

# Environmental Management

We are pursuing Groupwide environmental management to contribute to the development of a sustainable society.

## Our Environmental Charter

In April 2008, we integrated the Kyushu Electric Power Environment Charter and the Kyushu Electric Power Group Environmental Philosophy and Policy to create the charter presented below.

**Kyushu Electric Power Group Environmental Charter**

**Pursuing environmentally friendly corporate activities**

The Kyushu Electric Power Group undertakes initiatives to preserve and harmonize with the global environment to contribute to the development of a sustainable society.

1. We strive to properly address environmental issues and use resources effectively while pursuing business activities that lead toward the future.
2. We work with society to engage in initiatives that enhance the environment.
3. We foster interest in conservation in keeping with our desire to earn customer trust for the Group.
4. We proactively disclose environmental information when communicating with society.

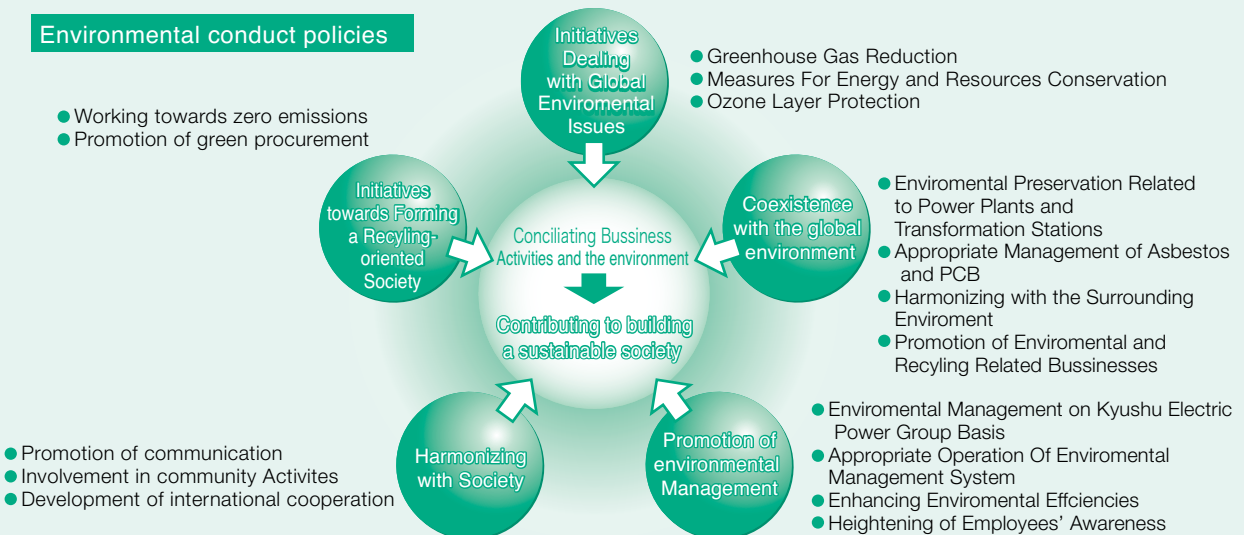
## Environment Action Plan

We draw on our environmental charter to update our Environment Action Plan annually, in light of the changing social climate, stakeholder needs, comprehensive internal, and external assessments of the previous year's activities. All employees participate in planning our environmental management activities.

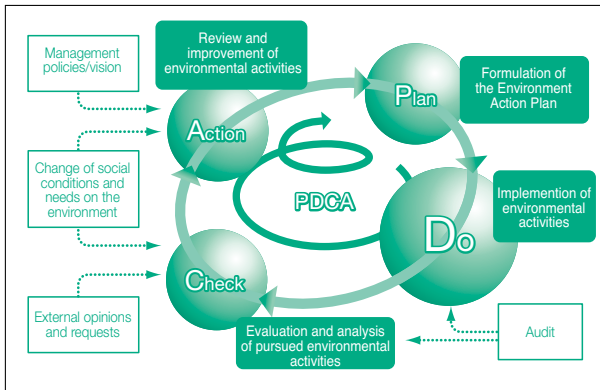
### ● FY 2008 Environment Action Plan

This initiative encompasses five environmental action policies, targets and plans for specific action. The five policies are taking initiatives dealing with global environmental issues, taking initiatives towards forming a recycling-oriented society, harmonizing with society, coexisting with the global environment, promoting of environmental management.

#### Environmental conduct policies



▼ Environmental PDCA chart



**Kyushu Electric Power Group Environmental Action Plan**

We formulated this plan in keeping with the Kyushu Electric Power Group Environmental Charter to drive our complete commitment environmental management.

