

Environmental Management

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

Environmental Management Vision

In 2004 we established a Basic Policy for achieving the J-POWER Group's Environmental Management Vision. Based on that policy we formulated an Action Program setting out medium-term goals, and we are now working toward those objectives.

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 eco-efficiency by achieving higher productivity with lower environmental load, thus enhancing both environmental responsibility and economic value.



Isogo Thermal Power Station

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 CO₂ emissions per unit of electric power sold through an economically rational combination of measures including maintenance and improvement of the efficiency of energy use; development of low CO₂ emission power sources; development, transfer, and dissemination of new technologies; and utilization of the Kyoto Mechanisms. Furthermore, we will continue to work toward our ultimate goal of achieving zero emissions through the capture and storage of CO₂.

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 CO₂ emissions per unit of electric power sold through an economically rational combination of measures that takes account of cost-effectiveness on a global scale. Such measures include maintenance and improvement of efficient energy use; development of low CO₂ emission power sources; development, transfer, and dissemination of new technologies; and utilization of the Kyoto Mechanisms.

Recognizing that it will be necessary within this century to capture and store CO₂ 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 CO₂ emissions. We will continue developing and testing technology to achieve that objective.

* Framework Convention on Climate Change, Article 3, Paragraph 3 (Principles):

"...lack of full scientific certainty should not be used as a reason for postponing such measures, taking into account that policies and measures to deal with climate change should be cost-effective so as to ensure global benefits at the lowest possible cost."

Efforts Relating to Local Environmental Issues

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

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

Ensuring Transparency and Reliability

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

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

April 1, 2004

Yoshihiko Nakagaki
President

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 to Counter Global Warming)

Target	Work to reduce CO ₂ emissions per unit of electric power sold by the J-POWER Group's domestic and overseas operations by 10% from the 2002 level by fiscal 2010
Action	Combine the measures below in an economically rational manner, taking into account cost-effectiveness on a global scale
Category	Measure
Maintain and improve efficiency of energy use	<ul style="list-style-type: none"> ● Maintain efficient operation of power facilities ● Improve efficiency when replacing machinery ● Lower auxiliary power ratio in plants through efficient operational management ● Adopt high-efficiency technologies in new facilities
Develop low CO₂ emission power sources	<ul style="list-style-type: none"> ● Pursue development of Ohma Nuclear Power Station ● Pursue development of renewable energy (wind power, co-combustion of biomass in coal-fired thermal power stations, etc.) ● Pursue development of gas-turbine combined-cycle power generation
Utilize Kyoto Mechanisms	<ul style="list-style-type: none"> ● Obtain carbon credits through JI, CDM, and emissions trading
Develop, transfer, and disseminate new technologies	<ul style="list-style-type: none"> ● Establish technology for biomass fuel use ● Pursue development of technology to reduce CO₂ emissions intensity of power generation on a long-term, sustained basis <ul style="list-style-type: none"> • Develop technology to improve efficiency of coal-fired power generation • Develop coal gasification and integrated coal gasification fuel cell (IGFC) technology • Research and develop CO₂ sequestration technology • Research and develop renewable energy

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J-POWER Group's Measures to Counter Global Warming and Assessment Indicators

The J-POWER Group's biggest impact on the global environment comes from the generation of CO₂ as a result of combustion of fossil fuels for power generation. With this in mind, we have adopted as our basic policy for addressing global environmental problems the ongoing reduction of CO₂ emissions per unit of electric power sold (CO₂ emissions intensity). The J-POWER Group targets were established for the purpose of conducting interim assessments of our long-term efforts.

Because these assessments pertain to global environmental problems, we have attempted to make the scope of evaluation as wide as possible by including power generating businesses, in Japan and overseas, in which the J-POWER Group has an interest.

We are also participating in the Environmental Action Plan by the Japanese Electric Utility Industry, oriented to compliance with the Kyoto Protocol (for more information, see p. 76 in the

Materials section). The J-POWER Group's own targets, described above, serve as indicators for an assessment of the overall success of a wide variety of efforts the Group has undertaken as an electric utility that is expanding its business internationally, but we also believe that our attainment of those targets will contribute to successful implementation of the Environmental Action Plan by the Japanese Electric Utility Industry.

