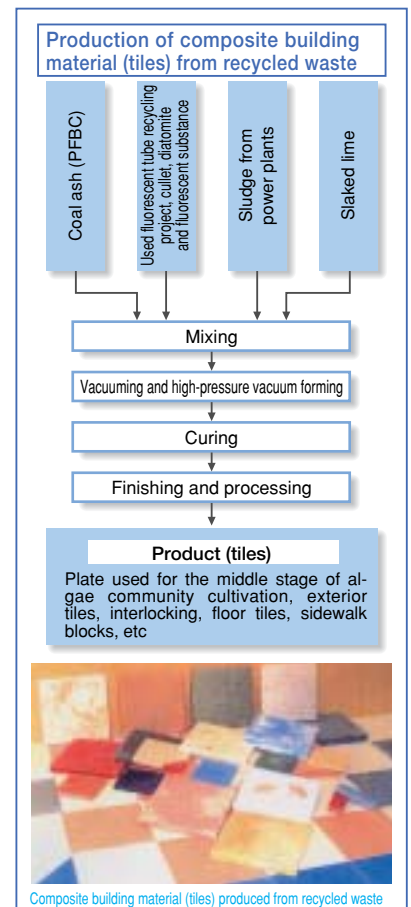
China, whose findings to date can be directly applied to Japan given its similar latitude, and a greening project in Indonesia which aims to rehabilitate and reforest an old coal mining site. Through these activities, Kyushu Electric Power hopes to develop overseas forestation technology and accumulate techniques and knowledge for forestation projects.



Loess Plateau where no forests are seen (Shanxi province, China)

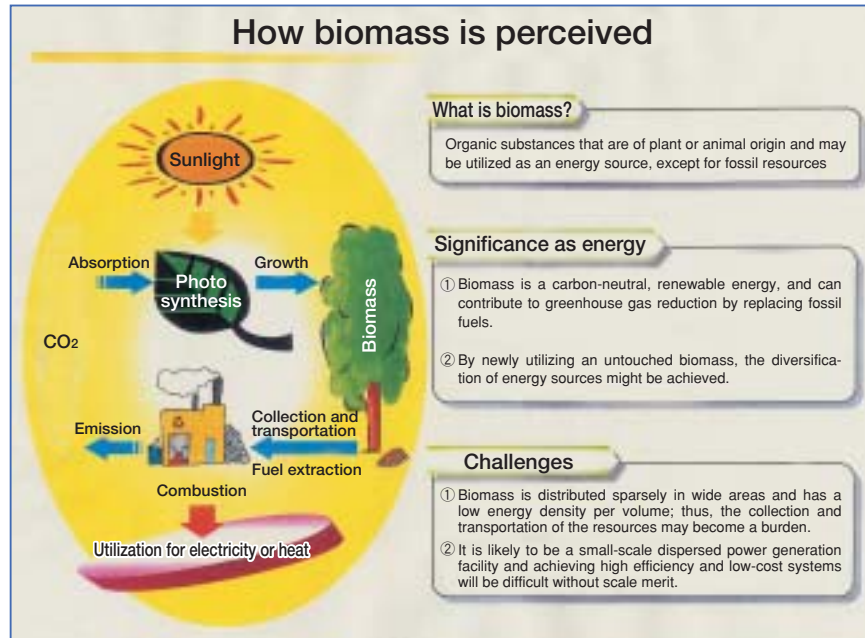
## Research on eco-materials

With raised awareness towards environmental issues such as air pollution, ozone layer depletion, global warming and increasing waste over recent years, the Basic Law for Establishing a Recycling Based Society came into complete effect in January 2001. In this context, Kyushu Electric Power is proceeding with the construction of a production system based on complete recycling, where waste from the production process is recycled and used as a material for another production. Kyushu Electric Power has developed technology for the production of environmentally friendly, composite building material (tiles) from recycled waste, and is conducting research toward its commercialization. The waste utilized includes coal ash from coal-fired thermal plants, sludge from wastewater treatment facilities and cullet from used fluorescent tubes.



### Research on biomass power generation

Biomass refers to “organic substances that are of plant or animal origin and may be utilized as an energy source, except for fossil fuels”. This ranges from agricultural resources and waste such as debris from thinning and rice husks, to food waste, construction waste, sludge from sewer systems, and animal fertilizer. Utilizing the biomass as an energy source helps reduce CO<sub>2</sub> and make the most out of the waste. Kyushu Electric Power conducts research on effective applications of biomass utilization technologies such as direct firing, methane fermentation and gasification



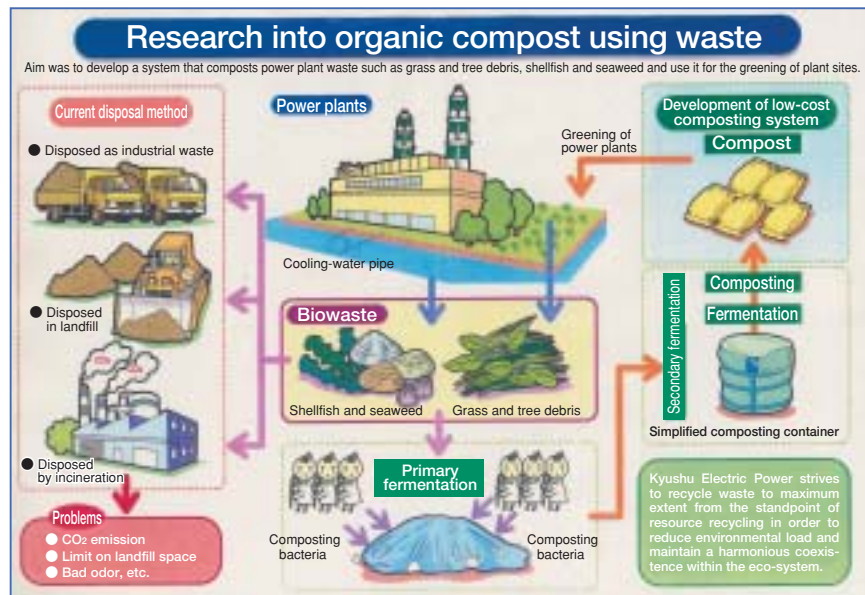
Source: Ministry of Economy, Trade and Industry

### Research into organic compost using waste

Kyushu Electric Power has developed a system to produce organic compost from power plant waste such as tree or grass debris, marine animals, and other waste. Our efforts continue for the production of better compost, such as the utilization of coal ash from our coal-fired thermal plants to adjust the moisture content during waste fermentation. The effectiveness of our composting has been confirmed on trees including Benjamin and melia azedarah, grass and brassica campestris at the Bioresources Research Center. Kyushu Electric Power plans to examine the possibility of applying this compost method that we have developed to other power plants which produce different kinds of waste.



Organic compost produced (Matsuura Power Station)





# II Addressing Environmental Activities

## II-1 Measures for Global Environmental Issues

### 1 Promoting Optimal Combination of Power Sources and New Energy Sources

Kyushu Electric Power promotes a well-balanced, optimal power source combination by placing nuclear power at its core, and by considering the reliability of power supply, economy and global environmental issues in a comprehensive manner. In addition, the company focuses on improving thermal efficiency as well as reducing CO<sub>2</sub> emission.

#### Power source composition target and achievement

	Composition of power source facilities		Composition of electric power production	
		FY2002 record		FY2002 record
Nuclear	Approx. 30%	23%	45~50%	45%
Renewable energy (geothermal, hydro, new energy)	Approx. 10%	9%	Approx. 10%	9%
Pumped storage	Approx. 10%	5%		
Thermal	Coal	18%	Share depending on fuel situation	22%
	LNG	Share the remaining 50% equally		17%
	Oil	24%		7%

#### 1 Measures for CO<sub>2</sub> emission reduction by each power source

##### Nuclear power

Nuclear power is excellent for supply reliability and economy, and produces less environmental loads such as CO<sub>2</sub>. The development of nuclear power generation is promoted as a base-load power source, while regarding safety with the utmost importance. To further utilize nuclear power, measures have been taken towards constant thermal output operation.

##### Thermal power

Kyushu Electric Power strives to increase the procured amount of LNG, for which CO<sub>2</sub> emission intensity is lower than other fossil fuels used for thermal power generation, while further pursuing improved overall thermal efficiency.

#### Renewable energy sources

##### ◇Hydroelectric and geothermal power generation

In consideration of the environmental aspects of site selection and the economy, Kyushu Electric Power systematically promotes further R&D on hydroelectric and geothermal power generation. These methods constitute renewable, domestic energy sources of excellent environmental capability.

##### ◇New energy sources

The promotion of new energy sources, such as wind and photovoltaic power, has been pushed through Renewable Portfolio Standard (RPS) system and the Green Electric Power System.

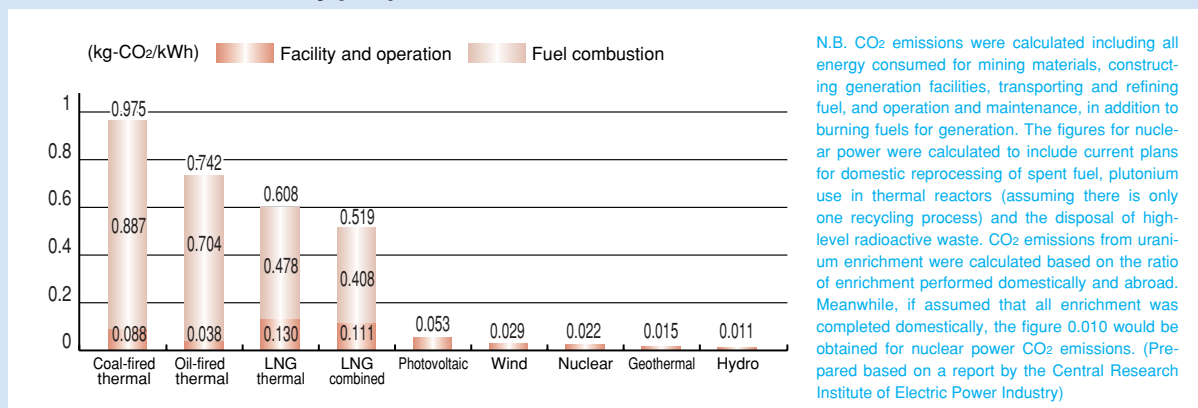


Cape Noma Wind Park Power Station

#### COLUMN No.8 CO<sub>2</sub> emission intensity per each power source during its lifecycle

CO<sub>2</sub> is emitted not only during fuel combustion for power generation, but also during other energy-consuming work such as constructing power stations, mining, transporting and refining fuel, as well as waste treatment. The chart shows the figures that are obtained by dividing the CO<sub>2</sub> emitted during the lifecycles of the stations including combustion and construction, by the amount of power production. Nuclear power generation is noted for its advantages in addressing global warming since its comprehensive CO<sub>2</sub> emission is significantly lower even when such indirect CO<sub>2</sub> emissions are taken into account.

#### CO<sub>2</sub> emission intensity per power source





## 2 Compliance with the Renewable Portfolio Standard (RPS)

Kyushu Electric Power will achieve the amount of renewable energy utilization for Fiscal 2003 required by the Renewable Portfolio Standard (fully enforced in April 2003). Continuous efforts will be made to clear the required amount, which is increased yearly until Fiscal 2010, by promoting the use of renewable energy. Measures include the development of power sources which can be used to satisfy the RPS levels, such as conducting demonstration tests of binary cycle power generation and bidding for wind power, as well as promoting purchases of power generated by other utilities from targeted power sources.

### Estimated figures of required renewable energy utilization

Unit: 100 million kWh

FY	2003	2004	2005	2006	2007	2008	2009	2010
Japan	32.8	35.7	38.6	41.5	44.4	64.2	88.9	122.0
Kyushu Electric	3.9	4.2	4.5	4.7	5.0	6.4	8.3	11.0

\*Figures for FY 2003 are required amount  
Source: Agency of Natural Resources and Energy materials

### Promotion of binary cycle power generation

Kyushu Electric Power actively promotes the binary cycle power generation, a new generation system utilizing geothermal energy.

#### Outline of binary cycle power generation

In the binary cycle power generation system, Pentane or other mediums which have a low boiling point are heated by steam/hot water (geothermal energy) obtained from steam wells. Steam generated from the heated Pentane, or other mediums, then rotate the turbine to generate electricity. The system uses two cycles: the steam/hot water cycle which collects thermal energy from the steam well, and the medium cycle which rotates the generator turbine with the steam produced by the steam generator. The system is thus called "binary" cycle power generation system. Conventional thermal power generation system, on the other hand, consists of only one cycle which rotates the generator turbine with the steam obtained directly from steam/hot water. The binary cycle power generation system enables effective use of geothermal energy by utilizing steam/hot water of low temperature, which cannot produce enough steam for rotating generator turbine.

#### Outline of binary cycle power generation experimental study

Kyushu Electric Power is conducting an experimental study on the binary cycle power generation system at its Hachobaru Geothermal Power Station, (Kokonoe Town, Oita),

### COLUMN

NO.9

### What is the Renewable Portfolio Standard (RPS: enforcement in April 2003) ?

The Renewable Portfolio Standard (RPS) is a regulation established to further enhance the use of renewable energy such as wind and photovoltaic power. Under the regulation, electric utilities are required to utilize a certain amount of electric power generated from renewable energy.

#### Targeted energy sources

Wind, photovoltaic, and geothermal power with the generation systems that do not significantly reduce the amount of hot water (thermal power source); hydroelectric power generation of under 1,000kW without use of dams; biomass (power generation from organic materials derived from plants and animals).

#### Required amount

For each fiscal year, electric utilities are required to utilize a certain amount of renewable energy set by the Minister of Economy, Trade and Industry. The amount is decided as a ratio to each electric utility's electric sales for the fis-

cal year by taking into account each electric utility's targeted figures. The required amount for Kyushu Electric Power in Fiscal 2003 is 390 million kWh.

