J-POWER Group Environmental Management Vision

Basic Policy

The J-POWER Group adheres to the following basic policy.

Basic Stance

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

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

Efforts Relating to Global Environmental Issues

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

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

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

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

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

Efforts Relating to Local Environmental Issues

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

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

Ensuring Transparency and Reliability

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

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

April 1, 2004

中坂喜彦

President
Yoshihiko Nakagaki

Action Program

In accordance with the basic policy of the J-POWER Group Environmental Management Vision, we have formulated an action program setting out goals with respect to key issues or problems related to our business activities, along with methods to achieve the goals. The entire group is now working toward meeting these targets.

J-POWER Group Targets

◆ Efforts Relating to Global Environmental Issues (Measures against Global Warming)

Target	We aim to reduce CO_2 emissions per unit of electric power sales in Japanese and overseas power plant operations to 10% below the 2002 level by fiscal 2010.
Action	We will implement the following measures by combining them economically, taking cost-effectiveness on a global scale into account.

Category	Measure
Sustainability and improvement of energy efficiency	● Maintain high-efficiency operation of power facilities ● Adopt energy-efficient equipment in case of renewal ● Lower the auxiliary power ratio in our plants through effective operation and management ● Introduce high-efficiency technologies in new facilities
Development of various types of power generation with lower CO_2 emissions	● Promote development of Ohma Nuclear Power Station ● Promote development of renewable energy ● Promote development of gas-turbine combined-cycle power generation ● Promote development of gas cogeneration systems
Utilization of the Kyoto Mechanisms	● Procure emission reduction credits through Joint Implementation, CDM, and emissions trading
Development, transfer, and dissemination of technologies	● Establish technologies for use of biomass fuel ● Continuously promote technological developments that reduce CO_2 emissions to power sales volume over the long term • Develop technology to improve efficiency of coal-fired plants • Develop coal gasification technology and Integrated Gas Fuel Cell technology (IGFC) • Research and develop CO_2 sequestration technology • Research and develop renewable energies

◆ Efforts Relating to Local Environmental Issues (Formation of a Recycling-Based Society)

Target	We aim to achieve a recycling rate of 97% across the J-POWER Group by fiscal 2010, toward our ultimate objective of zero industrial waste emissions.
Action	● Promote the effective use of coal ash ● Reduce all types of industrial waste emitted from the maintenance and operation of power plants

◆ Ensuring Transparency and Reliability (Enhance Our Environmental Management Structure)

Target	We plan to introduce environmental management systems (EMS) for the entire J-POWER Group by the end of fiscal 2007.
Action	● We aim to acquire ISO 14001 certification for all thermal power plants by the end of FY 2005. ● We plan to implement an EMS for all consolidated subsidiaries by the end of fiscal 2007.

Segment Goals—Each division and group company sets goals for its own business activities

◆ Efforts Relating to Global Environmental Issues (Measures against Global Warming)

Key items	● Thermal Power Division: High-efficiency operation of power plants and introduction of high-efficiency equipment in new plants ● Hydropower Division: Improve productivity of hydroelectric power plants ● Common issues: Energy conservation in buildings and offices, savings on vehicle fuel

◆ Efforts Relating to Regional Environmental Issues (Air, Water, Waste)

Key items	● Thermal Power Division: Reduce SOx and NOx emissions, reduce volume of water for industrial use, effective use of coal ash ● Hydropower Division: Effective use of driftwood ● Common issues: Reduce resource use in offices, cut waste

◆ Ensuring Transparency and Reliability

(EMS, Comprehensive Environmental Communications, and Green Procurement)

Key items	● Acquire ISO 14001 certification, introduce EMS ● Promote environmental communications, participate in environmental volunteer programs ● Promote green purchasing/procurement (energy-saving office equipment, recycled paper, environmentally friendly vehicles, etc.) ● Promote measures to prevent environmental damage from accidents ● Thoroughgoing environmental education (e-learning, auditor training, etc.)

Note: Key goals are outlined on the relevant pages below

Fiscal 2006
J-POWER Group Environmental Action Guidelines

1 Efforts Relating to Global Environmental Issues

Maintenance and Improvement of Efficient Energy Use

- Maintain highly efficient operations at existing thermal power stations and employ highly efficient technologies in new facilities
- Maintain stable operation of existing hydro and geothermal, as well as wind and recycling power stations
- Improve productivity of existing hydropower stations by improvements in efficiency when replacing equipment
- Promote energy saving
  - Manage power station operations efficiently and reduce auxiliary power ratio
  - Promote energy saving in offices through energy-conservation checkups, etc.
  - Promote energy saving projects and encourage widespread use of energy-saving products
  - Reduce environmental impact through efficient transportation of raw materials
  - Reduce environmental impact through use of public transport wherever possible, and efficient use of corporate vehicles when necessary, implementing eco-driving techniques.

Development of Low CO_2 Emission Power Sources

- Construct nuclear power stations
  - Steadily prepare for construction of Ohma Nuclear Power Station
- Effectively utilize renewable and unutilized energy
  - Promote the development of new sites in our hydro, geothermal, wind, and recycling power operations.
  - Promote mixed use of biomass fuel in existing thermal power plants
  - Expand consulting business for development of renewable and unutilized energy
  - Promote biomass power plants overseas
- Encourage the use of natural gas
  - Promote gas-turbine combined cycle power generation and cogeneration plants

Utilization of Kyoto Mechanisms

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

Development, Transfer, and Diffusion of New Technologies

- Develop the Integrated Gas Fuel Cell (IGFC) and the Solid Oxide Fuel Cell (SOFC)
- Conduct the Integrated Coal Gasification Combined Cycle (IGCC) trial in collaboration with power companies
- Promote micro-hydropower stations
- Promote R&D on CO_2 sequestration technologies

Reducing Emissions of Greenhouse Gases Other Than CO_2

- Reduce sulfur hexafluoride (SF_6) emissions from gas-insulated switch gear
- Reduce hydrofluorocarbon (HFC) emissions from air conditioners

2 Efforts Relating to Regional Environmental Issues

Reduction of Environmental Load

- Ongoing reduction of emissions
  - Control combustion and manage facilities for environmental measures to reduce emissions of SOx, NOx, and soot and dust
  - Manage wastewater treatment facilities to restrict release of pollutants
  - Restrict noise, vibration, and odors through proper management of equipment
  - Prevent soil and underground water pollution through proper management of facilities and publicizing these efforts.
- Prepare appropriate and timely countermeasures to deal with oil spills from equipment, etc.
- Design and introduce efficient and environmentally friendly plant and equipment when constructing or renovating facilities.

Recycling and Reuse of Recyclable Resources

- Recycling and reuse of recyclable resources and efforts toward zero-emission production
  - Promote effective use of materials such as coal ash, gypsum, concrete blocks, scrap metal, and driftwood
  - Promote reduction of emissions and reuse and recycling of waste materials from construction, renovation, and demolition sites
  - Promote reduced use of water, chemicals and lubricating oils
  - Promote use of electronic documents and work to reduce consumption of consumables such as copier paper and other office supplies
  - Separate paper, bottles, cans, and plastics prior to collection and promote the reuse and recycling of such materials
- Ensure proper disposal of waste materials
  - Work to minimize risk related to waste materials by selecting appropriate subcontractors for industrial waste disposal, etc.

Control of Chemicals

- PRTR system
  - Identify, control, notify, and disclose the emission and transfer volumes of chemicals subject to the Pollutant Release and Transfer Register (PRTR) Law
- Dealing with Dioxins
  - Properly manage waste incinerators, conduct surveys of exhaust gas and bottom ash, and report the results in accordance with the Law Concerning Special Measures against Dioxins
  - Promote widespread use of continuous measuring monitors for dioxin precursors
- Management and Disposal of PCBs
  - Properly store and manage PCBs in accordance with the Waste Management and Public Cleansing Law and the Law Concerning Special Measures against PCB Waste
  - Treat PCB waste in accordance with our basic policy, based on the government's regional waste-management program
- Strive to reduce volumes of hazardous chemicals handled
- Appropriate response to asbestos-related issues

Concern for Conservation of the Natural Environment and Biodiversity

- Planning and design initiatives
  - Evaluate the effects of our operations on the environment through monitoring and strive to reduce environmental impact from the planning and design stages
- Construction initiatives
  - Take environmental conservation measures, and work to reduce impact on the local biosphere and preserve the diversity of species in the area
- Maintenance and management initiatives
  - Consider preservation of the surrounding natural environment in the maintenance and management of plant and equipment
  - Consider conservation of river environments (sedimentation, turbid water, water quality, etc.) when controlling impounding and balancing reservoirs
- Forest conservation initiatives
  - Work to use forests owned by J-POWER as sites for environmental conservation and education
- Consider preservation of regional landscapes

Environmentally Conscious Projects Overseas

- Promote overseas transfer of environmental protection technologies
  - Promote transfers of environmentally friendly technologies for thermal power and hydropower generation
  - Promote cooperation in environmentally conscious technologies such as power generation from wind, solar, and waste materials, as well as energy conservation
- Formulate and implement development plans based on an appropriate level of environmental consciousness

Promotion of Technological R&D

- Technology R&D for cleaning up aquatic environments, treatment of sediment in reservoirs, and effective use of lakebed sediment

Note: Zero emissions—A concept proposed by the United Nations University for the creation of a system that would enable cooperation between different industries (and companies) to transform waste materials into resources, working to reduce waste emissions (final disposal amounts) as close to zero as possible.