**FY 2008 Kyushu Electric Power Group Environmental Action Plan**

- 1 Taking initiatives dealing with global environmental issues**
  1. Suppress greenhouse gas emissions
  2. Reduce regulated freon emissions
- 2 Taking initiatives towards forming a recycling-oriented society**
  1. Encourage recycling
  2. Engage in green purchasing
- 3 Harmonizing with society**
  1. Extensively disclose environmental information
- 4 Promoting environmental management**
  1. Establish and reinforce environmental management system
  2. Comply with laws and ordinances
  3. Assess environmental data and pursue targets
  4. Provide environmental education and share environmental information

**Promotional Scheme**

We have established a framework that ties directly to management and created an evaluation body of external experts.

**Environmental Committee**

This committee comprehensively deliberates on and determines Groupwide environmental action strategies.

Membership  
 Chairperson: Executive vice president  
 Members: Relevant directors and general managers

**Group Environmental Management Subcommittee**

The committee deliberates on and determines specific initiatives to foster Groupwide environmental management.

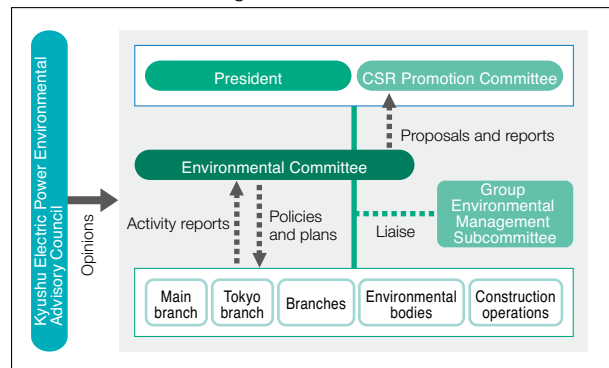
Membership  
 Chairperson: General manager of Environmental Affairs Department  
 Membership: 48 companies

**Kyushu Electric Power Environmental Advisory Council**

The council independently reviews Group environmental management efforts.

Membership  
 11 external industry experts

▼ Environmental management structure



Environmental Management

**Key opinions on activities and responses at the meeting of Kyushu Electric Power Environmental Advisory Council**

■ Date: Thursday, May 22, 2008

Opinions	Responses
<p><b>Recycling for the future</b></p> <p>○ We encourage the Group to pursue initiatives based on the Basic Plan for Establishing a Recycling-Based Society (resolved at a Cabinet meeting in March 2008)</p>	<p>○ Refer to the plan and consider for next FY year's action plan</p>
<p><b>International contributions</b></p> <p>○ We want the Group to continue contributing internationally in light of the issue of cross-border pollution in Asia</p>	<p>○ We will continue to contribute internationally through participation in Asia-Pacific Partnership on Clean Development and Climate and other initiatives</p>
<p><b>Environmental goals and heightening awareness</b></p> <p>○ It is crucial to improve awareness and implementation from the top down to achieve targets</p>	<p>○ We are striving to reach our goals based on the Environment Action Plan by properly deploying environmental management systems. We will establish more of these systems through ongoing support at business sites and through training to bolster environmental awareness</p>

## Tackling Global Environmental Issues

We aim to suppress our carbon dioxide emissions to target levels through supply-side initiatives, work with customers on reducing their power consumption and employ the Kyoto Mechanism so we can constrain greenhouse gas emissions into the future.

We are suppressing emissions of freon used in air-conditioners and other equipment to safeguard the ozone layer.

### Targeted Carbon Dioxide Emission Constraints

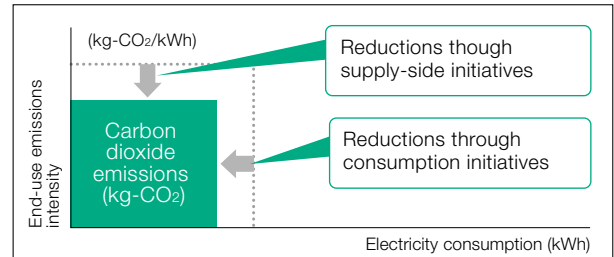
We are tackling global warming in line with the original commitment period of “2008 through 2012 for carbon dioxide emissions of the Kyoto Protocol to the United Nations Framework Convention on Climate Change.”

Cut average emissions intensity for 2008 through 2012 by around 20% from 1990 levels

### Working to Minimize Carbon Dioxide Emissions

We aim to cut carbon dioxide emissions per kilowatt-hour by pursuing supply-side efforts, while working with customers on initiatives to reduce power consumption without sacrificing convenience and lifestyles (see pages 8 through 16).

