Efforts Relating to Local Environmental Issues

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.

Reduction of 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 thermal power stations and other facilities to prevent air and water pollution, noise and vibration, and other environmental problems.

Air Pollution Control

Sulfur oxides (SOx), nitrogen oxides (NOx), and soot and dust are generated as a result of coal combustion at 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.

Water Pollution Control

We install wastewater treatment systems in our thermal 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 wastewater treatment unit. Treated water is routinely monitored by automatic measuring equipment and analyzed periodically to ensure compliance with the Water Pollution Control Law and environmental conservation agreements.

Noise and Vibration Control

We work hard to prevent undue noise and vibration from boilers, turbines, exhaust fans, and other equipment by taking preventive measures such as keeping such equipment inside buildings. For outdoor equipment at our thermal and hydropower stations, we install soundproof covers and barriers as needed. Noise

Emissions Performance at the Isogo Thermal Power Station

Emissions of SOx and NOx per unit of electricity generated by thermal power generation in Japan’s electric industry have decreased sharply since the mid-1970s owing to improvements in both fuel and equipment. As a result, today intensity for both substances is a fraction of that found in the other major industrial countries.

The Isogo Thermal Power Station new No. 1 unit has achieved particularly low levels, as indicated by the chart at left, thanks to the adoption of cutting-edge environmental technology.
and vibration levels are periodically measured at the boundaries of power station sites to ensure that they meet regulatory standards.

**Odor Control**
Because ammonia is used in such equipment as the denitrification systems of 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.

**Cutting Back on Industrial Water**
Industrial water is used in thermal power stations for such equipment as boilers, cooling systems, and wet-type desulfurization systems. Virtually all of the water used by such equipment, apart from the waste water it discharges, is released into the atmosphere as steam. We are working to further limit our consumption of industrial water by recovering and reusing this waste water, recycling rainwater, and so forth.

**Measures against Thermal Water Discharge**
Thermal 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 wind-shielding 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.

**Measures against Soil Pollution**
From fiscal 2004 through 2006, we conducted studies at all J-POWER Group domestic sites (370 locations, including thermal power stations, hydroelectric power stations, transmission system facilities, offices, and company-owned housing) and determined that all sites were free of soil or groundwater contamination. We will continue working hard to ensure that such pollution does not occur in the future.

**Greening Measures**
At our thermal power stations, we plant trees (primarily evergreen), grass, and seasonal flowers to provide the sites with greenery.

---

**Dry-Type Flue Gas Desulfurization-Denitrification System**
*Regenerative Activated Coke Technology: ReACT*

The ReACT dry-type desulfurization and denitrification system continuously regenerates and recycles activated coke and removes such pollutants as SOx, NOx, and soot and dust from flue gas. Another key feature is that it uses almost no water.

J-POWER has been using this system at two of its large-scale commercial plants, the Takehara Thermal Power Station No. 2 unit and the Isogo Thermal Power Station new No. 1 unit. In addition, the J-POWER Group company J-POWER EnTech, Inc., which specializes in ReACT engineering, has been supplying ReACT systems for power plants, steel mills, and other industrial facilities in Japan and abroad—including J-POWER’s Isogo Thermal Power Station new No. 2 unit (scheduled startup fiscal 2009). By using this technology in our own power plants and making it available to other companies and industries as well, the J-POWER Group is helping reduce the environmental load across a broad economic spectrum.
**Management of Chemical Substances**

Storage and management of chemical 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 stations, and other purposes, we have traditionally managed these substances carefully by monitoring and recording the quantities procured and used. We are committed to further reducing 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**

At three of its business sites, the J-POWER Group operates facilities (incinerators, etc.) designated as “specified facilities” under the Law Concerning Special Measures against Dioxins. At these specified facilities we follow appropriate maintenance and management procedures, such as sorting prior to treatment and combustion temperature control. In compliance with the above-mentioned law, the dioxin concentration in the flue gas of these facilities is measured at least once a year and reported to the local government, and in fiscal 2007, all of them 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 proper 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 2008 we had treated approximately 3 kl of insulating oil (containing high concentrations of PCBs). The J-POWER Group currently has approximately 136 kl of insulating oil (as of March 2008). 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, and the cases were unfortunately labeled as “trace PCB contamination incidents.” At the J-POWER Group 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.