3 Ensuring Transparency and Reliability

(1) Continual Improvement of Environmental Management (Greater Reliability)

Improvement of Environmental Management Level

- Maintain ISO 14001certification at all J-POWER generation facilities
- Promote introduction and enhance operation of EMS at all J-POWER group companies
- Raise employee awareness
  - Systematically implement environmental management education and training through use of e-learning and other methods
  - Introduce environmental report study groups at each J-POWER workplace and in group companies
  - Conduct opinion surveys of employees and publicize the results
- Environmental accounting
  - Strive to improve methods of identifying costs and benefits of environmental conservation
  - Examine appropriate environmental efficiency indicators
- Request cooperation of business partners in environmental activities
- Renew Eco-leaf environmental labeling using life cycle assessment method

Efficient Operation of EMS

- Continuous improvement of EMS
  - Identify actual environmental loads and establish targets and plans for environmental conservation
  - Comply with laws and agreements, strive to meet targets, and periodically evaluate and improve activities
  - Systematically conduct environmental audits and review EMS on the basis of audit results to achieve continual improvement
- Undertake environmental risk management, ensure communication in case of emergency, and work to prevent environmental accidents

Green Procurement Efforts

- Promote green procurement efforts in line with J-POWER Group guidelines
- Expand use of environmentally friendly vehicles

(2) Communication with Society (Greater Transparency)

Publication of Environmental Information

- Improvement of Environmental Report
  - Seek third-party verification of Environmental Report data (substances, energy, etc.) and strive for greater reliability
- Publicizing of environmental conservation activities
  - Publicize environmental conservation activities through media such as newspapers, business magazines, websites, and in-house publications for group companies
  - Publicize activities to visitors to offices and PR facilities
- Speedily communicate and release information on accidents and incidents with environmental impact

Active Communication

- Utilization of environmental reports, etc.
- Utilization of environmental events, etc.
- Diversification of external communications
  - Promote the diversification of communications by accepting external assessments such as of environmental management rating

Promotion of Social Activities Program

- Participate in regional environmental conservation activities
  - Take part in municipal/regional cleanup and beautification programs, afforestation projects, etc. as part of environmental action month and similar initiatives
- Take a leading role in regional environmental conservation activities

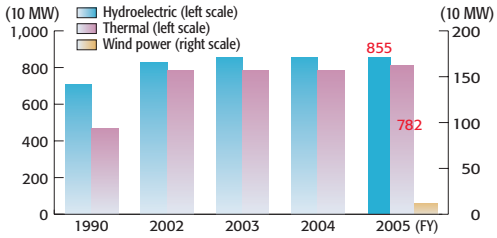
Fiscal Year Data

The following data represent annual values or year-end values in each fiscal year.
Unless specially noted, data for FY 2004 or earlier is for J-POWER only; data for FY 2005 includes that of the Group companies.

Figures for FY 2005 in the graphs (red text) are for the J-POWER alone.

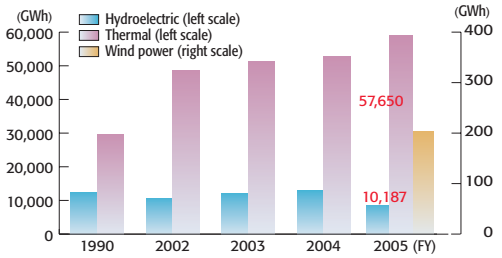
Power Facilities (maximum output)

	Unit	FY 1990	FY 2002	FY 2003	FY 2004	FY 2005
Hydroelectric	10 MW	709	826	855	855	855
Thermal	10 MW	465	782	782	782	810
Coal-fired	10 MW	464	781	781	781	792
Natural gas	10 MW					17
Geothermal	10 MW	1	1	1	1	1
Wind power	10 MW					12
Total	10 MW	1,174	1,609	1,637	1,637	1,677



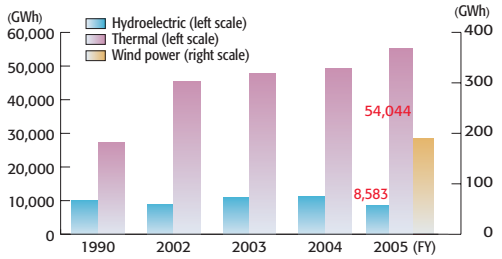
Electricity Output

	Unit	FY 1990	FY 2002	FY 2003	FY 2004	FY 2005
Hydroelectric	GWh	12,451	10,624	12,103	12,892	10,187
Thermal	GWh	29,551	48,679	51,237	52,708	58,922
Coal-fired	GWh	29,452	48,599	51,133	52,616	58,070
Natural gas	GWh					748
Geothermal	GWh	99	80	104	92	104
Wind power	GWh					203
Total	GWh	42,00	59,303	63,340	65,600	69,312



Electric Power Sales Volume

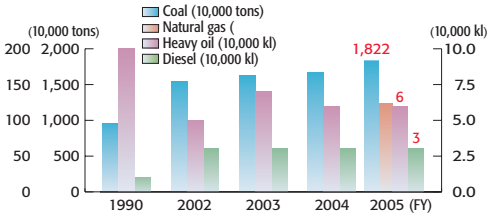
	Unit	FY 1990	FY 2002	FY 2003	FY 2004	FY 2005
Hydroelectric (excluding pumped storage)	GWh	10,046	8,902	10,850	11,172	8,583
Thermal	GWh	27,293	45,527	47,937	49,345	55,205
Coal-fired	GWh	27,206	45,453	47,841	49,261	54,413
Natural gas	GWh					698
Geothermal	GWh	87	74	96	84	94
Wind power	GWh					195
Total	GWh	37,338	54,429	58,787	60,517	63,983



Fuel Consumption

	Unit	FY 1990	FY 2002	FY 2003	FY 2004	FY 2005
Coal (dry coal 28 MJ/kg conversion)	10,000 tons	956	1,543	1,621	1,669	1,839
Use intensity (coal-fired thermal)	t/GWh	351	340	339	339	338
Natural gas	mil. m³					124
Heavy oil	10,000 kl	10	5	7	6	6
Diesel	10,000 kl	1	3	3	3	3

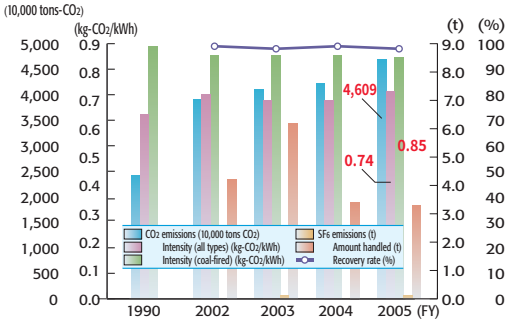
Note: Denominator for use intensity represents power sales from coal-fired thermal power stations.



Greenhouse Gas Emissions

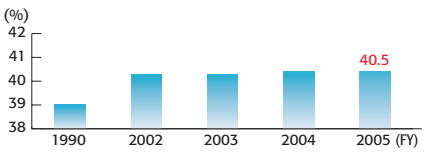
	Unit	FY 1990	FY 2002	FY 2003	FY 2004	FY 2005
CO_2 emissions	10,000 tons-CO_2	2,418	3,915	4,107	4,222	4,683
Intensity (all types)	-CO_2/kWh	0.65	0.72	0.70	0.70	0.73
Intensity (coal-fired)	-CO_2/kWh	0.89	0.86	0.86	0.86	0.86
SF_6 emissions	t	–	0.0	0.1	0.0	0.1
Handled	t	–	4.2	6.2	3.4	3.3
Recovery rate	%	–	99	98	99	98
HFC emissions	t	–	0.0	0.0	0.0	0.0

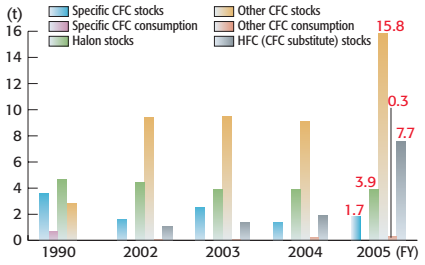
Notes: 1. Denominators for emission intensity represent power sales
2. Excluding Wakamatsu Research Institute



