Efforts Relating to the Local Environment

Through our power-generation activities in various locales, the J-POWER Group understands that the basis for harmony with local communities is to ensure the safety and preserve the living environment of the residents by taking measures to minimize the environmental impact of our operations.

Reducing the Environmental Load

To minimize the impact of our activities on air and water quality and other aspects of the local environment, we use the latest technology and know-how at our coal-fired thermal power stations and other facilities to prevent air and water pollution, noise and vibration, and other environmental problems.

Reducing Emissions from Thermal Power Stations

◆ Air Pollution Control

Sulfur oxides (SOx), nitrogen oxides (NOx), and soot and dust are generated as a result of coal combustion at J-POWER's coal-fired thermal power stations. To reduce these emissions we have improved combustion methods and installed flue-gas treatment equipment, including desulfurization and denitrification systems and electrostatic precipitators. Although the performance of equipment varies with its date of installation, at each facility we have used the newest technology available at the time to remove pollutants with maximum efficiency.

This equipment operates automatically with the aid of monitoring devices that continuously measure the content of flue gas. In addition, human operators monitor the equipment 24 hours a day to ensure a swift response in the event of any malfunction.

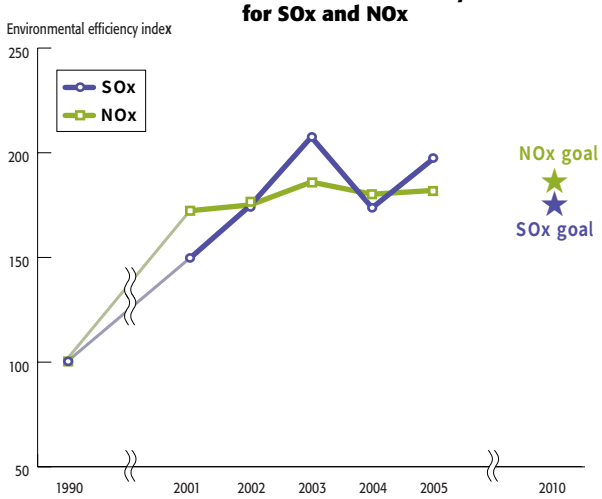
In fiscal 2005, the emissions intensity of NOx and soot and dust remained more or less constant compared with fiscal 2004. However, because the sulfur content of the coal was lower than in the previous year, SOx intensity decreased slightly in fiscal 2005, resulting in an improvement in environmental efficiency.

FY 2005 Performance (J-POWER)

Substance	Equipment efficiency (removal efficiency)	Emissions (tons)	Emissions intensity (g/kWh)
SOx	71%–99%	10,000	0.17 g/kWh
NOx	69%–91%	28,800	0.50 g/kWh
Soot and dust	99% (design value)	1,000	0.02 g/kWh

Notes:1. Emissions intensity in the text of this report and accompanying charts has been calculated using the electricity output of coal-fired thermal power stations as the denominator.
2.Emissions of dust are calculated on the basis of measurements taken monthly.

J-POWER Environmental Efficiency Index for SOx and NOx



Note: For the environmental efficiency index, 100 = FY 1990 environmental efficiency (electric power sales volume ÷ SOx, NOx emissions).

J-POWER EnTech—the J-POWER Group's Dry-type Desulfurization and Denitrification Business

Our dry-type desulfurization and denitrification system uses regenerative activated coke technology (ReACT) to remove SOx, NOx, dust, and other pollutants from flue gas. What distinguishes this process from conventional systems is that it uses almost no water.

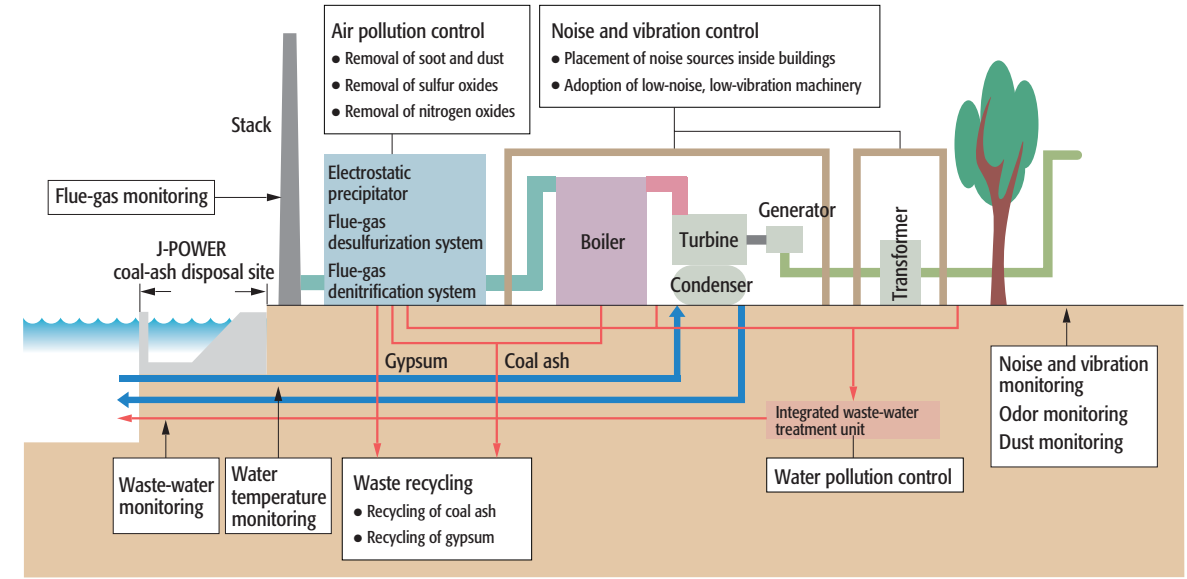
J-POWER has been using this system at two of its large-scale commercial plants, the Isogo Thermal Power Station new No. 1 unit and Takehara Thermal Power Station No. 2 unit.

In addition, J-POWER recently acquired the dry-type desulfurization and denitrification engineering division of Mitsui Mining and established the subsidiary J-POWER EnTech, which installs dry scrubbing equipment for domestic and overseas power plants—including J-POWER's Isogo Thermal Power Station new No. 2 unit—as well as steel mills and other industrial facilities.

The J-POWER Group is helping to reduce environmental impact in a wide range of fields with the ReACT dry scrubbing technology, both by using it in its own power stations and by making it available to other companies and industries.

Dry-type flue-gas desulfurization system at Isogo Thermal Power Station's new No. 1 unit.

Examples of Environmental Conservation Measures at Coal-Fired Power Stations



◆ Water Pollution Control

We install waste-water treatment systems in all our coal-fired power stations and make sure that water discharged from desulfurization units, waste water from offices, and other effluents are appropriately treated.

