

3 Maintaining Harmony with the Local Environment

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

1 Environmental Impact Assessment

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

Status of environmental surveys

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

Specifications for the surveys

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

*1 Geological survey



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

*2 Meteorological survey



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

Status of Environmental Impact Assessment

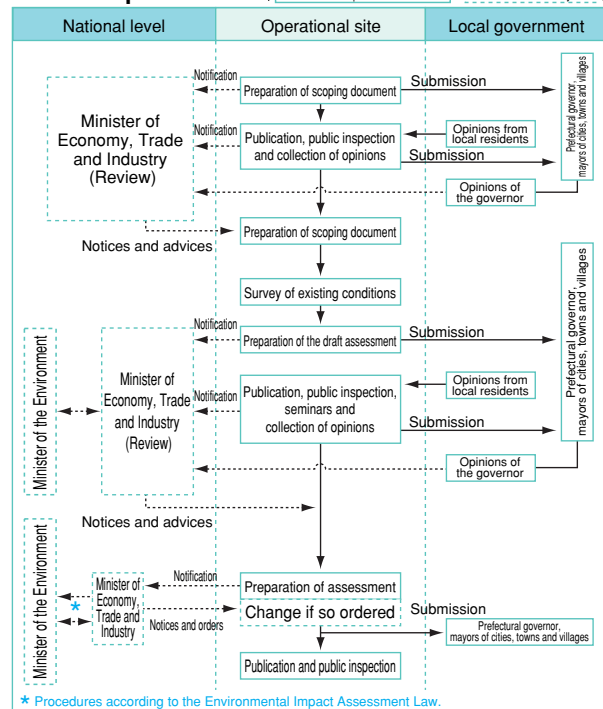
In February 2005, we started examining assessment items, and methods of implementation, forecast and survey for the environmental impact assessment (EIA) based on the outline of the power station construction plan and conditions around the planned site required for EIA implementation. These contents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

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

Main items in the scoping document

Purpose and content of the targeted project
Environment in and around the area of the targeted project 1. Natural environment 2. Social environment
Items of the environmental impact assessment
Methods of survey, forecast and assessment

Flow of procedures (Environmental Impact Assessment Law, Electric Utilities Industry Law)



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

Main items of the survey for the current situation

Items	Content
Atmospheric environment	Nitrogen oxides ①, noise, vibration, etc.
Water environment	Water temperature and quality, etc.
Marine organisms	Marine algae and seaweed, fish, plankton, etc
Terrestrial organisms	Plants, animals and ecosystem
Social environment (literature study)	Status of population, industry and land use



Survey on water environment (quality)



Survey on terrestrial organisms (animals)

- The results of the existing conditions survey are compiled as a draft assessment, and submitted for review to the national government after soliciting opinions from local residents through inspection and explanatory meetings.
- The assessment document is prepared by revising the draft assessment based on various opinions and review results from the national government. This is then submitted to the national government for review followed by an inspection by the local communities. This assessment document shall be treated as one of the approval requirements for an application for a power station construction plan, accepted based on the results of the environmental impact assessment.



2 Prevention of Air, Water and Noise Pollution

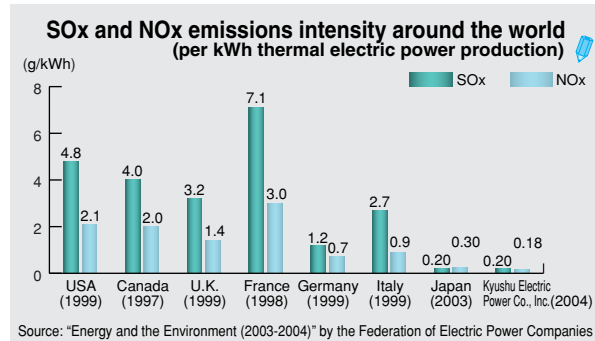
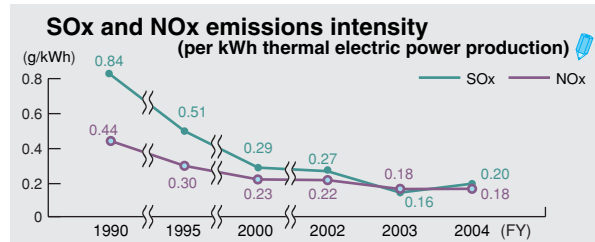
In operating our power stations and other facilities, we conform not only to laws and regulations, but also to environmental conservation agreements ① concluded with related local governments with regard to air pollution ① and water pollution ① as well as noise and vibration.