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

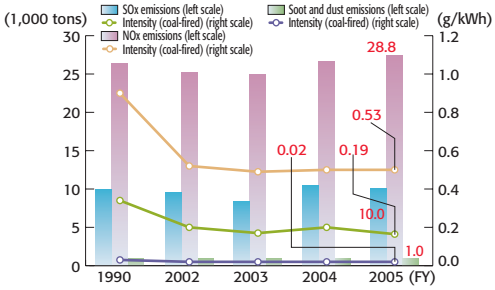
	Unit	FY 1990	FY 2002	FY 2003	FY 2004	FY 2005
Average thermal efficiency (at generation point)	%	39.0	40.3	40.3	40.4	40.5





Usage of Specific CFCs

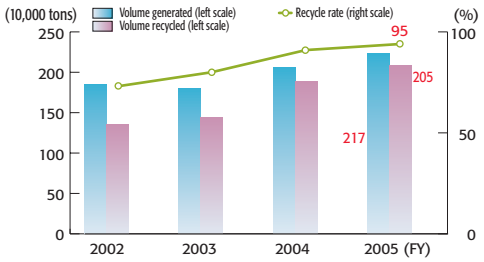
		Unit	FY 1990	FY 2002	FY 2003	FY 2004	FY 2005
Specific CFCs	Stocked	t	3.6	1.6	2.5	1.4	1.8
	Consumed	t	0.7	0.0	0.0	0.0	0.0
Halons	Stocked	t	4.7	4.4	3.9	3.9	3.9
	Consumed	t	0.0	0.0	0.0	0.0	0.0
Other CFCs	Stocked	t	2.8	9.4	9.5	9.1	15.8
	Consumed	t	0.0	0.1	0.1	0.2	0.3
HFCs (CFC substitutes)	Stocked	t	–	1.1	1.4	1.9	7.7
	Consumed	t	–	0.0	0.0	0.0	0.1



SOx, NOx, and Soot and Dust Emissions

	Unit	FY 1990	FY 2002	FY 2003	FY 2004	FY 2005
SOx emissions	1,000 tons	9.9	9.5	8.4	10.4	10.2
Intensity (coal-fired)	g/kWh	0.34	0.20	0.17	0.20	0.19
NOx emissions	1,000 tons	26.4	25.2	25.0	26.6	28.9
Intensity (coal-fired)	g/kWh	0.90	0.52	0.49	0.50	0.53
Soot and dust emissions	1,000 tons	1.0	0.9	1.0	1.0	1.0
Intensity (coal-fired)	g/kWh	0.03	0.02	0.02	0.02	0.02

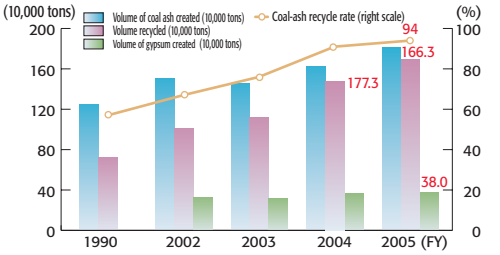
Notes: 1. Soot and dust emissions calculated from monthly measurements
2. Denominators for emissions represent power generation in coal-fired thermal power stations



Industrial Waste Recycling

	Unit	–	FY 2002	FY 2003	FY 2004	FY 2005
Volume generated	10,000 tons	–	185	180	206	223
Volume recycled	10,000 tons	–	135	144	189	209
Recycle rate	%	–	73	80	92	94

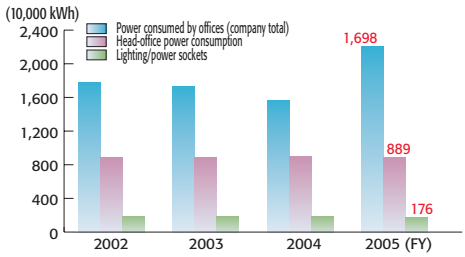
Note: Figures for FY 2004 are for the entire J-POWER Group



Coal-Ash and Gypsum Recycling

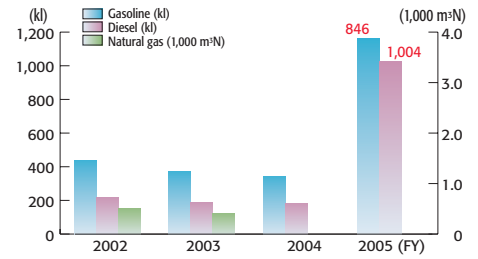
	Unit	FY 1990	FY 2002	FY 2003	FY 2004	FY 2005
Coal-ash created	10,000 tons	125.7	150.7	146.5	162.3	180.6
Coal-ash recycled	10,000 tons	71.9	101.4	111.9	147.4	169.6
Coal-ash recycle rate	%	57	67	76	91	94
Gypsum created	10,000 tons	–	33.0	32.0	37.1	38.0
Gypsum recycle rate	%	100	100	100	100	100

Note: Refer to p. 39 for details on coal-ash recycling rate



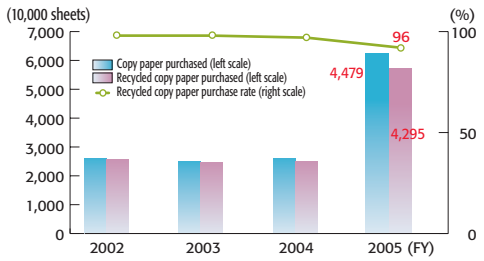
Office Power Consumption

	Unit	–	FY 2002	FY 2003	FY 2004	FY 2005
Power consumed by offices (company total)	10,000 kWh	–	1,781	1,728	1,564	2,200
Head office power consumption	10,000 kWh	–	884	881	899	889
Lighting/power sockets	10,000 kWh	–	185	179	179	176



Fuel Consumption (vehicles, ships, emergency generators, etc.)

	Unit	–	FY 2002	FY 2003	FY 2004	FY 2005
Gasoline	kl	–	438	372	342	1,162
Diesel	kl	–	217	185	182	1,026
Natural gas	1,000 m³N	–	0.5	0.4	0.0	0.0



Green Purchasing

	Unit	–	FY 2002	FY 2003	FY 2004	FY 2005
Copy paper purchased	10,000 sheets	–	2,617	2,492	2,597	6,241
Recycled copy paper purchased	10,000 sheets	–	2,560	2,453	2,511	5,722
Recycled copy paper purchase rate	%	–	98	98	97	92

Treaties and Laws Relating to Global Warming

Overview of the Framework Convention on Climate Change

The United Nations Framework Convention on Climate Change is a treaty that establishes an international framework for stemming global warming. It was adopted in June 1992 at the first World Summit on Sustainable Development in Rio de Janeiro (commonly known as the Earth Summit), and came into force on March 21, 1994. Thus far it has been ratified by 188 countries and one territory.

The ultimate aim of the convention is to stabilize the concentration of greenhouse gases in the atmosphere at levels that will not cause dangerous human disruption of the earth's climate system.

Principles

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

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

Overview of the Kyoto Protocol

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

* 35 developed countries (including 11 economies in transition) and the European Community.

Targeted greenhouse gases (GHGs)	6 categories of gases: CO_2 (carbon dioxide), methane, N_2O (nitrous oxide), HFCs (hydrofluorocarbons), PFCs (perfluorcarbons), and SF6 (sulfur hexafluoride)
Commitment period	2008–2012 (first commitment period)
Goal	To reduce average yearly emissions of greenhouse gases by the Annex I countries by 5% from 1990. In Annex B of the Kyoto Protocol, the Annex I countries commit themselves to specific reduction targets; Japan's reduction target is 6%.
Use of sinks (absorption forests)	Countries may include in their calculation of emissions reduction the removal of CO_2 by "sinks" resulting from land-use change and forestry activities, limited to afforestation, reforestation, and deforestation since 1990.
Kyoto Mechanisms	Emissions trading,[1] Joint Implementation (JI),[2] and the Clean Development Mechanism (CDM)[3] have been adopted as means to achieve reduction targets on a global scale through economically rational behavior.