Metals and organic substances contained in waste water are removed through coagulation, precipitation, filtration, and other methods in each facility's on-site integrated waste-water treatment unit.

Treated water is routinely monitored by automatic measuring equipment and analyzed periodically to verify that all substances are well within the regulatory limits established under the Water Pollution Control Law and environmental conservation agreements.

(For information on incidents involving waste water, see p. 53.)

◆ Noise and Vibration Control

We work hard to prevent undue noise and vibration from boilers, turbines, exhaust fans, and other equipment by installing low-noise, low-vibration machinery in our coal-fired power plants and by keeping such equipment inside plant buildings. With regard to outdoor equipment at our coal-fired and hydropower plants, in addition to using low-noise low-vibration equipment, we also install soundproof covers and barriers as needed.

Noise and vibration levels are periodically measured at the boundaries of power station sites to ensure that they meet regulatory standards.

◆ Greening Measures

At our coal-fired power stations, we plant trees (primarily evergreen), grass, and seasonal flowers to cover at least 20% of the site with greenery. These green areas provide habitat for birds, insects, and other small animals.

◆ Odor Control

Because ammonia is used in such equipment as the denitrification systems of coal-fired thermal power stations, we have put in place rigorous safeguards to ensure that it has no impact on the surrounding area. These include periodic inspection, performance testing, and routine checking of equipment that makes use of ammonia. In addition, care is taken to avoid leakage of ammonia from receiving or storage facilities. Odor levels are periodically measured at the boundaries of power station sites to confirm that they meet regulatory standards.

◆ Measures against Thermal Water Discharge

Coal-fired power stations intake seawater to cool steam used for power generation and release it as thermal water discharge. To prevent any negative impact on marine life in the vicinity, we control thermal water discharge with intake-discharge processes adapted to the conditions of the plant site. The temperature of thermal water discharge is monitored around the clock to ensure that it remains within the limits established by environmental agreements.

◆ Measures against Coal Dust

At our coal-fired power stations we implement various measures to prevent the dispersion of dust when coal is handled, including the use of closed conveyor belts and indoor coal storage, as well as windshielding and spraying as dictated by topographical and weather conditions.

◆ Measures at Coal-Ash Disposal Sites

At coal-fired power stations that are equipped with sites for landfill disposal of coal ash, soil is spread over the surface to prevent dispersion of the coal ash. Leachate treatment equipment is used to treat leachate as needed.

Recycling and Reuse of Resources

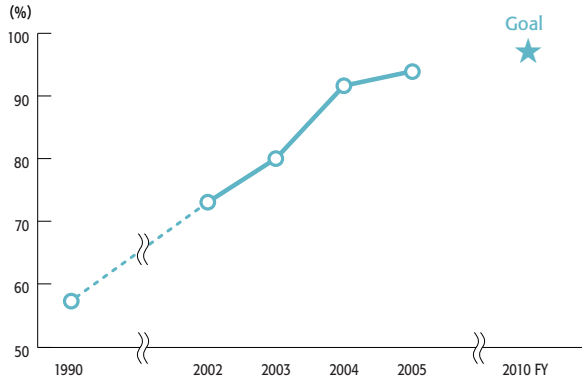
To help build a recycling-based society, the J-POWER Group is working hard to reduce the amount of waste we generate and to properly treat and recycle the waste we do produce. We are also involved in a number of environmental recycling programs to promote conservation measures, the use of untapped energy sources, and so forth.

Effective Use and Reduction of Waste

In fiscal 2005, the J-POWER Group generated 2.23 million tons of industrial waste, of which recycled or reused resources totaled 2.09 tons, or 94%.

Henceforth we intend to promote more extensive recycling of coal ash and reduction of industrial waste generated from maintenance and operation of power stations to "achieve a recycling rate of 97% within the J-POWER Group as a whole by the end of fiscal 2010, with the goal of zero emissions of industrial waste."

Industrial Waste Recycling Rate



Note: The figure for FY 1990 represents J-POWER's recycling rate for coal ash only; figures for FY 2002–FY 2003 are the rate for all industrial waste produced by J-POWER; and the FY 2004, FY 2005, and goal figures represent the recycling rate for all industrial waste generated by all companies of the J-POWER Group.

◆ Effective Use of Coal Ash

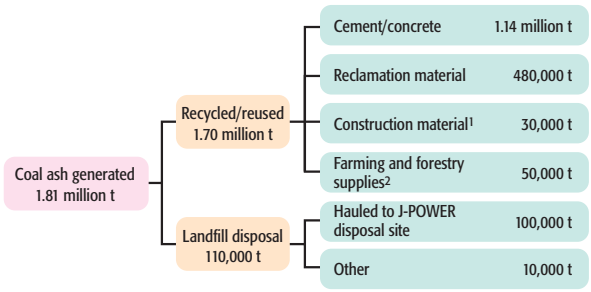
Coal ash, the residue from the combustion of coal at coal-fired power stations, accounts for the largest volume of waste we produce.

In fiscal 2005, we generated 1.81 million tons of coal ash, of which we recycled or reused 1.70 million tons, or 94% (see graph at right).

Recycled coal ash is used in such areas as land reclamation materials, construction materials, and farming and forestry supplies. The bulk of it is recycled as raw material for cement or concrete admixture. In the field of agriculture and forestry supplies, we sell potassium silicate fertilizer manufactured from recycled coal ash at a fertilizer plant operated by a J-POWER Group company.

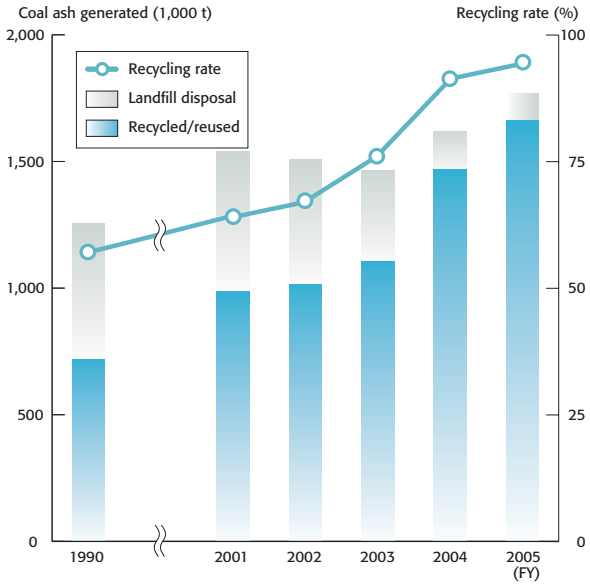
Most of the coal ash that cannot be recycled or reused is disposed of in landfill at our own disposal sites.

