J-POWER Group

Harmonizing energy supply with the environment

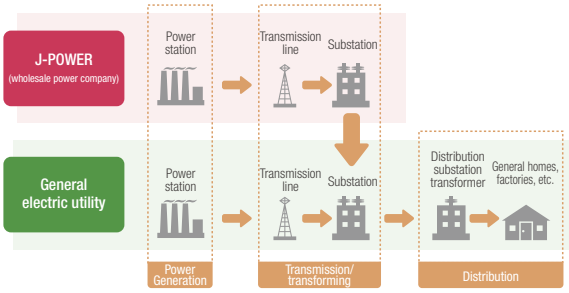
J-POWER Group SUSTAINABILITY REPORT 2014

Harmonizing Energy Supply with the Environment

J-POWER Group Overview (As of the end of March 2014)

Company name	Electric Power Development Co., Ltd.
Communication name	J-POWER
Date of incorporation	September 16, 1952
Headquarters address	6-15-1 Ginza, Chuo-ku, Tokyo, 104-8165 JAPAN
President	Masayoshi Kitamura
Capital	¥152.449 billion
Employees	J-POWER: 2,352
	J-POWER Group: 7,262
Business category	Electric Utility

How J-POWER Differs from General Electric Utilities



Overview of facilities

Wholesale power supply

● **Power generation facilities (output)**

Hydroelectric power stations	58	8.56 GW
Thermal power stations (including 1 geothermal)	8	8.39 GW
Total	66	16.95 GW

● **Transmission lines**		2,408 km
AC power transmission lines		2,141 km
DC power transmission lines		267 km
Substations (output)	4	4.30 million kVA
Frequency converter station (output)	1	0.3 GW
AC/DC converter stations (output)	4	2 GW

Other electricity businesses

(includes equity method affiliates, but percentage ownership is not taken into account.)

● **Power generation facilities (output)**

Wind farms	19	0.38 GW
Via independent power producers (IPP)	3	0.52 GW
Power generation for competitive market	3	0.32 GW
Total	25	1.22 GW

J-POWER Group

List of Main Group Companies (Percentage figures in parentheses are J-POWER equity shares)

Scope of environmental data: J-POWER and 25 domestic consolidated subsidiaries

Scope of domestic and overseas CO_2 emissions volume data: J-POWER, 12 domestic and 30 overseas electricity business companies

Electric power-related business

- JPec Co., Ltd. (100%)
- JPHYTEC Co., Ltd. (100%)
- JP Business Service Corporation (100%)
- J-POWER RESOURCES Co., Ltd. (100%)
- J-POWER EnTech, Inc. (100%)
- KEC Corporation (100%)
- J-Wind Service Co., Ltd. (100%)
- JP Design Co., Ltd. (100%)
- JP Enterprise Corporation (100%)
- Miyazaki Wood Pellet Co., Ltd. (98%)
- JM Activated Coke, Inc. (90%)

Electricity business

- Bay Side Energy Co., Ltd. (100%)
- Mihama Seaside Power Co., Ltd. (100%)
- Green Power Aso Co., Ltd. (100%)
- J-Wind Co., Ltd. (100%)
- Sarakitomanai Wind Power Co., Ltd. (100%)
- Minami Kyushu Wind Power Co., Ltd. (99%)
- ITOIGAWA POWER Inc. (80%)
- Nagasaki-Shikamachi Wind Power Co., Ltd. (70%)
- Nikaho-Kogen Wind Power Co., Ltd. (67%)
- Ichihara Power Co., Ltd. (60%)
- Tosa Power Inc. (45%)
- Genex Co., Ltd. (40%)

Other

- Kaihatsu Hiryo Co., Ltd. (100%)
- Japan Network Engineering Co., Ltd. (100%)
- OMUTA PLANT SERVICE Co., Ltd. (100%)
- Ecogenomics, Inc. (100%)

International business

- Gulf Cogeneration Co., Ltd.
- Nong Khae Cogeneration Co., Ltd.
- Samutprakarn Cogeneration Co., Ltd.
- EGCO Cogeneration Co., Ltd.
- ShanXi TianShi Power Generation Co., Ltd.
- China Resources Power (Hezhou) Co., Ltd
- Chiahui Power Corporation
- Tenaska Frontier Partners, Ltd.
- Elwood Energy, LLC
- Gulf Power Generation Co., Ltd.
- Green Country Energy, LLC
- Birchwood Power Partners, L.P.
- Pinelawn Power, LLC
- Equus Power I, LP
- Tenaska Virginia Partners, L.P.
- Edgewood Energy, LLC
- Shoreham Energy, LLC
- Orange Grove Energy, L.P.
- Gulf JP KP1 Co., Ltd.
- Gulf JP KP2 Co., Ltd.
- Gulf JP TLC Co., Ltd.
- Gulf JP NNK Co., Ltd.
- Gulf JP NLL Co., Ltd.
- Gulf JP CRN Co., Ltd.
- Gulf JP NK2 Co., Ltd.
- ROI-ET Green Co., Ltd
- CBK Power Co., Ltd
- Gulf Yala Green Co., Ltd.
- Shaanxi Hanjiang Investment & Development Co., Ltd
- Zajaczkowo Windfarm Sp. z o.o.

Contents

Editorial Policies

- The J-POWER Group operates under its corporate philosophy of playing our part for 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.
- To ensure objective credibility, this report has been independently assured by Ernst & Young Sustainability Co., Ltd. (For details, see p. 51)
- A questionnaire survey was conducted in order to gauge the opinions of readers concerning the FY 2013 Report. (A summary can be found on p. 52)
- The opinions of experts outside the company have been sought regarding issues and expectations in relation to the J-POWER Group. (See p. 53)

Period covered:
April 2013 - March 2014
(January - December 2013 for those companies with a January – December fiscal year. Also, some articles may include content from April 2014 or thereafter.)

Scope:
J-POWER and the J-POWER Group companies (consolidated subsidiaries)
Note: If other than above, this is indicated in the appropriate place.

Guidelines referred to:
Ministry of the Environment, Environmental Reporting Guidelines: FY 2012 Version
Global Reporting Initiative (GRI), Sustainability Reporting Guidelines* Ver3.0

Report issued since: 1998

Published in: September 2014

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 ma y cause results to differ from projections.

* **Sustainability Reporting Guidelines**
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.

This report is also available at the J-POWER's website as "J-POWER Group Sustainability Report 2014."

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

With the aim of "harmonizing energy supply with the environment" by putting the corporate philosophy into practice, we constantly take up the challenge of developing new technologies and aim for sustained growth as a global electric power company that contributes to a sustainable society.

The energy landscape in Japan has undergone major changes since the Great East Japan Earthquake in March 2011, and although the outlook for electric power supply and demand remains uncertain, in April of this year, the Cabinet conducted a complete review of energy strategies from before the earthquake disaster and adopted the Fourth Energy Basic Plan.

I believe that the positioning in this new basic plan of nuclear power and coal-fired power as key baseload power sources and adopting the reconstruction of electric power supply as its fundamental policy is in agreement with the direction of J-POWER Group's management.

We, the members of the J-POWER Group, will press ahead to put into practice our corporate philosophy of "meeting people's needs for energy without fail, and playing our part for the sustainable development of Japan and the rest of the world," however on March 28, 2014, a low-pressure turbine rotor from the Matsuura Thermal Power Station No. 2 Unit fell during a periodic inspection. This accident has had a substantial impact on electric power supply and demand, and I apologize to everyone for the inconvenience and concern that we have caused. We will return to the origins of our corporate philosophy of "meeting people's needs for energy without fail" and make further efforts to ensure the reliability of our facilities and restore confidence in the J-POWER Group. (See p. 18 for a report on the accident.)

The J-POWER Group is committed to reinforcing the business foundations that support the stable supply of electric power and making unceasing efforts to develop new power sources, thereby continuously enhancing our corporate value.

With regard to the reinforcement of business foundations, we will redouble our efforts to enhance technological capabilities and human resources and to reinforce foundations with a focus on ensuring the reliability of our facilities while responding to changes in the domestic electricity business in conjunction with reform of electric power systems. We will also contribute to stable electric power supplies in Japan and overseas through operation of coal-fired and hydroelectric power stations as well as backbone transmission lines and other electric power facilities and through the operation of the electricity business in various regions around the world.

With regard to development of new power supplies, we are conducting active development in Japan to follow the Takehara Thermal Power Station New Unit No. 1, which is currently under construction, and the Ohma Nuclear Power Station. By doing so, we will be able to respond to demands for stable electric power supplies over the medium to long term with baseload power supply at the core. Overseas, we are developing new projects primarily in Asia to achieve growth in the future.

As we address these issues, "Harmonizing energy supply with the environment," a subtitle of this report, is a concept that broadly underlies our activities.

In the area of coal-fired power generation, we are spreading the clean coal technologies at the world's highest

levels that we developed over many years to achieve both reductions in environmental impact and stable energy supplies. We are also constructing new higher-efficiency coal-fired power stations, replacing old plants, and developing technologies to reduce carbon emissions over the long term.

Measures to reduce carbon emissions include efforts to expand renewable energy, a valuable national asset. We are working to achieve both stable electric power supplies and lower CO_2 emissions by using diverse renewable energy sources including hydroelectric, wind, and geothermal power.

With regard to environmental, social, and corporate governance (ESG), interest in which has been rising recently, we are contributing to the continuous development of society by engaging in business operations that fulfill our corporate social responsibility, including reinforcing governance, ensuring strict compliance, maintaining safety, strengthening our crisis management and disaster responses, achieving mutual benefit with local communities, and conducting environmental management.

The J-POWER Group will carry out its missions of providing stable supply of electricity and harmonizing energy supply with the environment on even higher levels than in the past and will conscientiously address new challenges to contribute to the sustainable development of Japan and the world.

We thank everyone sincerely for their continuing support.

July 2014

President 北村雅良

Masayoshi Kitamura

J-POWER Group's Corporate Social Responsibility

In keeping with the J-POWER Group's corporate philosophy that "we will meet people's needs for energy without fail, and play our part for the sustainable development of Japan and the rest of the world," we are working to provide stable supply of electric power while preserving the environment.
It is this corporate philosophy that forms the basis of the J-POWER Group's social responsibility, and all Group members make every effort to conduct business based on this corporate philosophy while keeping it in mind at all times.
The J-POWER Corporate Conduct Rules set forth standards for carrying this out, and the J-POWER Group Environmental Management Vision Basic Policy is a statement of our action policies.

J-POWER Group Corporate Philosophy

(Established September 11, 1998)

Our Mission

We will meet people's needs for energy without fail,
and play our part for the sustainable development
of Japan and the rest of the world.

Our Credo

— We value integrity and pride, which drive everything we do.
— We pursue harmony with the environment, and thrive in the trust of communities where we live and work.
— We regard profits as the source of our growth, and share the fruits with the society.
— We refine our knowledge constantly, to be the pioneering leader in technologies and wisdom.
— We unite diverse personalities and passions as one, and dare create a better tomorrow.

J-POWER 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.

Basic Policy

(Revised on July 1, 2011)

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, the J-POWER Group will strive to bring together its expertise and its technologies in the utilization of a wide variety of energy sources, including fossil fuels, nuclear power, and renewable energies, to ensure the efficient and uninterrupted supply of the power essential to human life and economic activity.

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
Directing our most intensive efforts towards the provision of a stable energy supply, we will also steadily advance initiatives towards the realization of low-carbon technologies both domestically and internationally, and will contribute to the reduction of CO_2 emissions on a global scale.

To that end, we will work from mid- and long-term perspectives with technology as our central focus to realize a stable supply of energy and reduce CO_2 emissions domestically and internationally through measures including reducing CO_2 emissions from coal-fired power, conducting research and development of next-generation low-carbon technologies, and expanding CO_2-free power generation facilities. Our ultimate aim will be the achievement of zero emissions by means of measures including CO_2 capture and storage.

Efforts Relating to Local Environmental Issues
In addition to adopting measures to reduce the environmental impact of our operations, we will seek to operate in harmony with the local environments in which our facilities are located by working to save, recycle and reuse resources in order to limit the amount of waste that we produce.

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.

Direction of Management and Near-Term Managerial Policies of J-POWER Group

Japan's energy landscape has undergone extensive changes since the Great East Japan Earthquake and the outlook concerning electric power supply and demand remains uncertain, but in April of this year, the Cabinet conducted a complete review of energy strategies from before the earthquake disaster and adopted the Fourth Energy Basic Plan. The plan adopts new policies including reform of electric power systems and positioning nuclear power and coal-fired power as key baseload power sources.
In April 2014, the J-POWER Group announced its Direction of Management and Near-Term Managerial Policy as its policy for conducting business under this management environment, responding to management issues, and pursuing higher corporate value through contributions to the stable supply of electric power.
The figure below shows the relationship between J-POWER Group initiatives set forth in the Direction of Management and Near-Term Managerial Policy and the content of this report.

Issue

- Development of a competitive environment through reform of electric power systems
- Increase in problems in conjunction with aging and higher operating rates of existing facilities
- Uncertainty concerning developments in nuclear power policy
- Global environmental issues (restrictions on CO_2 emissions)

Basic Direction

- Stable operation of existing facilities including excellent hydroelectric and thermal power, as well as networks that support stable power supply in Japan
- Reinforce supply through development of new baseload power sources within Japan
- Steady progress on construction of the Ohma Nuclear Power Station while ensuring safety as an essential requirement
- Responding to global environmental issues through the active introduction of renewable energy
- Steady development in overseas power generation businesses

Reinforce business foundations that support the stable supply of electric power

Ensure the reliability of facilities

➡Domestic electric power business (pp. 17-22, 25)

Legal compliance, safety, and disaster prevention

➡Foundations of business operations (pp. 33-35, 38)
➡Environmental preservation, environmental management (pp. 29-32, 43-50)
➡Mutual benefit with local communities and societies (pp. 39-42)

Reinforcement of human resources and organizations

➡Recruiting and nurturing human resources and creating dynamic workplaces (pp. 36-38)

Responding to changes in the domestic power generation business in conjunction with reform of electric power systems

Continual cost structure improvements

Maintaining financial health

Developing domestic baseload electricity sources that contribute to the stability of electric power supply over the medium to long term

Replacing or upgrading existing coal-fired power facilities

➡Special Feature: Creating the Future of Coal-Fired Power Generation (pp. 7-12)

Steady progress on construction of the Ohma Nuclear Power Station

➡Report: The Ohma Nuclear Power Station (pp. 13-16)

Reducing environmental impact

Promoting high-efficiency and low-carbon coal-fired power stations (technological development)

➡Special Feature: Creating the Future of Coal-Fired Power Generation (pp. 7-12)

Expanding renewable energy (wind, geothermal, small-scale hydroelectric and biomass power)

➡Hydroelectric power (pp. 21-22)
➡Renewable energy (pp. 23-24)

Steady development in overseas power generation businesses

Steady progress on projects under construction and development of projects aimed at future growth in the overseas power generation business

➡Overseas business (pp. 26-28)

Strive to increase corporate value by responding to developments in the competitive environment and continuously contributing to the stable supply of electric power

Creating the Future of Coal-Fired Power Generation

Developing Clean Coal Technologies at the World's Highest Levels

Coal-fired power generation accounts for about 40% of electric power supplies worldwide and about 30% in Japan, and use of coal-fired power generation is expected to grow, particularly in Asia, where power demand is rising in conjunction with economic growth. In Japan, the new Energy Basic Plan adopted by the Cabinet in April 2014 positions coal-fired power generation as an important baseload power source that offers stable supplies and outstanding economy. Replacement of existing facilities and construction of new power plants with state-of-the-art technologies as well as the development of new technologies for controlling CO_2 emissions are being promoted, and policies for the overseas development of cutting-edge higher-efficiency coal-fired power generation are being carried out.

The J-POWER Group has continuously developed, introduced, and operated clean coal technology for coal-fired power generation for a half century in Japan and is working to transfer cutting-edge technology and put it into widespread application overseas.

This feature presents information on our contributions to stable energy supplies through the introduction of ultra-supercritical (USC) technologies at the world's highest levels at new higher-efficiency coal-fired power stations and the J-POWER Group's efforts to address the issue of global warming with a focus on research and development of clean coal technologies.

The entire J-POWER Group is working together with the aim of creating clean coal technologies at the world's highest levels in order to make the concept of harmonizing energy supply with the environment a reality in Japan and around the world.

Executive Managing Director
Hitoshi Murayama

Reducing CO_2 emissions from coal-fired power (pp. 8-10)

- Advance Replacement Plan
- Maintain high operating efficiency and reduce CO_2 emissions at existing thermal power plants
- Transfer and promote the widespread application of clean coal technologies overseas

Conducting research and development of next-generation low-carbon technologies (pp. 11-12)

- Implementation of the Osaki CoolGen Project
- Proceed with development of storage (CCS) technologies

Making efforts to reduce CO_2 Emissions

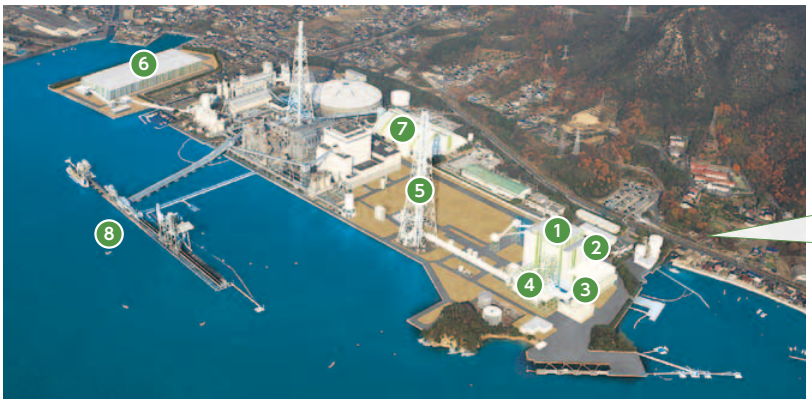
Expanding CO_2-free power generation facilities

- Measures under the Ohma Nuclear Power Station Plan (pp. 13-16)
- Expand use of renewable energies (pp. 21-24)

Takehara Thermal Power Station Replacement Plan: Pursuing the World's Highest Levels as USC Technology

The J-POWER Group is carrying out a plan to replace Takehara Thermal Power Station Units No. 1 (250 MW) and No. 2 (350 MW), which went into operation some 40 years ago, with a New Unit No. 1 (600 MW). The environmental assessment procedures have been completed, and construction began in March 2014, with operations scheduled to begin in 2020.

By introducing the latest power generation technologies and environmental pollution control equipment, we will create a coal-fired power station with the world's highest-level ultra-supercritical (USC) technologies.



Rendering of completed Takehara Thermal Power Station Replacement Project (Hiroshima Prefecture)

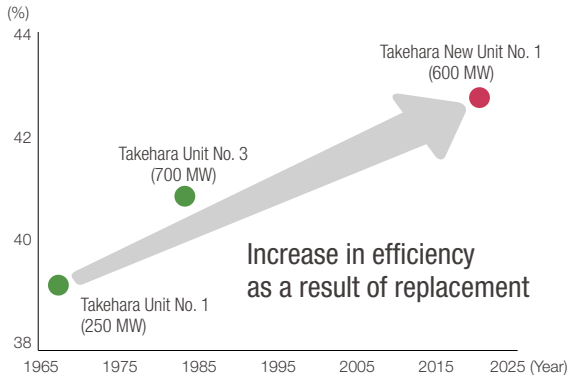
New Unit No. 1 Facilities

1. Boiler Building
2. Flue-gas denitrification system
3. Electrostatic precipitator
4. Flue-gas desulfurization system
5. Chimney stack
6. New indoor coal yard
7. Existing indoor coal yard
8. New Unit No. 1 and Unit No. 3 coal unloading and transport units

World's Most Efficient Power Generation Technologies

The new Unit No. 1 will produce steam conditions at the world's highest level and will be one of Japan's most efficient power stations. Raising power generation efficiency will reduce the consumption of coal, the station's energy source, making it possible to curtail CO_2 emissions and substantially reduce carbon.

Figure 1. **Comparison of Power Generation Efficiency after Replacement of the Takehara Station (at generation point, HHV)** * See note on p. 9.



Contribution to Stable Electric Power Supply

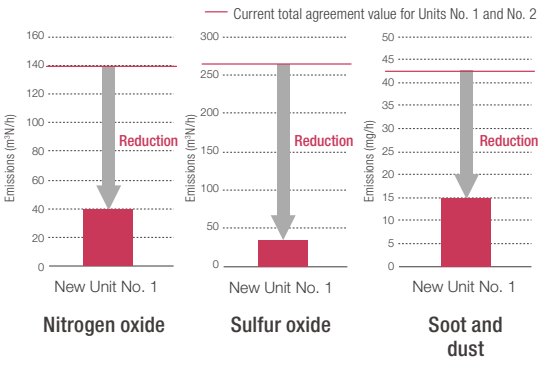
We are enhancing our role as a baseload power source that provides stable energy supplies through increases in energy efficiency achieved by replacing aging facilities with new facilities.

To minimize the power supply suspension period resulting from the replacement construction, we introduced a build and scrap construction method whereby Units No. 1 and No. 2 will be removed after construction of New Unit No. 1.

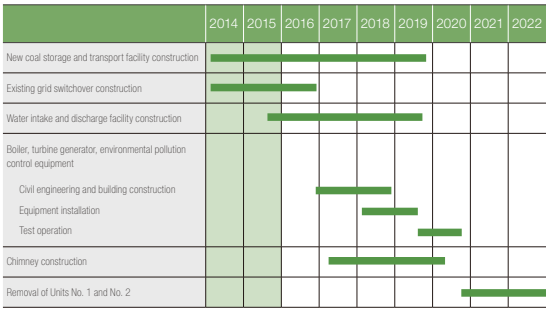
Clean Environmental Technology at the World's Highest Level

New Unit No. 1 will be equipped with the latest flue-gas denitrification system, flue-gas desulfurization system, and electrostatic precipitator, greatly reducing emissions of nitrogen oxides (NOx), sulfur oxides (SOx), soot and dust (see Figure 2). The Isogo Thermal Power Station, which is already equipped with similar equipment, boasts emissions that are extremely low compared to other thermal power plants in Europe, the U.S., and Japan (see p. 9).

Figure 2. **Comparison of Emissions Agreement Values of Current Takehara Units No. 1 and No. 2 and New Unit No. 1**



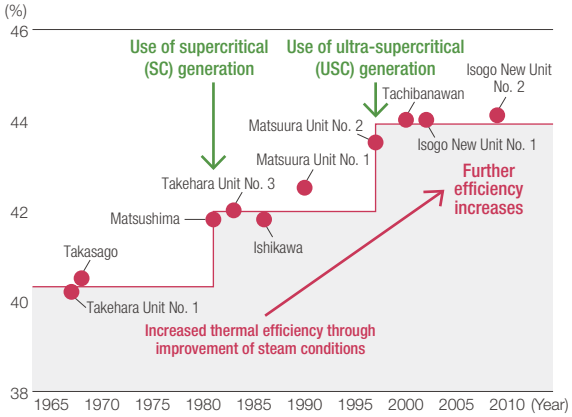
Main Construction Processes



Cutting Carbon Emissions

Even since the J-POWER Group started operating the Matsushima Thermal Power Station using imported coal, a first in Japan, in 1981, we have developed a number of large-scale thermal power stations using imported coal while improving power generation efficiency and reducing carbon emissions by enhancing steam conditions and increasing station size.

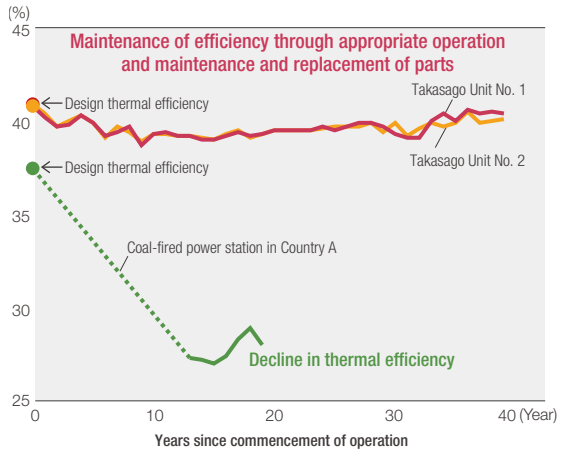
History of improvements in generating efficiency of J-POWER coal-fired power stations (at generation point, LHV) * See note on p. 9.



Maintaining High-Efficiency Operation

The J-POWER Group's coal-fired power stations play an important role as economical and stable baseload power supplies. Thermal efficiency declines as generating facilities age. Operating management and facility updates make it possible to continue operating with high levels of thermal efficiency. One example of this is the Takasago Thermal Power Station, which even now, maintains nearly the same power generation efficiency more than 40 years after it began operating.

Changes in thermal efficiency of Takasago Thermal Power Station (at generation point, LHV) * See note on p. 9.



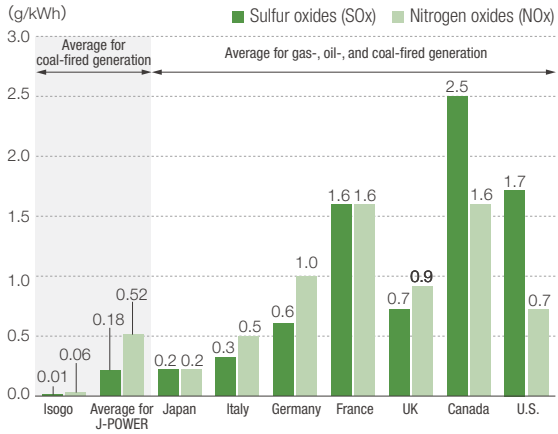
Implementation of Replacement Plans

The replacement of aging power stations leads to higher power generation efficiency and environmental preservation through the introduction of the latest technologies.