### ▼ Carbon dioxide emissions overview

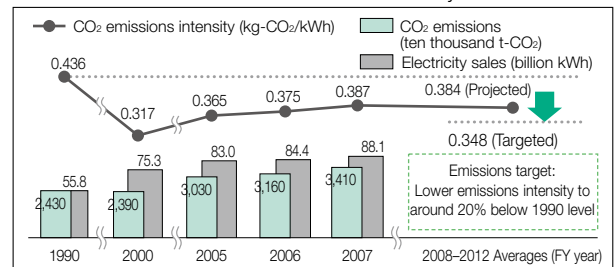


### Cutting Carbon Dioxide Emissions from Power Generation

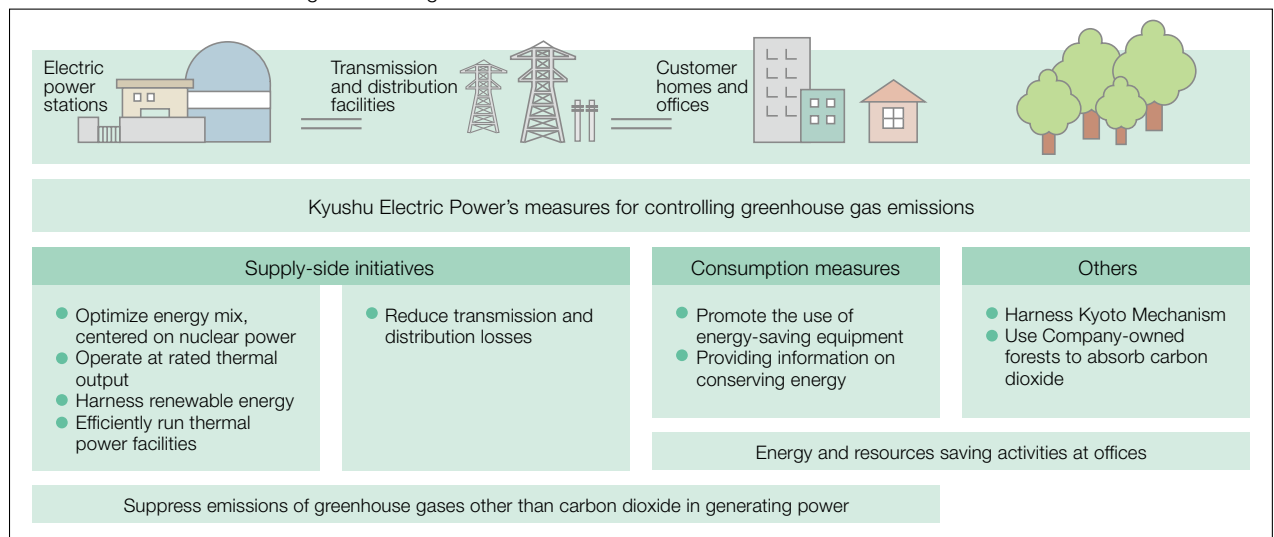
In FY 2007, our carbon dioxide emissions intensity was 0.387 kg per kilowatt-hour, down 11% from FY 1990.

In the 17 years since FY 1990, our carbon dioxide emissions have increased 40% against a roughly 60% rise in power sales. This is because we have suppressed emissions per unit of power by optimizing our energy mix. This centers on nuclear power and includes LNG in thermal generation and hydroelectric, geothermal, and other renewable energy sources. Nuclear power has represented a high proportion of our output, and we have deployed high-efficiency thermal power facilities, thereby maintaining and boosting our overall thermal efficiency.

### ▼ End-use carbon dioxide emissions intensity and emissions



### ▼ Overall measures to control greenhouse gas emissions

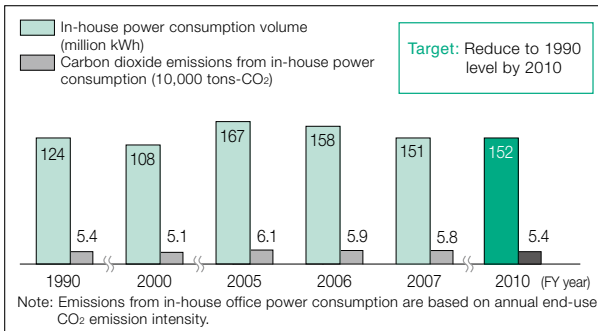


## Energy and Resource Conservation in Offices

### ● Suppressing in-house carbon dioxide emissions

By FY 2010, we aim to reduce carbon dioxide emissions from head office, branch offices, customer service offices and our power stations to around FY 1990 levels.

#### ▼ Carbon dioxide emissions from in-house power consumption and distribution



### ● Suppressing carbon dioxide emissions from our vehicle fleet

We are cutting such emissions by managing the fuel consumption of regular vehicles and deploying eco-driving initiatives. We are also using company cars that run on clean energy or which deliver low fuel consumption.

### Harnessing the Kyoto Mechanism to Control Greenhouse Gas Emissions

We help prevent global warming by harnessing the Kyoto Mechanism, investing in the World Bank's Prototype Carbon Fund and the Japan Greenhouse Gas Reduction Fund, and buying carbon dioxide emission credits from individual projects.

### Controlling Emissions of Greenhouse Gases other than Carbon Dioxide Emissions when Generating Power

More than 99% of our greenhouse gas emissions from generating power are from carbon dioxide. Still, we are assessing and trying to control emission volumes of other greenhouse gases, such as nitrous oxide and sulfur hexafluoride.