Breakdown of Coa-Ash Recycling (FY 2005)



1. Primarily facing and filling material
2. Potassium silicate fertilizer, etc.

Trends in Coal-Ash Recycling



Fertilizer Made Primarily from Coal Ash

The J-POWER Group (JPec Co.) has developed the world's first potassium silicate fertilizer soluble in citric acid, made primarily from coal dust generated at coal-fired thermal power stations, and is marketing it nationwide.

◆ Effective Use of Gypsum

Gypsum is generated as a by-product of wet-type flue-gas desulfurization systems at coal-fired power stations. We recycle all of this gypsum in the form of gypsum board and raw material for cement. In fiscal 2005, the amount of gypsum recycled or reused was 380,000 tons, 100% of the volume generated.

◆ Office Recycling Efforts

We are working hard to reduce municipal solid waste by such measures as sorting waste paper, bottles, cans, and plastics; using both sides of copier paper; and reusing envelopes.

With regard to waste paper and other refuse from the J-POWER head office, employees have familiarized themselves with and implemented a new waste-sorting policy based on the main office's EMS. As a result of such efforts the amount of municipal solid waste, including paper, generated by the head office in fiscal 2005 was approximately 27 tons, a 6% reduction from the previous year.

◆ Effective Use of Construction By-products

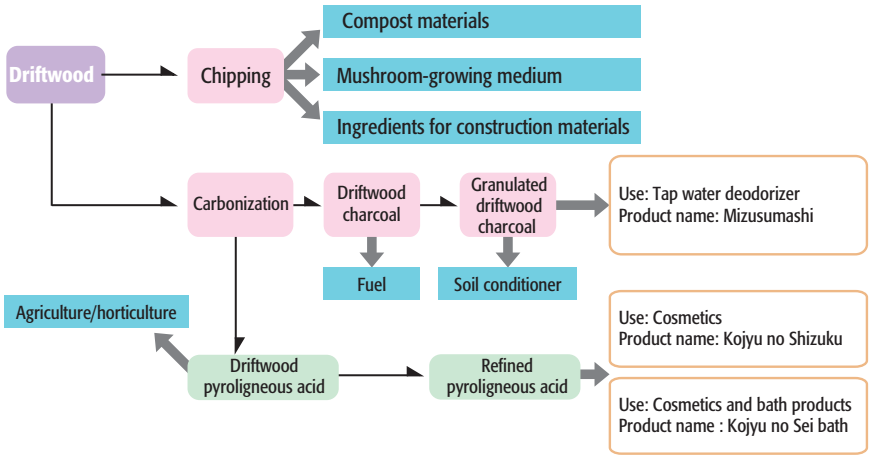
We work with contractors and others to promote effective use of the by-products of new construction, expansion, and renovation of electric power facilities by a variety of means, including the recycling of concrete scrap and cleared trees and the use of loose earth generated during construction within the grounds of the facility.

◆ Effective Use of Driftwood

We voluntarily retrieve driftwood that collects in dam reservoirs at our hydroelectric power stations and recycle it by manufacturing charcoal, extracting pyroligneous acid, or chipping the wood for use as building materials and mulch. In fiscal 2005, some 11,500 m^3 of driftwood was recycled.

Driftwood collecting in a dam reservoir (Sakuma Dam, Shizuoka Prefecture)

Effective Use of Driftwood



Kojyu no Shizuku Facial Cleanser

On Unfamiliar Ground, Dreaming of the Next Hit Cosmetic Product

Power Employee

Harumi Matsunaga
Marketing Department, Épuré Co., Ltd.

Épuré, a member of the J-POWER Group, markets skin care products made with "WV essence,"* an ingredient extracted from charcoal produced from the driftwood that collects in dams. Insofar as people tend to associate the name J-POWER with energy-related businesses, Épuré is a bit of an anomaly.

Matsunaga was transferred to the marketing department of Épuré in 2005. Lacking specialized knowledge in not only cosmetics but also sales and distribution systems, she found herself on unfamiliar ground. In the beginning, she must have found the whole experience baffling.

Pyroligneous acid is said to contain upwards of 200 beneficial ingredients, including plant phenols that help keep in moisture and stimulate the skin's metabolism. It is the key ingredient in a product line that includes Kojyu no Shizuku Facial Cleanser with sodium hyaluronate and Kojyu no Sei cosmetics and bath products with vitamin C. These are being marketed through in-house sales events at the Group's member companies, Internet sales, and advertisements in free newspapers, but product awareness among ordinary consumers remains low.

"I believe that once people have the chance to experience these cosmetics and smell their natural fragrance, they'll see what fine products they are," says Matsunaga. "We get particularly high marks from users with dry skin and atopic allergies." Matsunaga is on the go today as always, dreaming of marketing the cosmetic industry's next hit product.

*Wood vinegar essence, or refined pyroligneous acid.

◆ Environmental Recycling Program

The J-POWER Group's environmental recycling program is centered on promotion of appropriate treatment of waste, environmental measures, and the use of untapped energy sources. In launching projects in the area of environmental recycling, we have focused on private operation of public infrastructure through PFI/PPP* schemes.

* PFI (private finance initiative) and PPP (public-private partnership) are schemes that take advantage of private funds, management know-how, and technical expertise in the design, construction, maintenance, and operation of public facilities or projects.

Examples of PFI Waste-Power Generation Projects

Omuta Recycle Power Station (unconsolidated affiliate)
Omuta, Fukuoka Prefecture; startup December 2002
This RDF (refuse-derived fuel) power plant generates electricity efficiently using MSW as fuel.

Narumi Waste Disposal Plant, Nagoya (unconsolidated affiliate)
Nagoya, Aichi Prefecture; startup (planned) July 2009
This project for waste-power generation using a gasification and melting system will not only generate electricity from MSW (thermal recycling) but also recycle materials for reuse.

Examples of PFI/PPP Environmental Recycling Projects

- Kanda Eco Plant Project
- Samukawa Water Purification Plant Waste-Water Treatment PFI Project
- Edogawa Water Purification Plant Waste-Water Treatment Facility Construction and Operation PFI Project
- PFI consulting services for local governments

…and more

Other Efforts Relating to Environmental Recycling

- Utilization of sewage sludge (biosolid) fuels (co-combustion)
- Field testing of carbon fuel produced from MSW
- Development of technology for production of carbon fuel from sludge

…and more

Kenji Manda
Environmental Recycling Group, Business Development Department

Power Employee

Manda is involved in a J-POWER Group project to test-manufacture carbon fuel from MSW. The purpose of the project is to develop technology for producing fuel by carbonizing MSW and determine if such fuel can be used in place of coal at coal-burning thermal power stations.

Manda feels more motivated the longer he works on the project, the first such field test in Japan, as it promises to aid the earth's environment by reducing CO_2 levels as well as contributing to the growth of the J-POWER Group's environmental business.

