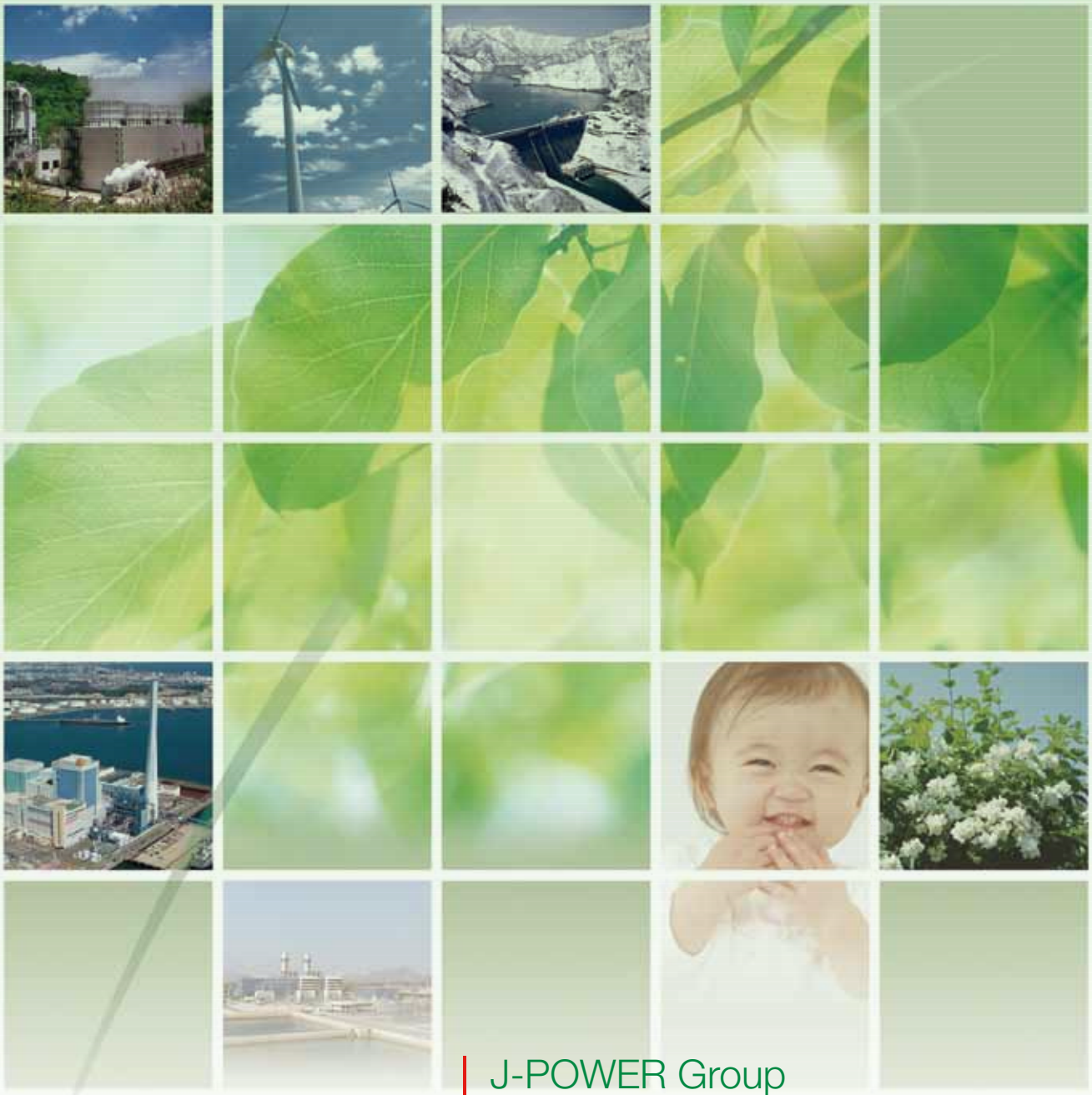


J-POWER Group

SUSTAINABILITY REPORT 2009

Harmonizing energy supply with the environment

J-POWER Group

J-POWER Group Overview (As of the end of March 2009)

◆**Founded:** September 16, 1952 (J-POWER)

◆**Employees:** Group total 6,581 (including 2,224 parent company employees)

◆**Main business activities:**

●Wholesale power supply (J-POWER)

Hydropower stations 59 Total output 8.56 GW

Thermal power stations (including geothermal) 8 Total output 7.82 GW

Transmission lines for wheeling Total route length 2,408 km

Customers 10 general electric utilities (regional power companies)

●Other domestic electricity business

(Includes affiliates accounted for by the equity method, but percentage ownership is not taken into account.)

Wind farms 12 Total output 0.26 GW

Wholesale power supply to general electric utilities via independent power producers (IPP) 3 Total output 0.52 GW

Wholesale power supply to power producers and suppliers (PPS) 3 Total output 0.32 GW

●Ancillary business related to electricity

Design, construction, and maintenance of electric power facilities, supply of fuel for power generation

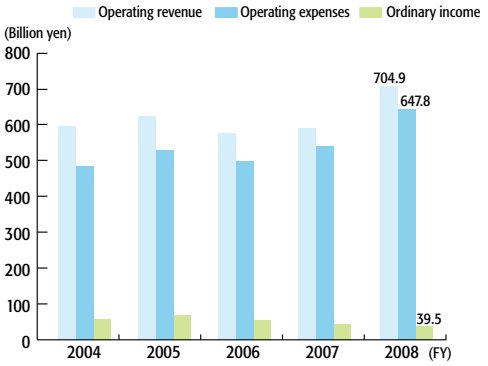
●Diversified business

Investment in overseas power generation projects and new energy businesses such as power generation from waste materials in Japan

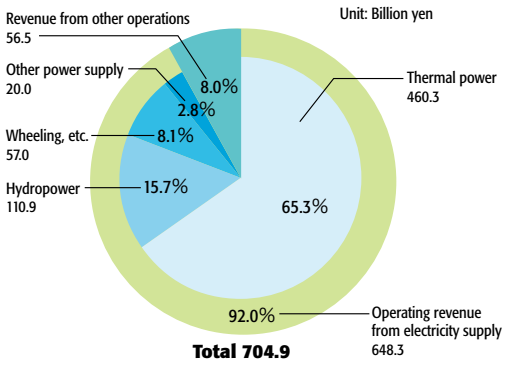
◆**Total sales (consolidated basis):** 704,936 million yen

Revenue from electricity supply 648,362 million yen

■ **Main Business Indicators (Consolidated basis)**

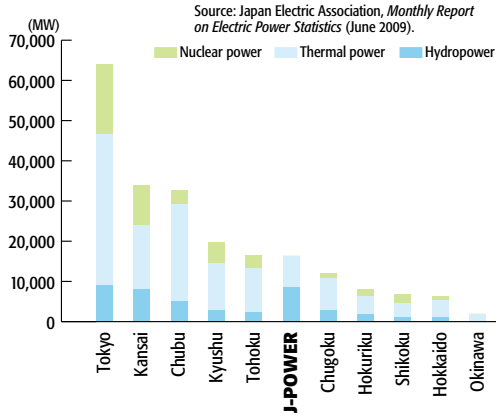


■ **Breakdown of Consolidated Sales (FY 2008)**

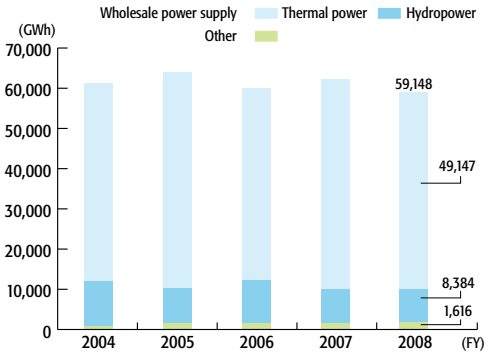


■ **Output of J-POWER and 10 Electric Power Companies (As of the end of March 2009)**

Source: Japan Electric Association, *Monthly Report on Electric Power Statistics* (June 2009).



■ **Electric Power Sold**



Note: Percentage ownership is not taken into account.

Editorial Policies

●The J-POWER Group operates under its corporate philosophy of contributing to the sustainable development of Japan and the rest of the world. Accordingly, this report is titled *Sustainability Report* to express our intention of achieving sustainable growth and development of both the Group and society. It summarizes and reports on the Group's corporate activities under the headings of Governance, Social Responsibilities, and Environment.

●This report includes all consolidated subsidiaries and is representative of the entire J-POWER Group. Key issues of the J-POWER Group have been listed in the Special Features section with the aim of clearly identifying them.

●All environmental load and other data, such as the figures for inputs and outputs given in the "Business Activities and the Environment" section, have been calculated for the J-POWER Group as a whole. Joint investments have been accounted for according to the percentage ownership except in the case of data listed under "J-POWER Group Overview" on this page.

●To ensure objective credibility, this report has been independently assured by Ernst & Young Shin-Nihon Sustainability Institute Co., Ltd. (for details, see p. 71).

●Opinions on issues that exist toward the fulfillment of J-POWER's corporate social responsibilities have been drawn from a wide spectrum of experts, researchers, and journalists with the goal of improving corporate management so that it may contribute to building a sustainable society and of increasing the reliability and transparency of our operations.

Period covered:
April 2008 to March 2009 (some items include information pertaining to April 2009 and beyond)

Scope: J-POWER and J-POWER Group companies (consolidated subsidiaries)
Where data apply only to J-POWER, or includes Group companies other than consolidated subsidiaries, this fact is noted in the text.

Guidelines referred to:
Ministry of the Environment, Environmental Reporting Guidelines: Fiscal Year 2007 Version
Global Reporting Initiative (GRI), Sustainability Reporting Guidelines 2006

Report issued since: 1998

Next report due: July 2010 (tentative schedule)

Note concerning forecasts
The plans, strategies, and forecasts set out in this report have been formulated based on currently available information. Unforeseeable changes in various factors may cause results to differ from projections.

This report is also available at J-POWER's website as "J-POWER Group Sustainability Report 2009." Information on business plans and financial data are provided in its Annual Reports.

WEB http://www.jpower.co.jp/english/

Contents

Governance

Social Responsibilities

Shokawa cherry trees and the Miboro Dam (Gifu Prefecture)

web http://www.jpower.co.jp/sakura/index.html (Japanese only)

Environment

External Evaluation and Outside Opinions

Reference Data

Business Outline

J-POWER was founded as an electricity wholesaler by the Japanese government in 1952 and is the only company with a nationwide network of transmission and substation facilities that play a key role in the generation and supply of electricity throughout Japan. Since its establishment J-POWER has contributed to economic growth and the improvement of everyday life in Japan by providing moderately priced and stable electricity supply to general electric utilities (10 regional power companies). J-POWER was fully privatized in October 2004, and under its corporate philosophy of contributing to the sustainable development of Japan and the rest of the world, it is striving to harmonize energy supply with the environment as it pursues business both at home and abroad.

Facilities in Japan

(As of the end of March 2009)

- Hydropower station
- Thermal power station (including geothermal)
- Wind farm
- Independent power producers (IPP)
- Generation for power producers and suppliers (PPS)

- Transmission line
- Substation (including converter stations)
- Research institute

Planned/Under construction

- Hydropower station
- Thermal power station
- Nuclear power station
- Transmission line

Note: The group also has dedicated communication facilities, and there are facilities owned by group companies.

Itoigawa Power Station (IPP)

Tomamae Winvilla Wind Farm

Nukabira Dam

Honshi Interconnecting Line

Sakuma Frequency Converter Station

Matsuura Thermal Power Station

Onikobe Geothermal Power Station

Bayside Energy Ichihara Power Station (PPS)

Okinawa Yanbaru Seawater Pumped Storage Power Station

Chigasaki Research Institute

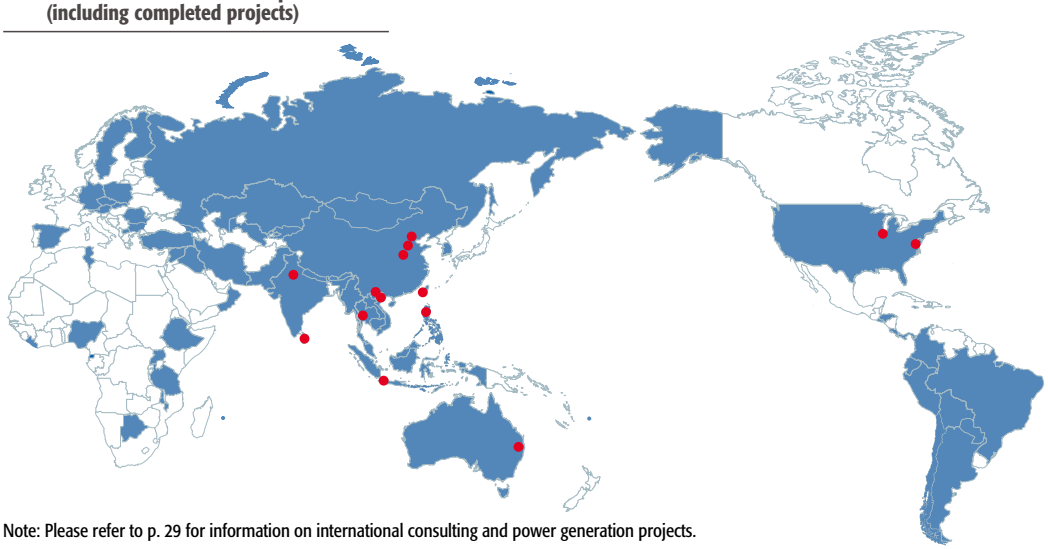
Isogo Thermal Power Station
(Yokohama)

The J-POWER Group aims to contribute to the sustainable development of Japan and the rest of the world as it pursues business both at home and abroad.

Overseas Operations

(As of the end of March 2009)

- Main overseas business sites
- Countries where J-POWER operates (including completed projects)



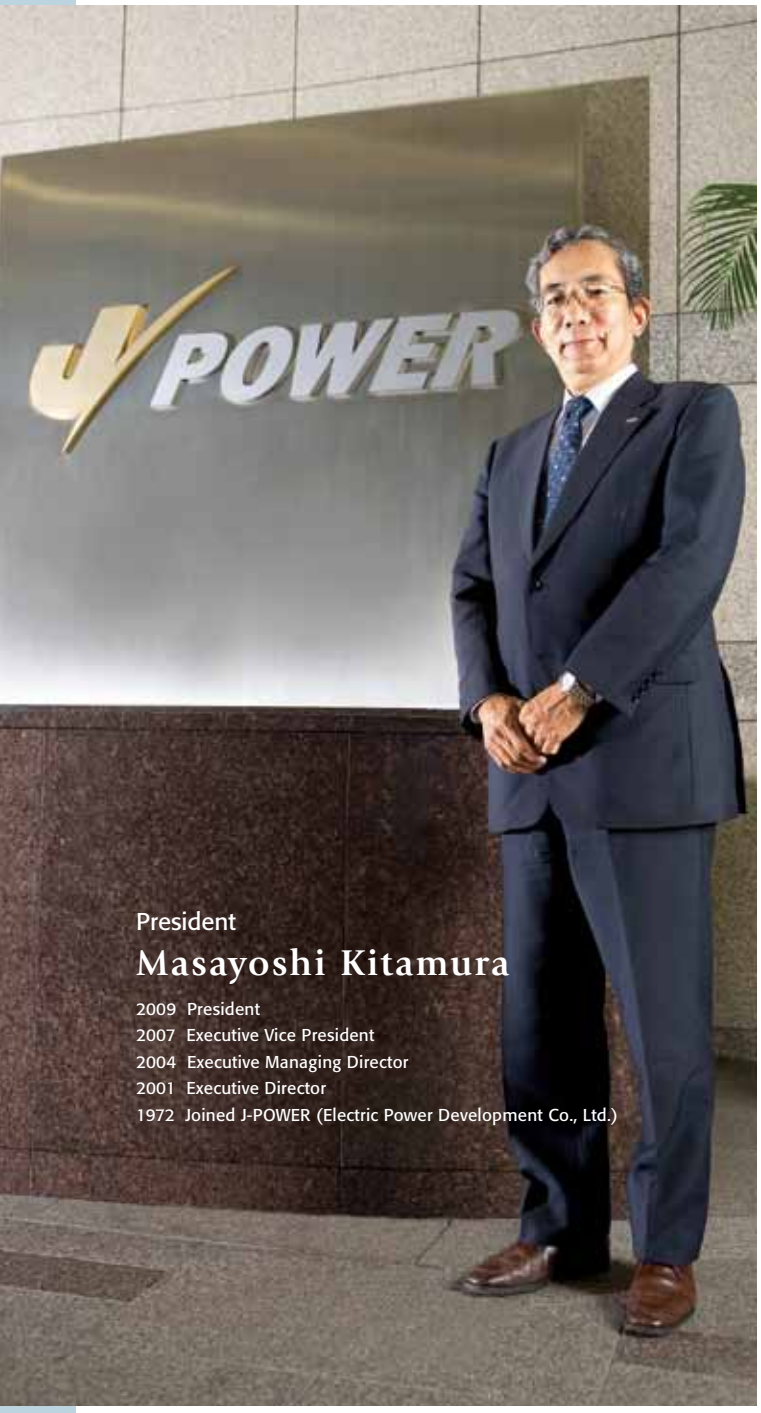
Note: Please refer to p. 29 for information on international consulting and power generation projects.

Birchwood Power Station
(U.S.A.)

Victoria Dam (Sri Lanka)

Message from the President

With the aim of "harmonizing energy supply with the environment" we will put our corporate philosophy into practice, constantly taking up the challenge of developing new technologies and aiming for sustained growth as a global electricity utility that underpins a sustainable society.



President
Masayoshi Kitamura

2009 President
2007 Executive Vice President
2004 Executive Managing Director
2001 Executive Director
1972 Joined J-POWER (Electric Power Development Co., Ltd.)

The achievement of a sustainable society is a prerequisite for the J-POWER Group's own sustained growth

After serving to efficiently provide stable supplies of electric power for more than half a century as a wholesale power supplier, J-POWER was fully privatized in 2004. In the course of doing so we engaged in Company-wide discussion on our convictions regarding our ongoing corporate activities, and determined that our corporate philosophy would be "to ensure constant supplies of energy to contribute to the sustainable development of Japan and the rest of the world." This also constitutes the corporate social responsibility of the J-POWER Group.

The energy supply business in which we engage is one of the most important components of the infrastructure that underpins the sustainability of society, but at the same time it is linked very closely with difficult issues such as environmental problems. Only when these two sides are reconciled, and society achieves sustainable development, can the J-POWER Group itself attain sustained development and growth. That is how we regard sustainability, and to achieve it we constantly keep in mind the question of whether we are helping society and whether the members of society believe that we are playing an essential role.

"Harmonizing energy supply with the environment" is the essential task of the J-POWER Group and the one it takes most seriously

We have engaged in the supply of electric power throughout our history, but we are mindful that producing electricity inevitably has an impact on the environment. Since it is impossible to produce electricity in a manner that has zero environmental impact, in carrying out our business we have always asked ourselves what we can do to minimize that impact.

Energy is essential to people's lives and to industry, and if energy production and the environment are incompatible, then the capacity of the environment to cope will reach its limits, as is being demonstrated by the problem of global warming. Accordingly, to continue producing energy by exercising knowledge and ingenu-

ity so as to avoid damaging the Earth's environmental capacity, its great tolerance, it is essential to pursue the goal of "harmonizing energy supply with the environment." In addition to recognizing that this is an essential task, we regard it as the most serious issue that faces us, and are devoting all our energies to addressing it.

Addressing global warming and other issues by deploying knowledge and technologies in a pioneering and frontier spirit

Addressing this task is exceptionally challenging, but we will not waver in doing so in spite of the present global recession. We are committed to "harmonizing energy supply with the environment" by using knowledge and intelligence to devise solutions. I feel confident that this concentration of knowledge and intelligence will give birth to new technologies and lead to the resolution of global issues.

The problem of global warming that confronts us today has never before been experienced by humankind. Furthermore, the methods and techniques needed to halt its advance lie mainly in undiscovered territory, and the people who take up the challenge need to have a frontier spirit. It is also essential to have a pioneering spirit to take initiatives in using new methods and technologies to address the issues. We have maintained this frontier and pioneering spirit since the postwar era, when our predecessors undertook large-scale hydropower developments, despite the difficulty of undertaking construction at the time, in order to overcome the nationwide shortage of electric power. Though we live in a different era today, it is once again incumbent upon the J-POWER Group to display this spirit. By using knowledge and technology inspired by this spirit we are committed to taking up the challenges posed by various issues.

There has been increasingly earnest discussion regarding the creation of a new international framework for long-term measures to counter global warming, the ultimate goal of which is the creation of a sustainable low-carbon society. To that end, the first task for the J-POWER Group is to radically enhance the efficiency of coal use in the field of power generation. As Japan's largest coal-fired thermal power producer, the J-POWER Group is making steady progress in high-efficiency power-generation technologies that limit carbon dioxide emissions. We are also developing next-generation technologies, for example for the integrated coal-gasification combined cycle system, that will achieve more dramatic advances in efficiency. Among fossil energy resources, coal is the most abundant and stable fuel for power generation, accounting for around 40 percent of power produced worldwide. To ensure a global energy supply-demand balance it will remain essential to use coal. In view of this, we must transfer Japanese high-efficiency coal-fired thermal power generation technologies, which rank among the finest in the world, to countries that are obliged to depend upon coal for a considerable portion of their energy requirements, while continuing to refine our own technologies in domestic power stations. I believe that this will contribute to the reduction of CO_2 emissions on a global scale.

In addition, I consider nuclear power generation, from which there are no CO_2 emissions, to be of decisive importance for satisfying demand for the energy that is so vital to people worldwide, while mitigating global warming. In view of its immense power output, the Ohma Nuclear Power Station, where construction began in May of last year, is expected to make a major contribution to reducing Japan's CO_2 emissions. The reuse of plutonium derived from spent fuel used in nuclear power generation at the power station is also expected to give rise to a full-fledged reactor fuel cycle that will enable resource-poor Japan to make thorough use of uranium resources. Construction of the Ohma Nuclear Power Station will be moving into full swing toward the scheduled start of operations in 2014, and we will be working energetically toward that goal, while making scrupulous efforts to ensure safety and conserve the surrounding environment.

Earning the greater trust of all our stakeholders by translating our corporate philosophy into action

To meet the expectations of the diverse stakeholders who support us it is our duty to continue to give close consideration to their interests and to ensure that they benefit from the fruits of our business activities. One means of gaining their confidence is to genuinely share with all Group employees the J-POWER Group's corporate philosophy of ensuring constant supplies of energy to contribute to the sustainable development of Japan and the rest of the world and to put it into action. The new value that is to be returned to stakeholders is created by our employees, who are also stakeholders. I pledge that by putting the Group philosophy into action I, together with all Group employees, will make every effort to win the even greater trust of all stakeholders.

To earn your greater trust by deepening communication with you and to enhance the quality of our business efforts, we are making this *Sustainability Report* widely available. We would be delighted to receive your frank opinions.

July 2009

北村雅良

Masayoshi Kitamura

J-POWER Group's Corporate Social Responsibility

Our corporate philosophy calls for ensuring constant supplies of energy to contribute to the sustainable development of Japan and the rest of the world. This is fundamental to our ongoing efforts to deliver efficient, reliable electricity while conserving the environment. It is this corporate philosophy that forms the basis of our social responsibility. In addition, the J-POWER Corporate Conduct Rules have been laid down as standards for the conduct of business grounded in our corporate philosophy. Individual Group companies also have policies relating to their own responsibilities to society.

We endeavor to fulfill our corporate social responsibility by adhering to our corporate philosophy and Corporate Conduct Rules as we press forward in our operations.

J-POWER Group Corporate Philosophy
Established September 11, 1998

We aim to ensure constant supplies of energy to contribute to the sustainable development of Japan and the rest of the world.

——— Sincerity and pride underlie all our corporate activities.
——— We build community trust by harmonizing our operations with the environment.
——— Profits are a growth source, and we share the benefits with society.
——— We continuously refine our knowledge and technologies to be a leader in these areas.
——— We meet the challenges of tomorrow by harnessing our unique skills and enthusiasm.

Tadami Main Transmission Line (Gunma Prefecture)

J-POWER Group Corporate Conduct Rules
Established January 1, 2001

●Reliable supply of energy

We will put forth every effort to reliably supply energy both in Japan and abroad utilizing our experienced personnel and cutting-edge technology.

●Safety assurance

In conducting operations we will constantly work to raise safety awareness and give the highest priority to public and worker safety.

●Environmental conservation

Based on an awareness that our business operations are deeply linked with the environment, we will actively engage in environmental conservation activities.

●Communication with society

To establish communication with society we will conduct information disclosure and public relations activities in a fair and transparent manner.

●Contribution to society

Aiming to be a good corporate citizen we will undertake activities to contribute to society and assist in the development of local communities both in Japan and abroad.

●Creation of a rewarding corporate culture

In addition to providing safe and comfortable work environments, we will respect the individuality of our employees and endeavor to establish a rewarding corporate culture that encourages them to take on new challenges.

●Compliance with laws, regulations, and corporate ethics

We will conduct business in good faith and in a fair manner with a strong commitment to compliance and ethics. We will stand firm against anti-social forces that undermine the order and security of civil society.

●Role of top management

Recognizing their responsibility in putting into practice the spirit of these Corporate Conduct Rules, our top management must set an example for others and work to spread awareness of these Rules.
Should an event occur that violates the spirit of these Rules, top management must take the initiative in dealing with the problem to determine the causes and prevent recurrence. Top management must also identify and take disciplinary action against those responsible, including themselves.

J-POWER Group's Corporate Social Responsibility and Principal Themes of Action Taken

The J-POWER Group carries out its responsibilities to society in line with its corporate philosophy, living up to the expectations of the diverse stakeholders who support it. The following is an outline of the principal themes of the action it has been taking.

Corporate Philosophy	Theme	Principal Action Taken	Ref.
Sincerity and pride underlie all our corporate activities.	Stable supply of electric power	Ensuring availability by proper facilities maintenance	Social Responsibilities
	Enhancement of internal controls	Enhancing the corporate governance structure Thorough regulatory compliance	Governance
	Gaining of the trust of society	Conducting appropriate information disclosure Giving attention to safety and peace of mind in all business activities	Governance Social Responsibilities
We build community trust by harmonizing our operations with the environment.	Efforts Relating to Global Environmental Issues	Reducing CO_2 emissions intensity Maintaining and improving thermal efficiency of thermal power generation	Environment
	Efforts Relating to Local Environmental Issues	Reducing emissions of SOx, NOx, etc. Promoting waste recycling	
Profits are a growth source, and we share the benefits with society.	Return of value to shareholders	Maintaining stable dividends and raising them in line with growth performance	Social Responsibilities
	Contribution to society as a whole	Instituting the J-POWER Group Approach to Social Contribution Activities	
We continuously refine our knowledge and technologies to be a leader in these areas.	Nurturing of human resources	Enhancing ability to conduct business by improving basic knowledge and professional capabilities	
	Promotion of innovation	Human-resource development and organizational structure to foster creation of new concepts	
We meet the challenges of tomorrow by harnessing our unique skills and enthusiasm.	Enhancement of workplace environments	Promoting work-life balance	
	Active participation by diverse human resources	Creating workplace environments and systems that facilitate active participation by senior citizens and women	

Notes:
1. The J-POWER Group fiscal 2009 management plan is on the Company website.
(Japanese) http://www.jpower.co.jp/annual_rep/ann20000
(English) http://www.jpower.co.jp/english/news_release/news/news090331_2-1.pdf
2. The J-POWER Group's environmental management targets are set out on pp. 43- 44 of this report.

1

Special Feature

Safe, Sustainable Use of Nuclear Energy

Nuclear power is responsible for nearly a third of Japan's total electric power generating capacity, helping to assure continuous provision of electricity.

Besides benefitting from the stable supply and price of nuclear fuel, nuclear power stations have the advantage of producing no CO_2 emissions in the process of generating electric power.

For Japan, which depends on imports for most of its energy resources, promoting the "nuclear fuel cycle" is essential to achieving a stable supply of energy well into the future. This cycle involves reprocessing spent fuel from nuclear power stations and reusing the extracted plutonium and uranium.

Plan and Background of the Ohma Nuclear Power Station Project

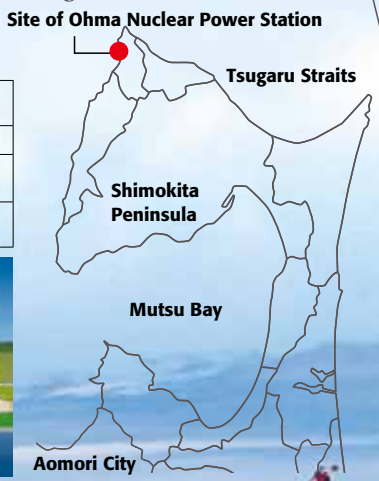
The J-POWER Group has been carrying out surveys and studies concerning nuclear power development since 1954. The Ministry of Economy, Trade and Industry (METI) in April 2008 gave its approval to build a nuclear reactor at the Ohma Nuclear Power Station in Ohma-machi, Shimokita-gun, Aomori Prefecture, which had been in preparation since 1976. Construction began in May 2008 and is currently under way.

With the aim of starting operation in November 2014, we are now proceeding with work on this facility, giving highest priority to assuring safety and gaining the understanding of the surrounding communities.

Overview of the Ohma Nuclear Power Station

Location	Ohma-machi, Shimokita-gun, Aomori Prefecture
Output	1,383 MW
Reactor type	Advanced Boiling Water Reactor (ABWR)
Fuel	Enriched uranium and uranium-plutonium mixed oxide

Artist's rendering of completed Ohma Nuclear Power Station



June 1976 Ohma town council requested environmental survey for hosting a nuclear power station

August 1983 Environmental survey of proposed site

December 1984 Decision by Ohma town council to attract a nuclear power station

August 1995 Atomic Energy Commission abandons prototype ATR plant in favor of full-MOX-ABWR

September 1998 Environment impact survey reports submitted to MITI

December 1998 First round of public hearings

August 1999 Incorporated into the Basic Plan for Electric Power Development

September 1999 Application for approval of nuclear reactor installation (withdrawn in March 2004 due to revision of power station deployment plan)

March 2004 Application for approval of nuclear reactor installation

June 2005 METI asks advice of Nuclear Safety Commission/Atomic Energy Commission

October 2005 Second round of public hearings

April 2008 Nuclear reactor installation approved

May 2008 Approval and start of phase 1 construction project

December 2008 Approval of phase 2 construction project

INTERVIEW

Importance of the Ohma Nuclear Power Project

Resolute Progress Toward the Nuclear Fuel Cycle

Osamu Hagiwara
Leader, Construction Administration Group, Nuclear Power Construction Department

Significance of Full-MOX-ABWR

The J-POWER Group believes it is necessary to diversify our energy sources by the addition of nuclear power generation, for reasons that include achieving energy security and countering global warming.

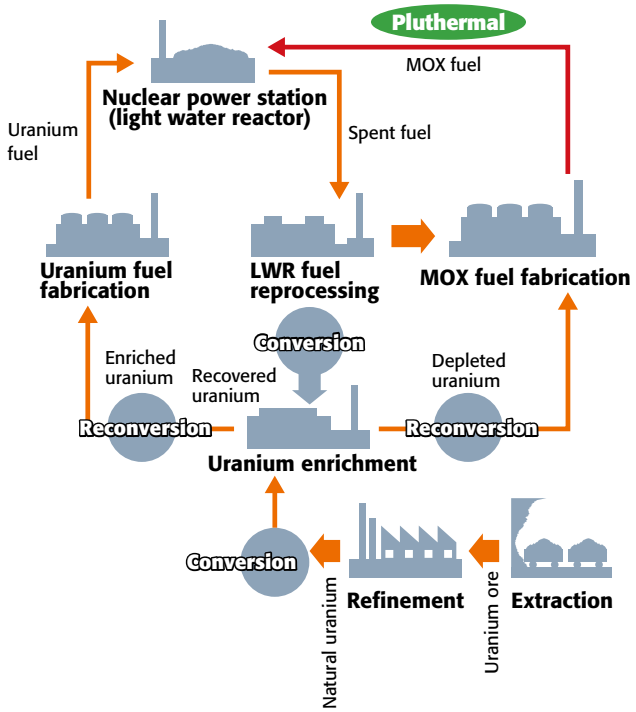
Natural uranium consists mostly of U-238, an isotope that is not readily fissionable. Fissile U-235 makes up only about 0.7 percent of the total. Nuclear power stations use enriched uranium, in which the percentage of U-235 is raised to between 3 and 5 percent. Nuclear fission produces heat and neutrons, and this thermal energy is used by nuclear power stations to generate electricity. When U-238 absorbs a neutron, it is converted to fissile U-239. By reprocessing and recovering the resulting U-239 and reusing it in nuclear power stations, uranium can be utilized more efficiently.

The use of uranium and plutonium mixed oxide (MOX) fuel in nuclear power stations (light water reactors) for the purpose of using plutonium as nuclear reactor fuel is called "pluthermal" in Japan.

The Ohma nuclear power station is being constructed as a full-MOX-ABWR facility, aimed at loading MOX fuel in all the reactor cores. Based on Japan's policy of increasing the flexibility of the pluthermal program, this approach plays an important role toward conserving and effectively using valuable uranium resources. A statement adopted by the Japan Atomic Energy Commission in August 1995 assessed the significance of full-MOX-ABWR as follows.

- It has been positioned as part of Japan's policy of broadening flexibility of plans to use MOX fuel in light water reactors, which is a key means of medium-term recycling of nuclear fuel.
- It is seen as technically feasible without changing the existing basic ABWR specifications, and has ample prospects of being economically feasible for use in actual reactors.

The Nuclear Fuel Cycle Concept



COLUMN | How the Construction Project Is Progressing | Ohma Nuclear Power Construction Office

Building a full MOX nuclear power station with safety as our highest priority

As of May 2009, the Ohma Nuclear Power Construction Office is busy mainly with foundation excavation work for the reactor building, turbine building and other main buildings.

The construction site is located in a region with a severe climate featuring strong winds and sub-freezing average temperatures in winter. As we carry out the construction work, we are making safety assurance our top priority and paying careful attention to the surrounding environment.

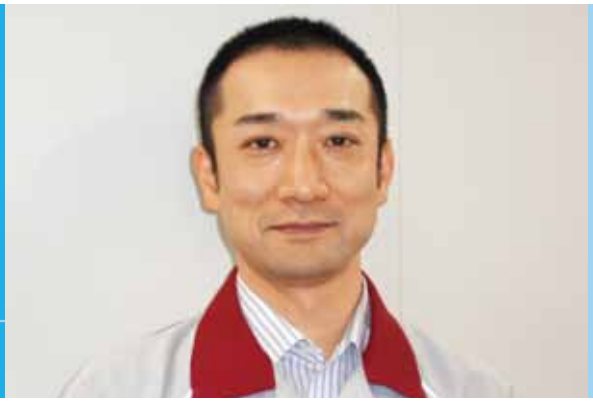
Soon we will begin earthwork for the water intake and discharge facilities, assembly of steel plating in the reactor containment vessel using a huge slewing crane, and installation of the circulating water pipes as well as other mechanical and electrical work. The foundation excavation work for the main buildings currently under way is scheduled for completion by fall 2009, after which construction of the buildings themselves will start based on the results of bedrock testing for the reactor building.

INTERVIEW

Assuring Safety/Maintaining Reliability

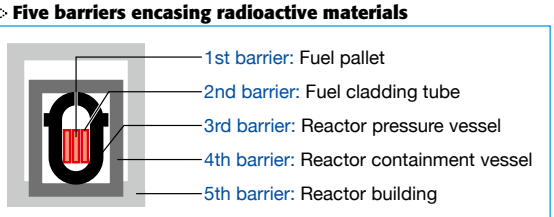
Going forward together with the local communities, giving top priority to safety

Takaya Nakano
Nuclear Engineering Group, Ohma Nuclear Power Construction Office, Ohma General Management Department



A nuclear power station must adopt a "defense-in-depth" approach to safety, with multiple, redundant, independent safety layers, in acknowledgement of the reality that radioactive materials are being handled, that machines can fail, and that human beings can make mistakes. These layers are designed to prevent problems from arising in the first place, prevent errors from spreading and developing into accidents, and prevent abnormal discharge of radioactive materials outside the site. The most important of these is ensuring no abnormal outside emission of radioactive materials, and to this end five layers of barriers are created to keep the materials enclosed in rigorous security.

Five barriers encasing radioactive materials



The Ohma Nuclear Power Station additionally adopts the following safety assessment and design measures.

Seismic Safety

A nuclear power station is designed to withstand an earthquake of the maximum scale anticipated in the area where it is located. This is true also in the case of the Ohma Nuclear Power Station, for which detailed geological surveys have been conducted. The power station was designed with sufficient seismic safety margin and will be monitored as necessary with additional assessments and verifications based on the latest knowledge.

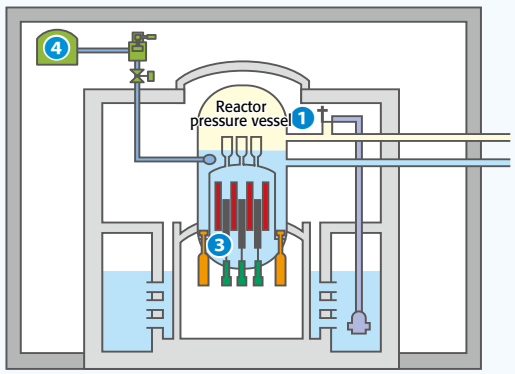
In September 2006, the Nuclear Safety Commission revised the *Regulatory Guide for Reviewing Seismic Design of Nuclear Power Reactor Facilities*, adopting a more sophisticated method of plotting seismic motion on which seismic design is based, and broadening the scope of facilities to be treated with the highest level of importance. Following the government safety review of the Ohma Nuclear Power Station based on the revised Regulatory Guide, we obtained approval in April 2008 for nuclear reactor installation.

Measures Enabling Full MOX Use

The Ohma Nuclear Power Station, while having the same basic specifications as a conventional ABWR reactor, uses MOX fuel in all reactor cores. Supporting this use, necessary measures are taken in the equipment design so that sufficient safety can be assured. The main equipment design measures enabling full MOX use are as follows.

- Larger main steam relief safety valve capacity keeps reactor pressure from rising when an abnormal condition occurs.
- A new fuel inspection system is adopted that reduces the exposure of workers to radioactive materials when conducting incoming inspection of new MOX fuel.
- Some of the control rods adopted are of higher efficacy than conventional rods, raising their reactor shutdown capability.
- Capacity of the standby liquid control system has been increased, providing greater backup capability for reactor shutdown by control rods.

Main specifications of facilities supporting full MOX use in the Ohma Nuclear Power Station



❶ **Large-capacity main steam relief safety valve**
❷ **New fuel inspection system**
❸ **Use of high-efficacy control rods**
❹ **Larger tank capacity of standby liquid control system**

Our Quality Assurance Efforts

A quality assurance program is essential to the peace of mind and trust of the surrounding communities. We have established a quality assurance organization headed by the President, in accord with the Nuclear Quality Regulations, and implement quality assurance measures based on the Quality Policy for Nuclear Safety.

Quality Policy for Nuclear Safety

Basic Policy

With sincerity and pride underlying all our corporate activities, and with safety as our first priority, each of us shall be involved in quality assurance activities by making ourselves fully aware of our duties and roles, as well as their importance. In this way we will build the Ohma Nuclear Power Station as a facility worthy of the local community's trust and peace of mind.

Conduct Rules

1. We will perform high-quality design and construction work, giving top priority to assuring safety.
2. We will observe the requirements in laws and regulations, as well as the company's own rules.
3. We will strive for smooth communication with the surrounding communities, the national government, and other related institutions.
4. We will work continuously to improve the effectiveness of quality assurance activities.

Issued June 2009

Information Disclosure

In building the Ohma Nuclear Power Station, keeping the public properly informed in timely fashion is an important part of earning the trust of surrounding communities.

- We use the Web to give updates on the construction progress, publish press releases and provide other information.
- We provide information to the news media at milestones in the project and other appropriate times.
- If an accident should occur, we are committed to properly informing the public through our website and media releases.
- We provide construction progress updates in our monthly PR magazine *New Pocket* available on our website.
- We offer tours to local residents who would like to see the construction progress for themselves.