#### Options to clear the required amount

- Generate and supply electric power generated from renewable energy by each electric utility.
- Purchase and supply electric power generated from renewable energy by other electric utilities
- Purchase "Renewable Energy Credits (a certificate of proof that one kWh of electricity has been generated by a renewable-fueled source)" from other electric utilities.

#### Advice and order

If the electric utility fails to implement the duty without good reason, the Minister of Economy, Trade and Industry can order them to fulfill its duty in a certain period. Penal regulations (a fine of max. one million yen) are applied to those which fail to comply with the order.

aiming to establish the reliability of equipment for the system.

- Study period: Fiscal 2001-05 (5 years)
- Output: 2MW

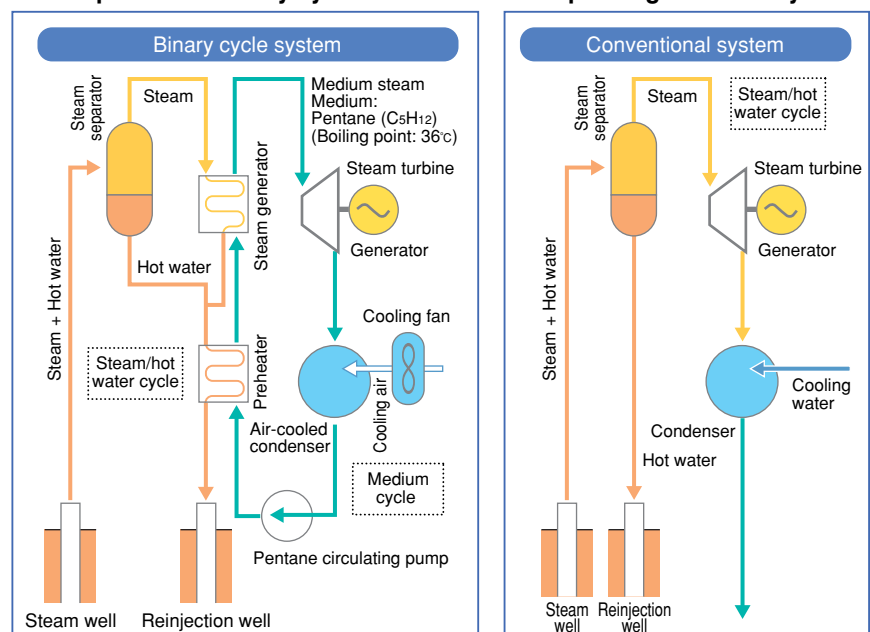
### Experimental study schedule for binary cycle power generation at Hachobaru Power Station

2001	2002	2003	2004	2005
Facility design and construction		Operational start	Demonstration test	
		Evaluation for practical use		



Hachobaru Geothermal Power Station

### Comparison of binary cycle and conventional power generation systems



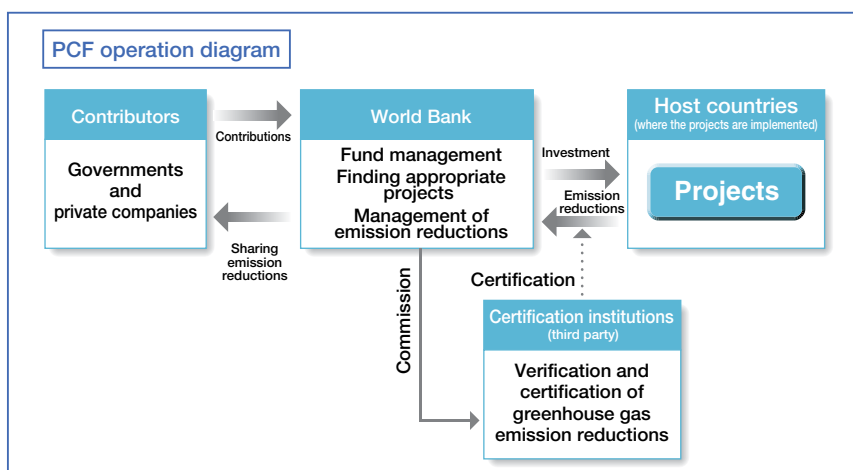
## 2 Participation in the World Bank's Prototype Carbon Fund (PCF)

### 1 Outline of the PCF

The World Bank's Prototype Carbon Fund (PCF) was established in January 2000 to address greenhouse gas reductions internationally. The PCF enables the World Bank to effectively invest funds from contributors (governments and companies) in greenhouse gas reduction projects that are implemented in developing countries and economies in transition (Eastern European territories of former Soviet Union). Greenhouse gas reductions achieved through such investment will be shared among contributors. Kyushu Electric Power has been a member of the Fund since its establishment. In Fiscal 2002, an investment of three million dollars was made, additional to its original contribution of five million dollars.

### Outline

Operation period	January 2000 to December 2012
Fund amount	180 million dollars
Contribution by Kyushu Electric Power	8 million dollars (entered the contract of an additional contribution of 3 million in Nov. 2002)
Contributors	6 countries, 17 companies including Kyushu Electric Power



### 2 Operational status of the PCF

The PCF plans to invest in 30-35 greenhouse gas reduction projects in various countries throughout the world. Currently, an agreement has been reached for the purchase of greenhouse gas reductions for the projects detailed in the table. Approximately 110,000 tons of CO<sub>2</sub> emission reduction has been generated from the construction of a small hydroelectric power station in Chile. Of which, 4,512 tons of CO<sub>2</sub> emission reduction has been applied to Kyushu Electric Power according to its share of contribution.

### Projects for which the purchase agreement was reached

Host country	Outline of projects
Latvia	Methane recovery and power generation at waste disposal sites
Brazil	Use of charcoal for pig iron production (alternative to coal and coke)
Chile	Construction of a small hydroelectric power plant (alternative to coal and natural gas)
Uganda	Construction of a small hydroelectric power plant (alternative to diesel electric power generation)
Costa Rica	Development of hydroelectric and wind power generation technologies

### 3 Outline of Kyoto Mechanism

The Kyoto Mechanism refers to systems that are approved to achieve the objectives stated in the Kyoto Protocol and encourage every country to achieve greenhouse gas reductions through international cooperation. Some countries, including Japan, have relatively high costs for greenhouse gas emission reduction due to past efforts towards energy conservation. The Kyoto Mechanism can help such countries to relax the economic impact of taking measures against global warming.

### Outline of Kyoto Mechanism

Joint Implementation	Developed countries jointly implement emission reduction projects and share the reductions
Clean Development Mechanism	Developed countries cooperate with emission reduction projects in developing countries and receive resulting reductions
Emission Trading	Developed countries trade assigned amounts

### Comparison of CO<sub>2</sub> emission reduction costs per measure

Measures	CO <sub>2</sub> emission reduction cost (yen/t-CO <sub>2</sub> )	Contents
Promotion of wind power generation*	12,000	Promote the use of wind power instead of thermal power for generation
Change of fuel types for thermal power generation*	4,400	Promote the use of LNG instead of coal for thermal power generation
Promotion of power generation from waste*	3,800	Promote the use of waste instead of conventional power sources
PCF	600	Estimation based on the PCF finished price (5 dollars)

\* Extract from the Central Environment Council Global Environment Section materials (Subcommittee for scenarios to achieve targets, June 2001)  
Nuclear power generation is the most excellent measure for CO<sub>2</sub> emission reduction because it is a CO<sub>2</sub> emission-free generation method of low generation cost, and does not require additional reduction cost.

## II – 2 Establishing a Recycling-Based Society

### 1 Measures for Green Procurement

#### 1 Basic policies of green procurement

Kyushu Electric Power promotes green procurement under its Green Procurement Policy for the creation of a recycling-based society.

- Under the green procurement system, the company takes into account environmental aspects in addition to practical considerations of price, quality and delivery time when purchasing products. It aims to promote the procurement of eco-friendly products under collaborative partnership with suppliers, thereby strengthening relations with the suppliers in the field of environmental activities, toward the creation of a recycling-based society.

**Policies of Green Procurement**

Kyushu Electric Power recognizes its task of contributing to the creation of a recycling-based society, and endeavors to mitigate environmental load in all business activities including the procurement of products with the cooperation of all the suppliers of Kyushu Electric Power.

- Upon procurement, each employee takes responsibility and reviews the necessity of the products.
- Kyushu Electric Power actively promotes this system, which encourages the purchase of environmentally friendly products.

March 8, 2002

#### 2 Green procurement guidelines

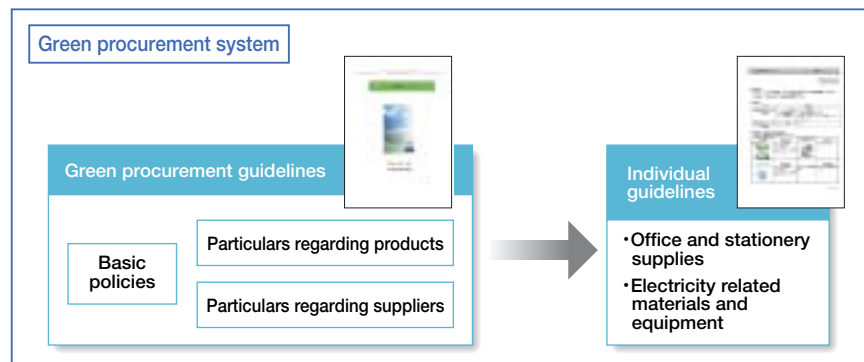
##### Particulars regarding products

##### ◇ Office and stationery supplies (goods on the market)

- The company selectively purchases office and stationery supplies with the EcoMark or other socially recognized environmental labeling.
- Individual guidelines for items and judgment criteria are set for products purchased, according to their categories.

##### ◇ Electricity related material and equipment (inclusive of construction work and services)

- The company welcomes information and proposals on environmentally friendly products from suppliers. The information and proposals are evaluated based on the degree of contribution to environmental load reduction in their total life cycles. Products and ideas judged to be based on environmental considerations are favorably reviewed for procurement.



#### ■ Items and focal points for electricity related materials and equipment evaluation

Items	Focal points
Resource saving	<ul style="list-style-type: none"> <li>○ Product weight and size is reduced</li> <li>○ Recyclable parts and resources are used</li> <li>○ Product life cycle is lengthened</li> </ul>
Energy saving	<ul style="list-style-type: none"> <li>○ Energy consumption is reduced</li> </ul>
Recycling	<ul style="list-style-type: none"> <li>○ Products are collected and recycled</li> <li>○ Repairing and exchange of parts can be done easily</li> <li>○ Enables products to be easily dismantled and sorted</li> </ul>
Chemical substances	<ul style="list-style-type: none"> <li>○ Regulated/restricted substances are not used</li> <li>○ Use of hazardous substances is inhibited/abolished</li> </ul>
Packing material	<ul style="list-style-type: none"> <li>○ Use of packing material is reduced</li> <li>○ Packing material is collected, reused or recycled</li> </ul>
Display	<ul style="list-style-type: none"> <li>○ Materials are displayed in not easily erasable way where possible</li> </ul>
Information disclosure	<ul style="list-style-type: none"> <li>○ Environmental information regarding products is disclosed</li> </ul>

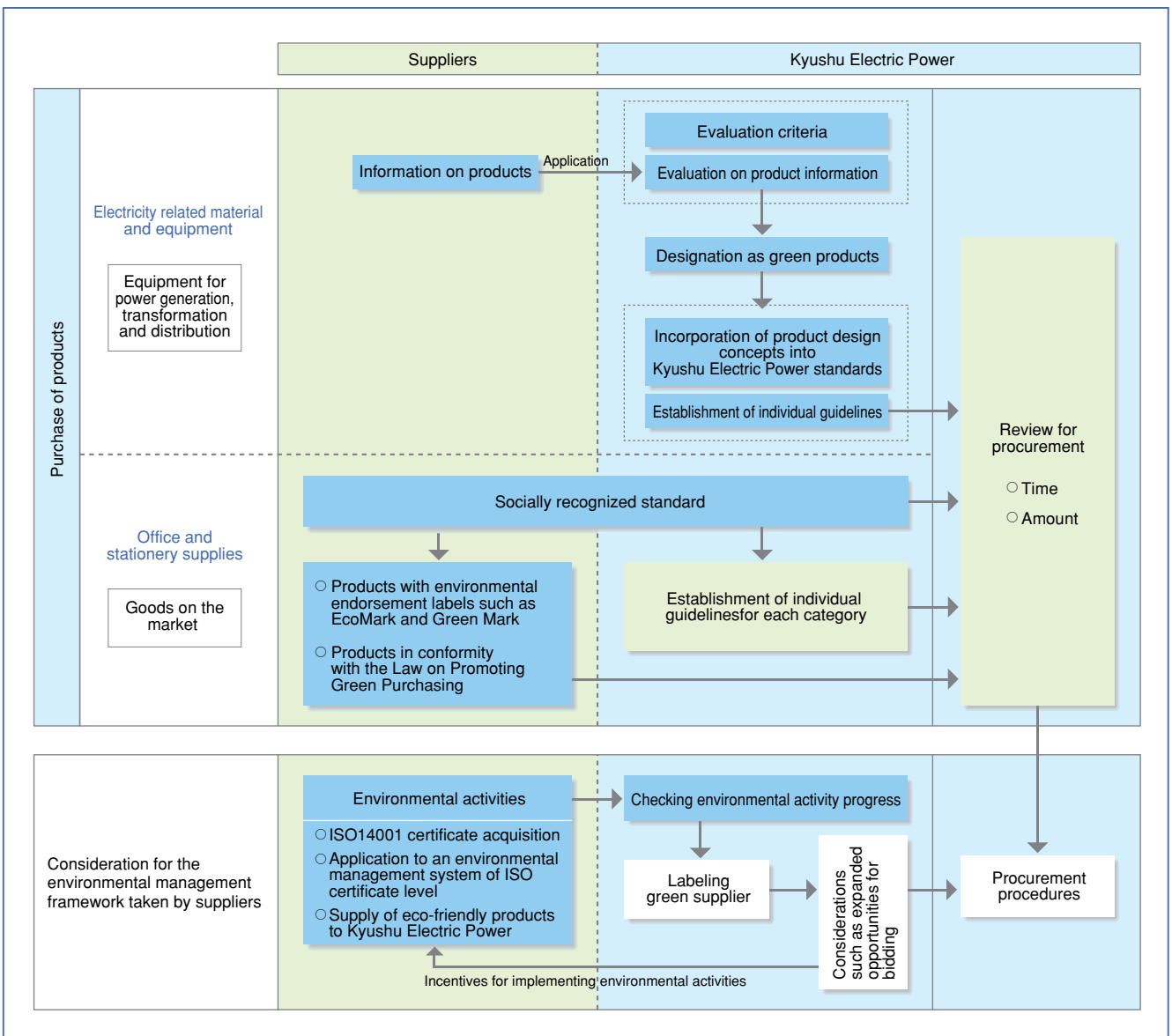
### Particulars regarding suppliers

- Kyushu Electric Power requests its suppliers to make self-evaluations on their progress in environmental activities and submit reports on the subject.
- Based on the information submitted, Kyushu Electric Power checks the environmental activity status of these suppliers. When a supplier is judged to be active in implementation, the company designates the supplier to be a Kyushu Electric Pow-

er 'green supplier', and makes an announcement with prior consent. (21 green suppliers at the end of March 2003)

- For those designated as green suppliers, special consideration is made after a certain time from the start of the green procurement system operation, such as expanded estimation opportunities.