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

Target	Work to achieve a recycling rate of 97% for the entire J-POWER Group with the ultimate goal of zero industrial waste emissions by the end of fiscal 2010
Action	<ul style="list-style-type: none"> ● Promote effective use of coal ash ● Reduce total volume of industrial waste generated by maintenance and operation of power stations

Ensuring Transparency and Reliability (Enhance Our Environmental Management Structure)

Target	Adopt an environmental management system (EMS) for the entire J-POWER Group by the end of fiscal 2007
Action	<ul style="list-style-type: none"> ● All J-POWER's electric power business sites will receive ISO 14001 certification by the end of fiscal 2005 ● All consolidated subsidiaries will adopt an EMS 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 to Counter Global Warming)

Key items	<ul style="list-style-type: none"> ● Thermal Power Division: High-efficiency operation of power plants and adoption of high-efficiency equipment in new plants ● Hydropower Division: Increased productivity of hydroelectric power stations ● Common issues: Energy conservation in buildings and offices, cutting back on vehicle fuel consumption
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Efforts Relating to Local Environmental Issues (Air, Water, Waste)

Key items	<ul style="list-style-type: none"> ● Thermal Power Division: Reducing SOx and NOx emissions, reducing industrial water usage, effective use of coal ash ● Hydropower Division: Effective use of driftwood ● Common issues: Cutting back on resource consumption in offices, reducing waste
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Ensuring Transparency and Reliability (EMS, Enhanced Environmental Communication, Green Procurement)

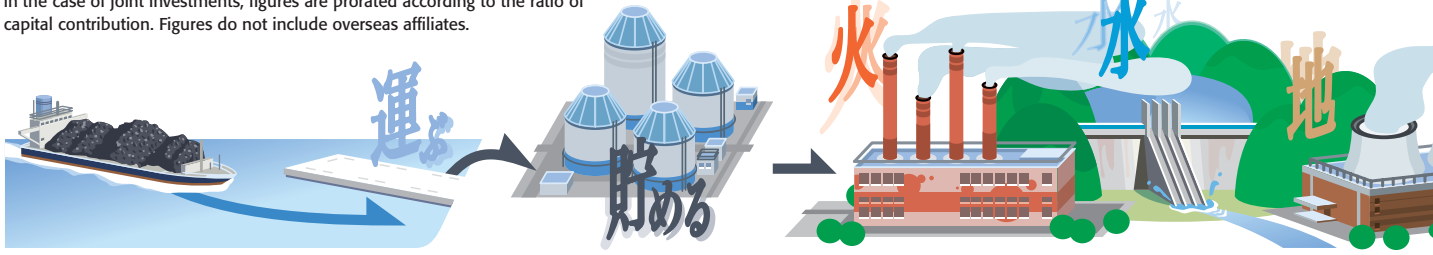
Key items	<ul style="list-style-type: none"> ● Obtaining ISO 14001 certification, adopting EMS ● Promoting environmental communications, participate in environmental volunteer programs ● Green purchasing/procurement (energy-saving office equipment, recycled paper, low-emissions vehicles, etc.) ● Measures to prevent environmental accidents ● Rigorous environmental education (e-learning, auditor training, etc.)
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Notes:

1. Each of the major goals is discussed on their respective pages.
2. See page 71 in the Materials section for the Fiscal 2007 J-POWER Group Environmental Action Guidelines.

Business Activities and the Environment (Fiscal 2006)

Note: Figures represent aggregate of all J-POWER Group companies (companies subject to J-POWER Group consolidated financial reporting); in the case of joint investments, figures are prorated according to the ratio of capital contribution. Figures do not include overseas affiliates.



INPUT

Thermal Power Generation (including Wakamatsu Research Institute)

Fuel		Chemicals (undiluted equivalents)	
Wet coal	18.76 million tons	Limestone (CaCO ₃)	230,000 tons
Heavy oil	59,000 kl	Ammonia (NH ₃)	11,000 tons
Light oil	21,000 kl	Hydrochloric acid (HCl)	1,000 tons
Natural gas	116.9 million Nm ³	Sulfuric acid (H ₂ SO ₄)	1,000 tons
Biomass (dried sewage sludge)	2,000 tons	Caustic soda (NaOH)	5,000 tons
Water			
Industrial water	9.96 million m ³		

Hydropower Generation

Power for pumped storage	1,900 GWh
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Geothermal Power Generation