Air Pollution Measures

We adopt the world highest-level measures to address smoke ① emissions from our thermal power stations.

Measures for reducing sulfur oxide (SOx) ①	<ul style="list-style-type: none"> • Use of heavy and crude oil with a low sulfur content • Promotion of the use of sulfur-free liquefied natural gas (LNG) ① • Installation of desulfurization facilities ① that remove SOx from exhaust gas • Adoption of the in-furnace desulfurization ① method, which removes SOx within the boiler.
Measures for reducing nitrogen oxide (NOx) ①	<ul style="list-style-type: none"> • Combustion method improvement for boilers, etc. • Adoption of the two-stage combustion method ① • Adoption of the exhaust gas recirculation combustion method ① • Adoption of low NOx burner ① and combustors • Installation of denitration facilities ① that remove NOx from exhaust gas
Measure for reducing particulates ①	<ul style="list-style-type: none"> • Promotion of LNG use that does not generate particulates • Installation of high-efficiency precipitators ① that remove particulates from exhaust gas

- Emissions intensity ① -- emissions per kWh thermal electric power produced -- for fiscal 2004 was 0.20g/kWh for SOx and 0.18g/kWh for NOx. The reason for the SOx emissions intensity increase from fiscal 2003 is the increase in electricity production at power stations with high emissions intensity due to higher demand.



Water Quality Control

- Wastewater from equipment and facilities is processed using wastewater treatment systems at all of the company's thermal and nuclear power stations, and is discharged after quality confirmation.
- Quality analysis is conducted regularly for reservoir water at hydroelectric power stations. The water quality is maintained by implementing measures against eutrophication ①, the treatment of freshwater red tide ① with ultraviolet rays, and selective water intake ① when water gets turbid, as well as supporting projects for improving devastated neighboring forests.

Measures against Noise and Vibration

- We address noise and vibration problems by adopting low-noise, low-vibration equipment, employing mufflers

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

Measures against Land Pollution

- We strictly comply with laws and regulations related to land pollution ① to prevent discharge and leakage of toxic substances into the ground. We conduct voluntary surveys on soil contamination for sites sold or purchased, to avoid the risks from land pollution.
- In fiscal 2004, as a preventative measure following fiscal 2003 practice, a groundwater contamination survey was conducted based on government survey results in possibly contaminated areas in the vicinity of company-owned land. The findings revealed there was no groundwater contamination attributable to Kyushu Electric Power Co., Inc.



Implementation of a water-bloom measure in Yamashitaike Dam

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

Yamashitaike Dam is a man-made lake constructed in 1918 in the Aso-Kuju National Park. The area around the dam is developed to cater to tourism, including fish farms, hotel and golf course facilities. The dam serves as a supplemental water source for irrigation and tourism resource incidental to the hotels. The problem of water-bloom during summer has started since around 1975 due to eutrophication.

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



Yamashitaike Dam

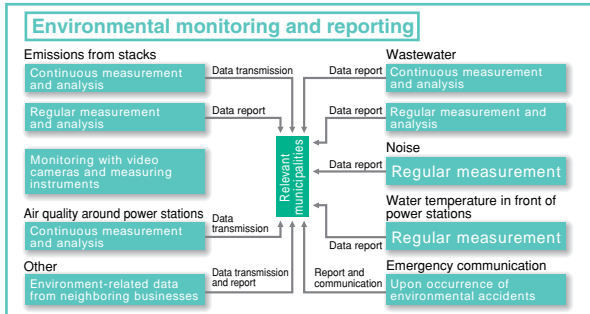


3 Environmental Protection Management

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

Environmental Monitoring ①

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



Chemical Substance Control

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

Σ Pollution Release and Transfer Register (PRTR) system ①

- We take the initiative in investigating, collecting and voluntarily disclosing data on the amounts of designated chemical substances ① emissions and transfers.