### 3 Flow of green procurement



For inquiries on the green procurement system: Purchase Planning & International Procurement Group, Materials and Fuels Dept., Kyushu Electric Power Co., Inc. Phone: 81-92-726-1645



# II – 3 Maintaining Harmony with the Local Environment

## 1 Electromagnetic Field

With the advancement of technology, electricity use expanded in various fields, and became indispensable in our industrial development and improvement of our everyday lives. This trend raised a concern that the electromagnetic field (electric field and magnetic field) created by power facilities might have an impact on human health, and subsequent research and surveys were conducted. This effect has been evaluated in reports by international organizations and other investigations. The conclusion from such research was that no harmful biological effect has been observed, in regard to electromagnetic fields in living environments, such as those existing around power facilities and home appliances. However, there is heightened interest in this matter in Kyushu with the introduction of information regarding research conducted in other countries. Here, through this article, a brief explanation on the electromagnetic fields seen around power facilities is offered.

### Electromagnetic field

Generally speaking, "electromagnetic field" is a term that refers collectively to "electric field" and "magnetic field".

#### ◇Electric field

When you rub a plastic sheet against a sweater and hold it over your head, you can see your hair standing on end. There is an electric field at work, namely static electricity, produced between the plastic sheet and your body.

- 1 In terms of electricity, the "field" occurring around objects to which "voltage" is applied is the "electric field".
- 2 "Electric fields" are created not only from power facilities such as transmission lines, but also from electric appliances at home. It is also present between thunderclouds and the ground.
- 3 The strength of an "electric field" is expressed in kV/m (kilovolt per meter).

#### ◇Magnetic field

When you place a plastic sheet over a magnet, and sprinkle iron sands on the sheet, you will see patterns that connect north and south poles. They are created by the effect of the magnetic field.

- 1 In terms of electricity, the "field" occurring around objects, in which "electric current" flows, is the "magnetic field".
- 2 "Magnetic fields" are created around electric appliances at home just as electric fields are. Also, the earth is responsible for a magnetic field as geomagnetism, since the earth is one big magnet.
- 3 The strength of a "magnetic field" is expressed in G (gauss) (1gauss(G) = 1,000 milligauss(mG) )

### Difference between electromagnetic field and electromagnetic wave

Electric fields and magnetic fields exist in electromagnetic waves just as in electromagnetic fields. However, electromagnetic waves have higher frequency, and electric fields and magnetic fields interact, intertwine and travel far into the space as a wave. The electric wave for TV and radio, and sunrays, are also electromagnetic waves.

The electromagnetic fields around the power facilities and electric appliances for households have a very low frequency of about 50-60Hz. Electric fields and magnetic fields don't interact with each other; therefore, they don't travel far as a wave. They weaken rapidly with distance. Thus, they are called "electromagnetic fields" to differentiate them from electromagnetic waves which have higher frequency. Among electromagnetic waves, "ionizing radiations" such as X-rays and gamma-rays, with frequencies of over 3,000 trillion Hz, have huge energy and could cause damage to genes or DNA (deoxyribonucleic acid) ; and ultraviolet rays (sunrays) could lead to sunburn.

"Non-ionizing radiations" with a frequency of 3,000 trillion Hz or less don't have enough energy to damage DNA, thus would not affect the human body. Some non-ionizing radiation, such as microwaves used in microwave ovens, is able to warm objects. However, electromagnetic fields around power facilities such as transmission lines and household appliances have a very small energy, and would not damage cells or generate heat.

### Criteria for the strength of electromagnetic fields

The environmental health criteria set by the World Health Organization (WHO) are international criteria for electric fields. In Japan, the technical standard for electric facilities by the Ministry of

International Trade and Industries stipulates that the power facilities are to be constructed so that the "strength of the electric fields under the transmission lines is 3kV/m or less at 1m above ground". There is no standard for magnetic fields in Japan; however, those acknowledged internationally are the environmental health criteria by WHO and the guideline by the International Commission on Non-Ionizing Radiation Protection (ICNIRP) of  $3 \times 10^{11}$ Hz or less.

### Criteria for electromagnetic fields

Category	Environmental health criteria set by WHO	Guidelines by ICNIRP (for general public)
Electric fields	10kV/m or less: no need to restrict access	4.2kV/m
Magnetic fields	50,000mG or less: no harmful biological effect 5,000mG or less: no biological effect of any kind	833mG

The levels of electric fields and magnetic fields on the ground attributable to Kyushu Electric Power's transmission lines are approximately 3kV/m and 200mG, respectively, even at the strongest points and are significantly lower than the guidelines set by ICNIRP.

### Actions by Kyushu Electric Power

Based on these environmental health criteria set by WHO and guidelines by ICNIRP, Kyushu Electric Power believes that electromagnetic fields from the power facilities in living environments do not have any effect on the health of people, and the current operational practice of power facilities should not create a problem. However, for the better understanding and peace of mind of our customers, Kyushu Electric Power will continue its research and investigation to accumulate scientific knowledge and findings on electromagnetic fields around its power facilities.

### Frequency and wavelength of electromagnetic waves (electromagnetic fields)

Frequency (Hz)	Wavelength	Applications
$3 \times 10^{18}$	Gamma-rays	Medical treatment
$3 \times 10^{16}$	X-rays	Material test
$3 \times 10^{15}$	Ultraviolet rays	X-ray photograph
$3 \times 10^{13}$	Visible rays	
$3 \times 10^{12}$	Infrared rays	
$3 \times 10^{11}$	Submillimeter waves	
$3 \times 10^{10}$	Millimeter waves (EHF)	0.1mm
$3 \times 10^9$	Centimeter waves (SHF)	1cm
$3 \times 10^8$	Microwaves (UHF)	10cm
$3 \times 10^7$	Ultrashort waves (VHF)	1m
$3 \times 10^6$	Short waves (HF)	10m
$3 \times 10^5$	Medium waves (MF)	100m
$3 \times 10^4$	Long waves (LF)	1km
3,000	Very low frequency waves (VLF)	10km
50~60	Extremely low frequency waves (ELF)	100km
		5,000~6,000km

## II-4 Working with Society

### 1 Status of Kyushu Homeland Forestation Program

As part of its celebration of 50 years since foundation, Kyushu Electric Power began the Kyushu Homeland Forestation Program in Fiscal 2001. The program aims to plant one million trees at sites throughout Kyushu over the next 10 years.

#### Forestation of Onagohata

In April 2002, 12,000 chinquapin, oak and machilus thunbergii saplings were planted in the 3,000m<sup>2</sup> of land surrounding Kyushu Electric Power's Onagohata dam.

- Over 1,400 people from all over Kyushu joined the activity.
- After a thorough field study of the geographical distribution of plants, selections were made for rapidly growing indigenous forest in the land. (This activity is based on the concept of forestation by planting native trees proposed by Dr. Akira Miyawaki, Professor Emeritus of Yokohama National University.)
- Tree planting in Onagohata began in Fiscal 2000. This afforested area and the abundance of nature around it make it ideal for environmental education, and will be used for the Class for Integrated Study, which was introduced in the school curriculum in Fiscal 2002.

See [P58](#) for details. 



Tree planting in Onagohata

#### Forestation in Aburagi dam surrounding area

Aiming to conserve the natural environment with beautiful green forest, 10,000 wild cherry tree, maple and camellia saplings were planted in the surrounding area of Aburagi dam, where Moso bamboo grows thick and illegal dumping frequently occurs.

- 540 people from the Aburagi dam area beautification group, local authorities and communities as well as Kyushu Electric Power staff members and their families joined the forestation.



Tree planting in Aburagi dam surrounding area

#### Greening project in Fukiage Beach

10,000 Japanese black pine saplings were planted at Fukiage Beach, where trees are damaged by harmful insects.

- A total of 600 people from Kyushu Electric Power and its affiliated companies, NPOs and Kimpo Town were gathered for the project in spite of the drizzling weather.
- Through the project, started in Fiscal 1997 and counted as the 6th for this time, a total of 38,000 trees have been planted.



Tree planting at Fukiage Beach

#### COLUMN no.10

##### Participation in the Green Helper training

Kyushu Electric Power has been providing support since Fiscal 1998 for fostering of "Green Helpers", volunteers who hold basic knowledge and skills on greening and forestation, in cooperation with an NPO, the Interchange Association for Promoting Forestation.

- Nine seminars were held at seven areas (Kumamoto, Fukuoka, Saga, Oita, Miyazaki, Kagoshima, Nagasaki) by the end of Fiscal 2002, in which 434 people participated. Those who finished the training program have formed the Green Helpers' Association to participate in the local forest conservation activities as well as supporting the Kyushu Homeland Forestation Program.
- Training sessions are planned to be held in Kumamoto and Saga areas in Fiscal 2003.
- The company also supports the Forestation Program for 100 years, a citizen's activity to restore forest in urban area promoted by the Interchange Association for Promoting Forestation.



#### Forestation activities in Fiscal 2002

Branch	Activity Name	No. of trees	No. of participants	Date of activity	Trees planted
Kitakyushu	Forestation surrounding Aburagi dam	10,000	540	Mar. 16, 2003	Wild cherry tree Maple, Camellia
Fukuoka	Planting of 100,000 trees in Koga City	10,000	1,000	Mar. 8, 2003	Oak
Saga	Forestation of dirtheaps in former Taku coal mine area "Forestation Festival Part II"	2,150	300	Mar. 1, 2003	Chinquapin, Oak
Nagasaki	Forestation volunteers in Unzen/Fugen	10,000	1,390	Nov. 10, 2002	Machilus thunbergii Quercus myrsinaefolia
Oita	Forestation of Onagohata	12,000	1,440	Apr. 29, 2002	Chinquapin, Oak Machilus thunbergii
Kumamoto	Forestation of Kyokushi Village	3,000	160	Nov. 17, 2002	Oak
	Forestation of Minami Oguni Town	3,000	140	Mar. 15, 2003	Oak
	Forestation of Maruyama Park, Yabe Town	3,000	260	Dec. 7, 2002	Zelkova serrata, Maple Wild cherry tree
Miyazaki	Forestation of Takahara Town	3,000	470	Feb. 15, 2003	Zelkova serrata Melia azedarach
	Reforestation project in Hitotsuba Beach	4,000	560	Feb. 27, 2003	Japanese black pine
Kagoshima	Forestation commemorating graduation at Yojo Elementary School	5,000	320	Feb. 2, 2003	Cedar
	Greening project in Fukiage Beach	10,000	600	Mar. 1, 2003	Japanese black pine
	Forestation of Uchinoura	10,000	430	Feb. 9, 2003	Machilus thunbergii Ginkgo
Others	40 places (incl. 23 places where trees were planted during Environment Month)	23,850	3,090	—	—
Total	53	109,000	10,700	—	—

## 2 Supporting Energy and Environmental Education at the Onagohata Power Station Dam Area

Environmental education coordinated by the educational institutes, local communities and companies is becoming more and more important, due to the increased social awareness of environmental issues. Given this situation, Kyushu Electric Power supports educational efforts on energy and the environment conducted at the company's Onagohata Power Station dam premises in Amagase Town, Oita, which boasts rich natural resources. By listening to the opinions and advice of experts from outside the company, Kyushu Electric Power organizes various programs on nature watching, understanding nature and hands-on forestry experience in order to support citizens' activities and school education on energy and the environment. Such support programs are conducted through cooperative efforts with citizens' groups composed of nature-lovers.

### ◇Introduction of efforts through Field Guidebook and company website

The Onagohata Power Station dam area has been the site of a hydroelectric power station since the early 20th century, and has been spared unnecessary development, while proper environmental preservation efforts have been made. As a consequence, the area is blessed with a rich natural environment, and is a habitat for many birds, insects and rare plants. A forestation project was launched at this site in Fiscal 2000 to restore the forest to its original state with the cooperation of citizens and the guidance of Professor Emeritus Akira Miyawaki of Yokohama National University. The company compiled efforts being made for the project into the Onagohata Forest Field Guidebook to be utilized in the support programs for environmental education. These efforts are also made available on the company website, through which application for participation in the program can be made.



