

Environmental Action Report 2004



Scope of Environmental Action Report 2004

This report presents an overview of the environmental activities of Tohoku Electric Power Co., Inc. in FY 2003, beginning April 1, 2003 and ending March 31, 2004.

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Foreword

Environmental issues such as global warming, ozone layer depletion, and management of waste and chemical substances have not mitigated, but have become more widely spread and seriously apparent at global and local levels. This is because so much stress and serious damage to the environment are caused by our business activities and daily life, which are beyond the capacity of the earth. In other words, these issues are a warning from the earth to human beings.

Tohoku Electric Power Co., Inc. (TohokuEPCO) recognizes the close relationship between environmental issues and energy consumption, and believes that finding solutions to environmental problems is one of its corporate social responsibilities.

In the deregulation of the electricity market in Japan, TohokuEPCO places environmental activities at the top of its business plan and has established the Environmental Policy and the Midterm Environmental Action Plan.

Although compatibility between environmental protection and economical growth may be difficult in many cases, TohokuEPCO will continue with environmental management to achieve this compatibility, while maintaining a stable supply. Through environmental activities, we will continue to be a sustainable company that is trusted and preferred by customers.

Since its establishment, TohokuEPCO has pursued mutual prosperity with regional society as its philosophy. No matter how our business situation might change, our philosophy will never change. For the issue of environmental protection, we will strive to play a big part in the realization of a highly efficient energy system in collaboration with our customers.

TohokuEPCO's Environmental Action Report 2004 provides its policies, diverse measures and environmental performance in FY2003. It is our hope that the information in this report will help you understand our strong commitment and our position on environmental issues.

Environmental Policy

TohokuEPCO has formulated an "Environmental Policy" which represents the fundamental basis for its environmental activities. Since FY2004, we have applied the policy to the corporate group.

Vision2010

Management philosophy:

"Mutual prosperity with the regional society and creation of a new corporate value."

Image of the TohokuEPCO and the group companies:

"Integrated energy services company that is trusted and preferred by customers."

Environmental Policy

TohokuEPCO Group shall collaborate with regional communities for the creation of a social and economic system that realizes sustainable development.

Guidelines

TohokuEPCO commits itself to:

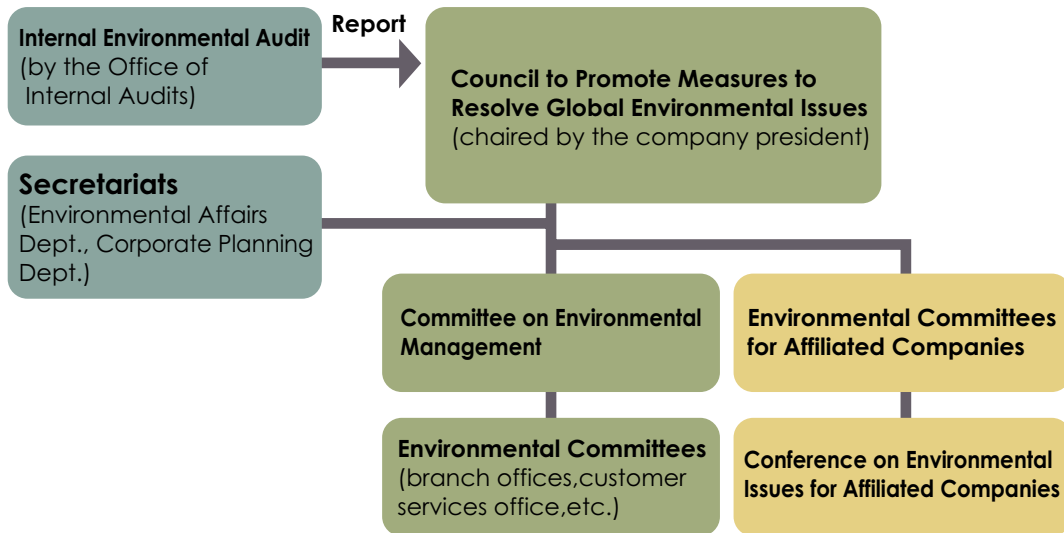
1. Establishing a highly efficient energy supply system that is stable, economical and environment-friendly.
2. Working with customers in order to strive for efficient energy usage.
3. Reducing greenhouse gas emissions and performing a range of cooperative programs across the globe.
4. Promoting waste reduction, reuse and recycling in order to realize a recycle-based society.
5. Encouraging environmental awareness among employees to promote environmental activities as a component of the community.
6. Complying with environmental laws, regulations and agreements and striving to reduce environmental loading.
7. Developing its Environmental Management System and reviewing it periodically to ensure continuous improvement.
8. Disclosing information on its environmental activities and communicating its goals and achievements in the community.

Environmental Management System (EMS)

TohokuEPCO has employed a company-wide Environmental Management System (EMS) based on ISO 14001 since April 2000, in order to contribute to both environmental protection and business profitability. EMS is an essential tool in the development of a comprehensive plan of action, implementation, periodic review, and upgrading.