The Isogo Thermal Power Station, which underwent replacement, now has the latest ultra-supercritical (USC) generating technologies and boasts power generation efficiency at the world's highest levels. Sulfur oxide, nitrogen oxide, soot and dust have been reduced to levels far below those of thermal power stations in other leading developed countries, becoming the world's cleanest coal-fired power station.

The J-POWER Group plans to follow replacement of the Isogo Thermal Power Station and the Takehara Thermal Power Station, construction for which has already begun, with further measures to replace aging coal-fired power stations.

International Comparison of SOx and NOx Emissions Intensity for Thermal Generation



Overseas: Emissions volume: OECD StatExtracts Complete Databases Available Via OECD's Library
Volume of power generated: IEA Energy Balances of OECD Countries (2012)
Japan: Materials published by The Federation of Electric Power Companies of Japan
(10 electric power company and J-POWER)
Figures for Isogo and J-POWER are formulated from results for 2013

Isogo Thermal Power Station (Yokohama City)

* At generation point: the power generation efficiency calculated by using the amount of electric power at the point of generation (amount of electric power at the time of generation by the generator).
* At transmission point: the power generation efficiency calculated by using the amount of electric power at the point of transmission (amount of electric power at point of generation minus internal power (power used in the generation process)).

Seeking Further Reductions in Carbon Emissions

In fiscal 2013, the J-POWER Group's electric power business in Japan produced approximately 47.84 million t-CO_2 (the domestic and overseas electric power business produced approximately 56.33 million t-CO_2), a year-on-year increase of approximately 0.6%. Electric power sold was approximately 65,100 GWh, about the same as the previous year, but the hydroelectric power station water flow rate fell, and as a result, thermal power stations were maintained at high operating rates. CO_2 emissions per unit of electric power sold remained flat at 0.74 kg-CO_2/kWh (emissions in the domestic and overseas electric power business were 0.68 kg-CO_2/kWh).

In consideration of the importance of global environmental issues, the J-POWER Group is working to maintain and improve high operating efficiency including the replacement of existing thermal power stations and is taking measures to introduce mixed combustion (combusting a different fuel with the coal boilers) at coal-fired power stations by using biomass fuels, a renewable energy source that has recently been attracting attention (see p.24).

See pages 11 and 12 for further information on high-efficiency power generation such as advanced ultra-supercritical (A-USC) generation, integrated coal gasification combined-cycle (IGCC), integrated coal gasification fuel cell (IGFC), and other technologies and research and development of next-generation technologies such as CO_2 capture and storage (CCS), which is expected to greatly reduce CO_2 emissions.

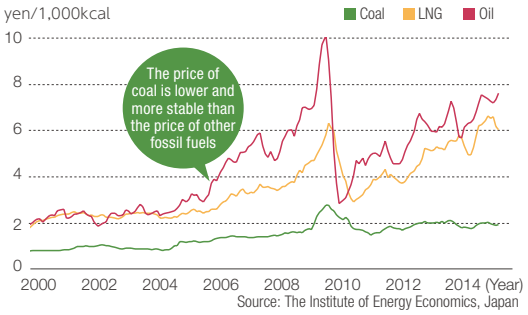
Coal-Fired Power Generation and Clean Coal Technologies Needed Around the World

Coal-Fired Power Generation Used Globally

Compared to oil and natural gas, which are also fossil fuels, coal is lower in cost and economically more efficient (see Fig. 1); has more abundant reserves; and is distributed widely around the world, so that it is also superior in terms of energy security.

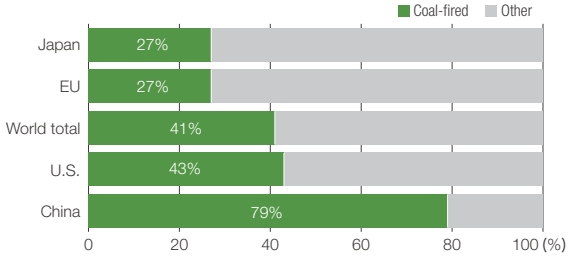
For these reasons, coal supports stable electric power supplies in many countries as a primary electric power generating fuel, and coal-fired power generation accounts for more than 40% of global electric power supplies (see Figure 2).

Figure 1. **Trends in Fuel Prices**



Source: The Institute of Energy Economics, Japan

Figure 2. **Ratio of coal-fired generation in total power generation (2011)**



Source: IEA World Energy Outlook 2013

Cutting CO_2 Emissions Using Clean Coal Technology

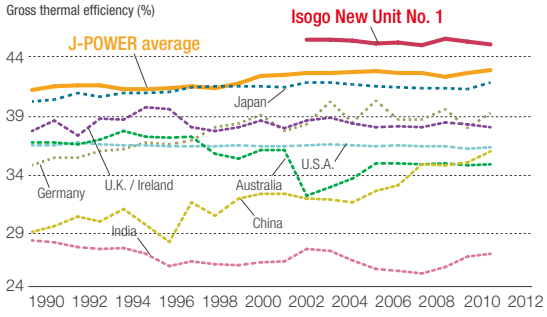
Global measures are needed to respond to the issue of global warming caused by CO_2 and other greenhouse gases generated from the combustion of coal and other fossil fuels.

Coal-fired power generation accounts for the majority of electric power supply in China, India, Indonesia, and other areas of Asia where demand for electric power is expected to remain robust in the future, and curtailing CO_2 emissions and coal consumption has become an important issue.

If the power generation efficiency of the J-POWER Isogo Thermal Power Station, which is at the world's highest levels (see Figure 3), were achieved at all coal-fired power stations in China, India, and the United States, which currently account for about 50% of global CO_2 emissions, we estimate that CO_2 emissions would be cut by approximately 1.47 billion t-CO_2, which is more than Japan's total annual emissions.

Transferring USC and other clean coal technologies that were developed and put into use in Japan to countries around the world and contributing to the reduction of global greenhouse gas emissions is positioned as a core policy in the Energy Basic Plan, and the J-POWER Group is taking active measures to support this policy.

Figure 3. **Comparison of thermal efficiency of coal-fired power around the world (at generation point, LHV)** * See note on p. 9.

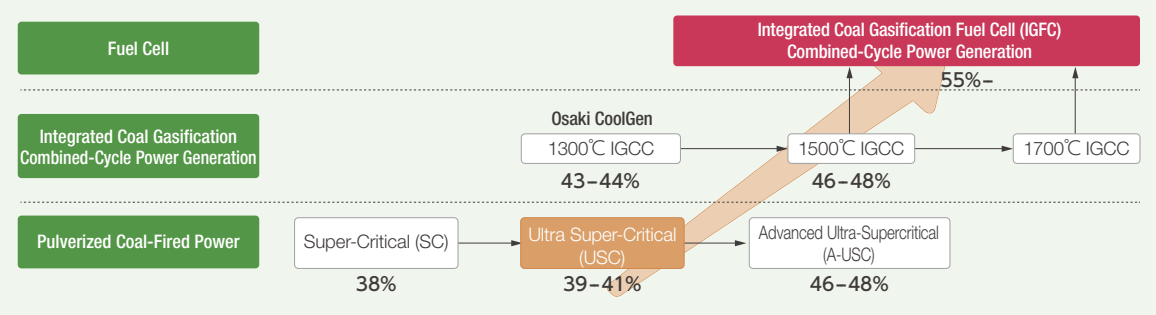


Source: Compiled from Ecofys International Comparison of Fossil Power Efficiency and CO_2 intensity Update 2013

Research and Development of Next-Generation Low-Carbon Technologies: For the Sake of the Earth's Future

The J-POWER Group is pursuing cutting-edge clean coal technologies and employing USC power generation at the world's highest levels, and by conducting further research and development, we are promoting additional reductions in carbon from coal-fired power. We are committed to continuing active research and development in Japan and overseas on next-generation, higher-efficiency coal-fired power generation that can reduce CO_2 emissions through even higher power generation efficiency, CCS to capture and store CO_2 produced by power generation so it is not released into the atmosphere, and other technologies.

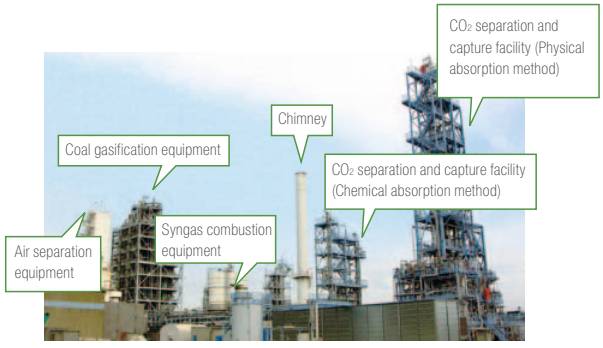
Thermal Efficiency Improvement by Technical Development (at transmission point, HHV) * See note on p. 9.



Higher-Efficiency Coal-Fired Power Generation Technologies

The higher-efficiency coal-fired power generation technologies on which the J-POWER Group is conducting R&D include integrated coal gasification combined-cycle (IGCC) power generation, which combines conversion of coal into a flammable gas for combustion in a gas turbine with a steam turbine that uses the waste heat; integrated coal gasification fuel cell (IGFC) combined-cycle power generation, which adds triple-combined-cycle generation to fuel cell power generation using IGCC; and advanced ultra-supercritical power generation, which improves USC steam conditions even further.

R&D on IGCC is the most advanced, and trial operations at a pilot plant facility were conducted for more than 10 years starting in 2002 under the EAGLE Project in collaboration with the New Energy and Industrial Technology Development Organization (NEDO) (the project ended in June 2014). The knowledge and results obtained from the project will be used, and the technology is entering the testing phase under the Osaki CoolGen Project.



External view of EAGLE Pilot Plant test facility (Kitakyushu City)

The EAGLE Project tested a physical collection method and a chemical collection method for separating and collecting CO_2, and information was gained on the properties of each.

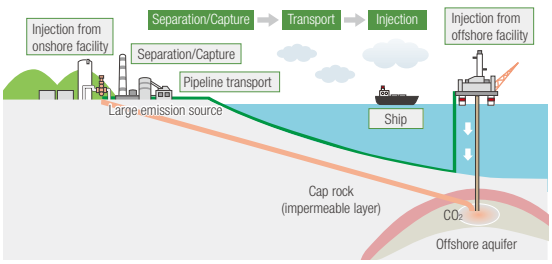
CO_2 Capture and Storage (CCS) Technology

CO_2 capture and storage (CCS) separates and collects CO_2 produced from the combustion of coal and other fossil fuels without releasing it into the atmosphere and transports the CO_2 for storage deep in the earth. R&D on CCS is being conducted around the world as a promising technology for achieving substantial reductions in CO_2 emissions.

At this time, there are issues of lower power generation efficiency during the separation and collection phase as well as securing suitable sites and creating infrastructure and legal systems in the transport and storage phases, and as a result, CCS is not in practical use anywhere in the world.

The J-POWER Group plans to continue conducting research and development on separation and collection as a part of the Osaki CoolGen Project by using the results from the EAGLE Project. In addition, we are participating in the Callide Oxyfuel Combustion Project, a joint Japanese-Australian public and private sector initiative that is conducting trials of an integrated separation, collection, and storage system in Australia.

CCS Concept



Osaki CoolGen Project: Seeking IGCC at the World's Highest Levels

In order to curtail CO_2 emissions from coal-fired power generation beyond what is possible with current clean coal technologies, the Energy Basic Plan expresses expectations for development and application of next-generation, higher-efficiency coal-fired power generation technologies such as IGCC as well as research and development in the pursuit of application of CCS technologies.

The J-POWER Group is conducting the Osaki CoolGen Project in collaboration with Chugoku Electric Power Co., Inc. to test these advanced clean coal technologies. For the project, an oxygen-blown IGCC trial power station with output of 166 MW is being built at the Chugoku Electric Power Osaki Power Station, and tests will be conducted in three phases.

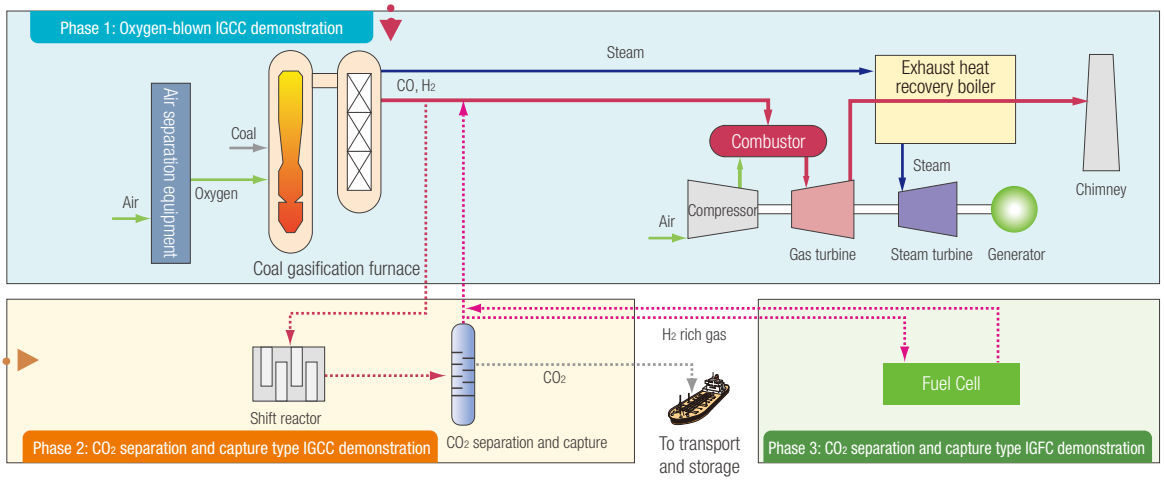
Osaki CoolGen Project Schedule

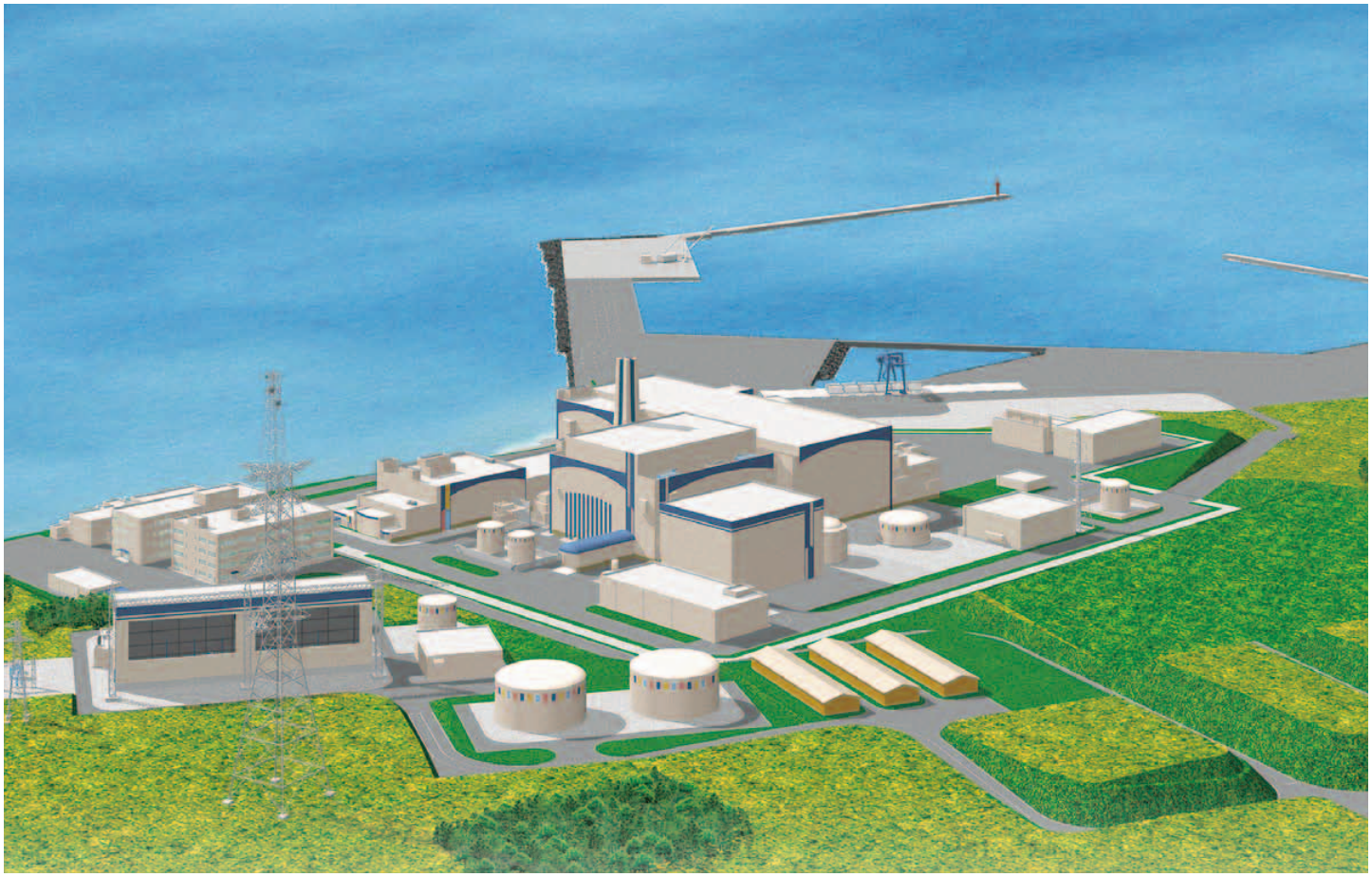
(Fiscal Year)

		2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Phase 1	Oxygen-blown IGCC demonstration	Design, manufacture, installation					Proving trials				
Phase 2	CO_2 separation and capture type IGCC demonstration					Design, manufacture, installation			Proving trials		
Phase 3	CO_2 separation and capture type IGFC demonstration							Design, manufacture, installation		Proving trials	

Construction for the start of the first phase of testing in the 2016 fiscal year began in March 2013, and basic construction of the principal facilities has entered the busiest period. J-POWER and Chugoku Electric Power established Osaki CoolGen Corporation in 2009 to carry out the project. The "CoolGen" name is derived from the Cool Gen Plan proposed to carry out the Japanese government's Cool Earth-Innovative Energy Technology Program and was created from "cool" and "generation."

Planned Completion of Testing Facilities (Hiroshima Prefecture)





Report

The Ohma Nuclear Power Station
Seeking Trusted Power Stations

Introduction

The J-POWER Group is engaged in construction of the Ohma Nuclear Power Station in Ohma-machi, Shimokita-gun, Aomori Prefecture.

From the perspective of steady energy supply, nuclear power is an essential and indispensable source of energy for our island country with poor natural resources. It is also a source of energy that provides an effective countermeasure to global warming.

We consider it is necessary for nuclear power to continue fulfilling a constant role in Japan's electric power supply because nuclear power can be an effective source of energy with adequate safety management measures, needless to say, should be taken.

We have proceeded with the project of Ohma Nuclear Power Station in accordance with national government policy, with the understanding and cooperation of Aomori Prefecture and the local residents of Ohma-machi, Kazamaura-mura, and Sai-mura, and with the necessary permits and approvals in hand. It is a key power station with high safety and reliability achieved by leading-edge technology, and it will perform a crucial role both in the provision of a stable supply of electric power and in the provision of nuclear fuel cycle.

The J-POWER Group has taken the lessons of the accident at Fukushima Daiichi Nuclear Power Station to heart. We will proceed with steady implementation of safety measures and practices in light of the new regulatory standards, making the fullest use of the experiences and the latest technical findings. In this way, we will build power station that earns the trust of local and regional communities.

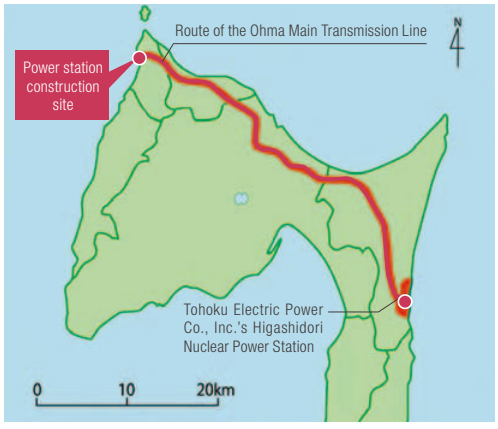


Diagram of Ohma Nuclear Power Station position (Aomori Prefecture)

Panoramic view of construction work on Ohma Nuclear Power Station (Aomori Prefecture)

Pursuing Safety Improvements

J-POWER is investigating safety enhancement measures including tsunami countermeasures, ensuring power supplies, ensuring heat removal functions, and severe accident responses at the Ohma Nuclear Power Station based on the new regulatory standards issued by the Nuclear Regulatory Authority. It is our policy to implement necessary safety measures during the construction stage. In line with this policy, we are carefully proceeding with construction while keeping in mind responses to the new safety standards within the scope of the nuclear power reactor license obtained in April 2008.

We are autonomously taking steps to improve our data on geology and tectonics in light of recent trends. Ever since we obtained permission to build this nuclear reactor in April 2008, therefore, we have been using the latest technologies and methods as needed to conduct marine terrace surface surveys,*1 airborne gravity surveys,*2 marine sonic prospecting, studies of tsunami deposits, three-dimensional subsurface structure surveys, and geological surveys of the plant site and neighboring areas.

We will continue to acquire information relating to the earthquake resistance and tsunami safety of the power station while investigating safety enhancement measures to achieve even higher levels of safety. We will also make every effort to increase trust in Ohma Nuclear Power Station.

*1 Marine Terrace Surface Survey:
Study of the altitude distribution of the surface of marine terraces and the year in which it was formed, with the purpose of ascertaining such matters as the amount of upheaval that has occurred since that time.

*2 Airborne Gravity Survey:
One method of geophysical survey that uses a helicopter to make measurements of gravity. The measurement results are then used to extrapolate subsurface density distribution.

Preparation Status of Application for the Alteration of Establishment

J-POWER is diligently conducting design operations relating to safety enhancement measures to address external accidents such as tsunami and earthquakes as well as tornadoes, volcanic eruptions, and fires in accordance with the new safety standards and the latest knowledge. We are also conducting design operations and assessments of effectiveness concerning countermeasures for the occurrence of severe accidents. In addition, we plan to submit a nuclear reactor installation modification license application in the future for specified severe accident response facilities*3 and reinforcement of permanent DC power source facilities, which are eligible for five-year interim measures.

Plan Overview

Location		Ohma-machi, Shimokita-gun, Aomori Prefecture
Construction begins		May 2008
Commercial operation begins		To be determined
Output		1.383 GW
Reactor	Type	Advanced boiling water reactor (ABWR)
	Fuel: Type	Enriched uranium and uranium-plutonium mixed oxide (MOX)
	Fuel assembly	872 elements

*3 Specified severe accident response facilities:
Facilities to restrict abnormal external emission of radioactive material due to large aircraft collision or terrorism.

Harmony with the Local Community

At the Ohma Nuclear Power Station, we are pursuing a variety of initiatives in order to ensure the understanding and trust of every member of the local community.

J-POWER issues newsletters for local residents and reports on local issues as well building plans, construction status, safety enhancement measures, and other matters.

We also participate in local festivals and other events and cooperate with schools to conduct geological formation field trips for elementary school students and junior high school students and energy education for high school students, providing continuous support for education of future generations.

In the 2013 fiscal year, we conducted a total of six geological formation field trips that included explanations based on geological formation and rock formation sample observation and testing, observation of nearby geological formations, and collection of rock samples. Going forward, we will continue to conduct a wide range of activities while placing particular importance on our relationships with local residents.

A geological formation field trip

Measures to Reinforce Safety for Ohma Nuclear Power Station (Overview)

For the Ohma Nuclear Power Plant, in addition to previous safety enhancement measures, we are complying with the New Safety Standard for Nuclear Power Stations (effective July 8, 2013), and implementing further safety enhancement measures to further improve safety of the power plant.

We are reviewing active implementation of superior safety technologies and will appropriately incorporate necessary measures towards building a safe power plant.

1. Tsunami Assessment and Emergency Power Supply

(1) Tsunami Assessment

Based on historical records and hypothetical tsunami generating mechanisms, it is estimated that the maximum, height of a potential tsunami is T.P. +4.4 m (according to application document for establishment permission in 2008), and the facilities necessary for cooling the nuclear reactor are to be installed in major structure (reactor building, turbine building, etc.) built on site with an elevation of T.P. +12 m.

(2) Emergency Power Supply

Three emergency diesel engine generators are to be installed the reactor building at a site with an elevation of T.P. +12 m. In addition, there are two 500 kV lines and a 66 kV line capable of supplying electric power to emergency facilities.

2. Safety Enhancement Measures

In addition to the plan in 1, above, the following measures will be implemented during construction.

◯Design Basis

The following countermeasures are to be implemented to increase reliability of the nuclear power plant while ensuring functionality of the safety systems against external phenomena such as tornados, volcanic eruptions and fires as well as tsunamis and earthquakes.