That said, problem-solving in a ground-breaking endeavor like this is largely a matter of trial and error. As Manda faces one high hurdle after another, he could be forgiven for wondering if the undertaking might grind to a halt.

However, Manda never finds his work onerous, not even in those situations. "It's always interesting because you approach problems from a variety of angles," he says.

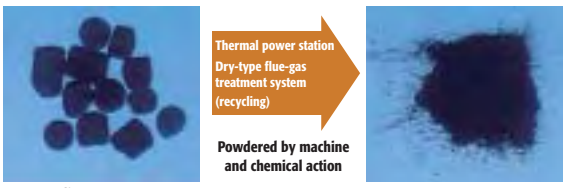
The recycling business Manda envisions, together with the widespread use of biomass energy, may be just over the horizon.

EPO-COAL: Recycled Granulated Coke Powder for Dioxin Removal

The powdered dioxin remover EPO-COAL for waste incinerators is made from activated coke powder produced in and shipped from the dry-type flue-gas desulfurization unit at J-POWER's Isogo Thermal Power Station new No. 1 unit and the dry-type flue-gas denitrification unit at Takehara Thermal Power Station No. 2 unit.

EPO-COAL has received high marks thus far. Its carbon load during manufacturing is close to zero, unlike that of commercially available activated charcoal products, and it has been found to be the equal of such products in performance tests for the dioxin removal in conventional incinerators.

In fiscal 2005, EPO-COAL (from Takehara Thermal Power Station) was registered as a Hiroshima Prefecture Recycled Product. It has also been adopted by a waste-disposal consortium in the Kyushu area. We will continue to actively market and promote the use of EPO-COAL, not only to cut back on waste and increase the recycling rate within the J-POWER Group but also to contribute to the building of a recycling-based society in Japan's local communities.



Dry-type flue-gas treatment (activated coke pellets)

EPO-COAL (activated coke powder)

Management of Chemical Substances

Storage and management of chemicals and other substances is rigorous and in full compliance with the law. With regard to PCBs, we are following detoxification treatment procedures in conformance with Japan's regional waste-management program.

◆ PRTR (Pollutant Release and Transfer Register) Law

The PRTR system is a mechanism for reporting and disclosing the level of chemical emissions and the transfer of chemicals to the environment through waste materials. The legislation was enacted in 1999, and monitoring and reporting of the targeted substances began in 2001.

While the J-POWER Group uses chemical substances for painting and coating, treatment of intake water at thermal power plants, and other purposes, we have traditionally managed these substances carefully by monitoring and recording the quantities procured and used. We are committed to minimizing the use of such chemicals and to controlling and managing those we use appropriately, complying with all established procedures. With respect to dioxins, we are working hard to reduce emissions through correct management and oversight of facilities.

◆ Measures to Reduce Dioxins

The J-POWER Group operates incinerators ("specified facilities" under the Law Concerning Special Measures against Dioxins) at three sites for such purposes as carbonizing driftwood. At these specified facilities we implement appropriate maintenance and management procedures, such as sorting prior to treatment and combustion temperature control.

Under the above-mentioned law, incineration facilities must monitor the concentration of dioxin in flue gas at least once a year and report it to the local government. In fiscal 2005, all our incinerators met emissions standards.

◆ Management and Treatment of PCBs

PCBs have been widely used as insulators in transformers and other electric devices because of their excellent heat-resistance and insulation properties. Because of their toxicity, however, manufacture and import were outlawed in 1974, and all those in possession of such substances were required to observe stringent storage and management requirements. In July 2001, the Law Concerning Special Measures Against PCB Waste came into force, and appropriate treatment of waste containing PCBs became mandatory.

The J-POWER Group began treatment of these substances under the regional waste-management program in February 2005, and as of March 2006 we had treated approximately 3 kl of insulating oil (containing high concentrations of PCBs). We currently have approximately 136 kl of insulating oil (as of March 2006). This is stored and managed under stringent conditions in 31 warehouses and similar facilities that we have established nationwide.

◆ Trace PCB Contamination

In July 2002, the Japanese government announced that extremely low levels of PCBs (under 5.0 ppm in about 60% of the cases) had been detected in products that had been accidentally contaminated by heavy electrical machinery following the prohibition on PCB use. We are diligent in enforcing stringent management procedures for machinery that uses insulating oil in which PCBs have been detected and in submitting the paperwork required by the relevant laws and regulations. Meanwhile, a national commission has investigated the causes of the contamination and will be deliberating measures for treating PCB-contaminated material. We will continue to respond to this issue in a conscientious and appropriate manner.

*For information on the asbestos problem, see p. 19.

Total PRTR-Substance Release and Transfer Volumes (FY 2005)

Chemical	Use	Volume handled	Volume released	Volume transferred through waste
40: Ethyl benzene	Coating for machinery and equipment	1.05 t/y	1,049 kg/y	0.0 kg/y
63: Xylene	Coating for machinery and equipment	7.03 t/y	4,066 kg/y	0.0 kg/y
253: Hydrazine	Additive for boiler water	3.75 t/y	0.0 kg/y	0.0 kg/y
179: Dioxins	Waste incinerators	–	0.02 mg-TEQ/y	0.0 mg-TEQ/y

Notes:
1. Figures represent total release and transfer volumes for all facilities handling 1 ton or more of the specified substance annually.
2. For dioxins, figures represent total emissions from waste incinerators.
3. As stipulated by law, figures represent the total of the values reported by each business unit.

Machinery containing PCBs being shipped to treatment site

Steps to Protect the Natural Environment and Biodiversity

When building new power stations, we carry out environmental impact assessments and incorporate the views of the local residents as we work to minimize the facility's impact on the environment. During construction, we monitor construction activity and implement environmental conservation measures to ensure a harmonious balance with nature. We also work to preserve the natural environment and biodiversity of the area in our maintenance and management of facilities.

Environmental Assessment and Monitoring

The J-POWER Group carries out environmental assessments (environmental impact assessments) when planning for the construction of a new power facility or the expansion of an existing one. We make a survey of the current state of the area's natural environment (air quality, water quality, soil quality, ecology, etc.) and social environment (industry, land use, traffic, etc.) and predict and assess the impact the siting of a power facility will have on that environment. During the process, we listen to the views of local residents and incorporate them in our plan.

After a power plant starts operating, we continue monitoring the environment for a certain period of time to ensure that the impact on the environment falls within the parameters of our predictive assessment.