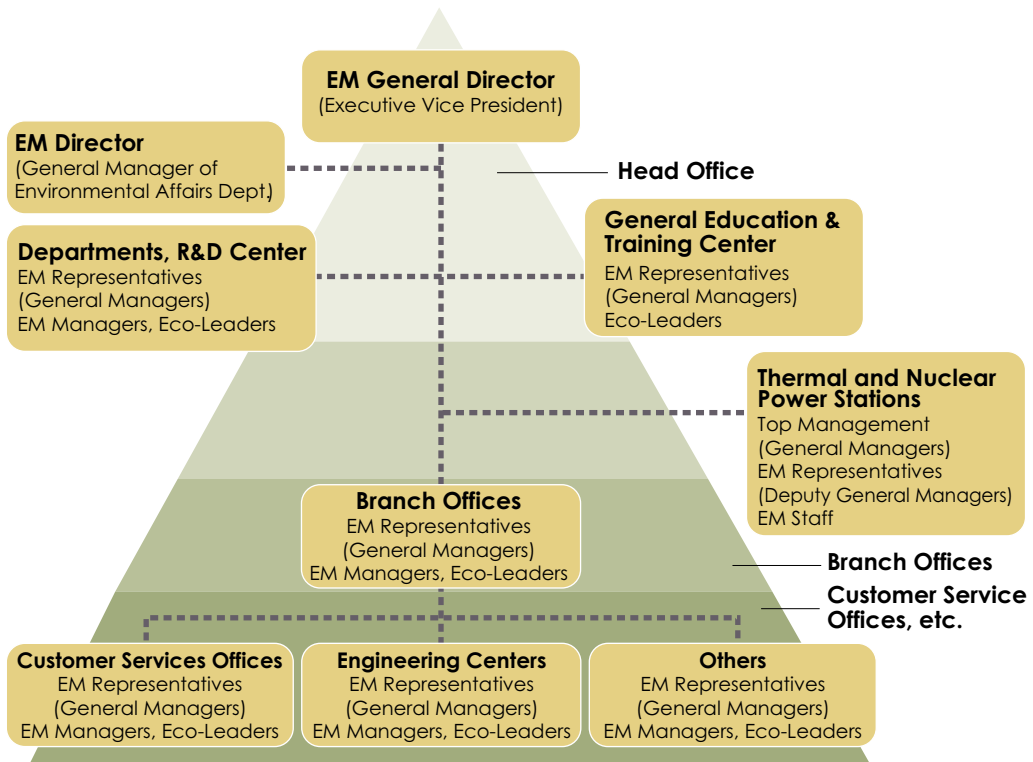
Task Force

TohokuEPCO has established task forces to deal with environmental issues since March 1990.



Lines of Accountability

TohokuEPCO has clearly defined its lines of accountability. The vice president and general managers are responsible for environmental management (EM) at the company and department / office levels, respectively. In addition, EM managers and Eco-leaders are promoting activities at individual offices. Besides offices, all of thermal and nuclear power stations have implemented ISO14001-based EMSs.



○ Midterm Environmental Action Plan

To realize the environmental policy, TohokuEPCO has formulated a Midterm Environmental Action Plan, which covers the next three years.

Vision 2010



Management Philosophy



Environmental Policy



Midterm Environmental Action Plan

Key Objectives and Measures

1. Mitigation of Global Warming

- Development of nuclear power generation
- Development of high-efficiency LNG combined cycle generation systems
- Examination of the possible use of the Kyoto Mechanisms
- Promotion of renewable energy usage

2. Resource Conservation and Recycling

- Effective use of industrial wastes and removed materials / equipment.
- 3Rs (Reduce, Reuse, Recycle) measures with the group companies
- Green procurement and purchasing
- Conservation of energy and resources in the office

3. Protection of the Regional Environment

- Reduction of pollutant emissions from thermal power stations
- Radiation control at nuclear power stations
- Management and treatment of PCBs
- Environmental impact assessments

4. Environmental Communications

- Collaborative activities with the community
- Support program for children's environmental education

5. Environmental Management

- Operation of the Environmental Management System at the corporate group
- Examination of environmental business

Major Indicators and Targets for FY 2006

[]: Estimates based on the supply plan

Environmental Indicators	Results for FY 2003	Targets / Projections for FY 2006
CO ₂ emission intensity (end-use electricity)	0.473 kg-CO ₂ /kWh	[0.362 kg-CO ₂ /kWh]
CO ₂ emissions (All power sources)	35.22 million tons	[-]
Nuclear power station capacity factor	71.1%	[85% or more]
Thermal efficiency at thermal power stations (HHV)	40.7%	[40% or more]
Transmission and distribution losses	6.0%	Reduce to a minimal level
SF ₆ recovery	98.2%	97% or more
Waste recycling	92.7%	[95% or more]
Coal ash recycling	91.5%	93%
Scrapped concrete poles recycling	100%	100%
Final waste disposal	76,000 tons	Less than 60,000 tons
Green purchasing (Office supplies)	50.5%	55% or more
SO _x emission intensity (at thermal power stations)	0.28 g/kWh	Reduce to a minimal level
NO _x emission intensity (at thermal power stations)	0.38 g/kWh	Reduce to a minimal level