J-POWER website, "Nuclear Power Generation Services"

web http://www.jpower.co.jp/bs/field/gensiryoku/index.html (Japanese only)

COLUMN

Coexistence with Local Communities

Ohma Nuclear Power Construction Office

We at the Ohma Nuclear Power Construction Office are engaged in a variety of activities directed at residents of the surrounding communities, seeking to build understanding of the nuclear power station and gain their trust.

● Communicating

We issue a monthly PR magazine, *New Pocket*, for residents of surrounding communities, taking up local issues as well as providing information on progress in building the Ohma Nuclear Power Station. We also regularly host lectures on cultural themes, cinema showings, family events and other such activities.

● Supporting education aimed at the next generation

In cooperation with educational institutions, we offer science classes, stage presentations and other extracurricular activities as well as providing on-going assistance with science education.

● Participating in local events

We take advantage of every opportunity for daily contacts with people in the surrounding communities, such as by taking part in traditional festivals, arts preservation activities, and beautification and other events held by local municipalities and groups.

J-POWER Group employees take part in the Ohma Inari Shrine festival

Special Feature

2 Coal Use and Measures to Counter Global Warming

The J-POWER Group is one of the biggest coal users in Japan, consuming approximately 20 million tons of coal per year at eight coal-fired power stations. With a total capacity of 7.95 GW, these stations account for approximately 20 percent of Japan's total coal-fired generating capacity. We are endeavoring seriously as a leading company in the industry to balance the effective use of coal with responsiveness to global environmental issues.

The Significance of Effective Coal Use in Today's World

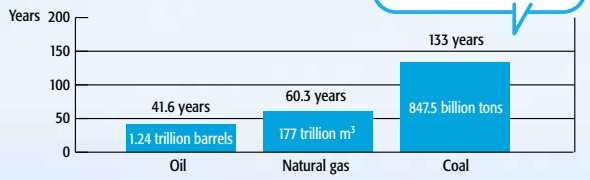
The world today depends on fossil fuels for most of its energy needs. Among these fuels, coal has more abundant reserves than oil or natural gas. Moreover, it is available globally including Asia rather than being concentrated in the Middle East, and is therefore used throughout the world as a main energy source. Coal-fired power generation accounts for around 40 percent of the world's current electricity production, and coal is expected to continue to be a major source of energy, helping to meet ever-rising global energy demands in China, India and elsewhere.

For Japan, dependent on overseas sources for the majority of its energy resources, aiming for a robust and flexible energy mix is a must. The advantages of coal will continue to make it essential in forming that mix.

At the same time, when coal and other fossil fuels are burned they generate CO_2, a greenhouse gas. In the midst of growing energy demand, the world faces the issue of how to reduce emissions of CO_2 and other greenhouse gases.

Fossil Fuel Energy Resource Reserves

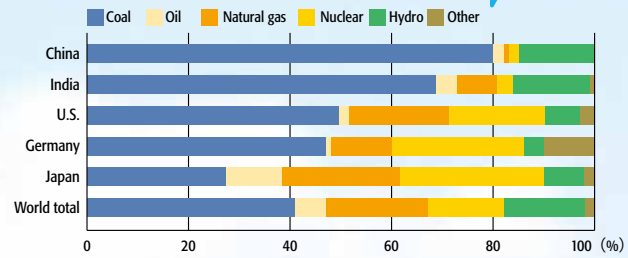
Coal has ample reserves.



Source: Compiled by J-POWER using data from BP *Statistical Review of World Energy 2008*

Electricity Generation Worldwide by Source

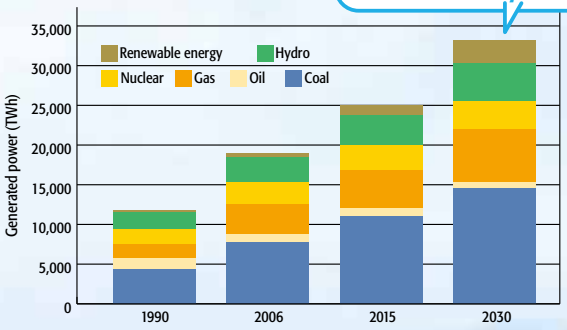
Approximately 40% of the world's electricity comes from coal.



Source: Compiled by J-POWER using data from IEA *World Energy Outlook 2008*

Global Power Generation Trends and Outlook by Energy Source

Coal-fired power will continue to be essential as a main source of the world's electricity



Source: Compiled by J-POWER using data from IEA *World Energy Outlook 2008*

The J-POWER Group's Four Strategies for the Problem of Global Warming

The J-POWER Group in Japan is the source of approximately 3 percent of this country's total CO_2 emissions. This is something we take very seriously. As a leader in the use of coal, we recognize our social responsibility to deal with global warming, making it one of the top priority issues for our corporate management. The four strategies outlined below are helping to shape our short-term, mid-range, and long-range efforts to continue reducing CO_2 emissions intensity. Further details are given in the section on Environment (pp. 42 ff.). See also p. 55 for fiscal 2008 emissions data.

1 Maintenance and Improvement of Energy Use Efficiency

In addition to promoting increased efficiency in thermal power generation, we are further boosting the power generation efficiency of hydropower facilities, which do not emit CO_2, by continually upgrading them.

2 Development of Low CO_2 Emission Power Sources

The J-POWER Group is working to develop power generation that emits little or no CO_2, including nuclear power, wind power, and solar energy. We are also actively working to take effective advantage of biomass as an energy source.

3 Development, Transfer, and Dissemination of New Technologies

The J-POWER Group is developing coal gasification technology to improve power generation efficiency as well as technology for capturing CO_2. We also intend to continue our quest for next-generation technologies and lead the world in coal-fired power generation, while transferring and promoting the spread of our ultra super critical technology.

4 Utilization of the Kyoto Mechanisms and Other Measures

J-POWER is making use of its technological and financial resources to apply such Kyoto Mechanisms as the Clean Development Mechanism (CDM), which allows member countries to count the amount of emissions reduced by projects they conduct in other countries for cutting greenhouse gases as their own reductions. In this way we are contributing to effective reduction of CO_2 emissions on a global scale.

The Significance of Improving Coal-Fired Power Generation Efficiency

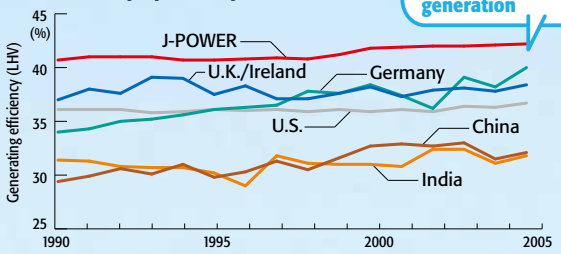
To reduce CO_2 emissions it is necessary both to lower the ratio of CO_2 emissions per unit output and to reduce the absolute amount of emissions. In generating electricity, coal results in higher CO_2 emissions than oil and natural gas. In Japan, however, coal-fired power stations generate electricity with higher energy efficiency than in Europe or Asian countries by raising the temperature and pressure in steam turbines to ultra super critical (USC) conditions.

If this high-performance technology were introduced in the United States, China, and India, which together emit a large portion of the world's CO_2, it is estimated that CO_2 emissions in these three countries could be reduced by around 1.3 billion tons annually, an amount equivalent to Japan's annual total of CO_2 emissions and five percent of the world total. It is therefore important to transfer and disseminate these clean coal technologies.

In addition, the J-POWER Group is pioneering efforts to develop next-generation coal-utilization technologies aiming at higher energy efficiency, including integrated coal gasification combined cycle (IGCC) and integrated coal gasification fuel cell combined cycle (IGFC) systems.

Japan boasts the world's highest thermal efficiency in coal-fired power generation

Trends in Coal Generation Efficiency by Country

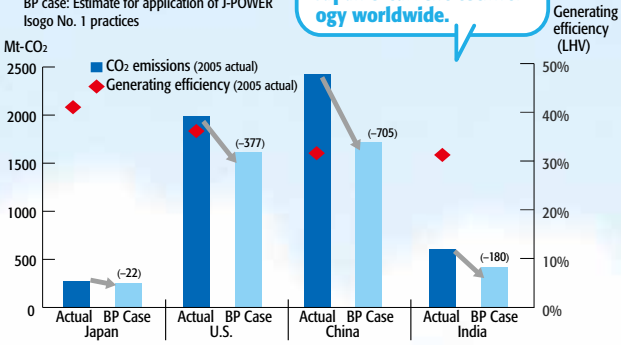


Source: Compiled using data from Ecofys *Comparison of Power Efficiency on Grid Level 2008*

CO_2 Emissions from Coal-Fired Power Generation and Potential for Reduction

Annual reduction of 1.3 billion tons CO_2 could be achieved by adopting Japan's current technology worldwide.

BP case: Estimate for application of J-POWER Isogo No. 1 practices



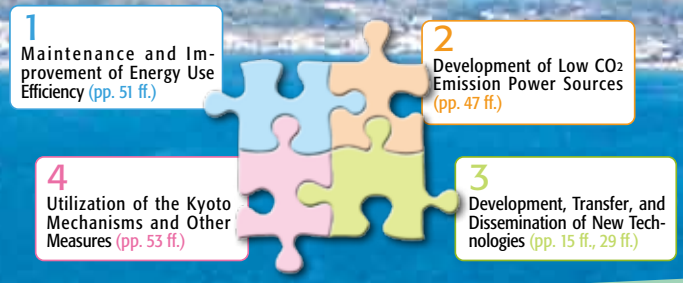
LHV: Lower heating value

Source: Compiled using data from IEA *World Energy Outlook 2007* and Ecofys *Comparison of Power Efficiency on Grid Level 2008*

Ultimate Goal: Zero CO_2 Emissions

Projects are under way around the world to develop carbon dioxide capture and storage (CCS) technology, and the J-POWER Group is also engaged in developing such technology. According to the *Special Report on Carbon Dioxide Capture and Storage* (released September 26, 2005) of the Intergovernmental Panel on Climate Change (IPCC), CCS has a major role to play in fighting global warming.

The IEA Energy Technology Perspectives 2008 concludes that the required reduction in CO_2 emissions will be achieved with improvement in energy efficiency and the combined use of renewable energy generation, nuclear power generation, and power generation at fossil fuel power stations equipped with CCS. The report claims that large-scale deployment of CCS will be needed for reducing CO_2 emissions.



We are advancing the fight against global warming by effectively combining the four strategies in an appropriate way, from a long-term standpoint.

>>Present

- **Implementing the Ohma Nuclear Power project**
- **Promoting the development of wind power and other forms of renewable energy**
- **Utilizing Kyoto credits and domestic credits**
- **Making older thermal power stations more efficient**
- **Effective use of biomass fuel**
- **Enhancing hydropower facilities and operation**

Future >>

- **Technological innovation achieving dramatic gains in power generation efficiency from coal**
- **Establishment of CO_2 capture and storage technology**

Question

What are you doing to reduce CO_2 emissions from coal use?

Answer 1

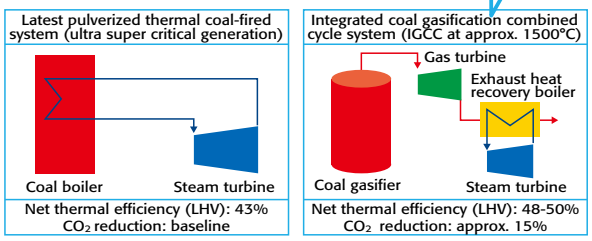
Hideki Gotou Director, Wakamatsu Research Institute, Technology Development Center

We are advancing the EAGLE Project aiming for the pinnacle of clean coal technology.

EAGLE stands for Coal Energy Application for Gas, Liquid, & Electricity. It is the name we have given to our project for "multi-purpose coal gas production technology development." The J-POWER Group is carrying out this project to achieve more efficient utilization of coal and as an important step toward the goal of zero CO_2 emissions. The conventional way of producing electricity from coal is to burn the coal and create steam from the heat, then use that steam to generate electricity. Our research is focused on converting coal to a combustible gas (syngas, consisting mainly of CO and H_2) and using that gas to generate electricity. Besides using the resulting gas to drive a gas turbine, the exhaust heat is used to produce steam for driving a steam turbine. A system using this approach is called an integrated coal gasification combined cycle (IGCC) system. Power generating efficiency is greatly improved, enabling CO_2 emissions to be reduced. Moreover, if we can efficiently capture CO_2 in the coal gas and store it, we will be much closer to our ultimate goal of a zero-emissions electrical plant. Also of note is that the EAGLE coal gas can have multiple uses, as a raw material for manufacturing such products as synthetic fuel and hydrogen.

CO_2 emissions can be reduced by around 15% by more efficient coal use.

>>> Comparison of Coal-Fired Power Generation Systems



EAGLE_Step 1 (test period: FY 2002-FY 2006)

The outstanding performance achieved in 6,000 hours of test operation has given us confidence in this project!

In Step I of the EAGLE Project, we built a pilot plant with capacity of 150 tons of coal per day, at the J-POWER Wakamatsu Research Institute in Kitakyushu, Fukuoka Prefecture, collaborating with the New Energy and Industrial Technology Development Organization (NEDO). Aimed at establishing Japan's own high-performance gasification technology, the pilot project determined the basic performance and verified reliability. Another important aspect of the pilot was obtaining data necessary for designing a large-scale plant. The goal set for the pilot was to demonstrate performance surpassing that of overseas gasification technology. After test operation of around 6,000 hours, we confirmed outstanding basic performance exceeding our goals, further boosting our confidence in the great potential of EAGLE technology.

>>> The EAGLE logo

>>> Outline of the EAGLE pilot facilities

Coal use	150t/day
Gasifier type	Oxygen blown single-chamber two-stage entrained-bed gasifier
Gasification pressure	2.5MPa
Gasification temperature	1,500 to 1,600°C
Gas turbine output	8,000kW

EAGLE pilot plant (Kitakyushu)

The operations room is bristling with anticipation

EAGLE_Step2 (test period: FY 2007- FY 2009)

On to even bigger challenges – Working to meet the great hopes for zero CO_2 emissions, and aiming for higher gasifier performance

With Step I successfully completed, the EAGLE Project is moving on to Step II, as a joint project with NEDO toward practical gasifier implementation. The gasifier is being modified to enable higher-temperature operation, and will be tested to verify its usability with a wide range of coal types. The ability to use various grades of coal will give greater flexibility both in gasifier operation and in coal procurement, easing the way to development of a commercial system.

Step II will also see the world's first attempt to combine gasification with CO_2 capture and storage technology, as a major objective will be to demonstrate the use of CO_2 capture technology with the EAGLE test bed. If successful, the accomplishment is expected to be a major breakthrough in solving the problem of global warming, and to contribute toward establishment of zero CO_2 emissions technology for thermal power stations. This technology is an important development theme also in Cool Earth 50, Japan's project for countering global warming. Much is riding on the successful outcome of Step II.

CO_2 Capture and Storage System

>>>Overview of the CO_2 Capture and Storage System

Gas processing rate	Approx. 1,000 Nm^3/h
Capture method	Chemical absorption
CO_2 capture capacity	Approx. 24 t/day
Captured CO_2 purity	At least 99%

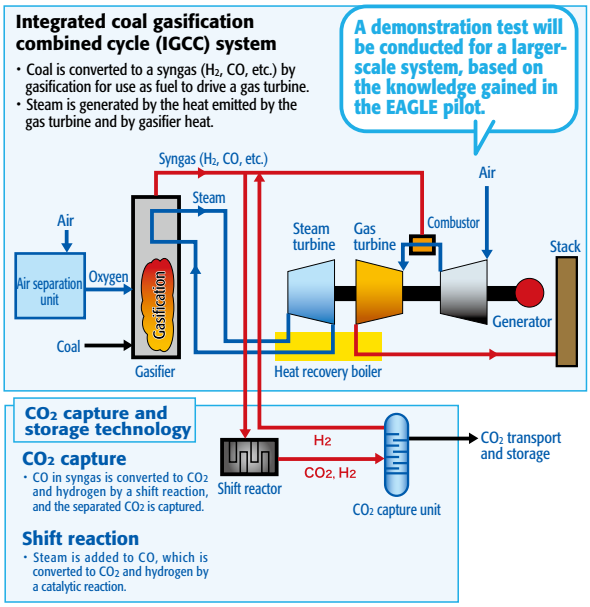
Large-Scale Demonstration of Oxygen-Blown Coal Gasification Technology (conducted jointly with Chugoku Electric Power Co., Inc.)

A large-scale demonstration test, reflecting the results of trials of oxygen-blown coal gasification and CO_2 capture and storage technologies, is expected to start in fiscal 2016 at the Chugoku Electric Power's Osaki Power Station.

The demonstration plant will be built with output in the 170 MW class (processing around 1,100 tons of coal per day). After verifying the reliability, economic efficiency, and operability as an electric power generation system based on oxygen-blown coal gasification, application of the latest CO_2 capture and storage technology will be tested, aimed at realizing revolutionary zero-emission high-efficiency thermal power generation from coal.

This demonstration is also being positioned as one of the projects for innovative zero-emission coal-based power generation of Japan's Ministry of Economy, Trade and Industry (METI), simultaneously meeting both the High-Efficiency Coal Fired Power Generation and CO_2 Capture and Storage (CCS) technological development goals of the METI Cool Earth Innovative Energy Technology Program.

>>>Overview of the Demonstration Test System (Oxygen-blown IGCC)



PERSON | **Establishing CO_2 Capture and Storage Technology** | **Susumu Kage** EAGLE Research & Engineering Group, Wakamatsu Research Institute, Technology Development Center

One of the undertakings in EAGLE Step II is to establish technology for capturing and storing CO_2 produced in the coal gasification process. The technology uses a catalytic reaction to convert CO in syngas to CO_2 and hydrogen (H_2), then separates and captures the CO_2 by means of a chemical absorbing solution. Since there are virtually no examples anywhere of applying this process to coal gas, we are now determining the basic performance of the catalyst and absorbing solution as well as obtaining data on equipment and operation characteristics.

A problem with CO_2 storage and recovery systems is their heavy use of steam and electricity, so that the addition of such equipment to a power generation system greatly reduces efficiency. We are therefore studying how to configure and operate the system so as to minimize this energy use, seen as a crucial step toward future CCS implementation.

Answer2

Nobuhiro Misawa Research Planning Group, Technology Development Center

We are testing CO_2 capture and storage (CCS) technology in a variety of ways.

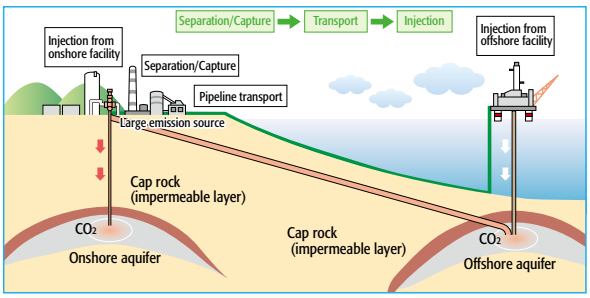
What Is CSS Technology?

One large-scale coal-fired power station with 1,000 MW output today produces around 5 or 6 million tons of CO_2 annually. An effective way to combat global warming would be to reduce the amount of CO_2 discharged from large-scale sources such as coal-fired power stations. Improving the coal use efficiency (thermal efficiency) of coal-fired stations could realize future reductions in CO_2 emissions of at most 30 percent from today's levels. If stronger global warming measures become necessary, however, even further CO_2 reductions are likely to be demanded. For this reason, the J-POWER Group is busy developing CCS technology that will make possible reductions of 90 percent or more in the amount of CO_2 released to the atmosphere by coal-fired power stations.

CCS technology separates and captures CO_2, transports it, and then sequesters it in stable storage deep underground (around 1000m). As such, it entails additional facility installation and energy use. Drawing on our extensive experience in operating and maintaining large numbers of power stations, we are carrying out technology development aimed at deriving a capture method optimally suited to use with power stations. Our researches are also seeking to understand the behavior of CO_2 when stored underground, taking advantage of experience with underground geological formations gained from geothermal power generation.

The CO_2 capture phase of CCS technology is now at the stage of pilot-scale testing. Its practical realization will require solutions to such issues as reducing the costs and energy use, as well as demonstrations using large-scale facilities.

CCS Concept



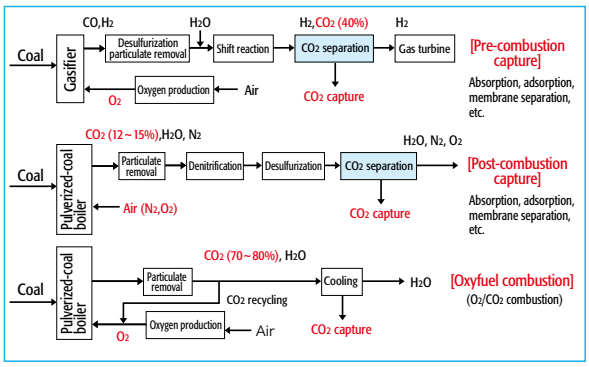
Source: Reference material for March 14, 2006 meeting, Global Environment Committee, Central Environment Council

CO_2 Capture from Coal-Fired Power Generation

There are three basic approaches to separating and capturing CO_2 from coal-fired thermal power generation: (1) pre-combustion capture, (2) post-combustion capture, and (3) oxyfuel combustion. Pre-combustion capture can be used in IGCC and IGFC plants that gasify coal, while post-combustion capture and oxyfuel combustion are suitable mainly for PCF power stations.

We are working on development of technology for all three types of CO_2 separation and capture, aware that PCF power stations, which burn coal to generate energy, are currently widespread, while combination systems using high-efficiency IGCC and IGFC generation with CCS offer great potential for the future.

Technologies for Capturing CO_2 from Coal-Fired Power Generation



Study of an Integrated System for CO_2 Capture and Storage: The Callide Oxyfuel Combustion Project

Oxyfuel combustion supplies the boiler with oxygen instead of air for combustion, with the aim of increasing the concentration of CO_2 in exhaust gas so that less energy is needed for CO_2 capture. The J-POWER Group is one of seven Japanese and Australian companies to take part in the Callide Oxyfuel Combustion Project, conducted at the Callide A power station (PCF, 30 MW) in Queensland with assistance from the Japanese and Australian governments. In order to carry out the world's first demonstration of an integrated system for CO_2 capture and storage applied to an existing power station, power station retrofitting is being implemented from fiscal 2008 to the first half of fiscal 2011, and test operation using oxygen combustion is scheduled to start in the latter half of fiscal 2011 (see also p. 36).

Corporate Governance

Corporate Governance Structure_19

Governance

Fiscal 2008 Highlights

Institution of Chairmanship and Outside Directors

P. 19

To enhance the corporate governance structure,
the office of chairman was created
and an outside director was elected.

Corporate Governance

The J-POWER Group is committed to addressing changes in society and being worthy of the trust held in it by its diverse stakeholders. To that end, we are taking steady steps to build and operate a structure needed to ensure enhanced corporate governance.

Corporate Governance Structure

Based on its corporate philosophy of aiming "to ensure constant supplies of energy to contribute to the sustainable development of Japan and the rest of the world," the J-POWER Group recognizes that the enhancement of corporate governance and thorough implementation of regulatory compliance are highly important management issues for achieving long-term corporate growth and enhanced corporate value and winning the trust of its stakeholders.

Corporate Governance Framework

In accordance with the J-POWER Group corporate philosophy, J-POWER directors and corporate auditors take the initiative in giving guidance on honest and fair activity based on an unswervingly law-abiding spirit and ethical attitude in accordance with the J-POWER Corporate Conduct Rules. At the same time, they promote efforts to instill this attitude in all J-POWER employees.

At J-POWER, corporate governance is enhanced continually by the Board of Directors, which exercises control by means of mutual checks by directors well versed in the Company's business, and the Board of Corporate Auditors, which is composed of highly experienced auditors who oversee the management from an independent perspective.

Since June 2009 the supervisory functions of the Board of Directors have been strengthened by the institution of the position of chairman with the aim of enhancing the supervisory capabilities of the directors. In addition, one outside director was elected to participate in decision-making by the J-POWER management from an independent perspective in the capacity of a non-executive director.

To ensure that directors' duties are carried out efficiently, functions have been allocated to bodies other than Board of Directors. Specifically, the Executive Committee has been established to deliberate on specific matters, in particular matters of key importance to the Company as a whole from among those being handled by the president in accordance with policies decided on by the board, and the Management Executing Committee deliberates on important matters relating to specific aspects of business execution.

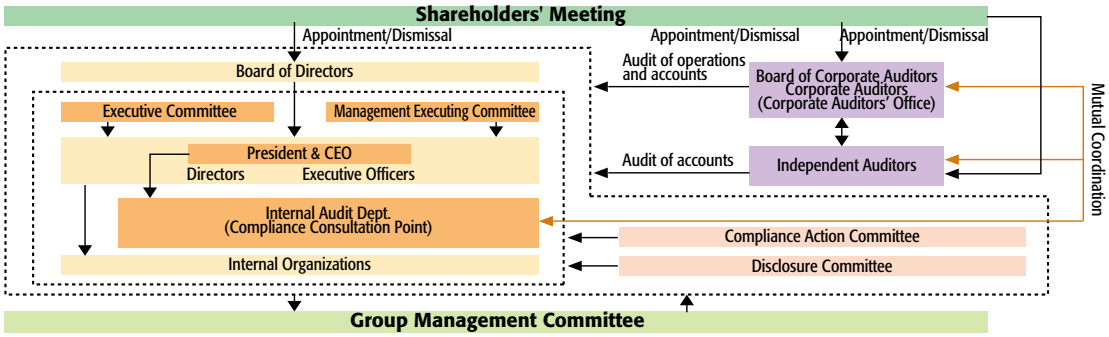
In addition, the creation of the system of executive officers has apportioned the execution of business among directors and executive officers. This has clarified responsibilities and authority, enabling precise and prompt decision-making and efficient corporate management.

J-POWER's Board of Corporate Auditors comprises five auditors. Three of these are outside auditors, and since July 2008 one of these has had the status of a standing auditor, in order to enhance still further the oversight functions of the Board of Corporate Auditors.

To ensure that the corporate auditors' auditing is carried out effectively, the directors have created an environment in which corporate auditors attend and state their opinions at meetings of the Board of Directors, the Executive Committee, and the Management Executing Committee, hear descriptions from directors and others concerning the state of business execution, inspect internal Company organizations and major subsidiaries, and engage in smooth mutual coordination with accounting auditors and others.

In addition to these supervisory and oversight functions, J-POWER has established its Internal Audit Department, which conducts internal auditing independent of other Company units. On top of this, each Company unit conducts periodic voluntary audits of its own operations.

>>> The J-POWER Group's Corporate Governance Framework



key word

With regard to disclosure, to improve the accountability and transparency of its corporate activities the Company has established the Disclosure Committee, chaired by the president, which ensures that the disclosure of the Company's information is vigorous, fair, transparent, and timely.

The J-POWER Advisory Board was established in September 2008 as part of the Company's measures to enhance corporate governance. The Advisory Board allows outside experts to provide diverse and objective opinions and uses them to enhance corporate value.

With regard to the administration of subsidiaries and affiliates, J-POWER's basic policy calls for Group-wide development in accordance with the Group's management plan. In addition to the administration of subsidiaries based on company regulations, we have set up a Group Management Meeting to enhance the fairness of business activity within the corporate group.

●Implementation of Internal Control Reporting System

The J-POWER Group has progressed with the development of an internal control system pertaining to financial reporting under the system of internal control reporting applied under the Financial Instruments and Exchange Law. We have completed visualization (documentation) and compiled regulations for the purpose of identifying risks that may impact financial reporting throughout the J-POWER Group and clarifying the controls needed to address them, and the system was brought into operation in April 2008.

With regard to the evaluation of internal controls by management executives themselves, based on implementation criteria prescribed by Japan's Financial Services Agency in relation to company-wide internal controls, internal controls relating to business processes, and internal controls that use IT, J-POWER's Internal Audit Department has taken the central role in assessing their status of development as of the fiscal 2008 first half and the status of their implementation in the second half, finding that there are no significant defects. At the end of June 2009, the results of management executives' evaluations were compiled and issued as a report on internal control. The J-POWER Group is committed to ongoing enhancement of its internal control systems and to ensuring the reliability of its financial reporting.

Emergency Management Structure

The risks inherent in J-POWER's business environment are becoming increasingly diverse and complex, requiring us to take responsibility for forecasting the various risks accurately and to manage them appropriately in the event they emerge. In view of this, J-POWER has prepared itself for risk by putting the following structure in place.

1 Emergency Response Team

(1) To deal with emergency management during periods of normality, the Emergency Response Team is established permanently within the General Affairs Department at head office to predict emergencies, conduct rapid first response when they do occur, and take overall charge of emergency management.

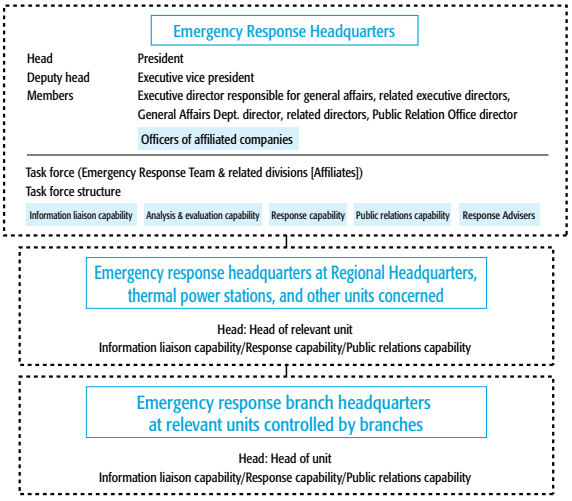
(2) The Emergency Response Team manages the following matters.
- Prediction of emergencies and rapid first response when they do occur
- Risk identification, gathering and management of risk information
- Education and training

2 Emergency managers and emergency duty personnel

Emergency managers and duty personnel are appointed in each head office division and local unit, and these undertake rapid first response and transmission of information.

3 Emergency Response Headquarters and branches

When emergencies are predicted and occur, and their seriousness warrants emergency countermeasures, the Emergency Response Headquarters (and branches) are established promptly (see chart below).



4 Overseas emergency response task force

The overseas emergency response task force has been established under the Emergency Response Team in line with the expansion of the scale of J-POWER's business outside Japan. Its activities also include the gathering of information relating to emergencies overseas.

What Emergencies Mean for J-POWER Group

For the J-POWER Group, a variety of events are regarded as being emergencies.

As a wholesale power company the greatest emergency for J-POWER is the malfunctioning of equipment that produces electricity, its product upon which companies depend for their very existence. The causes of equipment malfunctions include natural disasters, man-made causes, and physical causes.

(1) Malfunctions caused by natural disasters

Natural disasters such as earthquakes, typhoons, lightning strikes, tsunami, and volcanic eruptions are not able to be prevented by artificial means, though it is possible to minimize the damage they cause through the use of appropriate equipment and systems for disaster recovery. J-POWER takes precautions against the risk of natural disasters by such means as having systems in place to restore equipment functions as rapidly as possible when such natural disasters affect the maintenance and operation of facilities such as those for power generation and transmission, substations, and control centers (for remote operation of power stations), and conducting reinforcement engineering works that incorporate state-of-the-art earthquake-resistant design concepts. In addition, the Company fosters emergency-management awareness among its employees by conducting regular disaster-prevention drills.

(2) Malfunctions from man-made causes

With the exclusion of crises that it is impossible for a single company to address alone, the Company addresses warfare, terrorism involving acts of destruction, malicious acts, and other forms of crisis caused by human activity to avoid them as much as possible by such means as making every effort to gather relevant information, liaising with relevant authorities, and building a liaison structure for times of crisis. In addition, power transmission pylons close to public thoroughfares are fenced off and inspected and examined regularly.

(3) Malfunctions from physical causes

J-POWER's electricity generation, transmission, substation, and communications equipment was in some cases installed more than 50 years ago, and thus a significant proportion of it is aging. Equipment whose functioning deteriorates and suffers damage is repaired or renewed as necessary, and daily inspections and examinations are conducted to ensure that they do not give rise to significant obstacles to power supplies. In addition, risk is avoided by means of regular overhauls and meticulous inspections to check the performance of key parts and equipment, and the implementation of preventative maintenance to avoid equipment malfunctions.

Disaster Prevention Measures

In recent years, natural disasters such as major earthquakes and torrential rains due to abnormal weather have been occurring frequently. J-POWER is an electric power supplier with responsibility for the nation's vital lifelines, and has the status of a designated public institution under the Disaster Countermeasures Basic Act and the Civil Protection Law.

In view of this, the Company has long been developing disaster prevention measures and has formulated and announced operational plans for disaster prevention and plans for measures to protect the people. In this way, J-POWER has aimed to be a company that is resilient to disasters.

In-house manuals for responding to disasters, including a set of rules on disaster countermeasures and protection measures for the people, have been prepared, and the Company has built a disaster prevention structure that encompasses head office and all Group units in each region systematically.

In addition to the creation of this structure, disaster drills are held regularly in every unit to improve its practical ability to deal with actual disasters so that emergency situations can be handled appropriately.

COLUMN Activities of the Disaster Prevention Task Force

Deployment of Company-wide cross-functional disaster prevention activity centered on the Disaster Prevention Task Force established in 2005

Given the frequent occurrence and growing severity of natural disasters since the Chuetsu Earthquake in Niigata Prefecture in 2004, the Disaster Prevention Task Force was established as a cross-functional organization straddling all related divisions. It brings together the Company's knowledge in a broad range of spheres such as civil engineering and construction, studying and implementing measures to protect Company power generation, transmission, substation and communications equipment from such disasters.

Specifically, with regard to potential large-scale earthquakes under such areas as the Tokai, Tonankai, and Nankai regions and the Tokyo Metropolitan Area in the near future, the task force is studying their impact on J-POWER facilities and is implementing necessary countermeasures that include reinforcement works for earthquake resistance.

Emergency drills (Upper: Regional area; Lower: Head office)

key word

Compliance Promotion Structure

In accordance with its corporate philosophy, J-POWER has instituted its Corporate Conduct Rules as the core of its compliance activity, serving as the model for action in the conduct of business that accords with corporate ethics and reflects a law-abiding spirit, and has also instituted its Compliance Code (see p. 73) to provide specific decision-making standards for managers and employees in their daily business activities. To ensure that the tenor of the Rules and the Code is constantly effective in practice, the Company has established the Compliance Action Committee, chaired by the chairman, to determine policy for Company-wide compliance activities and to evaluate and modulate how they are being applied, and also the Compliance Promotion Headquarters, headed by the executive vice president responsible for compliance, the task of which is to formulate and implement activity plans.

In addition, compliance committees have been established in individual branches, thermal power stations, and other key units, for the purpose of conducting compliance activity that accords with the characteristics of each unit.

Roles are apportioned to these organizations and units, and through cooperation and liaison they endeavor to ensure that compliance-consciousness becomes firmly entrenched in the corporate culture.

Out-of-compliance issues, and measures to prevent recurrence

Since fiscal 2007 J-POWER has been laying down a concrete action program for compliance promotion and has endeavored to prevent out-of-compliance issues from arising. In fiscal 2008, however, there were out-of-compliance issues such as the violation of the dam-management rules for the Kassa Dam.

Defective official procedures

Required official procedures have been conducted in a defective manner with regard to cases such as works conducted for the installation of facilities, but when they were discovered the Company filed reports immediately to the authorities, and corrected the situation.

Violation of dam-management rules at the Kassa Dam

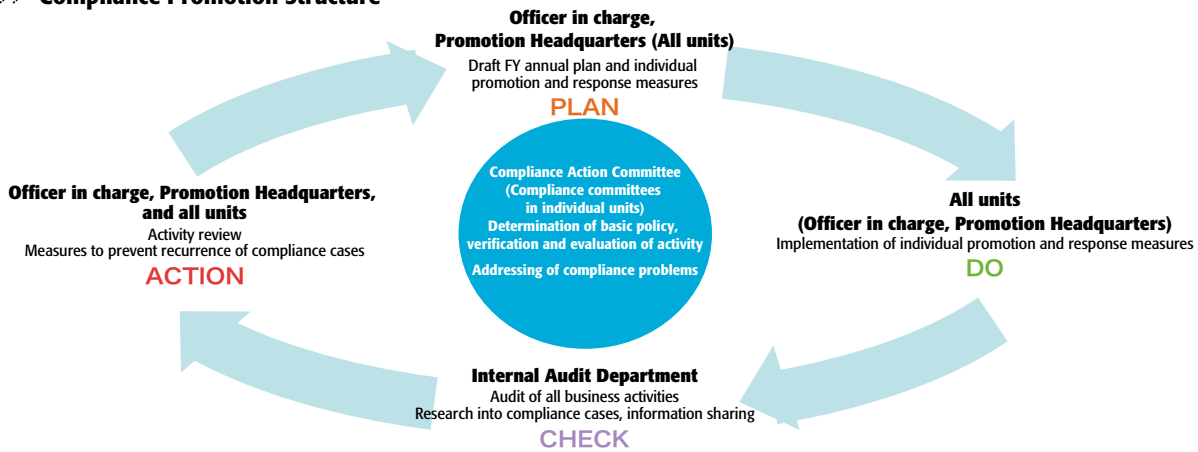
In May 2008, at the Kassa Dam above the Okukiyotsu Power Station (Niigata Prefecture) there was a discharge caused by a natural surge. At the time of the surge it was obligatory, according to the dam-management rules based on the River Act, to give advance notification to the relevant bodies and for a patrol by an alarm vehicle to be conducted, but owing to deficiencies in the surveillance structure the discharge was not noticed for 15 hours, and no advance notification or patrol was conducted. In addition, it is obligatory under the Electricity Business Act to report abnormal discharges to the director of the responsible industrial safety and inspection department within 48 hours, but here too the report was delayed.

Note: Please refer to p. 66 for the situation regarding occurrences of environment-related problems.

All facts concerning the case referred to above have been exposed and the causes investigated, and measures to prevent recurrence have been formulated based on the results, and then implemented. Other Company departments have been made thoroughly conversant with the facts, and steps taken to ensure no recurrence of similar cases. The state of implementation of these countermeasures is monitored regularly and their effects measured, and these will be reflected in future compliance action programs.

Compliance-related exchange program between different job categories

Compliance Promotion Structure



Information Security Activities

As companies have become increasingly information-oriented and are making ever-greater use of IT, the significance of information security is growing.

J-POWER has the duty to build vital national infrastructure in the form of nuclear power stations and to provide stable supplies of electricity. Given this important duty, it seeks to enhance information security and maintain it at a higher level and is implementing a variety of measures to achieve that.

Basic Policy on Information Security

J-POWER has formulated its Group-wide "Basic policy on information security", [*1] and publicizes it on its website.

The information security measures outlined below are implemented throughout the Group in accordance with this basic policy.

In addition to existing operations, the J-POWER Group's business activities are expanding continuously, including the development of nuclear power at Ohma and of power generation business overseas. In tandem with this it is becoming increasingly important to conduct proper information management that earns the trust of society while ensuring the stability of business operations. In view of this, the assurance and enhancement of information security is regarded as an important theme of management, and steps to upgrade the level of security still further are being taken throughout the Group.

Collaboration in Core Electric Power Systems

J-POWER is also making efforts in the field of IT to help ensure the stability of electric power systems. To position ourselves to deal rapidly and properly with IT problems in core systems for electric power operations, we are strengthening the structure of collaboration with the government and electric power industry as a whole.

Specific Measures

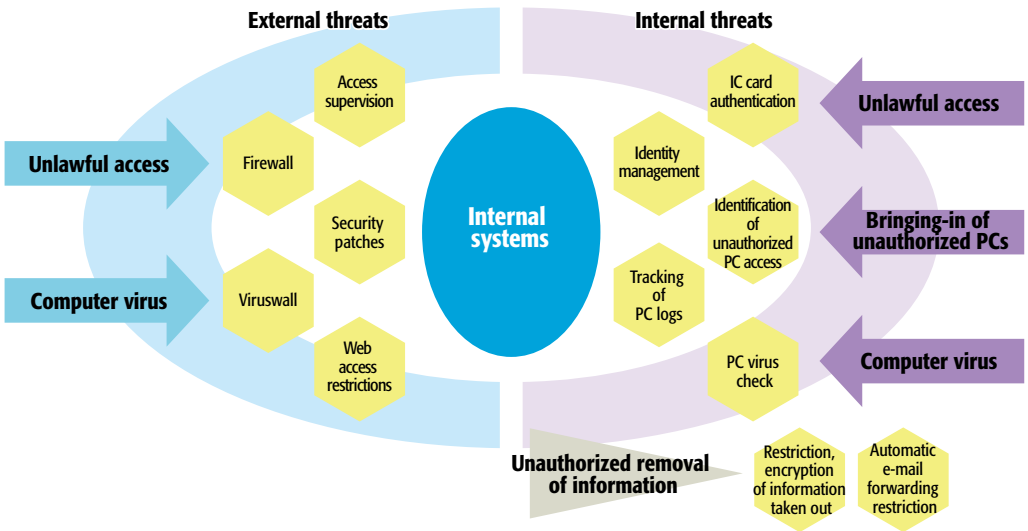
Organization and structure
- Establishment of Information Security Committee as a lateral organization whose membership comprises the heads of all J-POWER head-office divisions
- Designation of the J-POWER IT & Telecommunications Office of the Corporate Planning & Administration Department as the unit in overall charge of information security to promote the development of rules and the implementation of concrete countermeasures
- Agile first response at any time an information security incident arises
- Joint assessment by all J-POWER Group companies of information security status at individual companies, and implementation of improvements
- Countermeasures involving third-party inspections using external experts

Personal measures
- Instruction and education for all Group employees, including e-learning and seminars
- Training for staff in charge of promoting information security.