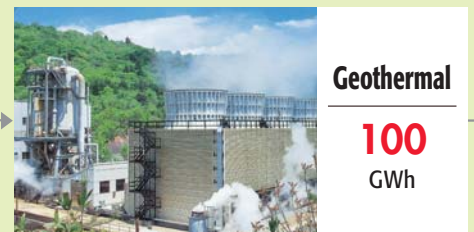
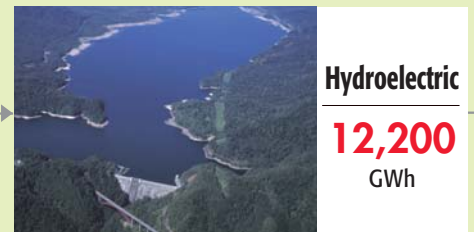
Steam	1.02 million tons	Hot water	4.56 million tons
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Business Sites and Offices (internal use)

Electricity		Water	
Business sites	41.80 GWh		650,000 m ³
Offices	17.38 GWh	Copy paper (A4 equivalent)	
			70 million sheets
Fuel			
Gasoline, diesel, city gas, etc. (gasoline equivalent)	4,122 kl		

BUSINESS ACTIVITIES

Electric Power Generated

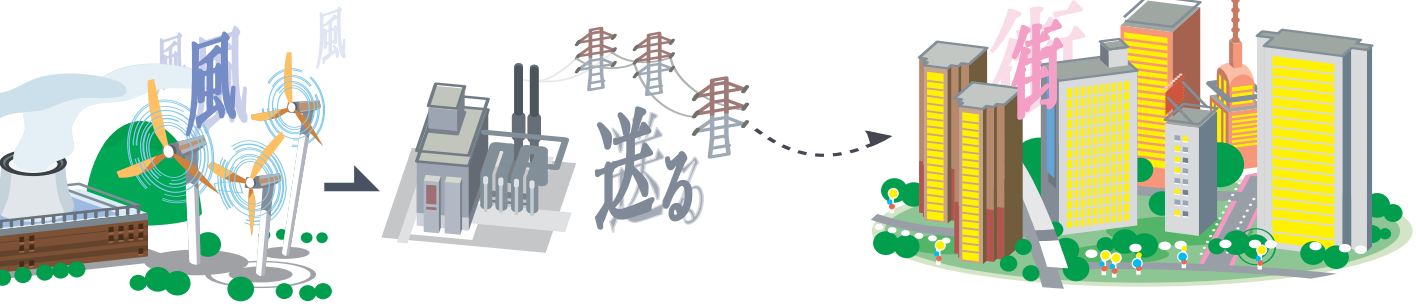


Auxiliary power for operation and transmission loss 3,500 GWh

Notes:

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

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



Volume of electric power sold	60,000 GWh
Pumped storage hydroelectric power output	1,400 GWh
Total	61,400 GWh



OUTCOME

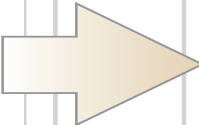
The electricity generated at our power stations is supplied through regional power companies to end users throughout Japan. The 60,000 GWh of wholesale electric power we sold last year is equivalent to approximately 7% of total electric power sold by regional power companies.*

* 889,400 GWh: Total fiscal 2006 electric power sold according to confirmed figures on electricity demand published by the Federation of Electric Power Companies of Japan.

Recycling and reuse of resources

Coal ash	1,510,000 tons (97%)
Sludge (excluding gypsum)	3,000 tons (10%)
Gypsum (desulfurized byproduct)	530,000 tons (100%)
Sulfuric acid (desulfurized byproduct)	9,000 tons (100%)
Other industrial waste	15,000 tons (48%)
Waste paper	303 tons (86%)
Driftwood from dam reservoirs	16,800 m ³ (89%)

Percentages indicate rate of efficient use.



OUTPUT

Thermal Power Stations (including Wakamatsu Research Institute)

Atmospheric emissions			
CO ₂	42.16 million t-CO ₂	NO _x	28,000 tons
SO _x	10,000 tons	Soot and dust	1,000 tons
Waste water		Waste water COD	
	3.63 million m ³		15 tons

Geothermal power station

Hot water	4.86 million tons
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Industrial waste

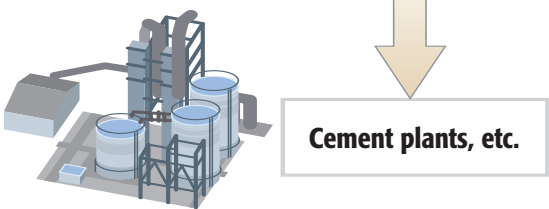
Coal ash	44,000 tons	Other industrial waste	16,000 tons
Sludge (excluding gypsum)	30,000 tons	Specially controlled industrial waste	1,000 tons

Municipal solid waste

Waste paper	49 tons	Driftwood in dam reservoirs	2,100 m ³
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CO₂ emissions generated from consumption of electricity and fuel at business sites and offices

	35,000 t-CO ₂
(Amount generated from office activities)	11,000 t-CO ₂



Environmental Accounting and Eco-efficiency

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

Environmental Accounting

To calculate the overall costs and benefits of the J-POWER Group environmental conservation activities in fiscal 2006 in light of the nature of our business, we

referred to the Environmental Accounting Guidelines 2005 issued by the Ministry of the Environment.