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

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

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

Σ Dioxins

- We have been reducing the use of waste incinerators which are considered contributing to dioxin emissions. We possess three incinerators as of the end of fiscal 2004.
- Of these three incinerators, two units are not in use and remaining one unit is operating with emissions level below the emission regulation index set forth in the Law Concerning Special Measures against Dioxins ①.
- As for the boilers installed at thermal power stations, dioxins are almost never emitted since the boilers operate at high combustion temperature under an appropriate management system with fuel containing little chlorine.

Σ Polychlorinated biphenyl (PCBs) ① ②

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

4 Harmony with the Surrounding Environment

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

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

Underground distribution system installation status ① ②

	Underground Distribution System Installation Plan			New Underground Distribution System Installation Plan	Pole-free Power Distribution Promotion Plan	Cumulative total
	1st phase (1986-1990)	2nd phase (1991-1994)	3rd phase (1995-1998)	4th phase (1999-2003)	5th phase* (2004)	
Underground distribution line installed (km)	97	73	117	210	33	530

* The planned value for FY2004 through 2008 is 257km.

Landscape before/after system installation (Fukuoka Prefecture)



Before

After

TOPIC
No. 7

Kamishiiba Dam designated as TOP 100 Dam Reservoirs

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

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



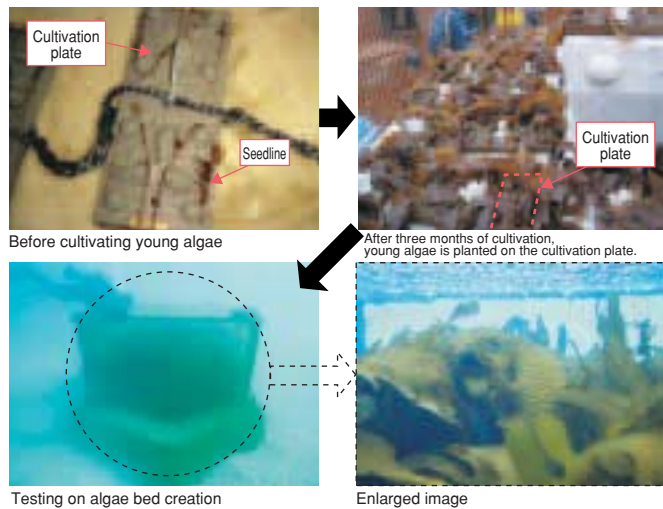
Kamishiiba Dam

5 Environment-related Research and Development

Research on Environmental Restoration of Seas

It is generally known that algae forms a community and functions to purify water, sequester CO₂ and foster the growth of marine animals. However, due to various reasons including global warming, a decrease of algae communities known as rocky-shore denudation has become a grave issue. Kyushu is one of the areas where severe damage from this problem has been observed.

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



Research on CO₂ Sequestration by Trees

The CO₂ absorption and sequestration method using the photosynthesis of plants (trees) is a preventative measure against global warming. Research to date on chinaberry -- a tree species with excellent CO₂ absorption ability found in temperate environments -- includes the selection of superior family lines, the development of technology for mass propagation by a tissue culture method and trial planting on the company premises using tissue culture seedling. Based on their growth, their high CO₂ absorption ability was confirmed (average growth in height in five years was approximately 1.5m/year/tree).

In fiscal 2003, we started to build on these research results to establish technology for environmental forestation at home and abroad that would bring about CO₂ sequestration contributing to the implementation of the Kyoto Mechanisms.