Physical measures
- Locking control (J-POWER head office) when people enter or leave the premises, by means of IC cards (for employee identification)
- Separation of business areas from meeting and reception space

Technical measures
- Prevention of unlawful intrusion through the Internet
- Access management (user authentication) for all business systems by means of IC cards (for employee identification)
- Approval by senior staff for removal of electronic information, and encryption of files
- Encryption of e-mail attached files
- Management of collation and analysis of operating logs

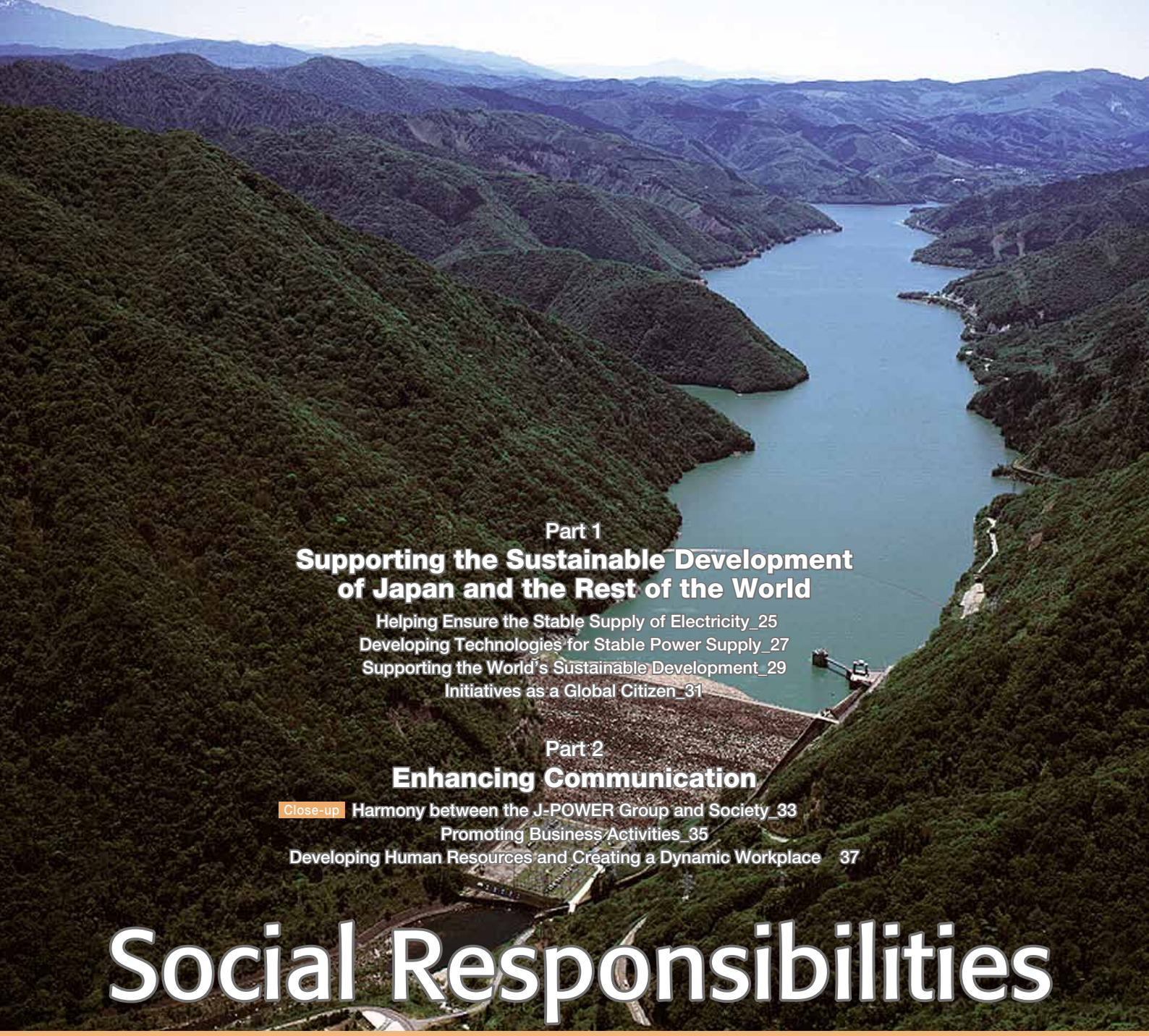
J-POWER Group Information Security Countermeasures



key word

[*1] Basic policy on information security

web http://www.jpower.co.jp/english/privacy/privacy_003_e.html



Social Responsibilities

Fiscal 2008 Highlights

J-POWER Group Approach to Social Contribution Activities

P. 33

The J-POWER Group Approach to Social Contribution Activities has been established to facilitate ongoing active and effective implementation of social contribution activities befitting the J-POWER Group.

Part

1 Supporting the Sustainable Development of Japan and the Rest of the World

The J-POWER Group supports the sustainable development of Japan and the rest of the world through a wide range of activities at home and abroad that are rooted in electric power.

Helping Ensure the Stable Supply of Electricity

The J-POWER Group produces electricity at hydroelectric, coal-fired thermal and wind power stations throughout Japan and transmits it through its power transmission and substation facilities, supporting people in their daily lives. Backed by a highly trustworthy technical capability built up over a half-century of development and operations, it will continue to supply electric power in a stable and efficient manner, bringing peace of mind to people's daily lives.

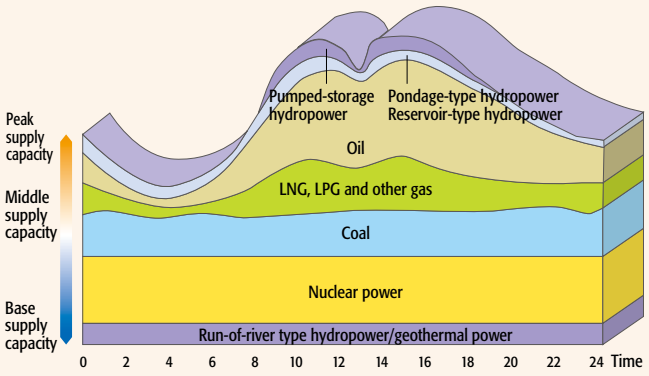
TOPIC.1 Fulfilling Our Commitment to Stable Supply

Drawing on Different Power Sources to Help Ensure Stable Power Supply

Electricity demand varies substantially throughout the day, with different amounts used during daytime and at night, as well as over the course of the year, as demand in summer and winter, when use of electrical cooling and heating tends to be heavy, differs from spring and fall when use is lighter. Since electricity cannot be stored, power utilities like J-POWER combine and coordinate various power sources—hydropower, thermal, nuclear, etc.—in an optimal balance to meet these constant fluctuations in demand and provide stable supplies of power.

As Japan's largest wholesale power company[*1], J-POWER owns domestic power generating facilities with total output capacity of 16.39 GW, as of March 31, 2009, giving it a market share of approximately 7 percent. The electric power generated by these facilities, together with power generated by other Group companies, is delivered to consumers via general electric utilities[*2] throughout the country.

Drawing on Different Power Sources to Match Daily Electricity Demand



TOPIC.2 Unifying Electric Power in Japan

J-POWER's Transmission lines and Converter Stations Help Distribute Power Throughout Japan

J-POWER owns and operates approximately 2,400 kilometers of transmission lines and eight substations and converter stations that link Japan's disparate regional power companies together. In this way it plays a major role in the overall operation of Japan's electricity grid. It also operates essential facilities that support power transmission over a wide area in Japan, including extra-high-voltage transmission lines that connect Japan's main island of Honshu with the other main islands of Hokkaido, Shikoku, and Kyushu, and the Sakuma Frequency Converter Station, the first facility in Japan that has made possible the transmission of electricity between the differing frequencies of Eastern Japan (50 Hz) and Western Japan (60 Hz) (see p. 3).

Additionally, the Central Load Dispatching Center issues appropriate operating instructions (load dispatching) on a 24-hour basis to power stations and other facilities in order to help keep the electricity grid stable while maintaining stable, efficient operations at domestic power facilities owned by J-POWER.

At the same time, stable grid operations are supported by remote monitoring and operations that utilize the latest in information technology. Our communications network includes highly reliable microwave radio circuits, fiber-optic cables and other cutting-edge components.

Central Load Dispatching Center

Sakuma Frequency Converter Station (Hamamatsu)

key word

*1 Wholesale Power Company
A company with power generating facilities in excess of 2.0 GW that supplies electricity to general electric utilities (10 electric power companies).

*2 General Electric Utility
A company that supplies electricity to meet general demand. Japan's ten regional power companies are general electric utilities.

Facilities Maintenance and Technology Transmission

The J-POWER Group possesses various facilities in fields such as power generation, power transmission, transformation of electrical energy, telecommunications, civil engineering, and construction. To ensure stable supplies of power, it conducts high-quality facilities maintenance to maintain facility functions, prevent accidents and other incidents before they can occur and minimize environmental load. These maintenance activities help stabilize the power grid and ensure stable supplies of electric power throughout the country.

Efforts are being made to pass down facilities maintenance skills that have been accumulated through work in these various fields through on-the-job training[*3] and training programs conducted at training centers and other locations, with the goal of developing personnel and raising technical skill levels.

Ensuring Stable Facility Operations

In addition to 24-hour monitoring of power generation facilities, the J-POWER Group works to detect equipment abnormalities as early as possible through daily patrols and strives to maintain reliability and prevent accidents and other incidents via such measures as regular overhaul inspections of facilities.

Also, because transmission and substation facilities are located in various environments, from mountainous regions to urban cities, and subjected to harsh natural conditions such as wind, snow, lightning, and sea salt contamination, surroundings must be taken into account when addressing aging facilities and changes in local environments.

For example, undersea DC cable connecting Hokkaido and Honshu and large-capacity cable linking Honshu and Shikoku, which crosses a bridge connecting the two islands (Seto-Ohashi Bridge), must be managed while taking into account two extreme locations, the bottom of the ocean and the top of a bridge. Recently, J-POWER has worked to make its DC facilities connecting Hokkaido and Honshu more functionally advanced and reliable by upgrading control equipment and other components.

Tadami Main Transmission Line (Gunma Prefecture)

In addition, J-POWER strives to promptly and accurately respond to emergency situations and has conducted the following measures to prepare for the event of a natural disaster or accident.

1) Establishment of information contact routes with regions where its power generation and substation facilities and transmission lines are located
2) Operation of a mutual assistance structure with all related units
3) Stockpiling of supplies for post-accident recovery
4) Training for dealing with accidents

Improving and Passing Down Technical Skills

The J-POWER Group works to improve and pass down technical skills accumulated in various fields, including facilities maintenance.

In order to maintain stable operations at hydropower and thermal power facilities, the Hydropower Division's Kawagoe Training Center in Saitama Prefecture and the Thermal Power Division's Thermal Power Training Center in Kitakyushu City conduct technical training aimed at maintaining and further developing the practical capabilities of operators and onsite maintenance staff through the use of simulators and other training tools. In the IT & Telecommunications Division, the information technology training facility in Saitama Prefecture is equipped with microwave telecommunications systems and other devices used on actual communications networks. The facility conducts practical technical training to sharpen response capabilities, including training for maintenance workers on how to respond to malfunctions. In the Civil Engineering Division, the Chigasaki Research Institute in Kanagawa Prefecture runs practical training on dam operations using dam simulators located onsite as well as Civil Engineering Technology Training, a comprehensive training program for J-POWER Group employees involved in the field.

On-the-job training in session

Thermal Power Training Center (Kitakyushu City)

PERSON

Shigenori Suzuki Planning Group, Energy Business Department

Securing Stable Supplies of Coal

The J-POWER Group holds stakes in four Australian coal mining projects for the purpose of further stabilizing long-term procurement of steam coal[*4] for consumption at J-POWER's coal-fired power stations around the country.

However, due in part to the upcoming closure of the Blair Athol Coal Mine, a key project among the four, we are faced with the need to diversify our portfolio by acquiring stakes in new mines. We are therefore currently considering acquiring additional interests primarily in Australia, which boasts extensive coal reserves, a favorable investment environment and other advantages.

We will continue involvement in premier coal mines while paying attention to mine cost competitiveness, the coal supply-and-demand balance and competitor activity.

*3 On-the-Job Training
Educating and training employees through actual work at the workplace.

*4 Steam Coal
Coal used for power generation. J-POWER imports some 20 million tons of coal a year and is one of the largest consumers of steam coal in Japan.

Developing Technologies for Stable Power Supply

The J-POWER Group develops technologies to protect hydropower facilities, thermal power stations, wind farms and other facilities from natural disasters and accidents and to continue to deliver safe and stable supplies of electric power.

TOPIC Ensuring Safe, Secure Power Facility Operations

We are developing technologies for ensuring stable power supplies.

Technology Development Center Chigasaki Research Institute (Kanagawa Prefecture)

Akira Fukuhara
Director, Chigasaki Research Institute

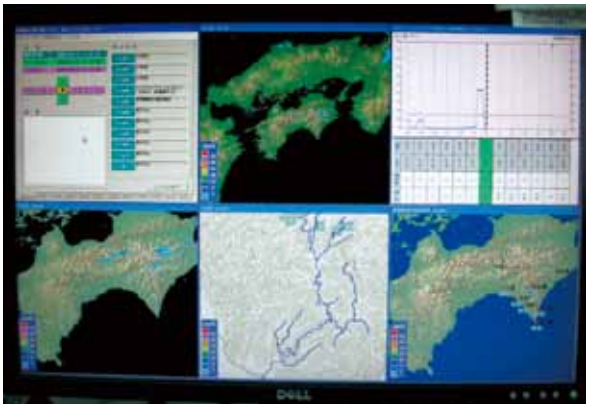
The Chigasaki Research Institute, one of J-POWER's Technology Development Centers, was established in 1960 as a civil engineering testing center to support large-scale hydropower development and has grown in close step with J-POWER's history of development projects. The institute currently conducts a variety of research aimed at solving technical issues associated with the construction, operation, maintenance and management of hydro, thermal and wind power facilities. It seeks to pioneer the frontiers of both energy and the environment.

Recently, the institute has been actively involved in developing technologies for mitigating or adapting to environmental problems. Research is focused on rainfall and inflow forecasting technologies to help make dam operations safer, developing high-efficiency combustion technologies for coal-fired thermal power stations, and raising the value of renewable energies such as wind and solar. The institute is committed to improving technologies necessary for continuing to operate power facilities safely and securely.

Supporting safe dam operations

●Development of Rainfall and Inflow Prediction System

Abnormally heavy rainfall and flooding has been increasing in frequency across Japan due to global climate change. The Chigasaki Research Institute is involved in refining technologies for predicting rainfall and river inflow to raise safety levels of dam operations and ensure safe watershed areas. Forecasting precision is being improved by combining predictions based on Japan Meteorological Agency statistical models with methods for forecasting rainfall in the near future based on cloud movement observed by radar. We are also developing precision forecasting models for river inflow. Watershed areas are subdivided based on Digital National Land Information[*1] and environmental factors such as plant life are incorporated into models for each subregion.



Rainfall and Inflow Prediction System

key word

[*1] Digital National Land Information
A database developed by the Ministry of Land, Infrastructure, Transport and Tourism for the establishment and promotion of national land projects. The database includes numerical data on topography, land use and other geographic features.

Protecting Facilities from Major Earthquakes

Improving Seismic Technologies for Power Facilities

Protecting power generation facilities from major earthquakes is an essential part of ensuring stable power supplies. Various seismic design standards and guidelines were revised following the Kobe earthquake of 1995. Dam structures on rivers now must also be inspected for seismic performance in the event of a major earthquake.

The Chigasaki Research Institute is involved in developing practical, rational methods for checking seismic performance against major earthquakes for dams and connected structures (flood gates,*2 etc.). It conducts experiments with a large underwater vibration platform, onsite vibration measurements and data analysis.

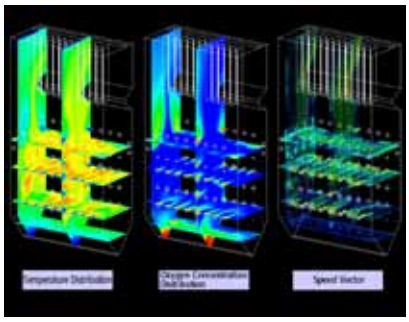
Vibration experiment using a large underwater vibration platform

Support for High-Efficiency Power Generation

Development of Advanced Combustion Control Technologies

Almost all of J-POWER's thermal power stations are pulverized coal-fired power stations. Combustion control technologies are extremely important in keeping pulverized coal boilers operating stably, efficiently and economically. The Chigasaki Research Institute has developed a high-precision method for estimating the kinetic parameters of char oxidation (patent pending) that previously had not been included in combustion simulations.

The new method raises the sophistication of combustion simulation models. Application of the technology makes it possible to precisely predict temperature, oxygen concentration and speed vectors within the boiler when there are changes in coal type or operating conditions.



Boiler Combustion Simulation Example

Support for Stable Operations at Power Facilities

Improving Power Grid Analysis Technology

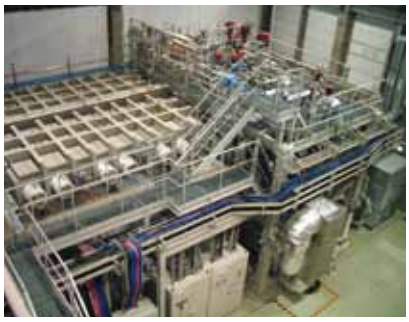
Continuing stable operations at power facilities and maintaining power quality—voltage, frequency, etc.—during lightening storms and other scenarios is a major part of ensuring the stable supply of electricity. The Chigasaki Research Institute tests and analyzes control operations for power source facilities, DC conversion stations and other facilities using power grid analysis simulators, including analog simulators and real-time digital simulators. These grid analysis technologies are being improved in an effort to raise the operational reliability of facility control systems.

Power grid analysis simulator

Realizing High-Efficiency Fuel Cell Power Generation

Development of an SOFC System

Fuel cell power generation produces electricity through an electrochemical reaction between hydrogen and oxygen. Electric energy is derived directly to deliver high generating efficiency with less energy loss. We are focused on solid oxide fuel cells (SOFC), which are operational under high temperatures and exceptionally durable, and are working to develop an SOFC system with a view to future application to large-scale power projects. Pilot testing using an SOFC cogeneration system (SOFIT) is being conducted to validate SOFC systemization technologies and long-term reliability.



SOFC cogeneration system

*2 Flood Gate
A gate that allows water that cannot be held safely by a dam during flooding to flow safely downstream.

Supporting the World's Sustainable Development

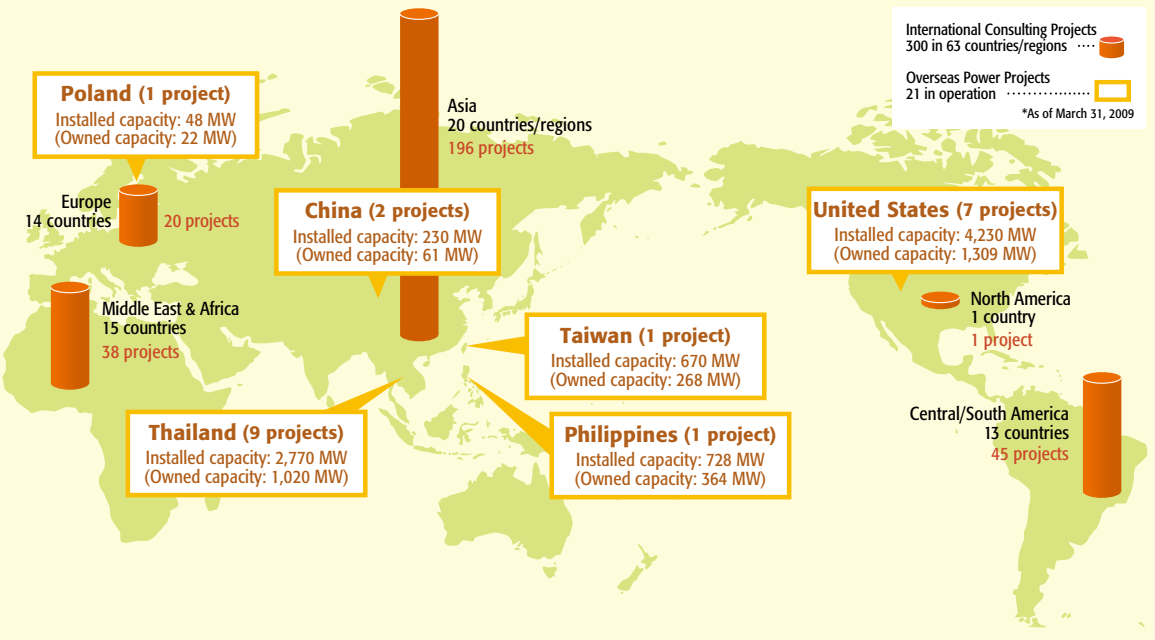
The J-POWER Group carries out international consulting and overseas electric power projects based on technologies and expertise cultivated in domestic operations. International consulting is provided in connection with designing power stations and supervising their construction work, environmental impact assessments, desulfurization and denitrification technology transfers, and promoting energy conservation. For overseas electric power projects, we promote hydropower, gas-turbine combined-cycle generation, and biomass plants. Through these activities we contribute to the world's sustainable development.

TOPIC **Overseas Operations**

International Consulting and Overseas Power Generation

The J-POWER Group's overseas operations began with our entry into the field of international technology cooperation, which was prompted by revisions to Japan's Electric Power Development Promotion Law in 1960. Our track record in consulting over the nearly 50 years since stands at 300 total projects in 63 countries/regions as of the end of fiscal 2008.

Moreover, we are involved in 21 overseas power projects in six countries/regions, mainly Southeast Asia, the U.S. and China. Our stake in power generated by these projects amounts to some 3.04 GW.



Promoting Overseas Power Projects

Responding to the worldwide trend toward privatization and deregulation of the electric power industry, the J-POWER Group is 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.

We initiated operations at Kaeng Khoi 2 Gas-Fired Thermal Power Station (gas combined cycle) in Thailand in 2008, participated in the Xinchang Coal-Fired Thermal Power Project in China, acquired stakes in the Birchwood thermal power station and three other gas-fired thermal power stations in the U.S. and acquired equity in the Nhon Trach 2 gas-fired thermal power station in Vietnam. These initiatives are intended to improve power supply conditions and facilitate economic development in their respective countries.

In addition, through operations at Thailand's Roi-Et Rice Chaff Thermal Power Station and Yala Biomass Station, which uses waste from rubber-wood sawmills as fuel, we are contributing to the effective use of untapped resources and CO_2 emissions reduction.

Kaeng Khoi 2 Gas-Fired Thermal Power Station (Thailand)

key word

International Consulting

For many years we have drawn on technologies nurtured in the J-POWER Group's Hydropower Division to supervise construction work in hydropower station projects and conduct other initiatives aimed at helping countries develop hydropower, a renewable energy source. Major projects currently underway include Upper Kotmale and Victoria in Sri Lanka and Son La SV in Vietnam.

We have also worked to widely share environmental technologies and expertise in high-efficiency operations accumulated as Japan's largest supplier of coal-fired thermal power. In addition, we are committed to pursuing effective energy conservation measures as a way to reduce CO_2 emissions, and have been involved in studies since August 2007 on promoting energy conservation in Indonesia, Sri Lanka and Vietnam. The studies are surveying socioeconomic conditions and energy consumption and demand trends in the countries. Policies for promoting energy conservation suited to each country's circumstances are formulated while drawing on our experience and expertise. The initiative is intended to further strengthen energy conservation programs and systems and enhance the technical skills of electric power professionals. We believe it will help stabilize energy supplies and lighten the environmental load in the decades ahead.

Victoria Dam (Sri Lanka)

Looking Ahead: Expanding Operations While Supporting Sustainable Development

In our international consulting business, we take part in electric power projects that leverage J-POWER's technological expertise, including ODA[*1] projects. We also plan to expand our operations to private development projects and other areas.

Coal-fired thermal power faces a number of challenges, from the problem of sulfur oxide (SOx) and nitrogen oxide (NOx) emissions at the regional level to the global issue of CO_2 emissions. Nonetheless, coal-fired thermal power is expected to remain an indispensable energy source underpinning economic growth in China, India, and elsewhere in the world. Given this, we believe it is important to reduce environmental load by using advanced technology and raising generating efficiency. 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 consulting and power generation operations, in keeping with the mission articulated in our corporate philosophy of ensuring constant supplies of energy to contribute to the sustainable development of Japan and the rest of the world.

>>> Recent Major Consulting Projects

Country	Project	Type	Description
Sri Lanka	Upper Kotmale Hydroelectric Power Project	Hydropower	Bidding support and construction supervision for dam and power station
Costa Rica	Pirris Hydropower Project	Hydropower	Detailed design and construction supervision for dam and power station
Uzbekistan	Tashkent Thermal Power Plant Modernization Project	Thermal	Construction of power station to promote efficient use of Uzbekistan's natural gas and reduce environmental load
Sri Lanka	Colombo Transmission and Substation Development Project	Power transmission and transformation	Construction of additional substations, establishment of new distribution lines, installation of remote monitoring and control systems, etc.
Myanmar	In-House Consulting Project	Hydropower	Construction of Kyeeon Kyeewa Dam and eight other dams/power stations
Cambodia	Mondol Kiri Micro-Hydropower Project	Hydropower	Construction of three micro-hydropower stations and other facilities
Vietnam	Son La SV	Hydropower	Construction of hydropower station and reservoir upstream from existing hydropower station
Indonesia	Energy Conservation Promotion Study	Energy conservation	Measures to promote sustainable energy conservation initiatives
Indonesia	Keramasan Thermal Power Station Expansion Project	Thermal	Construction of 80,000 kW combined cycle power station in Keramasan
Vietnam	Nghi Son Thermal Power Plant Project Phase 1	Thermal	Construction of power station fueled by anthracite coal
Sri Lanka	Energy Conservation Promotion Project	Energy conservation	Measures to promote sustainable energy conservation initiatives
Vietnam	Study for Energy Conservation Promotion Master Plan	Energy conservation	Creation of roadmap and action plan for promoting energy conservation
Brunei	1 MW Solar Power Plant Project	Solar	Procurement support and construction supervision for solar power facility
India	Thermal Power Efficiency Improvement Project Study	Thermal	Project to improve the efficiency of India's thermal power stations

[*1] ODA Official Development Assistance
Aid and investment provided by industrialized countries and government bodies to developing countries for the sake of international contribution

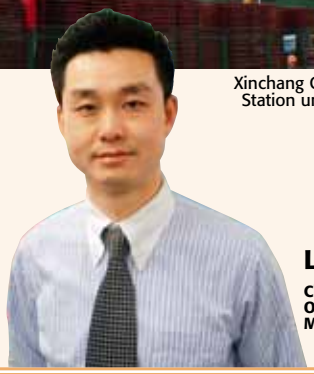
Initiatives as a Global Citizen

The J-POWER Group has been involved in a large number of overseas projects to develop power generation facilities and other forms of social infrastructure through its overseas operations. In addition to contributing to the global community through such infrastructure development projects, the J-POWER Group also engages in community-based social action programs while leveraging the experience and networks it has built up overseas.

TOPIC Bringing J-POWER Group Expertise in Coal-Fired Thermal Power to China

J-POWER leverages its expertise in advanced coal-fired thermal power generation to promote high-efficiency energy use and reduce environmental load.

Xinchang Coal-Fired Thermal Power Station under construction (China)



Liang Ping
China Business Development Office, International Business Management Department

China's high economic growth has resulted in the annual addition of 60–100 GW in new power sources every year since 2002, the majority of which are coal-fired thermal power stations. Many of the power stations in operation are small-scale facilities with output of 100,000 kW or less, meaning generating efficiency is low and environmental measures tend to be less than adequate.

The Chinese government has adopted a policy of constructing large-scale power stations and eliminating smaller facilities in order to improve this situation. It is currently promoting installation of ultra super critical (USC) power plants as well as desulfurization and denitrification systems to meet its objectives of converting to high-efficiency power generation and reducing the environmental load for China as a whole.

The J-POWER Group has been involved in consulting, training, inspection, technology exchange and other initiatives with a number of power companies in China for over 30 years. As a result, for China's second thermal power investment project, we have been selected to construct a coal-fired thermal station (two 660,000 kW units) using USC technology in partnership with Chinese firms. Utilizing our expertise in advanced coal-fired thermal power generation is expected to ensure stable plant operations.

Countries may have borders, but environmental problems are borderless. People living on this same earth must build the earth's future together. We intend to continue striving to make maximum use of the J-POWER Group's expertise in environmental preservation measures, in China and around the globe.

Accepting Trainees to Promote Energy Conservation

J-POWER is currently engaged in energy conservation promotion projects in Indonesia, Sri Lanka, Vietnam and Turkey on commission from the JICA.[*1] As a part of this initiative, we conducted training in November 2008 and January 2009 for officials involved in formulating energy conservation policy in Indonesia and Sri Lanka.

The training course, which consisted of lectures and onsite training, conveyed Japan's policies and technologies as a leading nation in energy conservation as well as some of J-POWER's accumulated technologies and expertise.

We will continue to promote energy conservation as a part of the global effort to bring about sustainable development by furthering energy conservation and creating socioeconomic structures that consume energy highly efficiently.

Training for JICA trainees

key word

[*1] JICA: Japan International Cooperation Agency
JICA is a government agency under the jurisdiction of the Ministry of Foreign Affairs. It is one of the agencies in Japan involved in implementing Official Development Assistance (ODA). Its objectives are to contribute to economic and social development in developing regions and other areas and promote international cooperation.

Job Training in the Philippines

CBK Power Company Limited (CBK) is a hydropower company with an output of 728 MW that is located in Laguna Province about 100 kilometers southeast of the Philippine capital of Manila. J-POWER has a 50 percent stake in the company.

Since its establishment in 2001, CBK has made a wide variety of contributions to Filipino society. These have included improvements to public facilities in five local municipalities, dispatching medical professionals to provide assistance, providing medical supplies, and establishing a scholarship program. These activities by CBK are highly regarded locally and have earned many positive comments in surveys of local residents.

As a part of its community involvement, the company refurbished a building on the premises of its plant and is running a job training program in order to help expand employment opportunities. This is the largest need of the local region, which depends heavily on agriculture and lake fisheries and is lacking in industrial development.

Job training is conducted with grants from the Ministry of Health, Labour and Welfare through the Overseas Vocational Training Association, based on a framework established by the Asia-Pacific Economic Cooperation. The program also receives assistance from the Philippines' Technical Education and Skills Development Authority.

The program is comprised of the following four courses.

1) Beginning welding
2) Advanced welding
3) Basic electronics
4) Building wiring and electrical appliance installation

We sincerely hope that the young people who undergo training will utilize the skills they have learned to acquire employment and make contributions in various fields.

Working on radio assembly as a part of the basic electronics course

Support for Local Elementary Schools in China

The Tianshi Power Plant in Shanxi Province, China is a waste coal-fired thermal power station established by J-POWER together with Chinese partners. The power station is located in a coke producing region, and illegal dumping of coal debris given off by coke production had caused deterioration in local environmental conditions, which had become a problem for the region. J-POWER's decision to participate in this project was driven in part by the fact that the power station would effectively use low-grade coal and coal waste as fuel.

The power station was established as a comprehensive utilization type power generation project designed to conserve and effectively use resources in an environmentally sensitive manner. It was the first power station of its kind in China involving foreign capital. The power station has been operating smoothly since it came online in May 2001.

We work to provide stable supplies of electricity through operating such power stations and consider how we can give back to the regions where they are built.

Support for Neighboring Elementary Schools

Like Japan, China has established an official "Children's Day," which falls on June 1 of each year. There are four towns in the vicinity of the Tianshi Power Plant and they each have elementary schools. To help celebrate Children's Day, every year since fiscal 2005 the Tianshi Power Plant has invited children from one of the local schools to the facility for a tour, Q&A and other activities. The power station also donates school supplies to the other schools in order to contribute to the communities in the area. The power station's entryway features drawings of the facility made by the children, which is a great source of enjoyment.

We intend to actively continue these activities and continue working together with local communities.

Local elementary students on a tour of the power station

2 Enhancing Communication

The J-POWER Group is supported by a wide range of stakeholders. In order to continue earning the trust of stakeholders, we will continue conducting business activities rooted in sincerity and striving to enhance communication.

Close-up

Harmony between the J-POWER Group and Society

J-POWER Group Approach to Social Contribution Activities

"We build community trust by harmonizing our operations with the environment. Profits are a growth source, and we share the benefits with society." Under this corporate philosophy, the J-POWER Group has long engaged in social contribution activities as a member of society to help society develop soundly and sustainably.

Our activities largely fall into two categories: community involvement and harmonizing energy supply with the environment. We place high value on open communication with local community members and people working to harmonize energy supply with the environment and on sharing knowledge and learning from one another. We will steadily engage in activities on this basis as well as support the volunteer activities of our employees.

April 2009

web http://www.jpower.co.jp/company_info/kouken/index.html (Japanese only)

ACTION

Community Involvement

Our corporate activities are supported by the communities where our power stations and other facilities are located.

Every employee is committed to being a good resident in these local communities. And, our business sites and offices strive to be good corporate citizens that benefit communities and society as a whole. We will strive to exist harmoniously with local communities and grow together with society through activities that are accepted and trusted by local residents.

Community and Social Contribution Activities

Because individual communities and regions have individual characteristics, our business sites and offices are involved in a variety of initiatives that reflect local needs and views in an effort to further our contribution to society.

For example, the Okukiyotsu Power Station, located in an area of Niigata Prefecture prone to heavy snowfall, conducts snow plowing and removal on a volunteer basis, the Matsushima Thermal Power Station, located on a remote island in Nagasaki Prefecture, participates in the local government's program for dispatching doctors by helicopter, the Shimogo Power Administration Office in Fukushima Prefecture, a region with an aging population, participates in a variety of local events, JP Business Service Corporation in Tokyo utilizes fair trade products in its business activities, and the JPec Wakamatsu Environmental Research Center in Kitakyushu provides innovative waste processing technology in order to help resolve waste-related problems faced by Southeast Asia.

J-POWER Community Concerts

J-POWER community concerts were initially held in celebration of our 40th anniversary, and since 1992 performances have been held at 123 locations around the country (as of March 2009). The concerts are a token of our appreciation for the daily understanding and cooperation of community members in regions where we operate. They also reflect our commitment to furthering trust and friendship as a member of local communities and society at large.

Until 2004 full-fledged classical music concerts were held for the general public at large concert halls and other similar venues, but since full privatization we have actively conducted smaller community concerts at local community facilities. We travel to schools, special nursing homes, occupational training centers for people with disabilities and other such sites. The concerts last about 45 minutes and primarily feature classical music. The performers include musicians who are active on the world stage and who have won domestic and international competitions or received prestigious awards. We try to make the concerts accessible to people who are not readily familiar with classical music by including talk sessions and other elements to put people at ease and enhance their enjoyment.

Community concerts were held at six locations in fiscal 2008 and received warm praise from people who attended. One person commented, "I was very impressed by the wonderful, topflight performance."

We will continue to highly value these opportunities to interact with the community.

web http://www.jpower.co.jp/concert/index.html (Japanese only)

A community concert held by the Chigasaki Research Institute in Kanagawa Prefecture

Experiential Learning Project for Ecology and Energy (Fukushima and Niigata Prefectures)

ACTION Harmonizing Energy Supply with the Environment

In order for people to lead enriching lives, both energy, which supports enriching lives, and a better environment are needed.

Leveraging environmental knowledge acquired through our business activities to date, we partner with people seeking to harmonize energy supply with the environment and conduct activities to raise awareness and develop technologies for energy and the environment in an effort to facilitate the sustainable development of Japan and the rest of the world.

Initiatives for Harmonizing Energy Supply with the Environment

The J-POWER Group started the Experiential Learning Project for Ecology and Energy in fiscal 2008. The project provides support for experiential energy and environmental education in partnership with Keep, Inc., an environmental nonprofit organization. Programs are provided with an emphasis on direct experience, collaboration and group learning.

web www.jpower.co.jp/ecoene/index.html (Japanese only)

Our organizations around the country are also involved in other activities, including forest preservation, nature observation events and science education.

Initiatives of Ishikawa Thermal Power Station (Okinawa Prefecture)

A nature observation event is held for local residents at the power station. It involves surveying plant and animal life on the premises of the facility. Animal life at the site was first surveyed in 2005 and it was found that the station is home to a wide variety of plants and animals. This prompted the launch of the event, which is held to experience nature's diversity and increase interest in the natural environment. The event has been held eight times to date, and a total of 238 people have participated.

Thirty-two local children participated in the nature observation held in December 2008 and got to directly experience the importance of nature. For example, they saw kingfishers and Scaly-breasted Munias, small birds that protect themselves using thorns from screw pine leaves. Other activities conveyed Okinawan culture, such as preparing traditional Okinawan food using plants observed by the children.

Nature observation event at Ishikawa Thermal Power Station

Initiatives of Kitayamagawa Power Administration Office (Owase Region, Mie Prefecture)

The office has conducted environmental education with the Choshi River Fishing Cooperative since 2007.

J-POWER's Kuchisubo Dam and Owase No. 1 Power Station are located on the upper part of the Choshi River, a river well known to local children. The goal of the education program is to teach children about the importance of electricity, river environments and aquatic resources through tours of the dam and power station and release of juvenile ayu fish.

The program for fifth-grade elementary students begins with an explanation of how dams and power stations work. Students then tour the actual facilities and learn about the importance of electricity. Next, they learn about the ecology of ayu and the importance of aquatic resources with the help of the fishing cooperative director.

Finally, everyone releases juvenile ayu into the river, giving the students an invaluable learning experience not available through their normal curriculum.

Releasing juvenile ayu fish (Owase Region)

Promoting Business Activities

The J-POWER Group works to earn the trust of shareholders, investors, and business partners by promoting its business activities, which are rooted in sincerity. We are also working to deepen trust by facilitating understanding of our activities and seeking views and opinions on them through enhanced communication.

Communicating with Shareholders and Investors

The J-POWER Group conducts timely disclosure of corporate information as well as a range of activities to deepen understanding of our business operations, reflecting the importance we place on communicating with shareholders and investors.

For institutional investors, we hold briefings on management plans and financial results, actively hold meetings as the need arises, and work to provide opportunities for direct dialogue with management and other company members. In addition, we provide a range of investor relations tools, including an annual report and fact book, and make information available on our website in order to convey messages from management and other detailed information.[*1]

For individual investors, we hold corporate presentations, publish a corporate newsletter aimed at individual investors, provide information via our website and make efforts to enhance disclosure. In April 2008 we established a new section on our website expressly for individual investors to provide easy access to the type of information they demand.

For individual shareholders, we issue a biannual shareholder newsletter to further understanding of our business activities, conduct regular questionnaires as an interactive communication initiative, and constantly work to improve the information we provide and the ways it is provided based on feedback we receive.

In addition, we conduct tours of power stations around the country several times a year to help institutional investors and shareholders become more familiar with the J-POWER Group and deepen their understanding.

We intend to continue enhancing communication with shareholders and investors.

IR Tools

We provide information to shareholders and investors using our website and a variety of other investor relations tools.

Briefing for individual investors

Tour of Okukiyotsu Power Station in Niigata Prefecture

Shareholder Newsletter

Fact Book

Annual Report

key word

[*1] "Investor Relations" section of J-POWER's website

web http://www.jpower.co.jp/english/ir/index.html

Committed to Business Partners

The business activities of the J-POWER Group are supported by a large number of business partners. Rooted in good relations with business partners, we will contribute to the sustainable development of Japan and the rest of the world.