HHV: high heat value

Major Results of Our Activities in FY 2003

Following are the major results of TohokuEPCO's environmental activities in FY 2003:

Mitigation of Global Warming

- CO₂ emissions intensity resulted in 0.473 kg-CO₂/kWh.
- The thermal efficiency rate of Higashi-Niigata Unit 4-1 system recorded 50.24% (Gross, HHV) and attained our target (50% or more) for two years in succession.
- SF₆ recovery rate reached 98.8%.
- Electricity purchase from renewable energy sources considerably increased over the previous year (solar power: 1.6 times; wind power: 1.6 times; waste power: 1.1 times).
- Installation of All-Electric Housing System recorded 12,000 households and surpassed our target by over 21%.

Resource Conservation and Recycling

- The waste recycling ratio was 92.7% and attained our target (90% or more) for two years in succession.
- Recycled all scrapped concrete poles.
- Considerably reduced electricity use in offices from 107.7 million kWh to 92.5 million kWh.

Protection of the Regional Environment

- Strictly adhered to the relevant legal regulations and agreements.
- Emission intensities of SO_x and NO_x were 0.28 g/kWh and 0.38 g/kWh, respectively.
- Promoted projects for PCB treatment.

Environmental Communications

- Implemented nearly 330 environmental activities with 33,000 people in regional communities in "Environmental Awareness Month" (June).
- Organized and implemented environmental education programs for children.

Environmental Management

- Environmental training was carried out for all 12,000 employees
- Internal audits were conducted at 36 offices.
- Cooperative activities with affiliated companies.

Environmental Accounting

Environmental accounting is a way to estimate costs and conduct a cost-benefit analysis on environmental activities. To promote environmental activities more effectively, TohokuEPCO is continuously reviewing and improving the accuracy of its environmental accounting. We will continue our study and review process on environmental accounting in order to ensure greater accuracy and more effective application of the results.