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

Plan to Meet the Targets of the Kyoto Protocol

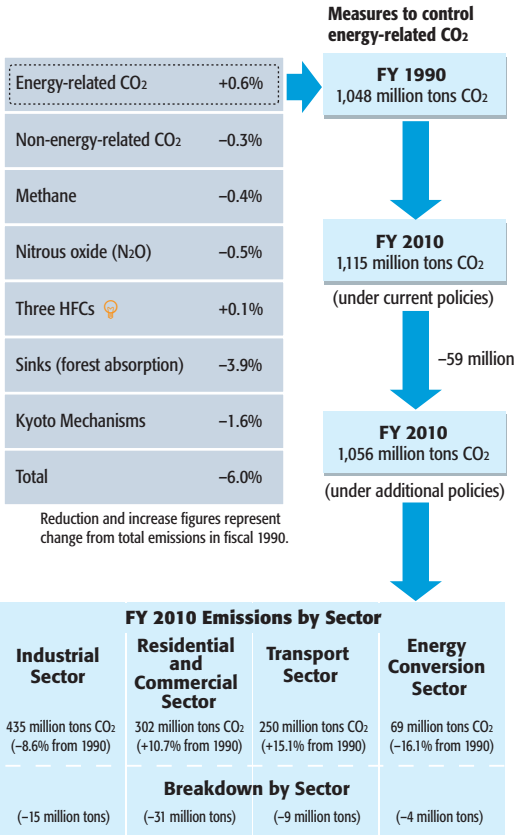
In accordance with the Law Concerning the Promotion of the Measures to Cope with Global Warming (Law no. 117, 1998), the Japanese government has formulated a Kyoto Protocol Target Achievement Plan establishing the measures and mechanisms needed for Japan to be certain of meeting its Kyoto Protocol commitment to reduce emissions by 6% from the 1990 level. On April 28, 2005, the plan was adopted by cabinet resolution.

Basic Directions for the Promotion of Measures to Stem Global Warming

Goals for Fighting Global Warming
- Achieve the 6% reduction target under the Kyoto Protocol without fail
- Aim for long-term, continuing reductions
- Take a global leadership role as an "advanced environmental nation."

Basic Approach to Fighting Global Warming
- Reconcile environmental and economic imperatives
- Promote technological innovation, encourage participation by and partnership among all entities in all sectors of society
- Make use of a variety of policy tools
- Forge international partnerships

Quantitative Targets for Emissions Reduction and Absorption of Greenhouse Gases



Environmental Action Plan of the Electric Power Industry

(Summarized from the Environmental Action Plan of the Electric Power Industry, Federation of Electric Power Companies of Japan, September 2005)

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

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

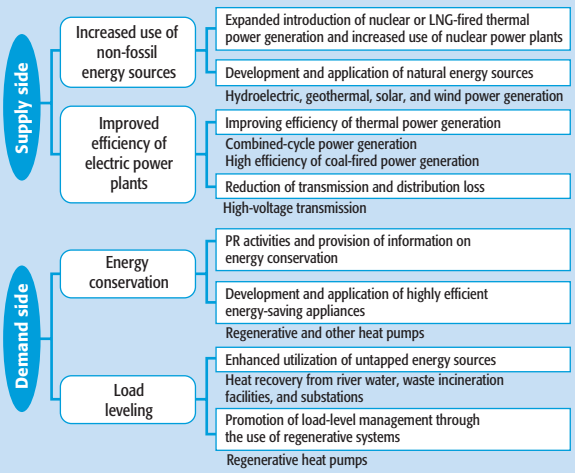
Measures for Stemming Global Warming

◆ CO_2 Emissions Reduction Target

The electric power industry has adopted as its indicator for CO_2 emissions reductions CO_2 emissions per unit of electricity used by consumers (CO_2 intensity at the point of consumption) and has set the following target for reduction from the fiscal 1990 level.

> To work to reduce CO_2 emissions intensity at the point of consumption by about 20% from the level of fiscal 1990 by fiscal 2010 (to approximately 0.34 kg-CO_2/kW)

Summary of Measures to Reduce CO_2



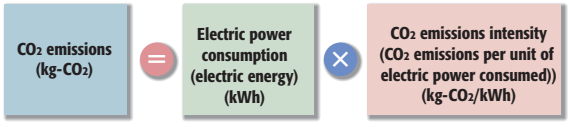
Japan's CO_2 Emissions

Item	FY 1990 (results)	FY 2002 (results)	FY 2003 (results)	FY 2004 (results)	FY 2005 (estimate)	FY 2010
Electricity consumption (billion kWh)	659	841	834	865	854	(Est.) 897
CO_2 emissions (million t-CO_2)	277 [2]	342 [17]	363 [20]	364 [26]	330	(Est.) 320
CO_2 intensity at point of consumption (kg-CO_2/kWh)	0.421	0.407	0.436	0.421	0.39	(Est.) 0.36 → (Target) 20% reduction vs. FY 1990 (about 0.34)

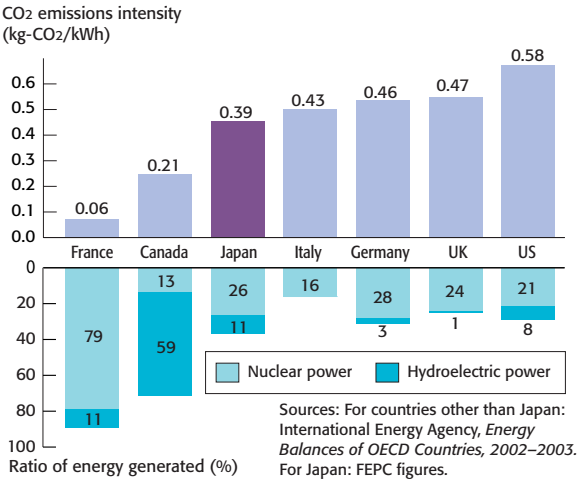
1. CO_2 emissions intensity (user-end electricity) = CO_2 emissions ÷ energy consumption
2. "CO_2 emissions" represents total of emissions for each type of fuel. It is calculated as follows: CO_2 emissions = Calorific value attending fossil fuel combustion x CO_2 emission coefficient
3. Calorific values used are those provided in the Agency for Natural Resources and Energy's Fiscal 2005 Fuel Plan for Steam Power Generation, etc. Fuel-specific CO_2 emission coefficients are those provided in the Ministry of the Environment's Comprehensive Report on the Calculation of Greenhouse Gas Emissions (August 2002).
4. Estimates for fiscal 2005 and 2010 are based on the fiscal 2005 energy supply plan, which considers GDP indicators, demand trends, and other factors.
5. Electric power consumption includes power purchased from cooperative thermal power plants, IPPs (independent power producers), and household generators and sold to customers; CO_2 emissions include those stemming from the generation of this purchased power.
6. Figures in parentheses represent total CO_2 emissions from power purchased from IPPs and household generators; CO_2 reduction efforts are expected from each generation source. For purposes of calculation, calorific value is estimated from the amount of power purchased.

Goal of 12 FEPC-Affiliated Companies

Reduce CO_2 emissions intensity (user-end electricity) by about 20% from fiscal 1990 level by fiscal 2010



Country-by-Country Comparison of CO_2 Emissions Intensity (per unit of energy generated) Fiscal 2003 Preliminary Calculation by FEPC

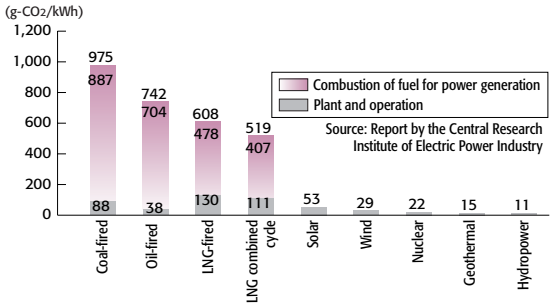


Sources: For countries other than Japan: International Energy Agency, *Energy Balances of OECD Countries, 2002–2003.* For Japan: FEPC figures.

Lifecycle CO_2 Emissions by Power Source, Japan

The chart below represents the CO_2 emissions for various power sources when the entire life cycle is taken into account (LCA CO_2). This method calculates CO_2emissions not only from the combustion of fuel for power generation but also from all energy consumed from such activities as mining and drilling, building power generation facilities, transporting fuel, refining fuel, operating and maintaining facilities, and so forth.

Lifecycle CO_2 Emissions by Energy Source in Japan



Measures for Waste Reduction and Recycling

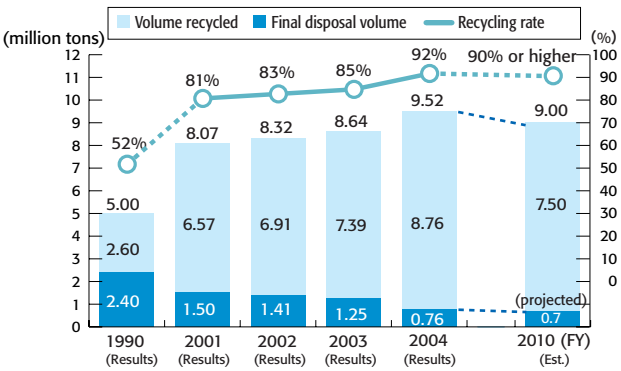
◆ Waste Recycling Rate Target

Until now the electric power industry has been working to achieve reduction of waste disposal using final waste disposal as the indicator, with the goal of reducing the volume of final waste disposal to 1.5 million tons, well below the level of fiscal 1990. Henceforth, however, the industry has decided to adopt the recycling rate as an indicator that is less influenced by fluctuations in demand and to embrace the following goal.