Producing Tomatoes by Utilizing Landfill and Energy Conservation Technologies: Hibikinada Greenfarm Co., Ltd.

The history of KAGOME Co., Ltd. and its tomatoes dates back one century. Returning to its roots, ten years ago Kagome began once again cultivating and selling fresh tomatoes as a part of its business activities. The company got involved in Hibikinada Greenfarm with J-POWER in 2005 based on the view that with domestically produced agricultural products on the decline, future agricultural activities would be larger in scale and more efficient.

Hibikinada Greenfarm is located on a section of landfill owned by J-POWER in the Hibikinada area of Wakamatsu Ward, Kitakyushu City in Fukuoka Prefecture. It features a greenhouse with 85,000 m^2 of cultivation space and some 200,000 tomato plants. It is a high-tech farm that produces approximately 2,500 tons annually. Temperature, humidity, irrigation, and other factors are controlled automatically, and a special highly transparent fluorine-based film is used to cover the greenhouse, which raises greenhouse effectiveness by promoting tomato photosynthesis. These technologies facilitate stable tomato production. The facility is also environmentally sensitive thanks to utilization of energy saving technologies.

Fresh tomatoes at Hibikinada Greenfarm and a view from inside the greenhouse (Kitakyushu)

Participation in Callide Oxyfuel Project: IHI Corporation

IHI is participating in the Callide Oxyfuel Project, which is being conducted at the Callide A Power Station in Queensland, Australia with J-POWER and Mitsui & Co., Ltd. The project is the world's first demonstration trial involving installing the oxyfuel combustion method at an existing coal-fired thermal power station and validating an integrated system for carbon dioxide capture and storage.

The oxyfuel combustion method was first conceived in Japan in 1974 and developed by J-POWER and IHI. Nitrogen is removed from the air and coal is burned with the resulting high-concentration oxygen, which makes it relatively easy to capture and recover carbon dioxide from the exhaust gas.

The project is using an existing coal-fired thermal power station to verify whether the method is applicable on a larger scale. It seeks to achieve an extremely high CO_2 reduction effect by cutting its emissions by at least 90 percent.

Callide Coal-fired Thermal Power Station (Australia)

PERSON

Synergies between Tomatoes and Electricity

We farm and sell tomatoes. The business itself appears extremely simple, but because it deals directly with nature and living plants, it is actually quite deep and difficult to master.

We conduct operations together with J-POWER at its Wakamatsu Operations & General Management Office, and I have been extremely impressed with the company's level of awareness and initiatives in connection with conducting each and every task safely and assuredly.

Tomatoes and electricity may be completely different products, but we are working to deliver synergies for both companies through this project.

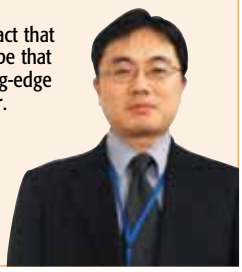
Takayuki Nasuno
President & Representative Director
Hibikinada Greenfarm Co., Ltd.

PERSON

Toward Zero Emissions at Existing Thermal Power Stations

We are participating in the Callide Oxyfuel Project in Australia together with J-POWER and Mitsui & Co., Ltd. The project also receives assistance from the Japanese and Australian governments, and it has been a true joy to implement and operate a project with all three companies working closely together.

J-POWER has impressed me with the fact that it is sincere in everything that it does. I hope that we continue to make progress on cutting-edge developmental research into thermal power.



Toshihiko Yamada
Development Department, Power Plant Division
IHI Corporation

Developing Human Resources and Creating a Dynamic Workplace

The J-POWER Group strives to ensure safe, comfortable working environments while endeavoring to create a corporate culture that respects the character and individuality of employees and inspires them to constantly meet new challenges with a high level of motivation.

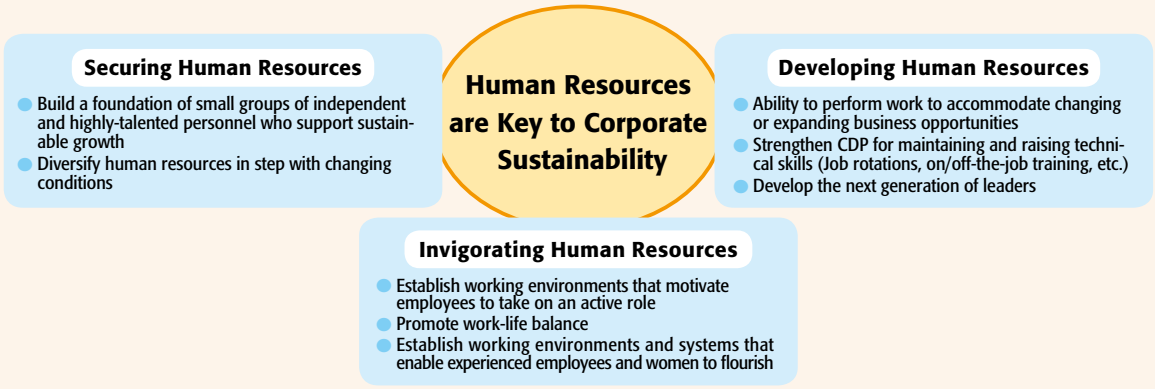
TOPIC J-POWER Group's Basic Philosophy on Human Resources

Building a Human Resources Foundation for Sustainable Group Growth

Human resources are the key to a company's sustainability. For the sustainable growth of business, all employees must cultivate their skills and abilities in order to continually create added value with new ideas.

Under our new medium-term management plan that started in fiscal 2008, we have placed the highest priority on securing and developing human resources in order to strengthen the foundation of the company for the purpose of ensuring sustainable growth. We intend to reinforce the foundation for career development, centering on CDP[*1] programs, establish working environments and systems that harness diversity in values and in the workforce, which includes experienced employees and women, and improve both individual skills and workforce productivity by promoting work-life balance.

Developing Group Human Resources and Creating Dynamic Workplaces



Securing Human Resources

In order to grow continuously while harmonizing energy supply with the environment, the J-POWER Group aims at stably recruiting new employees from various fields and age groups and creating opportunities that enable them to thrive.

With regard to personnel hiring and utilization, J-POWER's Compliance Code (see p. 73) has provisions stipulating respect for individuality and human rights and prohibiting discrimination. Aware-raising on these matters is conducted at level-specific training and at human rights training conducted by each unit.

We are currently creating systems and working environments that enable our diverse personnel to fully demonstrate their capabilities, without regard for gender, age or other such distinctions.

Employment of New Graduates (J-POWER)

	FY 2007	FY 2008	FY 2009
Men	36	40	60
Women	5	8	5
Total	41	48	65

Harnessing the Abilities of Experienced Employees

In order to make further use of the abilities of experienced employees, the J-POWER Group has a continuing employment system, which allows employees who have reached retirement age to continue working until they turn 63, a personnel registration system that introduces job opportunities in the Group for employees between the ages of 60 and 65, as well as other related programs. These programs seek to utilize the experience, technical skills, and will to work of older Group employees in our ongoing business development. As of March 31, 2009, 228 employees had taken advantage of the continuing employment system and related programs.

Employing People with Disabilities

Our employment ratio for people with disabilities as of June 1, 2009 was 1.72 percent. As this does not meet the legal requirement, we plan to continue proactive hiring. A consultation desk has been established that helps employees with disabilities and provides information on working environments. We will continue to enhance working environments, through such initiatives as making office buildings barrier-free, and promote greater understanding among all employees.

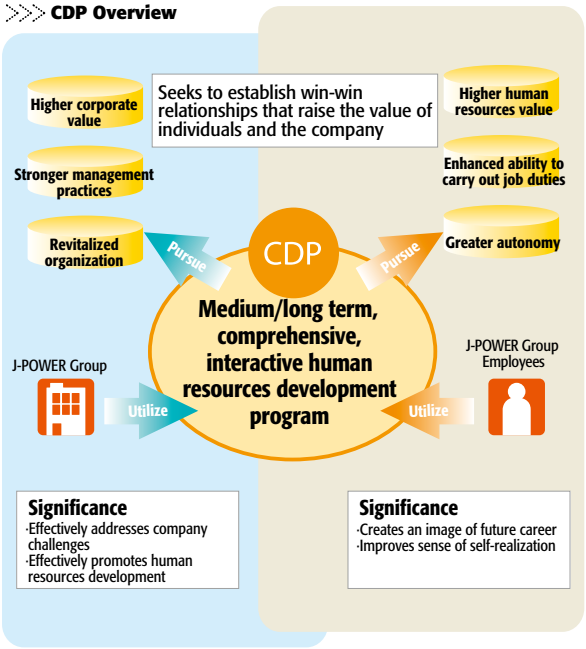
key word

[*1] CDP: Career Development Program
CDP refers to programs for developing human resources and specific skills through career development.
CDP programs seek to effectively promote human resources development by combining skill development based on knowledge and experience accumulated in performing daily work activities (on-the-job training) and skill development based on training (including self-study) that takes place away from daily activities (off-the-job training).

Human Resources Development

The J-POWER Group has introduced a CDP program based on the vision for our business. The program conveys to employees what is expected of them and serves as an effective system for education and training. The program provides management with specific guidelines for fostering personnel. It provides employees with an interactive development tool that helps them think about their own career trajectories and take the initiative in developing their abilities and raising their value to the company. We encourage employees to make active use of the program.

CDP Overview



Human Resources Development Programs

The J-POWER Group believes in the importance of using work itself, particularly on-the-job training, to enable employees to improve their job performance and facilitate their growth. At the same time, as the scope of our business activities has expanded, we have established programs to systematically train personnel through a well-designed plan so that their abilities are fully utilized.

Evaluation and Assessment System

The J-POWER Group established an evaluation system in 2004 that is rooted in goal management. Through initiatives aimed at achievement of specific goals, the system encourages employees to perform work autonomously, motivates them to achieve the goals and improves work performance. We also seek to realize our organizational strategies through unit- and goal-based collaborative action.

Various Training Programs

We run level-specific training courses designed to provide employees with business knowledge and management skills that match their qualifications and age. Career training is also provided for employees to review their careers to date and consider their next steps. We also conduct divisional training, objective-specific training, and other off-the-job training courses to enhance employee knowledge, skills, and specialization in order to meet divisional requirements and ensure we are capable of quickly accommodating changes in business conditions.

We have established technical training facilities in Chigasaki, Kanagawa Prefecture for civil and architectural engineering divisions; Kawagoe, Saitama Prefecture for hydropower, transmission, and telecommunications divisions; and Kitakyushu, Fukuoka Prefecture for thermal power divisions. We systematically conduct training for engineers in technical divisions at these facilities. Level-specific training is held at the Human Resources Development Center in Tokyo's Chuo Ward. These initiatives are aimed at fostering personnel in line with our career development programs.

Participation in Level-Specific Training and Career Training (J-POWER)

	FY 2006	FY 2007	FY 2008
New assistant managers	69	65	64
New managers	83	120	129
Career plan training	57	55	80
CLDS*2	79	91	82
Total	288	331	355

Dam simulator training

An objective-specific training course in session

Helping Employees Voluntarily Develop Their Careers and Abilities

J-POWER introduced a self-assessment system for employees to convey their career intentions to the company once a year and discuss them with their immediate superiors. The system was introduced to facilitate career-related discussions between employees and management. We also have a voluntary training incentive program and an academic training program that provide financial assistance to employees who attend foreign language classes or business school or take a correspondence course after work or on weekends. These programs are aimed at helping employees develop their abilities on their own initiative.

Participation in the Voluntary Training Incentive Program (J-POWER)

	FY 2006	FY 2007	FY 2008
School attendance	47	74	76
Correspondence	116	101	78

*2 CLDS: Career & Life Design Seminar
A training course on life design and financial planning to help employees develop post-retirement career and life plans.

Invigorating Human Resources

The J-POWER Group believes that a better work-life balance can help ensure sound labor force reproduction and lead to improved efficiency. We are committed to helping employees generate new ideas and added value by creating workplaces that enrich both work and private life and enable diverse employees to fully demonstrate their abilities.

To realize work-life balance, we are actively developing working environments and cultures that enable every employee to autonomously enhance their work and personal life and focus on highly creative work.

We are putting priority on two initiatives, based on the results of the Employee Attitude Survey conducted at the start of 2008.

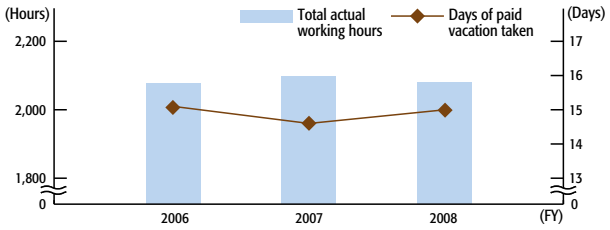
1) Create time by strengthening management of working hours
2) Create working environments that enable diverse employees to perform despite restrictions on working hours

Creating Time

Appropriate working hours has been established as a common goal for all units in order to properly manage hours and improve employee productivity. And, since fiscal 2008, how well the goal is achieved has been included in bonus calculations as a means to encourage employees not only to rethink how they work but also to improve their motivation and energy levels.

We are also promoting a number of other initiatives, including strengthening the practice of making employees leave by a fixed time at business sites and offices, highlighting units that actively promote work-life balance as model organizations, and conducting training in various regions.

Change in Total Actual Working Hours and Paid Vacation Taken (J-POWER)



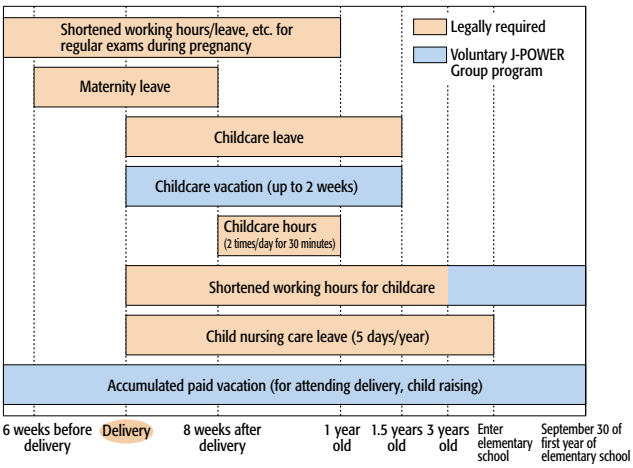
Working Environments in Support of the Next Generation

J-POWER has established multiple options in its working and leave programs in order to enable employees facing differing life circumstances to fully demonstrate their abilities. For employees involved in raising a child or caring for an elderly family member, we offer leave programs and shortened working hours. In particular, in order to provide further support for employee participation in raising children, we have established an action plan based on the Act for Measures to Support the Development of the Next Generation. Guided by the plan we are currently enhancing programs and working conditions to facilitate balance between work and family life.

System Utilization

	FY 2006	FY 2007	FY 2008
Childcare leave	13	20	19
Childcare vacation *1	–	19	26
Shortened working hours for childcare	8	10	19

Overview of Childcare Programs



Moral Harassment Consultation Desk

A consultation desk has been established for employees to discuss working hours and conditions as well as sexual harassment, moral harassment, and other issues. We also work to solve problems before they can arise by raising awareness of these issues as a part of level-specific training. Our goal is for a working environment where human rights and individuality are respected and where diverse personnel are completely at ease in going about their work.

COLUMN "Go-Home-Early Day" at the J-POWER Head Office

At the head office, where working hours tend to be long, efforts to have employees leave by a certain time have been strengthened since fiscal 2008 by establishing "Go-Home-Early Day" on the second and fourth Fridays of every month. We display posters, make announcements, send out e-mail alerts, turn off lights, and place restrictions on elevator operation. In addition, employees who remain at the office and those who come to work on that weekend are reported for each department and results are reported at meetings of unit managers.

As a result of this initiative, work outside of regular hours by head office employees declined by approximately 2 percent compared to the previous fiscal year. This had the added effect of reducing power consumption by around 4 percent, so not only did we save costs but also energy. We intend to continue the initiative while incorporating new ideas.

key word

*1 Childcare Vacation Time
Employees can take up to two weeks of paid vacation until their children are 1.5 years old. (Established in fiscal 2007)

Enhancing Working Environments

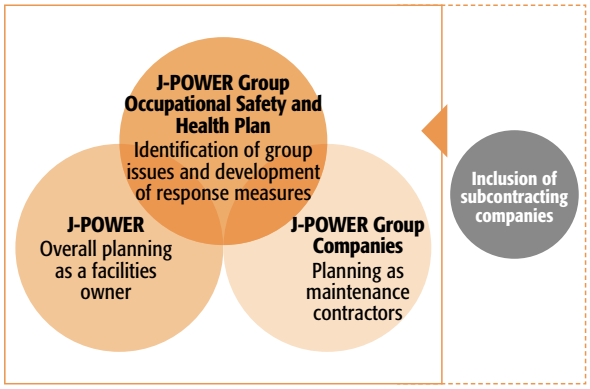
The J-POWER Group is committed to creating safe, healthy, and invigorating workplaces as the foundation of our business activities. Through the establishment and operation of occupational safety and health management systems within the Group, each group company fulfills its roles and responsibilities, and overall safety management is promoted. This serves to prevent workplace accidents and maintain or improve employee health.

Planning Based on Mutual Cooperation

At the J-POWER Group, common issues pertaining to the Group as a whole and how to address them are compiled into a J-POWER Group plan for occupational safety and health following discussions with group companies on these issues. Based on this overall plan, the companies formulate their own plans for occupational safety and health, while taking into account their positions and responsibilities, to promote J-POWER Group activities for occupational safety and health.

In drawing up the Group plan, J-POWER comprehensively checks to ensure that safety management is being conducted appropriately from the perspective of a facilities owner and outsourcer. At the same time, J-POWER's group companies formulate their plans based on the perspective of an organization with direct responsibility for maintenance work or other operations.

Operational Safety and Health Planning through Mutual Collaboration



J-POWER Group Safety and Health Initiatives

The J-POWER Group has established the following priorities as common themes in safety and health activities.

1. Safety Priorities

1) Enhance communication
2) Prevent recurring workplace accidents
3) Prevent traffic accidents resulting in injury or death and other commuting-related accidents

2. Health Issues

1) Promote mental and physical health

Incidence of Workplace Accidents[*2]

	Deaths	Serious Injury	Minor Injury
FY 2006	0	2	10
FY 2007	2	5	8
FY 2008	0	8	9

Accident Frequency and Severity

	Frequency[*3]	Severity[*4]
FY 2006	0.48	0.01
FY 2007	0.63	0.82
FY 2008	0.66	0.03

The majority of accidents in recent fiscal years have been workplace accidents involving contractors connected with construction and other work. In order to prevent occupational accidents, it is essential that our activities are unified and collaboration takes place with partner companies on the front lines. We therefore work to enhance communication at the workplace and among all relevant parties through safety promotion committees, safety patrols, safety training, traffic safety classes, and other safety activities at each worksite. We continue to work in collaboration with all parties involved to prevent recurring workplace accidents and traffic accidents.

Maintaining the Health of Employees and Their Families

The J-POWER Group conducts initiatives designed to help employees and their families maintain or improve their health. We encourage employees and their families to undergo health checkups, provide guidance in the area of health maintenance, and promote prevention of communicable diseases. We also place emphasis on measures to prevent mental health disorders and metabolic syndrome that can lead to lifestyle diseases, which have both become major social issues. Since fiscal 2008, we have conducted special institutionalized exams and health-related guidance as well as THP activities[*5] to promote physical and mental health.

Participation in Health Exams

	Percentage of employees receiving regular spring health exams
FY 2006	99%
FY 2007	99%
FY 2008	99%

THP activities put priority on physical health, mental health, and communication with group employees and others. They involve improving lifestyles by offering health-related guidance (health maintenance, nutrition, exercise, and mental healthcare) based on the results of health exams and other data, strengthening prevention, awareness, and training related to lifestyle diseases, and further enhancing mental healthcare through counseling.

We also hold activities and events to promote communication and development of good exercise habits, including walking events.

[*2] Incidence of Workplace Accidents
Accident incidence includes accidents involving contractors (principal contractors and subcontractors) engaged in construction and other work contracted by J-POWER.

[*3] Frequency
Number of deaths or injuries caused by occupational accidents per one million working hours

[*4] Severity
Number of days of work lost per 1,000 working hours

[*5] THP Activities
Activities aimed at total health, both physical and mental, based on Ministry of Health, Labour and Welfare guidelines on Total Health Promotion Plans.

Communicating with Employees

The J-POWER Group communicates through an intranet in order to reliably convey management information to each and every employee. It also issues a monthly periodical for the Group, called *J-POWERs*, that provides detailed information to employees, for example, by explaining particularly important information in straightforward feature articles. Moreover, the magazine's content is reviewed as necessary, based in part on questionnaire feedback, to ensure that it continues serving as a helpful source of information for employees.

An event was held in fiscal 2008 in the Ginza area of Tokyo to communicate information on THP activities (see p 40). Called "Family Welcome Day 2008," this social event also featured a tour of J-POWER's head office. It was designed to encourage employees and their families to reconsider what it means to work and to serve as an opportunity for families to rethink the meaning of family and company and rediscover their relationship. Various activities were held to facilitate communication, including commemorative photos in the president's office and eating in the employee cafeteria.

Commemorative photos were taken in the president's office

PERSON Representing Employees — Yasushi Oono The J-POWER Group Worker's UNION Chairman

Our union was initially established as the J-POWER Group Worker's Union (JPGU) in 1956 and has worked over the years to improve wages and other working conditions. It took on the role of representing group employees in 2004 in order to represent labor in this age of group management.

Specifically, we strive to be a democratic organization that represents the collective will of our members, and we seek to maintain or improve employment stability and working conditions through negotiations with the Group Labor Committee.

In addition, through administrative meetings, labor related discussions and other avenues, we fulfill a monitoring function that helps maintain the soundness of J-POWER Group management, and thereby contribute to the Group's development. In terms of day-to-day activities, we have a number of consultation desks* to support union members in need of help and resolve everyday problems. The consultation desks are managed with appropriate cooperation from the corporate organization.

* Consultation Desks
Consultation is offered on general issues, including legal issues, labor matters, sexual and moral harassment, financial planning, and compliance.

Communication Tools

The J-POWER Group publicizes its environmental activities and other initiatives and communicates a range of information through its public relations activities in order to earn local trust and understanding and maintain harmony with local communities. We convey information on harmonizing energy and the environment in an easy-to-understand manner through pamphlets, informational videos, television commercials, newspaper advertisements and other channels.

●J-POWER Website

We strive to maintain two-way communications with all stakeholders. The "Contact Us" page of our website provides an email address and phone number.

●Corporate Brochure

Provides an overview of J-POWER's overall business activities

●Tell Us! What is J-POWER?

Introduces J-POWER's business activities in an easy-to-understand format for people not quite sure what we do

●J-POWER is Powerful

A pamphlet for children introducing J-POWER's activities

●Global Edge

This informational magazine introduces the Group's technologies and business activities. It features contributed articles and interviews on the topic of harmonizing energy and the environment.

●Sekitan Power

Provides information on the importance of coal and coal-fired power stations as well as the J-POWER Group's initiatives to address global environmental problems

Environment

Fiscal 2008 Highlights

Startup of Isogo Thermal Power Station new No. 2 unit

P. 51

Under construction since October 2005, the new No. 2 unit at the Isogo Thermal Power Station began operating in July 2009.

Part

1 Environmental Management in the J-POWER Group

The J-POWER Group believes that energy production and the environment can coexist in harmony. In light of this corporate philosophy, our environmental management aims to promote greater environmental responsibility while enhancing the economic value of our operations in order to further contribute to the development of a sustainable society.

J-POWER Group Environmental Management Vision

In keeping with the Basic Policy of the J-POWER Group Environmental Management Vision, which was formulated in 2004, the J-POWER Group has adopted an Environmental Action Program laying out specific tasks and goals and the means to achieve them. The Group as a whole is working to achieve these environmental goals, guided by Corporate Targets[*1] that outline midterm targets for our efforts and Environmental Action Guidelines that clarify the focus of our efforts for each fiscal year.

Note: Figures for CO_2 emissions per unit of electric power sold refer to all J-POWER Group power generation operations in Japan and overseas (see p. 55).

Environmental Management Vision

Basic Policy					
Basic Stance	As an energy supplier, we will contribute to the sustainable development of Japan and the rest of the world by harmonizing our operations with the environment and ensuring the constant supply of energy essential to human life and economic activity.				
		Item	Base-year performance, etc	FY 2007 performance	
Part 2 Efforts Relating to Global Environmental Issues	In accordance with the principles of the United Nations Framework Convention on Climate Change, we will cost-effectively address issues relating to climate change on a global scale. We will continue to reduce CO_2 emissions per unit of electric power sold through an economically rational combination of measures including maintenance and improvement of the efficiency of energy use; development of low CO_2 emission power sources; development, transfer, and dissemination of new technologies; and utilization of the Kyoto Mechanisms. Furthermore, we will continue to work toward our ultimate goal of achieving zero emissions through the capture and storage of CO_2.	· Reduce CO_2 emissions per unit of electric power sold (domestic and overseas operations)	FY 2002 0.72 (kg-CO_2/kWh)	0.70 (kg-CO_2/kWh)	
		· Maintain/improve thermal efficiency of thermal power stations (HHV [higher heating value])	—	40.3 (Reference: LHV[*2] = 41.4)	
		· Reduce SF_6 emissions; increase recovery rate during inspection and retirement of equipment	—	Inspection: 99% Retirement: NA	
		· Reduce electric power consumption at offices	FY 2006 22.82 (GWh)[*3]	22.23 (GWh)	
		· Reduce fuel consumption by offices (gasoline equivalent)	FY 2006 1,644 (kl)	1,339 (kl)	
Part 3 Efforts Relating to Local Environmental Issues	We will take measures to reduce the environmental impact of our operations by saving, recycling, and reusing resources to limit the generation of waste and foster good community relations.	· Reduce SOx emissions per unit of electric power generated(point of generation, thermal power stations)	—	0.20 (g/kWh)	
		· Reduce NOx emissions per unit of electric power generated (point of generation, thermal power stations)	—	0.50 (g/kWh)	
		· Increase recycling rate for industrial waste	—	98%	
		· Increase paper recycling rate	FY 2006 87%	86%	
		· Increase rate of green purchasing of office supplies (stationery, etc.)	—	69%	
		· Increase percentage of recycled copy paper purchased	FY 2006 95%	95%	
		· Increase percentage of low-emission vehicles	—	87%	
Part 4 Ensuring Transparency and Reliability	We will ensure that our business activities comply with all laws and regulations, disclose a wide range of environmental information, and enhance communication with stakeholders.	· Raise level of environmental management	—	Adoption of EMSs at all consolidated subsidiaries completed by the end of FY 2007 as planned.	

[*1] In addition to Group-wide corporate targets, business divisions and affiliates set their own targets tailored to their operations.

Koriyama-Nunobiki Kogen Wind Farm (Fukushima Prefecture)

Action Program

Corporate Targets

	FY 2008 performance	Target	FY 2008 evaluation and next steps	Further Information
	0.68 (kg-CO_2/kWh)	Approx. 10% reduction from FY 2002 level (in FY 2010)	CO_2 emissions fell about 2% from the previous fiscal year owing mainly to a decrease in the operating rate of thermal power stations, while power sales increased 1% over the previous year, reducing emissions intensity to 0.68 kg-CO_2/kWh, roughly 5% below the FY 2002 level. We will continue to strive to meet our 2010 target.	p. 55
	40.1 (Reference: LHV = 41.1)	Maintain current level (about 40%) (FY 2008 and each FY thereafter)	The J-POWER Group maintained a total thermal efficiency of 40.1% (HHV) for thermal power generation in FY 2008 thanks to efforts to maintain highly efficient operation in existing thermal power stations and adopt high-efficiency technologies when upgrading facilities. We will continue working to maintain and improve efficiency of energy use in our thermal power stations.	p. 52
	Inspection: 99% Retirement: 99%	Inspection: at least 97% Retirement: at least 99% (FY 2008 and each FY thereafter)	The FY 2008 target was met, with a recovery rate of 99.1% during inspections and 99.6% at retirement, thanks to efforts to curb emissions during equipment inspection through careful and consistent recovery and reuse. We will continue to stress careful and consistent recovery and reuse to curb atmospheric emissions of SF_6 from gas insulation equipment.	p. 55
	21.86 (GWh) 2% annual decrease	At least 4% reduction from FY 2006 (in FY 2010) At least 1% annual reduction	Thanks to such energy-saving efforts as keeping lights off during lunch break, reducing power supply to equipment on standby, and turning down air conditioner settings, the FY 2008 target was achieved with an annual reduction of approximately 2%. We will continue our energy conservation efforts with the help of office energy-saving checklists and other tools.	p. 56
	1,251 (kl) 7% annual decrease	At least 4% reduction from FY 2006 (in FY 2010) At least 1% annual reduction	Energy-conservation initiatives resulted in a reduction of 7% from the previous fiscal year, meeting the FY 2008 target. We will continue working to reduce fuel consumption by making maximum use of public transportation, making more efficient use of company vehicles, using green driving techniques, etc.	p. 56
	0.20 (g/kWh)	Maintain current level (about 0.2 g/kWh) (FY 2008 and each FY thereafter)	Thanks to combustion control and correct operation of flue gas desulfurization systems, we were able to curb SOx emissions to maintain the level of emissions per unit of power generated. We will continue our efforts to curb emissions through good management practices.	p. 60
	0.50 (g/kWh)	Maintain current level (about 0.5 g/kWh) (FY 2008 and each FY thereafter)	Thanks to combustion control and proper operation of flue gas desulfurization systems, we were able to curb NOx emissions to maintain the current level of emissions per unit of power generated. We will continue our efforts to curb emissions through good management practices.	p. 60
	98%	97% (by the end of FY 2010)	The target for fiscal 2010 was exceeded thanks to steps to promote recycling of coal ash and reduce industrial waste generated by maintenance and operation of power stations. We will continue working to maintain our high recycling rate.	p. 61
	91% 5-point annual increase	At least 85% (by the end of FY 2010) At least 1-point annual increase	The FY 2008 target was achieved thanks to conscientious sorting and recycling of paper. We will continue to promote recycling to reduce disposal of non-industrial waste.	p. 62
	73%	At least 80% (by the end of FY 2010)	Thanks to efforts to promote green purchasing in accordance with the J-POWER Group Green Purchasing Guidelines, the rate rose by 4% from the previous fiscal year. We will intensify our efforts and continue working toward the FY 2010 target.	p. 62
	98% 3-point annual increase	At least 99% (by the end of FY 2010) At least 1-point annual increase	The FY 2008 target was met thanks to efforts to maximize use of recycled copy paper. We will continue to promote such efforts to further boost the percentage of recycled paper used.	p. 62
	91%	At least 90% (by the end of FY 2010)	Thanks to efforts to promote green purchasing in accordance with the J-POWER Group Green Purchasing Guidelines, the rate rose by 4% from the previous fiscal year, exceeding the FY 2010 target. We will continue such efforts so as to maintain this level and meet our target.	p. 62
	Consistent use of PDCA cycle	Continuous improvement of EMSs (FY 2008 and each FY thereafter)	Efforts were made to raise the level of environmental management through consistent implementation of the PDCA cycle. We will remain diligent in striving for continual improvement.	p. 65

Fiscal Year Guidelines: Environmental Action Guidelines, p. 74 (Reference Data)

*2 LHV (lower heating value) estimated from actual HHV (higher heating value) using conversion coefficients supplied in the Agency of Natural Resources and Energy's Comprehensive Energy Statistics (2004 edition).

*3 Figures are adjusted to compensate for changes in the scope of available data.

Business Activities and the Environment (Fiscal 2008)

The charts below detail the resource consumption and environmental load of J-POWER Group operations within Japan.

Note: Figures represent the aggregate of all J-POWER Group companies (J-POWER and consolidated subsidiaries); in the case of joint investments, figures are prorated according to the ratio of capital contribution.

INPUT

Thermal Power Generation

●Fuel

Coal (wet)	**19.58** million tons
Heavy oil	**38,000** kl
Light oil	**29,000** kl
Natural gas	**99** million Nm^3
Biomass (dried sewage sludge)	**3,000** tons
●Industrial-use water	**9.57** million m^3

Notes:
1. Apart from waste water, almost all industrial-use water used in thermal power stations is released into the atmosphere as steam.
2. River water used in hydroelectric stations is not included in the input figures, as all such water is returned to the river after power generation.
3. While steam is used in geothermal power stations, hot water is returned underground after power generation via an injection well.

●Major Chemicals Consumed (undiluted equivalents)

Limestone ($CaCO_3$)	**221,000** tons
Ammonia (NH_3)	**12,000** tons

Hydropower Generation

●Power for pumped storage 1,300 GWh

Geothermal Power Generation

●Steam	**780,000** tons
●Hot water	**3.81** million tons

Internal Use at Business Sites and Offices

●Electricity (purchased)

Business sites	**54.28** GWh
Offices	**17.82** GWh

●Fuel (gasoline equivalent)

Business sites	**13,407** kl
Offices	**1,251** kl

●Drinking water

Business sites	**110,000** m^3
Offices	**500,000** m^3
●Copy paper (A4 equivalent)	**56** million sheets

Business Activities

Electric Power Generated




Thermal 53,600 GWh **Hydroelectric 9,500 GWh** **Geothermal/Wind 400 GWh**

Auxiliary power for operation and transmission loss **3,700** GWh

Note: Due to rounding, figures may not add up to totals.

Volume of electric power sold **58,800** GWh

Pumped storage hydroelectric power output **900** GWh

Total **59,700** GWh

Supply

The electricity generated at our power stations is supplied through regional power companies to end users throughout Japan. The 58,800 GWh of wholesale electric power we sold last year is equivalent to approximately 7 percent of total electric power sold by regional power companies.*

* Total electric power sold in FY 2008 was 888,900 GWh, according to confirmed figures on electricity demand published by the Federation of Electric Power Companies of Japan.

Major Resources Recycled

Coal ash	**1.74** million tons (99.4%)	Other industrial waste	**29,000** tons (67.0%)
Sludge (excluding gypsum)	**5,000** tons (40.3%)	Waste paper	**437** tons (91.3%)
Gypsum (desulfurization byproduct)	**330,000** tons (100%)	Driftwood from dam reservoirs	**39,000** m^3 (95.5%)
Sulfuric acid (desulfurization byproduct)	**14,000** tons (100%)	Percentages indicate recycling rate.	

Effective Utilization (cement plants, etc.)

OUTPUT

Thermal Power Stations

●Emissions into the Atmosphere

CO_2	**43.47** million t-CO_2
SOx	**11,000** tons
NOx	**27,000** tons
Soot and dust	**1,000** tons

●Emissions into Bodies of Water

Waste water	**3.47** million m^3
Waste water COD	**15** tons

Geothermal Power Station

●Hot water	**4.07** million tons

CO_2 Emissions from Business-Site and Office Activities

●Business sites	**59,000** t-CO_2
●Offices	**11,000** t-CO_2

Waste

●Industrial waste

Coal ash	**11,000** tons
Other	**22,000** tons

●Specially controlled industrial waste

Specially controlled industrial waste	**2,000** tons

●Non-industrial waste

Waste paper	**42** tons
Driftwood from dam reservoirs	**1,900** m^3

Environmental Accounting and Eco-efficiency

The J-POWER Group regards environmental accounting as an important tool for environmental management. Through ongoing disclosure of environmental accounting data, we aim to further enhance the reliability and adequacy of information on cost and effectiveness. Improving eco-efficiency (production per environmental load) is one of the goals outlined as part of our basic stance in the Basic Policy section of the J-POWER Group Environmental Management Vision.

Note: Additional data provided on p. 79, Reference Data.

Environmental Accounting

To calculate the costs and benefits of the J-POWER Group's environmental conservation activities in fiscal 2008 in keeping with the nature of our business, we referred to the Environmental Accounting Guidelines 2005 issued by the Ministry of the Environment (see p. 79).

Environmental Conservation Cost and Benefit

Total costs for fiscal 2008 were approximately 43.0 billion yen, with pollution control costs for preventing contamination of the air, water, etc., accounting for about 40 percent of the total.

When looking at environmental load, the nature of our business requires that, instead of tabulating total emissions, we assess the overall environmental conservation benefit of our conservation measures on the basis of emissions intensity, thermal efficiency, and reuse/recycling rate, comparing these levels with the fiscal 2004 benchmarks.

Economic Benefit

Efforts contributing to earnings and cost reductions were calculated to have had an economic benefit of approximately 8.1 billion yen.

Economic Benefits

Unit: billion yen

Category	Details	Benefit
Revenue	Sales of marketable commodities from coal ash, gypsum, and sulfuric acid	0.4
Cost reduction	Reduction in fuel costs due to improved coal-fired thermal efficiency (introduction of USC)	3.5
	Reduction in disposal costs due to coal ash, gypsum, and sulfuric acid recycling	4.2
Total		8.1

Conservation Costs and Benefits

Category	Major measures and efforts	Cost (billion yen)	Environmental conservation benefit	FY 2004	FY 2008
Pollution control	Air pollution control (desulfurization/denitrification, soot and dust treatment), water pollution control (waste-water treatment), etc.	17.3	SOx emissions intensity (g/kWh)	0.20	0.20
			NOx emissions intensity (g/kWh)	0.50	0.50
			Soot and dust emissions intensity (g/kWh)	0.02	0.02
Global environmental conservation	Measures to reduce greenhouse gas emissions (maintaining high-efficiency operation of thermal power stations, developing renewable and untapped energy sources, maintaining energy-saving equipment, curbing of greenhouse gas emissions other than CO_2)	1.7	CO_2 emissions intensity (kg-CO_2/kWh)	0.69	0.68
			Average coal-fired thermal efficiency (%)	40.4	40.1
Resource recycling	Waste reduction through reuse and recycling, treatment and disposal of waste	12.3	Coal ash recycling rate (%)	91.0	99.4
			Industrial waste recycling rate (%)	92	98
			Gypsum recycling rate (%)	100	100
			Volume of driftwood recycled (1,000 m^3)	—	39
Other	Research and development, social activities, etc.	11.7			
Total		43.0			

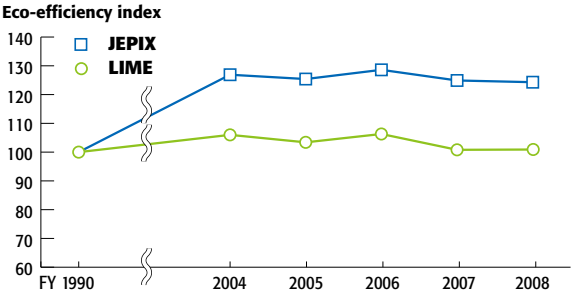
Note: For detailed data regarding each category, see pp. 75–76, Fiscal Year Data, in the Reference Data section.

Eco-efficiency

In the J-POWER Group, we have used JEPIX[*1] and LIME[*2] to evaluate the efficiency of our efforts to this point. Although the two methods assign different coefficients to various aspects of the environment, both indicate an overall trend of improving eco-efficiency since fiscal 1990.

As our medium- to long-term tasks henceforth, we are working to reduce the environmental load by improving the efficiency of energy use, which is closely tied to increased eco-efficiency, and developing renewable energy sources.

Integrated Index of Eco-efficiency (electric power sold per environmental load)



Notes:
1. Eco-efficiency: 100 = FY 1990 integrated index (electric power sold per environmental load).
2. FY 2004 data is for J-POWER only, on a non-consolidated basis.

[*1] JEPIX (Environmental Priorities Index for Japan)
An index that calculates a single score for overall environmental impact using the Ecopoints system, which assigns weights to more than 300 environmental pollutants according to their impact on water and air quality.

[*2] LIME (Life-cycle Impact assessment Method based on Endpoint modeling)
An integrated environmental impact assessment method that assigns weights to potentially harmful substances by scientifically analyzing their contribution to such environmental problems as global warming and destruction of the ozone layer and calculating their damage to human health, ecosystems, etc.

Part

2 Efforts Relating to Global Environmental Issues

Global warming is one of the most serious long-terms problems humanity will need to grapple with in the current century. The J-POWER Group regards measures to combat global warming as a top management priority and is pursuing such actions vigorously.

Close-up

Development of Low-CO_2-Emission Power Sources

The J-POWER Group is doing its best to curb CO_2 emissions by building low-emission power sources in the form of nuclear power stations and making effective use of such renewable energy as hydro-, wind, biomass, and geothermal power, while also working to perfect gas-turbine combined-cycle generation, which promises high efficiency of energy use.