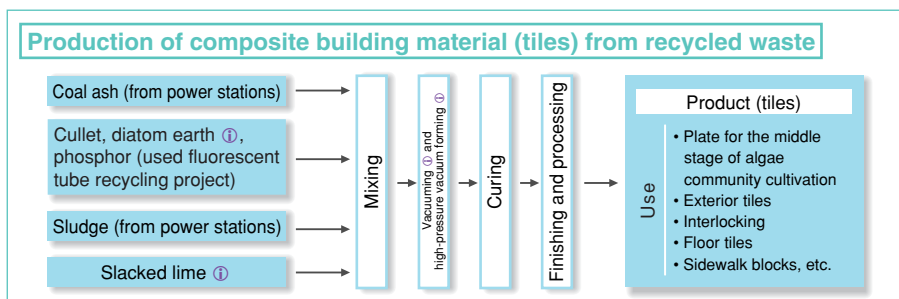
As part of such endeavors, we work on the development of technology and know-how for forestation projects abroad, particularly forestation in Loess Plateau in Shanxi Province, China, located in a range of latitude similar to Japan.



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

Research on Eco-materials

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



Recycled composite building material (tiles)

VOICE No. 6 Protecting the beautiful sea of Kyushu

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



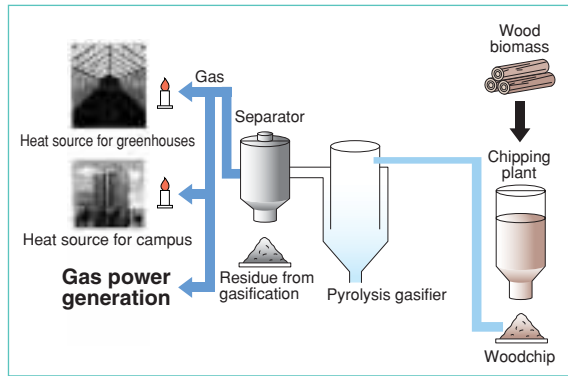
Environment & Chemistry Engineering Group, Research Laboratory
Terunobu Tsubota

Research on the Gasification of Wood Biomass

Biomass ① refers to renewable energy ① that is originated from organic substances of plant or animal other than fossil fuels that may be utilized as energy resources, and is carbon-neutral ①.

Biomass energy utilization can help reduce CO₂ ①, contributing to the prevention of global warming ① and the effective use of waste.

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



Flow of wood biomass gasification



Test equipment for wood biomass gasification

Research on Water Purification with Magnetic Separation Technology

When phytoplankton becomes overgrown in highly eutrophied ① lakes, dams and reservoirs, the water environment may be adversely affected. To address such circumstances, water purification technologies are needed to quickly and effectively remove causative agents from the eutrophied water.

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

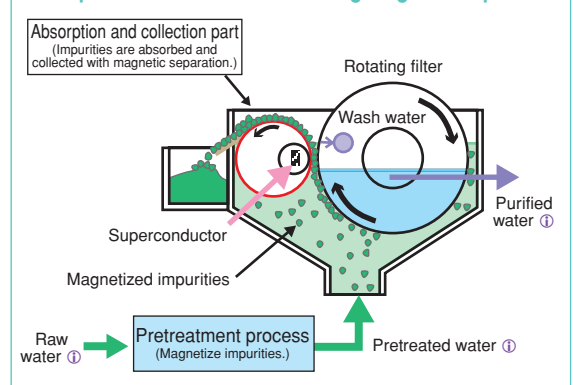
Currently, the performance evaluations of such equipment have been conducted using water purification tests held at lakes, marshes and regulating reservoirs in industrial parks.



Water purification equipment

Water before and after purification using model equipment

Water purification mechanism using magnetic separation



Research on Rare Plant ① and Native Plant ① Cultivation

There are 1.4 million species of known living organisms on this earth. When those species unknown to us are included, the estimated total extends to 3 million to 30 million species. Among them, approximately 40,000 species are said to become extinct every year, which makes the preservation of threatened wild species an urgent issue requiring worldwide attention.

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

preservation.

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



Orchis graminifolia blooming in forests



Calanthe discolor seen in forests