Onagohata Forest Field Guidebook

### ■Program outlines

Program	Detail
Nature watching	Enhance interests in nature close to us through nature watching in Onagohata.
Lecture on Forestation	Deepen understanding on roles and differences of natural and artificial forests.
Nature conservation activity, hands-on forestry experience	Deepen understanding of harmonious coexistence of human and nature through picking wild edible plants and growing mushrooms; promote forestation and its management for such coexistence.
Workshop on woodwork	Experience the joy of handmade products. Raise understanding of building recycling-based society by using natural materials.
Workshop on energy	Deepen understanding of resource-saving and energy-saving through visiting hydroelectric power generation facilities as well as learning about natural energy.

### ■Organizations accepted to the programs (as of Aug. 31, 2003)

Date	Organization (program)	No. of participants	
Trial basis	Jun. 15, 2002	Fukuoka University of Education (nature watching)	26
	Jul. 28, 2002	Shuyukan High School, Fukuoka (nature watching)	13
	Aug. 3, 2002	Kokura High School, Fukuoka (nature watching)	29
	Aug. 12, 2002	Kokura High School, Fukuoka (nature watching)	25
Nov. 30, 2002	Opening event (nature watching, lecture on Forestation)	100	
Apr. 29, 2003	Fukuoka troop 27 Girl Scouts of Japan (nature watching)	16	
	Fukuoka troop 29 Girl Scouts of Japan (nature watching)	35	
	Fukuoka Group No.15, fukuoka Council, Scout Association of Japan (nature watching)	60	
	Kamishirouzu Children's Association (lecture on Forestation)	51	
	Shuyukan High School, Fukuoka (lecture on Forestation)	10	
Jul. 13, 2003	Shuyukan High School, Fukuoka (nature watching, lecture on Forestation)	16	
Jul. 27, 2003	Shuyukan High School, Fukuoka (nature watching, lecture on Forestation)	13	
Aug. 11, 2003	Kaisei High School, Fukuoka (nature watching, workshop on woodwork, workshop on energy)	23	
Total (13 organizations)		417	



Lecture on nature



Nature watching

### Considering Maebaru Green Center (tentative name) as a greening and environment theme park

In Fiscal 2003, based on the experience of Onagohata and other foresting activities, Kyushu Electric Power began to consider utilizing the company's Research Laboratory Bioresour-

ces Research Center Maebaru Office (Maebaru City, Fukuoka) as a greening and environment theme park. Feasibility of the operation of the theme park will be studied into the future.



### 3 Development of Car-sharing Project through Collaboration with Environmental NGOs

Kyushu Electric Power deploys a car-sharing project through collaboration with Fukuoka City and an environmental NGO, West Japan Ecology Network which actively promotes green consumer activities. The car-sharing project using low-emission vehicles was originally suggested by the group in March 2001 as a means of relaxing traffic congestion and preventing global warming. In response to the group's request, the company together with Fukuoka City cooperated with the group to finally realize the project after a year-long study and discussion. In October 2002, the operation of the car-sharing project was introduced in Fukuoka City with NPO Car-Sharing Network (CSN) as its operational entity.

In the car-sharing project, an automobile driver becomes a member of the administrative organization, and instead of owning a car, uses one that belongs to the organization whenever necessary. The car-sharing scheme was spontaneously created in the late 1980's in Switzerland as a measure to reduce the cost of possessing vehicles. Since then, the scheme has attracted attention as a measure to reduce emissions and relax traffic congestion and has become a widespread project in western countries. In Japan, introduction of the scheme was led by government affiliated organizations and local authorities as a pilot measure in the late 1990's. Following the establishment of Japan's first car-sharing company in Yokohama in April

2002, the car-sharing project in Fukuoka has become the second such project to be operated in Japan.

Kyushu Electric Power offers a fund of 80 million yen to cover the cost of introducing approximately 20 vehicles (Fukuoka City offers 10 vehicles without charge), and developing an unmanned hiring out system. Knowledge accumulated through experimental studies on electric vehicles is also offered, and analysis of running data of vehicles is conducted.

The project characteristics are as follows:

- ① Japan's first collaboration between an environmental NGO, a local authority and a company.
- ② Japan's first car-sharing project operated by an NPO (CSN)
- ③ Actively collaborate with urban development organizations to seek the best possible location and vehicle hiring methods from the point of urban development.
- ④ Electricity from wind power generation is used for charging the electric vehicles through Green Power WIND certification (first such attempt in the world)
- ⑤ Six vehicle types are prepared for hire giving the user's choice of vehicles according to the number of passengers and purpose of the use.
- ⑥ Charge for using the vehicles is set from 30 minutes, enabling a short-time use.

Since the installment of the first station in October 2002, five stations have been set up as of July 2003, and 24 vehicles are installed for the project. As of the end of July 2003, a total of 935 people have used the project, and two tons of CO<sub>2</sub> emission has been reduced through the use of low-emission vehicles.

Currently, the average time for utilizing a vehicle remains at one hour, which is about one-third of the original target. Increasing the number of car-sharing project members by enhancing their awareness of its benefits will be a challenge in the future.



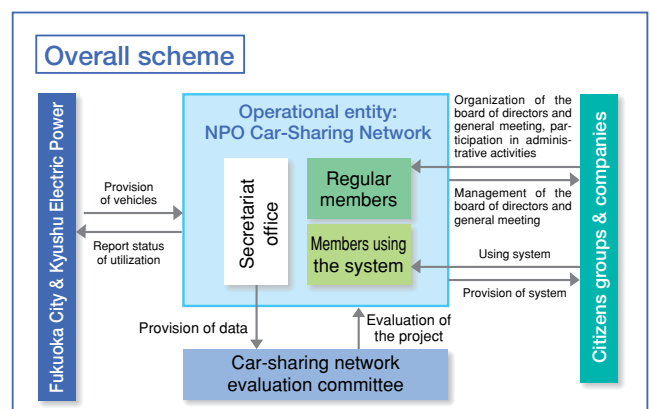
Hakozakimiyamae station (firstly installed)



Test driving at Research Laboratory

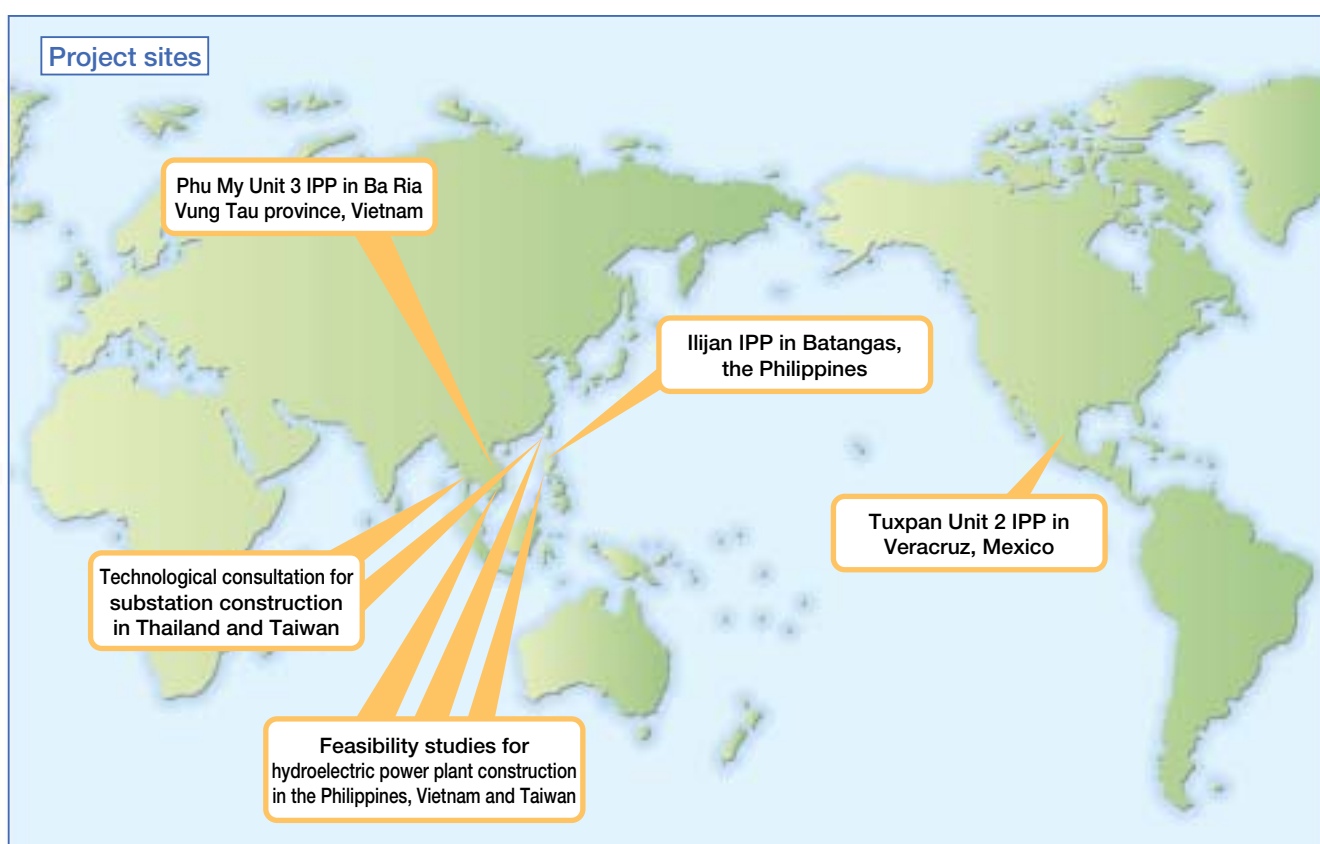
#### Car-sharing project outline

Operational entity	NPO Car-Sharing Network (CSN)
Project objectives	<ul style="list-style-type: none"> <li>○ Awareness enhancement of global warming prevention and traffic issues</li> <li>○ Acquisition and collection of knowledge for the business model construction</li> </ul>
Installation status (as of Jul. 14, 2003)	Station: 5 stations within Fukuoka City (under development) No. of vehicles installed: 24 low-emission vehicles



## 4 Status of Overseas Business Deployment

Kyushu Electric Power proceeds with environmentally conscious business abroad, such as global warming prevention, which is evidenced in the construction of high-efficiency thermal power stations, and feasibility studies for its hydroelectric power station construction project.



### ■ Thermal power generation projects (IPP)

Project name	Partners	Generation method	Output (10,000kW)	Construction began	Start of Commercial operation
Tuxpan Unit 2 IPP, Mexico	Mitsubishi Corporation	Gas combined cycle	49.5	Feb. 2000	Dec. 2001
Ilijan IPP, Philippines	Korea Electric Power Corp., Mitsubishi Corporation, Mirant (Taiwan)		120	Mar. 1999	Jun. 2002
Phu My Unit 3 IPP, Vietnam	BP (UK), SembCorp (Singapore), Nissho Iwai Corp.		71.7	Dec. 2001	Scheduled for Early 2004

#### Investigation of projects for global environment and plant activation [Commissioned by the Japan External Trade Organization: JETRO]

- Feasibility studies for hydroelectric power plant construction projects in the Philippines and Vietnam began in August 2002.

#### Technological consultation for substation construction for the Provincial Electricity Authority (PEA)

- A contract was signed with the PEA for the overall management of construction work and consultation starting in July 2001.

#### Investigation of overseas infrastructure development [Commissioned by Ministry of Economy, Trade and Industry]

- Feasibility studies for hydroelectric power plant construction projects in Taiwan began in August 2003.



Phu My Unit 3 IPP, Vietnam (under construction)

## 5 Working with Employees (Supporting self-development)

Kyushu Electric Power places its focus on offering a working environment where employees can comfortably devote themselves to worthwhile work as it is vital for the company's further development, despite the changing climate surrounding the electric industry. The company provides its employees with various systems and programs to encourage their efforts for self-development.

### 1 Human affairs

Various systems and programs are made available to establish a company of challenging spirit by encouraging employees to achieve their goals by exercising their abilities, as well as enhancing each employee's motivation and job satisfaction.

#### Self-application System

Established in Fiscal 2000 aiming to provide fair, and equal opportunity of, personnel selection and positioning, enhance employees' potentials, as well as to encourage employees' motivation. Voluntary applications are widely accepted for specific jobs, from which appropriate staff members are selected to engage in the work.

#### Job Challenge System

Established in Fiscal 2001 with the objectives of fostering motivated employees at an early stage and enhancing challenging spirit towards their work. Under the system, applications are accepted from general level employees who wish to work in the field of project planning or management at Head Office and branch offices, from which appropriate candidates are selected and positioned.

#### Management by Objective

A system to grasp and evaluate the performance of management level employees as accurately as possible. The evaluation results are incorporated in performance appraisals. Result management is a measure for self-management by setting own targets and making efforts to achieve them. The targets are set and evaluated through discussion with their senior staff.

#### Chief Challenge Tests System

An in-company examination system for young general level employees aiming to promote far-sighted employees who can cope with changes at an early stage. The exam consists of a written test, dissertation, and interview. The system provides all employees, regardless of educational background and sex, with equal promotional opportunity based on merit and ability.

### 2 Training programs

The company offers various training and self-development programs.

#### Workshop support system

The program offers financial support for groups that organize self-study sessions, aiming to encourage employees' self-development and foster an educational environment. As of April 2003, 33 groups have utilized the system, ranging from English and Chinese conversation classes, to study sessions towards the examination for electrician certificate.

#### Support for social welfare-related qualifications

The program helps employees wishing to obtain licences that enable them to conduct voluntary activities in a smooth and effective way. By providing them with financial support to cover fees for taking the examination, the course and transportation, it leads to enhancement of employee awareness of contribution to local communities.