Environmental Assessments for J-POWER Group Projects
(date: submission of environmental impact assessment document)

No.	Category	Name of Project	Prefecture	Date
1	Hydro-power	Shimogo	Fukushima	Feb. 1974
2		Sakuma No. 2	Shizuoka	Jan. 1978
3		Abunumagawa	Niigata	Jun. 1978
4		Hayakido	Nagano	Aug. 1981
5		Tadami	Fukushima	Nov. 1981
6		Tokuyama	Gifu	Dec. 1982
7		Kumaushi	Hokkaido	May 1983
8		Satsunaigawa	Hokkaido	Aug. 1986
9		Akiba No. 3	Shizuoka	Aug. 1987
10		Seawater Pumped Storage Demonstration Test	Okinawa	Jan. 1989
11		Kurotani	Fukushima	Feb. 1989
12		Isawa No. 1	Iwate	Jun. 1991
13		Okukiyotsu No. 2	Niigata	May 1992
14		Okutadami/Otori Expansion Projects	Fukushima	Sep. 1995
15	Thermal power	Matsushima	Nagasaki	Jan. 1976
16		Takehara No. 3	Hiroshima	Feb. 1980
17		Matsuura	Nagasaki	Apr. 1981
18		Ishikawa	Okinawa	Dec. 1982
19		Takehara No. 2 Fuel Conversion	Hiroshima	Feb. 1991
20		Tachibana-wan	Tokushima	Oct. 1994
21		Shin Isogo	Kanagawa	Aug. 1996
22	Nuclear power	Ohma	Aomori	Sep. 1999
23	Transmission lines	Honshi Interconnection Line	Okayama	May 1983
24		Tadami Main Transmission Line Phase III	Gunma	Apr. 1995
25		Sakuma-Higashi Main Transmission Line	Shizuoka	Nov. 1995
26		Ohma Main Transmission Line	Aomori	Jun. 2000
27	Wind power	Nunobiki Kogen	Fukushima	Jun. 2003

Note: Assessments listed include those carried under not only the Environmental Impact Assessment Law but also the Public Waters Reclamation Law, the Forest Law, prefectural and municipal ordinances, and other statutes.

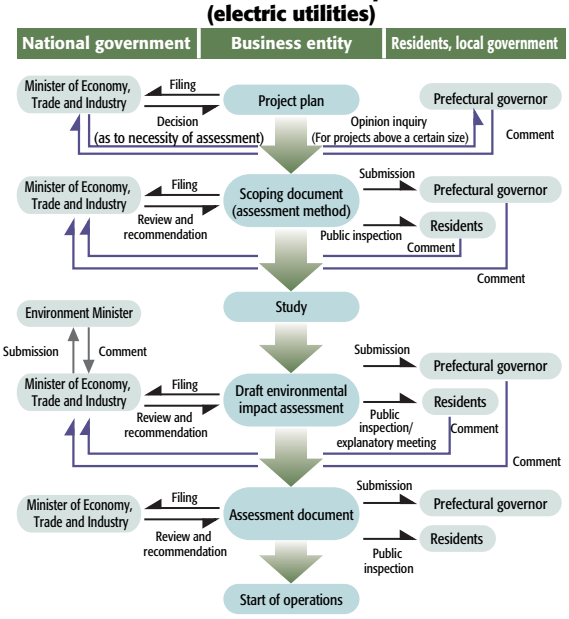
Outline of the Environmental Impact Assessment Law

The Environmental Impact Assessment Law, which came into effect in June 1999, mandates that businesses planning large-scale projects with the potential to markedly affect the environment conduct studies and make predictive assessments concerning the impact on the environment. It also establishes procedures whereby the prefectural governor, the relevant state minister, the local residents, and others can offer comments on the assessment's methods and conclusions, and it requires businesses to establish a mechanism for incorporating the results of the assessment and the comments into their project.

In respect to electric power plants, for twenty years we carried out environmental impact assessments in accordance with the environmental assessment system adopted by a resolution of the former Ministry of International Trade and Industry. Currently environmental impact assessments are carried out in accordance with the Environmental Impact Assessment Law and with the Electricity Utilities Industry Law, which was amended to conform with the EIA Law.

In addition to these statutes, we have also carried out environmental assessments under the provisions of the Public Waters Reclamation Law, the Forest Law, the Waste Management and Public Cleansing Law, and various local ordinances.

Procedures under the Environmental Impact Assessment Law (electric utilities)



◆ Environmental Conservation Measures During Preparatory Work on the Ohma Nuclear Power Station

The J-POWER Group is taking appropriate measures to protect the environment in carrying out preparatory work on the Ohma Nuclear Power Station as outlined in the Ohma Nuclear Power Station Environmental Impact Assessment. We have also adopted an environmental management system (EMS), under which we are working to protect, improve, and enhance the environment.

Survey of rare species

Since preparatory construction work began in April 2000, we have been monitoring the environment in respect to air quality, noise and vibration, and water quality. In addition, we are conducting a status survey of rare species inhabiting the area around the site of the power station to make doubly sure of their protection. The results of the survey are made available for public inspection along with the results of our coastal water quality survey.

Type of measure		Content
Protection of terrestrial animals and vegetation		• Preserving about 30% of site unaltered to protect rare species, etc. • Protecting small animals' migratory paths by constructing crossing tunnels under roads and gently sloping ditches along roads to allow animals to climb out
During construction	Water pollution measures	• Installing silt protectors in coastal waters and water quality monitoring • Neutralizing the chemical effects of concrete emplacements in seawater • Channeling runoff into temporary settling ponds at construction sites and releasing clear supernatant water
	Noise/vibration measures	• Selecting low-noise, low-vibration machinery • Implementing of anti-noise/vibration measures as necessary
	Disposal/handling of loose earth and rock during construction	• Using loose earth and rock generated by excavation and dredging for reclamation, backfill, and building embankments; using surplus earth from construction to build a mound on in on-site disposal area that is incrementally greened
	Anti-dust measures	• Installing washing facilities for construction vehicles • Spraying and cleaning construction roads • Installing anti-dust barriers and nets
	Traffic noise	• Designating routes for construction vehicles • Reducing road traffic through use of marine transport
	Industrial waste	• Appropriate disposal of waste in compliance with law • Chipping and recycling cleared timber and roots as mulch, etc. for greening of site

Hirotaka Uemura
Civil & Architectural Engineering Group,
Ohma Nuclear Power Project Construction Preparation Office

Power Employee

Uemura is involved in the construction of the J-POWER Group's first nuclear power station. The northern winters are harsh, and the work brings its share of hardship. But when Uemura witnesses the completion of the facilities that he himself designed and whose construction he oversaw, his satisfaction will surely make it all worthwhile.

Soil Pollution Measures

◆ Status Surveys Prior to Power Station Construction

For years we have carried out environmental assessments in advance of construction of power plants and other facilities, in conformance with the Environmental Impact Assessment Law that came into force in 1999 (and prior to that, in accordance with the environmental assessment system adopted by the former Ministry of International Trade and Industry in 1977), as well as local ordinances and other statutes. These assessments include status surveys of soil pollution within sites slated for construction to confirm the presence or absence of contamination prior to construction.