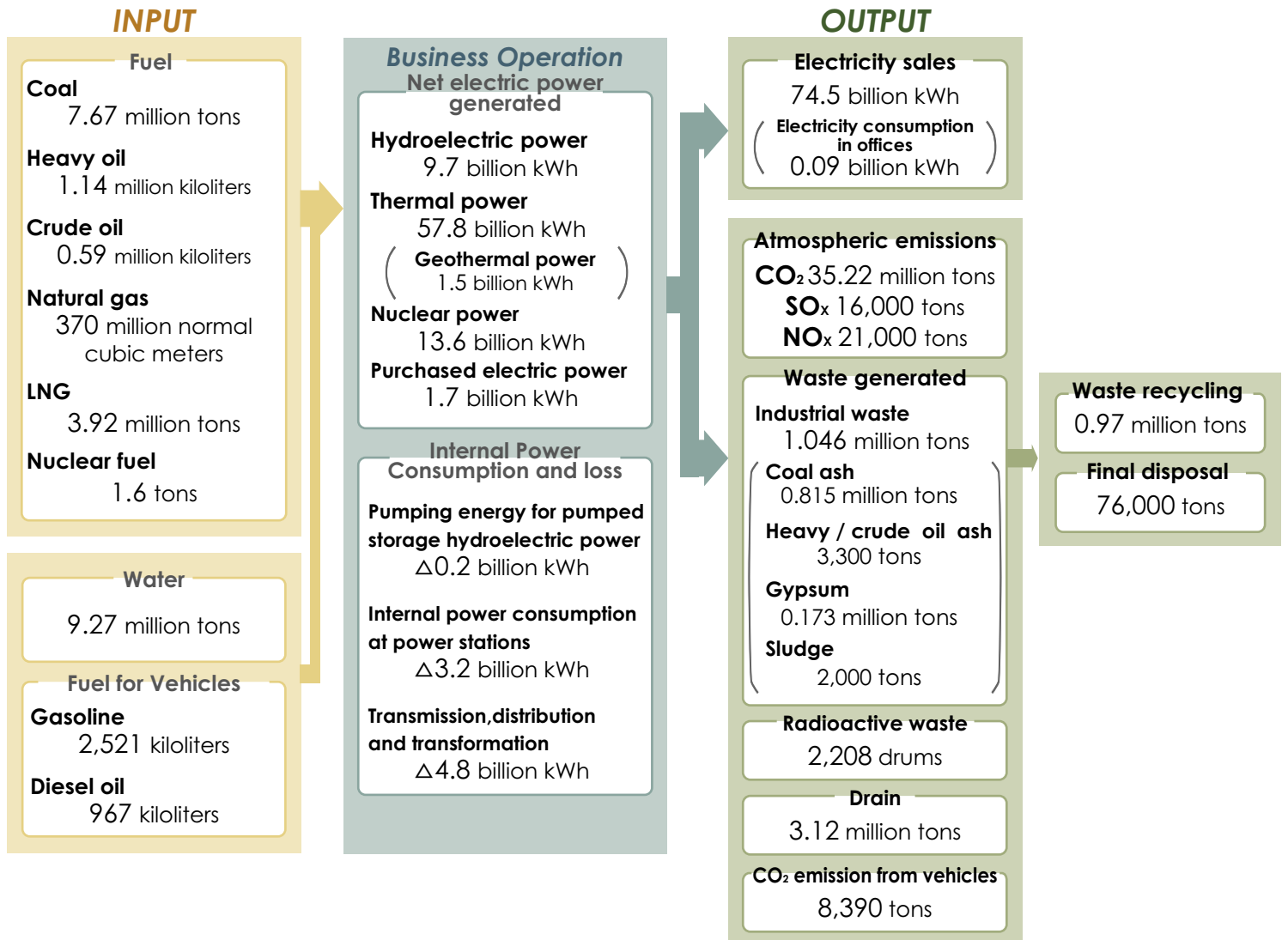
Results for FY 2003

Category	Principal Measures	Costs (billion yen)		Environmental Conservation Effects
		Investments	Expenses (*1)	
Mitigation of global warming	Power production via nuclear, hydroelectric, geothermal, LNG-fired thermal and other generators, etc. (*2)	-	-	Reduction: 28.28 million tons-CO ₂ CO ₂ emission intensity: 0.473kg/kWh
	Purchases of renewable energy (solar power, wind power); Contributions to the Tohoku Green Power Fund; Investment in the afforestation project and the Carbon Fund; Recovery and reuse of SF ₆ gas; etc.	0.70	6.4	Reduction: 520,000 tons-CO ₂ SF ₆ recovery ratio: 98.2% Specific CFCs & halon consumption: 0.79 tons
Waste disposal and recycling	Disposal, recycling and reuse of general, industrial and radioactive waste; Green procurement and purchasing, etc.	4.38	7.75	Industrial waste disposal: 76,000 tons Recycling: 970,000 tons Recycling ratio: approx. 92.7 %
Protection of the regional environment	Preservation of air quality (reduction of SO _x , NO _x and soot); Urban landscaping measures; Environmental inquiries, etc.	5.94	27.94	SO _x reduction: 110,000 tons NO _x reduction: 45,000 tons Soot reduction: 704,000 tons
Others	Environmental activities for the regional community; Environmental management; Environment-related R&D, etc.	-	1.83	Number of low emission vehicles: 362 Number of employees with environmental qualifications: 7,769
Total		11.02	43.92	

(*1) Depreciation expenses are included, and personal expenses required for environmental measures are distributed to each category.

(*2) Costs required for the reduction of CO₂ emissions by nuclear, hydroelectric, geothermal and LNG-fired thermal power stations are not included, because of the difficulty in identifying specific costs.

Environmental Impact of Operations (FY 2003)



Mitigation of Global Warming

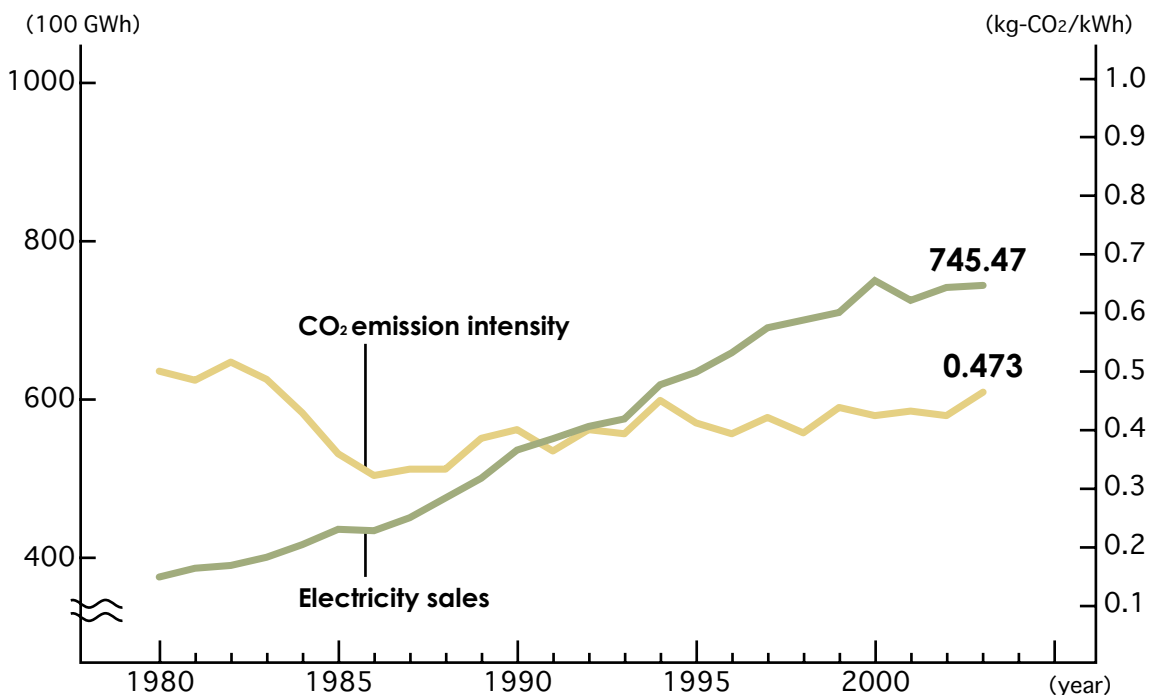
TohokuEPCO has long endeavored to reduce CO₂ emission intensity, which is indicated by CO₂ emissions per end-use electricity.