#### ■ Licenses eligible for support

Field	License
Welfare for physically disabled and aged	Social worker, sign language interpreter, care worker
Sports instruction	Sports instructor, coach
Health and hygiene	First aid license, water safety license
Leisure activities	Recreation instructor, camp instructor

### 3 Health care

To ensure employees' health, a medical check-up is conducted annually. Health seminars for employees aged 25, 30 and 35, as well as for those who have life-

style related health problems, are held aiming to improve awareness on health care and way of living in order to lead a healthy lifestyle. Information on health management is offered via the company intranet.



### 4 Measures for sexual harassment prevention

In order to enhance employees' abilities to their fullest extent in the workplace, it is vital for both sexes to recognize each other as equal partners and respect each other. In reality, however, thoughtless words and deeds, resulting from misunderstandings and miscommunications between the sexes, often dishonor people, harm personality and disturb them from exercising their abilities. Sexual harassment is an issue closely connected to infringing human rights and the right to work. The company takes measures against sexual harassment by distributing pamphlets to raise awareness of this issue, as well as setting up the "Sexual Harassment Hotline" through the cooperation of counselors from outside company.

### 5 Performance appraisal system

There are five categories in the performance appraisal system for the Head Office's Divisions and branch offices, which include financial affairs, customer relations and social contribution/environmental conservation. Under the environmental conservation category, items for management are placed as industrial waste recycling rate, used-paper recycling rate, SF<sub>6</sub> gas collection rate, CO<sub>2</sub> emission reduction by nuclear power generation, electric energy generated from self-developed geothermal power generation, which are reviewed and enriched as required.



## 6 Working with Employees (Survey of employees' attitude)

To pursue environmental activities companywide, enhancement of personnel awareness of the environment is the most important factor. Kyushu Electric Power therefore places focus on grasping the state of employees' awareness and recognition, as well as the state of the activities, to actively promote its environmental activities.

### 1 Survey outline

- Target: 13,224 employees
- No. of answers: 7,428 employees (ratio of respondents: 56%)
- Survey period: April 24 (Thu) to May 9 (Fri.), 2003
- Survey contents:

A survey was conducted to test knowledge relating to individual environmental activities and environment-related information, knowledge/understanding of policies on basic environmental activities and plans, and opinions on the activities.

### 2 Survey results

- About 80% of the respondents knew the policies on basic environmental activities and plans, 60% of which also understood the details.
- 80 to 90% of the respondents conduct individual environmental activities, while only 40% of them participated in voluntary forestation activities. Utilization of environment-related information and manuals remained low and marked only 30 to 60%.

● Other opinions obtained:

- Environment-related information should be offered whenever requested.
- It is difficult to see what kind of environmental activities should be conducted and to what extent.

### 3 Reflection in future environmental activities

From the above results, the state of Kyushu Electric Power's environmental activity can be summarized as follows:

- Overall activities gain high employee recognition but the details are not widely understood.
- Activities connected to business activities are conducted frequently but not often enough. In addition, the occurrence of voluntary activities was

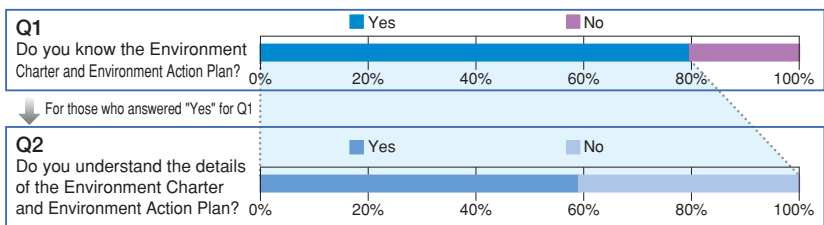
remarkably low.

- In-company environment-related information is not fully utilized. Method of offering information and the contents should be improved.

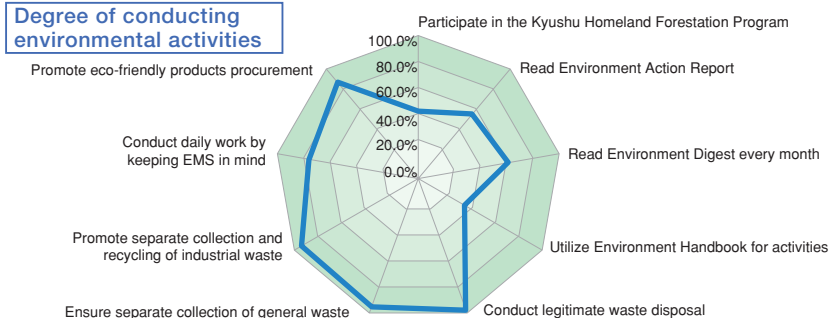
The above points will be reflected in conducting environmental activities in the future by:

- Offering improved information on the environmental policies and activity plans through the intranet.
- Offering information on the examples of activities in detail to promote company-wide activities.
- Establishing mechanisms that can provide access to environment-related information whenever needed.
- Improving environmental activities by grasping employees' awareness.

#### Degree of understanding environmental activities



#### Degree of conducting environmental activities



#### COLUMN

no.11

Kyushu Electric Power won the "Family-friendly Company" award for effort by the Minister of Health, Labor and Welfare

Kyushu Electric Power won the Fiscal 2002 "Family-friendly Company" award for effort by the Minister of Health, Labor and Welfare. The award, established by the Ministry of Health, Labor and Welfare in Fiscal 1999, is for the company with a system that enables its employees to continue work while raising children or nursing family members. The award is given to honor the company that makes active efforts to provide the employees with a flexible way of working and marks respective results. The company received the award for its wide range of efforts including introduction of family-care leave, short working hours and nursing leave, allowing the employees more flexible working hours than required by law.



Awarding ceremony

# III Kyushu Electric Power Group's Environmental Activity Progress

The Kyushu Electric Power Group boasts technologies and expertise accumulated through its operation, and operates in the general energy business, with electricity as its mainstay. It is also engaged in a wide range of businesses such as information and telecommunications, environment and recycling, and lifestyle services. Recognizing environmental conservation as a corporate social responsibility, the group works together on environmental activities in all of these business areas.

## 1 Environmental Management Framework

The Kyushu Electric Power Group has established an "Environment Philosophy" stating the principle of the group's commitment to environmental activities, and its "Environment Policies" that clarify specific guidelines to implement such activities.

### Environment Philosophy

The Kyushu Electric Power Group recognizes the importance of an environmental preservation consciousness in every aspect of energy supply and other businesses, and works towards the realization of an affluent society and better global environment.

May 2002

### Environment Policies

- 1 We fulfill our responsibility to society by complying with all environmental preservation laws and regulations.
- 2 For the creation of a recycling-based society, we work to reduce the environmental load through the effective use of energy and resources, as well as the recycling of waste.
- 3 We tackle all environmental issues aggressively and contribute to society through continuous environmental activities.
- 4 We disclose environment-related information and work for improved communication with society.

May 2002

### Environmental management promotional scheme

The Kyushu Electric Power Group promoted its environmental management through the Group Management Association and Group Environmental Management Promotion Subcommittee consisting of 27 group companies. With an additional 14 companies as new members, 41 companies have been engaged in environmental activities since Fiscal 2003. Specifically, based on the Group's Environmental Activity Plan, which was discussed and approved by the Group Management Association, each company carries out environmental activities. Their activities are analyzed and evaluated annually by the Group Management Association and the Group Environmental Management Promotion Subcommittee. Then the results are reflected when compiling the plan for the next fiscal year. This PDCA Cycle facilitates the group's effort to spiral up its environmental management.

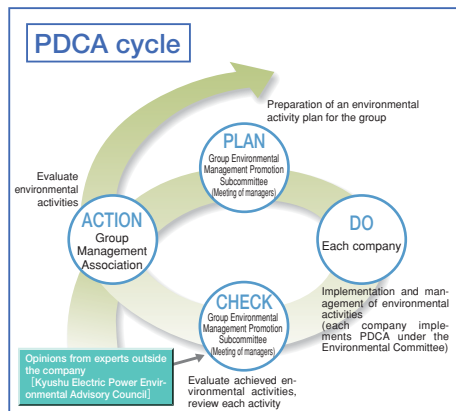
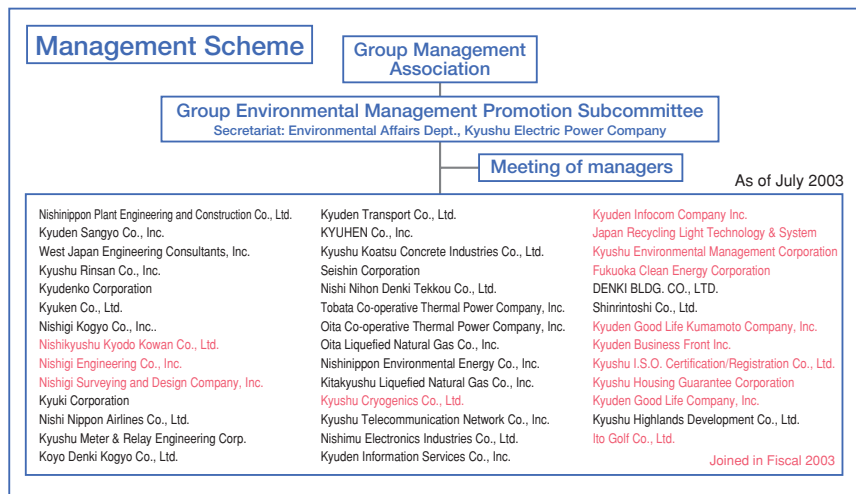
The 14 new members develop a scheme

following the PDCA Cycle including setting up an Environmental Committee, drawing up related rules and establishing a procedure to grasp the environmental load. Then they work on the Group's Environmental Activity Plan step by step.

### Kyushu Electric Power Group's standard for EMS formation

In a coordinated effort to promote environmental management, the Kyushu Electric Power Group introduced a unified standard for environmental management system (EMS) formation in stages so that each company could take steps in developing its EMS.

In Fiscal 2002, all 27 group companies established their Environmental Committee, and developed a scheme for the PDCA Cycle on their environmental activities. From Fiscal 2003, based on the Kyushu Electric Power Group's Standard for EMS Formation, each company sets a level relevant to its actual state and then strives for a higher level.












Group Environmental Management Promotion Subcommittee (held on Aug. 7, 2003)

■ Outline of stages of Kyushu Electric Power Group's standard for EMS formation (1)

Stage	State achieved	Evaluation	
		Criterion	Evaluator
Stage 1	Environment policies compiled at the corporate level, and a plan to achieve objectives established. (Environment Policies, Environmental Targets, Management System)	90% or more conformity rate at the 1st stage of EMS formation.	Kyushu Electric Power Co. Environmental Affairs Dept.
Stage 2	Environment policies compiled at the operational office level, and the management framework to achieve the objectives (plan) established. The framework enables document-based implementation and evaluation of activities.	90% or more conformity rate at the 2nd stage of EMS formation.	
Stage 3	A simple system complying with all the requirements stated in ISO14001, Article 17 established at the operational office level. (The stage aimed at ISO14001 certification acquisition)	90% or more conformity rate at the 3rd stage of EMS formation.	
Stage 4	A system fulfilling ISO 14001 requirements established at the operational office level.	90% or more conformity rate at the 4th stage of the EMS formation.	
Stage 5	ISO14001 certification acquired at the operational office level.	90% or more conformity rate at the 5th and 6th stages of EMS formation.	Verification and Registration Agency
Stage 6	ISO14001 certification acquired at the entire company level.		

■ Outline of stages of Kyushu Electric Power Group's standard for EMS formation (2)

Stage		Stage 1	Stage2	Stage 3	Stage 4	Stage 5	Stage 6	
Item	Company	○					○	
	Head office/operational offices		○	○	○	○		
Stage achieved	Environment Policies (Declaration)	<div style="background-color: yellow; padding: 5px;">Environment Policies (Declaration)</div> <div style="background-color: yellow; padding: 5px;">Environmental Objectives</div> <div style="background-color: yellow; padding: 5px;">Management system</div>	<b>Head Office</b> • Environment Policies • Objective • Plan • Documents (Scheme) • Activities • Evaluation	<b>Head Office</b> 	<b>Head Office</b> 	<b>Head Office</b> 	ISO14001, Article 17 Requirements 4.2 Environmental Policy 4.3.1 Environmental Aspects 4.3.2 Legal and Other Requirements 4.3.3 Objectives and Targets 4.3.4 Environmental Management Program 4.4.1 Structure and Responsibility 4.4.2 Training, Awareness and Competence 4.4.3 Communication 4.4.4 Environmental Management System Documentation 4.4.5 Document Control 4.4.6 Operational Control 4.4.7 Emergency Preparedness and Response 4.5.1 Monitoring and Measurement 4.5.2 Nonconformance and Corrective and Preventive Action 4.5.3 Record 4.5.4 Environmental Management System Audit 4.6 Management Review	
			<b>Operational Offices</b> • Environment Policies • Objective • Plan • Documents (Scheme) • Activities • Evaluation	<b>Operational Offices</b> 	<b>Operational Offices</b> 	<b>Operational Offices</b> 		
	<b>Operational Offices</b> • Environment Policies • Objective • Plan • Documents (Scheme) • Activities • Evaluation		<b>Operational Offices</b> 	<b>Operational Offices</b> 	<b>Operational Offices</b> 			
Environmental management Level	30		40	60	90	95		100
ISO14001	—			ISO-based system (self-declaration)	Certification acquired			

■ ISO14001 certification acquisition

Through independent commitment by group companies, four of them have already acquired ISO 14001 certification.

Company	Date	Level
Kyudenko Corporation	Dec., 1999	Head Office only
Nishinippon Environmental Energy Co., Inc.	Oct., 2000	Entire company
Kyuden Sangyo Co., Inc.	Dec., 2002	Environment Dept. only
Kyuki Corporation	Mar., 2003	Entire company



■ Progress in EMS formation

Kyuki Corporation

To be an eco-friendly "company of the 21st Century"

Environmental problems such as global warming have become serious social issues that need urgent improvement. Now it is required to shift from a conventional social system based on mass production, mass consumption and mass disposal to one based on recycling. Against such a background, Kyuki Corporation believes that each of our

employees should be aware of the necessity of environmental activities, strongly promote and carry out any possible activities to preserve the environment, and that it is our duty to pass on a better environment to the next generation. To be an environment-friendly company of the 21st century, it established a company-wide environmental management system and acquired ISO14001 certification in March, 2003, and is continuously enhancing environmental activities.