(For more on nuclear power, see Special Feature 1, "Safe, Sustainable Use of Nuclear Energy," pp. 9–12; for more on coal, see Special Feature 2, "Coal Use and Measures to Counter Global Warming," pp. 13–17.)

J-POWER's Hydroelectric Power Development

Hydropower uses the force of falling water to turn a water turbine and generate electricity. The typical approach is to build a dam on the upper reaches of a river and use the potential energy of the water stored in the dam reservoir to generate power. Power output can easily be adjusted to match demand by altering the amount of water used; when no electricity is needed, the turbine is stopped and the water stored up in the dam reservoir. In this way water is converted to electricity with a minimum of waste.

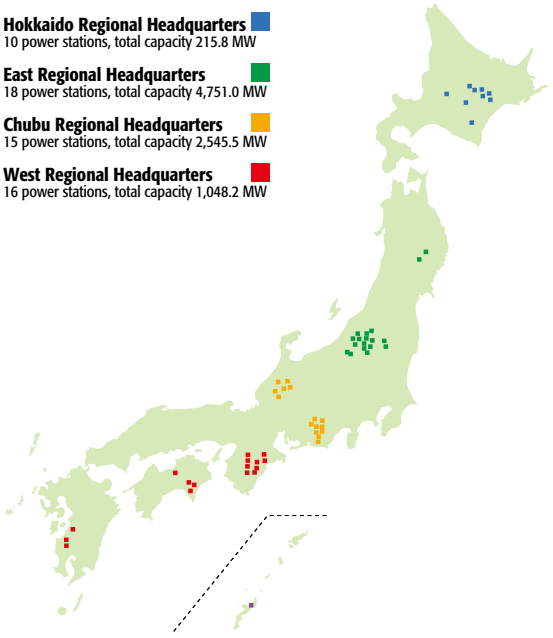
J-POWER has a half-century of experience developing, building, and operating hydroelectric power stations, from such large-scale facilities as Sakuma Power Station, which began operating in 1956, to our new pumped storage power stations, noted for their superior ability to adjust output to meet peak demand. Today J-POWER operates 59 hydroelectric power stations with a combined capacity of 8.56 GW, almost 20 percent the total installed capacity of Japan's hydropower facilities.

In fiscal 2008, J-POWER sold 8,380 GWh of electricity from these hydropower facilities for a CO_2 emissions reduction benefit of approximately 3.8 million t-CO_2. Today, the pressing need to combat global warming is stimulating renewed interest in hydroelectric power, a renewable resource.

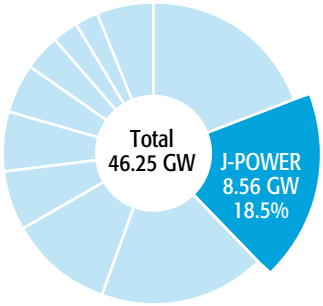
J-POWER is also working to upgrade its aging hydroelectric power facilities using the latest technologies to boost generating efficiency and further reduce the CO_2 intensity of our electric power generation (see p. 52).

Kurotani Dam (Fukushima Prefecture)

Location of J-POWER Hydropower Stations (Japan)



J-POWER Share of Japan's Installed Hydropower Capacity (as of March 31, 2009)



Note: Excludes home power systems.
Source: Agency for Natural Resources and Energy, Electric Power Statistics.

Motogoya Dam (Hokkaido)

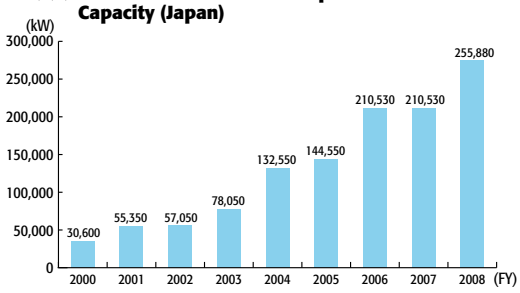
ACTION Wind Power Development

Wind power is a clean, renewable energy source that emits no CO_2 in the electricity generating process. In resource-poor Japan, expectations are high for this valuable, 100 percent domestic energy source.

Making maximum use of know-how accumulated through decades of experience building, operating, and maintaining hydroelectric and thermal power stations and transmission lines, the J-POWER Group is positioned to handle every phase of a wind power project, from the initial study of wind conditions and project planning to construction, operation, and maintenance. In fiscal 2008, we launched commercial operation of three more wind power facilities in Japan--Sarakitomanai Wind Farm, Yokihi no Sato Wind Park, and Minami Oosumi Wind Farm (a total of 32 generators with a combined capacity of 45.35 MW), for a total of 12 wind farms nationwide (155 generators, 255.88 MW). Altogether, the J-POWER Group's installed wind power capacity (prorated according to ownership share) accounts for approximately 12 percent of Japan's total. Outside of Japan, meanwhile, commercial operation was launched at the new Zajaczkowo Windfarm in Poland (24 generators, 48 MW).

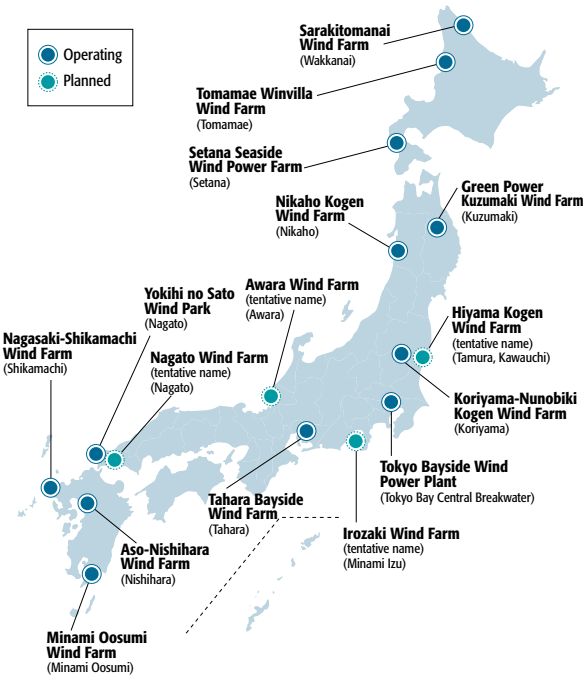
Over the medium term, J-POWER Group is aiming for a wind power capacity of 500 MW each in Japan and overseas. Meanwhile, we are surveying and developing new sites in preparation for additional projects to follow. In addition, we are working constantly to improve operation efficiency and stability for even more effective utilization of wind energy.

Growth in J-POWER Group Installed Wind Power Capacity (Japan)



Note: Figures represent combined installed capacity of facilities in which J-POWER Group has an ownership interest, non-prorated.

Locations of J-POWER Group Wind Power Facilities (Japan)



PERSON Making Wind Power as Green as Possible

Although wind power is clean energy that emits no CO_2 in the electricity generating process, care must be taken to limit the environmental load stemming from construction and operation. In addition to carrying out environmental impact assessments prior to construction (habitat and growth environment of plants and animals, noise, radio interference, etc.), we are at pains to protect the environmental during the actual building and operating processes.

Tadashi Matsumoto
Wind Power Engineering Group, Wind Power Business Office Environment & Energy Business Department

Close-up

Development of Low-CO_2-Emission Power Sources

ACTION

Beneficial Use of Biomass

In the J-POWER Group we are actively promoting the beneficial use of such biomass resources as sewage, woody biomass, and non-industrial waste in the belief that co-combustion in coal-fired power stations is the most efficient and economical way to tap these resources on a significant scale.

Utilization of Sewage Sludge (Biosolid Fuel)

Biosolid fuel, produced by heating a mixture of sludge from sewage treatment plants and discarded cooking oil to remove the moisture (oil-heat depressurization drying method is employed), has approximately the same heating properties as coal. In fiscal 2006 we began co-firing biosolid fuel in the commercial facilities at the Matsuura Thermal Power Station (Nagasaki Prefecture) in the first such undertaking in Japan. Working within the constraints of limited fuel production, the facility co-fired about 580 tons of biosolid fuel in fiscal 2008, yielding approximately 1,400 MWh of electric power. We are now working with such entities as the Fukuoka Prefectural Sewage Public Corporation to develop a technique for manufacturing an oil substitute from waste cooking oil with the aim of increasing the volume of biosolid fuel used in co-combustion.

Biosolid fuel

Development of Biosolid Fuel Production Technology (low-temperature carbonization)

Low-temperature (250°C–350°C) carbonization improves the calorific value of biosolid fuel produced from sewage sludge by about 40 percent compared with high-temperature (600°C–800°C) carbonization processes, in addition to curtailing the amount of N_2O generated during sludge treatment. By pelletizing the dried sludge and adding steam prior to carbonization, this process also reduces the danger of spontaneous combustion while minimizing odor. By enhancing the value of biosolid fuel as a coal substitute, the technology can make a major contribution to the reduction of greenhouse gases.

Utilization of Woody Biomass

Long-term trials of woody biomass co-firing were begun at Matsuura Thermal Power Station (Nagasaki Prefecture) in fiscal 2008 (scheduled to end in fiscal 2009), in preparation for full-scale generation using woody biomass fuel. In fiscal 2008, the trials co-fired approximately 2,500 tons of woody biomass fuel and confirmed that plant equipment was not affected by co-combustion. In fiscal 2009, the facility will begin long-term trials of simultaneous co-firing of woody biomass and biosolid fuel to verify that the equipment is not affected by simultaneous combustion.

Woody biomass fuel

Testing Carbonized Fuel from Non-industrial Waste

The J-POWER Group is also working to develop technology for producing carbonized fuel from non-industrial waste with biomass content with a view to encouraging use of untapped energy sources (for details, see p. 63).

COLUMN

Turning Sewage Sludge into Fuel in Hiroshima

In April 2012, at the Hiroshima City Seibu Water Resources Reclamation Center, we will be launching Japan's first sewage-sludge recycling operation to produce biosolid fuel using low-temperature carbonization. Under the project, sewage sludge, a biomass resource, will be converted into fuel to be co-fired at J-POWER's Takehara Thermal Power Station (Hiroshima Prefecture). We take an integrated approach in this project, from design, construction, maintenance, and operation of facilities to sales of the fuel produced and use of fuel in boilers at coal-fired thermal power stations. In recycling an estimated 27,000 tons of sewage sludge each year, 46% of the total amount generated by the city of Hiroshima, the program is expected to aid in the fight against global warming by reducing greenhouse gas emissions equivalent to 15,000 t-CO_2 at the sewage treatment center and the power station combined.

In the years ahead we intend to use mainly our own coal-fired power stations around the country to actively promote expanded recycling of sewage as biosolid fuel.

Exterior view of planned biosolid fuel production facilities (artist's rendering)

ACTION

Tapping a Wide Range of Renewable Energy Sources

Geothermal Power

An unusual number of volcanoes makes Japan a country rich in geothermal resources, with more than 100 hot springs measuring 90°C or higher. Moreover, this 100 percent domestic, renewable energy source is virtually free of CO_2 emissions. We are working hard to ensure the stable operation of our Onikobe Geothermal Power Station (Miyagi Prefecture; 12,500 kW), which puts this precious resource to beneficial use. Meanwhile, we are conducting surveys to lay the groundwork for new geothermal power projects in Japan and overseas. At present we are carrying out a detailed survey, including exploratory drilling, in Akita Prefecture.

Onikobe Geothermal Power Station (Miyagi Prefecture)

Small Hydropower

J-POWER is also moving forward with development of small hydropower to make beneficial use of an important untapped energy source of 100 percent domestic origin. Thus far we have provided design and construction supervision for a power station that makes use of an existing sediment control dam (Oita Prefecture) and a facility that uses the public water supply system (Mie Prefecture) as well as for the redevelopment of a hydropower station damaged by flooding (Mie Prefecture). We also participated in joint development of a micro hydropower system[*1] ("hydro-agri") using falling water in existing irrigation channels, for which we carried out demonstration testing in Tochigi Prefecture and designed and built commercial facilities.

[*1] Micro hydropower
Hydroelectric power installations with a capacity of 100 kW or less

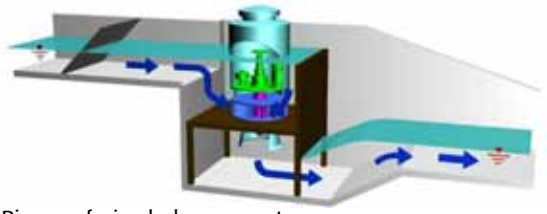


Diagram of micro hydropower system using irrigation channel

Solar Power

In March 2008 operations began at Hibikinada Solar Power Station, which was built on reclaimed land in the Hibikinada district of Kitakyushu's Wakamatsu Ward. This solar power system, approved by the New Energy and Industrial Technology Development Organization (NEDO) in fiscal 2007 as a Field Test Project on New Photovoltaic Power Generation Technology, has an installed capacity of 1,000 kW (1 MW). It consists of 5,600 solar cell modules of the polycrystal silicon type, each measuring 1.29 by 0.99 meters.

The field test is measuring and analyzing various actual-load operating data over a period of four years to evaluate a new type of control system using a high-capacity power conditioner. In one year, the facility generated about 1,100 MWh of electricity, for an emissions reduction benefit of about 500 t-CO_2.

Hibikinada Solar Power Station (Kitakyushu)

COLUMN

High-Efficiency Gas-Turbine Combined-Cycle Generation

Gas-turbine combined-cycle power generation combines gas turbines and steam turbines to achieve high generation efficiency, in the area of 50 percent.

We established Ichihara Power Co., Ltd. (a joint venture between Mitsui Engineering & Shipbuilding Co., Ltd. and J-POWER) and Bay Side Energy Co.,Ltd. to work on gas-turbine combined-cycle power generation using natural gas as fuel. We are also involved in gas-fired power generation overseas, including the Kaeng Khoi 2 gas-fired thermal power station project in Thailand.

Ichihara Power Station
(Bay Side Energy Co., Ltd., Chiba Prefecture)

Maintenance and Improvement of Energy-Use Efficiency

The energy-use efficiency of the J-POWER Group's coal-fired power facilities is among the highest in the world, thanks to our ongoing efforts to develop and actively incorporate our own cutting-edge technology. At our hydropower stations, as at other facilities, we strive for stable operations and work to further improve equipment efficiency during upgrades. In addition, the entire Group is working as a team to improve energy conservation.

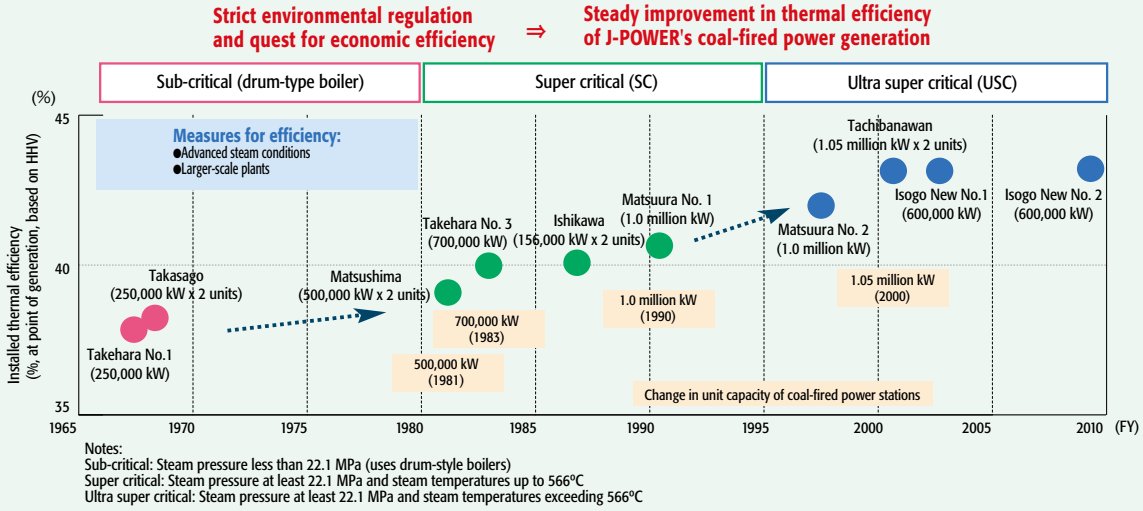
TOPIC Start-up of Isogo Thermal Power Station New No. 2 Unit

Isogo Thermal Power Station, Pinnacle of Pulverized Coal Technology

The Isogo Thermal Power Station new No. 2 unit (capacity: 600 MW), under construction since October 2005, began operating commercially in July 2009. With the new No. 1 unit up and running as well, this marks the completion of a massive project to replace the generating equipment at Isogo Thermal Power Station. Determined to make Isogo Thermal Power Station a showcase of advanced clean-coal technology, J-POWER boosted the power station's thermal efficiency by applying some of the world's most advanced ultra super critical (USC) technology (main steam at 25 MPa and 600ºC). In the new No. 2 unit, moreover, the reheated steam temperature was raised another 10ºC to 620ºC, to boost heat efficiency even higher and further reduce CO_2 emissions.

Thanks to the installation of cutting-edge anti-pollution equipment, SOx and NOx emissions per unit of electricity generated (intensity) at Isogo Thermal Power Station are extremely low at levels one digit smaller than those of major industrial countries. In this way the Isogo Thermal Power Station has emerged as one of world's most advanced facilities in terms of curbing emissions that impact the environment.

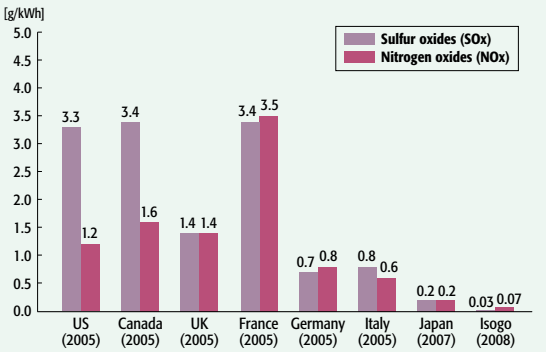
Thermal Efficiency of Coal-Fired Power Generation by J-POWER



Notes:
Sub-critical: Steam pressure less than 22.1 MPa (uses drum-style boilers)
Super critical: Steam pressure at least 22.1 MPa and steam temperatures up to 566ºC
Ultra super critical: Steam pressure at least 22.1 MPa and steam temperatures exceeding 566ºC

Isogo Thermal Power Station (Yokohama)

SOx and NOx Emissions Intensity of Thermal Power Generation by Country



Source: Data compiled by the Federation of Electric Power Companies of Japan.
Notes: 1. Figure for Japan represents combined data for Japan's 10 regional electric utilities and J-POWER.
2. Country figures represent combined emissions intensity for coal-, oil-, and gas-fired thermal power.

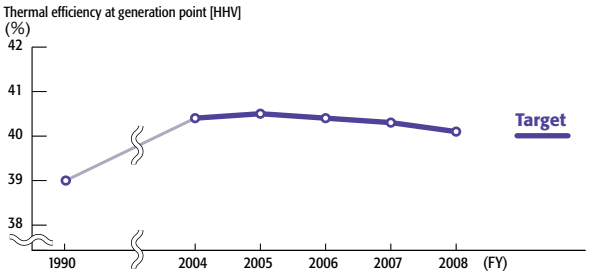
key word

Maintaining and Improving Efficiency of Thermal Power Stations

When the thermal efficiency of a thermal power station declines, it means that more fossil fuel is consumed to generate the same amount of power, resulting in an increase in CO_2 emissions. We work hard to keep thermal efficiency high through conscientious maintenance of our generating facilities. Equipment that has aged from years of use is replaced and upgraded to restore or improve operational efficiency.

At Matsuura Thermal Power Station, the high- and intermediate-pressure rotors of the steam turbine that powers the generator will be replaced during fiscal 2009 and 2010 to restore generating efficiency. In the process, we will adopt the latest technology to maintain and improve thermal efficiency, including high-performance blades optimally designed with the help of computer simulation and an improved packing structure that prevents steam from escaping.

Change in Thermal Efficiency of J-POWER Group Thermal Power Stations



Note: Figures for 1990–2004 are for J-POWER (non-consolidated) only.

High- and intermediate-pressure turbine rotors at Matsuura Thermal Power Station (Nagasaki Prefecture)

Equipment Replacement at Hydropower Facilities

At hydropower facilities with aging equipment, we have undertaken the total replacement of key system components. The purpose is to prolong the life of the facility and improve the reliability of its equipment, while boosting power generation efficiency and capacity by incorporating the latest advances in design engineering.

At Tagokura Power Station (Fukushima Prefecture), work has been ongoing since fiscal 2004 under an eight-year plan to replace four water turbine generators and increase the facility's capacity from 380,000 kW to 400,000 kW. To date, the no. 4 and no. 2 generators have been replaced and are operating commercially.

At Nukabira Power Station (Hokkaido), where a four-year project to replace two water turbine generators was launched in fiscal 2006, the no. 2 generator has been replaced and is operating commercially. Large-scale renovation is under consideration for other sites as well.

Replacement of key system components at Nukabira Power Station (Hokkaido)

PERSON **Mitsuo Miyahara** Planning & Management Group, Thermal Power Engineering Department

Royal Purple

RP-LUCID is a high-performance lubricant perfected by the US firm Royal Purple using advanced additive technology centered on the proprietary additive Synerlec. This unique product achieves the ideal that has eluded previous lubricants by combining film strength, oxidation resistance, and excellent separation from water in one product. At J-POWER we use RP-LUCID to lubricate much of our rotary equipment, and the result has been fewer equipment failures, longer intervals between oil changes, and energy savings.

At our wind power facilities, use of the lubricant in recent years has led to improved output performance, and we intend to expand its use over time.

RP-LUCID high-performance synthetic lubricant

Note: The original name of the lubricant is Royal Purple.

Utilization of the Kyoto Mechanisms and Other Measures

The J-POWER Group has been moving forward with application of the Kyoto Mechanisms, with an emphasis on CDM Project development. The CDM (Clean Development Mechanism; see chart below) and JI (Joint Implementation)[*1] are essential mechanisms for minimizing Japan's economic burden and keeping Japanese industry internationally competitive, and the J-POWER Group is actively involved in efforts to earn and make use of carbon credits through these programs.

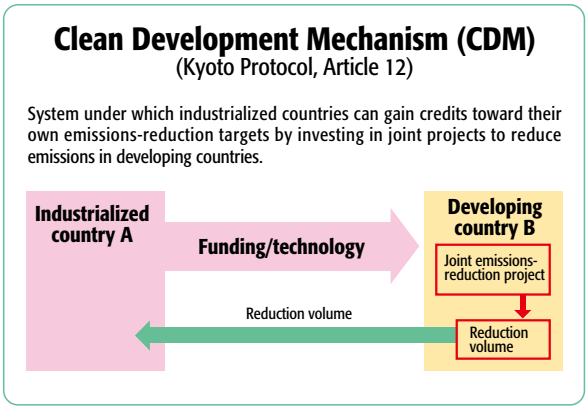
Overview of CDM Project Development

The Kyoto Protocol sets numerical targets to reduce greenhouse gas emissions for industrialized nations. Under the protocol, the Kyoto Mechanisms (JI, CDM, and emissions trading) have been established as tools by which industrial nations can achieve their targets in an economically rational manner while providing technical and financial support for emissions reduction in developing countries.

The J-POWER Group began moving proactively to take advantage of the CDM even before the Kyoto Protocol went into effect in February 2005. The reason for the focus on CDM was that, unlike JI and emissions trading, for which carbon credits were not to be issued until 2008, the CDM applied to activities undertaken from 2000 on, making it possible to earn credits even before 2008.

In order to accumulate experience, we began by participating in a large number of small-scale projects. Focusing on Central and South American countries that have actively embraced the CDM, we assisted in a broad range of activities required for official CDM registration. As the date of the protocol's enforcement neared, we broadened our focus to include Asia and began to participate in large-scale projects as well. Of the CDM-related projects in which we have been involved, six had been registered with the CDM Executive Board[*2] as of the end of March 2008.

>>> Outline of Clean Development Mechanism



Major Activity in FY 2008

JI and CDM Projects

In January 2009, the Sichuan Erdaoqiao Hydropower Project to develop renewable hydroelectric power was registered as an approved CDM project.

The J-POWER Group has been involved in a variety of other JI- and CDM-related projects as well, not only in Central and South America but also in Eastern Europe, China, and Southeast Asia, providing development support for projects involving the use of such renewable energy sources as biomass and hydropower, as well as projects to recover biogas with methane content from landfills and effluent treatment facilities and burn it as fuel.


Landfill in Brazil


Landfill gas[*3] recovery well

>>> CDM Executive Board–Registered Projects Developed with J-POWER Participation

Country	Project name	Description
Chile	Nestle Graneros Plant Fuel-Switching Project	Switch to natural gas in conjunction with renovation of facilities
Chile	Metrogas Package Cogeneration Project	Introduction of cogeneration for improved energy-use efficiency
Colombia	La Vuelta and La Herradura Hydroelectric Projects	Use of renewable energy sources
Brazil	Aquarius Hydroelectric Project	Use of renewable energy sources
Brazil	Caieiras Landfill Gas Emission-Reduction Project	Combustion of landfill gas to reduce greenhouse gases
China	Sichuan Erdaoqiao Hydropower Project	Use of renewable energy sources

Participation in Carbon Funds

As part of our ongoing effort to secure emissions credits efficiently through CDM and JI, J-POWER contributes to the following carbon funds:

- Japan Greenhouse Gas Reduction Fund (JGRF)
- Dexia-FondElec Energy Efficiency and Emissions Reduction Fund

key word

[*1] Joint implementation (JI)
Mechanism whereby industrialized countries can carry out joint emissions-reduction projects and apply the resulting reductions toward their own emissions-reduction targets.

[*2] CDM Executive Board
Body charged with oversight of CDM projects. Responsible for accrediting designated operational entities (DOEs), registering CDM projects, and issuing certified emission reductions (CERs).

[*3] Landfill gas
Biogas generated from waste in landfills. A major component of landfill gas is methane, generated during the ana erobic fermentation of organic matter. Methane is a greenhouse gas with a warming effect 21 times that of CO_2.

CDM Project Close-up

Small-scale CDM Project at Aquarius Hydroelectric Power Station in Brazil

One small-scale CDM project in which J-POWER has been involved is the Aquarius Hydroelectric Project in Brazil. The United Nations CDM Executive Board approved the project's registration on December 15, 2006, and the Aquarius Hydroelectric Power Station has been operating successfully. In December 2008, the board approved issuance of the first certified emission reductions, or CERs,[*4] from this project.

The project's objective was to avoid greenhouse gas emissions from fossil-fuel-fired power by supplying clean electricity from the Aquarius Hydroelectric Power Station (capacity 4,200 kW), built and operated in Rua da Cana, Municipio Sonora, Mato Grosso do Sul, by Brazilian wholesale power supplier Aquarius Energetica S.A. J-POWER worked with the project owner to draft the project design document (PDD) and complete other CDM procedural requirements. The CO_2 emissions reduction volume anticipated from the project is 284,000 t-CO_2 over the 21-year period from 2006 through 2026.

Aquarius Hydroelectric Power Station, Brazil

Project History

April 24, 2006	Approved by Japanese government
Sept. 19, 2006	Approved by government of host country, Brazil
Dec. 15, 2006	CDM registration approved by CDM Executive Board
Dec. 19, 2008	CERs issued by CDM Executive Board (19,024 CERs)

The Kyoto Mechanisms and the J-POWER Group's CO_2 Intensity Target

Such Kyoto Mechanisms as CDM and JI allow industrially developed nations to earn carbon credits to offset their own emissions by taking part in emissions reduction projects in other countries. CDM and JI were adopted under the Kyoto Protocol to help achieve the emissions reduction targets at the lowest possible cost. By implementing programs to reduce CO_2 emissions in developing countries and elsewhere, a country like Japan, whose energy conservation measures have progressed to the point where further reductions in greenhouse gas emissions can only come at considerable cost, to pursue more cost-effective CO_2 emissions at the global level, while encouraging emissions reduction in developing countries.

With this in mind, we have been working actively to earn and use credits via CDM and JI. To give due consideration to these efforts, when calculating the J-POWER Group's progress toward its CO_2 intensity reduction target, we offset our CO_2 emissions from power generation with the carbon credits transferred to Japan through our CDM and JI projects.

PERSON **Taichi Hirose** Carbon Credit Group, Climate Change Office, Corporate Planning & Administration Department

Ensuring the Success of Our CDM and JI Projects

For a CDM or JI project to succeed, thorough preparations must be carried out in close contact with personnel on the ground, so as to build an effective team. One must also be diligent in obtaining project approval from the UNFCCC[*5] organization and each government involved. It must be remembered that the systems and procedures governing CDM and JI are still evolving and can change from one day to the next. Staying alert at all times to any new information from the UNFCCC, government, or DOE,[*6] as well as from consultants and others involved in the program, we work with local personnel on a daily basis to respond nimbly to procedural changes and ensure the success of the project.

[*4] Certified emission reductions (CERs)
Emission reduction credits issued by the CDM Executive Board for a CDM project in accordance with its outcomes.

[*5] UNFCCC (United Nations Framework Convention on Climate Change)
Treaty establishing an international framework for averting the environmental effects of global warming, with the ultimate aim of at stabilizing greenhouse gas concentrations in the atmosphere. The treaty came into force in March 1994.

[*6] Designated operational entity (DOE)
An independent body that verifies and certifies the amount of greenhouse gas emissions reduction from a CDM project.

Efforts to Curb Greenhouse Gas Emissions

In the J-POWER Group we are taking appropriate steps to control CO_2 and other greenhouse gases (SF_6, HFC, PFC, N_2O, and CH_4) to minimize emissions. We are also taking the necessary steps to control emissions of specified CFCs and halons that deplete the ozone layer.

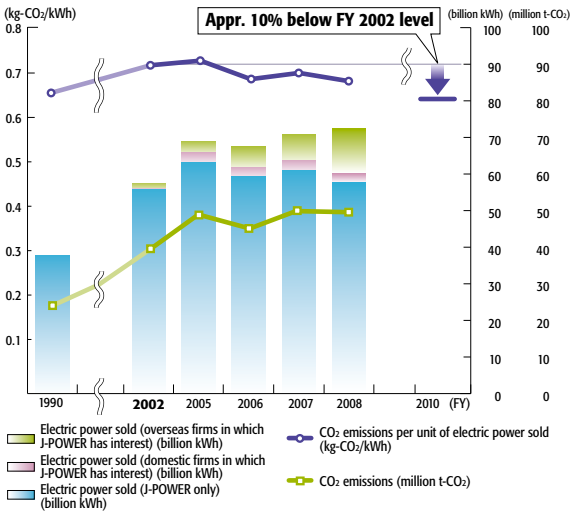
CO_2 Emissions in Fiscal 2008

In fiscal 2008, electric power sold by the J-POWER Group as a whole, calculated by pro-rating sales according to J-POWER's ownership share in each subsidiary and unconsolidated affiliate in Japan (20 companies) and overseas (21 companies), was 72,200 GWh, representing an annual increase of about 1 percent. During the same time CO_2 emissions decreased approximately 2 percent, to 49.38 million t-CO_2.

CO_2 emissions per unit of electric power sold fell 2 percent, to 0.68 kg/t-CO_2, the result of a slight increase in electricity sold from hydropower facilities and a drop in electricity sold from thermal power stations, reflecting a decline operating rate. This figure is 5 percent below the baseline fiscal 2002 level of 0.72 kg-CO_2/kWh. We will continue working to reach our target through such strategies as the development of low-CO_2-emission power sources* and utilization of the Kyoto Mechanisms.

* CO_2 emissions reduction benefit of wind power and other alternative energy sources (estimated using average CO_2 intensity of all energy sources in Japan): Electricity sold from wind power and geothermal generation in FY 2008 was approximately 300 GWh and 70 GWh respectively, yielding a combined emissions reduction benefit of approximately 170,000 t-CO_2. (For hydropower, see p. 47.) The annual emissions reduction benefit from Ohma Nuclear Power Station since its completion is estimated at around 3.2 million t-CO_2 (based on an 80 percent utilization rate).

J-POWER Group (Japan and Overseas) CO_2 Emissions



* Scope of Data Included in Calculation of CO_2 Emissions and Electric Power Sold

Inasmuch as our focus is on global environmental problems, when calculating CO_2 emissions per unit of electric power sold (CO_2 intensity)—the measure on which our corporate targets are based—we have made an effort to include in our aggregate all energy-producing businesses in which J-POWER has an investment, both domestically and overseas. To this end, we have calculated the electric power sold and the CO_2 emissions of each of the Japanese and overseas companies in which J-POWER has a stake, including unconsolidated affiliates, and prorated their figures in accordance with J-POWER's ownership share.

To calculate the volume of CO_2 emissions, we have used the emission coefficients set by the greenhouse-gas accounting, reporting, and disclosure system instituted under the amended Law Concerning the Promotion of Measures to Cope with Global Warming.

Measures to Curb Greenhouse Gases Other than CO_2

The Kyoto Protocol covers five greenhouse gases in addition to CO_2. Where emissions by the electric utility industry are concerned, the contribution of these other gases to global warming is about 1/480 that of CO_2.* With regard to SF_6, the J-POWER Group has established as its targets a 97 percent recovery rate during equipment inspection and a 99 percent rate when equipment is retired and are working to minimize emissions through careful and consistent recovery and reuse. In 2008, our recovery rate during inspections was 99 percent.

* Federation of Electric Power Companies of Japan, Environmental Action Plan by the Japanese Electric Utility Industry (September 2008).

Measures for Reducing Emissions of Other Greenhouse Gases

Gas	Applications and measures for reducing emissions
Sulfur hexafluoride (SF_6)	Used for insulation in gas insulation equipment. The J-POWER Group works to reduce emissions through rigorous recovery and reuse during inspection and disposal. In 2008, our rate of recovery and reuse was 99 percent.
Hydrofluorocarbons (HFCs)	Used as refrigerant in air-conditioning equipment, etc. Their use is expected to increase as they are adopted to replace government regulated CFCs. The J-POWER Group works to reduce emissions through cooperative efforts to recover and reuse such gases, as well as preventing leaks during installation and repair.
Perfluorocarbons (PFCs)	Not stocked by J-POWER Group Companies.
Nitrous oxide (N_2O)	The J-POWER Group is working to keep emissions to a minimum by improving thermal efficiency of thermal power stations. (In fiscal 2008, emissions totaled approximately 1,660 t.)
Methane (CH_4)	As CH_4 concentrations in flue gases from thermal power stations are below average atmospheric concentrations, emissions are effectively zero.

Protecting the Ozone Layer

The ozone layer in the upper stratosphere (about 20 km–40 km above the earth) plays an important role in protecting life by absorbing harmful ultraviolet rays. There are concerns that specified chlorofluorocarbons (CFCs) and halons can destroy the ozone layer, resulting in serious damage to human health and to the ecosystem. In the J-POWER Group we periodically monitor our stocks and consumption of these substances and are working to limit their emissions through proper management and control (see p. 76).

key word

Stepping Up Energy Conservation

Larger Coal Carriers for a Lighter Environmental Load

In the J-POWER Group we are working to reduce our environmental load by moving in the direction of larger Panamax[*1] coal carriers (approximately 90,000 tons) when contracting with shipping companies.

In fiscal 2008, we imported approximately 20 million tons of coal from Australia, China, Indonesia, and other countries to our power stations.

The use of larger bulk carriers makes it possible to cut back on the amount of shipping fuel consumed per ton of coal transported, which in turn reduces the environmental load from shipping (emissions of CO_2, sulfur oxides, and nitrogen oxides).

The *Southern Cross*, a dedicated coal carrier

Marine Transport of Coal Ash

Coal ash is the residue generated when coal is burned in coal-fired thermal power stations.

In fiscal 2008, approximately 1.75 million tons of coal ash was generated and shipped from power stations to cement plants and other locations around the country to be recycled as raw material for cement or land reclamation material.

In the J-POWER Group, we use dedicated carriers and other marine transport for 90 percent of the coal ash we ship to reduce CO_2 emissions per unit transported. Greater reliance on maritime transport also helps mitigate congestion on our roads.

With respect to the Isogo new No. 2 unit, which began commercial operation in July 2009, plans are now under way to secure carriers and build the necessary loading facilities, so that the coal ash generated there can be shipped by marine transport as well.

Environmental Infrastructure Operations

J-POWER has become the first Japanese power company to take part in a district cooling project in the Middle East by teaming with the United Arab Emirates company Tabreed and Sumitomo Corporation 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 with a total capacity of 54,500 RTs.[*2] 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 percent compared with the use of individual cooling units.

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

District cooling project, United Arab Emirates

Curbing Energy Use at the Office and at Home

As part of our effort to stem global warming, the J-POWER Group's business sites follow such energy-saving policies as lights off during lunch break, reduced power supply to equipment on standby, and environmentally-friendly driving. In addition, we make a point of selecting equipment meeting strict specifications for energy efficiency whenever we build new office buildings or replace company vehicles.

One critical component of Japan's overall effort to combat global warming is stepped-up energy-conservation efforts in the commercial sector, which includes offices. To this end the J-POWER Group has adopted corporate targets to step up energy-conservation efforts in our offices. Through Group-wide initiatives, our employees are working as a team to meet to meet those targets (see p. 44).

We have also launched an initiative to encourage employees to aid in the fight against global warming by conserving energy in their own homes with the help of the "Household Eco-Account Book" available on the Ministry of the Environment's "Eco-family" website.[*3]

[*1] Panamax
The largest category of ship that can transit the Panama Canal. For bulk carriers, this usually means a cargo capacity of 60,000 to 90,000 tons.

[*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.

[*3] Ministry of the Environment Eco-family
web http://www.eco-family.go.jp/index.html (Japanese only)

3 Efforts Relating to Local Environmental Issues

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.

Close-up Preserving Biodiversity

In all its business activities, the J-POWER Group considers their impact on biodiversity and strives for harmonious coexistence with the natural environment.

When building a new power station or other facility, we carry out environmental impact assessments and adopt appropriate environmental safeguards with the views of local residents in mind. In addition, we carefully monitor outcomes as we pursue environmental policies oriented to harmonious coexistence with nature.

ACTION Steps to Preserve Biodiversity

In all our business operations, the J-POWER Group strives to accommodate and protect wildlife with the preservation of biodiversity in mind.

Northern Japanese Macaque

The Ohma Main Transmission Line will extend 61 km through Aomori Prefecture, from the Ohma Nuclear Power Station (Ohmamachi), currently under construction in Shimokita-gun, to Tohoku Electric Power Company's Higashidori Nuclear Power Station (Higashidori Village). During construction of the new line, it was found that the area bordering the route was a rich natural environment populated by a variety of rare species of flora and fauna, including the northern Japanese macaque, 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 gathered expert opinion on the macaques, sponsoring a study of the macaques' activity around the construction site using radio transmitters, and we have incorporated the information into conservation measures designed to minimize the impact of construction on the macaques' habitat.

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. As with the Japanese macaques, we have sought expert advice and have adopted conservation measures to minimize our impact on these rare bird species.

We also require all staff involved in the project, including construction personnel, to keep with them at all times a conservation handbook containing photographs of the rare plant and animal species in the area, so that transplanting and other appropriate steps can be taken if these species are discovered near the site.

Northern Japanese Macaques (photo taken December 3, 2003)

Japanese Golden Eagle, Okutadami-Otori Area

The area around Okutadami Dam and Otori Dam (Fukushima Prefecture, Niigata Prefecture) is home to the Japanese golden eagle, ranked as "endangered IB" in the Environment Ministry's Red Data Book. The J-POWER Group is helping protect the eagles by avoiding outdoor work on these dams during the eagle's nesting season. If work needs to be carried out in the vicinity, we determine the status of nesting activity, seek the advice of local ornithological experts, and take precautions to reduce vehicle traffic and noise level so as to minimize the impact on nesting activity.

Young Japanese golden eagle (photo taken July 18, 2000)

Blakiston's Fish-owl, Tokachi District

The Tokachi district of Hokkaido is home to Blakiston's fish-owl, classified as "endangered IA" in the Japanese Environment Ministry's Red Data Book (critically endangered in Hokkaido). The J-POWER Group is taking care to minimize any impact on the owl population, as by scheduling work in the area for times other than the nesting season.

Blakiston's fish-owl (photo: Kushiro Zoo)

Like the beech and Japanese oak forest near Tagokura Dam, much of the wooded land owned by J-POWER is relatively pristine forest. We are committed to maintaining these forests to protect their precious ecosystem.