### Participating in Asia-Pacific Partnership on Clean Development and Climate

The Asia-Pacific Partnership, which comprises Australia, China, India, Japan, the Republic of Korea, the United States and Canada, is a framework for preventing global warming from major carbon dioxide producers China, India, and the United States. There is global interest in the potential achievements of that organization.

Part of the focus of this partnership is peer review initiatives among power industry participants to maintain and improve the thermal efficiencies of aging coal-fired thermal power stations.

We sent several employees to peer reviews in Japan, India, the United States and Australia between April 2007 and June 2008 to share our expertise in thermal power technologies.

We will continue to transfer, develop, and improve technologies to help combat global warming.



Peer review in the United States

### Protecting the Ozone Layer

We are controlling emissions of gases such as freon from air-conditioners and other equipment. Our efforts include inspecting equipment and the rigorous collection of regulated freon when removing equipment. As a result, except for minute natural leaks, we have maintained zero emissions of specified chlorofluorocarbons and carbon tetrachloride since FY 2000.

### Topic Receiving SHASE Ten Years Award

In recognition of efforts at our Oita branch building to improve energy savings and develop maintenance and management technologies over the past decade, the Society of Heating, Air-conditioning and Sanitary Engineers of Japan (SHASE) bestowed its eighth specialty award, the Ten Years Award. The prize reflected ongoing improvements in the facility's equipment, including air conditioning, ventilation, and lighting. Such initiatives reduced the facility's electricity consumption by around 13.5% and thereby cut carbon dioxide emissions.

We will harness what we learned from efforts at this building to meet new challenges in conserving energy.



Our Oita branch building

## Forming a Recycling-Oriented Society

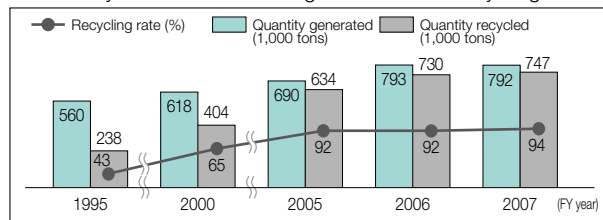
Kyushu Electric Power has set a target of zero emissions of final waste from its business activities, and is properly managing and treating its industrial and general waste. We are also practicing the 3Rs—Reduce, Reuse, and Recycle—to minimize waste.

### Properly Using Industrial Waste

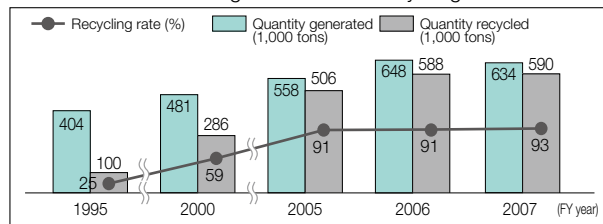
Our industrial waste includes coal ash and gypsum from thermal power operations and materials we remove from construction work.

We will continue to improve recycling rates Companywide, notably by employing a collaborative collection system that recycles specific types of industrial waste.

#### ▼ Quantity of industrial waste generation and recycling rates



#### ▼ Amount of coal ash generated and recycling rates



### Properly Using General Waste

We also practice the 3Rs for general waste, including the paper we use in our offices, kitchen waste from canteens, shellfish from power plants and driftwood from dams.

#### ▼ General waste produced

	Amount created (metric tons)	Amount recycled (metric tons)	Recycling rate (%)	Major uses of recycled materials
Paper	1,556	1,556	100	Recycled paper
Dam driftwood	7,076	6,517	92	Alternative litter
Shellfish	416	393	94	Fertilizer

### Recycling Dam Driftwood

We make woodchips out of driftwood and by pruning or removing trees around our power plant and reuse the materials as gardening fertilizer.



Dam driftwood



Garden fertilizer made of chips from driftwood

### Promoting Green Procurement

We launched our Green Procurement System in FY 2002 as part of initiatives to reduce the environmental impact of our operations, and thus carefully consider the need for products before buying them. We are working with vendors to purchase green products.

### Responding to Issue of Recycled Paper Failing to Contain Stated Percentages of Used Pulp

We have long prioritized purchasing products that match our environmental requirements, reflecting such buying in our green purchasing ratios. But in January 2008 we learned that recycled copier paper and other stock did not contain stated percentages of recycled pulp. Such paper thus failed to meet our green purchasing standards.

Realizing the broad impact that this issue could have, we decided to provisionally refrain from declaring recycled pulp percentages in our publications until the government finishes reviewing recycled paper definitions and standards.

We also decided against recalculating our green procurement ratios, including those for previous years—as so many of our printed materials use recycled paper—and we concluded that it would be too difficult to produce accurate figures.

We will push ahead with green purchasing after reassessing our benchmarks for buying products that incorporate recycled paper in light of a government review of its Law on Promoting Green Purchasing.

## Coexisting with the Global Environment

We fully manage the chemical substances we produce as part of our efforts to minimize the environmental impact of our facilities.