Measures for Reduction of CO₂ Emissions

Supply Side	Development of diverse power sources (Developing nuclear, hydroelectric and geothermal power stations)
	Promotion of renewable energy usage Purchasing electricity from renewable energy
	Improvement of plant efficiencies at power facilities Improvement of generation efficiency Reduction in generation, transformation, transmission and distribution losses
	Technology development for reduction of CO₂ emissions High-efficiency power-generation technology
Demand Side	Energy conservation Utilization of unused energy sources Publicizing energy conservation
	Load leveling Various electricity rates Suggestion for effective energy usage
International Programs	Overseas afforestation project World Bank's "prototype Carbon Fund (PCF)"

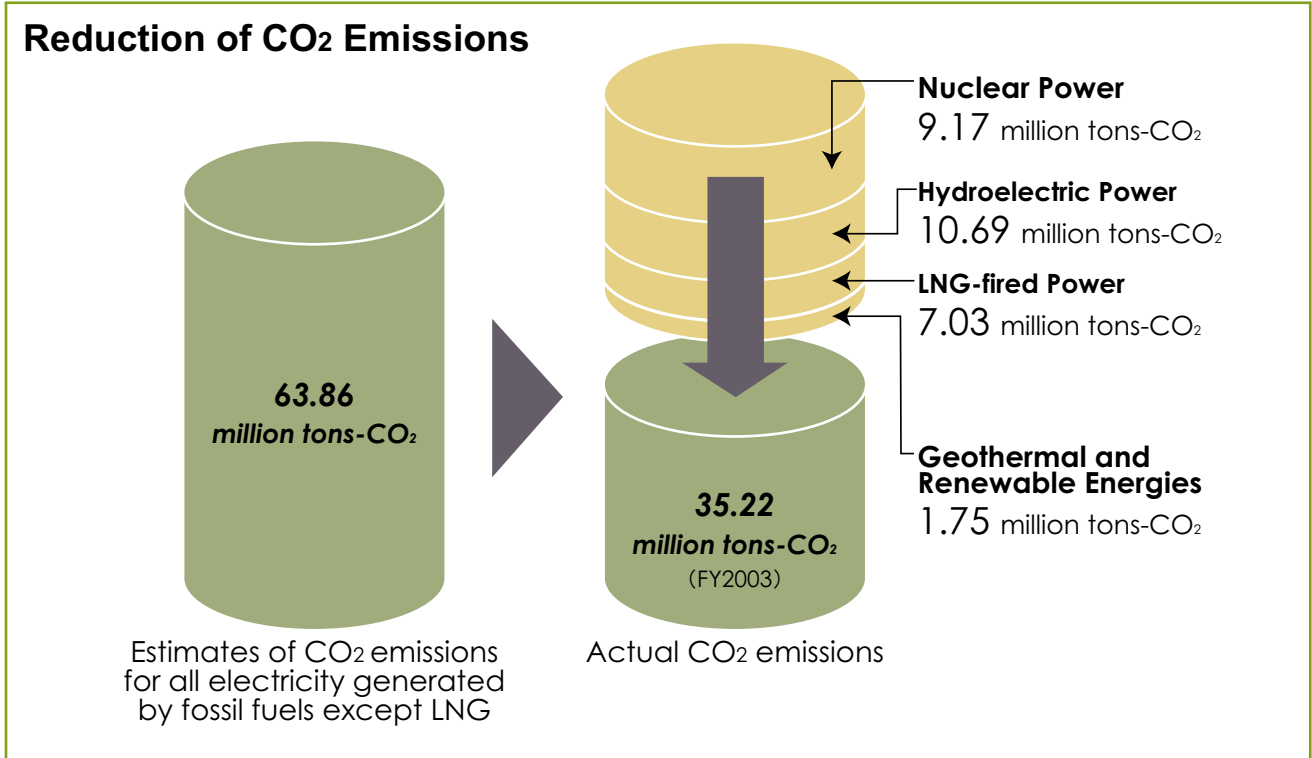
The total emissions of CO₂ and the emission intensity for FY 2003 were 35.22 million tons and 0.473 kg-CO₂/kWh, respectively. Since the non-operating period of nuclear power plants was prolonged, thermal power plants which used fossil fuels generated more electricity and the intensity exceeded the planned value.