Coal ash is the waste generated in the largest amount compared with any other type of waste, so the electric power industry regards the promotion of recycling of the waste as its highest priority and continues to make efforts to recycle it.

> Work to raise the recycling rate from the level of fiscal 1990 (52%) to at least 90% by fiscal 2010. (The forecast for final waste disposal in 2010, based on the current level of recycling, is approximately 700,000 tons.)

Electric Power Industry's Target for Waste Recycling Rate



Note: Figures for FY 1990 include some estimated values.

Trends in Recycling of Major Wastes and By-products

Unit: 1,000 tons

Type			FY 1990	FY 2002	FY 2003	FY 2004
Waste	Combustion residue, soot and dust (coal ash)	Volume generated	3,470	6,050	6,400	6,970
		Volume recycled (Recycling rate)	1,370 (39%)	4,740 (78%)	5,260 (82%)	6,310 (91%)
	Construction waste material	Volume generated	400	330	300	360
		Volume recycled (Recycling rate)	210 (53%)	310 (94%)	290 (96%)	350 (98%)
	Scrap metal	Volume generated	140	170	160	170
		Volume recycled (Recycling rate)	130 (93%)	160 (96%)	150 (97%)	160 (98%)
By-products	Gypsum from desulfurization process	Volume generated	850	1,600	1,610	1,830
		Volume recyclede (Recycling rate)	850 (100%)	1,600 (100%)	1,610 (100%)	1,830 (100%)

Notes: 1. Waste includes products of value
2. FY 1990 figures for construction waste materials and scrap metal are estimates.
3. All gypsum from desulfurization process is sold.
4. Recycling rates are calculated on an actual volume basis. Figures for volume generated and volume recycled are rounded to the nearest 1,000 tons.)

Glossary

(Page numbers indicate major citations.)

ABWR (advanced boiling water reactor)
p. 31
A nuclear reactor that incorporates all the latest BWR (boiling-water reactor) technologies, including use of steel reinforced concrete for the containment vessel and a self-contained reactor recirculation pump, resulting in significant improvements in terms of safety, reliability, and cost.

Annex I countries
p. 87
Countries, designated in Annex I of the Framework Convention on Climate Change, that have committed themselves to reducing emissions of greenhouse gases (also referred to as "developed countries" in this report).

Biotope
p. 52
The habitat of a community of organisms. From the Greek *bio*, meaning life, and *topos*, meaning place. Originally used broadly to mean an ecosystem, it now often refers to an artificially created habitat for plants, fish, insects, etc.

CDM (Clean Development Mechanism)
pp. 11, 33, 34, 81, 83, 87

CDP (career development program)
p. 72

CMMS (computerized maintenance management System)
p. 58
A maintenance management system leveraging IT technology that has had excellent results in Western countries. By seamlessly linking management of facilities, operations, materials, procurement, etc. in an integrated database, it facilitates efficient operations and the integration and sharing of data and know-how relating to maintenance management.

COD (chemical oxygen demand)
p. 24
The amount of oxygen required to oxidize the pollutants (primarily organic) in water. Used as an indicator to measure pollution of coastal waters and lakes.

Compliance
pp. 2, 9, 13, 16, 50, 67, 80
Observance of legal statutes.

Dioxins
pp. 41, 42, 52, 83, 95
Collective name for Polychlorinated dibenzo-p-dioxin (PCDD), polychlorinated dibenzofuran (PCDF), and coplanar polychlorinated biphenyl (coplanar-PCB). Toxic substances generally present in the environment in trace amounts and suspected of posing grave danger to human life and health. Under the Law Concerning Special Measures against Dioxins, which came into force in January 2000, dioxin emissions from waste incinerators and other sources are strictly regulated.

DNA microarray
p. 49
A wafer or microscopic slide on which DNA spots are densely fixed in a predetermined arrangement; used as a tool for genetic analysis. When the microarray is exposed to the sample DNA, which has been marked with fluorescent pigment, it is possible to identify the DNA in the sample by taking advantage of the structure of the DNA molecule, which consists of two complementary chains. DNA microarrays allow a large amount of genetic information to be analyzed in a short time and are expected to have wide application, including genomic drug discovery, tailor-made medical treatment, and inspection of genetically modified food.

EMS (environmental management systems)
pp. 11, 17, 22, 29, 40, 44, 50, 51, 52, 81, 82, 95

Environmental accounting
pp. 25, 84
A mechanism for accurately determining and disclosing what a company invests and spends on environmental conservation and the effect of such spending—something not reflected in traditional financial analysis. Environmental accounting benefits companies by providing a quantitative assessment of their efforts to protect the environment so that they can improve the cost-effectiveness of their business activities with respect to environmental costs. It benefits stakeholders by making available corporate environmental accounting data in the form of environmental reports, etc., which can be used as yardsticks for measuring and comparing the environmental efforts of different companies.

Environmental Action Plan of the Electric Power Industry
p. 88
Plan for positive, voluntary environmental action by electric utilities, compiled by 12 organizations affiliated with the Federation of Electric Power Companies of Japan. Establishes concrete goals and outlines active efforts to address global warming, build a recycling-based society, etc. To ensure transparency, progress under the plan is reviewed each year and the results are made available to the public.

Environmental efficiency
pp. 26, 28, 37, 47, 79, 84
A method for quantifying, comparing, and evaluating activities to reduce the amount of water, electricity, and raw materials used and to reduce the volume of waste, effluent, and exhaust gas generated in business operations, as well as efforts at legal compliance and control of environmental pollution.

Fuel cell
pp. 11, 35
A device that converts externally supplied hydrogen and oxygen into electricity through a chemical reaction. Because fuel cells can achieve high generating efficiency and the heat generated can also be utilized, they have a high net energy efficiency and offer an effective means of saving energy and reducing CO_2 emissions. Fuel cells are particularly friendly to the environment because they dispense with combustion, thus giving off few air pollutants, and because they generate electricity without using rotating parts, and thus are relatively quiet.

Gas cogeneration system
pp. 47, 81, 83
An energy system that burns natural gas to produce electricity with turbines or engines and uses the heat generated for air conditioning, hot water, etc. It achieves high thermal efficiency by generating two forms of energy at once.

Gas-turbine combined-cycled generation
pp. 7, 31, 81, 83
A power generation method combining gas turbines and steam turbines. The pressure of the exhaust gas created when the fuel is burned within compressed air drives the gas turbine, and the residual heat is used to run the steam turbine. Combining these two processes results in high generating efficiency.

Generating efficiency (thermal efficiency)
pp. 10, 28, 35, 47, 95
For an electric power generating facility, the ratio of electric power generated (converted to thermal units) to heat energy input.

Green purchasing
pp. 55, 82, 84, 86
Placing priority on minimizing the environmental burden in the purchase of goods and services by emphasizing environmental impact, as opposed to price, quality, convenience, or design.

HCFCs (hydrochlorofluorocarbons)
pp. 36, 86, 88
Chemicals used in refrigerators and in the manufacture of semiconductors in place of chlorofluorocarbons, which destroy the ozone layer. Because their greenhouse effect is several thousands or even tens of thousands times that of carbon dioxide, they were included among the gases targeted for reduction at COP3, held in Kyoto in December 1997.

HFCs (hydrofluorocarbons)
pp. 36, 83, 85, 87
Chemicals used in refrigerators, car air conditioners, etc., beginning around 1991, after CFCs and HCFCs were subject to controls out of concerns that they destroy the ozone layer. HFCs are artificial greenhouse gases with a greenhouse effect ranging from 140 to 11,700 times that of CO_2.

IGCC (integrated coal gasification combined cycle)
pp. 11, 35
A combined power generation system consisting of gas turbines that generate electricity by firing gas produced from coal and steam turbines that use the exhaust heat from the gas turbines.

IGFC (integrated coal gasification fuel cell combined cycle)
pp. 11, 35, 81, 83
A triple combined power generation system achieved by combining the fuel cell, gas turbine, and steam turbine; the ultimate coal-fired thermal power generation system.

Industrial waste
pp. 11, 22, 24, 39, 44, 52, 53, 81, 83, 86
Wastes such as ash, sludge, waste acid, waste oil, waste alkali, and waste plastics generated in the course of business operations. The Waste Management and Public Cleansing Law calls for proper disposal and incineration of industrial waste.

IPP (independent power producer)
pp. 3, 4, 7, 8, 32, 47, 48, 51, 76
A business, other than a wholesale power supplier, that supplies electricity to general electric utilities.

ISO 14001
pp. 11, 17, 18, 22, 50, 51, 52, 81, 82, 84, 95
An international standard specifying the requirements for an environmental management system; one of the ISO 14000 series of international standards for environmental management adopted by the International Standards Organization (ISO).

JEPIX (Environmental Priorities Index for Japan)
p. 26
A method for assessing the overall environmental impact of a company and expressing it by means of a single figure by assigning weights to 300 environmental pollutants in terms of their impact on water and air quality using a single index model called ecopoint.