◆ Prevention of Soil Pollution

When constructing a power plant, we design the facilities in accordance with the Fire Prevention Law and other statutes by building dikes around oil and chemical tanks and pipes and by separating hazardous substances and treating them with on-site waste treatment units, to ensure that in the unlikely event of a leak such substances do not spill into coastal waters or the surrounding area.

In the operation of our power stations we prevent leakage of chemicals into the environment by mandating appropriate handling methods and emergency procedures in our EMS and exercising careful oversight.

We also prevent soil and groundwater pollution by carrying out education and training programs for plant staff as necessary.

◆ Studies to Identify Potential Soil Pollution

The J-POWER Group has no sites that require a soil contamination survey under the Soil Contamination Countermeasures Law. Nonetheless, we have voluntarily drawn up plans to carry out soil contamination surveys. During fiscal 2004 and 2005, studies were conducted at all domestic sites (368 locations, including thermal power stations, hydroelectric power stations, transmission system facilities, offices, and company-owned housing).

These studies determined that none of the sites had a history of contamination before coming into our possession. They also established that chemicals presently being handled at power stations and other facilities were being properly managed by means of storage and transfer facilities designed to prevent infiltration into the ground, and that there was no risk of soil or groundwater pollution at these sites.

Hydroelectric Power and Harmony with the River Environment

◆ Reservoir Water Quality

Typhoons or torrential rains can send large amounts of muddy water flowing into dam reservoirs, where it builds up. The release of water for power generation purposes can then lead to prolonged river turbidity.

For this reason, we are constantly monitoring the water quality of reservoirs by making measurements using turbidimeters and carrying out water quality analyses on water samples. In this way we are able to discharge turbid water quickly or, at dams where turbidity threatens to become chronic, implement appropriate countermeasures, such as installation of surface-water intake systems that enable the intake of the relatively clear water at the surface.

At sites where the problem of turbid water is severe, we are taking preventive measures by cooperating with the national and prefectural governments in forest-management and afforestation programs.

Sakamoto Dam surface-water intake system under construction (Nara Prefecture)

◆ River Maintenance Discharge

Downstream from power station dams, river flow falls off between the dam and the generator outlet. For this reason, we carry out river maintenance flow discharge, in consultation with the Ministry of Land, Infrastructure and Transport and other relevant agencies, to preserve a normal flow of the river. As of the end of fiscal 2005, such measures were being implemented at 30 power plants over 527 km of river.

River maintenance discharge (circled area) at Nanairo Dam (Wakayama Prefecture/Mie Prefecture)

◆ Efforts to Preserve Our Forests

Recognizing the manifold value of our forests, the J-POWER Group decided to designate and preserve a portion of its own wooded land as riverhead forest. In December 2002, we adopted Provisional Guidelines for the Conservation of Riverhead Forests, and we have since been involved in conservation efforts based on these guidelines.

Since fiscal 2004, we have been at work on plans to offer a tract of wooded company land situated on the border between Kawasaki-shi, Kanagawa Prefecture, and Machida-shi, Tokyo—the site of our Nishi Tokyo Power Administration Office—as a "forest shared with the community" with the purpose of restoring the *satoyama* (village commons; communal forests) and preserving the scenery for local residents and hikers on the historic Fudamichi road.

◆ Control of Sediment in Reservoirs

Each year large quantities of earth flow into dams from upstream and are deposited there as sediment. To avoid damage from flooding when rains cause the water level to rise, we control sediment by dredging to remove it or move it to another area of the reservoir.

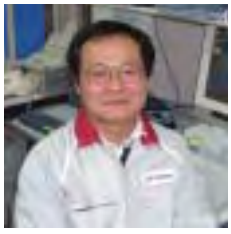
In fiscal 2005, we moved or removed approximately 1.28 million m^3 of sediment at 13 dams nationwide. Of the roughly 760,000 m^3 of sediment removed from the reservoirs, approximately 95% was recycled in the form of aggregate or cover soil.

Sediment dredging at Senbiri Dam (Hokkaido Prefecture)

Takatoshi Kunisaki
Totsukawa Power Administration Office , West Regional Headquarters

Power Employee

Kunisaki's job is maintenance and management of the civil engineering installations at power generation facilities. His major duties include direction and supervision of water discharge to prevent overflow from the dam and management of sediment control to remove excess sand and mud that accumulate in the dam, together with disposal and treatment of driftwood. Kunisaki was attracted to civil engineering when he first joined the company, and as his responsibilities have increased, so has the fulfillment that he gains from a job that is essential to maintenance of the power station.



Supporting Biodiversity

We are aware of the need to preserve biodiversity, and are striving toward coexistence with rare species through scrupulous study, planning, construction, and operation.

◆ Northern Japanese Macaques and Other Rare Species

The Ohma Main Transmission Line now being constructed in Shimokita-gun in Aomori Prefecture will extend a total of 60 km from the planned Ohma Nuclear Power Station (Ohma-machi) to the grounds of the Higashidori Nuclear Power Station (Higashidori-mura), scheduled to be built by Tokyo Electric Power Company and Tohoku Electric Power Company. During construction of the line, it was found that the area bordering the planned route is a rich natural environment populated by various rare species of wildlife.

Among these is the northern Japanese macaque, which has been designated a protected species. Since 1997 we have been soliciting the opinions of experts, conducting a variety of studies, and incorporating the results in protection measures implemented during construction. In this way we have kept the impact of power-line construction on the northern Japanese macaques to an absolute minimum.

In addition to Japanese macaques, the area around the planned route is known to be home to a number of endangered birds, including the northern goshawk and the mountain hawk-eagle. As with the Japanese macaque, we are taking precautions to minimize the impact on the growth and development of these rare bird species.

Northern Japanese macaque (April 18, 1999)

◆ Blakiston's Fish-owl

Among the inhabitants of the Tokachi district of Hokkaido Prefecture is Blakiston's fish-owl, categorized as "endangered IA" in the Japanese Environment Ministry's Red Data Book.

We are taking care to plan and carry out work in the area during times other than the nesting season to minimize the impact on the owl population.

Blakiston's fish owl (Photo: Kushiro Zoo)

◆ Japanese Golden Eagle

The Japanese golden eagle, listed as "endangered IB" in the Environment Ministry's Red Data Book, inhabits the area around Okutadami Dam and Otori Dam.

In the maintenance and operation of these dams, we are doing our utmost to avoid outdoor work during the Japanese golden eagle's nesting season.