Main environmental activities

- ☆ Promoting environmental activities by holding regular meetings of the Environmental Management Council
- ☆ Developing a method to manage substances subjected to PRTR, and ensuring a full grasp of and control over the amounts used and transferred
- ☆ Implementing environmental evaluation at the designing stage to consider energy and resources conservation in manufacturing products
- ☆ Promoting green procurement of office supplies and OA equipment
- ☆ Promoting waste recycling and paperless documentation at the company
- ☆ Regular cleaning of roads adjacent to the company compound and active involvement in community volunteer cleaning activities

環境方針

基本理念

- ・ 私たちは、地球環境にやさしい“21世紀型企業”を目指し、環境保全と企業の成長を両立させ、広く社会に貢献します。
- ・ 私たちは、すべての企業活動において、環境問題を重点課題とし、環境に配慮した製品やサービスを提供します。
- ・ 私たちは、次の世代により良い環境を残すため、企業としてはもちろん従業員一人ひとりが環境負荷の低減に努めます。

行動指針

1. 環境保全に関わる法規制や協定を遵守し、社会的責任を遂行する。
2. 環境活動の継続的改善を行うとともに、環境汚染の予防に努める。
3. 企業活動の環境影響に応じた環境目的・目標を設定し、その運用を評価して必要な見直しを行う。
4. 循環型社会の形成を目指して、エネルギーや資源の有効利用、廃棄物の再資源化に努める。

2002年11月1日  
株式会社キューキ  
代表取締役社長 小野 耕一

Nishinippon Environmental Energy Co., Inc.

People, earth and an affluent future

Recognizing that global environmental preservation is the first priority for all people, Nishinippon Environmental Energy Co., Inc. believes that it can contribute to environmental preservation through its business activities. For this purpose, the company established an environmental

management system and acquired ISO14001 certification for all its business activities on October 6, 2000. It continues to work on effective energy use, waste reduction and natural resources conservation mainly through recycling, promotes environmental preservation activities and strives to contribute to building a sustainable society. Furthermore, the company launched a consultation business on ISO14001 certification acquisition in Fiscal 2002, based on the standpoint that the knowledge and skills accumulated through its business activities should be given back to society for wider utilization.

Main environmental activities

- ☆ Total abolishment of specific Freons use
- ☆ Reduction of power consumption at its office
- ☆ Reduction of paper use through recycling and efforts towards a paperless workplace
- ☆ Promotion of green procurement of office supplies
- ☆ Proposing eco-friendly and effective energy use
- ☆ Promoting biomass energy business

環境方針

当社は地球環境の保全と人類の発展の両立を目的として、環境保全と企業の成長を両立させ、広く社会に貢献することを目指し、環境保全と企業の成長を両立させ、広く社会に貢献することを旨として、環境管理活動を進めます。

人 地球にやさしくなろう

1. 環境負荷低減に努めることにより、環境保全活動、エネルギーの削減、廃棄物の削減、資源の有効利用、環境汚染の予防に努めます。
2. 環境保全に関わる法規制や協定を遵守し、社会的責任を遂行します。
3. 環境活動の継続的改善を行うとともに、環境汚染の予防に努めます。
4. 企業活動の環境影響に応じた環境目的・目標を設定し、その運用を評価して必要な見直しを行う。
5. 循環型社会の形成を目指して、エネルギーや資源の有効利用、廃棄物の再資源化に努めます。

平成 12 年 4 月 1 日  
西日本環境エネルギー株式会社  
代表取締役社長 石井 國典

Oita Co-operative Thermal Power Company, Inc.

Commitment to environmental conservation activities

Recognizing the significance of its business impact on the environment and efforts to tackle environmental issues, Oita Co-operative Thermal Power Company, Inc. drew up Environment Policies on April 15, 2003 and set forth Environmental Management Rules on April 17. The company held two Environmental Management Committee meetings in May and adopted an Education Plan and Environ-

mental Activity Plan based on the Environment Policies. Following the Environment Activity Plan, the company sets targets such as reducing copy paper use and power consumption at the office, practicing appropriate waste disposal and recycling, thus encouraging environmental activities. Also, the company complies with relevant laws and regulations as well as agreements with related municipalities, while it strives for environmental preservation through continuous improvement of its Environmental Management System.

Targets

- ☆ Reduction of copy paper use 【10% year-by-year reduction】
- ☆ Reduction of power consumption at the office 【1% year-by-year reduction】
- ☆ Reduction of chemical use 【10% year-by-year reduction】
- ☆ Zero emission of greenhouse gases (CFCs and SF<sub>6</sub>)
- ☆ Environmental activities to achieve the set targets including discussions on waste recycling of EP ash, sludge cake and paper

環境方針

環境理念

当社の事業活動が環境に与える影響及び環境保全活動への取り組みの重要性を認識し、より良い地球環境の実現に向けての環境管理活動を推進する。

環境方針

1. 当社の事業活動が環境に与える影響を把握し、環境マネジメントシステムの継続的改善を図り、環境保全に努める。
2. 環境保全に関わる法規制及び関係自治体との協定を遵守し、社会的責任を遂行する。
3. 循環型社会の形成を目指し、エネルギー及び資源の有効利用並びに廃棄物の適正な処理と再資源化に努める。



2003年4月15日 大分共同火力株式会社 代表取締役社長

## 2 Fiscal 2003 Kyushu Electric Power Group Environmental Activity Plan

### Outline of environmental activities in Fiscal 2003

The Kyushu Electric Power Group drew up its Environmental Activity Plan for Fiscal 2003 after deliberations at the Group Environmental Management Promotion Subcommittee and the approval of the Group Management Association before March 2003. Based on the Environment Policies, Fiscal 2003 Kyushu Electric Power Group Environmental Activity Plan sets forth specific activities. The four pillars are: the "promotion of environmental management in the group"; "establishing a recycling-based society"; "implementation of environmental activities in cooperation with communities" and "active disclosure of environment-related information". Especially, to encourage recycling, the entire group promotes the recycling of confidential documents and fluorescent tubes by using the know-how of the members, Kyushu Environmental Management Corporation and Japan Recycling Light Technology & System.

### Measures to achieve environmental targets

In Fiscal 2002, the Kyushu Electric Power Group started collecting data on environmental loads including power consumption at its offices and on recycling such as used paper recycling rates. Based on the data, the group set up unified targets to be tackled at the entire group level in Fiscal 2003, and is striving to reduce environmental loads. The group will redouble its efforts for data gathering and evaluation to expand the reach of its unified targets, while each company sets its own targets and is committed to their fulfillment.

### Promotion of Environmental Management in the Group

- Conformity with relevant laws and regulations:
  - Appropriate operation and management of environmentally damaging substances based on relevant laws and regulations
- Better management of environmental targets:
  - To set forth voluntary targets, expand their reach and raise their achievement rates
  - To decide unified targets and strive for their achievement
- Formation of environmental management framework:
  - To form an environmental management system at each group company level
  - To develop guidance for environmental activities
  - To introduce an environmental accounting system

### Establishing a Recycling-based Society

- Encouraging recycling:
  - To encourage recycling of confidential documents and fluorescent tubes
  - To raise paper recycling rates, recycled paper use and industrial waste recycling
- Promoting green procurement:
  - To purchase office and stationery supplies at prices equivalent to those of previous supplies, in principle
  - To increase green procurement of other supplies within the means of each group company
- Exploring new businesses:
  - To find new environment-related businesses by taking advantage of each company's management resources

### Implementation of Environmental Activities in Cooperation with Communities

- Participation in a planting activity:
  - "Kyushu Homeland Forestation Program"
- Offering environmental education:
  - To offer joint training for environmental management and environmental activities
  - To hold environment-related seminars
  - To organize study tours to a model corporation with advanced environmental activities

### Active Disclosure of Environment-related Information

- Sharing environment-related information among group companies:
  - sharing the EMS formation procedure and good examples of environmental activities
- Further disclosure of information on environmental activities among group companies:
  - Actively disclose information by using the Environment Action Report, an interactive network, and at various events

### ■ Kyushu Electric Power Group's unified targets (Fiscal 2003)

Item [Target]	Specific Measures
Specific Freons emissions 【Zero Emission】	<ul style="list-style-type: none"> <li>• To use alternative equipment that does not use Freons subjected to regulations when renewed.</li> <li>• To ensure the recovery of Freons during inspections and repairs</li> </ul>
SF <sub>6</sub> gas recovery rate 【97% or more】	<ul style="list-style-type: none"> <li>• To ensure the use of a SF<sub>6</sub> gas collector during equipment inspection</li> </ul>
Power consumption at office 【1% year-by-year reduction】	<ul style="list-style-type: none"> <li>• Annual reduction of 1% from the figure achieved in Fiscal 2002 as the base rate</li> <li>• 3% reduction from the base rate by Fiscal 2005</li> </ul>
Used paper recycling rate 【100%】	<ul style="list-style-type: none"> <li>• To sort and collect used paper to recycle all of it</li> </ul>
Rate of recycled copy paper use 【Rate of recycled paper use 100%】	<ul style="list-style-type: none"> <li>• To achieve 100% recycled paper use through green procurement</li> </ul>
Rate of recycled toilet tissue use 【Rate of recycled toilet tissue use 100%】	<ul style="list-style-type: none"> <li>• To achieve 100% recycled paper use through green procurement</li> </ul>

### 3 Kyushu Electric Power Group's Environmental Accounting

Kyushu Electric Power introduced environmental accounting in Fiscal 2000 and has published it in its Environment Action Report ever since. The Kyushu Electric Power Group also is working on environmental accounting in Fiscal 2003. The group compiles the Kyushu Electric Power Group's Environmental Accounting Guideline based on the yardstick for calculating environmental activity costs that Kyushu Electric Power uses, and calculates the overall costs and effects of its environmental activities. The listed costs are those involved in environmental conservation for Fiscal 2002 that each group company could compute as a trial calculation. The group will further discuss its accounting system including how to raise its accuracy and factor in its effects.

#### ◇Data from

27 group companies

### 4 Grasping Achieved Reduction of Environmental Loads

The group also has worked on grasping how much it succeeded in reducing environmental loads through its energy saving and recycling efforts. It established a data processing method in Fiscal 2002 to understand how much environmental load reduction can be achieved. Each group company sets out its own targets selected from the unified targets that it considers possible to achieve, working towards a reduction of environmental loads. As for substances subjected to environmental laws and regulations, the group continues to strive for appropriate operation and management based on the laws and regulations. It also discusses measures to reduce environmental loads.

#### ◇Data from

27 group companies

### ■ Costs of Kyushu Electric Power Group's environmental activities (Fiscal 2002)

Activity areas		Main activities	Cost (million yen)	
			Investment	Expense
Global environmental preservation	Global warming prevention	Installation of power sources with low CO <sub>2</sub> emissions, thermal efficiency improvement, introduction and support for new energy equipment, energy conservation (including low-emission vehicles) and SF <sub>6</sub> emission control	255.5	6.8
	Ozone layer protection	Measures for Freon and Halon recovery	0.1	10.5
Local natural environment preservation	Air pollution prevention	Flue gas treatment (desulfurization, denitrification, particulate reduction equipment) and use of fuel with low sulfur content	0.9	80.0
	Water pollution prevention	Waste water treatment, measures against oil leaks	2.9	91.8
	Noise and vibration prevention	Measures against noise and vibration at facilities	0	0.9
Resource recycling	Industrial waste	Reduction and recycling of industrial waste	0	36.3
		Disposal of industrial waste, and PCB storage	22.0	91.3
	General waste	Reduction and recycling of general waste	0	13.9
		Disposal of general waste	0	63.9
Green procurement		Additional cost incurred by green procurement	0	0.2
Environmental activity management	Environmental activity organization	Expenses from environment-related license acquisition, education and training, and for personnel	0	47.5
	ISO and EMS application and maintenance	ISO14001 and EMS (ISO-based system) acquisition, application and maintenance	0	32.1
	Environmental load measurement and monitoring	Environmental impact assessment, monitoring and measurement of environmentally burdening substances, and PRTR measurements	0	10.6
Environment related research	Environmental preservation	Prevention of global warming, improvement of air and water quality and effective use of waste	0	40.5
Social activities	Greening of sites	Greening of company owned land and facilities, and its maintenance and management.	0	70.5
	Maintaining quality townscapes and surroundings	Measures to keep buildings in harmony with the landscape of their surrounding environment	0	0
	Environment Month	Environment month, planting activities, etc.	0	0.1
	Supporting local environmental activities	Support for local environmental activities and environmental organizations	0	0.7
	Environmental information disclosure	Making pamphlets and setting up a web-site related to the environment	0	0.1
Total			281.4	597.7

N.B. Data of some companies not included.