### Air Pollution Measures

We have taken several steps to reduce emissions of sulfur oxides and other pollutants from our thermal power stations.

Measures to reduce sulfur oxides	<ul style="list-style-type: none"> <li>○ Use heavy and crude oil with low sulfur content</li> <li>○ Use sulfur-free liquefied natural gas</li> <li>○ Install desulfurization facilities that remove sulfur oxides from emissions</li> <li>○ Adopt in-furnace desulfurization to remove sulfur oxides within boilers</li> </ul>
Measures to reduce nitrogen oxides	<ul style="list-style-type: none"> <li>○ Improve boiler combustion                             <ul style="list-style-type: none"> <li>— Use dual-stage combustion</li> <li>— Use exhaust gas recirculation combustion</li> <li>— Use low-nitrogen oxide burners and combustors</li> </ul> </li> <li>○ Install denitration facilities</li> </ul>
Measures to reduce soot and dust	<ul style="list-style-type: none"> <li>○ Use liquefied natural gas that does not generate soot and dust</li> <li>○ Install high-performance devices that remove soot and dust from exhaust gases</li> </ul>

FY 2007 emission factors (emissions per unit of thermal power in generating electricity) were 0.31g/kWh for sulfur oxides, up from 0.25g/kWh in FY 2006, and 0.23g/kWh for nitrogen oxides, up from 0.21g/kWh. The rises reflected additional power generation at older thermal plants to accommodate higher electricity demand.

### Managing Chemical Substances

We strictly comply with laws and ordinances in handling the chemical substances at our electric power plants and other business sites.

### ● Managing Polychlorinated Biphenyl and Asbestos

In FY 2006, the Kitakyushu polychlorinated biphenyl treatment plant of the government-owned Japan Environmental Safety Corporation began to neutralize equipment containing these substances from our sites in Fukuoka Prefecture. The facility had treated 435 sites.

We plan to complete treatment of all our polychlorinated biphenyls by 2016.

Some of our buildings and facilities incorporate asbestos, although there is no risk of dispersal in most cases. At the end of FY 2006, we had 16 structures and four transformer facilities from which such dispersal could occur. We had reduced the number of structures in question to four and had removed sprayed asbestos insulation from all transformer facilities by the close of FY 2007. We intend to replace remaining asbestos insulation from structures during FY 2008.

### Environmental Assessments

We aim to build new nuclear power facilities between 2015 and 2020 to ensure energy security and tackle environmental issues while satisfying small but steady increases in electricity demand.

We are conducting an environmental assessment at the Sendai Nuclear Power Station site and are undertaking geological and meteorological surveys outside the site.

### Developing High-Performance Lithium Ion Batteries

As part of efforts to innovate products that cut carbon dioxide emissions, we joined hands with Mitsubishi Heavy Industries, Ltd., in FY 2006 to develop high-performance lithium ion batteries for electric vehicles and hybrid cars that users can recharge from their homes.

We are looking into assessing the applicability of these technologies and a recharging infrastructure for commercial electric vehicles. In February 2008, 10 of our business sites began operating the iMIEV electric model that Mitsubishi Motors Corporation is developing. We are evaluating the suitability of this model as a commercial vehicle and are assessing the rapid recharging stands that we developed.



Electric vehicle at rapid recharging stand

## Harmonizing with Society

By educating children about the environment and energy and by running our Kyushu Homeland Forestation Program we hope to give back to society.

### Educating Children about the Environment

We have undertaken various activities to educate children about energy and the environment.

#### ● Eco Mothers Activities

We initiated Eco Mothers Activities in FY 2003 to help educate children about the environment and provide parents with information so they can enlighten their children at home.

Under this program, Eco Mothers visit kindergartens and other facilities around Kyushu to perform and show pictures that raise awareness of environmental issues and explain the need to protect the environment in ways that even the youngest can understand.

Eco Mothers are raising their own children and they are a link to our customers.

In FY 2007, 20,063 people participated in 311 Eco Mothers visits.



An Eco Mothers' gathering in Saga

### Community Activities

We engage in and support community environmental activities. We also help safeguard biodiversity.

#### ● Kyushu Homeland Forestation Program

We commemorated our 50th anniversary in FY 2001 by launching the Kyushu Homeland Forestation Program. We are working with residents throughout the region through this initiative to plant one million trees in 10 years.

In FY 2007, we planted 120,000 trees under the program in 45 locations. That raised the seven-year total to about 790,000 trees.



Volunteers planting trees in the Unzen Fugendake area near Shimabara, Nagasaki Prefecture

### Planting Local Tree Species

Our forestation program entails planting local tree species to conserve watersheds, absorb carbon dioxide, ensure biodiversity, prevent landslides, and provide recreational areas.

## Education In and Out of The Classroom

Voice



Kayoko Tsuruta,  
a staffer at the Genkai  
Energy Park

In September 2007, I became part of Kyushu Electric's in-house children's education program that comprised a six-month initiative to develop a visiting class curriculum.