Tagokura Dam
(Fukushima Prefecture)

ACTION

Harmony with the Aquatic Environment

In all of its business operations, the J-POWER Group is mindful of the aquatic environment that supports the local ecosystem.

Water Quality of Dam Reservoirs

Typhoons and torrential rains can cause mud to flow into rivers, and dam reservoirs have an inherent tendency to retain this muddy water. When this happens, water released from the dam for power generation purposes can prolong the river turbidity. In the J-POWER Group, we monitor the water quality of our dam reservoirs by installing turbidimeters and performing water quality analyses on water samples. We also monitor changes in turbidity during periods of heavy runoff so that we can take appropriate countermeasures, as by using dam discharges to pass turbid water through quickly or installing surface-water intake systems that permit intake of the relatively clear water at the surface. In areas where turbidity is severe, we are taking preventive measures by working with national and prefectural governments in their forest management and afforestation programs.

River Maintenance Discharge

Downstream from power station dams, river flow falls off between the dam and the generator outlet. To preserve a healthy river flow, we carry out river maintenance discharges in consultation with the Ministry of Land, Infrastructure and Transport and other relevant agencies.

River maintenance flow discharge
(Itoshiro Dam, Fukui Prefecture)

Restoration of Wetlands

Plans connected with the Okutadami-Otori Hydro Power Expansion Project called for rock generated during excavation to be used as landfill on the left bank downstream of the Okutadami Dam. Because the area hosted a mountain ecosystem that depends on a wetland environment, a plan was devised to conserve the wetland ecosystem while proceeding with the landfill by creating a new wetland to take the place of the old. Meticulous attention was paid, such as by transplanting the flora carefully and allowing the old and new wetlands to exist together for as long as possible to allow dragonflies and other wildlife to migrate naturally. In fiscal 2005, these efforts were recognized and awarded the Japan Society of Civil Engineers Environment Award.

Since then, we have confirmed the continuing presence of rare dragonfly species in the area, including a newly created pond just downstream from the new wetland. In fiscal 2007, we carried out our first scientific survey to track changes in the flora and fauna since the restoration, and we are using the findings to draw up a maintenance plan for the period through 2013 to further enhance the efficacy of our conservation efforts.

Pond created in area adjacent to new wetland

COLUMN

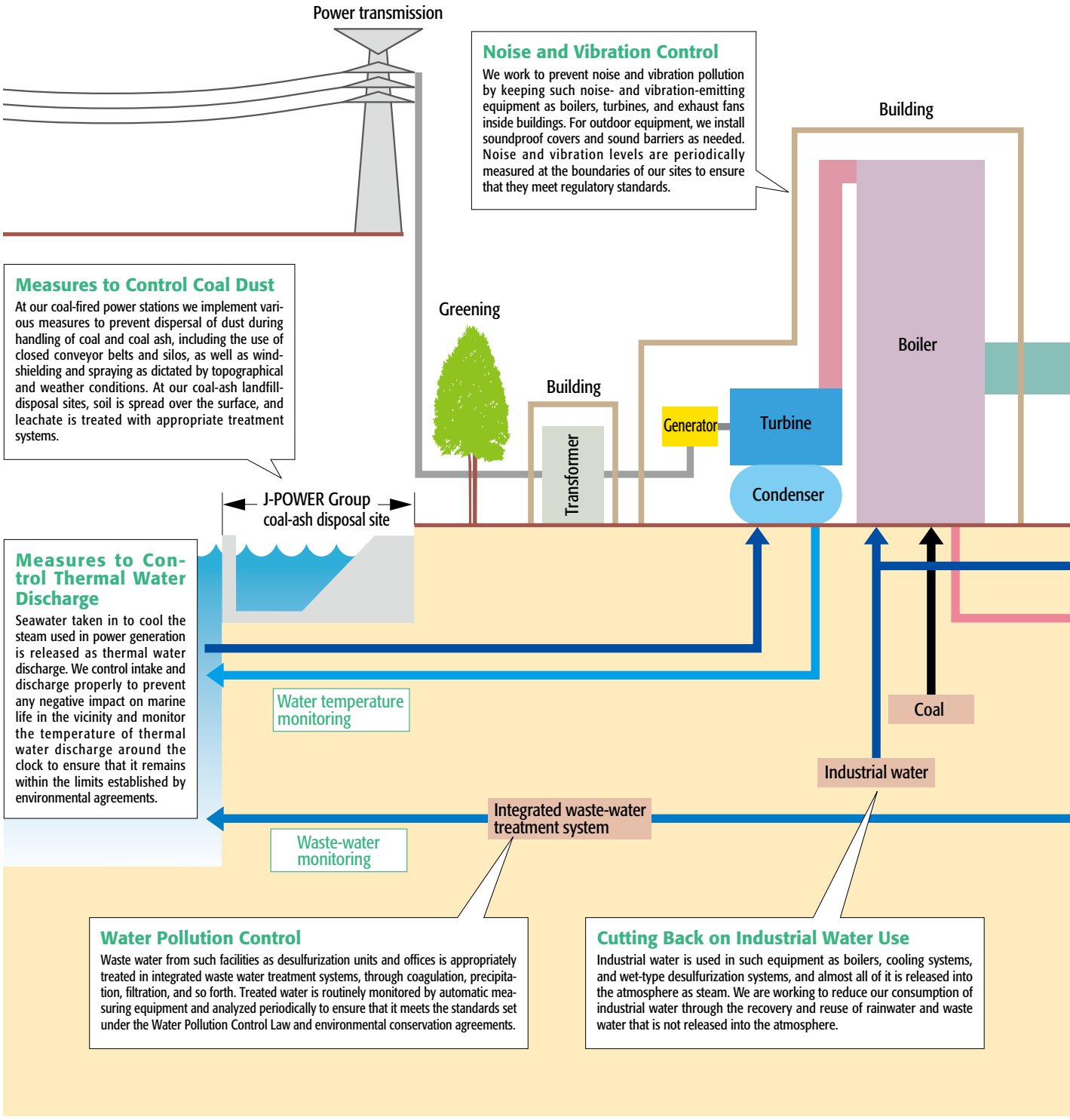
Control of Reservoir Sediment

Each year large quantities of earth flow into dam reservoirs from upstream, and a portion of it builds up as sediment at the bottom of the reservoir. This can cause the level of the river bottom to rise, raising the risk of flooding when rains or melting snow cause the river level to rise upstream. To prevent this, we control sediment by dredging and removing it or transporting it to another part of the reservoir.

Reduction of Environmental Load

In the J-POWER Group we use the latest environmental technology and know-how to prevent air and water pollution, noise, and vibration from our thermal and hydroelectric power facilities, so as to minimize the impact of our activities on air quality, water quality, and other aspects of the local environment.

Environmental Measures at Coal-Fired Power Stations



Air Pollution Control

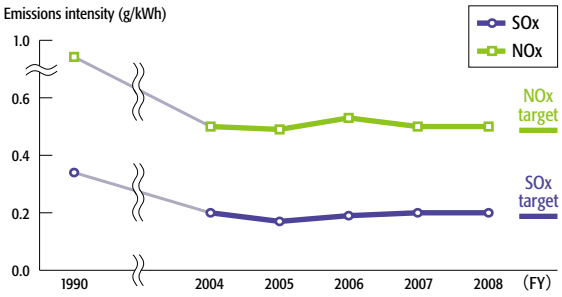
Combustion of coal and other fuels can generate sulfur oxides (SOx), nitrogen oxides (NOx), and soot and dust. To reduce these emissions we have improved our combustion methods and installed such flue-gas treatment equipment as desulfurization and denitrification systems and electrostatic precipitators. Although the performance of equipment varies with its date of installation, at each facility we have installed 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.

Flue-gas Emissions, FY 2008

Substance	Equipment efficiency (removal efficiency)	Emissions	Emissions intensity
SOx	69%–99%	10,600 tons	0.20 g/kWh
NOx	70%–91%	26,700 tons	0.50 g/kWh
Soot and dust	99% (as designed)	800 tons	0.02 g/kWh

Notes:
1. Emissions intensity: Emissions per unit of electricity generated at thermal power stations.
2. Emissions of soot and dust are calculated on the basis of measurements taken monthly.

■ J-POWER Group SOx and NOx Emissions Intensity



Note: Figures for 1990–2004 are for J-POWER only.

Odor Control

Ammonia is used in such equipment as our flue-gas denitrification systems, and we are careful to prevent its leakage from equipment for handling it and facilities for receiving and storing it through routine inspections and other measures. Odor levels are periodically measured at the boundaries of our sites to confirm that they meet regulatory standards.

Greening

We supply our sites with greenery by planting trees and shrubs, primarily evergreens.

Measures to Prevent Soil Pollution

From fiscal 2004 through 2006, we conducted studies at all J-POWER Group domestic sites and determined that they were free of soil or groundwater contamination. We will continue working diligently to prevent soil and groundwater pollution.

COLUMN

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, removing 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, J-POWER Group company J-POWER EnTech, Inc., which specializes in ReACT engineering, has been supplying ReACT systems for power stations, steel mills, and other industrial facilities in Japan and abroad, including J-POWER's Isogo Thermal Power Station new No. 2 unit (began operating in fiscal 2009). By using this technology in our own power stations 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 (see also p. 78).

Dry-type desulfurization system at Isogo Thermal Power Station new No. 2 unit (Yokohama)

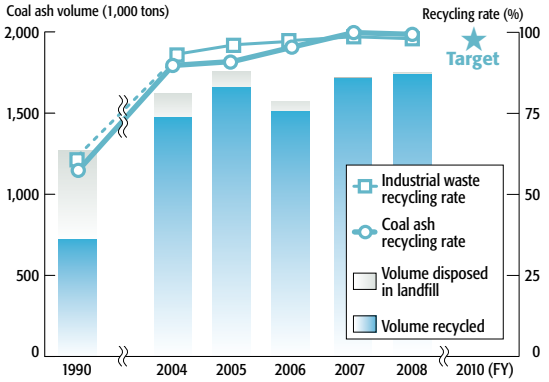
Establishing a Sound Material-Cycle Society

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.

Recycling and Reduction of Waste

In fiscal 2008, the J-POWER Group generated 2.14 million tons of industrial waste, while recycling or reusing resources totaling 2.10 million tons, or 98 percent. In the J-POWER Group, 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 percent within the J-POWER Group as a whole by the end of fiscal 2010, with the goal of zero emissions[*1] of industrial waste" (see p. 43).

Industrial Waste and Coal Ash Recycling Rates

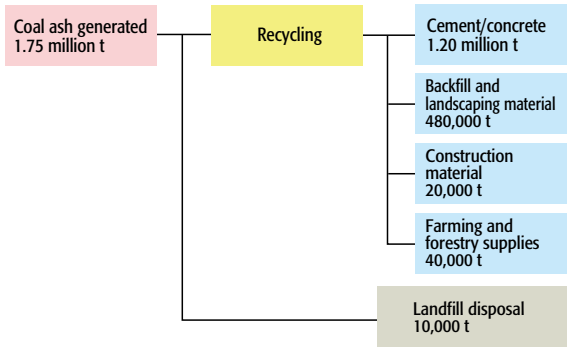


Note: The figure for FY 1990 represents J-POWER's recycling rate for coal ash only; figures for FY 2002–FY 2003 are the rate for all industrial waste produced by J-POWER; FY 2004–FY 2008 and target figures represent the recycling rate for all industrial waste generated by all companies of the J-POWER Group.

Beneficial Use of Coal Ash and Gypsum

Almost all the coal ash generated by coal-fired power stations is recycled, either as construction material such as a clay substitute in cement and backfill and landscaping material or farming and forestry supplies such as fertilizers. All of the gypsum and sulfuric acid generated by our flue-gas desulfurization systems is recycled.

Breakdown of Coal-Ash Recycling



Examples of coal ash recycling

Park turf planted using "J-SAND" (clinker ash[*2])

Dam built with "J-POWDER" (fly ash[*3]) as concrete admixture

COLUMN

EPO-COAL: Recycled Activated Coke Powder for Dioxin Removal

J-POWER's powdered dioxin remover EPO-COAL for waste incinerators is a commercial product made from activated coke powder discharged by the dry-type flue-gas denitrification unit at the Takehara Thermal Power Station No. 2 unit. In fiscal 2008, sales volume doubled from the previous year, reflecting the high marks EPO-COAL receives from users and equipment manufacturers for performance, quality, and stable pricing. Production of EPO-COAL using activated coke from Isogo Thermal Power Station new No. 1 unit began in April 2009, following installation of equipment to improve the quality of the activated coke generated by that facility's desulfurization system.

The purpose of the J-POWER Group's involvement in this business is not only to reduce waste and raise our recycling rate but also to contribute to the creation of a material-cycle society. We also regard it as integral to our efforts to stem global warming, since recycling can reduce the CO_2 emissions that result from production of the activated coke commonly available on the market. As a member of a society that is striving for harmonious coexistence with the environment, we plan to pursue such operations actively.

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

Thermal power station dry-type flue-gas treatment system (recycling)

Powdered by machine and chemical action

EPO-COAL (activated coke powder)

key word

[*1] Zero emissions
An initiative advocated by United Nations University to build a system of waste recycling through inter-industry partnerships and reduce the amount of waste (final disposal volume) to a level approaching zero.

[*2] Clinker ash
Sandlike substance formed when dissolved ash congeals and collected at the bottom of boilers. Used as soil and ground conditioner, backfill material, etc.

[*3] Fly ash
A granular ash created by the combustion of coal in boilers and collected in electrostatic precipitators. Used as concrete admixture.

Beneficial Use of Driftwood

In the J-POWER Group, we recycle the driftwood that flows into the dam reservoirs at our hydroelectric power stations, using it to manufacture charcoal or extract pyroligneous acid, or chipping it for use as building material, mulch, or ground cover.

Ground cover made from our chipped driftwood has been used in parks, as in the photo below, and on the restored Fuda Path (said to have been used by members of the heroic Shinsengumi band of samurai when they traveled to a village to teach swordsmanship), part of our project to develop a "community forest" around the site of the Nishi Tokyo Power Administration Office.

We are currently studying other ways of recycling driftwood, such as the use of chips as boiler fuel by local businesses.

Chips used as ground cover at Ikehara Dam Park (Nara Prefecture)

Recycling of Construction By-products

We work with subcontractors and others to promote efficient use of by-products generated by new construction, expansion, and renovation of electric power facilities, as by recycling concrete scrap and cleared timber or making use of loose earth generated during construction within the grounds of the facility.

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 our paper recycling rate, our employees are working harder than ever to help us reach our group-wide corporate target (see p. 43).

Promoting Green Purchasing

To contribute to the development of a material-cycle society, we have adopted the J-POWER Group Green Purchasing Guidelines[*4] to promote green purchasing throughout the J-POWER Group.

These guidelines apply not only to office supplies but to all products and services purchased by members of the J-POWER Group.

We are pursuing a wide-ranging policy that encourages environmental responsibility among our suppliers and subcontractors, as by stipulating specifications that must be built into construction and other contracts to ensure that subcontractors carry out the work in an environmentally friendly manner.

In addition, we are taking our efforts a step further by establishing group-wide corporate targets (see p. 43) 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, to promote green purchasing on an ongoing basis.

PERSON

Hiromi Iwamatsu Management Group, JPec Matsushima Company

We Take Sorting Seriously

The city of Saikai (Nagasaki Prefecture) is fastidious about sorted garbage collection, and we do our best to cooperate. Instead of waste baskets in the offices, we have waste stations on each floor with separate receptacles for burnable trash, paper, plastic, PET bottles, PET bottle caps, and so forth—close to 10 receptacles altogether. At times we may find ourselves wondering which one to use, but that gives us an opportunity to think about why we need to sort.

We also take pains to purchase nothing but green supplies. Often the first handy-looking product I spot is missing the Eco-mark, so I search through the catalogue to find another product that is not only just as handy but also has the Eco-mark.

[*4] J-POWER Group Green Purchasing Guidelines

web http://www.jpower.co.jp/company_info/environment/kankyo04gl.html (Japanese only)

Environmental and Recycling Programs

The J-POWER Group is involved in a variety of environmental and recycling programs pertaining to such matters as proper waste treatment, environmental conservation, and use of untapped energy sources.

Demonstration Trials of Non-industrial Waste Carbonization

To promote the use of a promising untapped energy source, the J-POWER Group has been developing technology for production of carbonized fuel from non-industrial waste with biomass content. The current project, aimed at achieving a more efficient use of biomass energy, is being carried out in collaboration with the city of Saikai in Nagasaki Prefecture as a NEDO (New Energy and Industrial Technology Development Organization) Verification Test for Biomass and Other Untapped Energy. It involves demonstration testing at Matsushima Thermal Power Station to verify the feasibility of replacing a portion of the coal burned at coal-fired thermal power stations with carbonized fuel, as well as development of technology for producing the fuel. Viewed also as a means of reducing CO_2 emissions through the use of biomass fuel in coal-fired power stations, the operation has produced about 60 tons of carbonized fuel from 276 tons of non-industrial waste as of the end of fiscal 2008.

Test facilities for production of carbonized fuel from non-industrial waste (Matsushima Thermal Power Station, Nagasaki Prefecture)

Omuta Recycle Power Station

Since December 2002 the J-POWER Group has been operating a high-efficiency waste-power station in Omuta, Fukuoka Prefecture, that uses refuse-derived fuel (RDF) made by shredding, drying, and pelletizing non-industrial waste.

Omuta Recycle Power Station (Fukuoka Prefecture)

Narumi Waste Gasification Plant, Nagoya

The J-POWER Group is also participating in a project involving gasification power generation[*1] using non-industrial waste. At the Narumi Waste Gasification Plant in Nagoya, waste is not only used to generate power but also reduced to molten slags and metals that can be recycled. The facility began operating in July 2009.

Narumi Waste Gasification Plant (Nagoya)

COLUMN

Dioxin Monitor

A valuable by-product of the J-POWER Group's development of technology for non-industrial-waste power generation is our proprietary flue-gas monitor, first developed seven years ago. Our initial model (coulometric titration method) is widely used to monitor dioxin emissions from incinerators and other systems.

We continued work on our monitoring technology, and today a new, high-performance model (plasma method) is on the threshold of commercialization. This latest technology is designed to support the stable, long-term operation of waste power plants and other facilities by facilitating the monitoring and control of gas emissions, and we are hopeful that it will enhance the safety and peace of mind of local residents while contributing to the development of a material-cycling society.

Field testing of new flue-gas monitor

key word

[*1] Gasification power generation

Power generation technology that uses high-temperature processing to melt down such waste matter as burnable refuse, combustion ash, and shredded solid waste into recyclable slag. The pyrolysis gas generated by the gasification-melting furnace is directed to a boiler for heat recovery and used to power an electric generator. The electric power thus generated is used to operate the facility, and surplus power is sold.

Management of Chemical Substances

Storage and management of chemical substances in the J-POWER Group 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 treatment 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 purchased and used. We are committed to 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 proper management and oversight of facilities.

>>> PRTR Substance Release and Transfer Volumes (FY 2008)

Substance	Use	Volume handled	Volume released	Volume transferred as waste
63: Xylene	Coating for machinery	13.43 t/y	8,616 kg/y	64.38 kg/y
40: Ethylbenzene	Coating for machinery	1.03 t/y	1,032 kg/y	–
177: Styrene	Coating for machinery	1.01 t/y	1,006 kg/y	–
26: Asbestos	Insulation material	7.46 t/y	–	7,461 kg/y
179: Dioxins	Waste incinerators	–	0.0 mg-TEQ/y	3.1 mg-TEQ/y
304: Boron and its compounds	Fertilizer additive	14.49 t/y	0.3 kg/y	–

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.

Measures to Reduce Dioxins

The J-POWER Group operates incinerators (designated as "specified facilities" under the Act on Special Measures against Dioxins) at three business sites. 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 act, 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 2008, all of them met emissions standards.

Asbestos

The J-POWER Group has adopted an asbestos policy, 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 Act.

PCB Waste

Management and Treatment of PCBs

PCBs have been widely used for insulating oil 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 Act on 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 treatment program in February 2005, and as of March 2009 we had treated approximately 9 kl of insulating oil (containing high concentrations of PCBs). The J- POWER Group currently has approximately 130 kl of insulating oil (as of March 2009). This is stored and managed under stringent conditions in 31 warehouses and similar facilities that we have established nationwide.

Trace PCB Contamination

Concerns have been raised by the detection of extremely low levels of PCBs in heavy electrical machinery that would not ordinarily contain PCBs. In the J-POWER Group, we are conducting analyses as needed, following stringent management procedures for machinery using insulating oil in which traces of PCBs have been detected, and submitting all paperwork required by the relevant laws and regulations. We will continue to respond to this issue in a conscientious and appropriate manner.

Part

4 Ensuring Transparency and Reliability

The J-POWER Group is working to improve environmental management and ensure legal compliance in all its business activities. By disclosing a wide range of environmental information, we are striving to earn society's trust.

Continual Improvement in Environmental Management

In 2002, the J-POWER Group completed the process of putting in place environmental management systems (EMSs) at all of our business sites to guide the implementation of environmental initiatives based on our corporate philosophy. By the end of 2005, all of J-POWER's power generation, transmission, substation, and communication facilities had obtained ISO 14001[*1] certification, and by end of fiscal 2007, every one of our consolidated subsidiaries had an EMS in place. Henceforth we will strive for continual improvement in our environmental management.

Administration of Environmental Management

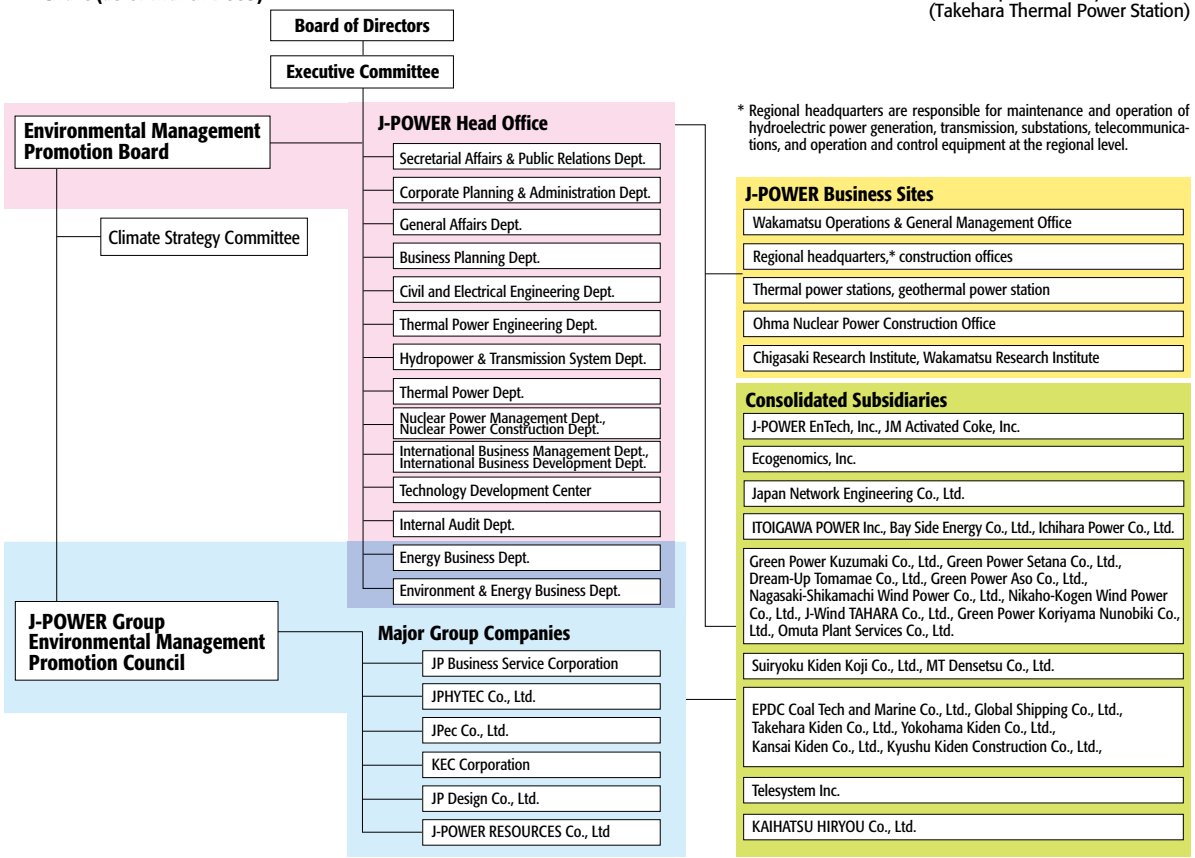
The Environmental Management Promotion Board was established to discuss, coordinate, and report on overall environmental management in the J-POWER Group. It is led by a J-POWER executive director in charge of environment and made up of relevant executives and division heads. The J-POWER Group Environmental Management Promotion Council was established as a subgroup of the Board to encourage cooperation and coordination throughout the group.

On the basis of the J-POWER Group Environmental Action Guidelines (see p. 74), reviewed annually by management, each J-POWER Group company or business site draws up its own Environmental Action Plan. They periodically review and evaluate their initiatives and revise the measures to be taken, following the PDCA cycle.[*2]

J-POWER Group companies that maintain electric power facilities have received ISO 14001 certification for all business sites involved in their operation or maintenance (thermal power stations, geothermal power stations, regional headquarters, etc.; see p. 78). All other J-POWER Group companies follow EMSs tailored to their own business activities, which they are working continuously to improve.

Water is sprayed during an ammonia-leak drill prescribed by the site's EMS (Takehara Thermal Power Station)

J-POWER Group Environmental Management Organization Chart (as of March 2009)



key word

[*1] ISO 14001
Part of the ISO 14000 series of international standards for environmental management adopted by the International Standards Organization (ISO), ISO 14001 specifies the requirements for an environmental management system.

[*2] PDCA cycle
Management cycle, consisting of plan, do, check, and act, whose repetition provides the basis for continual improvement in environmental management systems.

Education and Training

The J-POWER Group carries out various in-house and external environmental training programs to raise employee awareness and cultivate a sense of personal responsibility regarding environmental issues. In fiscal 2008 we implemented a variety of training programs aimed at promoting a better understanding of environmental statutes to ensure full compliance.

In-House Environmental Training, Fiscal 2008

Level	Category	Course/activity	Participation	Coverage of environmental statutes, compliance, etc.
General	Environmental management (general)	Environmental briefings, various lecture presentations on the environment	1,750 participants	J-POWER Group's efforts
	E-learning*	The J-POWER Group Sustainability Report (Environment)	75%	Overview of Sustainability Report
		Environmental law training	74%	Introduction to the Waste Management Law
		Ensuring full compliance with environmental statutes	82%	Overview of environmental statutes, etc.
		EMS course (overview)	86%	Overview of ISO 14001
Technical	EMS implementation	Internal environmental auditor training	126 trainees	Requirements of ISO 14001, internal environmental audit methods
		Follow-up training for internal environmental auditors	68 trainees	Practice in identifying non-compliance, etc.
	Environmental laws and regulations	Waste management skills upgrade	358 trainees	Understanding of the Waste Management Law, application of guidelines for selecting contractors, etc.
		Waste management risk assessment	6 sites	Verification of legal requirements for contracts, manifestos, etc.
		Environmental law courses by level	281 trainees	Explanation of environmental statutes, etc.
	E-learning*	EMS course (advanced)	75%	Requirements of ISO 14001, audit methods, etc.

* Participation rate for e-learning courses is cumulative.

PERSON

Inspired by Environmental Law Training

Inspired by the environmental law training course I took, I had the idea of compiling a textbook for my company. After consulting with my supervisor, I began by studying the content of environmental laws relevant to the company's operations, using the same approach as the course materials I had at home.

Then I edited the material, focusing on the essential points for people engaged in our business. The result is now being used as a textbook for in-house environmental law training.

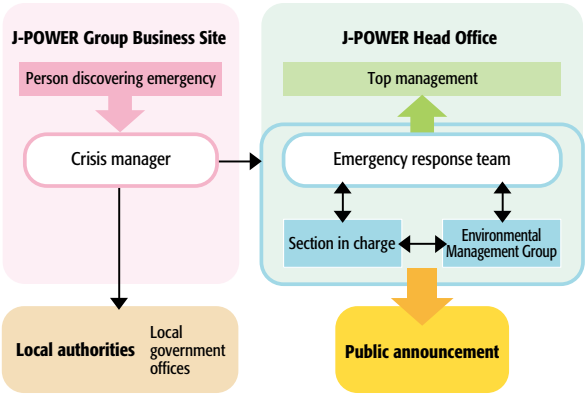
Miho Inoue
Safety, Quality, and Environmental Management Department
JP Design Co., Ltd.

Response in the Event of an Environmental Emergency

In the event of an environmental emergency within the J-POWER Group, the following procedures are to be followed:

1. The official in charge of crisis management at each business site will take the necessary steps to prevent damage from spreading and will contact the relevant local organizations, the Head Office Emergency Response Team, and the head office section in charge of the business site.
2. The Head Office Emergency Response Team will promptly report to top management and provide information on the emergency to the media and other interested parties.

Response and Information Disclosure in the Event of an Environmental Emergency



Environmental Incidents

Environmental incidents within the J-POWER Group in fiscal 2008 included one violation of environmental law and one incident of which the public was informed via the mass media. We are working to prevent recurrences through more rigorous management procedures and other steps.

Location	Situation/response
Matsushima Thermal Power Station (Saikai-shi, Nagasaki Prefecture)	On October 9, 2008, in Yoshihara Harbor, which serves as a dock for ships connected with Matsushima Thermal Power Station, a crack developed in the fuel line of a ship, and some of the light oil that fuels the ship leaked and collected in the bilge tank at the bottom of the ship. The ship's captain (employed by a J-POWER affiliate), mistaking the oil for seawater, turned on the bilge pump, discharging the oil into the harbor in violation of the Marine Pollution Control Law. We are working to prevent a recurrence through such steps as equipping machinery with warning displays to prevent operating error and providing more rigorous training to ship operators.
Isogo Thermal Power Station (Yokohama-shi, Kanagawa Prefecture)	On December 18, 2008, at Isogo Thermal Power Station, light oil that was being pumped from a ship into the power station facilities spilled from the air separator drain valve, a component of the intake system, and several liters of oil leaked into the water inside the oil fence that had been set up during the pumping process. We are taking steps to prevent a recurrence of the incident, which resulted from an incorrect showing on the open-close indicator, as by tightening system checking procedures, ensuring that personnel study the operating manual carefully, and keeping the drain valve locked when not in use.

Harmonizing energy supply with the environment Envisioning the J-POWER Group in 2030

On December 1, 2008, we sat down with outside experts to discuss what kind of company the J-POWER Group should strive to become in 2030, in light of the need to harmonize energy supply with the environment.

Yuko Sakita
Journalist and environmental counselor

Ryuta Uozumi
CEO, KPMG AZSA Sustainability Co., Ltd.

- The situation regarding energy sources seems to have changed greatly in the past year. With the rise in oil prices leading to more expensive food, no doubt the public has a renewed awareness that Japan's food self-sufficiency is only 40 percent and our energy self-sufficiency is a mere 4 percent.
- Given the reality that Japan gets approximately 25 percent of its electricity from coal-fired generation, I hope the J-POWER Group as an active player in the industry will take the lead in clean coal technology that would reduce the environmental burden. There are also areas in which Asian nations lag considerably in technology development, so it will be important for you to contribute to global warming measures and environmental conservation strategies.
- Rather than becoming negative about environmental measures and energy problems due to the financial crisis, a company that can shape the future is one that takes on these issues squarely. Going forward, it will be vital to create a sustainable society in which the environment and economy are in a virtuous cycle.
- As for what kinds of power generation will be important in the future, the need to reduce CO_2 makes it imperative for us to determine what roles renewable energy and nuclear power should play in Japan's energy mix. Regarding nuclear power, I hope you will provide timely information as to the kinds of safety measures you are taking and maintain a relationship of trust with the local society. It will also be necessary for you to provide information about such remaining issues as deep geological disposal of high-level radioactive wastes.
- I believe furthering communication with local communities involves more than just taking part in local events. Another effective means is to actively provide basic education on energy, for example. And to prepare for the day when energy becomes important to the region, it will be necessary to think about how to carry out new community development premised on coexistence of community and corporations.
- What I see as a basic approach to the energy of the future is for each community to think about energy that makes use of its own untapped resources and to aim for self-reliance in power generation suited to that community. On that basis, Japan will achieve a kind of balance in which power companies support stable supply for the nation as a whole.
- Looking at global trends, when peak oil comes I believe there will be a shift toward coal as an energy resource from the standpoints of both cost and its approximately 200 years of reserves. Given the strong political current regarding global warming, however, the direction will likely be affected by policies like the U.S. Green New Deal and EU thinking on such themes as the environment, innovation, and employment. In the U.S. and EU, the future looks to be shaped by government initiatives aimed at creating a low-carbon society whose primary energy does not discharge CO_2, in the process of which jobs will be created through an industrial restructuring. For example, renewable energy is set to become the global mainstream by 2030 or 2050, and the EU strategy is to take the lead in hastening that trend.
- With CO_2 reduction being such a pressing issue, the time would seem to be ripe for CCS (CO_2 capture and storage). I think there is a need to proceed cautiously here, however, because there are still many questions about the efficacy of CCS, including such matters as capture efficiency and risks to biodiversity. If CCS ends up not being used, regionally dispersed energy based on renewable sources will become necessary, which will require studying facilities for supplying renewable energy such as solar, wind, geothermal, and biomass generation.
- Right now J-POWER is proceeding with nuclear power station construction. To gain the trust of the local communities, I hope you will be thoroughgoing especially in the areas of compliance and information disclosure concerning nuclear energy.

Participants
(in order of appearance here)

Yuko Sakita, Journalist and environmental counselor
Ryuta Uozumi, CEO, KPMG AZSA Sustainability Co., Ltd.
Mizue Tsukushi, President and CEO, The Good Bankers Co., Ltd.
Izumi Washitani, Professor, Department of Ecosystem Studies, Graduate School of Agricultural and Life Sciences, The University of Tokyo
Gento Mogi, Associate Professor, Department of Technology, Management for Innovation, School of Engineering, The University of Tokyo
Masayoshi Kitamura, J-POWER President; Chair, Environmental Management Promotion Board (at the time of the session)

Mizue Tsukushi
President and CEO, The Good Bankers Co., Ltd.

- The J-POWER I envision in 2030 will be selling electricity not just in Japan but to power companies around the world. You will also be designing platforms for supply of electric power that encompass everything from power source development to power station maintenance, and will be a company that gets its earnings from provision of these platforms. With that in mind, I would like to suggest that you build up mechanisms for developing and supplying power sources suited to each of the needs of various countries.
- From our perspective as SRI investors, corporate investor relations (IR) will need to change drastically. Today probably the most advanced type of research method is one that employs a data mining system to analyze a company's basic ESG (environment, society, governance) performance, following up with visits or telephone interviews to add a human touch to the information gathering, and then makes an overall assessment of this information.
- For a company like ours asked by end investors to perform a survey, the era is coming when artificial intelligence in the system will get information from all over the world while we sleep, following a list of check items. That's why the key to IR for a global corporation will be to produce as much information as possible and to take it directly to investors throughout the world. J-POWER will need to educate its employees without delay to be able to do this.
- In the U.S., the Democratic Party has majorities in both the House and Senate for these two years. During this period, we can expect them to be aggressive in coming up with spending plans and policies that affect your business. It will be important for J-POWER to adapt to this reality. My suggestion is that you consider how to take advantage of these as business opportunities.
- This is a time when CO_2 fundamentalism has taken hold, but the environment is impacted not only by CO_2 but also by such things as disposal of wastes. The entire life cycle needs to be considered. A key for companies is the capability for bringing logic to the discussion on all kinds of environmental impact, and for explaining the importance of examining the entire lifecycle associated with power generation.

Izumi Washitani
Professor, Department of Ecosystem Studies, Graduate School of Agricultural and Life Sciences, The University of Tokyo

- Looking ahead over the next 30 years, it appears certain that in addition to climate change, we are in for big changes in the social environment as well. Japan will see its population decline, as other developed nations similarly experience rapid aging of their societies. Populations will become even more concentrated in metropolitan areas, and society will be based more on service industries, causing the locations and amounts of energy needs to change year by year. The pace of change over the next 30 years will without a doubt outstrip the last 30 years, which will be a major problem.
- Electricity, however, is sure to grow further in importance as energy both in daily life and in production arenas. How its consumption is structured will therefore be a key issue. Considering environmental and other restrictions, in some cases it may be necessary to exercise restraint in electricity use based on the degree of necessity. Fair distribution of electricity consumption may need to be worked out between individuals and between nations in order to ensure minimum needs are met.
- Up to now it has been possible to apply a uniform standard for optimally matching electricity supply to needs. In the future, however, we will need to optimize supply in accord with a diversity of criteria, and to build a system for making those determinations.
- With the large variability and the accompanying changes taking place in people's sense of values, seeing ahead 30 years is by no means easy. Rather than deciding now how things should be in the future, what is needed is to make choices today that leave the younger generation with a diversity of options.
- It is important to set flexible goals permitting diverse values and methods to be chosen.
- The two pillars for environmental conservation on a global scale are climate change and biodiversity, making it of key importance to analyze and assess these two aspects in light of the overall supply chain.

Gento Mogi

Associate Professor, Department of Technology, Management for Innovation, School of Engineering, The University of Tokyo

- I am concerned about the danger of concentrating too much on environmental issues alone. There seems to be too much readiness to conclude that, since we are running short of oil we need to replace it with coal, but since coal produces CO_2, the answer to CO_2 is CCS. It is true that CCS will reduce CO_2, but in the process it will also use up considerable energy.
- As I see it, the pressing issue for humanity right now is not the environment but energy. What is the sense of sacrificing energy in order to reduce CO_2? This aspect of the discussion seems to have been ignored somewhat. There cannot possibly be only one solution, so the worst thing would be for the discussion to simply end here.
- I believe that if we can solve the energy problem, the environmental issues will be solved automatically. Solving the energy problem must be approached from the two standpoints of how to meet demand and what to do about demand. Japan leads the world regarding the latter of these, and this is not likely to change.
- A key to the problem of what to do about demand will be progress in battery technology. Batteries can be looked to for their backup role in adjusting for natural energy fluctuations, and for their role in global circulation of energy. If in the future the energy density of batteries can be raised by a single digit and their cost lowered by a single digit, global transporting of electricity by batteries should become feasible. This will make it possible to produce the world's energy where suitable and consume it where needed.
- If demand continues to rise at the present rate, by around 2030 oil production will begin declining due to resource constraints, making it gradually necessary to switch to other forms of energy. The question we face is whether at that time the switch will be to coal or to natural energy, but if left to chance, the choice will end up being coal. Another issue is what will happen if electric cars come into widespread use. If that happens, demand for oil will fall, easing the oil supply-and-demand pinch even as batteries become dispersed throughout society. This will enable electrical demand to be leveled. The electric power industry requires a very long lead time, so preparations will be needed far in advance; but it will be necessary to think about integrating supply with the demand diversion.
- Stable supply will continue to be a key point for energy. People tend to understand stable supply in terms of a constant flow, but in the final analysis it comes down to price. The reason why this point does not get conveyed sufficiently is that resource constraints manifest themselves not as a drying up but as a restricted flow, and it is not well understood that this brings about a rise in the equilibrium price. The decline in production due to resource constraints is not limited to oil. The same argument can be made regarding coal, and even coal is not a resource whose supply can be increased indefinitely as a substitute for oil.

Response to the discussions

We of the J-POWER Group are carrying out a variety of innovations looking to the next generation. I believe it will take 20 to 30 years for us to verify the new technologies, put them into operation, and change our business to one that can contribute to the world's sustainable development.

Today's discussions were carried out around the theme of what kind of company the J-POWER Group should become in 2030, the midway point to our 2050 target for reducing greenhouse gases. Many valuable ideas were presented here today.

We intend to make the most of your ideas and advice as we proceed with our pursuit of innovation over the coming years.

Masayoshi Kitamura

J-POWER President; Chair, Environmental Management Promotion Board (at the time of the session)

External Evaluation and Outside Opinions

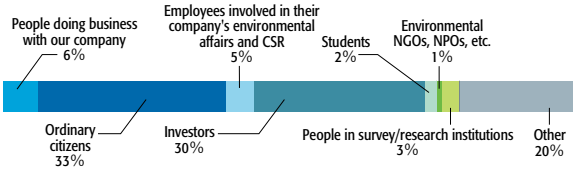
The J-POWER Group strives to incorporate various forms of third-party evaluations and recommendations into its activities, including reviews, Sustainability Report questionnaires, and expert opinions. By means of these evaluations and opinions, we determine the kind of business development and environmental activities that others expect of the J-POWER Group and work to improve our sustainable management. We also enhance our transparency and reliability by making such comments public.