**Asbestos**

The J-POWER Group has adopted a policy for dealing with asbestos, under which we have conducted health checks and surveys of asbestos use in our equipment and buildings and undertaken appropriate countermeasures. According to the results of our surveys, there are no active or retired J-POWER Group employees who have been designated eligible for workers’ compensation for health problems or death from asbestos, or who are in the process of applying for such compensation.

Where we have confirmed the presence of asbestos, we are systematically removing it and switching to alternatives while effectively managing the process to prevent dispersal of asbestos dust. Asbestos-containing material that has been removed is disposed of in a manner consistent with the Waste Management and Public Cleansing Law.

---

**Total PRTR Substance Release and Transfer Volumes (FY 2007)**

<table>
<thead>
<tr>
<th>Chemical</th>
<th>Use</th>
<th>Volume handled</th>
<th>Volume released</th>
<th>Volume transferred as waste</th>
</tr>
</thead>
<tbody>
<tr>
<td>26: Asbestos</td>
<td>Insulation material</td>
<td>2.45 t/y</td>
<td>–</td>
<td>2,445 kg/y</td>
</tr>
<tr>
<td>63: Xylene</td>
<td>Coating for machinery and equipment</td>
<td>6.27 t/y</td>
<td>3,290 kg/y</td>
<td>–</td>
</tr>
<tr>
<td>179: Dioxins</td>
<td>Waste incinerators</td>
<td>–</td>
<td>0.001 mg-TEQ/y</td>
<td>1.8 mg-TEQ/y</td>
</tr>
</tbody>
</table>

Notes:
1. Figures represent total release and transfer volumes for all business sites handling 1 ton or more per year of a Class 1 designated chemical substance or 0.5 ton or more per year of a specific Class 1 designated chemical substance.
2. For dioxins, figures represent total emissions from waste incinerators.
Functioning in Harmony with Nature

In all its business activities, the J-POWER Group strives for harmonious coexistence with the natural environment, including forest conservation initiatives.


J-POWER owns approximately 4,600 hectares of forest land around the country, primarily in the vicinity of our 59 domestic hydroelectric power facilities. In pursuing our power-generation activity on these lands we have always taken account of its impact on the surrounding wildlife and natural environment. In fiscal 2006 we launched a two-year survey of all company-owned forest land with the aim of strengthening the efficacy of our conservation efforts. The results of the survey were used to draft a new policy for conservation of company-owned forests.

The survey confirmed the relatively pristine character of J-POWER’s woodlands, determining that about 90% qualify as “natural forest,” which is characterized by a low degree of human disturbance of vegetation.* It found that the composition of these natural forests was on a par with Japan’s national parks and quasi-national parks, and that they are home to large-diameter trees and keystone species (listed in Japan’s Red Data Book). Moreover, these company lands are often representative of the regional ecosystem, and there is a strong possibility that, in combination with the surrounding environment, they serve as habitat for rare and threatened species as well.

We are committed to using the policy drawn up on the basis of these findings to protect our valuable forests now and in the future.

Preserving Biodiversity

Recognizing the need to preserve biodiversity, the J-POWER Group carries out the planning, building, and operation of its business facilities on the basis of thorough environmental studies.

* An index for measuring how close an area is to its natural state on the basis of its vegetation.

Environmental Measures for the Ohma Main Transmission Line

The Ohma Main Transmission Line will extend 61 km through Aomori Prefecture, from the Ohma Nuclear Power Station currently under construction (Ohmamachi), to Tohoku Electric Power Company’s Higashidori Nuclear Power Station (Higashidori Village). During construction of the new line, it has been determined that the area bordering the planned route is a rich natural environment populated by a variety of rare species of flora and fauna, including the northern Japanese macaque, which is designated a protected species. For this reason we are proceeding very carefully with construction, taking adequate account of the impact on the surrounding environment.

Since 1997 we have solicited the views of experts in a number of ways, including a survey of the macaques’ activity in the area surrounding the construction site by attaching radio transmitters to them, and have incorporated these opinions into measures designed to keep the impact on the 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 rare bird species, including the northern goshawk and the mountain hawk-eagle. Here, too, we are taking precautions to minimize the impact of our activities.