CO₂ Emission Intensity and Electricity Sales

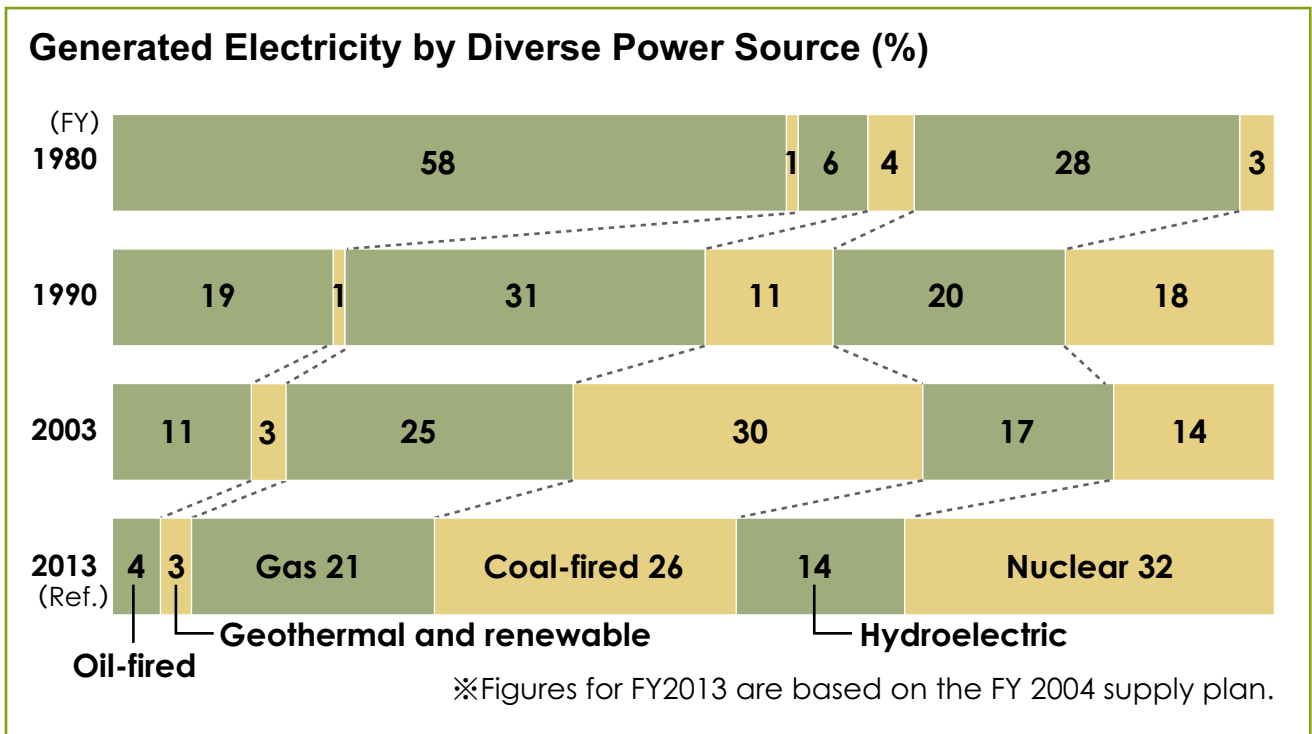


Development of Diverse Power Sources

Our trial calculation shows that the use of diverse power sources may result in reducing CO₂ emissions to half of the supposed case in which all electricity is generated by fossil fuels except LNG.



TohokuEPCO has been developing well-balanced electric power sources centered on nuclear power generation with the aim of achieving both environmentally and economically sound performances, stable supplies and efficient operation.



Nuclear Power

Nuclear power generation is essential for the mitigation of global warming as it does not emit CO₂ during the generation of power. TohokuEPCO is doing its best to ensure the safe and stable operation of its Onagawa nuclear power station (total capacity: 2,174 MW), while constructing the new Higashidori nuclear power station (capacity: 1,100 MW, which is scheduled to commence operations in FY 2005).

Thermal Power

TohokuEPCO is trying to reduce CO₂ emissions from thermal power stations through the development and installation of the most advanced LNG-fired power plant with the highest thermal efficiency in the world, and highly efficient coal-fired plants.

Hydroelectric Power

TohokuEPCO operates 210 hydroelectric power stations with a total capacity of 2,410MW, which is the largest scale in Japan.