As part of the program, representatives of the Company visit schools and other institutions to educate children about energy resources and the environment.

The Genkai Energy Park provides experiential classes to visiting primary school students. We ensure that they find the explanations easy to understand and the contents retain their interest.

I will keep working with other staff from the exhibition hall in the hope that we can increase even slightly children's awareness of energy and environmental issues.

● Environment Month Initiatives

Environment Month is a nationwide initiative that begins on June 1 and includes Environment Day, which is on June 5 as part of the Basic Environment Law.

We consider this period an opportunity to heighten awareness of the need to protect nature. During this time, we hold environmental and energy seminars for customers, conduct forestation and cleanup drives, and engage in other community-service activities.



Environment Month discussion

**Preserving Precious Flora and Fauna around the Omarugawa Pumped Storage Power Plant**

The area around this power plant abounds with natural life, including the precious mountain hawk eagle that is at the top of the food chain. In constructing the facility, we took steps to safeguard biodiversity and minimize the impact on the environment.

Measures to protect flora and fauna included soliciting guidance and advice from academics and conferring with relevant government institutions. We kept close tabs on the mountain hawk eagles near the lower dam during construction and limited project work during the breeding season.

Near the upper regulating reservoir, we restored the ground surface and built water channels to restore the Japanese umbrella pine and other growth.

In May 2007, we held a forestation drive in which numerous residents near the Omarugawa River participated. Together, we planted 5,000 native trees, including Japanese umbrella pines, firs, and hollyleaf cherry trees.



Vegetation near upper regulating reservoir

Environmental Management

**Promoting Environmental Management**

**Environmental Management Systems**

All our business sites have created and deployed environmental management systems based on the ISO 14001 standard as part of ongoing efforts to reduce our environmental footprint.

In keeping with our Companywide Environmental Action Plan, our business sites establish and pursue energy and resource conservation goals. They also assess environmental compliance and conduct emergency drills to manage environmental risks.

▼ Results of FY 2007 Initiatives

Initiatives	Results
Environmental Affairs Department support for business sites	107 sites assisted
Specialized environmental management systems training	112 participants
Training for internal environmental auditors	138 participants

**Compliance with Laws and Ordinances**

We have never received improvement warnings, summary orders, or penalties under key environmental laws and ordinances, and are not subject to any environmental litigation.

There has been an accidental leak of lubricant off the coast. We have disclosed information about that incident and undertook a cleanup.

**Lubricant Leak at Tanegashimadaichi Inner Thermal Power Station**

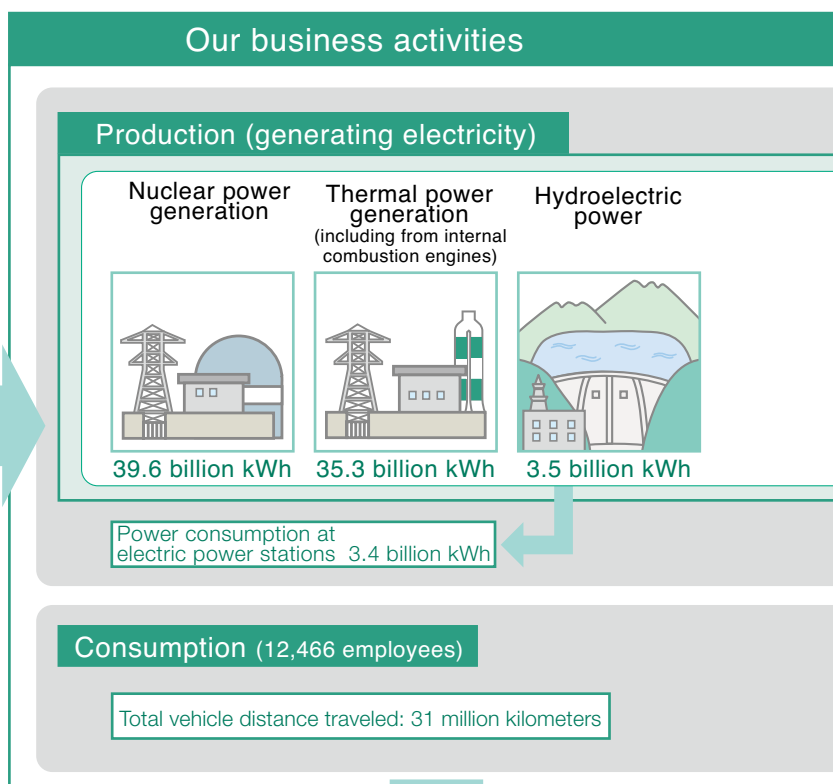
Around 600 liters of lubricant from a punctured cooling pipe supplying the no. 10 generator at the plant leaked, with some of the lubricant reaching coastal waters.

We deployed an oil fence to prevent the leak from spreading, used oil absorbant to collect around 380 liters of lubricant, and cleaned up the area. We identified the cause of the incident and have since formulated and implemented steps to prevent a recurrence.