### ■ Kyushu Electric Power Group's environmental loads (Fiscal 2002)

Items		Unit	Actual amounts in FY2002
Power consumption at office		kWh	33,441,702
Power consumption at plants		kWh	401,800,232
Water consumption at offices		m <sup>3</sup>	210,332
Industrial water consumption		m <sup>3</sup>	491,755
Fuel consumption for heating		kl	64
Fuel consumption for vehicles		kl	2,476
Used paper	Amount used	ton	675
	Recycling rate	%	48
Copy paper	Amount used	piece	84,247,017
	Rate of recycled paper use	%	60
Toilet roll	Amount used	roll	134,968
	Rate of recycled paper use	%	86
Industrial waste	Amount	ton	40,203
	Recycling rate	%	73

N.B. Data of some companies not included



## PRTR investigation results(Fiscal 2002)

(Unit: kg)

Index No.	Chemical substances	Application	Company	Amount handled	Amount released into the environment				Amount transferred
					Air	Water	Soil	Reclamation	
1	Water-soluble zinc compounds	Hot dip galvanizing	Nishi Nihon Denki Tekkou Co., Ltd.	1,280	72				88,995
40	Ethyl benzene	Coating	Kyushu Meter & Relay Engineering Corp.	1,453	1,453				
43	Ethylene glycol	Coolant	Nishinippon Environmental Energy Co., Inc.	6,263	6,263				
63	Xylene	Coating	Kyushu Meter & Relay Engineering Corp.	5,413	5,413				
			Kyuhen Co., Inc.	2,300	2,300				
227	Toluene	Coating	Kyushu Meter & Relay Engineering Corp.	5,698	5,698				
230	Lead and its compounds	Hot dip galvanizing	Nishi Nihon Denki Tekkou Co., Ltd.	4,480				46	27
		Soldering	Nishimu Electronics Industries Co., Ltd.	1,600					1,600

※Substances of which one ton or more were handled annually are listed above.

## PCB storage (Fiscal 2002)

PCB held by the Kyushu Electric Power Group is shown below and kept at dedicated storehouses under strict surveillance. The group plans to render it harmless by the 2016 deadline, according to the law concerning special measures against PCB waste (effective July 2001).

Equipment using PCB	Amount	Management status	Companies possessing PCB
Transformer	46 units	46 units kept in strict security	Kyudenko Corporation, Tobata Co-operative Thermal Power Company, Inc., Oita Co-operative Thermal Power Company, Inc., DENKI BLDG. CO., LTD.
Capacitor	93 units	3 units in use, 90 units kept in strict security	Nishinippon Plant Engineering and Construction Co., Ltd., Kyuden Sangyo Co., Ltd., Kyudenko Corporation, Kyuki Corporation, Kyushu Meter & Relay Engineering Corp., Koyo Denki Kogyo Co., Ltd., Kyuhen Co., Inc., Kyushu Koatsu Concrete Industries Co., Ltd., Nishi Nihon Denki Tekkou Co., Ltd., Tobata Co-operative Thermal Power Company, Inc., Oita Co-operative Thermal Power Company, Inc., Nishimu Electronics Industries Co., Ltd., DENKI BLDG. CO., LTD., Kyushu Highlands Development Co., Ltd.
Stabilizer	493 units	All units kept in strict security	Kyuden Sangyo Co., Ltd., Kyudenko Corporation, Tobata Co-operative Thermal Power Company, Inc., Oita Co-operative Thermal Power Company, Inc., DENKI BLDG. CO., LTD.
Others	1 units, 369 $\theta$ , 27kg	1 unit in use, all units kept in strict security	Kyuden Sangyo Co., Inc., Kyudenko Corporation, Oita Co-operative Thermal Power Company, Inc., DENKI BLDG. CO., LTD.

## SOx and NOx emissions from power generating facilities (Fiscal 2002)

Name of companies and units	Installed capacity [MW]	Fuels used	Records		Agreement with local governments	
			SOx (ppm)	NOx (ppm)	SOx (ppm)	NOx (ppm)
Tobata Co-operative Thermal Power Company, Inc.	Unit 2	156	Not measured because emissions are 10m <sup>3</sup> /h or less	89	18	93
	Unit 3	250		73	11	80
	Unit 4	375		17	19	19
Oita Co-operative Thermal Power Company, Inc.	Unit 1	253	299	163	326	180
	Unit 2	253	301	172		180

※The records are the maximum values for the year. ※The Air Pollution Control Law does not require measurement of SOx emissions of 10m<sup>3</sup>/h or less.

## Freon and Halon emissions (Fiscal 2002)

Listed below are the amounts of Freons and Halons kept and consumed by the Kyushu Electric Power Group. The group ensures the recovery of these gases in repairing and inspecting equipment that uses them, thus minimizing their emissions into the air.

Type	Main use	Amount contained (ton)	Consumption (ton)	Companies handling them
Specific Freons	Air conditioning, refrigeration	4.3	0	Nishinippon Environmental Energy Co., Inc., DENKI BLDG. CO., LTD.
Alternative Freons	Air conditioning, refrigeration, parts cleaning	41.1	4.3	Kyudenko Corporation, Kyuki Corporation, Kyushu Meter & Relay Engineering Corp., Koyo Denki Kogyo Co., Ltd., Nishi Nihon Denki Tekkou Co., Ltd., Tobata Co-operative Thermal Power Company, Inc., Oita Co-operative Thermal Power Company, Inc., Oita Liquefied Natural Gas Co., Ltd., Nishinippon Environmental Energy Co., Inc., Kitakyushu Liquefied Natural Gas Co., Inc., Nishimu Electronics Industries Co., Ltd., DENKI BLDG. CO., LTD.
Halon	Fire fighting	5.1	0	Kyudenko Corporation, Kyuki Corporation, Tobata Co-operative Thermal Power Company, Inc., Oita Co-operative Thermal Power Company, Inc., Oita Liquefied Natural Gas Co., Ltd., Nishinippon Environmental Energy Co., Inc., Kitakyushu Liquefied Natural Gas Co., Inc., DENKI BLDG. CO., LTD.

※Specific Freons: CFC11 ※Alternative Freons: HCFC22, HCFC123, HCFC225 ※Halons: Halon 1211, Halon 1301

## 5 Main Environmental Preservation Measures by Kyushu Electric Power Group

Kitakyushu Liquefied Natural Gas Co., Inc.

### Launching LNG sale through coastal services

LNG (liquid natural gas) is an eco-friendly and clean energy source emitting no SOx or particulates when burned because carbonic dioxide and sulfuric compounds that form impurities are removed in a liquefaction process. In addition to the LNG sale through Kitakyushu LNG Lorry, Kitakyushu Liquefied Natural Gas Co., Inc. started the sale through coastal services in August 2003, thus playing an important role to support lives and industrial activities not only in Kitakyushu but in the Okayama and Shikoku areas.



Koyo Denki Kogyo Co., Ltd.

### Lead-free soldering of printed wiring board

The 21st century is said to be the environmental century. More than ever, we have seen mounting social interest in global environmental preservation and pollution prevention. Accordingly, more attention is paid to corporate efforts towards environmental preservation. Koyo Denki Kogyo Co., Ltd. has long used tin-lead eutectic solder on printed wiring boards for flashers and streetlights for crime prevention. Since lead in solder is a great obstacle to the disposal and recycling of electronic equipment, lead control is a world-wide trend. Thus as part of its eco-friendly manufacturing effort, Koyo Denki Kogyo Co., Ltd. is engaged in lead-free soldering. After succeeding in its technical verification, the company is making propositions to its clients, power companies, and taking necessary steps following the ideas suggested by each client. It plans to shift to lead-free soldering within Fiscal 2003.



(Product and printed board with soldering)

Nishinippon Environmental Energy Co., Inc.

### Assistance to municipalities in forming visions for new energy use and energy conservation

These days, in response to environmental problems, municipalities are aggressively introducing facilities using photovoltaic, wind and other new energy sources as well as taking measures to save energy in public facilities. It is not rare for a municipality to acquire ISO14001 certification. In order to work out basic principles and specific measures for such undertakings, municipalities are drawing up their own local visions for new energy use and conservation by utilizing a state subsidy project. The company provides municipalities with consultation in drawing up a vision by using its know-how accumulated through its energy utilization business such as power generation and air conditioning technologies. In this way, it is actively engaged in indirect reduction of environmental loads in addition to direct environmental load reduction through its conventional heat supply business.



Tabata Co-operative Thermal Power Company, Inc.

### Measures against water pollution

Taking advantage of effective use of by-product gas from Yahata Works of Nippon Steel Corporation in power generation, Tobata Co-operative Thermal Power Company, Inc. makes a great contribution to stable power supply in the Kitakyushu area. Cold water several meters below the surface of the sea is taken as the coolant for the power station, minimizing differences in the temperatures between discharged water and seawater near the surface. Furthermore, all water used at the power station is treated to become clean water at its comprehensive wastewater treatment facility.



(Comprehensive wastewater treatment facility)

Kyushu Koatsu Concrete Industries Co., Ltd.

### Recycling waste concrete poles

Kyushu Koatsu Concrete Industries Co., Ltd. collects waste concrete poles from Kyushu Electric Power and the NTT Group and brings into its plant. These poles are crushed, sorted, treated, and made into aggregate. The company reuses it to manufacture their concrete products and also sells it as a back-fill material for civil engineering work.



(Site for primary crushing)

**Nishimu Electronics Industries Co., Ltd.**

**Development and sale of power storage systems**

Recently, due to the need to control global warming by cutting CO<sub>2</sub> emissions, a wider use for clean energy sources is strongly hoped for. One such example is power generation with natural energy sources. Nishimu Electronics Industries Co., Ltd. developed a power storage system that can cut peak loads in the daytime and thus achieve load leveling. The system has been installed at the Saga Plant. The system consists of stationary energy storage equipment with an LL (load leveler) lead storage battery, bidirectional converter and system interconnection protective board. It can store power at night when loads are low in the power storage equipment, and recharge or discharge it to meet the demand in the daytime when loads are high. Operation of this system brings about the following effects:

1. Contribution to environmental preservation and resources conservation at power generation facilities;
2. Contribution to wider use of clean energy sources by combining it with power generators using natural energy sources;
3. The stationary energy storage equipment can also be used as an emergency power source.
4. Reduction of power rates by cutting contract demand.



(Bidirectional converter and system interconnection protective board)



(LL lead storage battery)

**Japan Recycling Light Technology & System**

**Fluorescent tube recycling business**

Japan Recycling Light Technology & System undertakes the recycling of fluorescent tubes and the production and sale of recycled fluorescent tubes.

- Establishment: May 2000
- Start of operation: October 2001



**Kyushu Environmental Management Corporation**

**Confidential document recycling business**

Kyushu Environmental Management Corporation is engaged in the recycling of confidential documents, the production and sale of recycled paper, and document storage.

- Establishment: May 2001
- Start of operation: November 2001



**Nishinippon Plant Engineering and Construction Co., Ltd.**

**Scrapping incineration plants in a safe and environmentally friendly way**

The provisions set forth by the Ministry of Health, Labor and Welfare require safe and appropriate environmental management in scrapping incineration plants that have gone through their service life. For more systematic, safer and highly efficient dismantling of such incineration plants, Nishinippon Plant Engineering and Construction Co., Ltd. offers comprehensive support from planning to back-up services to local areas.

**Concept**

- **Best Communication with communities**  
To support clients with alliances (business tie-ups) close to communities  
Transparent information disclosure to build trust
- **To be considerate of the surrounding environment and to secure safety**  
To provide highly advanced skills of execution management accumulated at thermal and nuclear power stations
- **To offer optimal technology reasonably**  
To propose recycling methods for the future global environment



(Dismantling works of the former Tobu Clean Center in Sasebo City)



## 6 Business Outline of the 41 Kyushu Electric Power Group Companies

	Company name	Main businesses	Contact number
	Nishinippon Plant Engineering and Construction Co., Ltd.	Construction, repair and operation of various power stations	81-92-533-0011
	Kyuden Sangyo Co., Inc.	Insurance, fuel receiving and management for power station, and operation of environmental preservation facilities	81-92-781-3061
	West Japan Engineering Consultants, Inc.	Comprehensive construction consultation	81-92-781-2831
	Kyushu Rinsan Co., Inc.	Landscaping, planting, forestry and marine product industry	81-92-562-3013
	Kyudenko Corporation	Design and construction of distribution lines, electricity, air conditioning pipes, information and telecommunications, and environmental facilities	81-92-523-6255
	Kyuken Co., Ltd.	Transmission line construction work	81-92-523-9123
	Nishigi Kogyo Co., Inc.	Construction and maintenance of facilities for civil engineering; and manufacturing and installation of steel structures such as sluice	81-92-711-8811
●	Nishikyushu Kyodo Kowan Co., Ltd.	Maintenance and management of port & harbor facilities for power generation	81-956-72-5353
●	Nishigi Engineering Co., Inc.	Examination and design of electric and mechanical facilities	81-92-713-8574
●	Nishigi Surveying and Design Company, Inc.	Examination and design of civil engineering and construction work	81-92-712-1441
	Kyuki Corporation	Manufacture and sale of watt-hour meters, current limiters and other supplementary services	81-92-551-1731
	Nishinippon Airlines Co., Ltd.	Transmission line patrol and material transport using helicopters	81-92-761-6257
	Kyushu Meter & Relay Engineering Corp.	Maintenance, adjustment and manufacturing of watt-hour meters	81-92-541-0465
	Koyo Denki Kogyo Co., Ltd.	Manufacture and sale of insulators, flashers, and streetlights for crime prevention	81-96-353-1268
	Kyuden Transport Co., Ltd.	Transport of general freight and specific passengers and collection and transport of industrial waste	81-92-761-2523
	KYUHEN Co., Inc.	Manufacture and sale of transformers, electric water heaters, etc.	81-940-42-1364
	Kyushu Koatsu Concrete Industries Co., Ltd.	Manufacturing and sale of concrete poles and piles	81-92-771-3631
	Seishin Corporation	Wholesale materials for electrical and construction work	81-92-711-8151
	Nishi Nihon Denki Tekkou Co., Ltd.	Design, manufacture and sale of transmission towers and steel structures	81-92-771-2761
	Tobata Co-operative Thermal Power Company, Inc.	Electricity wholesale and supply	81-93-871-6931
	Oita Co-operative Thermal Power Company, Inc.	Electricity wholesale and supply	81-97-558-4314
	Oita Liquefied Natural Gas Co., Inc.	Receipt, storage, gasification, delivery and sale of LNG	81-97-522-1900
	Nishinippon Environmental Energy Co., Inc.	District heating and cooling, energy solution, dispersed power source operation	81-92-526-0601
	Kitakyushu Liquefied Natural Gas Co., Inc.	Receipt, storage, gasification, delivery and sale of LNG	81-93-882-8900
●	Kyushu Cryogenics Co., Ltd.	Manufacture and sale of liquid oxygen and liquid nitrogen	81-93-871-6441
	Kyushu Telecommunication Network Co., Inc.	Telecommunications (private line, phone, broadband, etc.)	81-92-981-7293
	Nishimu Electrics Industries Co., Ltd	Design, creation of information, telecommunications and control systems	81-92-461-0246
	Kyushu Information Services Co., Inc.	Development, sale and operation of software, and information systems related to consultation and temporary personnel service	81-92-781-9671
●	Kyuden Infocom Company Inc.	IT-related consultation and data center	81-92-726-1626
●	Japan Recycling Light Technology & System	Recycling of fluorescent tubes	81-93-752-2386
●	Kyushu Environmental Management Corporation	Recycling of confidential documents	81-92-725-5208
●	Fukuoka Clean Energy Corporation	Municipal waste treatment and power generation	81-92-738-3051
	DENKI BLDG. CO., LTD.	Rental business for rooms, meeting places and parking lots	81-92-781-0681
	Shinrintoshi Co., Ltd.	Real estate (sale and purchase, rental and introduction)	81-92-761-4060
●	Kyuden Good Life Kumamoto Company, Inc.	Housing and nursing homes for the elderly for lifelong settlement	81-96-359-1893
●	Kyuden Business Front Inc.	Job placement service	81-92-711-2610
●	Kyushu I.S.O. Certification/registration Co., Ltd	Certification and registration of quality and environmental management	81-92-720-5131
●	Kyushu Housing Guarantee Corporation	Certification, assessment and guarantee on the building performance	81-92-771-7744
●	Kyuden Good Life Company, Inc.	Housing and nursing homes for the elderly for lifelong settlement	81-940-35-8045
	Kyushu Highlands Development Co., Ltd.	Management of hotels and golf courses	81-977-84-3151
●	Ito Golf Co., Ltd.	Construction and management of golf courses and other sports facilities	89-92-322-5031