Geothermal Power

Geothermal power generation is a clean and environment-friendly system, because it uses renewable and domestic energy. TohokuEPCO operates 4 geothermal stations with a total capacity of 223.8 MW, which is the largest scale in Japan.



Yanaizu-Nishiyama Geothermal Power Station

Promotion of Renewable Energy Usage

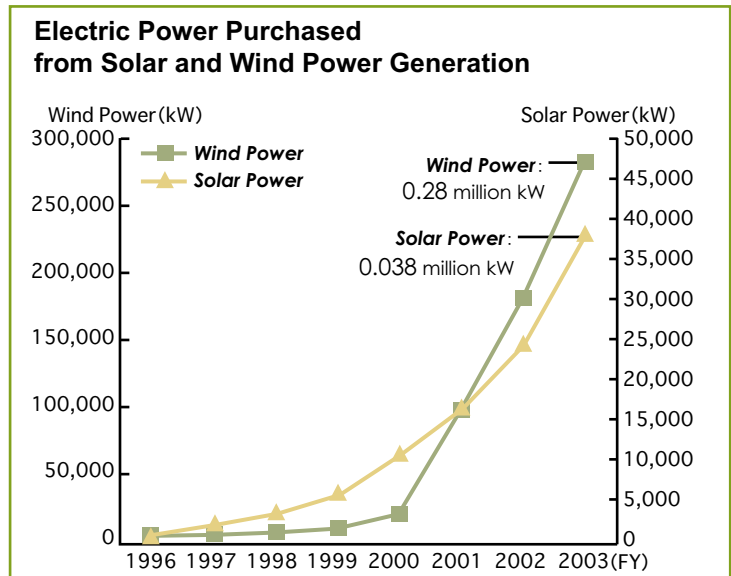
Power generation systems using renewable energies, including solar power and wind power, are environment-friendly, because they emit no CO₂ during the generation of electricity. Although these systems have some negative features, such as low energy density, dependence on weather conditions, which can result in unstable output, and higher costs, TohokuEPCO has carefully analyzed the cost and influence on electricity networks, and has purposefully introduced a variety of renewable energy sources. Since the Japanese RPS (Renewable Portfolio Standard) system, which obligates electric power companies to utilize a certain level of renewable energy, went into full effect in April 2003, we have promoted further use of renewable energies.

Purchasing Electric Power from Renewable Energy Sources

TohokuEPCO has purchased electricity generated by renewable energies from customers and non-utility power producers. and the amount of electricity purchased from these sources has significantly increased over the years. In FY2003, we purchased 280MW of wind power generated electricity, which is a little more than 40% of the total in all of Japan.



Tappi Wind Park



The Tohoku Green Power Fund

TohokuEPCO has donated to the Tohoku Green Power Fund, which started in October 2000, in order to offer financial support for the construction of solar power and wind power generation facilities.

Improving the Efficiency of Power Facilities

TohokuEPCO has made every effort to reduce CO₂ emissions by reducing the consumption of fossil fuel. This is achieved by maintaining a high level of thermal efficiency at thermal power stations and the capacity factor at nuclear and geothermal power stations. In addition to these measures, we are trying to reduce internal power consumption at power stations and losses in the transmission and distribution process.

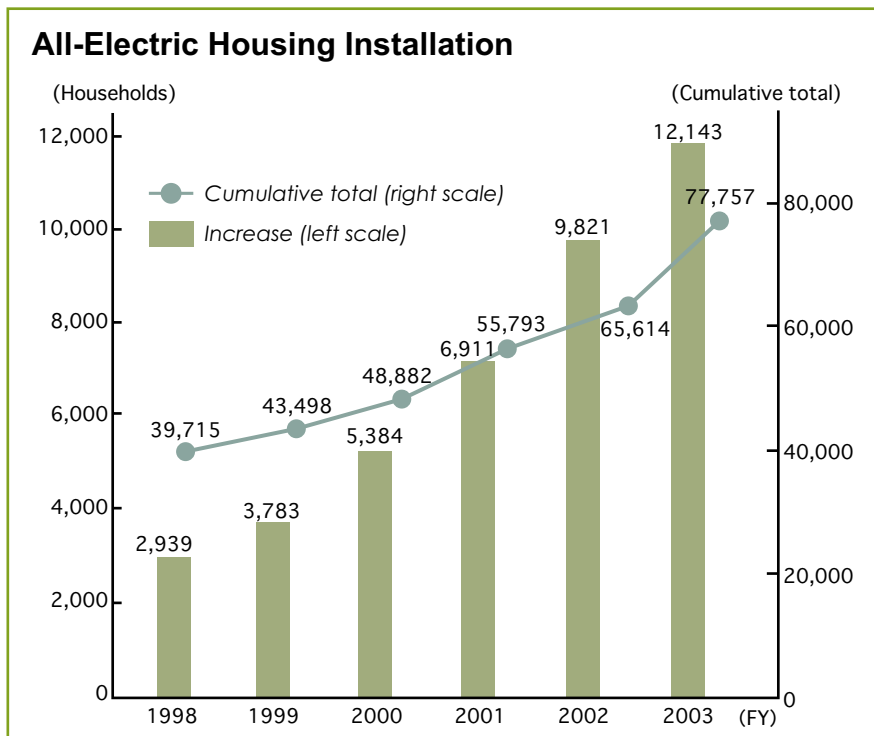
Higashi-Niigata Unit 4-1 system (capacity: 826 MW, LNG combined-cycle power plant) has attained an annual thermal efficiency of 50.24% (Gross, HHV), and therefore reached its target (50% or more) for two years in succession. Additionally the capacity factor of the Onagawa nuclear power units was 71% in FY2003 because of the introduction of rated thermal power operation.