We also require all staff involved in the project, including construction personnel, to keep with them at all times a conservation handbook titled “Take Care of Nature—Construction of the Ohma Main Transmission Line” containing photographs of the precious wildlife of the area, and have instituted policies for transplanting or relocating rare species discovered near the site. In this way we are working actively to protect the natural environment.

Forest Conservation in Umaji, Kochi Prefecture

Kochi Prefecture, which has the highest ratio of forested land of any prefecture in Japan, has positioned itself at the cutting edge of woodland conservation by instituting Japan’s first forest tax. Now J-POWER is participating in one of Kochi Prefecture’s key conservation strategies, known as Collaborative Forest Restoration with Environmentally Progressive Companies, by entering into a three-way partnership agreement with Kochi Prefecture and the village of Umaji for restoration of the “Yanase water-resource forest.”

Kochi Prefecture defines the purpose of this collaborative program as “supporting the role that forests play in water and soil conservation and in absorbing and fixing CO2, in the process preserving the environmental quality of our forests, rivers, and atmosphere.” In April 2007 the prefecture instituted its own unique “CO2 Sink Certification System.”

In August 2007, J-POWER received a 950 t-CO2 “sink certificate” from Kochi Prefecture for forest management activities in fiscal 2006. We place great importance on this document as Japan’s first certification of CO2 sinks calculated according to the provisions of the Kyoto Protocol.

The J-POWER Group also looks on this program as a way to interact with the community and contribute to its welfare and vitality, and we have continued to take part in related activities, including the thinning of 40-year-old cedar and cypress in collaboration with Kochi Prefecture, the village of Umaji, the Umaji Forest Rescue Team, and the local forestry cooperative in March 2008.
Restoration of Wetlands
We have restored wetlands downstream from the Okutadami Dam (Fukushima and Niigata Prefectures) by creating a new, substitute wetland area in a project that has allowed us to preserve the local mountain wetland ecology while filling in land with rock generated from excavation associated with the expansion of the hydropower facilities there.

Since then, we have been able to confirm the continuous presence of precious dragonfly species in the restored wetland area and the newly created pond downstream from it. In fiscal 2007, we carried out our first scientific survey to determine changes in the flora and fauna since the new wetland was created. We intend to use the findings to draw up a maintenance plan for the period through 2013 and strive for ever more effective conservation measures.

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.

Control of Reservoir Sediment
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.

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.

Hydroelectric Power and Harmony with the River Environment

Reservoir Water Quality Management
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 earlier or, at dams where turbidity threatens to become chronic, implement appropriate countermeasures, such as installation of surface-water intake systems that permit the intake of the relatively clear water at the surface.

Environmental Assessment and Monitoring
When planning for the construction of a new power station, such as the Ohma Nuclear Power Station or the Isogo New No. 2 thermal power station, we implement environmental impact assessments and incorporate the opinions of local residents as we formulate measures to protect the local environment. We also adopt environmental management systems (EMS) to guide our efforts to improve and upgrade the environment. During construction we implement conservation measures aimed at harmonious coexistence with nature and monitor the results.

Sediment Control at Sakuma Dam

At Sakuma Dam we use boats for dredging as we work to control sediment so as to prevent flood damage upstream when the waters rise. In addition to routine supervision of work, I look for suitable places to deposit the sediment, select the most appropriate methods, make arrangements to ensure safe navigation, and consult with relevant authorities to ensure legal compliance.

Completed a half-century ago, Sakuma Dam is a valuable public asset. My job is to ensure that we can continue making effective use of it by implementing our current sediment-control measures reliably and continually studying new strategies.

Yuji Fukushige
Sakuma Power Administration Office
Chubu Regional Headquarters
Establishing a Sound Material-Cycle Society

To help establish a sound material-cycle society, the J-POWER Group is working hard to reduce the waste we generate and to properly treat and recycle the waste we do produce. We are also pursuing business undertakings that build on these practices.