JI (Joint Implementation)
pp. 11, 33, 34, 81, 83, 87

LCA (life-cycle assessment)
pp. 23, 84, 89
A method for quantitatively and objectively assessing the resources and energy used and the total environmental emissions produced by a product in all its phases—including manufacture, transport, use, and disposal—and the impact of this consumption and burden on the earth and its ecosystems.

LIME (life-cycle impact assessment method based on endpoint modeling)
p. 26
A method for scientifically analyzing the contribution of substances such as CO_2 to various environmental problems, such as global warming and destruction of the ozone layer, and calculating the potential damage caused to various objects of protection, such as human health and ecosystems; weighting the relative importance of these objects; and integrating the information into an overall impact assessment.

Methane (CH_4)
pp. 36, 87
A main component of natural gas. Also produced through the decay or fermentation of organic matter. The second most common greenhouse gas, after carbon dioxide, with a greenhouse effect 21 times that of CO_2.

Microhydropower
pp. 31, 83
Hydroelectric power produced in smaller plants (usually generating 100 kW or less, although there is no precise definition).

MOX fuel (mixed-oxide fuel)
p. 31
Mixed oxide fuel consisting of uranium mixed with plutonium recovered by reprocessing spent nuclear fuel. In Japan, light-water and other reactors that use MOX fuel to generate electricity are referred to as "pluthermal." While Japan's pluthermal plan originally called for use of a 1/3 MOX core for fuel, the "full MOX" plan calls for a 100% MOX core.

Municipal solid waste (MSW)
pp. 24, 32, 40, 41
Defined as waste other than industrial waste under the Waste Management and Public Cleansing Law. Further divided into household waste, business waste (waste from offices, eating and drinking establishments, etc.) and excrement.

N_2O (nitrous oxide)
pp. 36, 87
Also known as dinitrogen monoxide. A major greenhouse gas (along with carbon dioxide, methane, tropospheric ozone, and chlorofluorocarbons) with a greenhouse effect 310 times that of CO_2. Said to be generated by combustion and application of nitrogen fertilizer.

NOx (nitrogen oxides)
pp. 18, 24, 25, 26, 30, 37, 47, 54, 82, 83, 86
Collective term for compounds made up of nitrogen and oxygen. NOx is invariably produced during combustion as oxygen binds with nitrogen in the air and/or in the substance being burned. High-temperature combustion in the boilers of electric power plants or in automobile engines yields nitrogen monoxide, and this NO is further oxidized to form the stable compound nitrogen dioxide (NO_2), which is emitted into the atmosphere. Ultraviolet light from the sun reacts with nitrogen oxides in the atmosphere to create ozone and other photochemical oxidants.

ODA (Official Development Assistance)
p. 48
Financial and technological aid offered by government and governmental agencies to developing countries with the purpose of promoting economic development and human welfare. In Japan, ODA is carried out by the Ministry of Foreign Affairs and such entities as the Japan International Cooperation Agency (JICA) and the Japan Bank for International Cooperation (JBIC).

PCB (polychlorinated biphenyl)
pp. 42, 84, 95
An organic chlorinated compound first produced industrially in 1929 and thereafter used for a wide range of applications because of its stability, heat resistance, and performance as an insulator. In time it became clear that PCB, which takes a long time to break down, tends to accumulate in living tissue and cause long-term toxicity, and its manufacture, import, and use in new products was banned in 1974 under the Law Concerning the Examination and Regulation of Manufacture, etc., of Chemical Substances. In addition, the Law Concerning Special Measures Against PCB Waste, which came into force in July 2001, calls for detoxification treatment of PCB waste currently in storage by 2016.

PDCA management cycle
p. 50
Management cycle, consisting of *plan, do, check,* and *action*, whose repetition provides the basis for continuous improvement in environmental management systems.

PFCs (perfluorocarbons)
pp. 36, 87
Chemicals used for semiconductor manufacturing beginning in the 1980s. PFCs are artificial greenhouse gases with a greenhouse effect 6,500 to 9,200 times that of CO_2.

PPS (power producer and supplier)
pp. 3, 4, 7, 8, 51
A business that provides electricity to meet a certain level of demand (in general, contract demand of at least 2,000 kW in a single service area served by extra-high-voltage lines maintained by general electric utilities, excluding Okinawa Electric Power Co.; in the case of Okinawa Electric Power Co., contract demand of at least 20,000 kW in a single service area served by power lines carrying at least 60,000 volts), excluding the general electric utilities that maintain the transmission lines. A new category of business established under the revised Electric Utility Law of 1999.

PRTR (Pollutant Release and Transfer Register)
pp. 42, 54, 83, 95

Renewable energy
pp. 5, 6, 9, 25, 26, 33, 47, 77, 81, 83
Energy derived from such natural phenomena as sunshine, water, wind, waves, and biomass, as opposed to such fossil fuels as coal and oil that exist in the earth in limited quantities.

River maintenance flow
pp. 45, 95
A minimum river flow determined for each river by considering all the conditions needed to restore or create a sound river environment, as by restoring habitat for fish, improving the scenery, etc. Established with the goal of minimizing problems caused by low water around hydroelectric power stations, as a tool for improving the river environment and restoring clean water flow.

SF_6 (sulfur hexafluoride)
pp. 25, 36, 83, 85, 87
A compound of sulfur and fluorine produced industrially; SF6 does not exist in nature. Because it is chemically stable and an excellent insulator, it is widely used in the electric industry as a gas insulator in circuit breakers and other devices. Its greenhouse effect is 23,900 times that of CO_2.

SOFC (solid oxide fuel cell)
pp. 35, 83

Soil pollution
pp. 44, 95
Contamination of soil or groundwater by hazardous substances, or the state of being so contaminated. May occur directly, as when raw materials leak from containers or pollutants enter the soil from dumped waste matter or landfills, or indirectly, via air or water pollution. Soil pollution is not easily visible and is difficult to mitigate.

Soot and dust
pp. 19, 24, 25, 37, 54, 83, 86, 89
The Air Pollution Control Law classifies particles that remain suspended in the atmosphere according to source. Soot and dust is that generated when matter is burned, general dust is that generated or dispersed when matter is broken up by mechanical treatment or from deposition of resultant particles, and particulate matter is that generated by the operation of motor vehicles.

SOx (sulfur oxides)
pp. 18, 24, 25, 26, 30, 37, 47, 54, 82, 83, 86
Collective term for compounds made up of sulfur and oxygen, including sulfur dioxide (SO_2), sulfur trioxide (SO_3), and sulfuric acid mist (H_2SO_4). Sulfur oxides are generated from the sulfur content in coal and heavy oil when they are fired as fuel in factories and thermal power plants and are released into the atmosphere in exhaust gases. As a substance responsible for acid rain, they are a source of atmospheric pollution.

Sustainability Reporting Guidelines
pp. 2, 96
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.

Specially controlled industrial waste
pp. 24, 52
Explosive, toxic, or infectious industrial waste requiring strict controls under the Waste Management and Public Cleansing Law. Includes waste oil with a low flash point, medical waste, PCBs, asbestos, and sludge containing high concentrations of heavy metals.

Sustainable development
pp. 9, 13, 21, 26, 48, 63, 77, 79, 87, 95
The 1987 report of the World Commission on Environment and Development, *Our Common Future*, defines sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." The 1991 report *Caring for the Earth*, jointly compiled by the International Union for Conservation of Nature, the United Nations Environmental Programme, and the World Wide Fund for Nature, defines it as "improving the quality of people's lives while living within the carrying capacity of supporting ecosystems."

Thermal water discharge
p. 38
In thermal and nuclear power generations, 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 plants, seawater is used to cool 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.

USC (ultra super critical)
pp. 18, 25,28
A steam turbine technology that makes use of advanced steam conditions, beyond those used in conventional super critical turbines (pressure 246 kg/cm^2; temperature 566°C), to improve the efficiency of thermal power plants.

Zero emissions
pp. 11, 21, 22, 35, 39, 80, 81, 83
A concept developed by United Nations University in 1994 in response to the idea of sustainable development put forth at the 1992 Earth Summit. It aims to build a system of recycling-based industries in which one industry uses the waste of another to create a situation in which no net waste is generated. It involves a process of continuous improvement in the quest for that ideal. In Japan different entities are now approaching the goal of "no garbage" (as the concept is popularly known) in a variety of different ways.