If eagle nesting activity is noted among the eagles that have been confirmed to nest near the dam, and if work needs to be carried out in the vicinity, we take precautions to minimize the number of vehicles and the noise level, taking into account the advice of local ornithologists, so as to minimize the impact on nesting activity.

A young Japanese golden eagle, 30 days after leaving the nest (July 16, 2003).

◆ Restoring a Wetland

The J-POWER Group has also carried out wetland restoration in conjunction with the Okutadami-Otori Hydro Power Project (Fukushima and Niigata prefectures).

The project involved construction of an underground generator and aqueduct tunnel, and plans called for the rock generated during excavation to be used to fill in a basin on the left bank downstream of the Okutadami Dam. However, because the ecosystem of the basin area provided habitat for rare wildlife species that inhabit wetlands within a mountain environment, the project faced the challenge of filling in the basin while simultaneously preserving the wetland ecology.

The solution arrived at was to create another wetland to substitute for the area to be filled in. The aim was to re-create an environment equivalent to that lost and, by allowing both to exist side by side for an extended period, to preserve the wetland ecology.

Site of re-created wetland near the Okutadami-Otori Hydro Power Project

Environmental Measures in the International Power Business

The J-POWER Group is applying the environmental technology it has nurtured in its domestic power generation business and transferring that technology overseas as it expands its operations. Through our international consulting work we conduct environmental impact assessments, transfer of desulfurization and denitrification technology, and similar activities. In our IPP investment projects as well, we provide technological consulting to the biomass plants, hydropower, gas-turbine combined-cycle, and other facilities in which we apply our environmental engineering know-how.

Power Generation Services Worldwide

Our international power business, centered on international consulting, has earned high marks and confidence since it was launched more than 40 years ago, at the beginning of the 1960s. We apply the technology and experience accumulated here in Japan, send government experts to agencies in the host countries, and invite engineers from developing countries to train with us.

As of the end of fiscal 2005, we had been involved in a total of 263 international consulting projects in 61 countries.

In order to make international IPP investment our secondary revenue source, we established the IPP Business Office in 1997 and have been expanding our business in this area. As of the end of fiscal 2005, we were involved in 14 overseas power generation projects in five countries and territories.

◆ International Consulting

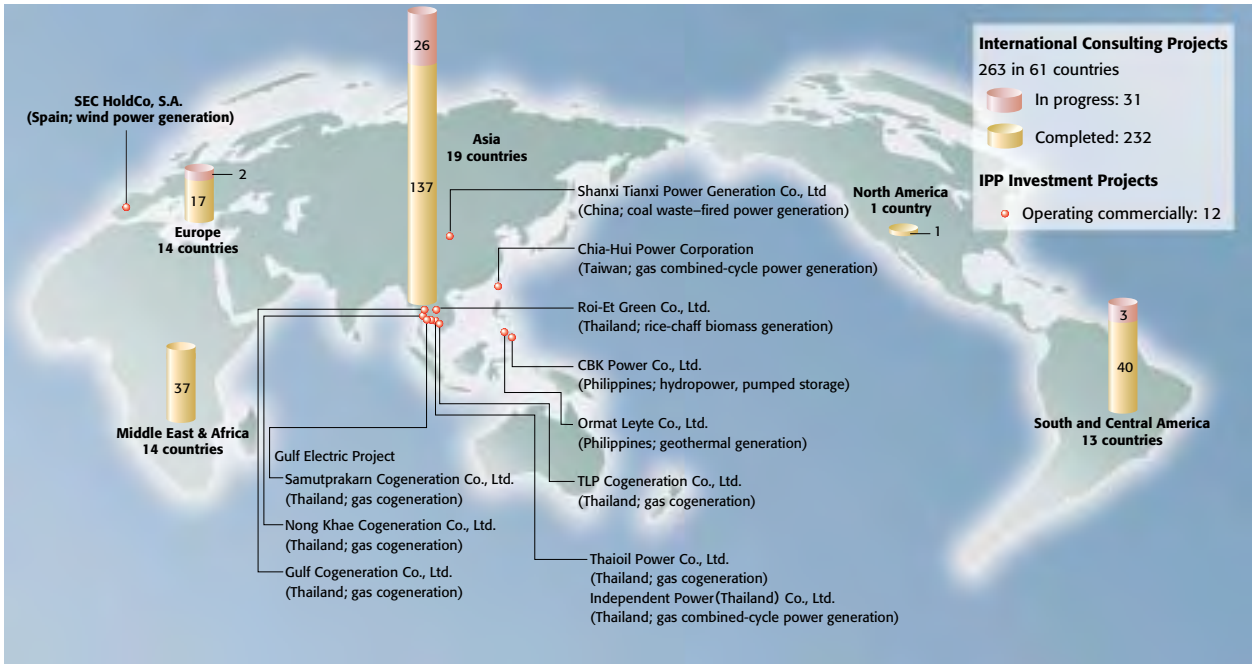
For many years now we have been making use of the technologies nurtured in our domestic hydropower operations to assist countries around the world in developing hydropower—a renewable energy source—through such means as supervision of construction projects.

Examples of environmental technology consulting in the area of coal-fired thermal power are the transfer of SOx and NOx emissions reduction technology to countries of the European Union, technological advice on measures to reduce SOx emissions to East European countries plagued by acid rain, and in China, a demonstration test of technology to desulfurize coal with high sulfur content (commissioned by METI).

An additional example is the Rehabilitation Project for the Fourth Thermal Power Plant (540 MW) in Ulaanbaatar, which has been funded by a Japanese ODA loan. Since 1995 we have been involved in a project to renovate an existing thermal power plant. Its facilities, designed and installed by the former Soviet Union, are outdated and equipped with low-efficiency boilers that consume too much coal and emit a large amount of pollutants. Since 2001 we have been involved in work to refurbish the plant's boiler burners (Phase 2), by which we plan to improve the plant's heat efficiency by about 10%.

With respect to operation and maintenance, we are making recommendations to improve environmental efficiency by such means as raising the utilization rate and reducing internal electricity consumption.