※:Though the Kyushu Electric Power Group consists of 55 companies, the information listed above is for 41 companies that belong to the Group Environmental Management Subcommittee.  
 ※:Companies marked with ● are new(14)members of the subcommittee.





**Eboshi –peak, Mt. Aso**

Mt. Aso, situated in the near center of the Island of Kyushu, boasts a huge caldera that is unique in the world. Its outer rim bosoms Mt. Aso's five dominating peaks within. Eboshi – peak is one of them. The early summer scenery here with red of the rhododendron might well dye our heart as well. This breathtaking landscape of Kyushu imparts with us the throbs of the life and the round of seasons, the energy latent in the earth.



## Part 3

# References

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### **Review of the Environment Action Report by a Third-Party**

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Environment Action Report..... 77



# I Company Profile - as of March 31, 2003

The Kyushu region includes the southwestern most of Japan's four main islands, and more than 1,400 smaller islands in the Japanese archipelago. With an area of 4.2 million hectares, the region is home to about 13 million people. As the closest part of Japan to continental Asia, Kyushu has traditionally been the nation's portal for cultural and technological exchange. Today, Kyushu is developing into a new industrial and cultural center, and is a well-known supplier of electronic products, fine ceramics and automobiles to Asia and the rest of the world.

Kyushu Electric Power was formed on May 1, 1951, when the reorganization of Japan's power industry created nine new power companies throughout Japan engaged in power generation, transmission and distribution. Established during a period of rapid demand growth caused by the devastation after World War II and by the Korean War, Kyushu Electric Power worked hard to maintain a stable power balance amid stringent demand and supply conditions.

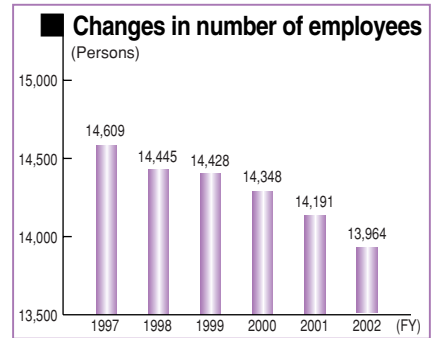
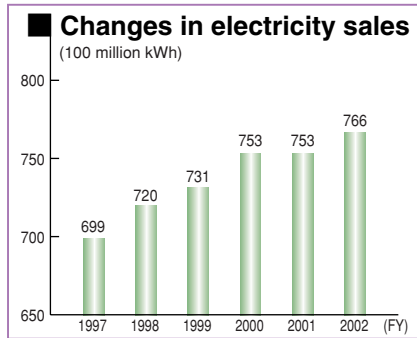
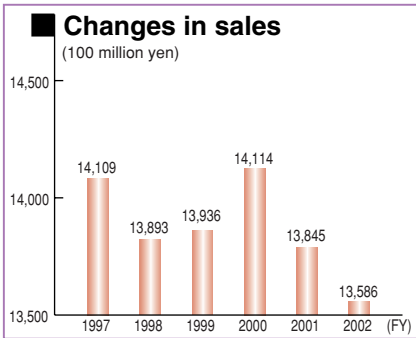
In the years that followed, high economic growth and lifestyle improvements caused demand to continue grow-

ing beyond all expectations. To ensure a stable power supply to users in the region, Kyushu Electric Power responded by developing a series of large-capacity hydroelectric power stations and advanced high-efficiency high-capacity thermal power stations. The oil shock of 1973 saw the company turning to the development of alternative energy sources to enable full-scale power diversification. Beginning in the mid-70s, we created a series of new facilities that let us add the optimum mix of energy sources to our mainstay, nuclear power. Unit 1 of our Genkai Nuclear Power Station began operation in 1975, and was followed by construction of Genkai Unit 2, Sendai Units 1 and 2, and Genkai Unit 3. Genkai Unit 4 began operation in 1997.

Reflecting the steady increase in Kyushu's demand for power since our inception, our sales volume has risen from 4.1 million MWh in 1951 to 766 million MWh in fiscal 2002. To support this growth in demand, we have established a supply network throughout Kyushu that has been key in ensuring efficient supplies of power to the region since our establishment.



- Date of establishment: May 1, 1951
- Service area: Fukuoka, Saga, Nagasaki, Oita, Kumamoto, Miyazaki and Kagoshima Prefectures
- Capital: 237.3 billion yen
- Head office: 1-82, Watanabe-dori 2-chome, Chuo-ku, Fukuoka

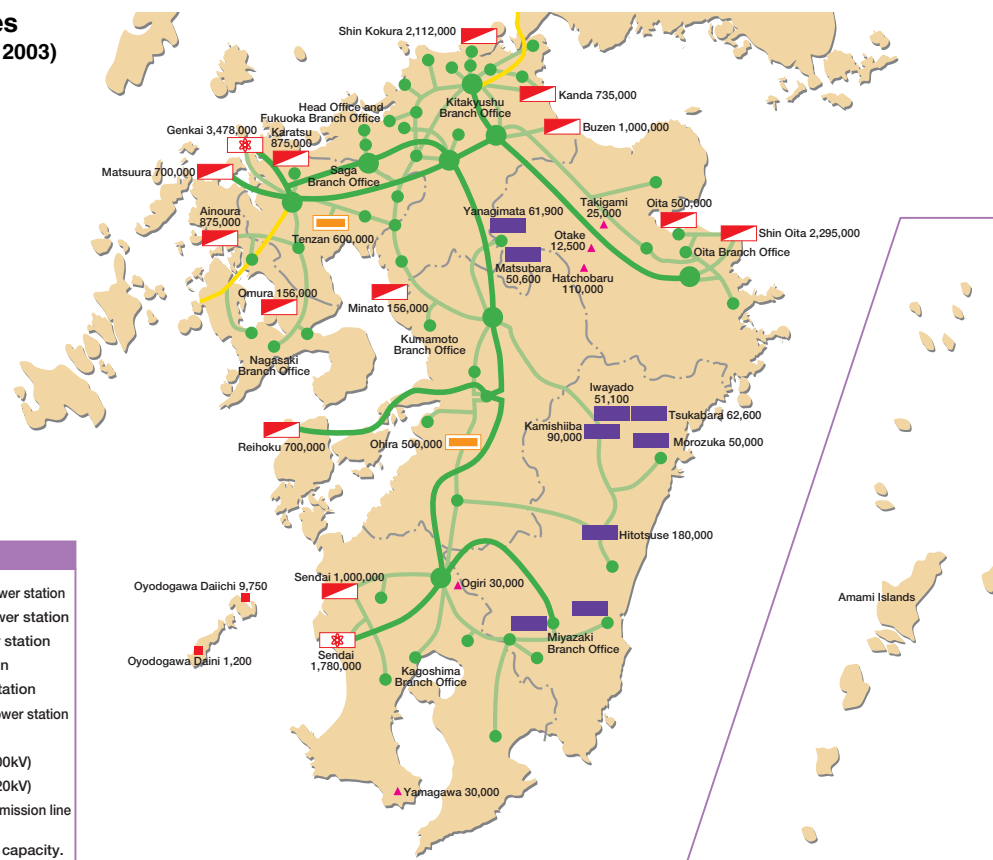


### Main offices

Kitakyushu Branch Office	3-1, Kome-machi 2-chome, Kokurakita-ku, Kitakyushu	+81-93-531-1180
Fukuoka Branch Office	1- 82, Watanabe-dori 2-chome, Chuo-ku, Fukuoka	+81-92-761-6381
Saga Branch Office	3-6, Kouno-higashi 2-chome, Saga	+81-952-33-1123
Nagasaki Branch Office	3-19, Shiroyama-cho, Nagasaki	+81-95-864-1810
Oita Branch Office	3-4, Kanaike-machi 2-chome, Oita	+81-97-536-4130
Kumamoto Branch Office	6-36, Kami-suizenji 1-chome, Kumamoto	+81-96-386-2200
Miyazaki Branch Office	2-23, Tachibana-dori Nishi 4-chome, Miyazaki	+81-985-24-2131
Kagoshima Branch Office	6-16, Yojiro 2-chome, Kagoshima	+81-99-253-1120
Tokyo Branch Office	7-1, Yurakucho 1-chome, Chiyoda-ku, Tokyo	+81-3-3281-4931

### Main Facilities

(as of March 31, 2003)



# Review of the Environment Action Report by a Third-Party

Since last fiscal year, Kyushu Electric Power's Environment Action Report has been subjected to a third-party review by Tohmat-su Environmental Research Institute Ltd. in order to improve the reliability of the contents of the report.



Checking the data in the report against the basic materials (Shin-Kokura Power Station)



The technical manager explains the power generation facilities (Shin-Kokura Power Station)

## 1. Report on the Review Results

### Report from the Review of 2003 Kyushu Electric Power Environment Action Report

Tohmat-su Environmental Research Institute Ltd. implemented a third-party review on the reliability of environmental activity records, environmental accounting and other related information described in the "2003 Kyushu Electric Power Environment Action Report" by Kyushu Electric Power Co., Inc. The items found during the review process are listed below, aside from those of the "Third-Party Opinions about the Environment Action Report".

#### 1 Merits

(1) Improvement made to the sustainability report

Since last fiscal year, measures in economic and social aspects have been included in the report, with a conscious effort to create substantive, sustainable reporting. Further improvements have been made in the social aspect this fiscal year.

(2) Improved process for providing information by group companies

Starting last fiscal year, the progress of environmental activities by group companies has been reported in the Related Information section, in addition to that of Kyushu Electric Power. This fiscal year, information on the environmental accounting for the group is disclosed.

#### 2 Items requiring further consideration

(1) Environmental accounting

Environmental costs are explained by comparing them to those from the last fiscal year. However, an explanation comparing the data from the last fiscal year is also desirable for activity benefits corresponding with such environmental costs.

(2) Data collection method

As for the process of collecting the actual records of environmental accounting and environmental load, each process and the internal information system is consolidated manually. To improve the accuracy of the data, this consolidation process must be systemized.

(3) Progress of group companies towards achievement of targets

Group companies set their voluntary targets for the fiscal year in relation to the environmental load information. It is preferable to include the explanation of their progress and achievements in the Environment Action Report.



## 2.Third-Party Opinions about the Environment Action Report

Deloitte  
Touche  
Tohmatsu

### Report by Tohmatsu Environmental Research Institute

Mr. Shingo Matsuo  
Representative Director & President  
Kyushu Electric Power Co., Inc.

#### Objective of our review

We have carried out a review of the 2003 Environment Action Report of Kyushu Electric Power Co., Inc., which is the sole responsibility of the Company's management. Our objective was to express an independent view on the information contained in the report.

#### Our review procedures

In accordance with your instructions, we performed the following review procedures, which were agreed upon with the Company's management. Since our review commenced in Fiscal 2001, it is to be noted that data and information before Fiscal 2000 are not included within the scope of our review.

- (1) A review was made of the reasonableness of the procedures for collecting and collating the information contained in the report.
- (2) Discussions were held with and inquiries made of the Company's management and staff who have responsibility for the preparation of the report. Minutes of the Company's relevant committees, site inquiries, and comparison of the information contained in the report with documents regarding ISO14001, other documents prepared internally, and available published information were also reviewed. Concerning the environmental data from Kyushu Electric Power Group companies, confirmation was made by the perusal and collation of records submitted, and inquiries to the Company's staff responsible for the preparation of the data.

#### Our conclusions

Based on these procedures, we conclude:

- (1) The data contained in the report was properly summarized from the data prepared by the Company in relation to their daily operations;
- (2) The information contained in the report is consistent with the supporting data obtained during our review.

*Tohmatsu Environmental Research Institute*

Tohmatsu Environmental Research Institute  
September 12, 2003



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