List of Organizations and Offices

(As of July 1, 2006)

In Japan	Name	Address	Phone Number
Head Office		104-8165 6-15-1, Ginza, Chuo-ku, Tokyo	+81-3-3546-2211
Hydropower & Transmission System Department			
	Hokkaido Regional Headquarters	060-0003 Daido Seimei Building, Kitasanjo, Nishi 3-chome, Chuo-ku, Sapporo-shi, Hokkaido	+81-11-221-8445
	East Regional Headquarters	350-1162 151, Oaza Minami Otsuka, Kawagoe-shi, Saitama	+81-49-246-9711
	Chubu Regional Headquarters	486-0815 3030-68-1, Jusanzuka, Jusanzuka-cho, Kasugai-shi, Aichi	+81-568-81-2300
	West Regional Headquaters	530-6691 Nakanoshima Center Building, 6-2-27, Nakanoshima, Kita-ku, Osaka-shi, Osaka	+81-6-6448-5921
	Ohma Main-Transmission Line Project Construction Office	035-0035 1-10, Hon-machi, Mutsu-shi, Aomori	+81-175-22-8177
	Nishi-Tokyo Main-Transmission Line Construction Office	350-1162 151, Oaza Minami Otsuka, Kawagoe-shi, Saitama	+81-449-247-7810
Civil and Electrical Engineering Department			
	Ibigawa Hydro Project Survey Office	501-0603 675, Kamiminamigata, Ibigawa-cho, Ibi-gun, Gifu	+81-585-22-0722
	Kumagawa Hydro Project Survey Office	868-0022 860-13, Ganjoji-machi, Hitoyoshi-shi, Kumamoto	+81-966-24-3100
Thermal Power Department			
	Isogo Thermal Power Station	235-8510 37-2, Shin-Isogo-cho, Isogo-ku, Yokohama-shi, Kanagawa	+81-45-761-0281
	Takasago Thermal Power Station	676-0074 6-4-1, Umei, Takasago-shi, Hyogo	+81-794-47-1301
	Takehara Thermal Power Station	729-2394 2-1-1, Tadanouminagahama, Takehara-shi, Hiroshima	+81-846-27-0211
	Tachibanawan Themal Power Station	779-1631 3, Kokatsu, Tachibana-cho, Anan-shi, Tokushima	+81-884-34-322l
	Matsushima Thermal Power Station	857-2531 2573-3, Matsushimauchigo, Oseto-cho, Saikai-shi, Nagasaki	+81-959-22-2111
	Matsuura Thermal Power Station	859-4595 458-1, Aza Sezaki, Shirahamamen, Shisa-cho, Matsuura-shi, Nagasaki	+81-956-72-1201
	Ishikawa Coal-Fired Power Staiton	904-1103 3-4-1, Ishikawaakasaki, Uruma-shi, Okinawa	+81-98-964-3711
	Onikobe Geothermal Power Station	989-6802 16-10, Aza Suezawa Nishi, Naruko-onsen, Osaki-shi, Miyagi	+81-229-82-2141
Thermal Power Engineering Department			
	Isogo Thermal Power Station No. 2 Unit Construction Office	235-8510 37-2, Shin-Isogo-cho, Isogo-ku, Yokohama-shi, Kanagawa	+81-45-761-0211
Nuclear Power Department			
	Ohma Nuclear Power Project Construction Preparation Office	039-4601 20, Aza Omataira, Oaza Ohma, Ohma-machi, Shimokita-gun, Aomori	+81-175-37-2125
	Aomori Branch Office	030-0802 Sumitomo Seimei Aomori Yanagimachi Building, 1-2-20, Hon-cho, Aomori-shi, Aomori	+81-17-722-4772
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	Wakamatsu Research Institute	808-0111 1, Yanagasaki-machi, Wakamatsu-ku, Kitakyushu-shi, Fukuoka	+81-93-741-0931

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EPDC Bangkok Office (Thailand)		10th Floor, Nantawan Building, 161 Rajdamri Road, Lumpinee Pathumwan, Bangkok 10330, Thailand
Kuala Lumpur Office (Malaysia)		Letter Box No. 38, 16th Floor, UBN Tower, 10 Jalan P. Ramlee, 50250 Kuala Lumpur, Malaysia
Hanoi Office (Vietnam)		9th Floor, Sun Red River Building, 23 Phan Chu Trinh Str., Hoan Kiem Dist., Hanoi, Vietnam
Purulia Pumped Storage Project Office (India)		WESEB PPSP Administrative Building, Patherdhi Village, P.O. Baghmundi, Purulia District, West Bengal State 723152, India
Upper Kotomale Hydropower Construction Supervision Office (Sri Lanka)		Walkers Place, Talawakelle, Nuwara Eliya, Sri Lanka
Dai Ninh Hydropower Construction Supervision Office (Vietnam)		Dai Nihn Gia, Duc Trong, Lam Dong, Vietnam

List of J-POWER's Consolidated Subsidiaries

As of the end of March 2006

Company Name	Investment Rate (%)	Head Office	Main Activities
Green Power Kuzumaki Co., Ltd.	100	Iwate-gun, Iwate	Construction and operation of wind power generation facilities
Green Power Setana Co., Ltd.	100	Kudo-gun, Hokkaido	Construction and operation of wind power generation facilities
Dream-Up Tomamae Co., Ltd.	100	Tomamae-gun, Hokkaido	Construction and operation of wind power generation facilities
Green Power Aso Co., Ltd.	81	Aso-gun, Kumamoto	Construction and operation of wind power generation facilities
Nagasaki-Shikamachi Wind Power Co., Ltd.	70	Kitamatsuura-gun, Nagasaki	Construction and operation of wind power generation facilities
Nikaho Kogen Wind Power Co., Ltd.	67	Nikaho-shi, Akita	Construction and operation of wind power generation facilities
J-Wind TAHARA Ltd.	66	Tahara-shi, Aichi	Construction and operation of wind power generation facilities
ITOIGAWA POWER Inc.	80	Itoigawa-shi, Niigata	Electric power supply
Bay Side Energy Co., Ltd.	100	Chuo-ku, Tokyo	Electric power supply
Ichihara Power Co., Ltd.	60	Ichihara-shi, Chiba	Electric power supply
JP Business Service Corporation	100	Koto-ku, Tokyo	Operation of welfare facilities; building management; undertaking of general affairs, labor, and accounting projects; development of computer software
J PHYTEC Co., Ltd.	100	Chiyoda-ku, Tokyo	Engineering, technical development, design, consulting, maintenance/surveys, construction, and management of hydropower and wind power generation facilities and transmission and transformer facilities; surveys and planning related to environmental conservation
JPec Co., Ltd	100	Chuo-ku, Tokyo	Engineering, technical development, design, consulting, and maintenance/surveys of thermal and nuclear power generation facilities; coal loading at thermal power plants; sale of fly ash and marine transportation of coal fuel; surveys, construction, and management related to green landscaping; surveys and planning related to environmental conservation
KEC Corporation	100	Bunkyo-ku, Tokyo	Construction and maintenance of electronics application facilities and communications facilities
KDC Engineering Co., Ltd.	100	Nakano-ku, Tokyo	Surveys, design, and construction management related to civil engineering, general architecture, and electric power generation facilities
J-POWER RESOURCES Co., Ltd.	100	Chuo-ku, Tokyo	Coal surveys, mining, development, and related investment
EPDC Coal Tech and Marine Co., Ltd	100	Chuo-ku, Tokyo	Marine transportation of coal ash

* Intermediate holding companies are not included in consolidated subsidiaries.