(1) Facility protection in the case of a tsunami (installation of seawall, waterproofing modification of doors in exterior walls, height extension of oil fences and improvement in the watertightness of important rooms for safety purposes)

(2) Implementation of impact assessments of tornadoes and other natural phenomena on the nuclear power plant

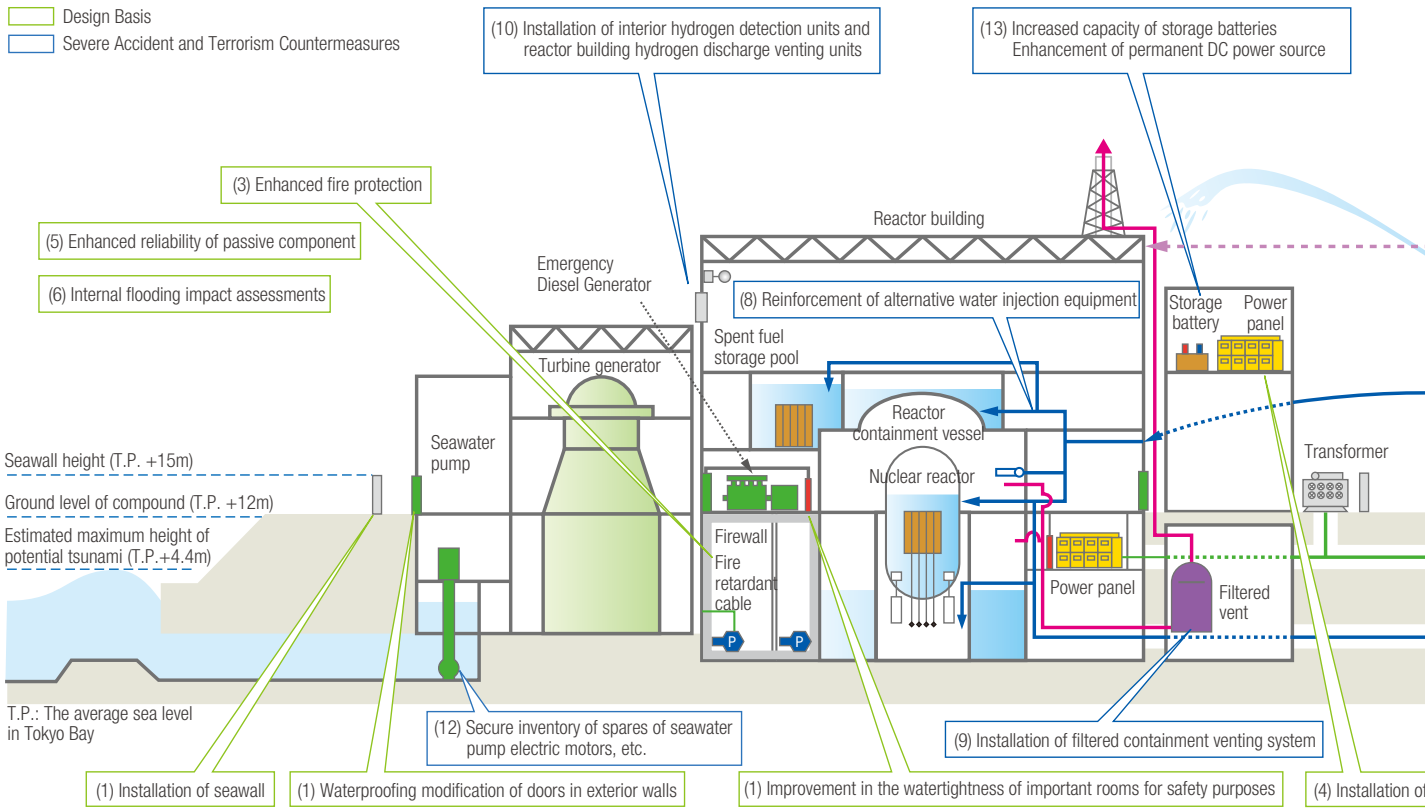
(3) Enhanced fire protection measures (use of fire retardant cables, installation of firewalls, and other measures)

(4) Installation of power panels on upper floor for locational dispersion

(5) Enhanced reliability of passive component that are crucial to safety

(6) Implementation of impact assessments of internal flooding on the safety system

Image of Measures to Reinforce Safety at Ohma Nuclear Power Station



◯Severe Accident and Terrorism Countermeasures

The following countermeasures are to be implemented to enable rapid response even in the case of a severe accident.

(7) Deployment of portable power pumps and fire engines for cooling the reactor, containment vessel and spent fuel storage pool

(8) Reinforcement of alternative water injection equipment for cooling the reactor, containment vessel and spent fuel storage pool

(9) Installation of filtered containment venting system*1 to prevent overpressurization on the containment vessel

(10) Installation of hydrogen detection units and hydrogen discharge venting units*2 to prevent hydrogen explosion at the reactor building

(11) Deployment of water spraying facilities to spray water on the reactor building and other facilities

(12) Secure inventory of spares of seawater pump electric motors, etc. and deployment of alternative seawater pumps and other equipments to ensure heat removal functionality for the reactor and containment vessel

(13) Deployment of power supply vehicles, installation of emergency power generators (fuel tanks and power cables), increased capacity of storage batteries and enhancement of permanent DC power source to secure power supply

(14) Installation of water storage tanks and reinforcement of water tanks to secure water source

(15) Installation of emergency response office to respond as necessary in an emergency

(16) Reinforcement of communications systems for making contact within and outside of the power plant in the event of an emergency

(17) Installation of materials and equipment warehouse, provision of high-level radiation protection suits and other materials and equipment, and deployment of heavy equipment for debris removal

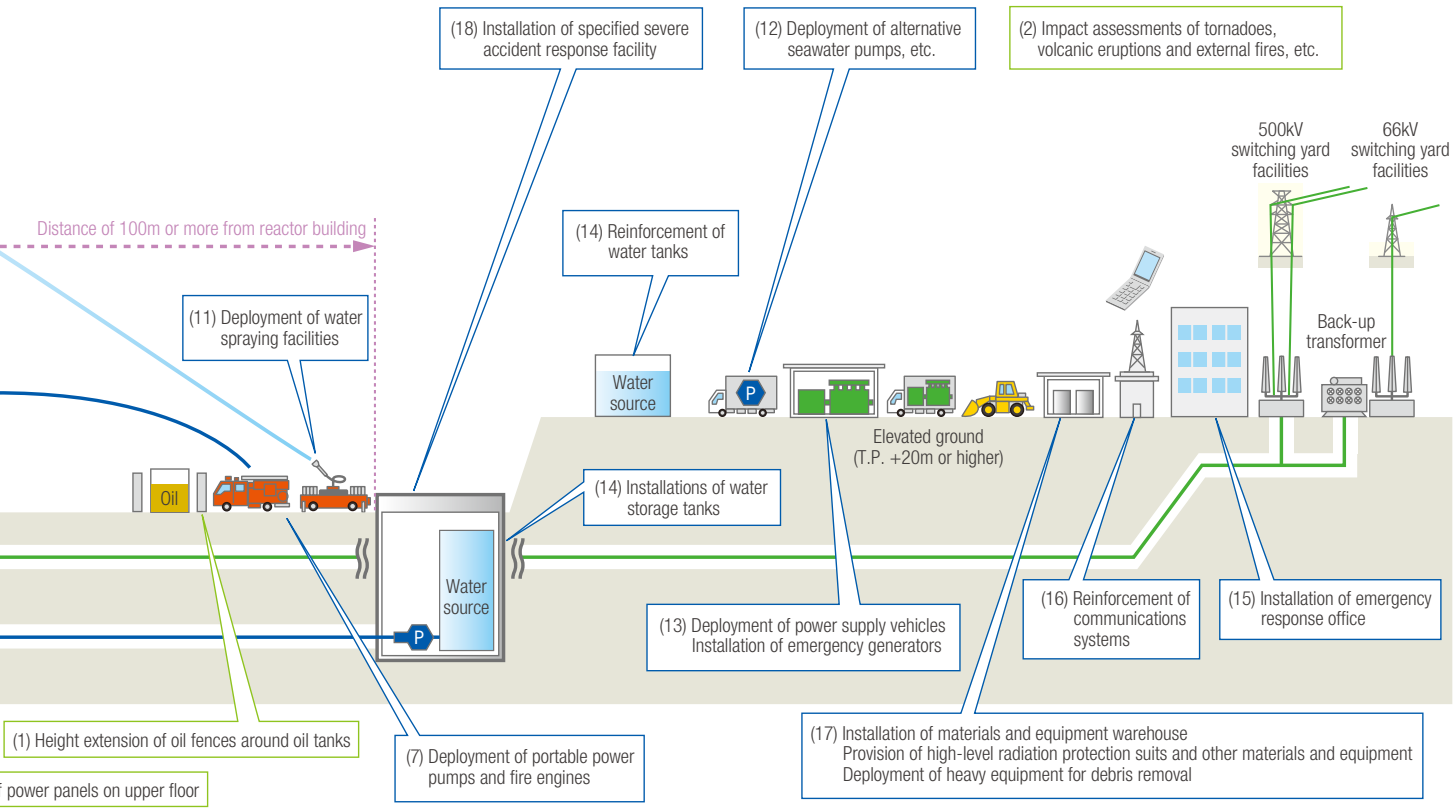
(18) Installation of specified severe accident response facility to respond to intentional crash of aircrafts and other such events

Aside from the above measures, we will be reinforcing links and collaboration between businesses operating in Aomori prefecture* to further ensure disaster prevention.

*1 **Filtered containment venting system:**
In the event that an excessive pressure increase occurs in the nuclear reactor containment vessel due to a major accident, this system expels the air in the containment vessel to the atmosphere in order to prevent damage to the containment vessel, and it passes the air through a filter to limit the amount of radioactive material released.

*2 **Hydrogen discharge venting units:**
In the event of reactor core damage or other such damage that causes hydrogen to leak inside the nuclear reactor building, this equipment prevents the explosion of hydrogen inside the building by quickly and reliably expelling the leaked and accumulated hydrogen outside the building.

* Tohoku Electric Power Company, Tokyo Electric Power Company, Japan Nuclear Fuel Limited, Recyclable-Fuel Storage Company and J-POWER



Measures for Stable Supply of Electricity and Environmental Preservation

The J-POWER Group operates power stations that it owns in Japan, engages in long-term wholesale power supply to electric power companies (general electric utilities) in various regions of the country, engages in the wheeling business using its own power transmission and substation facilities, conducts independent power producer (IPP) business, and supplies wholesale power-to-power producers and suppliers (PPS).

Based on the principle of achieving harmony between energy and the environment, the entire Group takes action to contribute to the stable supply of electricity throughout Japan through these business activities and to preserve the natural environment by minimizing the impact of its business activities.

Outlook for Electric Power Industry in Japan

Wholesale Power Supply Business and Wheeling Business

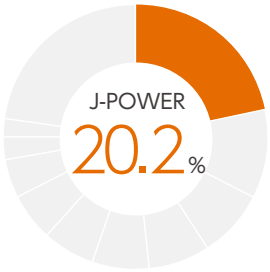
Thermal Power

Coal-Fired Power Stations Account for the Largest Share of Primary Baseload in Japan

Our seven locations throughout Japan have a total output of 8.37 GW, making our share of coal-fired power facilities the largest in the country. Electric power sold in the 2013 fiscal year was 54.3 billion kWh.

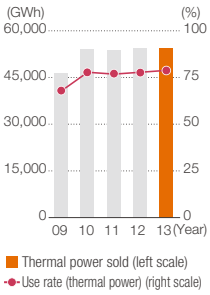
J-POWER's coal-fired power generating facilities are highly cost competitive compared to oil, LNG, and other fuels and are a key power supply for electricity demand baseload, and as a result are power supplies that offer high use rates and excellent economic efficiency.

J-POWER Share of Output from Japan's Coal-Fired Power Facilities (as of the end of March 2014)



Source: Based on Federation of Electric Power Companies, "Electric Power Industry Handbook" and Agency for Natural Resources and Energy, "Electric Power Statistics"

Thermal power: Electricity sold/use rate



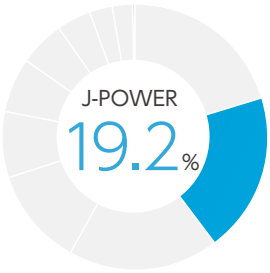
Hydroelectric power

Essential Power Source for Meeting Peak Demand

With 58 locations throughout Japan and a total output of 8.56 GW, we have the second-largest share of hydroelectric power facilities in the country. Electric power sold in the 2013 fiscal year was 8.8 billion kWh.

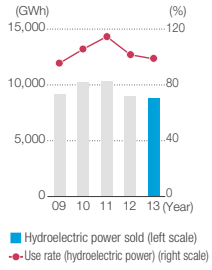
J-POWER's hydroelectric power facilities are valuable CO_2-free power sources that can respond quickly to changes in electricity demand. In addition, the facility output of each power station is high, so hydroelectric power facilities are used primarily as peak power supplies to respond to daily and seasonal changes in electricity demand, contributing to the stability of electricity supply and the grid in regions throughout Japan.

J-POWER Share of Output from Japan's Hydroelectric power Facilities (as of the end of March 2014)



Source: Agency for Natural Resources and Energy, "Electric Power Statistics"

Hydroelectric power: Electricity sold/use rate



Power Transmission, Substation (Wheeling), and Communications

Key Infrastructure Supporting Japan's Electric Power Grid

J-POWER owns approximately 2,400 km of backbone transmission lines including trunk lines that connect the different regions of Japan, four substations that supply power to major urban areas, four AC/DC conversion stations that provide interconnections within regions, and one frequency converter station that links eastern and western Japan, which use different frequencies. Our electric power security communication facilities include microwave radio circuits throughout Japan that extend over a total distance of approximately 5,900 km. These are extremely important facilities for comprehensive operation of Japan's electricity grid.

Other Electric Power Business

Developing Power Generation Businesses that Respond to Industry Liberalization and Support Low-Carbon Society Needs

In the wholesale power supply business, J-POWER has three IPP facilities with total capacity of 520 MW located in different areas of Japan and three facilities with total capacity of 320 MW used in the wholesale power supply business with PPSs located in different regions. We own 19 wind farms throughout Japan with a total capacity of 380 MW, giving us the number-two share of wind power generation capacity in Japan. All these businesses are operated through J-POWER subsidiaries or affiliates.

Report Incident Concerning the No. 2 Unit at the Matsuura Thermal Power Station (Fall of Low-Pressure Turbine Rotor)

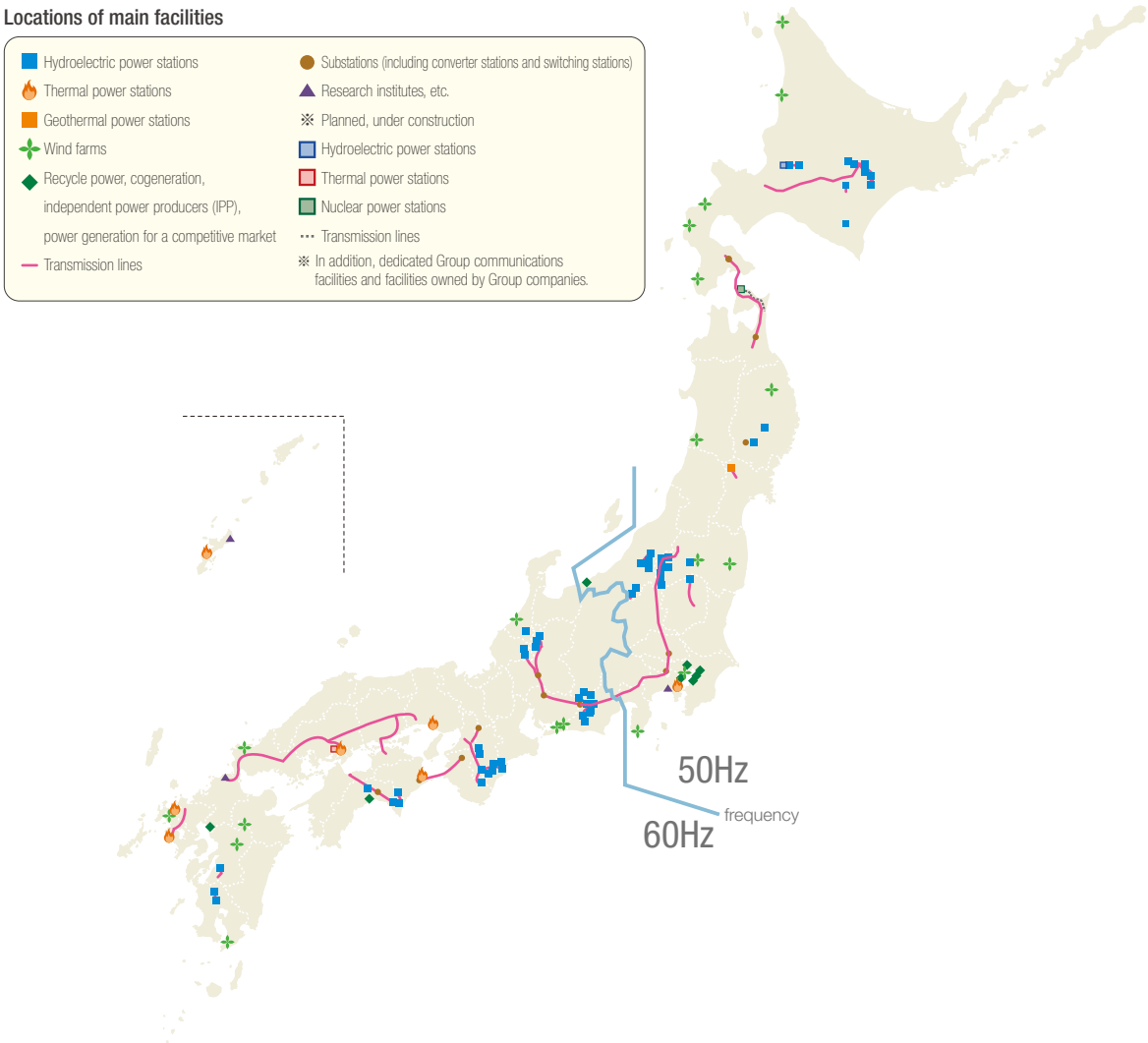
During a periodic inspection of the Matsuura Thermal Power Station No. 2 Unit (rated capacity: 1 GW; located in Matsuura City, Nagasaki Prefecture) on March 28, 2014, a low-pressure turbine rotor weighing approximately 100 tons that was suspended fell, causing damage. This incident had a significant impact on electricity supply, and J-POWER apologizes for the inconvenience and concern that it has caused to its customers and others.

Immediately after the incident occurred, a companywide task force headed by J-POWER's president was established to take action concerning the earliest possible restoration of operation and identification of the cause of the incident. Based on its investigations of an early restoration of operations, a plan that anticipates resumption of operations and full restoration at about the end of June 2015 by manufacturing a new low-pressure turbine rotor and provisional restoration through partial loading starting in about mid-August 2014 (with a capacity of approximately 400 MW) to supply power until full restoration can be achieved is being implemented (these details were announced May 29, 2014).

To identify the cause of the incident and prevent reoccurrence, J-POWER established an Expert Assessment Committee including outside experts to incorporate the opinions and verifications of the situation. The Committee is conducting an extensive investigation of the causes and will take measures to prevent reoccurrence.

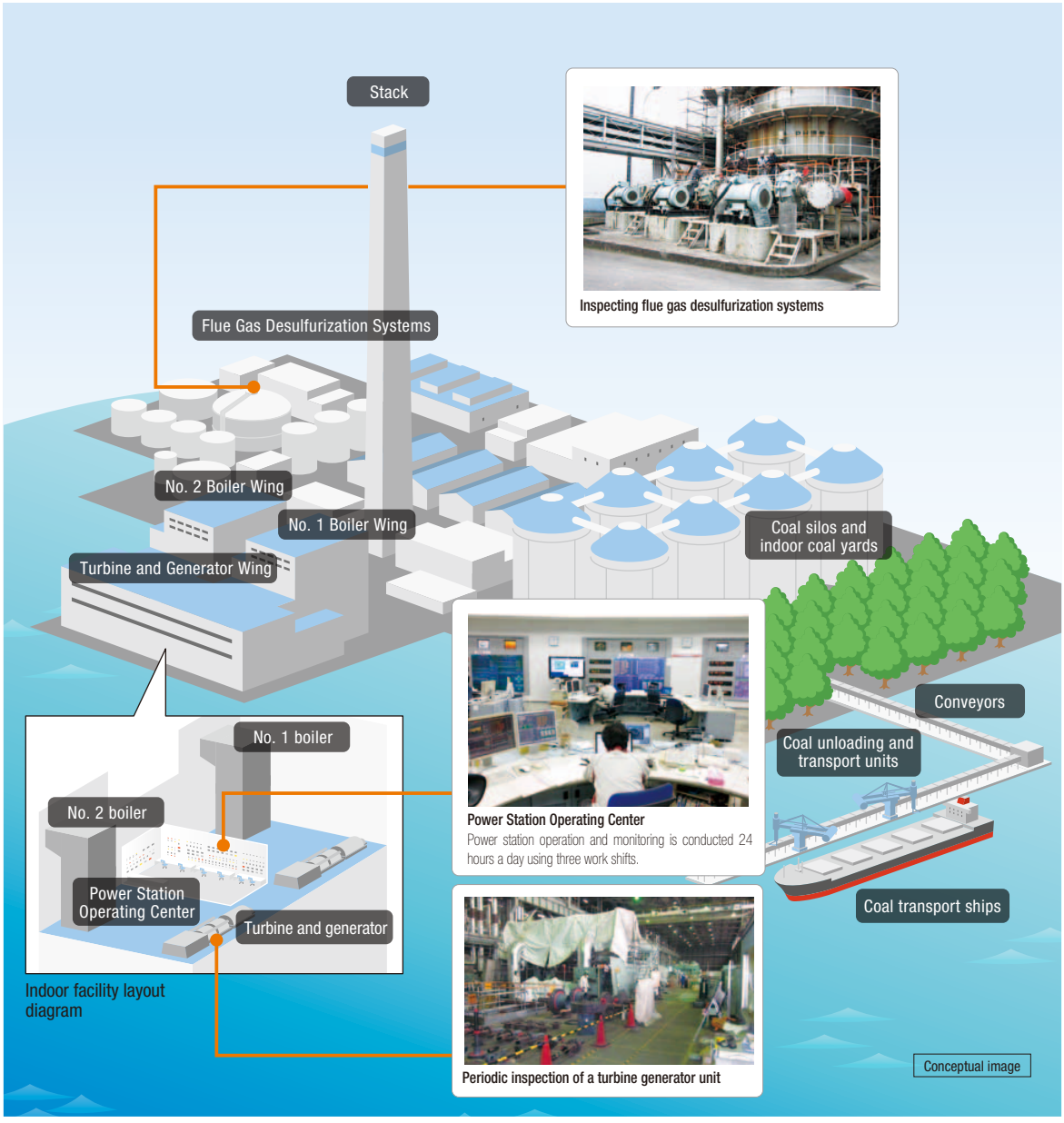
In consideration of the seriousness of this incident, the J-POWER Group will make every effort for the earliest possible restoration of full operation and will take additional measures to ensure the reliability of its facilities and recover the trust of its stakeholders.

Locations of main facilities



Thermal Power

The J-POWER Group's coal-fired power generating facilities maintain high use rates as economical and stable base power supplies. To achieve this, appropriate maintenance of generating facilities is reliably conducted and we make efforts to limit declines in thermal efficiency in conjunction with aging and the occurrence of problems with facilities and to maintain and enhance facility reliability.



Inspecting flue gas desulfurization systems

Power Station Operating Center
Power station operation and monitoring is conducted 24 hours a day using three work shifts.

Indoor facility layout diagram

Periodic inspection of a turbine generator unit

VOICE

Employee Attitudes

I work on operating the Tachibanawan Thermal Power Station (third shift). The power station operators conduct day-to-day operation and monitoring of the generating facilities and strive to maintain stable operation by quickly identifying any abnormalities in the equipment, taking responsive measures, and preventing shutdown of the power station by conducting on-site patrols. Despite these efforts, equipment problems can occur at any time of day or night. There are various causes of problems including aging equipment and natural disasters. Under these types of circumstances, operators must objectively assess the situation and make rapid and accurate responses. To do this, we engage in regular reporting, communication and consultations and maintain close communications among operators to improve teamwork. In addition to learning operations-related information, we use operations simulators to enhance operating skills. Going forward, we will continue to use occupational safety methods such as pointing and calling to ensure reliable operations, maintain strict compliance with environmental laws and regulations, and contribute to stable electric power supplies.

J-POWER Tachibanawan Thermal Power Station
Generating Group
Kiyoto Sugami

The Coal Value Chain

The J-POWER Group is involved in the entire value chain for coal, including procurement, transport, and receiving of the coal. We are building a global system that enables stable procurement of the coal we use in our coal-fired power stations.

Procurement

Coal Mine Project in Australia

The J-POWER Group began its participation in the Blair Athol Coal Mine, in the state of Queensland, in 1982. We have been investing in coal mining interests since that time, and as of the end of fiscal 2013, we own coal mining interests in the states of Queensland and New South Wales, Australia.

For the future, we will be scrutinizing trends in coal supply-and-demand balance and among competing companies for stable procurement of the coal as we examine new, cost-competitive projects, and as we pursue participation in new coal mine projects.

Clermont Coal Mine (Australia)

Transport

Stable Transport of Coal

The J-POWER Group uses approximately 21 million tons of coal per year. Transporting this coal to the various power stations requires 200 or more ship voyages per year. We will introduce dedicated vessels* and so on for this purpose as part of our measures to provide stability in the transport of coal.

JP CORAL

Receiving

Management of Coal at Power Stations

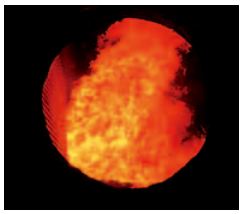
On-site at the power stations, the coal that has been received needs to be managed according to its particular characteristics. In order to control coal temperatures in the coal yard, we use infrared cameras and install water sprinkler systems in addition to enacting 24-hour systems of control.

Matsushima Thermal Power Station coal yard

Combustion

Creating Steam

Coal stored in the coal yard is finely ground into a powder by a coal pulverizer. The powdered coal is combusted by burners and water is heated in a boiler to generate high-temperature, high-pressure steam.



View inside a boiler

Power generation

Generating Electricity

The high-temperature, high-pressure steam spins a turbine. The high-speed turbine generates electricity by spinning a generator.

The turbine generator in the Isogo Thermal Power Station

Environmental preservation

Effective Use of Ash

The coal ash produced from burning coal is effectively used as a raw material in cement and other applications (see p. 31).

Fly ash mortar

* **Dedicated Vessel:** A ship that is built and owned by a shipping company for the special purpose of carrying cargo exclusively under a long-term contract.