## Business and Environmental Activity Achievements and Environmental Impact in FY 2007

Resource Inputs	
<b>Generating facilities</b>	
Thermal power fuels	
Coal	5.33 million metric tons
Heavy oil	730,000 kiloliters
Crude oil	430,000 kiloliters
LNG	2.38 million metric tons
Light oil	24,000 kiloliters
Nuclear fuels	
Nuclear fuel	111 metric tons (uranium)
Water for generating power	
	6.36 million metric tons
(Water used to generate electricity at thermal and nuclear power stations; does not include seawater used as coolant)	
Materials	
Ammonia	8,000 metric tons
Limestone	90,000 metric tons
<b>Offices</b>	
Fuel for vehicles	
Gasoline and light oil	25,000 kiloliters
Consumables	
Photocopy paper purchases	568 metric tons
Water consumption	438,000 metric tons

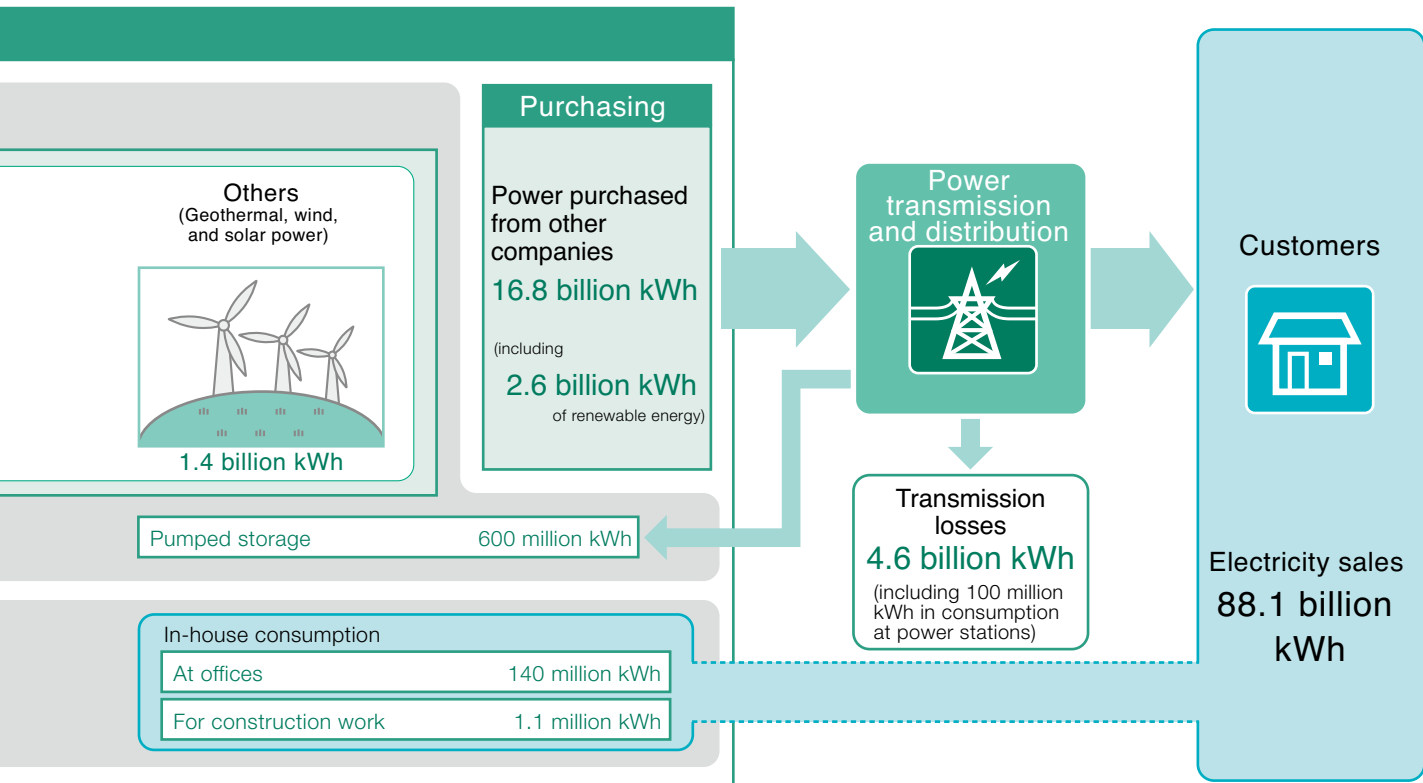


Results of Environmental Activities	
Global conservation	CO <sub>2</sub> reductions <sup>1</sup> 46.8 million metric tons CO <sub>2</sub>
	SF <sub>6</sub> collections <sup>2</sup> 570,000 million metric tons CO <sub>2</sub>
	99% recovery rate
	Regulated Freon collections 100% collection during inspections
	Forest absorption of CO <sub>2</sub> 80,000 metric tons CO <sub>2</sub>
Local conservation	SO <sub>x</sub> reductions <sup>3</sup> 63,000 metric tons
	NO <sub>x</sub> reductions <sup>4</sup> 16,000 metric tons
Resource recycling	Industrial waste recycled 750,000 million metric tons
	95% recycling rate
	Reduction in low-level radioactive waste 1,051 containers
	CO <sub>2</sub> reductions through office energy conservation <sup>5</sup> 174 metric tons CO <sub>2</sub>
	CO <sub>2</sub> reductions through use of low-emission and fuel-efficient company vehicles <sup>6</sup> 106 metric tons CO <sub>2</sub>
	Representing 53% of Vehicle feet
	Volume of paper recycled 1,556 metric tons
	(including copy paper, newspapers, magazines, cardboard containers, and confidential documents)
	100% recycling rate
	Ground and rain water consumption 26,000 metric tons

Environmental Loads	
<b>Generating facilities</b>	
Greenhouse gas emissions CO <sub>2</sub>	CO <sub>2</sub> 34.1 million metric tons CO <sub>2</sub> (in-house power consumption was 58,000 metric tons of CO <sub>2</sub> ; including power purchased from other companies)
	N <sub>2</sub> O 42,000 metric tons CO <sub>2</sub>
	SF <sub>6</sub> 42,000 metric tons CO <sub>2</sub>
	HFC 1,200 metric tons CO <sub>2</sub>
Ozone-depleting emissions	0.1 chemical oxygen demand metric ton
Air pollutant emissions	SO <sub>x</sub> 19,000 metric tons
	NO <sub>x</sub> 27,000 metric tons
Waste water	82 metric tons
Chemical oxide demand emissions	8 metric tons
Industrial waste disposed	46,000 metric tons
Increase in low-level radioactive waste	3,771 containers (each equivalent to one 200-liter oil drum)
<b>Offices</b>	
CO <sub>2</sub> emissions from vehicles	6,000 metric tons CO <sub>2</sub>