Readers' Opinions

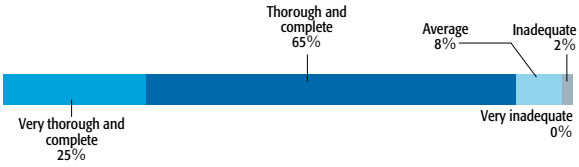
We received many comments from readers in response to the *J-POWER Group Sustainability Report 2008* (published July 2008). We consider these valuable comments to be important guidelines for compiling subsequent reports and conducting sustainable management in the future, and intend to put their lessons to use in our corporate activities.

Aggregate Questionnaire Results (as of the end of March 2009; 106 respondents)

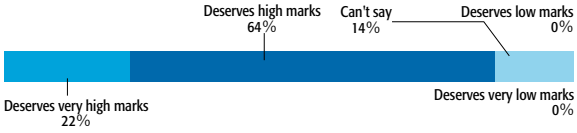
■ **Readership**



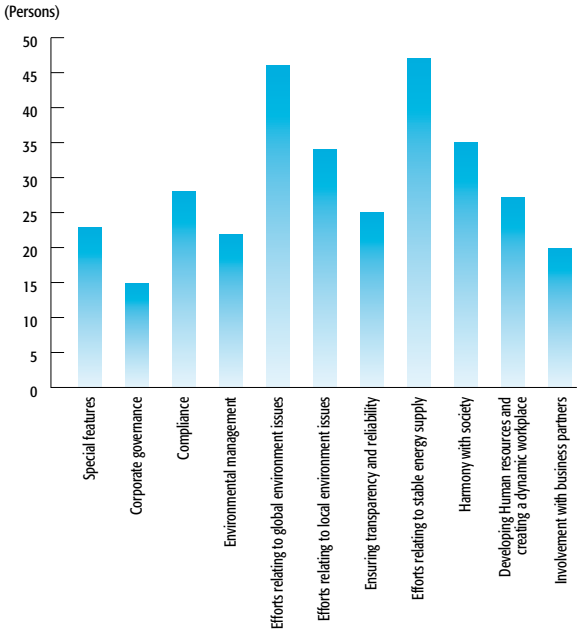
■ **Quantity and Quality of Information in the Report**



■ **Environmental Management**



■ **Areas That the J-POWER Group Should Tackle More Aggressively (up to four responses per person)**



■ **Expectations for the J-POWER Group**

Report readers	Typical comments	Our response
Investor	I came away impressed with how seriously you are working to contribute toward the world's sustainable growth. The report has more photographs than those of other companies and is easy to read. I also got a sense of familiarity from seeing actual working employees.	The 2009 edition again has been designed to be visually readable, making extensive use of pictures and figures along with a variety of font sizes. We have also tried hard to make it easy to understand and reader-friendly, in the organization and contents of each section, and by having employees introduce their work.
Ordinary citizen	The terminology in some places is difficult to understand. It would be nice if the report used plainer language.	Besides the glossary of terms at the end, we have added explanations of key terms or reference URLs at the bottom of each page. We also introduce other communication tools and hope you will make use of them as well.
Ordinary citizen	To raise awareness of safety, I hope you will provide human development and training in accident prevention measures, and create a dynamic workplace.	The J-POWER Group aims to provide safe and healthy places for carrying out rewarding work. By creating and operating a labor safety and sanitation management system and by promoting comprehensive safety management in which each Group company performs its role and duties, we strive to prevent workplace accidents and to maintain and enhance health.
Ordinary citizen	Making coal use compatible with the global warming fight seems to require a long-term undertaking. I believe coal will continue to be an important energy resource, so I am looking to you for improvements in power generation technologies. At the same time I look to nuclear energy for a stable supply of electrical power.	The 2009 edition, like last year's, has a special feature on balancing coal use with efforts to fight global warming. This year we describe how the J-POWER Group is mapping out a future in which energy and the environment can coexist, which we hope you will read. The Ohma Nuclear Power Station project is also the subject of a special feature, showing that pursuit of the nuclear fuel cycle is essential for ensuring energy stability.

Note: Other comments and our responses can be viewed on our website. WEB http://www.jpower.co.jp (Japanese only)

The Accuracy of This Report

To ensure the accuracy and comprehensiveness of important environmental and societal data as well as performance indicators (hereinafter "sustainability information") contained in the *J-POWER Group Sustainability Report 2009*, the sustainability information herein has been independently reviewed and certified by Ernst & Young ShinNihon Sustainability Institute Co., Ltd. in accord with the sustainability report review and registration system of the Japanese Association of Assurance Organizations for Sustainability Information (J-SUS). As a result of this review, an "Independent Assurance Report" has been received.

The J-SUS mark on the back cover indicates that the sustainability information contained in this report fulfills the reliability criteria established by the Association for its sustainability report review and registration system.

Document review (Tachibanawan Thermal Power Station, Tokushima Prefecture)

Site inspection (Koide Power Administration Office, Niigata Prefecture)

TRANSLATION

Independent Assurance Report

July 1, 2009

Mr. Masayoshi Kitamura
President
Electric Power Development Co.,Ltd

1. Purpose and Scope of our Assurance Engagement

We have performed certain assurance procedures, based on the engagement with Electric Power Development Co.,Ltd (the "Company"), on the "Company's Key Sustainability Performance Indicators". These comprise the "environmental accounting data" and the "material sustainability information" of the Company and its major subsidiaries for the year ended March 31, 2009, as stipulated in the "2009 Sustainability Reporting Assurance and Registration Criteria" of the Japanese Association of Assurance Organizations for Sustainability Information ("J-SUS") and that were reported in the "J-POWER Group Sustainability Report 2009" (the "Report"). The assurance procedures are with respect to whether the Key Sustainability Performance Indicators have been measured and calculated accurately and whether material information has been fully disclosed in accordance with the reporting standards for sustainability reports[*1].

The preparation of the Report is the responsibility of the Company's management. Our responsibility is to express an independent opinion on the Key Sustainability Performance Indicators.

*1 The reporting standards refer to the "2007 Environmental Reporting Guidelines" of the Ministry of the Environment, the "2006 Sustainability Reporting Guidelines" of the Global Reporting Initiative, and the "2009 Sustainability Reporting Assurance and Registration Criteria" of the J-SUS in the context of specifying the material subject matter to be disclosed.

2. Outline of the Assurance Procedures Performed

We have performed limited assurance procedures[*2] in accordance with the "2003 International Standard on Assurance Engagements (ISAE) 3000: Assurance Engagement other than Audits or Reviews of Historical Financial Information" of the International Federation of Accountants (IFAC) and the "2008 Practical Guidelines for the Assurance of Sustainability Information" of the J-SUS. Therefore, our assurance engagement provides relatively limited assurance compared to a reasonable assurance engagement.

*2 We have mainly reviewed and assessed the Company's procedures for the collection and aggregation of data, performed analytical procedures, as well as recalculated and reconciled them with the corroborating evidence on the quantitative sustainability information on a test basis. In addition, we have mainly made inquiries and reviewed the minutes on the qualitative sustainability information.

3. Conclusion

Based on the assurance procedures performed, nothing has come to our attention that causes us to believe that the Key Sustainability Performance Indicators have not been measured and calculated accurately in accordance with the reporting standards of sustainability reports, or material information has not been disclosed in accordance with the "2009 Sustainability Reporting Assurance and Registration Criteria", in all material respects.

4. Independency

We, as a subsidiary of Ernst & Young ShinNihon LLC, comply with the "Certified Public Accountants Law", and the "Ethics Regulations" of the Japanese Institute of Certified Public Accountants. Therefore, there has been no interest to be noted between the Company and us.

Akihiro Nakagome
Representative Director
Ernst & Young ShinNihon Sustainability Institute Co., Ltd.

Note: This Independent Assurance Report has been prepared as a translation of the original Japanese version.

Independent third-party certification of *J-POWER Group Sustainability Report 2009*

Acquisition of Eco-Leaf Certification

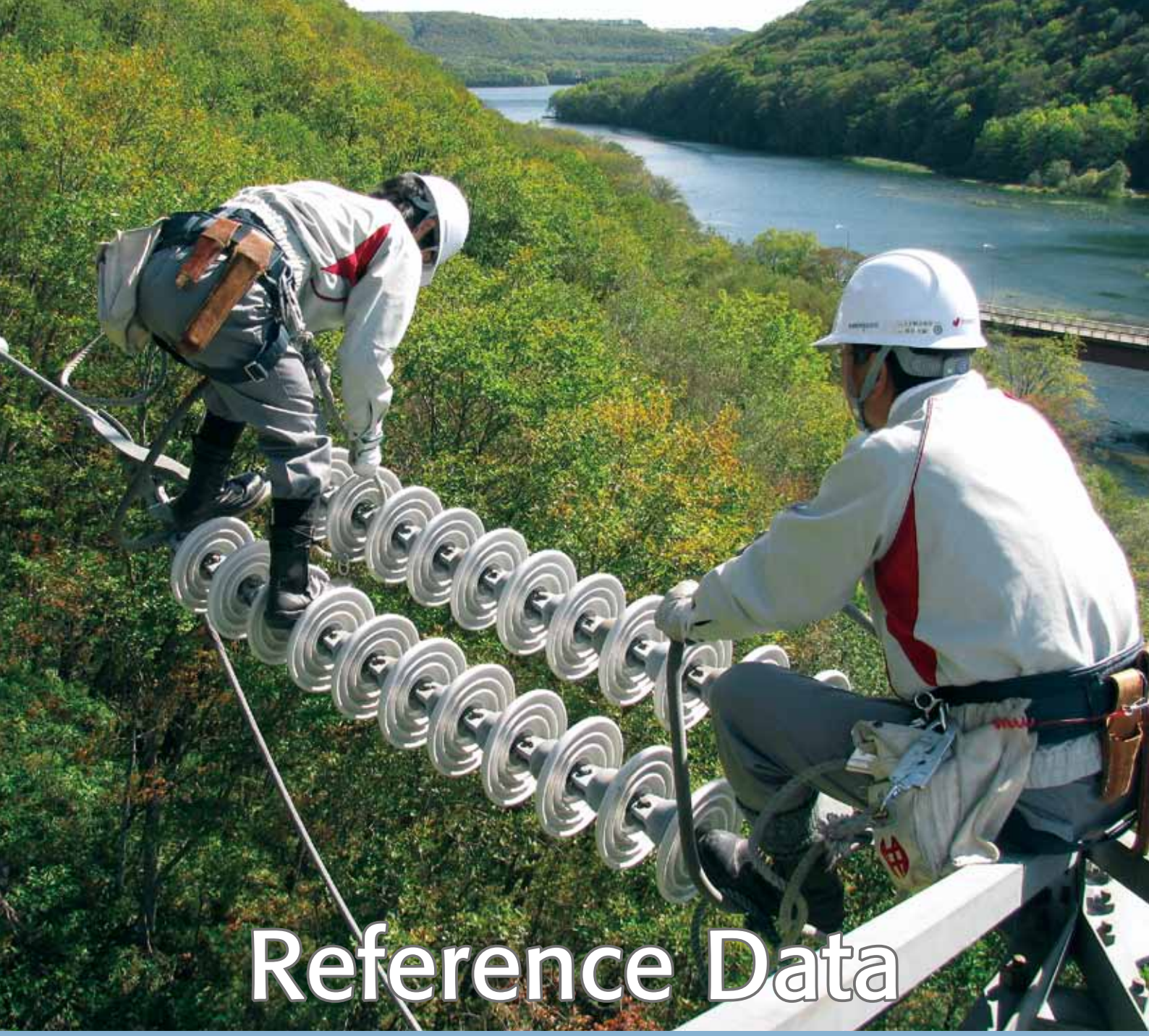
J-POWER's product, electrical power, is certified and registered as "wholesale electricity" under the Eco-Leaf environmental labeling program managed by the Japan Environmental Management Association for Industry (JEMAI). This information is available on the association's website. ISO 14025 defines three types of environmental labels: I, II, and III. Eco-Leaf is a Type III label, which means the product's environmental load has been quantitatively calculated for every stage of its lifecycle -- manufacture, use, and disposal -- using the lifecycle assessment (LCA) approach, and this fact has been independently verified.

Information on the Eco-Leaf label can be found on the Japan Environmental Management Association for Industry's website.

Product Environmental Aspects Declaration
ECO LEAF
製品環境情報
http://www.jemai.or.jp
No.BF-04-001-D

Japan Environmental Management Association for Industry

web http://www.jemai.or.jp/english/ecoleaf/index.cfm



Reference Data

Compliance Code

I. Basics

(1) Compliance with laws and internal regulations
(2) Acting in accordance with social norms

II. Areas for Compliance

1. Relations with Society
(1) Contribution to society
(2) Compliance with laws and ethical requirements; respect for cultures and customs
(3) Proper information disclosure
(4) Appropriate PR activities
(5) Regulation of donations and contributions to political parties
(6) Terminating relations with anti-social elements
(7) Environmental conservation
(8) Appropriate use of information systems
(9) Protection of intellectual property rights
(10) Compliance with import/export laws and regulations

2. Relations with Customers, Suppliers, and Competitors
(1) Security and reliability of energy supply and products sales
(2) Compliance with the Antimonopoly Law
(3) Dealing fairly with suppliers
(4) Preventing unfair competition
(5) Entertainment/gifts

3. Relations with Shareholders and Investors
(1) Disclosure of business information
(2) Prohibition of insider trading

4. Relations with Government Agencies/ Officials
(1) Adherence to approval and notification procedures
(2) Entertaining/giving gifts to government officials

5. Relations with Employees
(1) Respect for human rights; prohibition of discrimination
(2) Sexual harassment
(3) Protection of privacy
(4) Workplace safety and hygiene
(5) Compliance with labor laws
(6) Compliance with employment regulations
(7) Proper accounting and tax procedures
(8) Appropriate use of company assets

J-POWER Group Environmental Management Vision

Basic Policy

The J-POWER Group adheres to the following Basic Policy.

■Basic Stance

●As an energy supplier, we will contribute to the sustainable development of Japan and the rest of the world by harmonizing our operations with the environment and ensuring the constant supply of energy essential to human life and economic activity.

As an energy supplier, we will efficiently generate and continuously supply electric power essential to human life and economic activity by effectively using limited resources such as coal to meet diverse needs. We will contribute to sustainable development in Japan and the rest of the world as a whole by minimizing the environmental impact of our business activities, reducing environmental risks such as global warming, and improving eco-efficiency by achieving higher productivity with lower environmental load, thus promoting greater environmental responsibility while enhancing economic value.

■Efforts Relating to Global Environmental Issues

●In accordance with the principles of the United Nations Framework Convention on Climate Change,* we will cost-effectively address issues relating to climate change on a global scale. We will continue to reduce CO_2 emissions per unit of electric power sold through an economically rational combination of measures including maintenance and improvement of the efficiency of energy use; development of low CO_2 emission power sources; development, transfer, and dissemination of new technologies; and utilization of the Kyoto Mechanisms. Furthermore, we will continue to work toward our ultimate goal of achieving zero emissions through the capture and storage of CO_2.

Since fossil fuels will inevitably remain a key energy source this century, global warming is one of the most important long-term issues facing humankind. As measures against global warming will entail major costs, we must adopt highly cost-effective measures and actions on a global scale to make larger reductions in greenhouse gas emissions at lower cost if we are to achieve sustainable development that harmonizes environmental and economic needs. This principle is set out in the United Nations Framework Convention on Climate Change, on which the Kyoto Protocol is based.

We will continue to reduce CO_2 emissions per unit of electric power sold through an economically rational combination of measures that takes account of cost-effectiveness on a global scale. Such measures include maintenance and improvement of efficient energy use; development of low CO_2 emission power sources; development, transfer, and dissemination of new technologies; and utilization of the Kyoto Mechanisms.

Recognizing that it will be necessary within this century to capture and store CO_2 generated by the combustion of fossil fuels in order to keep supplying energy to people throughout the world in a sustainable manner, we have also set the ultimate goal of achieving zero CO_2 emissions. We will continue developing and testing technology to achieve that objective.

*Framework Convention on Climate Change, Article 3, Paragraph 3 (Principles)
"...lack of full scientific certainty should not be used as a reason for postponing such measures, taking into account that policies and measures to deal with climate change should be cost-effective so as to ensure global benefits at the lowest possible cost."

■Efforts Relating to Local Environmental Issues

●We will take measures to reduce the environmental impact of our operations by saving, recycling, and reusing resources to limit the generation of waste and foster good community relations.

Recognizing that assuring attractive and safe living environments is the key to good community relations, both nationally and internationally, we work hard to earn community trust. We use the latest technologies and know-how to minimize the environmental impact of our operations on the air and water around our power stations, as well as reducing and appropriately processing waste by saving, reusing, and recycling limited resources. In addition, we ensure that we are prepared to deal with emergencies resulting from accidents or natural disasters.

■Ensuring Transparency and Reliability

●We will ensure that our business activities comply with all laws and regulations, disclose a wide range of environmental information, and enhance communication with stakeholders.

We work to earn the trust of society by improving our environmental management and assuring complete compliance with laws and regulations, as well as by increasing corporate transparency through disclosure of a wide range of environmental information. At the same time, we strive to enhance communication with stakeholders about environmental issues, calling upon the skills and knowledge of the entire J-POWER Group to continue meeting stakeholder expectations in terms of our business development and environmental activities.

Established April 1, 2004

Fiscal 2009 J-POWER Group Environmental Action Guidelines

1. Efforts Relating to Global Environmental Issues

(1) Maintenance and Improvement of Energy Use Efficiency

- Maintain highly efficient operations at existing thermal power stations and employ highly efficient technologies in new facilities
- Maintain stable operation of existing hydro and geothermal power stations as well as of wind and recycling power stations
- Improve productivity of existing power stations by improvements in efficiency when replacing equipment
- Promote energy saving

(2) Development of Low CO_2 Emission Power Sources

- Construct nuclear power stations
- Effectively utilize renewable and unutilized energy
- Promote the use of natural gas-based fuels

(3) Development, Transfer, and Dissemination of New Technologies

- Carry out large-scale demonstration of oxygen-blown integrated coal gasification combined cycle (IGCC) technology
- Develop integrated coal gasification fuel cell combined cycle (IGFC) and solid oxide fuel cell (SOFC) technologies
- Promote small hydropower stations
- Promote R&D on CO_2 separation and capture technologies

(4) Utilization of the Kyoto Mechanisms and Other Measures

- Identify, cultivate, and utilize opportunities for Joint Implementation (JI), the Clean Development Mechanisms (CDM), and emissions trading

(5) Reduction of Emissions of Greenhouse Gases Other Than CO_2

- Reduce sulfur hexafluoride (SF_6) emissions from gas-insulated switch gear
- Reduce emissions of hydrofluorocarbons (HFCs) from air conditioners
- Reduce nitrous oxide (N_2O) emissions by appropriately managing thermal efficiency

2. Efforts Relating to Local Environmental Issues

(1) Reduction of Environmental Load

- Continue to reduce emissions
- Strengthen measures to prevent oil spills from equipment, etc. and be prepared so that emergencies can be dealt with in an appropriate and timely manner
- Design and introduce efficient and environmentally friendly plant and equipment when constructing or renovating facilities

(2) Promotion of the 3Rs (Reduce, Reuse, and Recycle waste) and Proper Disposal of Waste

- Recycle and reuse recyclable resources and make efforts toward zero emission* production
- Promote green purchasing efforts in line with the J-POWER Group Green Purchasing Guidelines
- Properly maintain and manage landfill sites and implement closing procedures

(3) Management of Chemicals

- Fully comply with the Act on Confirmation, etc. of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management Thereof (PRTR Law)
- Take appropriate measures to deal with dioxins
- Properly manage and dispose PCBs
- Strive to reduce volumes of hazardous chemicals handled
- Respond appropriately to asbestos-related issues

(4) Natural Environment and Biodiversity Conservation Initiatives

- Take the natural environment and biodiversity into account in the various stages of business
- Give consideration to rare animal and plant species on land
- Give consideration to aquatic environments
- Implement forest conservation initiatives

(5) Environmental Conservation Initiatives in Overseas Projects

- Promote overseas transfer of environmental protection technologies
- Incorporate environment-friendly initiatives when formulating development plans and considering investment in projects, and ensure that those initiatives are carried out

(6) Implementation of Accurate Environmental Impact Assessments

3. Ensuring Transparency and Reliability

1) Continual Improvement of Environmental Management (Greater Reliability)

(1) Improvement of Environmental Management Level

- Maintain ISO 14001 certification at all certified J-POWER Group business locations
- Continue to enhance operation of the environmental management system (EMS) at all J-POWER Group companies
- Raise employee awareness
- Utilize environmental accounting and eco-efficiency indicators
- Request cooperation of business partners in environmental activities
- Renew the Eco-Leaf environmental labeling certification, which employs the life cycle assessment method
- Strengthen risk management

(2) Full Compliance with Laws, Regulations, Agreements, and other Rules

- Identify applicable laws, regulations, agreements, and other rules, and work to raise awareness and ensure compliance
- Fully comply with environment-related laws, regulations, agreements, and other rules

2) Communication with Society (Greater Transparency)

(1) Publication of Environmental Information

- Carry out environmental reporting

(2) Increased Engagement in Environmental Communication

- Carry out environmental communication
- Carry out regional environmental conservation activities

* Zero emissions

A concept proposed by the United Nations University for the creation of a system that would enable the transformation of waste materials into resources through cooperation among different industries (and companies) so that waste emissions (final disposal amounts) can be reduced to as close to zero as possible.

Environment-Related Fiscal Year Data

The following data represent annual values or year-end values in each fiscal year. Unless specially noted, data for FY 2004 or earlier are for J-POWER only; data for FY 2005 onward include Group companies.

Notes:
1. The sum of the figures in each column may not equal the total due to rounding.
2. All figures include J-POWER and its consolidated subsidiaries. Except for the chart for power facilities, joint ventures have been accounted for based on the percentage ownership.

■ Power Facilities (maximum output)

	Unit	FY 1990	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008
Hydroelectric	GW	7.09	8.55	8.55	8.56	8.56	8.56
Thermal	GW	4.65	7.82	8.18	8.18	8.18	8.18
Coal-fired	GW	4.64	7.81	7.95	7.95	7.95	7.95
Natural gas	GW			0.22	0.22	0.22	0.22
Geothermal	GW	0.01	0.01	0.01	0.01	0.01	0.01
Wind power	GW			0.14	0.21	0.21	0.25
Total	GW	11.74	16.38	16.87	16.94	16.94	16.99

■ Electricity Output

	Unit	FY 1990	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008
Hydroelectric	GWh	12,451	12,892	10,187	12,212	10,428	9,470
Thermal	GWh	29,551	52,708	58,922	52,429	57,050	53,648
Coal-fired	GWh	29,452	52,616	58,070	51,624	56,260	52,979
Natural gas	GWh			748	701	686	589
Geothermal	GWh	99	92	104	104	104	80
Wind power	GWh			203	254	321	322
Total	GWh	42,002	65,600	69,312	64,870	67,799	63,439

■ Electric Power Sold

	Unit	FY 1990	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008
Hydroelectric (excluding pumped storage)	GWh	10,046	11,172	8,583	10,633	8,287	8,384
Thermal	GWh	27,293	49,345	55,205	49,128	53,576	50,122
Coal-fired	GWh	27,206	49,261	54,413	48,381	52,842	49,505
Natural gas	GWh			698	652	640	547
Geothermal	GWh	87	84	94	94	94	70
Wind power	GWh			195	245	307	310
Total	GWh	37,338	60,517	63,983	60,006	62,170	58,816

■ Fuel Consumption

	Unit	FY 1990	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008
Coal (dry coal 28MJ/kg equivalent)	million t	9.56	16.69	18.39	16.30	17.91	16.97
Use intensity (coal-fired thermal)	t/GWh	351	339	338	337	339	343
Natural gas	million m^3N			124	117	115	99
Heavy oil	million kl	0.1	0.06	0.06	0.06	0.05	0.04
Diesel	million kl	0.01	0.03	0.03	0.02	0.03	0.03

Note: Denominator for use intensity represents electric power sold by coal-fired thermal power stations.

■ Greenhouse Gas Emissions

	Unit	FY 1990	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008
CO_2 emissions (domestic and overseas power generation)*	million t-CO_2	24.67	44.76	49.49	45.36	50.22	49.38
	kg-CO_2/kWh	0.66	0.69	0.72	0.68	0.70	0.68
(domestic power generation)	million t-CO_2	24.67	42.54	47.18	42.14	45.97	43.47
	kg-CO_2/kWh	0.66	0.70	0.74	0.70	0.74	0.74
SF_6 emissions	t	-	0.0	0.1	0.1	0.0	0.1
Handled	t	-	3.4	3.3	6.4	4.4	7.9
Recovery rate	%	-	99	98	99	99	99
HFC emissions	t	-	0.0	0.1	0.0	0.1	0.1

* Figures for CO_2 emissions exclude the Wakamatsu Research Institute. Figures for CO_2 emissions (domestic and overseas power generation) include all consolidated subsidiaries and joint venture companies.

Notes: 1. Denominators for emission intensity represent electric power sold.
2. For the CO_2 calculation method, see p. 55.

■ Average Thermal Efficiency of Coal-fired Power Stations (at generation point)

	Unit	FY 1990	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008
Average thermal efficiency (at generation point)	%	39.0	40.4	40.5	40.4	40.3	40.1

■ Usage of Specified CFCs

		Unit	FY 1990	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008
Specified CFCs	Stocked	t	3.6	1.4	1.8	1.8	1.8	1.7
	Consumed	t	0.7	0.0	0.0	0.0	0.0	0.0
Halons	Stocked	t	4.7	3.9	3.9	4.3	4.6	4.6
	Consumed	t	0.0	0.0	0.0	0.0	0.0	0.0
Other CFCs	Stocked	t	2.8	9.1	10.2	9.9	9.5	9.2
	Consumed	t	0.0	0.2	0.3	0.3	0.3	0.3
HFCs (CFC alternatives)	Stocked	t	–	1.9	7.7	8.4	5.9	10.8
	Consumed	t	–	0.0	0.1	0.0	0.1	0.1

■ SOx, NOx, and Soot and Dust Emissions

	Unit	FY 1990	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008
SOx emissions	1,000 t	9.9	10.4	10.2	9.9	11.3	10.6
Intensity (thermal)	g/kWh	0.34	0.20	0.17	0.19	0.20	0.20
NOx emissions	1,000 t	26.4	26.6	28.9	27.9	28.5	26.7
Intensity (thermal)	g/kWh	0.90	0.50	0.49	0.53	0.50	0.50
Soot and dust emissions	1,000 t	1.0	1.0	1.0	0.9	1.0	0.8
Intensity (thermal)	g/kWh	0.03	0.02	0.02	0.02	0.02	0.02

Notes: 1. Soot and dust emissions are calculated from monthly measurements.
2. Denominators for emissions represent the electricity output of thermal power stations (excluding geothermal stations).

■ Industrial Waste Recycling

	Unit	–	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008
Volume generated	million t	–	2.06	2.23	1.96	2.18	2.14
Volume recycled	million t	–	1.89	2.09	1.86	2.15	2.10
Recycle rate	%	–	92	94	95	98	98

Note: Figures for FY 2004 and later are for the entire J-POWER Group.

■ Coal-Ash and Gypsum Recycling

	Unit	FY 1990	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008
Coal-ash created	1,000 t	1,257	1,657	1,806	1,556	1,714	1,747
Coal-ash recycled	1,000 t	719	1,507	1,696	1,512	1,711	1,736
Coal-ash recycle rate	%	57.2	91.0	93.9	97.2	99.8	99.4
Gypsum created	1,000 t	–	371	380	334	360	330
Gypsum recycle rate	%	100	100	100	100	100	100

Notes: 1. For details on coal-ash recycling rate, see p. 61.
2. Figures for FY 2004 and later are for the entire J-POWER Group.

■ Office Power Consumption

	Unit	–	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008
Power consumed by offices (company total)	GWh	–	15.64	22.00	22.82	22.23	21.86
Head office* power consumption	GWh	–	8.99	8.89	8.73	8.61	8.61
Lighting/power sockets	GWh	–	1.79	1.76	1.78	1.80	1.72

* J-POWER head office building
Note: Figures for the base year (FY 2006) and beyond have been adjusted in accordance with the expansion/contraction of the range of data available for compilation.

■ Fuel Consumption at Business Sites (vehicles, ships, emergency generators, etc.)

	Unit	–	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008
Gasoline	kl	–	342	1,162	1,191	1,136	1,077
Diesel	kl	–	2,137	2,352	4,342	3,589	3,235

■ Green Purchasing

	Unit	–	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008
Copy paper* purchased	million sheets	–	25.97	62.41	69.53	57.84	56.05
Recycled copy paper* purchased	million sheets	–	25.11	57.22	65.87	54.87	55.18
Recycled copy paper* purchase rate	%	–	97	92	95	95	98

* A4 paper-size equivalent

J-POWER: Main Business Sites and Significant Consolidated Subsidiaries

Main Business Sites (as of March 2009)

In Japan	Name	Location
Head Office		Chuo-ku, Tokyo
Hydropower & Transmission System Department	Hokkaido Regional Headquarters	Sapporo-shi, Hokkaido
	East Regional Headquarters	Kawagoe-shi, Saitama
	Chubu Regional Headquarters	Kasugai-shi, Aichi
	West Regional Headquarters	Osaka-shi, Osaka
	Ohma Main-Transmission Line Project Construction Office	Mutsu-shi, Aomori
	Nishi-Tokyo Main Transmission Line Construction Office	Kawagoe-shi, Saitama
	Kitahon Power Cable Construction Preparation Office	Kameda-gun, Hokkaido
Thermal Power Department	Isogo Thermal Power Station	Yokohama-shi, Kanagawa
	Takasago Thermal Power Station	Takasago-shi, Hyogo
	Takehara Thermal Power Station	Takehara-shi, Hiroshima
	Tachibanawan Thermal Power Station	Anan-shi, Tokushima
	Matsushima Thermal Power Station	Saikai-shi, Nagasaki
	Matsuura Thermal Power Station	Matsuura-shi, Nagasaki
	Ishikawa Coal Thermal Power Station	Uruma-shi, Okinawa
	Onikobe Geothermal Power Station	Osaki-shi, Miyagi
Ohma General Management Department	Ohma Nuclear Power Construction Office	Shimokita-gun, Aomori
	Aomori Branch Office	Aomori-shi, Aomori
Business Planning Department	Wakamatsu Operations & General Management Office	Kitakyushu-shi, Fukuoka
Corporate Planning & Administration Department	Sendai Office	Sendai-shi, Miyagi
	Takamatsu Office	Takamatsu-shi, Kagawa
	Fukuoka Office	Fukuoka-shi, Fukuoka
	Hokuriku Office	Toyama-shi, Toyama
	Chugoku Office	Hiroshima-shi, Hiroshima
Technology Development Center	Chigasaki Research Institute	Chigasaki-shi, Kanagawa
	Wakamatsu Research Institute	Kitakyushu-shi, Fukuoka

Overseas	Name
Washington Office (U.S.A.)	
Beijing Office (China)	
Hanoi Office (Vietnam)	
Upper Kotomale Hydropower Project Office (Sri Lanka)	
Son La Hydropower Project Office (Vietnam)	

Significant Consolidated Subsidiaries (As of March 2009)

Company name	Equity stake (%)	Main businesses	Head office
Bay Side Energy Co., Ltd.	100	Electric power supply	Chuo-ku, Tokyo
Green Power Kuzumaki Co., Ltd.	100	Construction and operation of wind power stations	Iwate-gun, Iwate
Green Power Setana Co., Ltd.	100	Construction and operation of wind power stations	Kudo-gun, Hokkaido
Green Power Koriyama Nunobiki Co., Ltd.	100	Construction and operation of wind power stations	Koriyama-shi, Fukushima
Dream-Up Tomamae Co., Ltd.	100	Construction and operation of wind power stations	Tomamae-gun, Hokkaido
Green Power Aso Co., Ltd.	81	Construction and operation of wind power stations	Aso-gun, Kumamoto
ITOIGAWA POWER Inc.	80	Electric power supply	Itoigawa-shi, Niigata
Nagasaki-Shikamachi Wind Power Co., Ltd.	70	Construction and operation of wind power stations	Kitamatsuura-gun, Nagasaki
Nikaho-Kogen Wind Power Co., Ltd.	67	Construction and operation of wind power stations	Nikaho-shi, Akita
J-Wind TAHARA Co., Ltd.	66	Construction and operation of wind power stations	Tahara-shi, Aichi
Ichihara Power Co., Ltd.	60	Electric power supply	Ichihara-shi, Chiba
JPOWER GENEX CAPITAL Co., Ltd.	100	Management of joint venture IPP projects	Chuo-ku, Tokyo
JPec Co., Ltd.	100	Construction, technical development, design, consulting, maintenance, and surveys for thermal and nuclear power generation facilities; unloading and transport of coal for thermal power stations; sale of fly ash; marine transport of coal for power generation; research and planning related to environmental conservation	Chuo-ku, Tokyo
JPHYTEC Co., Ltd.	100	Construction, technical development, design, consulting, maintenance, and surveys for hydropower and wind power stations, substations, and transmission facilities; land surveys and land compensation work related to construction sites; civil engineering, general construction, and construction management	Chiyoda-ku, Tokyo
KEC Corporation	100	Installation and maintenance of electronic and communications facilities	Bunkyo-ku, Tokyo
EPDC Coal Tech and Marine Co., Ltd.	100	Marine transportation of ash and fly ash from thermal power stations	Chuo-ku, Tokyo
JP Design Co., Ltd.	100	Construction consulting business; design and construction management of electric power facilities and other buildings; geological and other various surveys	Chiyoda-ku, Tokyo
J-POWER RESOURCES CO., LTD.	100	Import, sale, and transport of coal	Chuo-ku, Tokyo
J-POWER EnTech, Inc.	100	Engineering of equipment for removal of atmospheric and water pollutants	Minato-ku, Tokyo
Omuta Plant Service Co., Ltd.	100	Operation and maintenance of waste-fueled power stations	Omuta-shi, Fukuoka
Japan Network Engineering Co., Ltd.	100	Telecommunications business; operation and maintenance of telecommunications facilities	Chuo-ku, Tokyo
KAIHATSU HIRYOU Co., Ltd.	100	Production and sale of fertilizer using ash	Takehara-shi, Hiroshima
JP Business Service Corporation	100	Operation of welfare facilities; building maintenance; administrative, labor, and accounting contract services; computer software development	Koto-ku, Tokyo
FWM Investment Co., Ltd.	51	Investment management for implementing water service business	Omuta-shi, Fukuoka
Fresh Water Miike Co., Ltd.	51	Water service business and ancillary businesses	Omuta-shi, Fukuoka
J-POWER AUSTRALIA PTY.LTD.	100	Investment in development of coal mines in Australia	Australia
J-Power Investment Netherlands B.V.	100	Investment in overseas power generation projects	Netherlands
J-POWER North America Holdings Co.,Ltd.	100	Holding of power generation assets in the U.S.	U.S.A.
J-POWER Holdings(Thailand)Co.,Ltd.	100	Holding of power generation assets in Thailand	Thailand
J-POWER Generation(Thailand)Co.,Ltd.	100	Operation and management power generation assets in Thailand	Thailand
J-POWER USA Investment Co.,Ltd.	100	Operation and management of power generation projects in the U.S.	U.S.A.
J-POWER USA Development Co.,Ltd.	100	Development of new power generation projects in the U.S.	U.S.A.

Business Sites and Companies Receiving ISO 14001 Certification, Etc.

The following sites have received ISO 14001 certification as of March 2009.

Facilities managed by J-POWER regional headquarters (Hokkaido, East Japan, Chubu, West Japan): hydroelectric stations, transmission facilities, substations, telecommunication engineering centers, etc. Facilities managed by regional companies of JPHYTEC Co., Ltd., (Hokkaido, East Japan, Chubu, West Japan)
J-POWER thermal power stations (Isogo, Takasago, Takehara, Tachibanawan, Matsushima, Matsuura, Ishikawa Coal) JPec Co., Ltd., companies (Isogo, Takasago, Takehara, Tachibanawan, Matsushima, Matsuura, Ishikawa)
J-POWER Onikobe Geothermal Power Station JPec Co., Ltd., Onikobe Office
J-POWER Civil and Electrical Engineering Dept.
J-POWER Environment & Energy Business Dept. (Water Treatment Engineering Group, Subsurface Space Engineering Group)
JPHYTEC Co., Ltd. (Transmission and Compensation Division)
JPec Co., Ltd. (Wakamatsu Environmental Research Center)
JP Design Co., Ltd., main office
KEC Corporation (whole company)
Ichihara Power Co., Ltd.

Eco Business by Group Companies

The J-POWER Group has established eco businesses of many kinds, leveraging environmentally-friendly technologies developed over many years of providing energy-related services. A few examples are introduced here.

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

J-POWER EnTech, Inc.
http://www.jpower.co.jp/entech_e/index.html/

One of J-POWER EnTech's core technologies is dry-type flue gas treatment, which allows users to remove multiple trace pollutants such as sulfur, nitrogen, dioxin, dust, and soot from flue gas in one operation, using almost no water. This technology is widely used in Japan at coal-fired power stations, steel mills, petrochemical facilities, waste incineration plants and other industrial facilities.

J-POWER EnTech has already delivered the latest flue gas treatment system designed for Japanese steel mills, with the highest performance of any system for the steel industry, as well as supplying a flue gas treatment system for the J-POWER Isogo Thermal Power Station No. 2 unit, which started operation in 2009. This system is also being provided for use in power stations, steel mills and other facilities in Japan and overseas, where it is helping reduce the environmental burden in a wide range of fields.

Dry-type desulfurization system at Isogo Thermal Power Station new No. 2 unit (Yokohama)

Utilizing Coal Ash to Contribute to Agriculture: Potassium Silicate Fertilizer

KAIHATSU HIRYOU CO., Ltd.
http://www.jpsik.com/ (Japanese only)

KAIHATSU HIRYOU CO., Ltd., a J-POWER Group company, developed the world's first potassium silicate fertilizer as a slow-release potassium fertilizer made using coal ash from thermal power stations, and has been manufacturing and selling it since 1980. In fiscal 2007 the company built a new factory in Takehara, Hiroshima Prefecture, in order to increase production of potassium silicate fertilizer and also in an attempt to promote more effective use of coal ash. The manufactured potassium silicate fertilizer is sold to farmers and growers in 47 prefectures nationwide through ZEN-NOH (JA Group) as an agricultural cooperative exclusive fertilizer. By continuing to supply this outstanding fertilizer, which is friendly to people and nature and can be used with assurance, we intend to offer powerful support for future agriculture.

The world's first potassium silicate fertilizer soluble in citric acid, made from recycled coal ash generated at thermal power stations

*The fertilizer is soluble in a 2 percent solution of citric acid, but does not dissolve in weaker acids such as that exuded from roots. Since it dissolves gradually, its effectiveness is long-lasting.