Effective Use and Reduction of Waste

In fiscal 2007, the J-POWER Group generated 2.18 million tons of industrial waste, while recycling or reusing resources totaling 2.15 million tons, or 98%.

Henceforth we intend to promote more extensive recycling of coal ash and reduction of industrial waste generated from the 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.” (p. 27)

EPO-COAL: Recycled Granulated Coke Powder for Dioxin Removal

In fiscal 2007, the total volume of coal ash generated by all of J-POWER’s thermal power stations was 1.71 million tons, of which 99.8% was recycled.

Most of the coal ash is reused as raw materials for cement or as concrete admixture. It is also used in land reclamation, as construction materials, and as farming and forestry supplies.

In the agricultural field, we sell potassium silicate fertilizer manufactured from recycled coal ash at a fertilizer plant operated by our affiliate Jpee Co., Ltd.

About the Act on the Promotion of Effective Utilization of Resources

Under the Act on the Promotion of Effective Utilization of Resources, the coal ash generated by electric utilities is classified as a “specified by-product.” In November 2004 the Japanese government issued the interpretation that “coal ash supplied by electric utilities for public waters reclamation carried out on the basis of port and harbor plans for important or regional ports and harbors under the Harbor Law shall be considered reclamation material.” Accordingly, since fiscal 2004 we have reported the use of coal ash for reclamation works in Kitakyushu Harbor (at Hibikinada) and the Port of Kinwan (Ishikawa Coal-Fired Power Station) as effective utilization.

In December 2007, the government issued the following interpretation in regard to the aforesaid interpretation (of November 2004): “Coal ash provided by businesses in the electric power industry for the purpose of use in public waters reclamation work carried out under license from a prefectural governor according to Article 2, Paragraph 1, of the Public Waters Reclamation Law shall be regarded as reclamation material.” As a result, coal ash in the final disposal landfill of Matsuura Thermal Power Station was also reported as effective utilization.
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 2007, we generated approximately 360,000 tons of gypsum, and we maintained a recycling rate of 100%.

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
In the J-POWER Group 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. We are now using driftwood chips as mulch in recreating the Fuda Path (which is said to have been used by members of the heroic Shinsengumi band of samurai when they traveled to a village to teach swordsmanship) as part of our project to develop a “community forest” around the site of the Nishi Tokyo Power Administration Office (p. 60). In addition, we are studying new uses for the recycled driftwood, such as boiler fuel for local businesses.

Reducing and Recycling Office Waste
All J-POWER Group offices are working to reduce non-industrial waste by such measures as sorting waste paper, bottles, cans, and plastics; using both sides of copier paper; and reusing envelopes.

In respect to paper recycling, we intend to work harder than ever to reach the group target (p. 27) by further raising the awareness of every employee in the J-POWER Group.

Promoting Green Purchasing
In order to promote these kinds of efforts and contribute to the development of a material-cycle society, we have adopted the J-POWER Group Green Purchasing Guidelines* and are actively committed to green purchasing, including the use of recycled paper and energy-efficient PCs, photocopiers, and other office equipment.

These guidelines apply not only to offices but to purchasing for core operations as well. By stipulating environmental clauses to be built into contract specifications when subcontracting work and encouraging environmental responsibility among our suppliers, we are attempting to pursue a wide-ranging policy. We have also conducted a questionnaire survey of our major suppliers to assess their environmental management.

Finally, we are striving to boost the level of all these efforts by establishing Group targets for the rate of green purchasing of office supplies (desk supplies) and the ratio of recycled copy paper to the total purchased, as well as the percentage of low-emission vehicles among group company vehicles (p. 27).

*WEB http://www.jpower.co.jp/company_info/environment/kanky04gl.html (Available only in Japanese)

Co-firing of Woody Biomass Fuel from Construction Waste

Long-term trials of woody biomass co-firing have begun at Matsuura Thermal Power Station in May 2008, as we work toward our goal of commercially generating power from a mixture of coal and woody biomass chips derived from construction waste.

Woody biomass fuel made from construction waste is already used widely as an alternative to fossil fuels. But given the limited availability of scrap wood, the most important criterion from the standpoint of procuring fuel is the supply-and-demand situation in a given locale. We conducted a nationwide survey to gauge the quantities of woody biomass available in the vicinity of thermal power stations and determined that procurement of fuel could be accomplished most reliably and economically at Matsuura Thermal Power Station.