VOICE

Ash Processing Facility Inspection and Maintenance

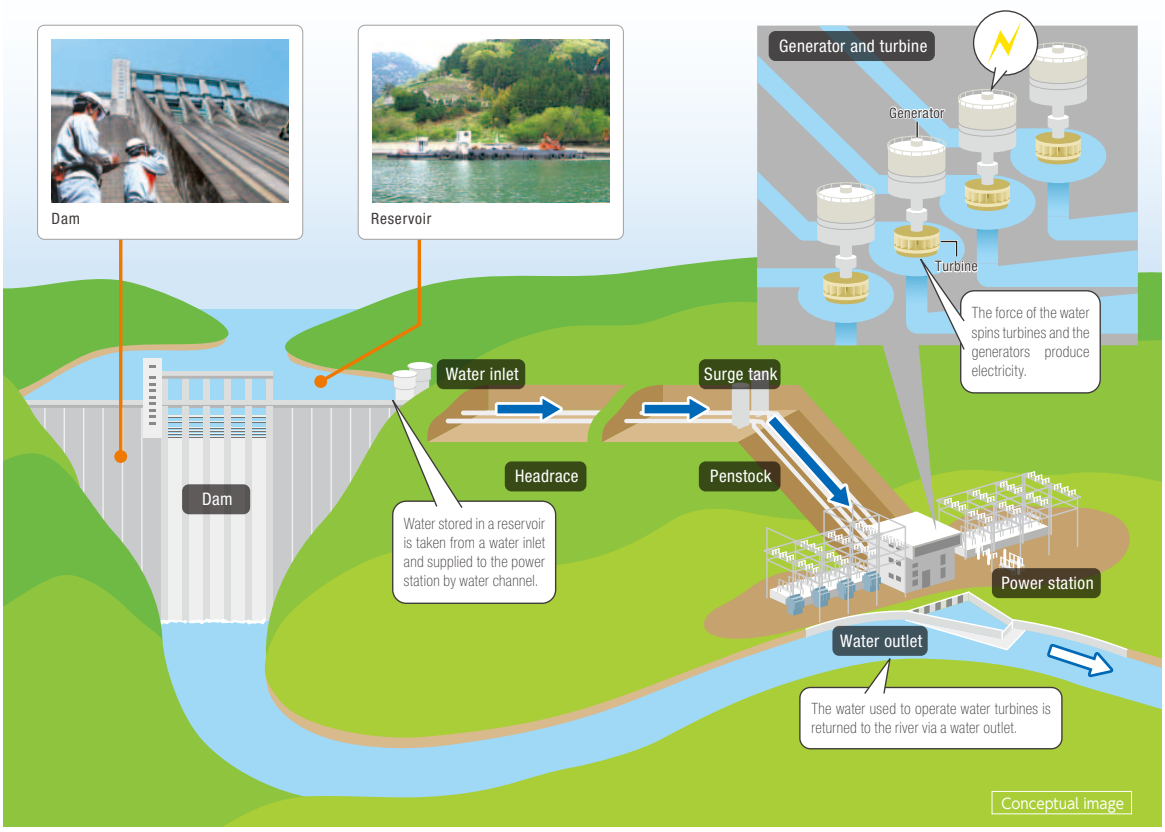
Coal-fired power stations have ash-processing equipment to process the coal ash that was burned in the boiler furnaces. This is simply processing the combusted ash, but abrasion from the powder, which is at a temperature of about 200°C, occurs continuously and facility maintenance requires an extreme amount of labor. Each time major inspections are conducted to repair a single problem, other problems in the pipes before and after the problem area and in the boiler may be discovered, so ordinary maintenance* is a never-ending job. I worked in the Operating Group for 18 years until this past September, and I have now been in the Maintenance Group for just six months, and every day I learn something new. In order to complete more than 20 work processes during shutdowns (10 days effective) for interim inspections and so on, I am extremely busy coordinating with operating personnel and employees of cooperating companies, procuring materials, negotiating with customers, and so on, but I feel that my work is meaningful when I can complete the on-site work processes efficiently and without problem. I hope to continue experiencing personal growth and to contribute to the stable operation of the power station.

* **Ordinary maintenance:** unplanned repairs performed when a problem occurs.

JPec Co., Ltd.
Maintenance Group, Matsuura Company
Yohei Yamashita

Hydroelectric power

J-POWER's hydroelectric power facilities are able to respond rapidly to changes in electricity demand and have high output per power station. For these reasons, they make significant contributions to electricity supplies in various regions around Japan as peak power supplies that can respond to daily and seasonal peak demand periods. In addition, hydroelectric power is a valuable, entirely domestic energy source and accounts for the J-POWER Group's largest renewable energy generation facilities, comprising 14% of Japan's total renewable energy capacity. As a result, hydroelectric power is a core presence for ensuring stable electricity supplies and reducing CO_2 emissions.



VOICE

Contributions in Both the 50 Hz and 60 Hz Regions

We conduct maintenance, inspections, and construction of the frequency converter station that connects the five power stations on the Tenryu River, which is also known as the "turbulent Tenryu," and its tributaries with 50 Hz and 60 Hz electric power. Because of recent circumstances regarding electric power, much of the work performed with the generators shut down is conducted on holidays or at night, and we seek to contribute to stable electric power supplies by responding quickly to problems with the facilities whether they occur during the day or night. There are generators that can produce both 50 Hz and 60 Hz power here, and I am confident that we are making contributions to both regions.

JPHYTEC Co., Ltd. Chubu Company
Deputy manager, Sakuma Office
Sohachi Sasaki

VOICE

Civil Engineering Facility Maintenance, Management, and Emergency Recovery

Civil engineering personnel at the Koide Power Station manage the civil engineering facilities for five dams and eight power stations including the Okutadami Dam. We conduct inspections, measurement, and repairs of dams and water channels, updating of aging facilities, and water discharges from dams to prevent any impairment of generating operations.

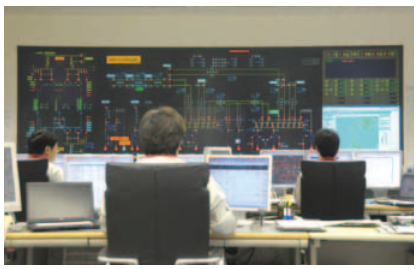
In July 2011, we repaired a road for power station management that had been damaged by torrential rains in Niigata and Fukushima Prefectures. The road was necessary for operation and management of the power station and is located in an area that is at risk of landslides from nearby mountains even during normal rainfall, so we conducted the construction with careful consideration for safety.

J-POWER East Regional Headquarters
Koide Power Station
Miki Hamada

The J-POWER Group implements measures on a daily basis to increase the reliability and efficiency of its existing hydroelectric power facilities. To use hydroelectric resources, a CO_2-free, renewable energy source, we are actively developing small and medium-sized hydroelectric power stations, one of the policies set forth in the Energy Basic Plan, and taking measures to increase generating capacity including installing new facilities and replacing facilities at existing dams to enhance use of facilities and resources.

Stable Operation of Hydroelectric power Facilities

The J-POWER Group operates 58 hydroelectric power stations located throughout Japan and monitors and controls each power station under a 24-hour system with three regional control centers located in Hokkaido, Saitama Prefecture, and Aichi Prefecture. At each power station, we conduct daily inspections for early detection of any abnormalities in facilities and prevention of accidents before they can occur so that J-POWER can provide stable power to the entire country.



North Regional Control Center (Hokkaido)

Measures for New Hydroelectric power Facilities

One measure we are pursuing to enhance the value of existing hydroelectric power facilities is concurrent updating of principal electrical equipment at the hydroelectric power stations that is becoming obsolescent. We plan to implement updates at the Akiba No. 2 Power Station starting in of 2015. At the old Isawa No. 1 Power Station, which began operating in 1954, we constructed a new power station that makes use of the Isawa Dam, a dam being constructed by the Ministry of Land, Infrastructure, Transport and Tourism directly above the power station, and began operations in July 2014 (see VOICE below).

To utilize currently unused hydroelectric power resources, we are actively developing small and medium-sized hydroelectric power stations. Construction of the Kuttari Power Station began in October 2013, and the station will use river maintenance discharges from the existing Kuttari Dam to generate a maximum of 470 kW. We aim to begin operations in April 2015, and work is currently underway on rebuilding some of the discharge facilities and constructing the turbine generator facilities.

A view of the generator (rotator) suspended (Isawa Hydroelectric Power Station, Iwate Prefecture)

VOICE

Using New Hydroelectric Power Facilities for Handing down Technologies

We have been working in construction at the Isawa No. 1 Power Station (located in Oshu City, Iwate Prefecture; maximum output of 14.2 MW) since February 2011.

Isawa No. 1 Power Station has one large and one small water turbine, and the small turbine is designed to make maximum use of river water when non-irrigating water flows are low. I coordinated dam construction and corporate office construction in a narrow worksite, and the work was conducted with a high level of teamwork by every member and with the highest priority on safety. We also implement various measures to protect the environment, including (1) preventing pollution of river and bodies of water and soil contamination, (2) preventing excess noise and vibration, (3) performing proper management of construction bi-products, (4) preserving scenery and cultural assets, and (5) protecting plant and animal life in surrounding areas.

There is a shortage of sites for new hydroelectric development, and this new construction, the first by J-POWER in about 10 years, has been valuable experience for handing down technologies. I hope to enable young employees to build high-quality power stations and to experience the joys of making things.

J-POWER Isawa hydroelectric Construction Manager
Yoshihiro Goda

Renewable Energy

We are actively undertaking measures concerning renewable energy under the new Energy Basic Plan as a promising and diverse domestic energy source that can be produced in Japan and contribute to ensuring energy safety. The J-POWER Group's renewable energy initiatives are diverse and include contributing to stable electricity supplies through existing hydroelectric power, wind power, and geothermal power stations, for which we have the second-highest shares among each type of domestic generation facilities; developing new power sources such as wind and geothermal power; and conducting research and development on offshore wind power. Renewable energy is a CO_2-free energy source that does not produce greenhouse gases such as CO_2 at the time of generation. The J-POWER Group is moving forward with the Ohma Nuclear Power Station plan and expanding the use of renewable energy with the aim of increasing CO_2-free energy sources.

Kaminokuni Wind Farm (Hokkaido)

Hibikinada Solar Power Station (Kitakyushu City)

Wind Power

The J-POWER Group made an early entry into the wind power business with the start of operation of the Tomamae Winvilla Wind Farm in December 2000. We currently have 19 wind power facilities with a total generating capacity of approximately 380 MW located nationwide. We have the second-highest share of wind power facilities in Japan.

We conduct business by utilizing the technologies and know-how developed over many years as a wholesale power provider and using integrated implementation systems that cover everything from wind surveys to plans, construction, operation, and maintenance as strengths. Construction is currently underway at the Minami Ehime Wind Power Plant (located in Uwajima City, Ehime Prefecture) and other facilities and we are moving forward with new development projects.

There are high expectations for offshore wind power in Japan, which is surrounded by seas on all four sides. J-POWER is conducting a demonstration project relating to offshore wind power in waters off Kitakyushu City in Fukuoka Prefecture (outsourced and joint research for NEDO*) and consistently conducting research, deepening our technical knowledge regarding offshore wind power generation.

* The New Energy and Industrial Technology Development Organization.

Embedded-type offshore wind power generation equipment (Kitakyusyu city)

VOICE

Measures to Increase Wind Power Operating Efficiency

Maintaining and improving the operating efficiency of wind power stations requires systematic inspections and repairs and responses to sudden problems. The Nikaho Highlands experience strong winds from autumn to spring, but the winds tend to be calm during the summer so inspections and repairs are systematically conducted during the summer. If a problem occurs during the high-wind period, we make every effort to respond quickly and minimize shutdown times. The working environment on the Nikaho Highlands is extreme during the winter, but I am able to perform my work with the cooperation of our local partners. The turbines are designed to rotate, and for maintenance personnel such as myself, there is nothing better than to see every turbine in operation. I hope to enhance my maintenance skills even further in the future.

J-Wind Service Co., Ltd.
Manager, Nikaho Office
Kimiaki Sugamata

Geothermal Power

Geothermal power is a CO_2-free power source that emits almost no CO_2 at the time of generation and is also a renewable energy source capable of providing a stable supply of electricity throughout the year without being affected by weather. For these reasons, there are high expectations for the future development of geothermal power.

The J-POWER Group owns and operates the Onikobe Geothermal Power Station in Osaki City, Miyagi Prefecture (output: 15 MW), and joined in April 2010 with Mitsubishi Materials Corporation and Mitsubishi Gas Chemical Company, Inc. to establish the Yuzawa Geothermal Co. Ltd. with the aim of building new geothermal power stations in the Wasabizawa and Akinomiya areas of Yuzawa City in Akita Prefecture. The environmental impact assessment procedures are currently underway.

Onikobe Geothermal Power Station (Miyagi Prefecture)

CLOSE UP

Environmental impact assessment in the Wasabizawa Geothermal Power Station (provisional name) siting plan

The environmental impact assessment report procedures for creation of a new geothermal power station in Yuzawa City, Akita Prefecture began in November 2011 with the start of the operation procedures followed by approximately one year of on-site assessment from June 2012 to September 2013. The assessment is currently in the environmental impact assessment report review phase.

This is the first time that environmental impact assessment procedures have applied to a geothermal power station since the Environmental Impact Assessment Act came into effect in 1999. Despite the lack of past precedents, the process is ongoing including briefings on the procedures for residents and individual briefings.

The on-site assessment consisted primarily of an atmospheric environment assessment, water environment assessment, and wildlife assessment to forecast the impact of the power station construction and operation on the atmosphere, water quality, wildlife, and so on, investigate issues that should be kept in mind to preserve the environment, and determine the current status of important standards.

When conducting on-site assessments in all four seasons of this mountainous region with heavy snowfall, various measures had to be taken other than the assessment itself including securing transportation access and power supplies and taking measures to ensure safety and protection against the cold. With the understanding and cooperation of local people involved with the project as well as experts, the assessment was successfully completed without any accidents or incidents.

Atmospheric Environment Assessment

Wildlife Assessment

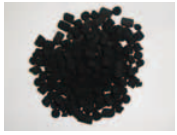
Water Environment Assessment

Promoting the Biomass Mixed Combustion

Forestry offcut and sewage sludge are carbon neutral biomass that absorb and release equal amounts of CO_2 over their life cycles, but in Japan, much of these resources remains unused.

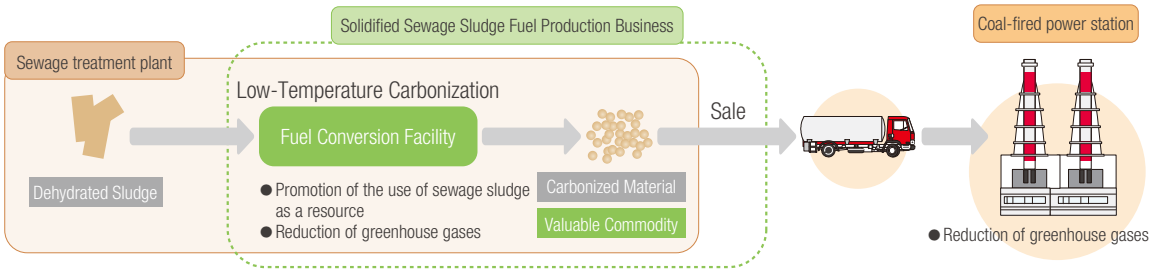
The J-POWER Group is reducing the carbon emissions of coal-fired power stations by utilizing unused biomass for mixed combustion at power stations.

Status of biomass mixed combustion initiatives

Biomass resources	Wood		Sewage sludge		Carbonization of ordinary waste for use as fuel
	Chips	Pellets	Low-temperature carbon fuel	Oil-desiccated fuel	
Examples of biomass fuels					
Characteristics of biomass fuels	Scrap construction timber is chipped and used. Comprise 50 to 70% of the calorific value of coal.	Forest offcut is dried, ground, and formed into pellets. They have about 70% of the calorific value of coal.	Sewage sludge is carbonized at a lower temperature than the incineration temperature used in conventional processing in order to manufacture fuel that produces less N_2O, a greenhouse gas, than conventional processing. The fuel produces little odor and has 50-70% of the calorific value of coal.	Sewage sludge and waste cooking oil are mixed and heated to remove the water content and produce fuel. This fuel has a calorific value about the same as that of coal.	General waste is carbonized to create a fuel able to be stored for long periods. It has about half the calorific value of coal.
Sites for the production of biomass fuel	Nagasaki City, Nagasaki Prefecture	Kobayashi City, Miyazaki Prefecture*	(1)Hiroshima City, Hiroshima Prefecture* (2)Kumamoto City, Kumamoto Prefecture* (3)Osaka City, Osaka Prefecture*	Fukuoka City, Fukuoka Prefecture	Saikai City, Nagasaki Prefecture*
Mixed combustion in coal-fired power stations	Matsuura Thermal Power Station	Matsuura Thermal Power Station	(1)Takehara Thermal Power Station (2)Matsuura Thermal Power Station (3)Takasago Thermal Power Station (Mixed combustion is being tested)	Matsuura Thermal Power Station	Under consideration

* Sites at which J-POWER is also involved in the manufacture of biomass fuel.

Conceptual diagram of the biomass fuel business (using the solidified sewage sludge fuel production business as an example)



Power Transmission, Substation, and Communications Facilities

J-POWER's transmission facilities are used not only to send electricity that the J-POWER Group generates to users, but also utilize extra-high-voltage AC and DC transmission lines to link Honshu with Hokkaido, Shikoku, and Kyushu, connecting the electrical grids of different regions. The Sakuma Frequency Converter Station, which enables the transmission of electricity between the different frequencies of eastern and western Japan, and the Hokkaido-Honshu Electric Power Interconnection Facility, which links Honshu with Hokkaido via DC transmission lines, support power interchange over wide areas of Japan and contribute to reducing needed spare electric power and maintaining frequencies.

J-POWER has also constructed a nationwide high-reliability information and telecommunications network that uses microwave radio circuits, optical lines, and other communications lines operated by the Group to operate the electric power grid and conduct centralized, remote control of unmanned hydroelectric power stations and dams. These facilities are installed in various environments including mountainous regions and urban areas and are exposed to extreme weather conditions including wind, snow, lightning, and seawater. Consequently, we conduct daily patrols and regular inspections to discover irregularities at an early stage and prevent facility accidents before they can occur.

Honshu-Shikoku Interconnection (Okayama and Kagawa Prefecture)
500,000-volt transmission lines across the Seto Inland Sea to connect Honshu and Shikoku. These transmission lines are connected to backbone transmission lines in Honshu and Shikoku, contributing to stable electric supplies in western Japan.

Sakuma Frequency Converter Station (Shizuoka Prefecture)
This converter station enables the transmission of electricity between the different frequencies of eastern Japan (50 Hz) and western Japan (60 Hz). It is the world's first electricity business frequency converter station built to support efficient electric power operations.

Tsuge Radio Relay Station (Nara Prefecture)
A microwave radio relay station that links power stations, transformer stations, and other facilities. The station is highly reliable in order to ensure uninterrupted communications even in the event of a disaster such as an earthquake or typhoon.

VOICE

Transmission Cooperation of Related Persons is Essential for Maintaining Transmission Facilities

The majority of the facilities in this transmission station have been in operation for more than half a century, and when it was built, the area was wilderness, but now most has been converted to agricultural use including fields and pasturage. As a result, the steel towers are in the middle of farmland, making the cooperation of landowners and others with rights to the land that we have to pass through essential to conduct patrols, inspections, and repairs in order to maintain the transmission facilities. Our fundamental role is ensuring a stable supply of electricity, and we perform maintenance of the transmission facilities while placing a priority on communications with landowners and other related persons.

J-POWER Hokkaido Regional Headquarters
Deputy manager, Kamishihoro Transmission Station
Shiro Sato

Substation Substations are Necessary for Stable Electric Power Supply

The Nagoya Substation is a key facility that links the main Chubu Electric Power Company's 500,000-volt substations and response to a portion of demand in the Chubu region. The substation transforms the voltage and adjusts it to appropriate levels, and adjusts the flow of electricity to ensure stable electric supplies. It is connected directly to users, so if any problems with the facility occur, there will be a direct interruption of power supplies. Because of this, maintenance personnel exercise special care when performing regular patrols, inspections, and work and make every effort to ensure a stable supply of electricity.

J-POWER Chubu Regional Headquarters
Manager, Nagoya Substation
Shinichi Okubo

Communications Securing Radio Communication Circuits While Considering Preservation of the Environment

J-POWER's radio communication circuits and optical communications lines are used for power station remote monitoring and control systems. Radio communication circuits go through relay stations, but when relay stations are located in mountainous areas and trees grow along the propagation paths, the radio signals are interrupted and the signals become week. As a result, it is necessary to remove the trees, and at that time, we confirm the owner of the trees and the trees to be removed and take environmental preservation into consideration, removing only the necessary trees.

J-POWER Hokkaido Regional Headquarters
Deputy Manager, Hokkaido Telecommunication Engineering Center
Akio Otsuka

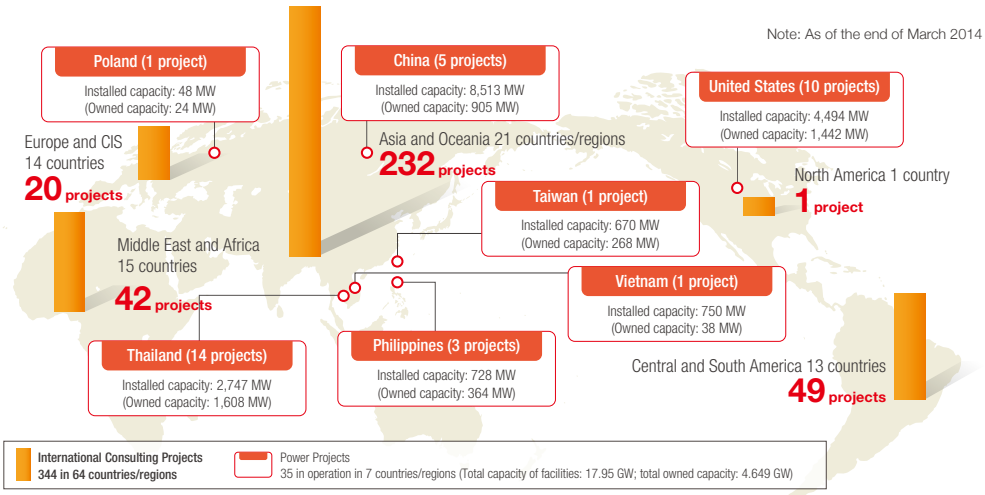
Overseas Business

The J-POWER Group's corporate philosophy calls on us to "play our part for the sustainable development of Japan and the rest of the world." Taking this as our basic approach, and leveraging the accomplishments and know-how we have acquired through a half-century of overseas operations, we are engaging in international consulting projects, which involve technical cooperation to develop power sources and protect the environment, and in overseas power generation projects, which involve our participation in businesses through the investment of capital and technology.

From the Second Pillar of Management to Two Pillars

The purpose of J-POWER's overseas consulting business is "to provide cooperation on electric power generation technology to developing countries and so contribute to the international community." Since implementing our first project in 1962, we have been involved in 344 projects in 64 countries (as of the end of March 2014). In the overseas power generation business, we have 35 electric power generation facilities in seven countries and regions with a total output of 17.95 GW. Our owned share of this output amounts to 4.649 GW (as of the end of March 2014).

We are reinforcing our efforts to change this overseas business from a "second pillar" into one of "two pillars" side by side with our electric power generation business in Japan. In terms of the environment, we will aim to use the clean coal technology we have in Japan to simultaneously achieve a contribution to growth in Asia and to reduction of environmental burden.



TOPICS

Providing Clean Coal Technology to the World through Our Consulting Business

In 2013, J-POWER received*1 a contract from NEDO*2 to conduct a proposal formation study concerning a high-efficiency, environmentally friendly ultra-supercritical coal-fired power station suitable for urban areas and restricted sites in Indonesia. The project involves converting the existing 300 MW oil-fired thermal power station (Tambak Lorok Power Station) located approximately 2 km from the center of Semarang in Central Java into a 600 MW coal-fired power station. The study is a feasibility study.

The project power station is located in an urban area, and the coal-fired power station must produce less environmental impact than the current plant. To meet these needs, it is believed that installation of an urban high-efficiency, low environmental impact-type coal-fired power station previously not possible in Indonesia would be ideal. Such a plant would not only contribute to reducing greenhouse gas emissions in accordance with policies being implemented by the Indonesian government, but would also impose the major challenge of constructing a coal-fired power station that can coexist with local residents.

We have been developing and introducing clean coal technology for more than half a century and are focusing our efforts on the transfer and spread of such technology overseas through our consulting business. The Isogo Thermal Power Station, which is located near a major city and has been in operation for many years, can serve as a model for this project, and by incorporating clean coal technology as well as our operational know-how, we can propose a high-efficiency low environmental impact-type coal-fired power station suitable for conditions in Indonesia.

By providing the technologies and expertise that we have developed to date, we can contribute to stable and environmentally friendly electric power supplies in Indonesia. This project is expected to support the spread of Japan's state-of-the-art clean coal technology.