Calculation Guidelines

- **Period:** April 1, 2006, to March 31, 2007
- **Format:** In accordance with Environmental Accounting Guidelines 2005 issued by the Ministry of the Environment
- **Scope:** Costs (including depreciation costs) for thermal power generation companies, which have the highest environmental load among J-POWER and Group operations
 - Costs were calculated focusing on expenses for: personnel contracting/repair/chemicals associated with operating and main-

- taining equipment; waste recycling and disposal; R&D; and overseas projects (contracting and personnel expenses).
- However, upstream and downstream costs associated with the contribution of hydroelectric power generation to measures against global warming, and with green purchasing efforts, were deemed to present problems in terms of calculation scope and method and thus were excluded from calculations.

Environmental Conservation Cost

Total costs for fiscal 2006 were approximately 39.5 billion yen, with "pollution control" costs for preventing contamination of the air, water, etc., accounting for about 44% of the total.

Environmental Conservation Benefits

When looking at environmental load, the nature of our business requires that instead of tabulating total emissions we assess the overall environmental conservation benefit of our conservation measures on the basis of emissions intensity (emissions per unit of electric power sold), thermal efficiency, and reuse/recycling ratio, comparing these levels with the fiscal 2002 benchmarks. Since our efforts to control NO_x, SO_x, and soot and dust have already attained a high level of effectiveness, our task with regard to these items is to maintain the current levels.

For items that allow assessment of environmental conservation on the basis of a total figure, we have used the total for fiscal 2006 as the measure of environmental benefit.

(Unit: billion yen)

Category	Main measures and efforts	Amount
Pollution control	Air pollution control (desulfurization/denitrification, soot and dust treatment), water pollution control (waste-water treatment), etc.	17.54
Global environmental conservation	Measures to reduce greenhouse gas emissions (maintaining high-efficiency operation of coal-fired power stations, developing renewable and unutilized energy sources, maintenance costs for energy-saving equipment, emission control of greenhouse gases other than CO ₂)	1.90
Resource recycling	Waste reduction through reuse and recycling, treatment and disposal of waste	11.37
Management activities	Monitoring and measurement of environmental load, labor costs for environmental conservation organizations, costs for environmental education, etc.	1.64
Research and development	High-efficiency generation, use of fuel cells, capture and storage of CO ₂ , recycling of coal ash and gypsum, etc.	1.58
Social activities	Tree-planting, environmental advertising, environmental beautification, membership in environmental groups, preparation of environmental report, etc.	3.07
International projects	Overseas cooperation projects for environmental conservation technologies	0.95
Other	Pollution load levy	1.49
Total		39.54

Environmental conservation benefit	FY 2002	FY 2006
SO _x emissions intensity (g/kWh)	0.21	0.20
NO _x emissions intensity (g/kWh)	0.56	0.57
Soot and dust emissions intensity (g/kWh)	0.02	0.02
CO ₂ emissions intensity (kg-CO ₂ /kWh)	0.72	0.68
Average coal-fired thermal efficiency (%)	40.3	40.3
Development of renewable/unutilized energy sources (MW)		66
Coal ash recycling rate (%)	67	97
Industrial waste recycling rate (%)	73	95
Gypsum recycling rate (%)	100	100
Volume of driftwood recycled (1,000 m ³)		16.8
Employees completing internal environmental auditor training		180
Environmental report (copies published)		8,000
Environmental pamphlet (copies published)		19,000
Overseas consulting projects (cumulative total)		277

Note: For detailed data regarding each category, see pages 73-74, Fiscal Year Data, in the Materials section.