Hideki Kouyama
Plant R&D Group
Thermal Power Department
Environmental Recycling Program

The J-POWER Group's environmental recycling program comprises the promotion of the use of untapped energy sources derived from waste or biomass and the proper treatment of waste. In expanding our environmental business, we are focusing on public infrastructure projects organized around PFI/PPP* schemes.

Waste-Power Generation

- Omuta Recycle Power Station
  In Omuta, Fukuoka Prefecture, we are operating a high-efficiency waste-power station combusting RDF (refuse-derived fuel) made by shredding, drying, and pelletizing non-industrial waste.

- Narumi Waste Gasification Plant, Nagoya
  J-POWER is also participating in a non-industrial waste gasification power project in Nagoya. In addition to generating electric power from waste, this plant also achieves material recycling by exhausting metal and slug.

Demonstration Trials of Non-industrial Waste Carbonization

Non-industrial waste contains biomass resources, and there are high expectations for its utilization as an energy source. We are working on developing a technology for producing carbonized fuel from non-industrial waste.

Currently we are involved in a NEDO (New Energy and Industrial Technology Development Organization) field test project on biomass and other untapped energy sources in collaboration with the city of Saikai in Nagasaki Prefecture. Aiming for a more effective use of biomass, we are conducting research on the use of carbonized fuel derived from non-industrial waste for supplemental use at coal-fired thermal power stations, as well as developing technology for producing carbonized fuel. In March 2006, a test run of the production of carbonized fuel was launched at the demonstration test facility at the Matsushima Thermal Power Station, and in fiscal 2007 about 30 tons of carbonized fuel was produced from approximately 135 tons of non-industrial waste.

Environmental Infrastructure Operations

The J-POWER Group is taking part in a district cooling project in the Middle East as part of our growing business in the area of environmental and energy-saving infrastructure.

District Cooling Project

J-POWER has become the first Japanese power company to take part in a district cooling project in the Middle East by teaming with Sumitomo Corporation and the United Arab Emirates company Tabreed to establish Sahara Cooling Limited. J-POWER has already provided consulting services for district heating and cooling projects in Japan and overseas, and we are building on that experience, together with our know-how in the design, management, maintenance, and operation of hydroelectric and thermal power stations, to improve the operating stability and increased efficiency of the system’s cooling plants.

The UAE district cooling project involves six cooling plants for a total capacity of 54,500 RTs*. District cooling helps save energy by centralizing the thermal energy source for higher efficiency and by permitting load leveling among multiple users. Tabreed has estimated that by shifting to a district cooling system the UAE could cut energy consumption by 55% compared with the use of individual cooling units.

With demand growing in the UAE and neighboring countries for environmentally friendly, energy-efficient district cooling systems, J-POWER plans to expand its Middle East operations and continue taking part in projects designed to lighten the environmental load.

Examples of PFI/PPP Projects Relating to Environmental Recycling

- 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
- Omuta District Waterworks Project
- PFI consulting services for local governments — etc.

Other Efforts Relating to Environmental Recycling

- Utilization of sewage sludge (biosolid) fuels (co-combustion)
- Development of technology for production of carbonized fuel from sludge — etc.

Notes: 1. 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.
2. RT (refrigeration ton): a unit used to measure refrigerating capacity. 1 RT is the thermal energy necessary to freeze a ton of water at 0°C in 24 hours. 1 RT is also about the capacity needed to cool the average Japanese house.
Supporting the World’s Sustainable Development

Through various international projects, the J-POWER Group is transferring the environmental technology it has nurtured in its domestic operations. Through our international consulting work we conduct environmental impact assessments, transfer desulfurization and denitrification technology, and promote energy conservation. In our overseas electric power projects as well, we are applying our environmental engineering expertise to the development of such alternatives as hydropower, gas-turbine combined-cycle generation, and biomass power generation.

Overseas Operations

Our international operations go back about fifty years, ever since we added international technological cooperation to our business lines in response to the 1960 revision of Japan’s Electric Power Development Promotion Law. Since then we have undertaken a number of projects around the world, mostly in a consultative capacity, receiving high marks and earning widespread confidence.