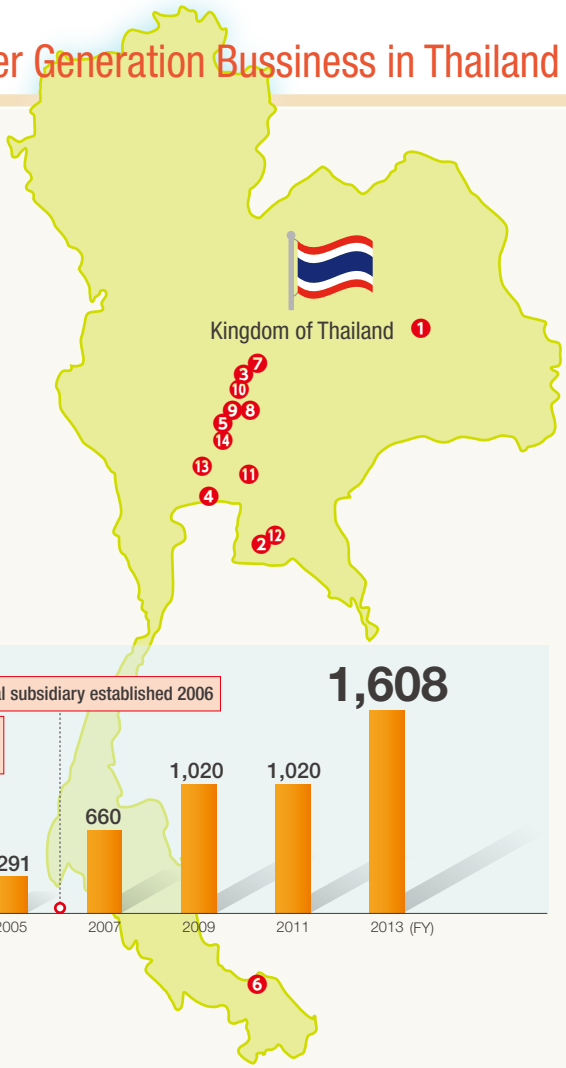

Tambak Lorok Power Station

*1 J-POWER received the order through a consortium with Hitachi, Ltd., Mizuho Bank, Ltd., and the Japan Coal Energy Center.
*2 New Energy and Industrial Technology Development Organization

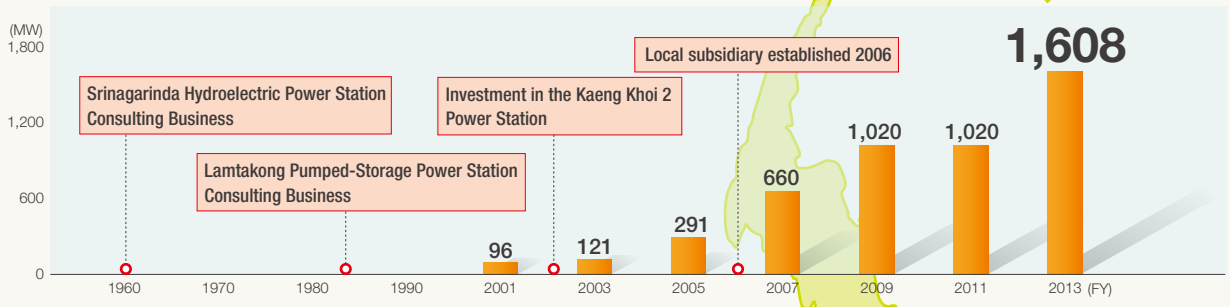
CLOSE UP J-POWER Electric Power Generation Bussiness in Thailand

List of Power Stations in Operation and under Construction	Type	Facility Output
❶Roi Et	Biomass (chaff)	10 MW
❷Rayong	Gas-fired thermal (Combined cycle)	112 MW
❸Gulf Cogeneration	Gas-fired thermal (Combined cycle)	110 MW
❹Samut Prakan	Gas-fired thermal (Combined cycle)	117 MW
❺Nong Khae	Gas-fired thermal (Combined cycle)	120 MW
❻Yala	Biomass (rubber wood waste)	20 MW
❼Kaeng Khoi 2	Gas-fired thermal (Combined cycle)	1468 MW
❽Gulf JP KP1	Gas-fired thermal (Combined cycle)	110 MW
❾Gulf JP KP2	Gas-fired thermal (Combined cycle)	110 MW
❿Gulf JP TLC	Gas-fired thermal (Combined cycle)	110 MW
⓫Gulf JP NNK	Gas-fired thermal (Combined cycle)	110 MW
⓬Gulf JP NLL	Gas-fired thermal (Combined cycle)	120 MW
⓭Gulf JP CRN	Gas-fired thermal (Combined cycle)	110 MW
⓮Gulf JP NK2	Gas-fired thermal (Combined cycle)	120 MW

As of the end of March 2014



J-POWER Group's Owned Capacity in Thailand



The J-POWER Group is actively expanding its electric power business in Thailand.

Seven newly constructed 100 MW-class gas combined thermal power stations went online in October 2013. When these are supplemented by large-scale IPP projects (Nong Saeng and U-Thai, each with a capacity of 1.6 GW) scheduled to go online in 2014 and 2015, the J-POWER Group will supply approximately 10% of electric power demand in Thailand.

In this way, business in Thailand is a key part of the overseas electric power business, which is positioned as a second profit base after our domestic wholesale electricity business, along with our business in The United States and China.

Nong Saeng IPP (1.6 GW, Gas-Fired Thermal)

Construction of the Nong Saeng IPP proceeded smoothly following its start in December 2011 and commercial operation of the No. 1 system began on June 1, 2014. Construction of the No. 2 system is proceeding with a scheduled start of operations at the end of 2014.

Nong Saeng IPP

U-Thai IPP (1.6 GW, Gas-Fired Thermal)

The U-Thai IPP construction site was submerged during the flooding in 2011, but construction started as planned in December 2012. Construction is now proceeding steadily for the scheduled start of operation of the No. 1 unit in June 2015. As of the end of March 2014, 67% of the construction had been completed.

U-Thai IPP

Relief Materials Provided during 2011 Flooding in Thailand

In the autumn of 2011, once-in-a-half-century, record-breaking torrential rains caused the Chao Phraya River, which runs from north to south through central Thailand, to overflow its banks, resulting in unprecedented flooding. The flooding reached the Rojana Industrial Park, where the U-Thai IPP is located, and the planned site of the power station was submerged.

Fortunately, the flooding occurred before the start of construction, and there was no major impact. J-POWER wanted to assist Thailand and immediately provided relief supplies (small boats, foods, etc.) to victims through a local business in which J-POWER has an equity interest. J-POWER also received a request for the provision of flood relief materials from the Thai Ministry of Energy and shipped 130 submersible drainage pumps to Thailand by airfreight and supported drainage work in flooded areas in cooperation with EGAT (Electricity Generating Authority of Thailand).

VOICE

Seeking Mutual Benefit and Collaboration in Thailand

I live in Thailand, and I feel that the people I have come to know here have taught me how to enjoy life. I believe that the greatest appeal of Thailand is the ability to evoke this feeling in foreigners who come here. In my work involving construction supervision of the IPP projects and new development projects, I encounter differences in the ways of thinking of Japanese and Thai people, and sometimes they come into conflict, but the work proceeds steadily through compromise. What is important for us Japanese, who have come a long way to a different country in order to carry out a project, is developing mutual respect and building relationships based on mutual trust. Just as is the case when living in a different country, once you are separated from the framework of a company, there is a limit to what a single person can do, and I was struck by just how important trusting relationships among people are. I believe that pursuing mutual benefit and collaborating will contribute to the development not only of the parties directly involved, but the two companies and both countries as well. I hope that there are additional opportunities to engage in this type of work in the future.

J-POWER Generation (Thailand) Co., Ltd.
Kayoko Kurisaki

VOICE

Doing Everything in Our Power for the Mission of Providing a Stable Supply of Power While Obtaining the Understanding of Local Residents

Kaeng Khoi 2 Power Station has the motto, "a power station that takes the same viewpoint as local and regional communities in treating both the environment and people with consideration." Therefore, we cooperate with local activities and welcome field trips to our power station. It is not just local people who come on field trips to the power station. We have about 1,000 visitors from within Thailand every year, and we are very grateful for it.

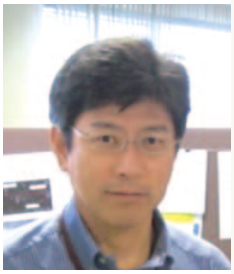
There are some difficulties associated with receiving such large numbers of people, but we hope to continue with this steady effort to have people understand our business. We also want to learn about J-POWER's measures in Japan for harmonious coexistence with local communities, and make good use of them in our activities here. We are committed to the continuing effort to do everything we can toward the mission of providing a stable supply of electric power while we work to gain the understanding of local residents.

Kaeng Khoi 2 Power Station
General Manager
Peerapan Srisukho

VOICE

Trusting Relationships with Local Partners Are Essential

Of the two IPP and seven SPP projects that were implemented, all of the SPP projects went online as planned in 2013. Starting operations as planned is something that is expected in Japan, but this is not necessarily easy in a different country with different work environments and practices. A major factor in performing the construction according to plan was the labor management. Creating suitable worksite organizations and systems based on an understanding of their temperament and work efficiency was the first step to building the power station. In this sense, it was essential for the on-site JPGT personnel to perform our work with a solid understanding of our local partners. It is necessary to interact with local workers through give-and-take and with a sense of balance based on the local conditions and environment. Relationships among people are the basis of everything, and trusting relationships are crucial. One of the IPP projects is scheduled to begin operations in 2014, and I hope to continue collaborative oversight of the project based on trusting relationships with local partners, just as we did with the SPP projects, so we can begin operations as planned with safety remaining our number one priority.



J-POWER Generation (Thailand) Co., Ltd.
Director
Takashi Jahana

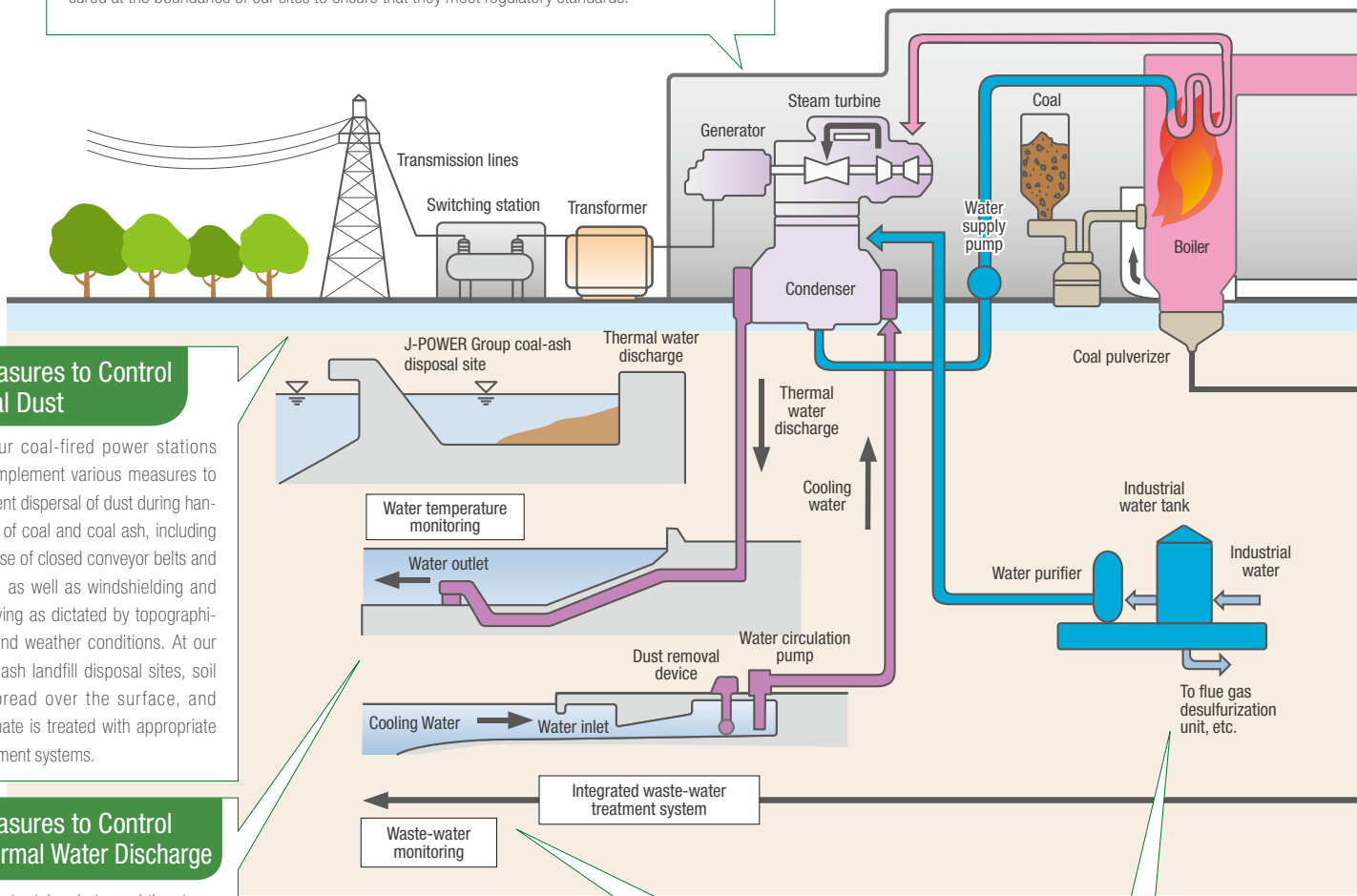
Environmental Preservation

The J-POWER Group undertakes environmental preservation initiatives using the latest technologies and knowledge to reduce the environmental impacts caused by its domestic and overseas electric power businesses.

Environmental Measures at Coal-Fired Power

Measures to Control Noise and Vibration

We work to prevent noise and vibration pollution by keeping such noise- and vibration-emitting equipment as boilers, turbines, and exhaust fans inside buildings. For outdoor equipment, we install soundproof covers and sound barriers as needed. Noise and vibration levels are periodically measured at the boundaries of our sites to ensure that they meet regulatory standards.



Measures to Control Coal Dust

At our coal-fired power stations we implement various measures to prevent dispersal of dust during handling of coal and coal ash, including the use of closed conveyor belts and silos, as well as windshielding and spraying as dictated by topographical and weather conditions. At our coal-ash landfill disposal sites, soil is spread over the surface, and leachate is treated with appropriate treatment systems.

Measures to Control Thermal Water Discharge

Seawater taken in to cool the steam used in power generation is released as thermal water discharge*. We control intake and discharge properly to reduce their impact on marine life in the vicinity, and monitor the temperature of thermal water discharge on a 24-hour basis to ensure that it remains at or below the reference values established by environmental agreements.

Measures to Prevent Water Pollution

Waste water from such facilities as desulfurization units and offices is appropriately treated in integrated waste-water treatment systems, through coagulation, precipitation, filtration, and so forth. Treated water is routinely monitored by automatic measuring equipment and analyzed periodically to ensure that it meets the standards set under the Water Pollution Control Law and environmental conservation agreements.

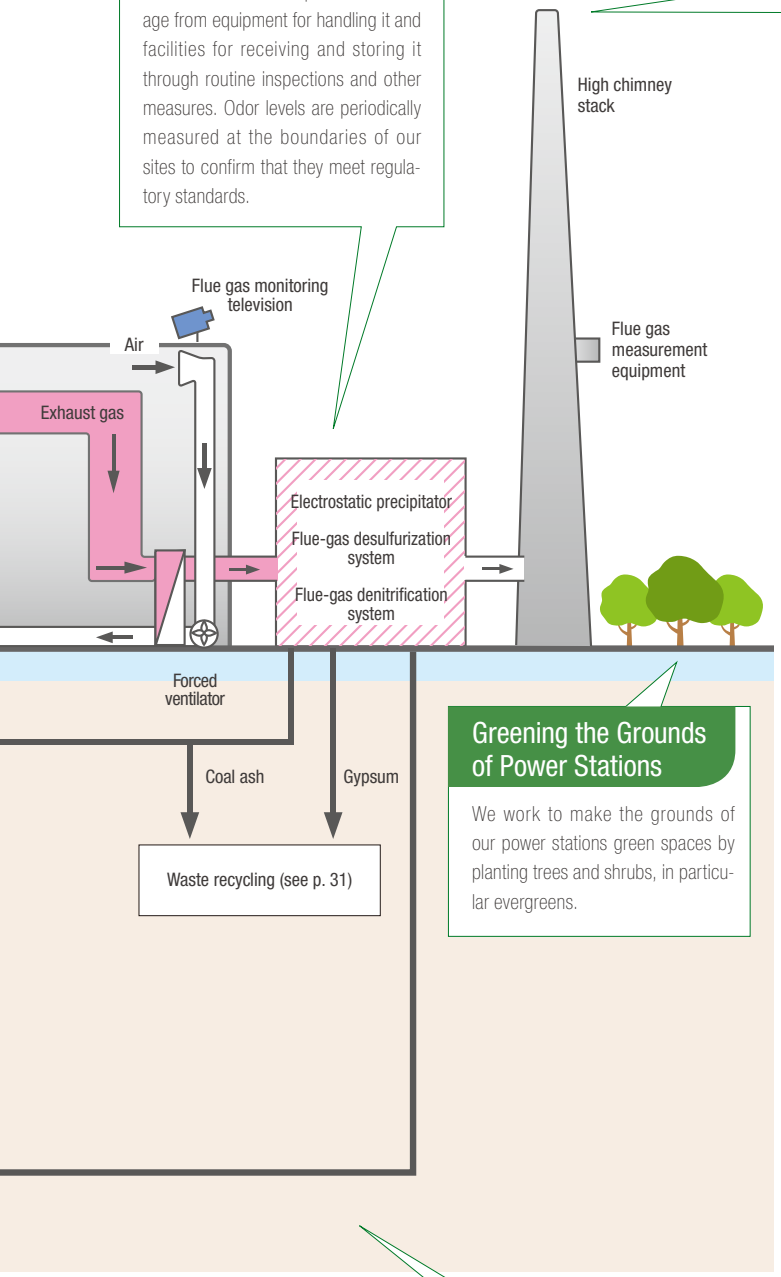
Cutting Back on Industrial Water Use

Industrial water is used in such equipment as boilers, cooling systems, and wet-type desulfurization systems. Part of this water is released into the atmosphere as steam. We are working to reduce our consumption of industrial water through the recovery and reuse, as far as possible, of wastewater that is not released into the atmosphere.

* Thermal water discharge:
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.

Measures to Control Odors

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.



Measures to Prevent Air Pollution

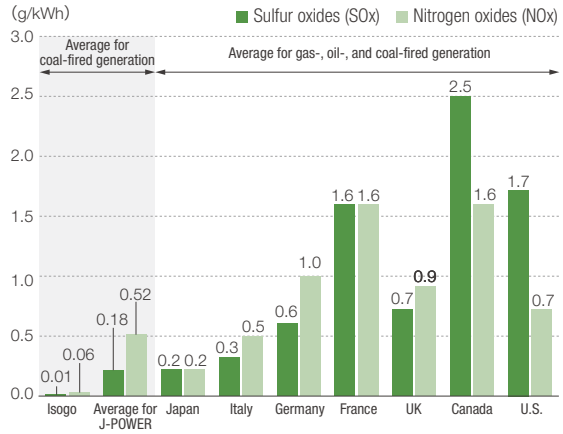
Combustion of coal and other fuels can generate sulfur oxides (SOx), nitrogen oxides (NOx), and soot and dust. To reduce these emissions we have improved our combustion methods and installed such flue gas treatment equipment as desulfurization and denitrification systems and electrostatic precipitators. 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 measurement devices that continuously monitor the content of flue gas. In addition, human operators monitor the equipment 24 hours a day and are able to mount a swift response in the event of any malfunction, ensuring that our emissions do not exceed the benchmark figures specified by the Air Pollution Control Act and environmental protection agreements.

Flue-gas Emissions, FY 2013

Substance	Equipment efficiency (removal efficiency)	Emissions	Emissions intensity
SOx	69-99%	10,700 tons	0.18g/kWh
NOx	67-93%	31,100 tons	0.52g/kWh
Soot and dust	99% (as designed)	800 tons	0.01g/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.

International Comparison of SOx and NOx Emissions Intensity for Thermal Generation



Overseas: Emissions volume: OECD StatExtracts Complete Databases Available Via OECD's Library
Volume of power generated: IEA Energy Balances of OECD Countries (2012)
Japan: Materials published by The Federation of Electric Power Companies of Japan (10 electric power company and J-POWER)
Figures for Isogo and J-POWER are formulated from results for 2013

Greening the Grounds of Power Stations

We work to make the grounds of our power stations green spaces by planting trees and shrubs, in particular evergreens.

Measures to Prevent Soil Pollution

From FY 2004 through FY 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 ensure that no soil pollution occurs.

Measures to Prevent Oil Leaks

We implement various measures to prevent the leakage and dispersion of fuel oil, lubricating oil, and other such substances within power station grounds, to include keeping adsorbent materials constantly ready in our power stations.

Proper Management and Disposal of Waste Material and Chemical Substances

Waste

Reduction and Effective Utilization of Waste

The J-POWER Group has set the industrial waste recycle rate of 97% as a Corporate Target. The total amount of industrial waste we generated in fiscal 2013 was 2.32 million tons, and we achieved a recycle rate of 98%.

Making Effective Use of Coal Ash and Gypsum

The J-POWER Group's industrial waste consists of 97% coal ash and gypsum from thermal power stations.

Of the coal ash produced, 99% is put to effective use, and 100% of gypsum and sulfuric acid are put to effective use.

Information on Maintenance and Management of Industrial Waste Final Disposal Sites

The J-POWER Group discloses on its website its maintenance and management plan for waste final disposal sites, the results of groundwater and discharge water quality analyses, inspection results, the volume of landfill waste, and other maintenance and management information.

Chemical Substances

Management of Chemical Substances

The J-POWER Group complies with applicable laws and regulations and properly and rigorously uses, stores, controls, and treats chemical substances regulated by the PRTR Law that are used in electric power generation or are included in equipment or machinery, dioxins, PCB waste material (including equipment that contains trace amounts of PCB), and materials that contain asbestos and other substances.

PRTR Substance Release and Transfer Volumes (FY 2013)

Substance	Use	Volume handled	Volume released	Volume transferred as waste
33: Asbestos	Insulation for equipment	8.75t/y	—	8,750 kg/y
53 : Ethyl benzene	Coating for machinery	2.71t/y	2,713 kg/y	—
71 : Ferric chloride	Wastewater treatment agents	16.18t/y	—	16,176 kg/y
80 : Xylene	Coating for machinery	6.69t/y	6,689 kg/y	—
300: Toluene	Fuel for power generation (coal)	17.72t/y	17,718 kg/y	
405 : Boron compounds	Manure additives	13.72t/y	1kg/y	—
406: Polychlorinated biphenyl	Transformers Insulating oil	12.15t/y	—	12,150 kg/y

Note:
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.

VOICE

Striving for Optimal Allocation of Coal Ash Transport Vessels

Coal ash produced by coal-fired power stations is effectively used as a material in civil engineering and construction products and as a raw material of cement, and I work in coordinating the vessels that transport coal ash to cement companies in Japan and overseas. The volume of coal ash produced varies according to the electricity demand, and there are often instances where ships are unable to transport the coal ash as planned because of imbalance between supply and demand, bad weather including typhoons and storms, and other factors. To overcome these risks, I maintain close communications and cooperate with all the involved parties to avoid any impediments to stable operation of the power stations and strive every day to allocate vessels optimally.

Coal Ash Utilization Promotion Department, Resource Recycling Business Division, JPec Co., Ltd. Ritsuko Sugimoto

It's My Job to Push Measures for Creating a Recycling-based Society!

J-POWER's thermal power stations generate about 1.8 million tons of coal ash each year, and my job is to build systems for comprehensive recycling of that coal ash and to work with local staff members to implement the recycling.

In addition to recycling the coal ash that is generated each day, there are many difficult aspects such as developing recycling areas and improving operations adapted in a timely manner to the constantly changing ash-processing environment, but I feel that it is a wonderful and meaningful job I am proud to perform. I am in a position within the company to play a leading role in contributing to the development of a recycling-based society, and I hope to provide a powerful push towards the creation of such a society while placing importance on collaboration with processor business partners and on-site personnel involved in this work.

Administration Office, Thermal Power Department Kenji Ueda

Preservation of the Natural Environment

Environmental Impact Assessment

Before expanding power plant facilities, we conduct environmental impact assessments in accordance with applicable laws and regulations and adequately take the environment into consideration while listening to the opinions of local residents during the planning stages. After a power plant becomes operational, we take environmental preservation measures based on the results of monitoring performed pursuant to environmental preservation agreements entered into with relevant local governments.

Environmental Impact Assessments conducted in the 2013 fiscal year (projects in the draft report or later stage are indicated)

Project	Operator	Implementation area	Implementation status
Takehara Thermal Power Station New Unit No. 1 Facility Upgrade Plan	J-POWER	Takehara City, Hiroshima Prefecture	January 2014 Environmental impact assessment procedures completed March 2014 Facility construction started
Wasabizawa Geothermal Power Station (provisional name) Siting Plan	Yuzawa Geothermal Co. Ltd.	Yuzawa City, Akita Prefecture	Environmental impact assessment report under review (as of the end of June 2014)
Ohma Wind Farm Construction Project	J-POWER	Ohma-cho, Shimokita-gun, Aomori Prefecture	Environmental impact assessment report completed
Setana Ozato Wind Power Farm Project (provisional name)	J-POWER	Setana-machi, Kudo District, Hokkaido	Environmental impact assessment report under examination (as of the end of June 2014)
Yurihonjo Seaside Wind Farm Project (provisional name)	J-POWER	Yurihonjo City, Akita Prefecture	Environmental impact assessment report under examination (as of the end of June 2014)

Preservation of the Water Environment

In fiscal 2013, the J-POWER Group made preservation of the water environment a corporate target for its environmental management vision with the aim of reinforcing its environmental preservation initiatives regarding rivers and the seas.

We undertake environmental preservation measures based on the specific regional environment and characteristics of each business site such as taking measures to maintain water quality and prevent the accumulation of silt in dam lakes and downstream areas in the case of hydroelectric power station, and managing the discharge of wastewater into nearby bodies of water in accordance with applicable laws and regulations in the case of thermal power stations.

Forest Conservation

J-POWER owns approximately 4,600 ha of forests in the areas near its hydroelectric power facilities located throughout Japan. We appropriately maintain these valuable forests in accordance with the J-POWER Group Forest Protection Guidelines (formulated in 2007).