Waste paper	None
Clean water consumed	398,000 metric tons

\*1: Calculations based on thermal power (except for LNG) generated replacing power generated from nuclear power, hydroelectric power, new energy sources, and LNG.  
 \*2: Where not recovered in equipment checkups or removals.  
 \*3: Where there was no desulfurization or no use of low-sulfur fuels at power stations.

\*4: Where there was no denitration at power stations.  
 \*5: Where there were no facility energy conservation measures at business sites.  
 \*6: Where no low-pollutant vehicles were used.



Environmental Management

### Environmental Targets and Loads

		Results		Targets		
		FY 2007	FY 2007	FY 2007	FY 2009	
Environmental initiatives	Supply	CO <sub>2</sub> emissions intensity (end use electricity)	0.387	~1	—	
		Nuclear power operating factor (%)	85.8	85.5	83.0	
		Thermal efficiency of thermal power stations (on a higher heating value basis) (%)	39.1	39.4	39.1	
		Power from new energy sources (billions of kWh)	More than 0.63	More than 0.63	More than 0.57	
		Transmission losses (%)	4.9	5.4	5.3	
	Consumption	In-house power consumption	CO <sub>2</sub> emissions (thousands of metric tons)	5.8	Around 5.7	Around 5.3
			In-house power consumption (millions of kWh)	151	Less than 159	Less than 153
		In-house logistics	CO <sub>2</sub> emissions (thousands of metric tons)	0.6	Around 0.6	Around 0.6
			Fuel consumed for regular vehicles (km/l)	13.0	More than 12.1	More than 12.2
		Office energy conservation and recycling initiatives	Percentage of low-pollution vehicles in fleet	53	More than 50	More than 60
Office energy conservation and recycling initiatives	Paper purchased (metric tons)	568	Less than 600	Less than 600		
	Clean water used (m <sup>3</sup> /person)	34	Less than 36	Less than 36		
	Percentage of SF <sub>6</sub> recovered during equipment checks	99	Less than 98	Less than 98		
	Percentage of regulated freon recovered during equipment checks	100	100	100		

		Results		Targets	
		FY 2007	FY 2007	FY 2007	FY 2009
Recycling initiatives	Percentage of industrial waste recycled	94	More than 90	More than 99	
	Percentage of coal ash recycled	93	More than 90	More than 90	
	Percentage of other waste recycled	99	More than 98	More than 98	
	Percentage of industrial waste put in landfill outside company premises	220	Less than 1,000	Less than 500	
	Percentage of used paper recycled	100	100	100	
	Green procurement (%)	~2	—	100	
Harmonizing with environment	NO <sub>x</sub> emissions intensity (g) per kWh	0.31	Around 0.2	Around 0.2	
	SO <sub>x</sub> emissions intensity (g) per kWh	0.23	Around 0.2	Around 0.2	
	Per capita sieverts of radiation exposure for people living near nuclear power stations	Less than 0.001	Less than 0.001	Less than 0.001	

Notes: 1. See page 33  
2. See page 35