Making the most of the technology and experience we have accumulated here in Japan, we have served as a technical adviser to overseas organizations and institutions in connection with power plant feasibility studies, design, and construction. We also send our experts to agencies in the host countries and invite engineers from developing countries to train with us under programs run by the Japan International Cooperation Agency (JICA).

As of the end of fiscal 2007, we had been involved in a total of 288 international consulting projects in 62 countries and regions.

Since 1997, we have also focused on expanding our power generation services overseas with the goal of establishing this as a second major revenue source and have taken an active part in a variety of international power generation projects abroad, primarily in Southeast Asia, the United States, and China. As of the end of fiscal 2007, we were operating 16 overseas power generation facilities with a total output capacity of about 2,700 MW (ownership capacity) in five countries and regions.

International Consulting

For many years 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 works. In fiscal 2007 we were involved in a number of large-scale power generation projects, including the Purulia Pumped-Storage Project in India and the Upper Kotmale Hydroelectric Power Project in Sri Lanka.

In the field of coal-fired thermal power generation, we have worked to spread the environmental technology and high-efficiency operating know-how we have built up as Japan’s biggest supplier of coal-fired thermal power. Examples of our international contribution in this area are technical assistance provided to countries of the European Union for reduction of SOx and NOx emissions, technical recommendations to East European countries plagued by acid rain on the most suitable measures for reducing SOx emissions, and demonstration trials in China of technology to desulfurize coal with high sulfur content (commissioned by METI).

We are also committed to pursuing effective energy conservation measures as a way to reduce CO2 emissions. Since August 2007 we have been conducting a study for the promotion of energy-saving measures in Indonesia. This study will survey the social and economic situation in Indonesia together with trends in energy consumption and demand and formulate a policy for spreading the use of energy-saving measures.
suited to that country’s circumstances, based on our experience and expertise on energy conservation. In this way we believe we can help strengthen Indonesia’s energy-conservation systems, enhance the technical know-how of its electric-power professionals and officials, and contribute to a stable energy supply and lighter environmental load in the decades ahead.

**Overseas Power Generation Business**

Responding to the worldwide trend toward privatization and deregulation of the electric power industry, we are involved in a wide range of projects overseas. At the same time, we are applying domestically developed technologies for high-efficiency thermal power generation and environmental measures in projects designed to support economic growth without sacrificing the environment.

Fiscal 2007 saw the startup of the Kaeng Khoi 2 Gas-Fired Thermal Power Station (gas combined cycle), which we had been building in Thailand. We believe it will improve power supply conditions in Thailand and contribute to the country’s economic development.

Through the operations of the Roi-Et Rice Chaff Thermal Power Station and the Yala Biomass Station, which uses waste from rubber-wood sawmill as fuel, we are contributing to the effective use of untapped resources and CO₂ emissions reduction.

**Looking Ahead: Expanding Operations While Supporting Sustainable Development**

In our international consulting business, we intend to continue our efforts in areas where we can apply J-POWER’s technological know-how, especially electric power projects carried out with Official Development Assistance (ODA). We also plan to expand our operations to non-ODA endeavors, such as private development projects.

Coal-fired thermal power faces a number of challenges, from the problem of SOx and NOx emissions at the regional level to the global issue of CO₂ emissions. Nonetheless, economic growth in China, India, and elsewhere in the world is expected to depend heavily on coal-fired thermal power for some time to come. Under the circumstances, we believe it is important to reduce the environmental load of coal-fired thermal power stations as much as possible by using advanced technology and raising generating efficiency.

We also intend to work actively to develop renewable energy. We are currently involved in a wind power project in Poland and biomass power generation in Thailand, and we intend to build on these achievements to branch out into new domains.

In a world where stable supplies of energy and the fight against global warming are increasingly urgent priorities, our aim is to contribute to global sustainable development while transferring technology to other countries through our consulting business and power generation business alike, in keeping with the mission articulated in our corporate philosophy: to ensure constant supplies of energy to contribute to the sustainable development of Japan and the rest of the world.