Japan's forests are falling into ruin because of inadequate management caused by slumping forestry markets, but the J-POWER Group is contributing to forest conservation and reduction of CO_2 emissions through efforts to burn biomass fuel pellets made from forestry offcuts and other materials in coal-fired power stations along with coal (see p. 24).

Preserving Biodiversity

To reinforce its measures in light of the Basic Law on Biodiversity, in the 2011 fiscal year, the J-POWER Group made preserving biodiversity a corporate target for its environmental management vision.

During the power generation facility planning and design stages, we implement environmental preservation measures taking into consideration the impact on the natural environment and ecological systems based on the results of wildlife and ecological assessments in the land and ocean areas surrounding the facility. We strive to preserve wildlife, particularly rare species, living in the vicinity of operating power plants and other facilities and their habitats.

These measures are tailored to local environments and characteristics such as making every effort to avoid outdoor work during the nesting season of the Japanese golden eagle and other endangered birds in the vicinity of the Okutadami Dam and Otori Dam and restoring, maintaining, and managing wetlands that became landfill areas when the Okutadami Dam in Niigata Prefecture was expanded.

An observation group in the Hassaki wetland, downstream from Okutadami Dam (Niigata Prefecture)

Business Operations That Fulfill Social Responsibility

The J-POWER Group undertakes business operations that fulfill our corporate social responsibility (CSR) by continuously reinforcing the foundations of business operations including management and human resources and efforts to achieve mutual benefit with local communities and society as well as environmental management in accordance with our corporate principle of contributing to the sustainable development of Japan and the rest of the world in response to changes in social conditions and the business environment.

Foundations of Business Operations

Corporate Governance

Officers and Management Council System

At J-POWER, directors have supervisory functions and the representative director, who has business administrative authority under the Companies Act, performs executive functions with the managing officers and executive officers. In addition, an independent director participates in management decision-making from an independent perspective based on specialized knowledge and experience. Under the Management Council System, J-POWER established an Executive Committee, which deliberates on matters that are of importance to the company as a whole, and a Management Executing Committee, which handles important matters relating to specific aspects of business execution. The system facilitates appropriate and timely decision-making and efficient corporate operations.

System of Audits and Supervision

J-POWER's Board of Corporate Auditors comprises five auditors, of which three are outside auditors and one is a full-time standing auditor, enhancing the oversight functions of the Board of Corporate Auditors. Separate from the audits conducted by the corporate auditors, the Internal Audit Department, which is independent from J-POWER's other internal organizations, conducts internal audits, and individual organizations also perform periodic voluntary audits.

Group Internal Controls

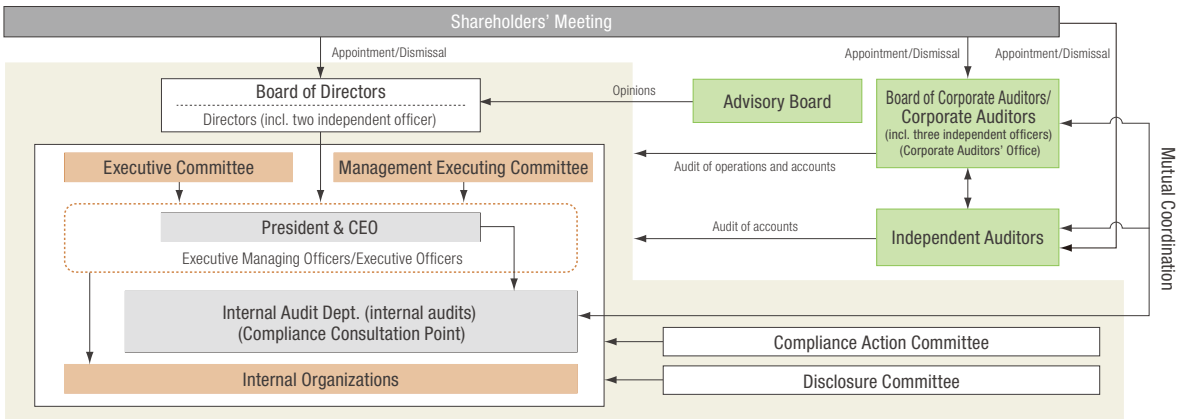
To implement internal controls in accordance with the Financial Instruments and Exchange Act, J-POWER creates internal regulations to ensure the reliability of financial reporting and operates internal control systems. In the 2013 fiscal year, we confirmed the status of development of internal control systems and their operational status, determined that they are effective, and reported the results to the Prime Minister in the form of an internal control report.

Information Disclosures

With regard to the outside disclosure of information, the Disclosure Committee chaired by the president makes active, fair, and transparent disclosures of corporate information.

The J-POWER Advisory Board was established in September 2008 to receive advice and proposals concerning corporate management from outside experts in a wide range of fields.

Figure 1 **J-POWER Group's Corporate Governance Framework (as of the end of July 2014)**



Compliance Initiatives

Implementation Measures

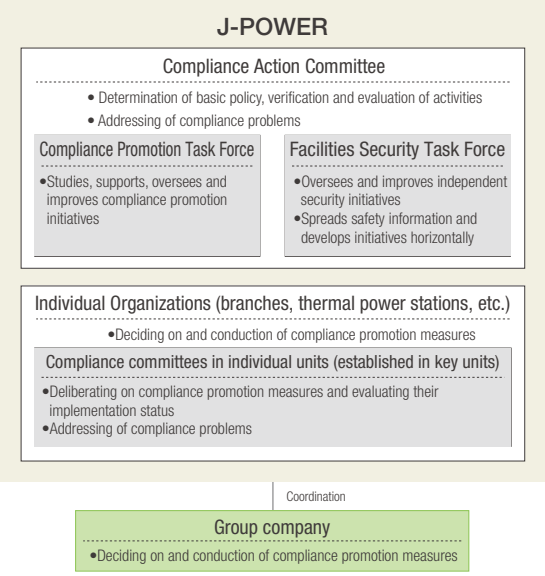
In accordance with its corporate philosophy, J-POWER adopted Corporate Conduct Rules and a Compliance Code.

To ensure compliance, J-POWER established the Compliance Action Committee and other organizations shown in Figure 2 and takes Group-wide action with the participation of Group companies.

We also established compliance consultation hotlines staffed by internal and external experts to prevent and quickly identify violations of laws and regulations and breaches of corporate ethics.

To raise awareness of compliance, we conduct training and hold lectures on compliance topics, create opportunities for officers and employees to exchange views and for personnel responsible for compliance matters to exchange information, and conduct compliance-related questionnaires, e-learning, and other programs.

Figure 2 **J-POWER Group Compliance Promotion Structures**



Information Security

Basic Policy

As advanced computerization and the use of information technology by businesses advances, instances of cyber terrorism and attacks targeting specific companies have increased, making information security more important than ever. The J-POWER Group, a key infrastructure business responsible for stable electric supplies and construction of nuclear power plants in Japan and other countries, must ensure higher levels of information security.

J-POWER adopted a Basic Policy on Information Security and publicizes Group-wide information security measures on its website.

WEB **Basic Policy on Information Security**
http://www.jpower.co.jp/english/privacy/privacy_003_e.html

Specific Measures

Each year, we formulate and implement an annual plan setting forth specific information security measures based on the status of activities in the preceding year. The main measures are described on the J-POWER website.

To rapidly and appropriately respond to IT harm to important systems relating to electric power operations, we are reinforcing collaborative systems with relevant government ministries and agencies and the electric power industry as a whole and contributing to the IT aspects of stable electric power supplies. With regard to construction of the Ohma Nuclear Power Station, IT divisions are working with nuclear power divisions to implement robust security measures.

WEB **Information Security Countermeasures**
http://www.jpower.co.jp/english/privacy/privacy_004_e.html

Emergency Management

Crisis Management Measures

The J-POWER Group recognizes a variety of events as emergencies, and as an electricity wholesaler, the greatest emergency would be an impairment to the production and distribution of electricity, our product, that prevented the supply of electric power.

We take the following measures to prevent such an occurrence.

(1) Installation of appropriate facilities and development of disaster recovery systems in preparation for natural disasters including earthquakes, typhoons, lightning strikes, and tsunami.

(2) Enhanced security to prevent malicious and violent conduct (excluding situations that cannot be addressed by a single company, such as war and terrorism).

(3) Ongoing enhancement of facility inspections to prevent major impediments to electric power supply and appropriate repairs and upgrades in response to deterioration, decline of function, and breakdowns.

(4) Preparation of action plans for responding to pandemics and other events that could have a major impact on business operations.

The J-POWER Group has established the following systems to accurately forecast and prevent accidents, facility incidents, and other crisis events and to respond promptly and appropriately if such events occur and manage them.

Emergency Management Systems

(1) Emergency Response Team

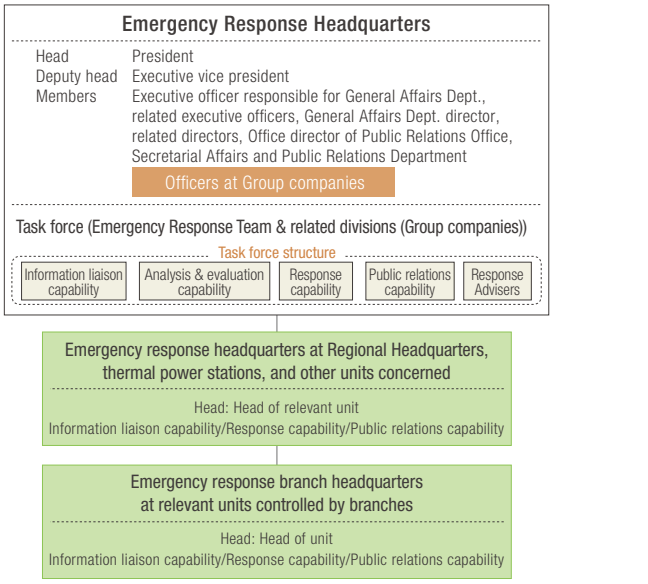
A permanent organization at the J-POWER Headquarters. The Team oversees immediate responses and emergency management operations in the event that an emergency occurs.

(2) Emergency managers and emergency duty personnel

Emergency managers and personnel are appointed at each head office division and local unit to take first-response action and report information.

A group discussion during disaster preparedness training

Figure 1. Emergency Countermeasures (after establishing Emergency Response Headquarters)



(3) Emergency Response Headquarters and branches

When an emergency is predicted to occur or occurs and the seriousness warrants emergency countermeasures, the Emergency Response Headquarters (and branches) are established. (See Figure 1.)

Disaster Response and Business Continuity Measures

As an electric power supplier with responsibility for vital lifelines, J-POWER has been designated a designated public institution under the Disaster Countermeasures Basic Act.

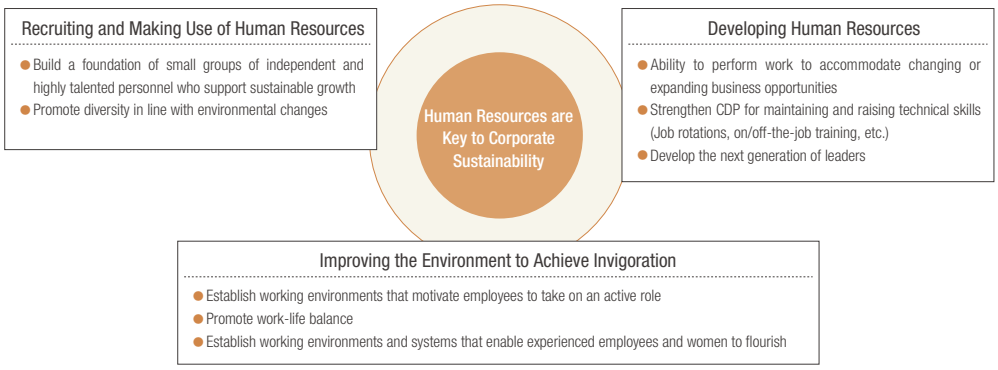
To carry this out, we actively implement physical measures in anticipation of a large-scale natural disaster as well as non-physical measures including the formulation of various rules relating to the occurrence of accidents and establishing systematic disaster response systems that cover the entire organization from the head office to local bodies. We are also reinforcing disaster response systems to ensure business continuity even in the event of damage that exceeds expectations.

With regards to business continuity, considering the importance of immediately shifting to an emergency structure following the occurrence of an emergency and undertaking recovery operations, we have determined the minimum necessary actions to maintain business during an emergency and periodically conduct disaster response training to confirm the effectiveness of manuals and the status of emergency stores. In accordance with Tokyo Metropolitan ordinances, the J-POWER head office is preparing for Tokyo Inland Earthquakes by increasing its stores of emergency foodstuffs and investigating ways to accommodate personnel who would not be able to return to their homes.

Recruiting and Developing Human Resources and Creating Dynamic Workplaces

The J-POWER Group strives to provide safe, comfortable working environments for every one of our employees. We consider human resources to be valuable assets upholding our fundamental sustainability as a corporation. At the same time, we endeavor to create a corporate culture that respects the character and individuality of our employees and makes them feel it worthwhile to constantly take on new challenges.
The J-POWER Group positions human resource recruitment and development as crucial policy measures for the company's sustainable growth. We are reinforcing the foundation for career development, with a focus on CDP programs, establishing workplace environments and systems that make advantageous use of diversity, and promoting work-life balance in order to improve individual skills and workforce productivity.

Developing Group Human Resources and Creating Dynamic Workplaces



Recruiting and Making Use of Human Resources

The J-POWER Group's Conceptual Approach to Human Resource Recruitment

The J-POWER Group approach is to conduct stable hiring in the interest of sustainable growth, and also to seek human resources from people in a wide range of fields and age groups to whom we provide opportunities to take an active part.

With regard to personnel hiring and utilization, the J-POWER Compliance Code stipulates respect for individuality and human rights and prohibits discrimination. We are also conducting awareness-raising on these matters in human rights training. 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.

Table 1. **Employment of New Graduates (J-POWER)**

	FY 2012	FY 2013	FY 2014
Men	72	67	59
Women	6	9	5
Total	78	76	64

Measures to Promote Diversity

As a measure to further increase the hiring of elderly people, we have reviewed the continuing employment system, which is a system for employment of people who have reached retirement age, to bring it in line with the amendment of the Law for the Stabilization of Employment of the Aged in April 2013. In combination with the personnel registration system, which introduces job opportunities in the Group, we will harness the experience, technology, and motivation to work possessed by older people in the Group and make use of it for the sustained growth of our business. As of the end of March 2014, 69 employees (J-POWER) had taken advantage of the continuing employment system and related programs.

Our employment ratio for people with disabilities was 2.17% as of June 1, 2014. A "consultation desk to provide employment assistance and information on working environments to employees with disabilities" having been established, we will continue to take measures to enhance working environments and promote understanding through such initiatives as making office buildings barrier-free. In the future, we will continue striving to raise the employment ratio.

VOICE

Aiming to Build a Workplace Where Diverse Human Resources Can Take Continuously Active Parts

The J-POWER Group operates in a changing business environment, and the arrival of a society of declining birthrates and an increasing elderly population has brought increasing demand from society for corporations to achieve longer sustained employment for people. We face a need to allocate a wide range of different job assignments to a diversity of human resources, regardless of their sex or age, while responding to changes in the business environment and social environment. The J-POWER Group will endeavor to build a workplace in which a diversity of human resources can continue playing active parts by taking such measures as revising the continuing employment system and promoting the development and use of childcare and family elder care support systems.

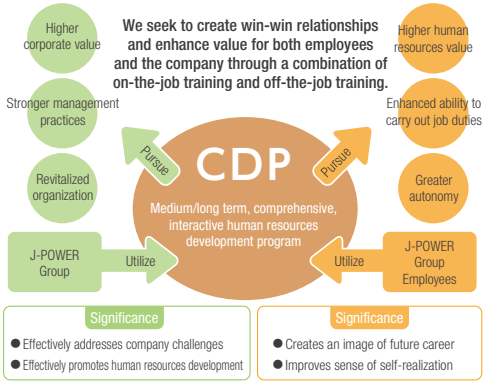
Human Resource Development Office, Personnel and Employee Relations Department
Shiho Mase

Human Resources Development

Human Resource Development Programs

Our aim in the J-POWER Group is to develop all our employees into independent, talented, professional human resources who contribute to the organization with a multiplicity of specialized knowledge and a broad perspective. We are adopting the Career Development Program (CDP) as a measure to achieve that aim.

Figure 1. CDP Overview



Evaluation and Assessment System

The J-POWER Group established an evaluation system in 2004 that is based upon a goal management system. Through initiatives aimed at achievement of specific goals, the system encourages every employee to perform work autonomously, heighten his or her achievement motivation, and improve his or her work performance. We also seek to realize our organizational strategies by having employees engage in mutual collaborative action that is based upon organizational goals.

Various Training Programs

The J-POWER Group is conducting various kinds of training as Off-JT, including level-specific training, career training, objective-specific training, and divisional training. These programs are conducted to develop human resources in line with CDP. We have also established training facilities for the technical divisions (civil engineering and architectural engineering divisions; hydroelectric power, transmission and substation, and telecommunications divisions; and thermal power divisions). Systematic development for engineers is conducted at these facilities.

Table 1. Track Record in Level-Specific Training, Career Training and Objective-Specific Training (J-POWER)

	FY 2011	FY 2012	FY 2013
Level-Specific Training	138	334	**460**
Career Training	163	248	**276**
Objective-Specific Training	216	235	**254**
Total	517	817	**990**

Helping Employees Voluntarily Develop Their Careers and Abilities

J-POWER is introducing a self-assessment system for employees to convey their career planning hopes and intentions to the company once a year and discuss them with their immediate superiors. We are also introducing a voluntary training incentive program and an academic training program to support employees developing their abilities on their own initiative.

Developing Environments to Create Dynamic Workplaces

Toward Realization of a 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. To achieve this, we have enhanced and encouraged use of our childcare and nursing care support programs (see Figure 2), volunteer leave program, and other programs and have made efforts to normalize working hours (see Figure 3).

Figure 2. Overview of the Childcare and Nursing Care Support Programs and Results in FY 2013 (J-POWER Group)

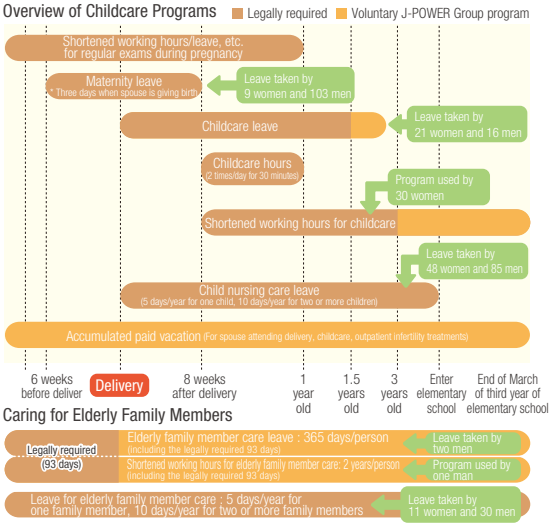
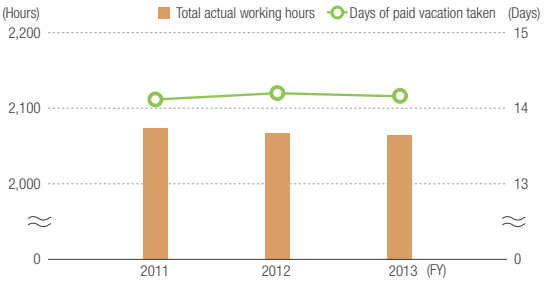


Figure 3. Change in Total Actual Working Hours and Paid Vacation Taken (J-POWER)



"Kurumin" Mark of Next-Generation Certification

Following certification in 2010 as a corporation that actively supports measures for developing the next generation, J-POWER again received the Kurumin mark of certification in 2013.

We will continue our efforts to establish even better working environments that enable each employee to maintain a balance between their work and private life and to provide meaningful and fulfilling work.

"Kurumin"

VOICE

Childcare Leave

I took childcare leave for about two months after my first son was born. I wanted to support my wife after the childbirth and to spend as much time with my son after he was born, so I took leave for that period. My wife returned to her family home in Osaka for the birth, but I was able to spend time with my family during the birth and in the hospital, at my wife's family home, and after we returned to our home in Tokushima. I was able to use this time to bond with my son and to deepen my relationship with my wife.

I am deeply grateful to my supervisor and colleagues for showing their understanding of me making use of this program.

Thermal Power Design Department, Thermal Power Construction Division
Gou Morii

Consultation Desk

We are working to build a work-friendly environment in the workplace by establishing a consultation desk where employees can discuss working hours, the workplace environment, sexual harassment, and power harassment.

We have also developed in-house regulations, manuals, and other such resources related to harassment, and we are implementing education for increased awareness in level-specific training courses, posters, and other such measures to resolve problems as well as to prevent them.

Our goal is a working environment where human rights and individuality are respected and where diverse personnel are completely at ease in going about their work.

Safety and Health Management

J-POWER Group's Health and Safety Measures

The J-POWER Group's health and safety measures are intended to create safe and healthy workplaces that provide meaningful work as the foundation of our business activities. J-POWER and Group companies each have roles and responsibilities and collaborate on implementing health and safety management to prevent workplace accidents and maintain and improve the health of our employees.

Measures Pursuant to the Group Occupational Safety and Health Plan

The J-POWER Group established a Group Occupational Safety and Health Plan that organizes common issues that the Group needs to address and set subsequent priority topics. Based on the plan, individual Group companies formulate their own occupational health and safety plans and take measures in cooperation with the Group.

Safety Priorities

(1) Promoted Communications through Collaboration among Personnel at Different Worksites and Offices
(2) Prevent recurring workplace accidents
(3) Prevent traffic accidents resulting in injury or death and other commuting-related accidents

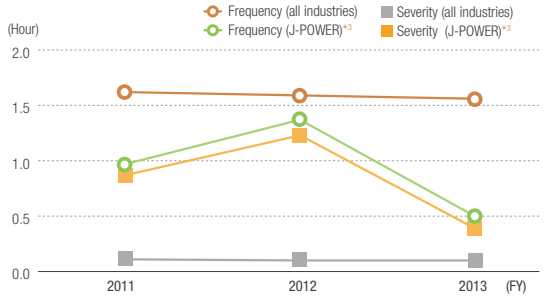
Health Issues

(1) Promote mental and physical health

Initiatives for the Prevention of Workplace Accidents

Many of the occupational accidents that have occurred in recent years have involved contractors engaged in construction and other such work. For this reason, undertaking integrated safety measures in cooperation with business partners is crucial. We are working to achieve more active communications throughout worksites overall, raise awareness of safety, and implementing ongoing measures to prevent repetitive-pattern accidents and traffic accidents.

Accident Frequency*1 and Severity*2



*1 Frequency:
Index of the frequency of accident occurrence. (Number of deaths or injuries caused by occupational accidents per one million working hours. Covers accidents causing loss of one day or more of work. Does not include accidents of employees on temporary transfer.)

*2 Severity:
Index of accident severity. (Number of days of work lost per 1,000 working hours. Does not include accidents of employees on temporary transfer.)

*3 Accidents involving J-POWER employees and accidents involving contractors (principal contractors and subcontractors) doing construction and other work ordered by J-POWER

Incidence of workplace accidents*3

	FY 2011	FY 2012	FY 2013
Deaths	2	3	1
Serious Injury	6	13	2
Minor Injury	9	8	7

Maintaining the Health of Employees and Their Families

To maintain and improve the health of employees and their families, we encourage them to receive health checks, health maintenance guidance, and infectious disease prevention measures. In addition, we place priority on the prevention of lifestyle-related disease and mental health disorders and conduct special health checks and designated health guidance as well as THP activities* to support good physical and mental health.

* 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.

Coexistence with the Community and Society

The J-POWER Group rolls out business based on harmonious coexistence with local communities and society as an electric power company with power generation and power transmission and substation facilities throughout Japan and overseas. Going forward, we will perform business that centers on “Communication with society” and “Contribution to society” as advocated in the J-POWER Corporate Conduct Rules as a means to drive advancement in local communities and society.

Communication with Society

The J-POWER Group implements fair and transparent public relations (PR) activities and information disclosure in order to secure good lines of communication with many stakeholders in different communities and in society. We are committed to making pinpoint response when it comes to PR in light of the characteristics of the stakeholders and our relationship with them, including local residents, shareholders, investors and society at large. We also promote stakeholder dialog, cognizant of the importance of two-way communication. In terms of information disclosure, we distribute information through our PR activities and respond to inquiries while also disclosing IR information via the Disclosure Committee.

PR and IR Activities

PR Activities

PR activities aim to enhance awareness of J-POWER as widely as possible, beginning with people in local communities. With this in mind, our basic policy is to distribute corporate information accurately and in a timely manner through all of our business activities and respond to inquiries concerning J-POWER sincerely and respectfully.

With regard to reporting, we strive to distribute appropriate information at appropriate timing, including through press releases and notifications. We also utilize TV commercials and magazines for advertising and do our best to gain broad understanding of our business.

J-POWER provides the opportunity for face-to-face contact with stakeholders as well as through events that include tours of power stations by each business unit, so that stakeholders can track our business activities with peace of mind.

IR Activities for Investors and Individual Shareholders

For institutional investors, we hold presentation briefings related to management plans and financial results around twice a year and actively convene meetings in Japan and overseas as the need arises. For individual investors, we hold corporate presentation briefings several times a year and provide opportunities for them to talk directly with J-POWER members, including management.

For individual shareholders, we issue a biannual shareholder newsletter (Kabunushi Tsushin) and actively disclose information on management activities and the overall condition of the company by giving tours of our power stations and other facilities twice a year.

We're working to enhance information disclosures through these types of communications activities on our website and by publishing annual reports and other documents. We also use communications tools such as Navi-Map and dam cards to conduct public relations in an accessible and user-friendly manner.