International Consulting and IPP Investment Projects



(As of the end of March 2006)

Major Recent Consulting Projects

Project type	Name	Country	Duration	Description
Thermal	Rehabilitation Project for the Fourth Thermal Power Plant in Ulaanbaatar	Mongolia	Nov. 2001 – Oct. 2006	Supervision of construction in high-efficiency rehabilitation of thermal power plant
Thermal	Tashkent Thermal Power Plant Modernization Project	Uzbekistan	Jan. 2005 – Dec. 2009	Support in bidding process and supervision of construction of high-efficiency gas cogeneration thermal power plant
Hydropower	Purulia Pumped-Storage Hydropower Project	India	Jul. 2003 – Feb. 2008	Detailed design and construction supervision of dam and power station
Hydropower	Upper Kotmale Hydropower Project	Sri Lanka	Nov. 2003 – Nov. 2009	Bidding support and construction supervision
Power transmission	Transmission and Distribution Development Project in Paraguay's Metropolitan Area	Paraguay	Aug. 1996 – Sept. 2006	Detailed plan and supervision of construction of metropolitan power grid
Power transmission	Cebu-Negros-Panay Interconnection Uprating Project	Philippines	Jul. 2004 – Sept. 2006	Detailed plan and supervision of construction project linking small islands with underwater cable
Water works	Zletovica Basin Water Utilization Improvement Project	Macedonia	Mar. 2005 – Aug. 2010	Detailed plan and construction supervision of multipurpose system to improve water supply
Solar power	Demonstration Research on Dispersed Power Generation System Technologies: Photovoltaic, Wind Power, and Advanced Storage Batteries	China	Oct. 2003 – May 2006	Demonstration test of wind power, new storage battery, and minigrid

◆ International IPP Investment Program

In response to the worldwide trend toward privatization and deregulation of the electric power industry, we are involved in a wide range of businesses overseas. We are also applying domestically developed technologies connected with high-efficiency thermal power generation and environmental conservation in order to achieve environmentally sustainable economic growth. As of the end of 2005, we were involved in IPP projects in 5 countries and territories, operating 12 power generation facilities and constructing two others.

Roi-Et Rice-Chaff-Fired Thermal Power Generation Plant (Thailand)

◆ Future Business Development and Our Contribution to Sustainable Development

In our international consulting business, while remaining focused on electric power projects using ODA, we plan to branch out into new areas such as water supply and irrigation where we can apply our technological know-how. We are also expanding our business operations to non-ODA areas, such as private development projects. In our IPP investment program, we will continue to strive for more environmentally friendly business operations as we pursue overseas investment.

We believe that through overseas technology transfers in our consulting and investment business, we can contribute to global sustainable development in the future.

Ulaanbaatar Fourth Thermal Power Plant Rehabilitation Project (Mongolia)

Thermal Power Generation from Rice Chaff Brings Smiles to Local People

Power Employee

Hiroya Naramoto
IPP Business Office No. 2,
International Power Business Department

The belief that an effective use can be found for things commonly discarded as worthless gave rise to a project to use rice chaff—waste material generated when rice is polished—as fuel for thermal power generation.

The result: Thailand's Roi-Et Rice-Chaff-Fired Thermal Power Generation Plant, an electric power generation facility fueled with rice chaff. Naramoto was one of the driving forces behind this project.

The same rice chaff that was once left outside in piles to decay, or burned in a manner that fouled the air with smoke, have been transformed into a valuable energy source. As a by-product, the ash remaining after the chaff is burned is used as fertilizer.

With the completion of the Roi-Et power plant, the local area now enjoys a stable electric power supply, and families can sit in brightly lit rooms as they eat their evening meal. Smiles also light the residents' faces. Naramoto's dedication has brightened their homes and their lives.

Pursuing Technological Research and Development

Through the research and development fostered by the J-POWER Group in fields ranging from energy, including the development of high-efficiency coal-use technology, to biotechnology, we have uncovered the potential for new technologies with great promise for the future, and are actively promoting R&D in these new areas.

◆ Agricultural Use of Coal Ash

Coal ash has the ability to adjust soil pH, provide nutrients essential to growth of crops, and improve water retention, qualities that make it highly suitable as a fertilizer or soil conditioner. Coal ash from thermal power plants is already being shipped to horticultural farmers for such purposes. For some crops, coal ash has the potential to increase yields, and depending on the state of the soil, application of coal ash as a conditioner can enable the growth of crops for which the soil was previously unsuited.

With an eye to exploiting the potential of coal ash as a fertilizer and soil conditioner, we are currently conducting soil conditioning tests on the red clay of Okinawa Prefecture and experiments to verify the usefulness of coal ash fertilizer for sugar cane. We are also engaged in the testing of other applications for coal ash, as well as other R&D efforts in partnership with government and academic institutions.

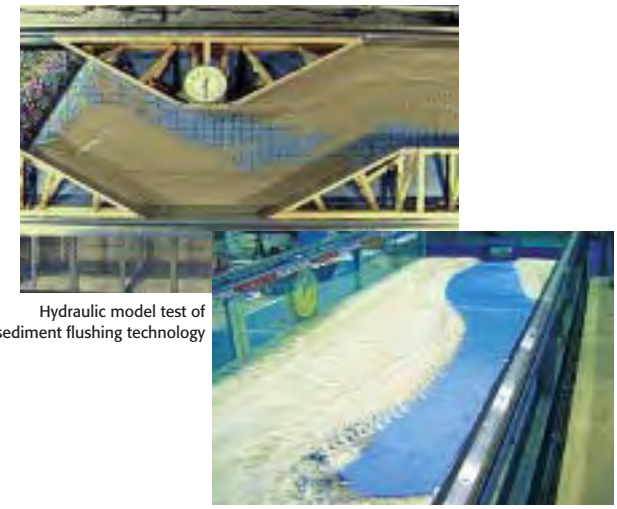
Verification test on usefulness of coal ash as fertilizer (sugar cane)

◆ Technology for Flushing Reservoirs

Earth and sand flowing into a dam reservoir from upstream build up sediment that reduces the reservoir's capacity. At the same time, the lack of earth and sand reaching the river below the dam results in a deepening of the river bed.

For this reason we are currently using hydraulic experiments, numerical analysis, and field surveys to develop an efficient, effective, and environmentally-friendly way to release the sediment to downstream rivers, together with methods for investigating and assessing the effect of such flushing on the river environment.

Collaborating institutions: Delft Hydraulics (Netherlands), HR Wallingford (UK)



Hydraulic model test of sediment flushing technology

A Gene's-Eye View of the Environment: Developing and Commercializing DNA Microarray Technology to Assess the Effect of Chemicals on Organisms

In July 2003, the J-POWER Group teamed with Transgenics Corp. (headquartered in Kumamoto Prefecture) to set up Ecogenomics Corp. (headquartered in Fukuoka Prefecture). Ecogenomics is working to develop and commercialize DNA microarray technology to assess the effect of endocrine disruptors and other chemicals on living organisms and the ecosystem by analyzing genetic changes in killifish and mice.

In August 2005, the company launched sales of mouse and killifish DNA microarrays. Currently it is conducting R&D to further improve these products, while working to establish a strong sales base. We are hoping that this gene's-eye view assessment technique will eventually be adopted as the standard method for screening substances under the Law Concerning the Examination and Regulation of the Manufacture etc. of Chemical Substances, and be used as well in assessing the water quality of rivers and other bodies of water.

For more information, see the Ecogenomics website at **http://www.ecogenomics.co.jp/english/**