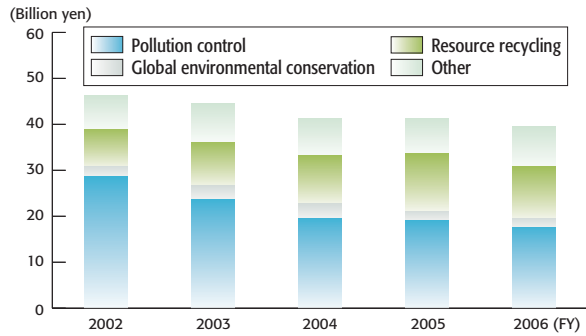
Economic Benefit

Efforts contributing to earnings and cost reductions were calculated to have had an economic benefit of approximately 6.53 billion yen.

(Unit: million yen)

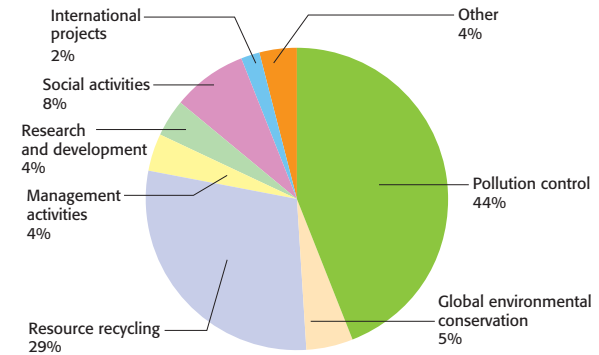
Category	Details	Amount
Revenue	Sales of marketable commodities from coal ash, gypsum, and sulfuric acid	410
Cost reduction	Reduction in fuel costs due to improved coal-fired thermal efficiency (introduction of USC)	2,000
	Reduction in disposal costs due to recycling of coal ash, gypsum, and sulfuric acid	4,120
Total		6,530

Environmental Conservation Costs: Comparison by Fiscal Year

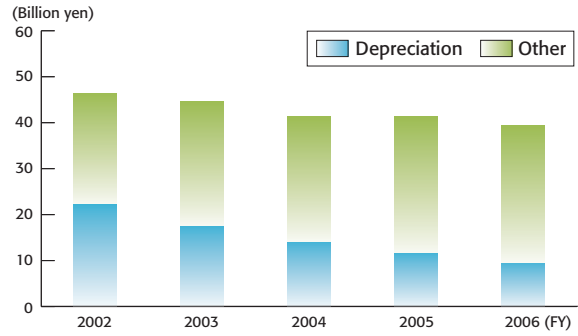


Note: Figures for FY 2002–2004 are for J-POWER only, on a non-consolidated basis.

Environmental Conservation Costs: Breakdown by Category



Proportion of Depreciation and Other Costs



Notes:
 1. Figures for FY 2002–2004 are for J-POWER only, on a non-consolidated basis.
 2. Depreciation: costs related to depreciation of environmental equipment.

Eco-efficiency

The Basic Policy section of the J-POWER Group Environmental Management Vision sets out our basic stance, which is to “contribute to sustainable development in Japan and the world as a whole by minimizing the environmental load of our business activities, reducing environmental risks such as global warming, and improving eco-efficiency by achieving higher productivity with lower environmental load, thus enhancing both environmental responsibility and economic value.”

The data presented here is an integrated index of eco-efficiency arrived at by weighting each category of environmental load using an established coefficient and then calculating the total. By using such an integrated assessment system it is possible to use a single value to rate the overall eco-efficiency of all corporate activities.

A number of integrated assessment methods have been developed overseas, including Eco-indicator 99 in the Netherlands, EPS 2000 in Sweden, BUWAL 297 in Switzerland, and others. Japan has also developed its own methods, which take into account the country’s local characteristics. These include JEPIX (which uses policy targets as indicators) and LIME (which uses damage to human health and ecosystems as indicators).

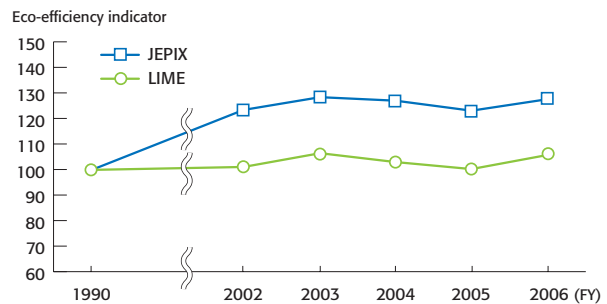
We have used both of these methods to evaluate our efforts to this point. Although the two methods assign

different coefficients to various aspects of the environment, both indicate an overall trend of improving eco-efficiency since fiscal 1990.

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

The production-to-environmental load quotient for each category is presented separately on the corresponding pages.

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



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