Information Disclosure

J-POWER endeavors to disseminate appropriate information on its PR and IR activities in a timely manner to stakeholders through press releases and notifications on its website.

In particular, we comply with all pertinent laws and regulations such as the Financial Instruments and Exchange Act and securities listing regulations for information related to the J-POWER Group business, operations or results that may have a significant impact on the investment decision of stakeholders. We also formulated internal disclosure regulations for IR information and instituted a basic policy to actively disclose information in a fair and transparent manner.

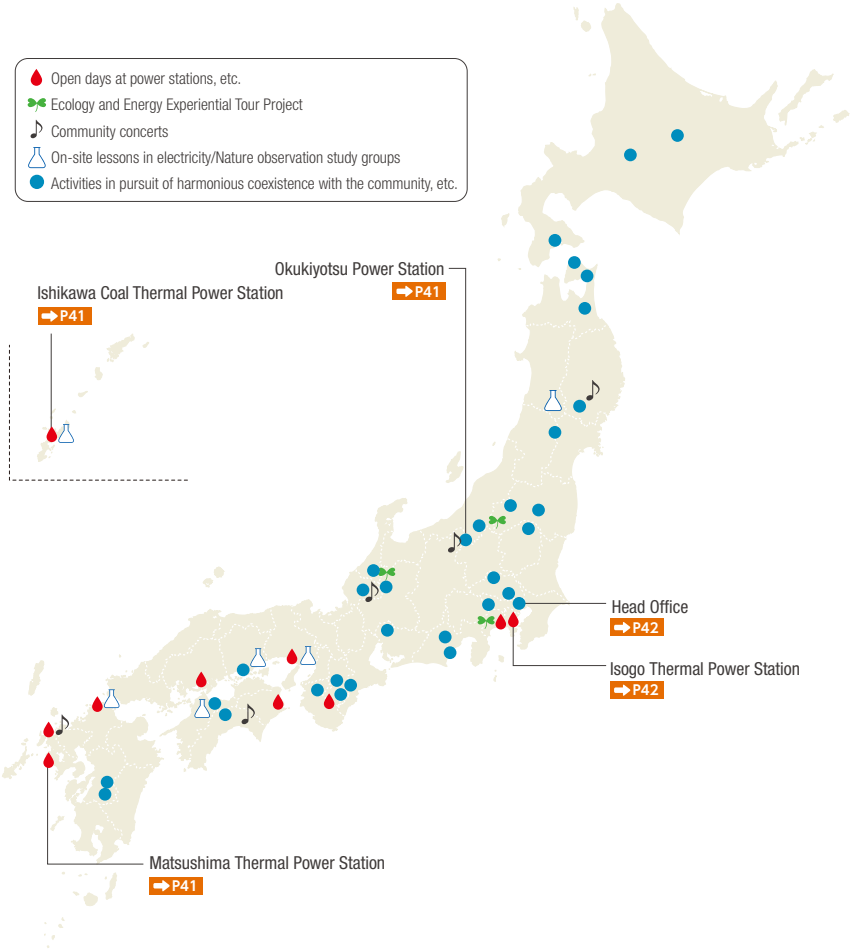
J-POWER established the Disclosure Committee, chaired by the president, to investigate and set up a system for disclosing IR information and also to examine and make judgments on information that ought to be disclosed with the aim of establishing a reputation in the market and gaining the trust of society.

Contribution to the Community and Society

J-POWER Group Approach to Social Contribution Activities

"We pursue harmony with the environment, and thrive in the trust of communities where we live and work. We regard profits as the source of our growth, and share the fruits with the 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 with one another. We will steadily engage in activities on this basis as well as support the volunteer activities of our employees.



Nara prefecture

Power Station Events Open to the Public and Facility Tours

We conduct events that allow local residents to visit power stations and other business sites and to tour facilities, increasing their understanding of the J-POWER Group. We strive to enhance our presence as a member of the community by having personnel interact directly with local residents.

A power station tour at the Kitayamakawa Power Station (Nara Prefecture)

Akita prefecture

Off-Site Electricity Lessons

J-POWER conducts off-site lessons on electricity and nature observation study groups in cooperation with local schools and governments to encourage interest in and raise understanding of energy and the natural environment by students at local schools.

Off-site lesson conducted by the Thermal Power Construction Division (Akita Prefecture)

Niigata prefectute

Community concerts

We hold concerts, primarily of classical music, performed by professional musicians around Japan, to convey our constant appreciation to everyone who lives in the areas where our power plants are located. More than 100 such concerts have been held since they began in 1992. In recent years, we have been holding many mini-concerts at schools and social welfare institutions.

A community concert held by the Okukiyotsu Power Station (Niigata Prefecture)

Community Involvement

The corporate activities of the J-POWER Group are supported by members of local communities. In response, power stations and other business sites strive to be good corporate citizens while each employee works to be a good resident in these communities by being a useful presence, and they all work to be trusted and accepted by local residents.

In addition to the programs discussed below, individual business sites undertake measures tailored to their specific communities such as cooperating with local governments to plant trees, release fish, and implement other measures and participating in and cooperating with local festivals and other events.

Niigata

Snow Removal Volunteer Program

Okukiyotsu Power Station is located in Yuzawa-machi, an area that gets heavy snowfall. Employees participate in a snow removal volunteer program sponsored by the village to remove snow from the homes of senior citizens. Initially, the work can be quite difficult before one gets used to it, but after working with diligence and determination, one feels a sense of satisfaction when the job is done, and seeing the smiling faces of the seniors, many of whom live alone, provides encouragement for the future.

Nagasaki

Oseto Regatta

Holding regattas in Chinese-style canoes is a traditional event in Nagasaki Prefecture. Personnel from the Matsushima Thermal Power Station have been participating in the Oseto Regatta in the local village of Oseto continuously for more than 30 years since the power station was constructed. This Regatta is an important event for strengthening feelings of community by competing with local residents.

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.

Okinawa

Butterfly-Filled Power Station

The Ishikawa Coal Thermal Power Station conducts environmental programs in cooperation with local elementary schools. Green areas within the power station site are similar to natural forest and seashore environments, and these areas are used to teach students about the relationship between living things and the environment. There are a total of three programs including exploration and observation study groups that enable participants to experience firsthand the wildlife in a natural forest and study of the characteristics of the tree nymph, Japan's largest butterfly. The children enjoy the experience of setting free the tree nymph butterflies that were bred and raised on the power station grounds.

For the Benefit of Broader Society

The J-POWER Group undertakes social contribution initiatives not just for the benefit of local communities, but also for the benefit of broader society and each region of the world where it operates.

Described below are some of the measures taken to support the future generations that will create the society of tomorrow. In addition to these programs, we will continue cooperating with volunteer activities targeting disaster areas including areas struck by the Great East Japan Earthquake as well as children suffering from malnutrition in various parts of the world, providing work training at power plants in Asia and support to persons affected by flooding.

Kanagawa

Internships

J-POWER, JPHYTEC Co., Ltd., and JPec Co., Ltd. offered summer internships to science students in graduate school, university, or technical college. The internships provide experience in certain operations at power stations and other facilities with the aim of helping the interns' studies and support them in making future occupation choices. In the 2013 fiscal year, 36 interns from various areas of Japan took up the challenge of practical training in the maintenance and operation of electric power facilities.

Public Relations Department

Minister of Energy Workshops

J-POWER conducts an Eco-Energy Hands-On Project (a hands-on, participation-based energy and environment study program) for university students, the leaders of tomorrow.

One aspect of this program is an off-site workshop entitled "Become the Minister of Energy" conducted in response to requests from students and various organizations.

The workshop challenges participants to formulate an optimal energy and environmental policy under the restrictions imposed by national economic strength and resource conditions. Power plant cards, country cards, and accident cards are used to help participants become the Minister of Energy for a certain country and consider energy and environmental policies.

VOICE

I Was the Minister of Energy!

I previously participated in a tour of the Takasago Thermal Power Station and learned about the Become the Minister of Energy workshop. While talking to a staff member, the discussion turned to how it would be interesting to try this as a club, and we asked J-POWER to hold the workshop during a new student welcome event.

We use electricity all the time without even thinking about it, and there are not many opportunities to consider how electricity is made and supplied. Through the game, the participants had fun and learned about electricity including generation methods and systems and their attributes. For the new students, the welcome event was something of a challenge, but a relaxing atmosphere was created through interaction with the J-POWER personnel and the game, and the event was quite a success.

I hope to plan other such events in the future and have as many students as possible participate in the workshop.

Member of ANGLEs, Sophia University (Ms. Ogawa is on the far left)

Sophia University ANGLEs Environmental Club

Maya Ogawa

Environmental Management

Based on its corporate principle of achieving harmony between energy and the environment, the J-POWER Group undertakes environmental a sustainable society. To carry this out, we undertake various measures pursuant to the J-POWER Group Environmental Management Vision, a statement management levels while maintaining strict compliance with laws, regulations, and agreements from the perspective of ensuring transparency and trust.

Corporate Target and Fiscal 2013 Results

The Action Programs for the J-POWER Group Environmental Management Vision define Corporate Targets*, which are mid-term targets that the Group as

* In addition to Group-wide Corporate Targets, business divisions and affiliates formulate their own targets tailored to their operations.

	Item	Target			
Efforts Relating to Global Environmental Issues	Reducing CO_2 Emissions from Power Generation and Promoting Technological Development	As an electric utility, in addition to continuing to contribute to the Environmental Action Plan by the Japanese Electric Utility Industry, looking towards 2020 we are working to provide a stable supply of energy and reduce CO_2 emissions in Japan and overseas by promoting the following measures.			
		● Work to replace aging coal-fired power facilities, such as Takehara Thermal Power Station Unit No. 1 and 2, scheduled to be replaced with the latest high efficiency USC plant technology.			
		● Promote mixed combustion of biomass fuels in coal-fired power stations (Effective exploitation of untapped resources).			
		● Contribute to the reduction of CO_2 emissions and technology transfer on a global scale by promoting the overseas expansion of coal-fired power using J-POWER's advanced, high-efficiency power generation technologies, in particular in the Asian region.			
		● Promote the development of higher-efficiency oxygen-blown integrated coal gasification combined cycle (IGCC) technology through the realization of the Osaki CoolGen Project.			
		● Advance research and development in the area of CO_2 capture and storage (CCS) technologies through the implementation of the EAGLE Project, the Osaki CoolGen Project, and the Callide Oxyfuel Project in Australia.			
		● In relation to the Ohma Nuclear Power Station Plan, do our utmost to ensure the construction of a safe and trusted nuclear facility, always appropriately incorporating the necessary measures for the realization of enhanced safety based on serious consideration of the accident at the Fukushima Daiichi Nuclear Power Station and following government and other guidelines, at the same time maintaining the approval of residents of the region in which the station is located.			
		● Build new hydroelectric power facilities, expand, upgrade and replace existing facilities, and expand the use of hydroelectric power.			
		● Significantly expand domestic wind power facilities and advance research and development towards the realization of ocean-based wind power generation technologies.			
		● Work to develop new geothermal power sites in Japan.			
	Item	Target	Target base-year performance, etc.	FY 2012 performance	
	● Maintain/improve thermal efficiency of thermal power stations [HHV (higher heating value)]	Maintain current level [about 40%] (FY 2008 and each FY thereafter)	FY 2008 40.1% (Reference: LHV*=41.1%)	40.5% (Reference: LHV = 41.5%)	
	● Reduce SF_6 emissions; increase recovery rate during inspection and retirement of equipment	Inspection: at least 97%; Retirement: at least 99% (FY 2008 and each FY thereafter)	FY 2008 Inspection: 99% Retirement: 99%	Inspection: 99% Retirement: 99%	
Efforts Relating to Local Environmental Issues	● Reduce SOx emissions per unit of electric power generated (point of generation, thermal power stations)	Maintain current level [about 0.2 g/kWh] (FY 2008 and each FY thereafter)	FY 2008 0.20g/kWh	0.21 g/kWh	
	● Reduce NOx emissions per unit of electric power generated (point of generation, thermal power stations)	Maintain current level [about 0.5 g/kWh] (FY 2008 and each FY thereafter)	FY 2008 0.50g/kWh	0.51 g/kWh	
	● Increase recycling rate for industrial waste	Maintain current level [about 97%] (FY 2011 and each FY thereafter)	—	98%	
	● Protection of the Water Environment	Consider protection of river and ocean environments in business activities (FY 2013 and each FY thereafter)	—	—	
	● Protect biological diversity	Consider the protection of biological diversity in relation to business activities (FY 2011 and each FY thereafter)	—	Efforts to Preserve Biodiversity	
Ensuring Transparency and Reliability	● Improvement of Environmental Management Level	Continuous improvement of EMSs (FY 2008 and each FY thereafter)	—	Consistent use of PDCA cycle	

management intended to achieve improvements in both environmental considerations and economic value so that it can contribute to the development of of internal and external Group initiatives, and strive to enhance the disclosure of information relating to environmental programs and environmental

a whole is expected to work towards. As shown below, all of the items included in the Corporate Targets for fiscal 2013 were achieved.

	Main results for FY 2013
	● Environmental impact assessment procedures for the Takehara Thermal Power Station Replacement Project were completed and building construction was started. ● Mixed combustion according to target fuels was conducted at the Matsuura Thermal Power Station and Takehara Thermal Power Station.
	● Preparatory measures for construction work conducted for the Central Java Project in Indonesia.
	● With regard to IGCC and CCS technology research and development, CO_2 separation and recovery technology trials were conducted under the EAGLE Project, power plant construction was conducted to perform trials of the Osaki CoolGen Project, and trial operation of the power station was conducted under the Callide Oxyfuel Project in Australia.
	● Measures to enhance safety were investigated under the Ohma Nuclear Power Station Plan and efforts were made to obtain the understanding and trust of local residents.
	● To expand the use of hydroelectric power, construction of the new Isawa No. 1 Power Station and other measures were implemented.
	● With regard to land-based wind power, operation of the Kaminokuni Wind Farm was started, trials of offshore wind power were conducted near Kitakyushu (a joint project with NEDO), and other activities were conducted.
	● Environmental impact assessment procedures were conducted in the Wasabizawa-Akinomiya region for development of a new domestic geothermal power plant site.

	FY 2013 performance	Fiscal 2013 Evaluation and Next Steps	Page Reference
	40.3% (Reference: LHV = 41.4%)	● The J-POWER Group met its target, realizing a total thermal efficiency of 40.3% (HHV) for thermal power generation thanks to efforts to maintain high-efficiency operation in existing thermal power stations and to adopt high-efficiency technologies when upgrading facilities. We will continue working to maintain and improve energy efficiency in our thermal power stations.	P50
	Inspection: 99% Retirement: 99%	● The FY 2013 target was met, with a recovery rate of 99% during inspections and 99% 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.	P49
	0.18 g/kWh	● Efforts including the application of fuel control and the appropriate operation of flue gas desulfurization systems saw us curb our SOx emissions and achieve our target for emissions per unit of power generated. We will continue our efforts to curb emissions through good management practices.	P30
	0.52 g/kWh	● Efforts including the application of fuel control and the appropriate operation of flue gas denitrification systems saw us curb our NOx emissions and realize our emissions target per unit of power generated. We will continue our efforts to curb emissions through good management practices.	P30
	98%	● We achieved our targets for the fiscal year through efforts to promote the recycling of coal ash and to reduce industrial waste generated by the maintenance and operation of power stations. We will go on working to maintain this level.	P50
	Practices of consideration for protection of river and ocean environments	● When operating power generation facilities that involve rivers, we implemented measures for protection of the river environment according to the conditions at each location, sedimentation control measures and measures to mitigate the long-term persistence of turbidity. ● When operating power generation facilities adjacent to the ocean, we exercised precise control over the discharge of wastewater in compliance with environmental protection agreements and other such arrangements.	P32
	Efforts to Preserve Biodiversity	● We showed consideration for the protection of ecosystems and the diversity of species in conducting our business activities and worked to protect rare animal and plant species and their habitats.	P32
	Consistent use of PDCA cycle	● 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.	P47

*: 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 (FY 2004 edition).

Business Activities and the Environment

The charts below detail the resource consumption and environmental load of the FY 2013 J-POWER Group operations within Japan.

Note: The scope of applicability will include J-POWER and its 25 consolidated domestic subsidiaries, such as electric power businesses and ancillary businesses related to electric power. The amounts attributed to consolidated subsidiaries are based on percentages corresponding to J-POWER's equity share.

INPUT

Thermal Power Generation

Fuel

Coal (wet)	21.22 million tons
Heavy oil	60,000 kl
Light oil	22,000 kl
Natural gas	171.8 million Nm³
Biomass	26,000 tons

Industrial-use water 10.69 million m³

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 power 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 ($CaCO_3$)	208,000 tons
Ammonia (NH_3)	13,000 tons

Hydroelectric power

Power for pumped storage 1,000 GWh

Geothermal Power

Steam	0.36 million tons
Hot water	2.00 million tons

Internal Use at Business Sites and Offices

Electricity (purchased)

Business sites	70.10 GWh
Offices	15.40 GWh

Fuel (gasoline equivalent)

Business sites	20,874 kl
Offices	1,293 kl

Drinking water

Business sites	200,000 m³
Offices	210,000 m³

Copy paper (A4 equivalent) 62 million sheets

Business Activities

Electric Power Generated

Thermal **59,400** GWh

Hydroelectric **9,700** GWh

Geothermal/Wind **700** GWh

Auxiliary power for operation and transmission loss 4,700 GWh

Volume of electric power sold

Total **65,100** GWh

Supply

• Sums of figures may not equal totals in some cases due to rounding.

The electricity generated at our power stations is supplied through regional power companies to end users throughout Japan. The 65,100 GWh of wholesale electric power we sold last year is equivalent to approximately 8% of total electric power sold by regional power companies.*

* Total electric power sold in FY 2013 was 848,500 GWh, according to confirmed figures on electricity demand published by the Federation of Electric Power Companies of Japan.

Major Resources Recycled

Percentages indicate recycling rate.

Coal ash	1.906 million tons (98.9%)	Other industrial waste	26,000 tons (71.6%)
Sludge (excluding gypsum)	18,000 tons (64.6%)	Waste paper	397 tons (95.8%)
Gypsum (desulfurization byproduct)	322,000 tons (100.0%)	Driftwood from dam reservoirs	26,000 m³ (70.7%)
Sulfuric acid (desulfurization byproduct)	21,000 tons (100%)		

Effective Utilization (cement plants, etc.)

OUTPUT

Thermal Power Stations

Emissions into the Atmosphere

CO_2	47.84 million t-CO_2
SOx	11,000 tons
NOx	31,000 tons
Soot and dust	1,000 tons

Emissions into Bodies of Water

Waste water	3.87 million m³
Waste water COD	15 tons

Geothermal Power Station

Hot water 2.11 million tons

CO_2 Emissions from Business-Site and Office Activities

Business sites	90,000 t-CO_2
Offices	11,000 t-CO_2

Waste

Industrial waste

Coal ash	22,000 tons
Other	20,000 tons

Specially controlled industrial waste

Specially controlled industrial waste 4,000 tons

Non-industrial waste

Waste paper	17 tons
Driftwood from dam reservoirs	10,900 m³

Environmental Accounting/Eco-Efficiency

Environmental Accounting

To calculate the costs and benefits of the J-POWER Group's environmental conservation activities in FY 2013 in keeping with the nature of our business, we referred to the Environmental Accounting Guidelines 2005 issued by the Ministry of the Environment.

Environmental Conservation Cost and Benefit

Total costs for FY 2013 were approximately 44.5 billion yen, with pollution control costs for preventing contamination of the air, water, etc., accounting for about 36% of the total.

Environmental Conservation Cost (unit: billion yen)

Category	Main measures and efforts	Cost
Pollution control	Air pollution control (desulfurization/ denitrification, soot and dust treatment), water pollution control (wastewater treatment), etc.	15.8
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)	2.0
Resource recycling	Waste reduction through reuse and recycling; treatment and disposal of waste	18.4
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 power generation, use of fuel cells, CO_2 capture and fixation, recycling of coal ash and gypsum, etc.	2.1
Social activities	Tree-planting, environmental advertising, environmental beautification, membership in environmental groups, preparation of sustainability report, etc.	1.9
International projects	Overseas cooperation projects for environmental conservation technologies	1.1
Other	Pollution load levy	1.7
Total		44.5

Note: Sums of figures may not equal totals in some cases due to rounding.

Environmental conservation benefit

Environmental conservation benefit	FY 2013
SOx emissions intensity (g/kWh)	0.18
NOx emissions intensity (g/kWh)	0.52
Soot and dust emissions intensity (g/kWh)	0.01
CO_2 emissions intensity (kg-CO_2/kWh)	0.74
Average coal-fired power efficiency (%)	40.3
Coal ash recycling rate (%)	98.9
Industrial waste recycling rate (%)	98
Gypsum recycling rate (%)	100
Volume of driftwood recycled (1,000 m^3)	26
Employees completing internal environmental auditor training	99
Sustainability report (copies published)	20,000
Overseas consulting projects (cumulative total)	344

Note: For detailed data, see pp. 49-50, Environment-Related Data.

When considering 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.

Economic Benefit

Efforts contributing to earnings and cost reductions were calculated to have had an economic benefit of approximately 11.5 billion yen.

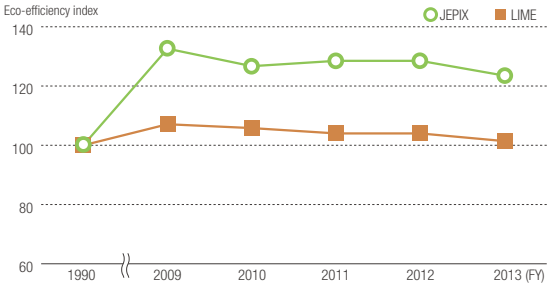
Economic Benefits (unit: billion yen)

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 power efficiency (introduction of USC)	3.6
	Reduction in disposal costs due to coal ash, gypsum, and sulfuric acid recycling	7.5
Total		11.5

Eco-Efficiency

J-POWER initiatives to date have been evaluated by the JEPIX*1 and LIME*2 methods. These two approaches assign different coefficients to environmental loads (coal, CO_2, SOx, NOx, coal ash), and the resulting recent trends in eco-efficiency are as shown in the graph below.

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



Note: Eco-efficiency: 100 = FY 1990 integrated index (electric power sold per environmental load).

*1 JEPIX (Japan Environmental Policy Index)
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.

Ensuring Transparency and Reliability

Continual Improvement in Environmental Management

The J-POWER Group conducts environmental preservation activities in accordance with corporate principles, and the introduction of environmental management systems (EMS) at all J-POWER business sites was completed in 2002. The introduction of EMS at J-POWER subsidiaries and affiliates and at subsequently established business sites is also proceeding, and we are continuing our efforts to enhance environmental preservation measures.

Improvement of Environmental Management Level

On the basis of the J-POWER Group Environmental Action Guidelines, reviewed annually by management, each J-POWER Group 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.

Raising Employee Awareness of Environmental Problems

The J-POWER Group puts efforts into environmental training for employees to deepen their awareness of environmental issues and instill a sense of personal responsibility.

In-House Environmental Training, FY 2013

Category/course		Contents
General	Lectures and Briefings	Lecture presentations on the environment
	E-learning	Basic knowledge concerning PM 2.5
Technical	EMS implementation	Internal environmental auditor training
	Environmental laws and regulations	Environmental law and regulation training and waste-processing risk assessment
	E-learning	EMS course

Full Compliance with Laws, Regulations, Agreements, and other Rules

In order to reduce the impact on the surrounding environment due to business activities, we take appropriate steps to implement the laws, regulations, agreements, and other such rules applicable to our business activities and make them widely known. We are also engaged in ongoing efforts to improve our facilities and operations.

In order to dispose of waste properly, we take measures to maintain and improve the disposal capabilities of waste disposal operators and other personnel involved, and we employ waste disposal consulting firms to directly confirm the status of waste disposal by local organizations.

Responding to Environmental Problems

We make every effort to prevent environmental problems before they occur. When problems arise that require emergency handling, however, we promptly take whatever measures are required to contain the damage and we notify the local agencies concerned as well as the J-POWER Head Office Emergency Response Team and departments.

The J-POWER Head Office Emergency Response Team promptly notifies top management and, in the interest of information disclosure, provides information on the emergency to the media and other interested parties for publication. We also devise measures to prevent recurrence of the problem.

Environmental Incidents

Of the incidents impacting the environment that occurred within the J-POWER Group in FY 2013, four incidents were reported by the mass media.

Status of Environmental Incidents

Location	Situation and Countermeasures
Isogo Thermal Power Station Unit No. 2 (Yokohama City, Kanagawa Prefecture)	On May 13, 2013, a portion of a natural rubber sponge ball used to clean narrow condenser pipes was released into the ocean because of improper assembly following an equipment inspection. The released ball was recovered, the ball recovery unit discharge valve assembly format was modified to prevent reoccurrence, and measures were taken to prevent future improper attachment.
Matsuura Thermal Power Station Unit No. 1 (Matsuura City, Nagasaki Prefecture)	On March 15, 2013, during removal work for inspection and maintenance of an electrostatic precipitator transformer and rectifier unit, approximately 30 liters out of a total of 955 liters of insulating oil in the unit leaked. The leaked oil was properly disposed of as a PCB-free substance based on composition analysis performed previously. Later, J-POWER received a report that measurements by the manufacturer detected a minute amount of PCB (1.2 mg/kilogram), and a follow-up investigation of the discarded material was conducted, but it was determined that it had already been processed. We are continuing to investigate the background to this minute amount of PCB and the cause of the accident, but based on the follow-up investigation, we believe that there was no impact on the environment.
Matsuura Thermal Power Station Unit No.2 (Matsuura City, Nagasaki Prefecture)	On June 24, 2013, it was discovered that solid ash material had dispersed from a smokestack and fallen on the power station grounds, and the No. 2 unit was shut down and an inspection and cleaning of the smokestack interior was conducted. It was determined that the incident occurred in conjunction with washing of a heat exchanger previously installed in the chimney flue. We changed work methods to prevent reoccurrence in the future.
Takehara Thermal Power Station (Takehara City, Hiroshima Prefecture)	On February 6, 2014, J-POWER determined that there was an omission and insufficient detail in a portion of a construction plan filing for a noise and vibration-emitting facility and dust-producing facility pursuant to the provisions of Article 48, Paragraph 1 of the Electric Business Act as a result of a misinterpretation of the law. We reported the details to the Ministry of Economy, Trade and Industry and the Chugoku and Shikoku Industrial Safety Supervision Bureaus, and filed a new construction plan. Measures to prevent reoccurrence will be implemented and we are making efforts to strengthen compliance and continue improvements.