Environmental Chronology

WORLD		J-POWER		JAPAN	
		1952	Establishment of our company		
		1960	Shokawa cherry trees transplanted at Miboro Power Station	1967	Basic Law for Environmental Pollution Control promulgated
		1964	Pollution Control Agreement concerning Isogo Thermal Power Station concluded with Yohohama City (Yokohama method)	1968	Air Pollution Control Law promulgated
1972	United Nations Conference on the Human Environment (UNCHE) held in Stockholm	1973	Numappara Power Station started operation (wetland conservation)	1968	Noise Pollution Regulation Law promulgated
1975	Washington Convention (Convention on International Trade in Endangered Species, CITES) came into force	1975	Flue-gas desulfurization system completed at Takasago Thermal Power Station No.1 (Japan's first complete flue-gas desulfurization system)	1970	Water Pollution Control Law promulgated
1985	Vienna Convention for the Protection of the Ozone Layer adopted	1976	Totsugawa Power Station No. 1 improved water intake by introducing surface intake facilities	1970	Waste Management (Disposal) and Public Cleansing Law promulgated
1988	Intergovernmental Panel on Climate Change (IPCC) established	1977	Funagira Dam started operation (fish ladder installed)	1971	Offensive Odor Control Law promulgated
		1980	Yanase Power Station improved water intake by introducing selective intake facilities	1974	Air Pollution Control Law amended and promulgated (regulation of total emissions introduced)
		1982	Takehara Thermal Power Station No. 1 installed flue-gas denitrification system	1975	Vibration Regulation Law promulgated
		1986	Isogo Thermal Power Station received Pollution Prevention Award from Kanagawa Prefecture	1977	Notification of Ministry of International Trade and Industry (currently Ministry of Economy, Trade and Industry) regarding the Ministerial Meeting on Assessment issued
		1987	Ishikawa Coal-Fired Thermal Power Station selected as one of Public Color Prize Ten Environmental Winners	1984	Implementation Outline of Environmental Impact Assessment approved by the Cabinet
		1988	Takasago Thermal Power Station received Director General's Award (Energy Saving) from the Agency for Natural Resources and Energy		
1992	United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro	1990	Committee for Coping with Global Environment Problems established	1990	Global Warming Prevention Action Plan approved
1994	Framework Convention on Climate Change came into force	1990	Nishi-Yoshino Power Station No. 1 started discharging for river flow maintenance (first hydraulic power station of J-POWER)	1993	Law for Promotion of Utilization of Recyclable Resources promulgated
1995	1st Conference of Parties to the UN Framework Convention on Climate Change (COP1) held in Berlin	1990	Tagokura Power Station started producing driftwood charcoal	1993	Basic Environment Law promulgated
1996	2nd Conference of Parties to the UN Framework Convention on Climate Change (COP2) held in Geneva	1990	Takehara Thermal Power Station received Director General's Award (Energy Saving) from the Agency for Natural Resources and Energy	1994	Basic Environment Plan approved by the Cabinet
1996	ISO 14001 Environmental Management System formulated	1993	Environmental Activities Promotion Board established	1995	Law for Promotion of Sorted Collection and Recycling of Containers and Packaging promulgated
1997	3rd Conference of Parties to the UN Framework Convention on Climate Change (COP3) held in Kyoto	1993	Denpatsu Environmental Action Guidelines established	1997	Environment Impact Assessment Law promulgated
1998	4th Conference of Parties to the UN Framework Convention on Climate Change (COP4) held in Buenos Aires	1993	Driftwood charcoal received Minister's Prize (Recycling Concept) from Ministry of International Trade and Industry	1997	River Law amended (for not only irrigation and water use but also improvement and conservation of river environment)
1999	5th Conference of Parties to the UN Framework Convention on Climate Change (COP5) held in Bonn	1994	Kumaushi Power Station received Good Design Prize from Ministry of International Trade and Industry	1998	Law Concerning the Rational Use of Energy (Energy Saving Law) amended
		1994	Huang Dao Power Station in China started high-sulfur coal desulfurization demonstration test	1998	Law Concerning the Promotion of the Measures to Cope with Global Warming promulgated
		1997	Okukiyotsu Power Station No. 2 received Technology Award (Cohabitation with Local Community/Open Type Power Station) from the Japan Society of Civil Engineers	1999	Law Concerning Reporting, etc. of Releases to the Environment of Specific Chemical Substances and Promoting Improvements in Their Management promulgated
		1998	New J-POWER Environmental Action Guidelines established	1999	Law Concerning Special Measures against Dioxins promulgated
		1998	Afforestation operation in Australia began		
		1998	Matsuura Thermal Power Station No. 2 received Director-General's Prize from the Agency of Industry Science and Technology (Prevention of Air Pollution) for its microfiltration-type flue-gas desulfurization wastewater treatment system		
		1999	Matsuura Thermal Power Station acquired ISO 14001 certification		
		1999	Okutadami-Otori Hydro Project Construction Office acquired ISO 14001 certification (first construction organization in Japan to receive ISO 14001 certification)		
		1999	Matsuura Thermal Power Station No. 2 Generator Turbine received an award (improvement of combustion efficiency, etc.) from the Japan Society of Mechanical Engineers		
2000	6th Conference of Parties to the UN Framework Convention on Climate Change (COP6) held in The Hague	2000	Environmental Management Regulations and J-POWER Environmental Policy formulated	2000	Fundamental Law for Establishing a Sound Material-Cycle Society promulgated
2001	Resumed Session of 6th Conference of Parties to the UN Framework Convention on Climate Change (COP6 Resumed Session) held in Bonn	2000	Okinawa Seawater Pumped-Storage Project Demonstration Test Office received the Technology Award (Restored Environment Area) from the Japan Society of Civil Engineers and recognition for Energy PR Facility/PR Activities, receiving the Steering Committee Chairman's Prize (for activities promoting understanding of environmental problems)	2001	Inauguration of Ministry of the Environment following the reorganization of ministerial offices
2001	7th Conference of Parties to the UN Framework Convention on Climate Change (COP7) held in Marrakesh	2000	Tomamae Winvilla Wind Farm started operation	2001	Law Concerning Special Measures against PCB Waste enforced
2001	Operational Rules for the Kyoto Protocol adopted	2000	Received Technical Development Award of the Japanese Geotechnical Society (Cyclic Use of Resources) for deep-chemical mixing method for utilizing coal ash	2001	Law Concerning the Promotion of Procurement of Eco-Friendly Goods and Services by the State and Other Entities (Law on Promoting Green Purchasing) enforced
2002	World Summit on Sustainable Development held in Johannesburg	2000	Tachibanawan Thermal Power Station received award from the Japan Society of Civil Engineers (measures for peripheral environmental conservation and harmonizing, reuse of sea-floor dredging earth, recycling of coal ash in large quantities, etc.)	2002	Law Concerning the Rational Use of Energy amended
2002	8th Conference of Parties to the UN Framework Convention on Climate Change (COP8) held in New Delhi	2000	Construction Division acquired ISO 14001 certification	2002	Law Concerning the Promotion of the Measures to Cope with Global Warming amended
2003	9th Conference of Parties to the UN Framework Convention on Climate Change (COP9) held in Milan	2001	Nikaho Kogen Wind Farm started operation	2002	Law for the Promotion of Nature Restoration promulgated
2003	3rd Water Forum held	2001	Isogo Thermal Power Station received Public Color Award and Top Ten Environmental Color Award from the Study Group for Color in Public Places	2003	Law Concerning Measures against Soil Pollution enforced
2004	10th Conference of Parties to the UN Framework Convention on Climate Change (COP10) held in Buenos Aires	2001	Introduction of EMS based on ISO 14001 throughout the company completed	2003	Law on Special Measures Concerning New Energy Use for Electric Utilities (RPS Law) enforced
2004	2004 version of ISO 14001 released	2002	Received Japan Institute of Energy Award for development of ash-circulating-type PFBC technology (improvement of desulfurization efficiency and combustion efficiency, reduction of coal ash, etc.)	2003	Law for Enhancing Motivation on Environmental Conservation and Promoting of Environmental Education enforced
2005	Kyoto Protocol came into force	2002	Omuta Recycling Power Station started operation	2004	Waste Disposal and Public Cleansing Law amended
		2002	Tokyo Bayside Wind Power Plant started operation	2004	Air Pollution Control Law amended
		2003	Omuta Power Recycling Station received New Energy Award and Chairman's Prize from the New Energy Foundation	2004	Law Concerning the Promotion of Business Activities with Environmental Consideration by Specified Corporations, etc., by Facilitating Access to Environmental Information, and Other Measures promulgated
		2003	Okutadami-Otori Hydro Project Construction Office received Technology Award from the Japan Society of Civil Engineers (for natural environmental conservation and overcoming of obstacles to technological development)	2004	Scenery Law enforced
		2003	Green Power Kuzumaki Wind Farm put into commercial operation	2005	Waste Disposal and Public Cleansing Law amended
		2004	Report prepared by Okutadami-Otori Hydro Project Construction Office received an encouragement prize at 7th Environmental Report Awards ceremony		
		2004	Concrete action plan for the J-POWER Group Environmental Management Vision formulated		
		2004	J-POWER certified and registered for EcoLeaf Environmental Labeling Program		
		2004	Ichihara Power's Ichihara Power Station put into commercial operation		
		2005	Three J-POWER-owned wind power stations (Tahara Wind Farm, Aso Wind Farm, and Shikamachi Wind Farm) put into commercial operation		
		2005	All of J-POWER's coal-fired thermal power stations and a geothermal power station acquired ISO 14001 certification		
		2005	Bay Side Energy's Ichihara Power Station put into commercial operation		
		2005	Okutadami/Otori Power Station expanded, received Environment Award from the Japan Society of Civil Engineers (for wetland restoration)		
		2005	Setana Rinkai Wind Power Plant started operation		
		2006	All of J-POWER's power stations acquired ISO 14001 certification		

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The Table of Correspondences represents the J-POWER Group's understanding of how the specific information contained in this report corresponds to the sections of the GRI Guidelines.

* GRI (Global Reporting Initiative): A global network of NGOs, corporations, and international organizations a goal of which is to encourage reporting of the economic, environmental, and social aspects of corporate activities. A copy of the GRI Guidelines is available at the following web address: http://www.globalreporting.org/NR/rdonlyres/529105CC-89D8-405F-87CF-12A601AB3831/0/2002_Guidelines_ENG.pdf

Harmonizing Energy with the Environment

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Vegetable INK for waterless printing
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Published November 2006
Printed in Japan