Environmental Accounting Data

Environmental Conservation Costs

(billion yen)

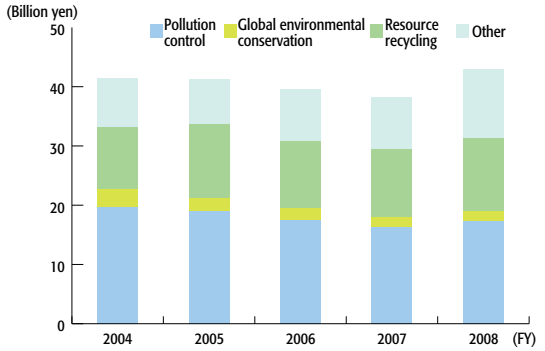
Category	Main measures and efforts	Cost
Pollution control	Air pollution control (desulfurization/denitrification, soot and dust treatment), water pollution control (waste-water treatment), etc.	17.3
Global environmental conservation	Measures to reduce greenhouse gas emissions (maintaining high-efficiency operation of coal-fired power stations, developing renewable and unutilized energy sources, maintenance costs for energy-saving equipment, emission control of greenhouse gases other than CO_2)	1.7
Resource recycling	Waste reduction through reuse and recycling; treatment and disposal of waste	12.3
Management activities	Monitoring and measurement of environmental load, labor costs for environmental conservation organizations, costs for environmental education, etc.	1.5
Research and development	High-efficiency generation, use of fuel cells, CO_2 capture and fixation, recycling of coal ash and gypsum, etc.	4.4
Social activities	Tree-planting, environmental advertising, environmental beautification, membership in environmental groups, preparation of environmental report, etc.	2.9
International projects	Overseas cooperation projects for environmental conservation technologies	0.9
Other	Pollution load levy	2.0
Total		43.0

Environmental Conservation Benefits

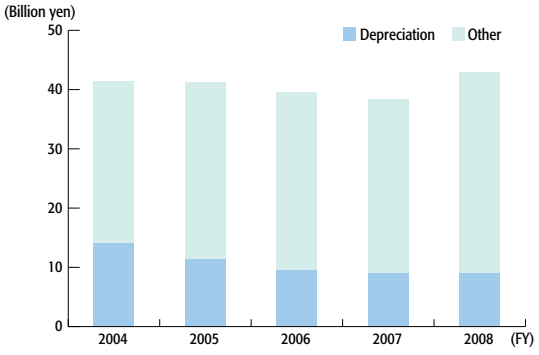
Environmental conservation benefit	FY 2004	FY 2008
SOx emissions intensity (g/kWh)	0.20	0.20
NOx emissions intensity (g/kWh)	0.50	0.50
Soot and dust emissions intensity (g/kWh)	0.02	0.02
CO_2 emissions intensity (kg-CO_2/kWh)	0.69	0.68
Average thermal efficiency of thermal power generation (%)	40.4	40.1
Coal ash recycling rate (%)	91.0	99.4
Industrial waste recycling rate (%)	92	98
Gypsum recycling rate (%)	100	100
Volume of driftwood recycled (1,000 m^3)	–	39
Employees completing internal environmental auditor training	126	
Environmental report (copies published)	15,000	
Environmental pamphlet (copies published)	15,000	
Overseas consulting projects (cumulative total)	300	

Note: For detailed data on each category, see pp. 75–76, Environment-Related Fiscal Year Data, in the Reference Data section.

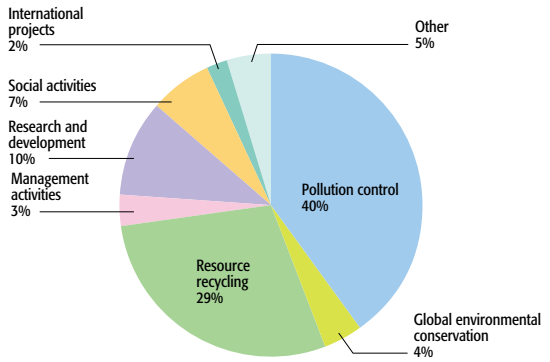
Environmental Conservation Costs: Comparison by Fiscal Year



Proportion of Depreciation and Other Costs



Environmental Conservation Costs: Breakdown by Category



Calculation Guidelines for Environmental Conservation Costs

- Period: April 1, 2008, to March 31, 2009
- Format: In accordance with Environmental Accounting Guidelines 2005 issued by the Ministry of the Environment
- Scope: Costs (including depreciation costs) for thermal power generation companies, which have the highest environmental load among J-POWER and Group company operations

Note: Costs were calculated focusing on expenses for the following: personnel/contracting/repair/chemicals associated with operating and maintaining equipment; waste recycling and disposal; R&D; and overseas projects (contracting and personnel expenses). However, upstream and downstream costs associated with the contribution of hydroelectric power generation to measures against global warming, and with green purchasing efforts, were deemed to present problems in terms of calculation scope and method and thus were excluded from calculations.

Treaties and Laws Relating to Global Warming

Overview of the United Nations Framework Convention on Climate Change

The United Nations Framework Convention on Climate Change is a treaty that establishes an international framework for stemming global warming. It was adopted in June 1992 at the first World Summit on Sustainable Development in Rio de Janeiro (commonly known as the Earth Summit), and came into force on March 21, 1994.

Thus far it has been ratified by 192 countries and regions. The ultimate aim of the convention is to stabilize the concentration of greenhouse gases in the atmosphere at levels that will not cause dangerous human disruption of the earth's climate system.

Principles

1) Protection of the climate on the basis of common but differentiated responsibility
2) Consideration of special circumstances
3) Implementation of precautionary measures
4) Right and duty to promote sustainable development
5) Cooperation to promote a supportive and open international economic system

Note: Complete text of Principle 3:
The Parties should take precautionary measures to anticipate, prevent or minimize the causes of climate change and mitigate its adverse effects. Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing such measures, taking into account that policies and measures to deal with climate change should be cost-effective so as to ensure global benefits at the lowest possible cost. To achieve this, such policies and measures should take into account different socio-economic contexts, be comprehensive, cover all relevant sources, sinks and reservoirs of greenhouse gases and adaptation, and comprise all economic sectors. Efforts to address climate change may be carried out cooperatively by interested Parties.

Overview of the Kyoto Protocol

The Kyoto Protocol is a resolution establishing the greenhouse gas emissions-reduction targets for the Annex I countries. It was adopted in December 1997 at the Third Session of the Conference of the Parties to the UN Framework Convention on Climate Change (COP3) and came into force on February 16, 2005.

Notes:
1. Emissions trading:
International trading of emissions allowances (or emissions reduction units earned through CDM or JI). Annex I countries may add allowances acquired from other countries to their own allowances.
2. Joint Implementation (JI):
Mechanism whereby Annex I countries can jointly carry out GHG emissions-reduction projects and distribute the resultant reduction volume among the countries concerned. Applicable to reductions between 2008 and 2012.
3. Clean Development Mechanism (CDM):
Mechanism whereby Annex I countries can carry out GHG emissions-reduction projects in developing countries and distribute the resultant reduction volume among the countries concerned. Applicable to reductions in 2000 and after.

Targeted greenhouse gases (GHGs)	6 categories of gases: CO_2 (carbon dioxide), methane, N_2O (nitrous oxide), HFCs (hydrofluorocarbons), PFCs (perfluorocarbons), and SF_6 (sulfur hexafluoride)
Commitment period	2008~2012 (first commitment period)
Goal	To reduce average yearly emissions of greenhouse gases by the Annex I countries by at least 5 percent below 1990 levels. In Annex B of the Kyoto Protocol, the Annex I countries commit themselves to specific reduction targets; Japan's reduction target is 6 percent.
Use of sinks (absorption forests)	Countries may include in their calculation of emissions reduction the removal of CO_2 by "sinks" resulting from land use change and forestry activities, limited to afforestation, reforestation, and deforestation since 1990.
Kyoto Mechanisms	Emissions trading,[1] Joint Implementation (JI),[2] and the Clean Development Mechanism (CDM)[3] have been adopted as economically rational means to achieve reduction targets on a global scale.

Overview of the Revised Kyoto Protocol Target Achievement Plan

In accordance with the Act on Promotion of Global Warming Countermeasures (Act No. 117, 1998), on April 28, 2005, the Japanese government formulated the Kyoto Protocol Target Achievement Plan establishing the measures and mechanisms needed for Japan to be certain of meeting its Kyoto Protocol commitment to reduce emissions by 6 percent from the 1990 level. The plan was later revisited and updated following a review of the targets and measures it laid down. On March 28, 2008, a fully revised plan was adopted by cabinet resolution.

Countermeasures and Policies to Achieve the Targets

1. Countermeasures and Policies Concerning Reduction, Removal, etc. of Greenhouse Gas Emissions

(1) Countermeasures and Policies Concerning Reduction of Greenhouse Gas Emissions

Key measures added

•Promotion of voluntary action plans •Improvement of the energy efficiency of homes and other buildings •Measures involving top-runner products, etc. •Thoroughgoing measures to save energy in factories and other places of business
•Improvement of vehicle fuel efficiency •Promotion of measures to reduce emissions by small- and medium- sized enterprises
•Measures for improvements in areas including agriculture, forestry, and fisheries; water and sewage systems; and traffic flow
•Urban greening and efforts concerning wastes, the three fluorinated gases, etc.
•Promotion of the use of new forms of energy

(2) Greenhouse Gas Sink Measures and Policies
•Forest management through thinning, etc., and promotion of the campaign to create well-managed forests

2. Cross-Sectoral Policies
•Systems for calculation, reporting, and public disclosure of greenhouse gas emissions •Development of national campaign

Quantitative Targets for Emissions Reduction and Absorption of Greenhouse Gases

		Emissions target range for FY 2010	
		million t-CO_2	Ratio to base year total emissions
Energy-related CO_2		1,076~1,089	+1.3%~+2.3%
	Industrial sector	424~428	-4.6%~-4.3%
	Commercial and other sectors	208~210	+3.4%~+3.6%
	Residential sector	138~141	+0.9%~+1.1%
	Transport sector	240~243	+1.8%~+2.0%
	Energy conversion sector	66	-0.1%
Non-energy-related CO_2, CH_4, N_2O		132	-1.5%
Three fluorinated gases		31	-1.6%
Greenhouse gas emissions		1,239~1,252	-1.8%~-0.8%

Japan will ensure achievement of its 6 percent reduction target under the Kyoto Protocol by combining the reduction of greenhouse gas emissions with such means as the use of carbon sinks and the Kyoto Mechanisms.

Environmental Action Plan by the Japanese Electric Utility Industry

(Summarized from the Environmental Action Plan by the Japanese Electric Utility Industry, The Federation of Electric Power Companies of Japan, September 2008)

The Environmental Action Plan by the Japanese Electric Utility Industry lays out the electric industry's policy and plan for dealing with global warming and other environmental issues. Each year the plan is reviewed in relation to the industry's progress toward its goals and domestic and international trends.

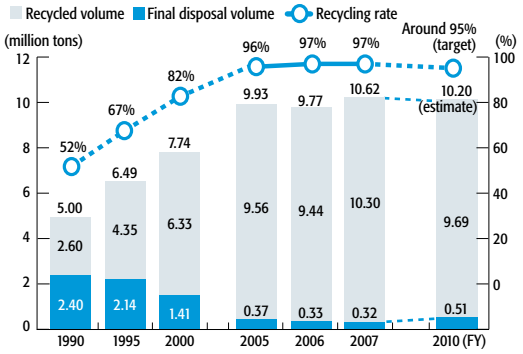
This plan is incorporated in the Keidanren Voluntary Action Plan on the Environment, adopted by Nippon Keidanren in June 1997. Progress toward the Keidanren plan as a whole and the various voluntary industry plans that make it up is regularly monitored by national councils and similar organs.

Measures for Waste Reduction and Recycling

Waste Recycling Rate Targets

Through fiscal 2010, we aim to maintain our waste recycling rate at around 95 percent.

■ **Waste Recycling Rate Target for the Electric Utility Industry**



Note: After landfills for final disposal are closed, the land is utilized for the expansion of power generation facilities or for other industrial purposes. A portion of the coal ash used at such sites has been included in "volume recycled" from fiscal 2004 as land reclamation material in accordance with the position taken by the national government.

■ **Trends in Recycling of Major Wastes and By-products**

(Unit: million tons)

Type			FY 1990	FY 2005	FY 2006	FY 2007
Waste	Combustion residue, dust and soot (coal ash)	Volume generated	3.47	7.24	7.05	7.68
		Recycled volume (Recycling rate)	1.37 (39%)	6.97 (96%)	6.83 (97%)	7.46 (97%)
	Construction waste material	Volume generated	0.40	0.36	0.42	0.41
		Recycled volume (Recycling rate)	0.21 (53%)	0.35 (97%)	0.41 (97%)	0.40 (98%)
	Scrap metal	Volume generated	0.14	0.19	0.20	0.22
		Recycled volume (Recycling rate)	0.13 (93%)	0.18 (99%)	0.19 (98%)	0.22 (99%)
By-products	Gypsum from desulfurization process	Volume generated	0.85	1.90	1.87	1.97
		Recycled volume (Recycling rate)	0.85 (100%)	1.90 (100%)	1.87 (100%)	1.97 (100%)

Measures to Mitigate Climate Change

CO_2 Emissions Suppression Targets

From fiscal 2008 to fiscal 2012, we aim to further reduce CO_2 emissions intensity (emissions per unit of user-end electricity) by an average of approximately 20 percent to about 0.34 kg-CO_2/kWh from the fiscal 1990 level.

■ **Goal of 12 FEPC-Affiliated Companies**

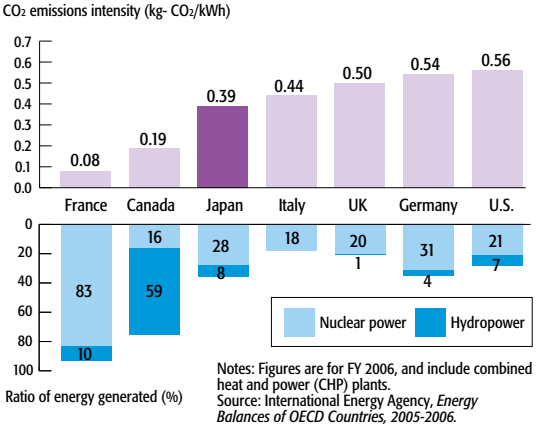
CO_2 emissions (kg-CO_2) = **Electric power consumption (electric energy) (kWh)** × **CO_2 emissions intensity (CO_2 emissions per unit of electric power consumed) (kg-CO_2/kWh)**

■ **Electric Utility Industry's CO_2 Emissions**

Item \ Fiscal year	1990 (results)	2005 (results)	2006 (results)	2007 (results)	2008 to 2012 (five-year average)
Electric power consumption (billion kWh)	659	883	889	920	(est.) 931
CO_2 emissions (million t- CO_2)	275 [2]	373 [26]	365 [28]	417 [30]	(est.) –
CO_2 emissions intensity of user-end electricity (kg- CO_2/kWh)	0.417	0.423	0.410	0.453	(est.) –

Reference Information

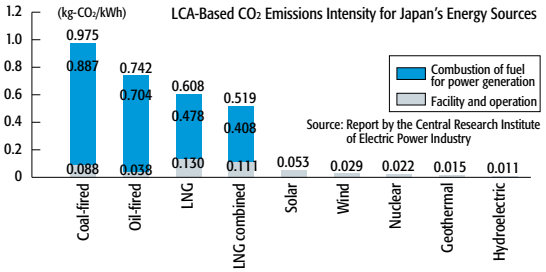
■ **Country-by-Country Comparison of CO_2 Emissions Intensity**
(per unit of energy generated; preliminary calculation by FEPC)



Notes: Figures are for FY 2006, and include combined heat and power (CHP) plants.
Source: International Energy Agency, *Energy Balances of OECD Countries, 2005-2006.*

■ **Life Cycle Assessment-Based CO_2 Emissions Intensity for Japan's Energy Sources**

The chart below represents the CO_2 emissions for various power sources when the entire life cycle is taken into account (LCA CO_2). This method calculates CO_2 emissions not only from the combustion of fuel for power generation but also from all energy consumed from such activities as mining and drilling, building power generation facilities, transporting fuel, refining fuel, operating and maintaining facilities, and so forth.



The J-POWER Group's Contribution for Japan to Achieve the Kyoto Target

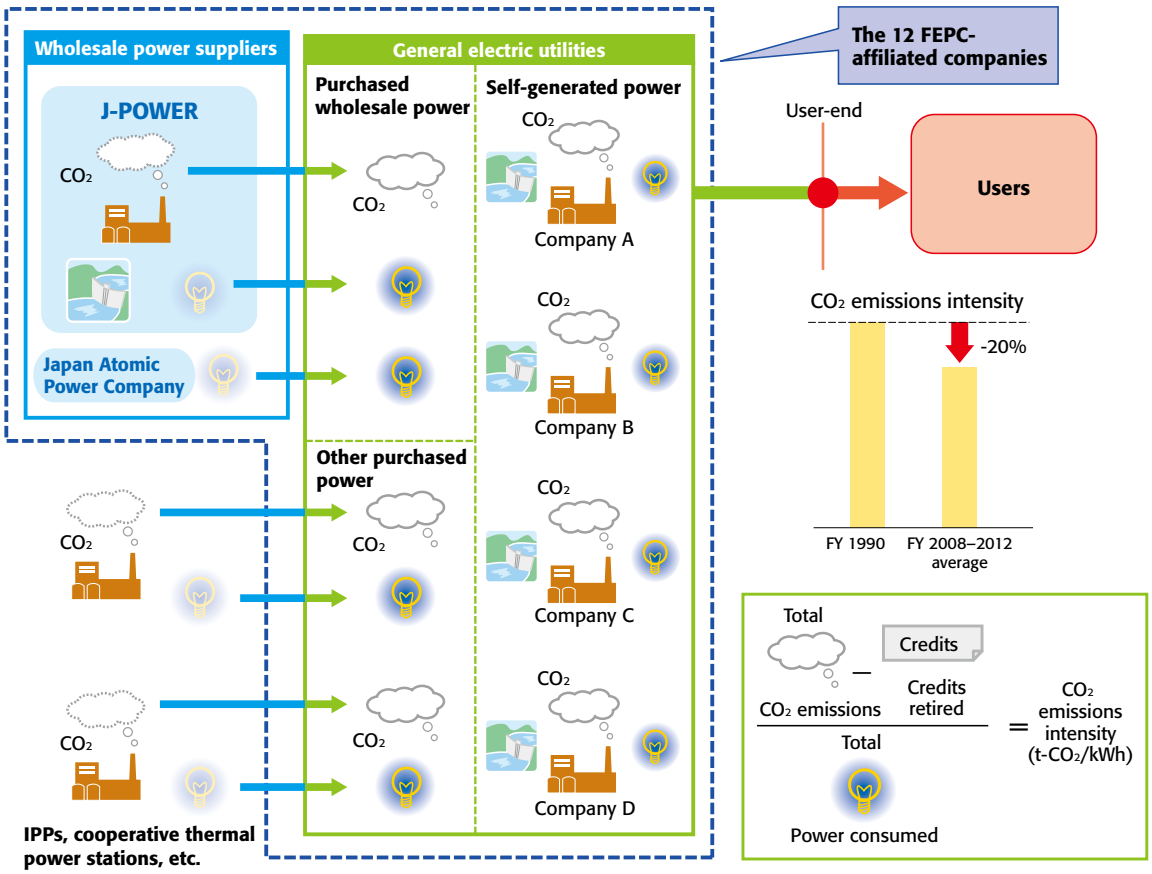
J-POWER, one of the 12 members of the Federation of Electric Power Companies of Japan (FEPC), is supporting the federation's program—the Environmental Action Plan by the Japanese Electric Utility Industry—to contribute to Japan's achievement of its Kyoto target.

Based on the Act on Promotion of Global Warming Countermeasures (Act No. 117, 1998) the Japanese government adopted the Kyoto Protocol Target Achievement Plan, a program to provide a series of necessary measures for surely achieving the Kyoto target of the 6 percent reduction in greenhouse gas emissions from 1990 levels, in a Cabinet resolution on April 28, 2005 (revised on March 28, 2008). As part of the industrial sector's efforts, the Keidanren Voluntary Action Plan on the Environment of the Nippon Keidanren has been incorporated into the governmental program, and the FEPC's program, composing a part of Nippon Keidanren's program, has in turn been included in the governmental program. The FEPC's program has also been incorporated into the governmental program as part of the energy supply sector's efforts to reduce CO_2 emissions.

The FEPC's program, the Environmental Action Plan by the Japanese Electric Utility Industry, has set the following target: From fiscal 2008 to fiscal 2012, we aim to further reduce CO_2 emissions intensity (emissions per unit of user-end electricity) by an average of approximately 20 percent from the fiscal 1990 level. One means to achieve this target is the retirement of emission credits gained by electric utility companies through the Kyoto Mechanisms to offset CO_2 emissions (see figure below).

Because J-POWER is a wholesale power supplier without consumption points, the electric power and emissions it generates is directly reflected in the emissions of general electric utilities. J-POWER is therefore working in cooperation with general electric utilities to reduce CO_2 emissions. Specific efforts include the maintenance and improvement of the generation efficiency of coal-fired power stations, the development of energy sources with low CO_2 emissions such as nuclear power, the development of innovative technologies including those relating to coal gasification and CO_2 capture, and the utilization of CDM and JI credits. In these ways, J-POWER continues to press forward toward joint achievement of the targets set forth in the Environmental Action Plan by the Japanese Electric Utility Industry.

Note:
The 12 companies affiliated with the Federation of Electric Power Companies of Japan are the 10 FEPC member companies (Hokkaido Electric Power Co., Inc., Tohoku Electric Power Co., Inc., Tokyo Electric Power Co., Inc., Chubu Electric Power Co., Inc., Hokuriku Electric Power Co., Inc., Kansai Electric Power Co., Inc., Chugoku Electric Power Co., Inc., Shikoku Electric Power Co., Inc., Kyushu Electric Power Co., Inc., and Okinawa Electric Power Co., Inc.) plus J-POWER and the Japan Atomic Power Company.



Glossary

(Page numbers indicate major citations.)

Advanced boiling water reactor (ABWR)
pp. 9–11
A nuclear reactor that incorporates all the latest BWR (boiling-water reactor) technologies, including use of steel reinforced concrete for the containment vessel and a self-contained reactor recirculation pump, resulting in significant improvements in terms of safety, reliability, and cost.

Annex I countries
p. 80
Countries designated in Annex I of the United Nations Framework Convention on Climate Change, which have committed themselves to reducing emissions of greenhouse gases. Includes countries generally referred to as developed countries as well as those transitioning to market economies, such as former republics of the Soviet Union and Eastern European countries.

Biomass
pp. 13, 14, 29, 30, 45, 47, 49, 53, 63, 67
Renewable organic resources of plant and animal origin other than fossil fuels.

Carbon dioxide capture and storage (CCS)
pp. 14, 16, 17, 36, 67, 69, 82
A system for capturing CO_2 from factory and power station emissions and transferring and storing the captured CO_2 to sequester it from the atmosphere over the long term. The two storage options are storage in geological formations and storage in the ocean.

Chemical oxygen demand (COD)
p. 45
The amount of oxygen required to oxidize the pollutants (primarily organic) in water. Used as an indicator to measure pollution of coastal waters and lakes.

Chlorofluorocarbon (CFC) alternatives
pp. 76, 80
Chemicals used in refrigerators and in the manufacture of semiconductors in place of chlorofluorocarbons, which destroy the ozone layer. Because their greenhouse effect is several thousands or even tens of thousands times that of CO_2, they were included among the gases targeted for reduction at COP3 held in Kyoto in December 1997.

Cool Earth 50
p. 16
A long-term target for combating global warming proposed in May 2007 by then-Prime Minister Shinzo Abe. It set the goal of halving global CO_2 emissions by 2050.

Designated public institution
p. 21
A public institution designated by the prime minister based on the Basic Act on Disaster Control Measures and the Act on the Peace and Independence of Japan and Maintenance of the Nation and the People's Security in Armed Attack Situations etc. Included are institutions of a public nature such as Japan Broadcasting Corporation and the Bank of Japan, as well as companies providing basic public services such as the supply of electricity and gas, transportation, and communications. Designated public institutions are obliged to cooperate with local governments and among themselves to help prevent disasters and carry out measures to protect the people of Japan. J-POWER is a designated public institution under both of the Acts mentioned above, and it intends to undertake disaster prevention and the protection of the public through the supply of electricity.

Dioxin(s)
pp. 61, 63, 64, 74
Generic name for polychlorinated dibenzo-p-dioxin (PCDD), polychlorinated dibenzofuran (PCDF), and coplanar polychlorinated biphenyl (coplanar-PCB). Toxic substances generally present in the environment in trace amounts and suspected of posing grave danger to human life and health. Under the Act on Special Measures against Dioxins, which came into force in January 2000, dioxin emissions from waste incinerators and other sources are strictly regulated.

Eco-efficiency
pp. 46, 73, 74
A method for quantifying, comparing, and evaluating activities to reduce the amount of water, electricity, and raw materials used and to reduce the volume of waste, effluent, and exhaust gas generated in business operations, as well as efforts at legal compliance and control of environmental pollution.

Environmental accounting
pp. 46, 74, 79
A mechanism for accurately determining and disclosing what a company invests and spends on environmental conservation and the effect of such spending—something not reflected in traditional financial analysis. Environmental accounting benefits companies by providing a quantitative assessment of their efforts to protect the environment so that they can improve the cost-effectiveness of their business activities with respect to environmental costs. It benefits stakeholders by making available corporate environmental accounting data in the form of environmental reports, etc., which can be used as yardsticks for measuring and comparing the environmental efforts of different companies.

Environmental Action Plan by the Japanese Electric Utility Industry
pp. 55, 81, 82
Plan for positive, voluntary environmental action by electric utilities, compiled by 12 organizations affiliated with the Federation of Electric Power Companies of Japan. Establishes concrete goals and outlines active efforts to address global warming, build a recycling-based society, etc. To ensure transparency, progress under the plan is reviewed each year and the results are made available to the public.

Environmental management system (EMS)
pp. 43, 65, 66, 74
A system by which organizations employ the PDCA management cycle to continuously improve the environment in an effort to comply with laws and regulations and take initiative in protecting the environment.

Fuel cell
pp. 14, 28, 74, 79
A device that converts externally supplied hydrogen and oxygen into electricity through a chemical reaction. Because fuel cells can achieve high generating efficiency and the heat generated can also be utilized, they have a high net energy efficiency and offer an effective means of saving energy and reducing CO_2 emissions. Fuel cells are particularly friendly to the environment because they dispense with combustion, thus giving off few air pollutants, and because they generate electricity without using rotating parts they are relatively quiet.

Gas-turbine combined-cycle generation
pp. 29, 47, 50
A power generation method combining gas turbines and steam turbines. The pressure of the exhaust gas created when the fuel is burned within compressed air drives the gas turbine, and the residual heat is used to run the steam turbine. Combining these two processes results in high generating efficiency.

Green purchasing
pp. 43, 44, 62, 74, 76, 79
Placing priority on minimizing the environmental load in the purchase of goods and services by emphasizing the effect on the environment, as opposed to price, quality, convenience, or design.

Hydrofluorocarbons (HFCs)
pp. 55, 74, 80
Chemicals used in refrigerators, car air conditioners, etc., beginning around 1991, after CFCs and HCFCs were subject to controls out of concerns that they destroy the ozone layer. HFCs are artificial greenhouse gases with a greenhouse effect ranging from 140 to 11,700 times that of CO_2.

Independent power producer (IPP)
pp. 1, 3, 77, 82
A business, other than a wholesale power supplier, that supplies electricity to general electric utilities.

Industrial waste
pp. 43–46, 61, 74, 76, 79
Wastes such as ash, sludge, waste oil, waste acid, waste alkali, and waste plastics generated in the course of business operations. The Waste Management and Public Cleansing Act calls for proper disposal and incineration of industrial waste.

Integrated coal gasification fuel cell combined cycle system (IGFC)
pp. 14, 17, 74
A triple combined power generation system achieved by combining the fuel cell, gas turbine, and steam turbine; the ultimate coal-fired thermal power generation system.

Integrated coal gasification combined cycle system (IGCC)
pp. 6, 14–16, 17, 74
A combined power generation system consisting of gas turbines that generate electricity by firing gas produced from coal and steam turbines that use the exhaust heat from the gas turbines.

Intergovernmental Panel on Climate Change (IPCC)
p. 14
The IPCC was established by the United Nations Environment Programme (UNEP) and the World Meteorological Organization (WMO) in 1988 as a forum for international deliberation on the issue of global warming. Participants include Japan, the United States, China, Russia, and numerous other developed and developing countries. The IPCC collects and assesses a wide range of research involving scientific knowledge on global warming, its impacts, and the measures to be taken, and publishes the results in assessment reports. As part of the IPCC Fourth Assessment Report (AR4), Working Group I, studying the physical science basis of climate change, released a report in February 2007. This report concluded that warming of the climate system is unequivocal and also stated with very high confidence that the increase in anthropogenic greenhouse gas emissions is the cause.

Internal Control Reporting System
p. 20
From the perspective of investor protection, this system is aimed at ensuring the reliability of financial reporting. The term refers to the stipulations of the Financial Instruments and Exchange Act's Article 24-4-4 and Article 193-2, which set forth matters relating to internal control. Specifically, the system requires that applicable corporations and corporate groups issue internal control reports evaluating the internal structures essential to ensuring validity of financial statements and other information and that the statements be accompanied by an audit certificate issued by a certified public accountant or audit firm.

Kyoto Mechanisms
pp. 13, 14, 43, 53–55, 73, 74, 80, 82
Please refer to pp. 53, 80.

Kyoto Protocol
pp. 53–55, 73, 80, 82
Please refer to p. 80.

Lower heating value (LHV)
pp. 14, 15, 43, 44
Heating value refers to the amount of heat released when completely combusting a specified amount (1 kg, 1 m^3, 1 l) of fuel at a specified state (for example, 1 atm and 25°C) with a sufficient amount of dry air, then cooling the combustion product gas to the

original temperature (in this case, 25°C). Higher heating value includes the latent heat of condensation of any vapor contained in the combustion product gas, whereas lower heating value assumes that vapor remains in that state and therefore does not include the latent heat of condensation. Lower heating value is determined by subtracting the latent heat of vapor condensation from the higher heating value measured by a calorimeter, and is calculated using the following equation:
Lower heating value = Higher heating value – latent heat of vapor condensation x amount of vapor

Methane (CH_4)
pp. 53, 55, 80
A main component of natural gas. Also produced through the decay or fermentation of organic matter. The second most common greenhouse gas, after CO_2, with a greenhouse effect 21 times that of CO_2.

Mixed-oxide fuel (MOX fuel)
pp. 10, 11
Mixed oxide fuel consisting of uranium mixed with plutonium recovered by reprocessing spent nuclear fuel. In Japan, the use of MOX fuel in light-water and other reactors to generate electricity is referred to as "pluthermal." While Japan's pluthermal plan originally called for use of a one-third MOX core for fuel, the "full MOX" plan calls for a 100% MOX core.

Nitrogen oxides (NOx)
pp. 8, 30, 43–46, 51, 56, 60, 76, 79
General term for compounds made up of nitrogen and oxygen. NOx is invariably produced during combustion as oxygen binds with nitrogen in the air and/or in the substance being burned. High-temperature combustion in the boilers of electric power stations or in automobile engines yields nitrogen monoxide, and this NO is further oxidized to form the stable compound nitrogen dioxide (NO_2), which is emitted into the atmosphere. Ultraviolet light from the sun reacts with nitrogen oxides in the atmosphere to create ozone and other photochemical oxidants.

Nitrous oxide (N_2O)
pp. 49, 55, 74, 80
Also known as dinitrogen monoxide. A major greenhouse gas (along with carbon dioxide, methane, tropospheric ozone, and chlorofluorocarbons) with a greenhouse effect 310 times that of CO_2. Said to be generated by combustion and application of nitrogen fertilizer.

Non-industrial waste
pp. 44, 45, 49, 62, 63
Defined as waste other than industrial waste under the Waste Management and Public Cleansing Act. Further divided into household waste and business waste (waste from offices, eating and drinking establishments, etc.).

Perfluorocarbons (PFCs)
pp. 55, 80
Chemicals used for semiconductor manufacturing beginning in the 1980s. PFCs are artificial greenhouse gases with a greenhouse effect 6,500 to 9,200 times that of CO_2.

Polychlorinated biphenyl (PCB)
pp. 64, 74
An organic chlorinated compound first produced industrially in 1929 and thereafter used for a wide range of applications because of its stability, heat resistance, and performance as an insulator. In time it became clear that PCB, which takes a long time to break down, tends to accumulate in living tissue and cause long-term toxicity, and its manufacture, import, and use in new products was banned in 1974 under the Law Concerning the Examination and Regulation of Manufacture, etc., of Chemical Substances. In addition, the Act on Special Measures concerning Promotion of Proper Treatment of PCB Wastes, which came into force in July 2001, calls for detoxification treatment of PCB waste currently in storage by 2016.

Polychlorinated biphenyl (PCB) regional waste treatment program
p. 64
In 2001, the government enacted the Act on Special Measures concerning Promotion of Proper Treatment of PCB Wastes and revised the Japan Environment Corporation Law to establish a framework for the treatment by 2016 of the PCB waste in storage since production and use was banned in 1974. As part of this framework, the Japan Environment Corporation (name changed to Japan Environmental Safety Corporation in 2004) set up five regional treatment facilities in Hokkaido, Tokyo, Toyota, Osaka, and Kitakyushu, where PCB waste is now being treated.

Power producer and supplier (PPS)
pp. 1, 3
A business that provides electricity to meet a certain level of demand (in general, contract demand of at least 2,000 kW in a single service area served by extra-high voltage lines maintained by general electric utilities, excluding Okinawa Electric Power Co.; in the case of Okinawa Electric Power Co., contract demand of at least 20,000 kW in a single service area served by power lines carrying at least 60,000 volts), excluding the general electric utilities that maintain the transmission lines. A new category of business established under the revised Electricity Business Act of 1999.

Pulverized coal-fired (PCF) power
pp. 17, 28
Method of power generation whereby pulverized coal and air are placed in a boiler for combustion.

Renewable energy
pp. 13, 14, 27, 30, 46–48, 50, 53, 67
Energy derived from such natural phenomena as sunlight, water, wind, waves, and biomass, as opposed to such fossil fuels as coal and oil that exist in the earth in limited quantities.

River maintenance flow
p. 58
A minimum river flow determined for each river by considering all the conditions needed to restore or create a sound river environment, as by restoring habitat for fish, improving the scenery, etc. Established with the goal of minimizing problems caused by low water around hydroelectric power stations, as a tool for improving the river environment and restoring clean water flow.

Soot and dust
pp. 45, 46, 60, 76, 79, 81
The Air Pollution Control Act classifies particles that remain suspended in the atmosphere according to source. Soot and dust is that generated when matter is burned, general dust is that generated or dispersed when matter is broken up by mechanical treatment or from deposition of resultant particles, and particulate matter is that generated by the operation of motor vehicles.

Specially controlled industrial waste
p. 45
Explosive, toxic, or infectious industrial waste requiring strict controls under the Waste Management and Public Cleansing Act. Includes waste oil with a low flash point, medical waste, PCBs, asbestos, and sludge containing high concentrations of heavy metals.

Sulfur hexafluoride (SF_6)
pp. 43, 44, 55, 74, 75, 80
A compound of sulfur and fluorine produced industrially; SF_6 does not exist in nature. Because it is chemically stable and an excellent insulator, it is widely used in the electric industry as a gas insulator in circuit breakers and other devices. Its greenhouse effect is 23,900 times that of CO_2.

Sulfur oxides (SOx)
pp. 8, 30, 43–46, 51, 56, 60, 76, 79
General term for compounds made up of sulfur and oxygen, including sulfur dioxide (SO_2), sulfur trioxide (SO_3), and sulfuric acid mist (H_2SO_4). Sulfur oxides are generated from the sulfur content in coal and heavy oil when they are fired as fuel in factories and thermal power stations and are released into the atmosphere in exhaust gases. As a substance responsible for acid rain, they are a source of atmospheric pollution.

Sustainability Reporting Guidelines
p. 1
Set of guidelines adopted by the Global Reporting Initiative (GRI; an international nongovernmental organization involving the UN Environmental Programme, environmental groups, institutional investors, accountants' associations, and corporations from various countries) to standardize sustainability reports, i.e., company reports that cover not only environmental but also social and economic aspects of business activity from the standpoint of sustainable development.

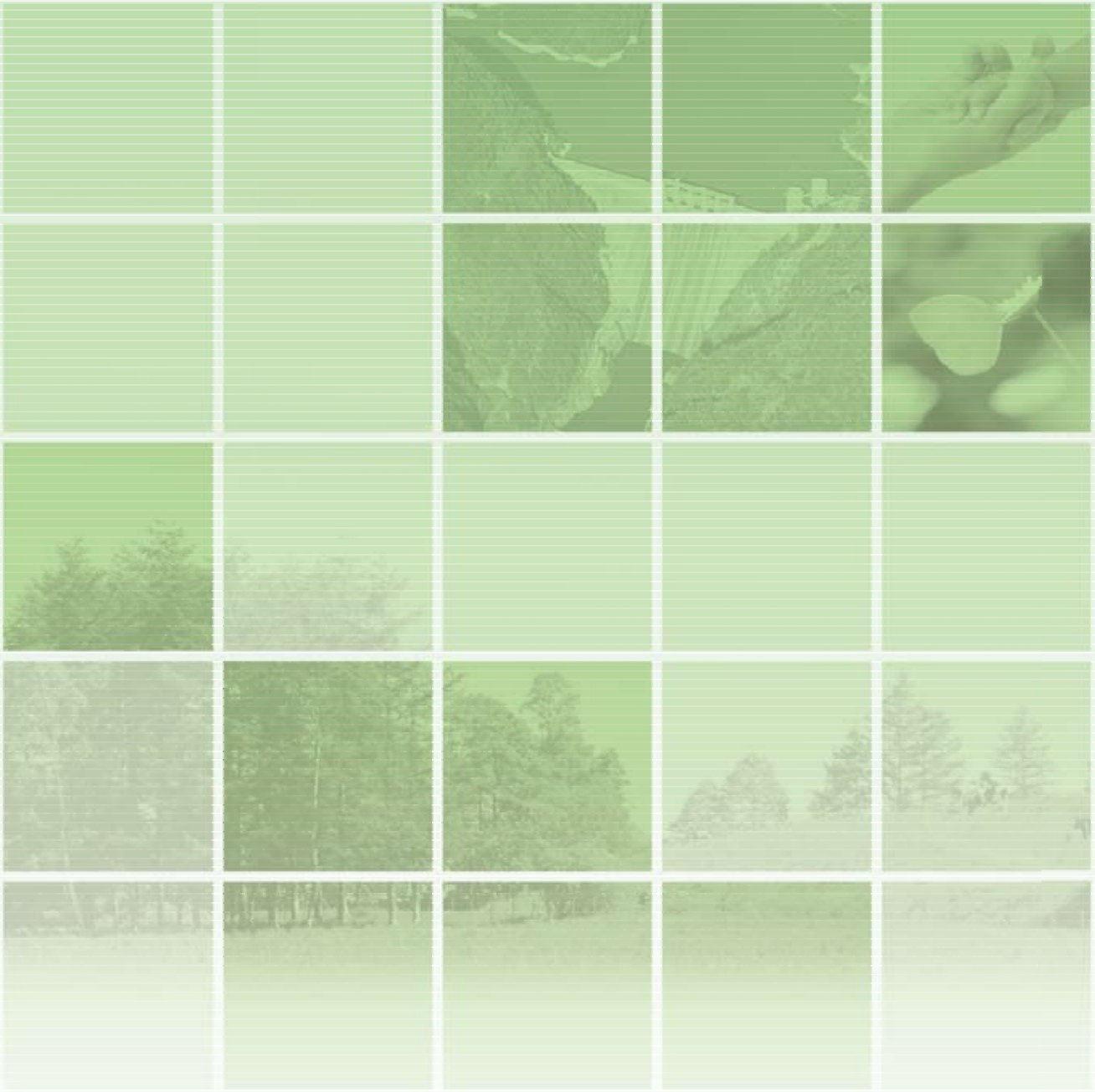
Sustainable development
pp. 1, 3–7, 19, 25, 27, 29–31, 34, 36, 43, 69, 70, 73, 80
The 1987 report of the World Commission on Environment and Development, Our Common Future, defines sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." The 1991 report Caring for the Earth, jointly compiled by the International Union for Conservation of Nature, the United Nations Environmental Programme, and the World Wide Fund for Nature, defines it as "improving the quality of people's lives while living within the carrying capacity of supporting ecosystems."

Thermal efficiency
pp. 8, 14, 15, 17, 43, 44, 46, 51, 52, 55, 74, 75, 79
For an electric power generating facility, the ratio of electric power generated (converted to thermal units) to heat energy input.

Thermal water discharge
p. 59
In thermal and nuclear power generation, the steam that powers the turbine is cooled and turned to water in a condenser so that it can be used again. In almost all Japanese power stations, seawater is used for cooling in the condensers. As the seawater passes through the condenser, its temperature rises. It is then returned to the ocean through the discharge outlet, at which point it is referred to as thermal water discharge.

Ultra super critical (USC)
pp. 13, 14, 15, 31, 51
A steam turbine technology that makes use of advanced steam conditions, beyond those used in conventional super critical turbines (pressure 246 kg/cm^2; temperature 566°C), to improve the efficiency of thermal power stations.

Wheeling
p. 1
The delivery by a power producer and supplier of power received from a third party to users via its own transmission lines and other equipment.



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