Corporate Targets for FY 2014

Efforts Relating to Global Environmental Issues

Item	Target
● Reducing CO_2 Emissions from Power Generation and Promoting Technological Development	As an electric utility, in addition to continuing to contribute to the Environmental Action Plan by the Japanese Electric Utility Industry, looking towards 2020 we are working to provide a stable supply of energy and reduce CO_2 emissions in Japan and overseas by promoting the following measures. • We will replace aging coal-fired power stations with new facilities with higher efficiency at the world's highest levels. • Promote mixed combustion of biomass fuels in coal-fired power stations (Effective exploitation of untapped resources). • Contribute to the reduction of CO_2 emissions and technology transfer on a global scale by promoting the overseas expansion of coal-fired power using J-POWER's advanced, high-efficiency power generation technologies, in particular in the Asian region. • Promote the development of higher-efficiency oxygen-blown integrated coal gasification combined cycle (IGCC) technology through the realization of the Osaki CoolGen Project. • Advance research and development in the area of CO_2 capture and storage (CCS) technologies through the implementation of the EAGLE Project, the Osaki CoolGen Project, and the Callide Oxyfuel Project in Australia. • In relation to the Ohma Nuclear Power Station Plan, do our utmost to ensure the construction of a safe and trusted nuclear facility, always appropriately incorporating the necessary measures for the realization of enhanced safety based on serious consideration of the accident at the Fukushima Daiichi Nuclear Power Station and following government and other guidelines, at the same time maintaining the approval of residents of the region in which the station is located. • Build new hydroelectric power facilities, expand, upgrade and replace existing facilities, and expand the use of hydroelectric power. • Significantly expand domestic wind power facilities and advance research and development towards the realization of ocean-based wind power generation technologies. • Work to develop new geothermal power sites in Japan.
● Maintain/improve thermal efficiency of thermal power stations [HHV (higher heating value)]	Maintain current level [about 40%] (FY 2008 and each FY thereafter)
● Reduce SF_6 emissions; increase recovery rate during inspection and retirement of equipment	Inspection: at least 97%; Retirement: at least 99% (FY 2008 and each FY thereafter)

Efforts Relating to Local Environmental Issues

Item	Target
● Reduce SOx emissions per unit of electric power generated (point of generation, thermal power stations)	Maintain current level [about 0.2 g/kWh] (FY 2008 and each FY thereafter)
● Reduce NOx emissions per unit of electric power generated (point of generation, thermal power stations)	Maintain current level [about 0.5 g/kWh] (FY 2008 and each FY thereafter)
● Increase recycling rate for industrial waste	Maintain current level [about 97%] (FY 2011 and each FY thereafter)
● Protect the water environment	Consider the protection of the river and ocean environment in business activities (FY 2013 and each FY thereafter)
● Protect biological diversity	Consider the protection of biological diversity in relation to business activities (FY 2011 and each FY thereafter)

Ensuring Transparency and Reliability

Item	Target
● Improvement of Environmental Management Level	Continuous improvement of EMSs (FY 2008 and each FY thereafter)

Environment-Related Data

The following data represent annual values or year-end values in each fiscal year. Unless specifically noted, includes data for Group companies*1.

*1 J-POWER and its 25 consolidated domestic subsidiaries, such as electric power businesses and ancillary businesses related to electric power. The amounts attributed to consolidated subsidiaries are based on percentages corresponding to J-POWER's equity share. For information on companies included in the statistics, see the list of main Group companies on page 1. Figures may not add up to totals because of rounding.

Power Facilities (maximum output)

	Unit	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Hydroelectric	GW	8.56	8.56	8.56	8.56	8.56	8.56
Thermal	GW	8.18	8.79	8.79	8.79	8.79	8.85
Coal-fired	GW	7.95	8.55	8.55	8.55	8.55	8.51
Natural gas	GW	0.22	0.22	0.22	0.22	0.22	0.32
Geothermal	GW	0.01	0.02	0.02	0.02	0.02	0.02
Wind power	GW	0.25	0.27	0.35	0.35	0.35	0.38
Total	GW	16.99	17.61	17.69	17.69	17.69	17.78

Electricity Output

	Unit	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Hydroelectric	GWh	9,470	10,004	11,301	11,557	10,330	9,708
Thermal	GWh	53,648	50,742	58,511	58,522	59,303	59,456
Coal-fired	GWh	52,979	50,224	58,084	57,624	58,377	58,423
Natural gas	GWh	589	415	355	862	898	1,007
Geothermal	GWh	80	103	72	36	29	25
Wind power	GWh	322	393	458	590	620	638
Total	GWh	63,439	61,140	70,271	70,669	70,253	69,801

Electric Power Sold

	Unit	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Hydroelectric (excluding pumped storage)	GWh	8,384	9,214	10,267	10,318	9,033	8,760
Thermal	GWh	50,122	47,364	54,786	54,777	55,577	55,697
Coal-fired	GWh	49,505	46,887	54,388	53,946	54,722	54,730
Natural gas	GWh	547	383	327	803	836	952
Geothermal	GWh	70	94	71	28	19	15
Wind power	GWh	310	379	442	562	596	614
Total	GWh	58,816	56,957	65,495	65,657	65,206	65,071

Fuel Consumption

	Unit	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Coal (dry coal 28 MJ/kg equivalent)	million t	16.97	16.09	18.51	18.04	18.49	18.61
Use intensity (coal-fired)	t/GWh	343	343	340	338	338	340
Natural gas	million m^3N	99	71	60	142	148	172
Heavy oil	million kl	0.04	0.04	0.04	0.04	0.05	0.06
Diesel	million kl	0.03	0.05	0.03	0.03	0.02	0.02

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

Greenhouse Gas Emissions*2

	Unit	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
CO_2 emissions (domestic and overseas power generation)*3	million t-CO_2	49.07	46.52	52.54	52.24	54.09	56.33
CO_2 emission intensity	kg-CO_2/kWh	0.69	0.66	0.67	0.67	0.67	0.68
CO_2 emissions (domestic power generation)	million t-CO_2	44.35	40.88	47.01	46.77	47.56	47.84
CO_2 emission intensity	kg-CO_2/kWh	0.74	0.72	0.72	0.71	0.73	0.74
SF_6 emissions	t	0.1	0.0	0.1	0.1	0.1	0.0
Handled	t	7.9	5.9	12.0	11.1	6.5	7.7
Recovery rate	%	99	99	99	99	99	99
HFC emissions*4	t	0.1	0.2	0.1	0.1	0.2	0.2
N_2O emissions	t	1,660	1,610	1,650	1,660	1,362	1,553

Note: Denominators for emission intensity represent electric power sold.

*2: CO_2 is calculated based on fuel combusted in conjunction with electric power generation.
Other greenhouse gases (PFC, CH_4, and NF_3) are effectively not emitted. Calculation of CO_2 emissions is performed in accordance with the Act on Promotion of Global Warming Countermeasures for both Japan and overseas.

*3: This covers J-POWER and consolidated subsidiaries, such as electric power businesses and overseas businesses, as well as equity method affiliates (12 domestic and 30 overseas companies). The portions attributed to consolidated subsidiaries and equity method affiliates are based on the percentage of J-POWER's equity share. For information on companies included in the statistics, see the list of main Group companies on page 1.

*4: The same tabulation as for Usage of Specific CFCs was used.

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

	Unit	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Average thermal efficiency (at generation point) based on HHV	%	40.1	40.3	40.5	40.6	40.5	40.3

Usage of Specified CFCs

		Unit	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Specified CFCs	Stocked	t	1.7	1.0	1.0	1.0	1.0	1.0
	Consumed	t	0.0	0.0	0.0	0.0	0.0	0.0
Halons	Stocked	t	4.6	4.6	4.6	4.6	4.6	4.6
	Consumed	t	0.0	0.0	0.0	0.0	0.0	0.0
Other CFCs	Stocked	t	9.2	12.6	11.9	11.4	10.8	10.8
	Consumed	t	0.3	0.1	0.2	0.2	0.1	0.1
HFCs (CFC alternatives)	Stocked	t	10.8	11.3	12.0	12.0	12.9	13.3
	Consumed	t	0.1	0.2	0.1	0.1	0.2	0.2

SOx, NOx, and Soot and Dust Emissions

	Unit	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
SOx emissions	1,000 t	10.6	8.1	10.1	12.1	12.3	10.7
Intensity (thermal)	g/kWh	0.20	0.16	0.17	0.21	0.21	0.18
NOx emissions	1,000 t	26.7	22.3	28.0	28.5	30.3	31.1
Intensity (thermal)	g/kWh	0.50	0.44	0.48	0.48	0.51	0.52
Soot and dust emissions	1,000 t	0.8	0.6	0.8	0.7	0.8	0.8
Intensity (thermal)	g/kWh	0.02	0.01	0.01	0.01	0.01	0.01

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

Industrial Waste Recycling

	Unit	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Volume generated	million t	2.14	2.00	2.34	2.38	2.30	2.32
Volume recycled	million t	2.10	1.96	2.26	2.33	2.26	2.27
Recycle rate	%	98	98	97	98	98	98

Coal-Ash and Gypsum Recycling

	Unit	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Coal-ash created	1,000 t	1,747	1,669	1,936	1,957	1,900	1,928
Volume recycled	1,000 t	1,736	1,660	1,900	1,939	1,882	1,906
Recycle rate	%	99.4	99.4	98.1	99.0	99.0	98.9
Gypsum created	1,000 t	330	263	320	362	352	322
Recycle rate	%	100	100	100	99.8	99.9	100

Office Power Consumption

	Unit	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Power consumed by offices (company total)	GWh	21.24	21.06	21.39	19.40	19.48	19.04
Head office*5 power consumption	GWh	8.61	8.53	8.22	7.31	6.99	6.94
Lighting/power sockets	GWh	1.72	1.71	1.65	1.25	1.33	1.29

*5: J-POWER head office building

· Figures have been adjusted in accordance with the expansion/contraction of the range of data available for compilation.

Fuel Consumption in Offices (Gasoline Equivalent)

	Unit	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Consumption	kl	1,308	1,345	1,289	1,299	1,290	1,293

· Corrected for expansion, contraction, etc. of the range of data available for compilation.

Rate of Procurement of Recycled Copy Paper

	Unit	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Copy paper*6 purchased	million sheets	56.05	57.17	56.77	58.77	61.50	61.79
Recycled copy paper*6 purchased	million sheets	55.18	56.79	56.38	58.14	61.25	61.45
Recycled copy paper*6 purchase rate	%	98	99	99	99	99	99

*6: A4 paper-size equivalent

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 2014, the sustainability information herein has been independently reviewed and certified by Ernst & Young Sustainability 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.

EY
Building a better working world

Translation

The following is an English translation of an independent assurance statement prepared in Japanese and is for information and reference purposes only. In the event of a discrepancy between the Japanese and English versions, the Japanese version will prevail.

Independent Assurance Report

04 July, 2014

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

Kenji Sawami
Representative Director
Ernst & Young Sustainability Co., Ltd.
Tokyo

We, Ernst & Young Sustainability Co., Ltd. have been commissioned by Electric Power Development Co., Ltd. (hereafter the "Company") to provide limited assurance on the Key Sustainability Performance Indicators (hereafter the "Indicators") of the Company and its major subsidiaries for the year ended March 31, 2014 included in the Company's Sustainability Report 2014 (hereafter the "Report").

1. **The Company's Responsibilities**
The Company is responsible for the preparation of the Report in accordance with the Company's policies and standards found at page 2 and 49 of the Report as criteria.

2. **Our Independence and Quality Control**
We have complied with the independence and other ethical requirements of the Code of Ethics for Professional Accountants issued by the International Ethics Standards Board for Accountants, which is founded on fundamental principles of integrity, objectivity, professional competence and due care, confidentiality and professional behavior.
We apply International Standard on Quality Control 1 and accordingly maintain a comprehensive system of quality control including documented policies and procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

3. **Our responsibilities**
Our responsibility is to express a limited assurance conclusion on the Key Sustainability Performance Indicators of the Company and its major subsidiaries for the year ended March 31,2014 included in the Report based on the procedures we have performed and the evidence we have obtained.
We conducted our limited assurance engagement in accordance with the International Standard on Assurance Engagements - Assurance Engagements Other than Audits or Reviews of Historical Financial Information (ISAE 3000), issued by the International Auditing and Assurance Standards Board, Practical Guidelines for the Assurance of Sustainability Information, revised in December 2012 by the Japanese Association of Assurance Organizations for Sustainability Information and the International Standard on Assurance Engagements 3410, Assurance Engagements on Greenhouse Gas Statements (ISAE 3410), issued by the International Auditing and Assurance Standards Board.
The summary of the procedures we performed for our assurance engagement is as follows:
- Reading relevant documents with regard to the Company's Reporting Standards and the Company's policies and standards and inquiring of personal responsible thereof;
- Reading relevant documents with regard to the design of the Company's internal control of the Indicators and inquiring of personal responsible thereof at the headquarters and the sites visited;
- Performing analytical procedures of the Indicators at the headquarters and the sites visited; and
- Agreeing to supporting documents and recalculating with part of the Indicators at the headquarters and the sites visited on a test basis.

The procedures performed in a limited assurance engagement are more limited in nature, timing, or extent than a reasonable assurance engagement.
As a result, the level of assurance obtained in a limited assurance engagement is not as that obtained had we performed a reasonable assurance engagement.

4. **Conclusion**
Based on the assurance procedures performed, nothing has come to our attention that caused us to believe that the Indicators of the Company and its major subsidiaries for the year ended March 31, 2014 included in the Report were not measured and reported in accordance with the Company's policies and standards in all material respects.

Independent third-party certification of J-POWER Group Sustainability Report 2014

Document review (Towa Power Administration Office, Iwate Prefecture)

Document review (Towa Power Administration Office, Iwate Prefecture)

Site inspection (Matsushima Thermal Power Station, Nagasaki Prefecture)

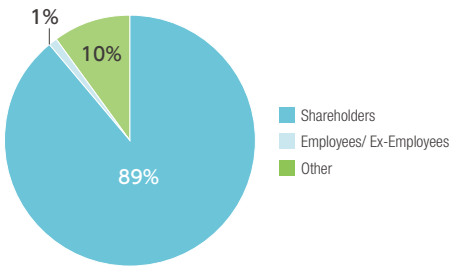
External Evaluation and Outside Opinions

The J-POWER Group strives to incorporate third-party evaluations and recommendations, as heard in Sustainability Report questionnaires, reviews, and so on, into our activities. 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 business activities. We also enhance our transparency and reliability by making such comments public.

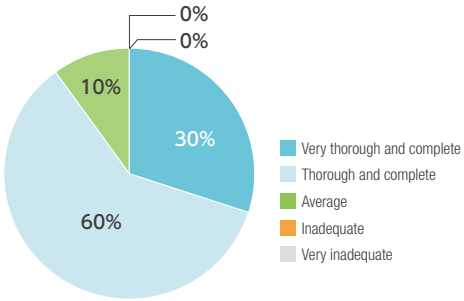
Readers' Opinions

We received many comments from readers in response to the J-POWER Group Sustainability Report 2013 (published July 2013) (849 respondents). We consider these valuable comments to be important guidelines for compiling subsequent reports and for the future initiatives of the J-POWER Group, and intend to put their lessons to use in our corporate activities.

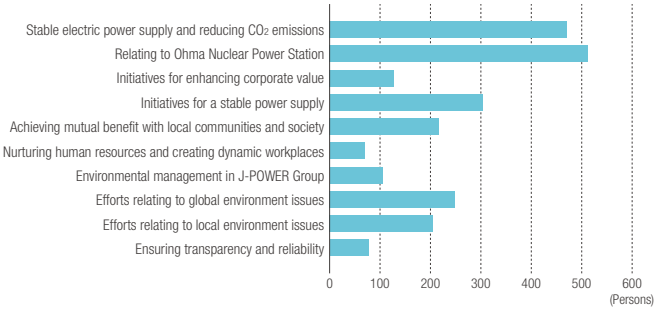
Breakdown of survey respondents



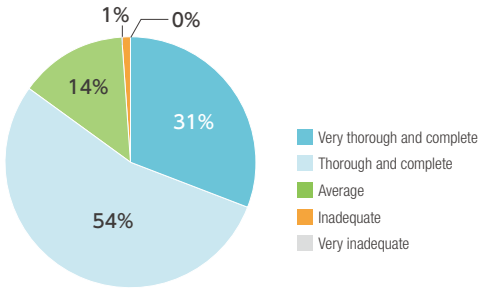
Quantity and quality of information in the report



Items of particular interest (multiple answers)



Design and layout of report



Expectations for the J-POWER Group

Typical Comments	Typical Comments
Global warming is a major issue, and consequently, I would like J-POWER, a coal-fired power station operator, to describe in detail its measures to reduce CO_2.	In light of the seriousness of global warming, this report contains a special feature on the J-POWER Group's new plans concerning coal-fired power, technology development, and various other measures. **Please refer to the special feature on pp. 7-12 of this report.**
The Ohma Nuclear Power Station has not yet started commercial operation, but I do not think that supplementary information has been adequate. It is desirable for the company to fulfill its responsibilities regarding transparency and accountability to shareholders and society, taking into account the risks.	With regard to the Ohma Nuclear Power Station, we have implemented consistent safety measures based on full use of the latest knowledge and the new safety standards of the Nuclear Regulatory Authority in an effort to create a power station that is trusted by local residents. We have made efforts to augment the information included in this report in order to fulfill our disclosure responsibilities. **Please refer to the information on the Ohma Nuclear Power Station on pp. 13-16 of this report.**
Employment of women is lower than expected. We are now in a time when calls are being made for women to be employed in greater numbers in business, and I believe that this is particularly necessary for electric power companies that have an image as traditional heavy industry.	The J-POWER Group encourages diversity so that we can make use of a wide range of human resources without regard for gender, age, or other such characteristics. The comment sections of this report include statements from various personnel within the J-POWER Group. **Please refer to Recruiting and Developing Human Resources and Creating Dynamic Workplaces on pp. 36-38 of this report.**
It is good that the report contains a lot of information, but there are too many pages and there is too much text, making it difficult to read in its entirety. A more compact report is desirable.	In the interests of making it easier to read, this report has approximately half of the number of pages than the report from two years earlier and the text size has been enlarged. The report also uses more charts and tables. Going forward, we will continue our efforts to prepare reports from the perspective of the readers.

Third-Party Opinion

To help us meet society's expectations regarding our corporate social responsibility (CSR) and play our part in the sustainable development of Japan and the world, in June 2014, the J-POWER Group asked outside experts who specialize in energy, the environment, and CSR to give their opinions concerning the Group's business efforts and the disclosure of information through this sustainability report from the perspective of achieving harmony between energy and the environment.

In the lead-up to the release of the fifth assessment report of the IPCC*1 scheduled for October 2014, much information concerning the effects of global warming and measures to mitigate them as well as responsive measures has been publicly released. Mitigation measures will require the pursuit of comprehensive policies that address both greenhouse gas sources and sinks. Considering that coal-fired power generation accounts for a large portion of CO_2 emissions, a strategy for global adoption of effective source countermeasures made possible by J-POWER's advanced technological capabilities would be expected to contribute significantly to global warming mitigation measures.

J-POWER is conducting research and development on the use of CCS technology for underground storage of the CO_2 currently released into the atmosphere from the combustion of fossil and other fuels, but I believe that it will be necessary for industry and academia to collaborate in the search for means of using CO_2 such as integrating new biomass technologies. This will become comprehensive technology that generates new value by linking sources and sinks, and if such technology spreads on a global scale as a part of the clean coal technologies that J-POWER is pursuing, I believe significant contributions would be made to mitigation.

With regards to biomass, in addition to biomass mixed combustion, J-POWER is also conducting research and development on biomass power generation*2 using perennial vegetation. Measures that integrate this type of electric power generation through local production for local consumption with preservation and management of semi-natural areas used by local communities and job creation efforts will be highly significant from the perspectives of mutual benefit for local communities and the natural environment. I have high expectations that J-POWER will play a role as a sustainability coordinator for energy, the environment, and local communities.

*1 Intergovernmental Panel on Climate Change
*2 Technology for generating electricity by converting grassland plants that can be repeatedly harvested such as reeds, silver grass, or plume grass to gas for combustion.

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

The Japanese Stewardship Code released by the Financial Services Agency in February 2014 includes the environment, society, and governance (ESG) as indicators of corporate status that institutional investors should understand, and I examined the direction of the content of the J-POWER Group Sustainability Report keeping in mind that investor interest in ESG will increase in the future.

The social portions of the Report are easy to understand and contain specific information, but the governance portions focus on organizational structures. From an international perspective, governance is not limited to internal organizations, and there is a tendency for the content to be broad with a focus on the impacts of systemic requirements on governance. For example, it would be desirable to include information on the direction and impact of reform of electric power systems.

In the environmental portion, the feature on coal-fired power provides detailed information on new projects and the status of technology development, but considering that interest is rising in the financial effects of global warming countermeasures including the need for new CO_2 reduction targets and CCS facilities, J-POWER could describe substantive management issues by combining previously disclosed risk information and breakdowns of facility investments and research and development expenditures with financial information such as electric power unit prices.

With regard to the Ohma Nuclear Power Station, there is detailed information on the effects regarding global warming as well as efforts to enhance safety, but the public remains uneasy about nuclear power in general, and it is expected that investors will be increasingly interested in expenses relating to compliance with the new regulatory standards for improving safety and recycling nuclear fuel. From the perspective of the long-term creation of value, it is necessary for J-POWER to carefully and in good faith disclose information concerning its business implementation intentions as well as risks such as potential financial impacts and changes in policy.

Director and Certified Public Accountant PricewaterhouseCoopers Sustainability Co., Ltd.
Ryoji Terada

The Sustainability Report is a tool for J-POWER to convey information on its activities to the general public. For this reason, the information and messages in the report should be specific and quantitative and explain in an easy-to-understand manner J-POWER's approaches.

For example, I expect J-POWER to explain more clearly whether it has chosen to increase the efficiency of coal-fired power generation rather than switching to gas-fired thermal power generation and, with regard to curtailing CO_2 emissions, how much those increases in efficiency can match the introduction of renewable energy.

There is much specific content concerning the roles and responsibilities of J-POWER facilities in Japanese society. Coal-fired power contributes to the trade balance, and can also be praised for contributing to the enhancement of Japan's energy security through the diversification of energy sources. With regard to regional cooperation, the Sakuma Frequency Converter Station makes it possible to link the power grids of eastern and western Japan, which utilize different frequencies, and the Hokkaido-Honshu Electric Power Interconnection Facility, which links Hokkaido with Honshu, contributes to the introduction of renewable energy in Hokkaido.

Nuclear power is CO_2-free power source and makes various other contributions including contributing to bargaining power with regard to imported resources such as LNG, which is maintained in an operable form, and J-POWER should continue actively disseminating information throughout the process of constructing the Ohma nuclear power station.

Associate Professor and Doctor of Engineering
Graduate Course of Technology
Management for Innovation, School of Engineering, The University of Tokyo
Gento Mogi

Japan is highly reliant on coal-fired power as a baseload power source, and a similar trend can be seen throughout Asia. As a result, the presentation of detailed information concerning J-POWER efforts to promote low-carbon power generation including measures to increase efficiency in a feature of this report is important from the perspective of disseminating information to the general public.

Mercury is one of the environmental impacts resulting from coal-fired power generation. It is my understanding that emissions in Japan are extremely low as a result of outstanding equipment that removes mercury, but coal-fired power generation is a major source of atmospheric releases of mercury around the world. The Minamata Convention on Mercury adopted in 2013 strictly regulates the manufacture and release of mercury globally. It would be beneficial for J-POWER to respond to growing public interest in this issue by providing information concerning its mercury-release countermeasures.

In light of the need for large-scale power sources to support stable electric power supplies, J-POWER discloses information concerning its efforts to implement adequate safety measures concerning the Ohma Nuclear Power Station, but further efforts concerning risk communications with the local community are desirable.

From the perspective of the future of energy in Japan, there are expectations that J-POWER will adopt approaches that enable cooperation with regional revitalization through its electricity business in the form of social contribution programs and that it will develop technology relating to hydrogen energy.

I expect that J-POWER will provide information in its reports on its responses concerning the future full-scale reform of electric power systems.

Journalist, Environmental Counselor
Yuko Sakita

A Response to Opinions

Thank you for these valuable opinions. All members of the J-POWER Group at each worksite are committed to performing their work with an understanding of the increasing importance of stable electric power supplies in Japan and environmental preservation including reducing CO_2 in order to conscientiously fulfill the diverse and increasing responsibilities that society expects of businesses.

Going forward, we will continue reporting on the J-POWER Group's activities through sustainability reports.

Executive Vice President and Chairman of J-POWER Group Environmental Management Promotion Board
Yoshihiko Sakanashi

Electric Power Development Co.,Ltd.

Environmental Management Promotion Board Office:
Business Research Office,
Corporate Planning and Administration Department

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Reliability Assurance

Inspection/Registration Mark
Indicates that the report has been inspected by a third party organization and satisfies "Sustainability Report Inspection and Registration Mark Conferment Standards."

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