Higashi-Niigata Unit 4-1 System

Load Leveling

Recent trends in electricity demand shows an increase in seasonal and hourly variations, which can impede the efficient utilization of power supplies. In order to promote more effective energy usage and electrical facilities, TohokuEPCO is taking positive steps to achieve more flexible electricity charges and innovative marketing.



International Programs

TohokuEPCO promotes international programs that contribute to the mitigation of global warming, including the afforestation project in Australia, the World Bank's Prototype Carbon Fund (PCF), and the project for improving generating efficiency in Kazakhstan. At the same time, we are looking ahead to the possible use of the Kyoto Mechanisms provided for in the Kyoto Protocol.

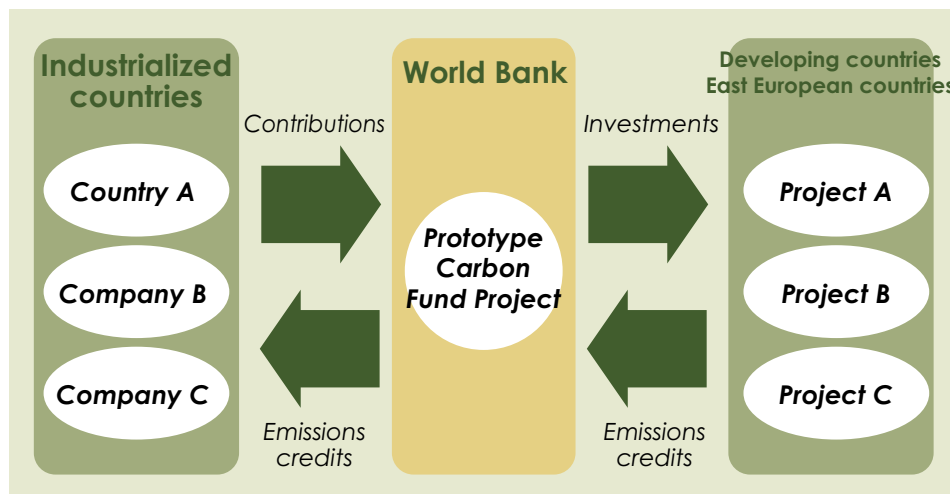
Involvement in the World Bank's "Prototype Carbon Fund (PCF)"

TohokuEPCO has contributed 10 million dollars to the World Bank's PCF in order to explore new projects and procedures for certification of greenhouse gas (GHG) emission reductions, and to acquire GHG emission reduction credits. The PCF contributes to global efforts to reduce GHG emissions through financial assistance and technology transfers to projects in developing countries as well as several East European countries. In FY2003, its steady performance generated the first CO₂ emission credit.

PCF Profile

PCF is an international system financed by contributions from developed countries and various businesses. This fund invests in projects to reduce GHG emissions in developing countries and East European countries, and returns GHG emission reduction credits resulting from the implementation of projects.

The participants include 6 governments and 17 companies, one of which is TohokuEPCO.



Investment in Afforestation Project in Australia

TohokuEPCO has joined the afforestation project operated by the Albany Plantation Forest Company of Australia Pty. Ltd. (APFL) to reduce CO₂ emissions. APFL's afforestation project will continue to plant and harvest trees on a total land area of 26,000 ha, supplying resources for the paper manufacturing industry. This project is in harmony with existing agricultural practices, and contributes greatly to the conservation of the natural environment by preserving forest resources and preventing damage from salinity in the region.



Afforestation Project in Australia

Improvement in Generation Efficiency in Kazakhstan

TohokuEPCO was entrusted by NEDO (The New Energy and Industrial Technology Development Organization, Japan) with an energy saving model project at the Uralsk heat power station plant (West Kazakh, Kazakhstan). This project aims to improve generating efficiency and energy-saving technologies (2002-2005), by utilizing both a highly efficient gas turbine and its high-temperature exhaust heat through a heat recovery steam generator. This CO₂ emission-reducing project has been validated by the government as the very first joint implementation (JI) project that is designated in the Kyoto Protocol.



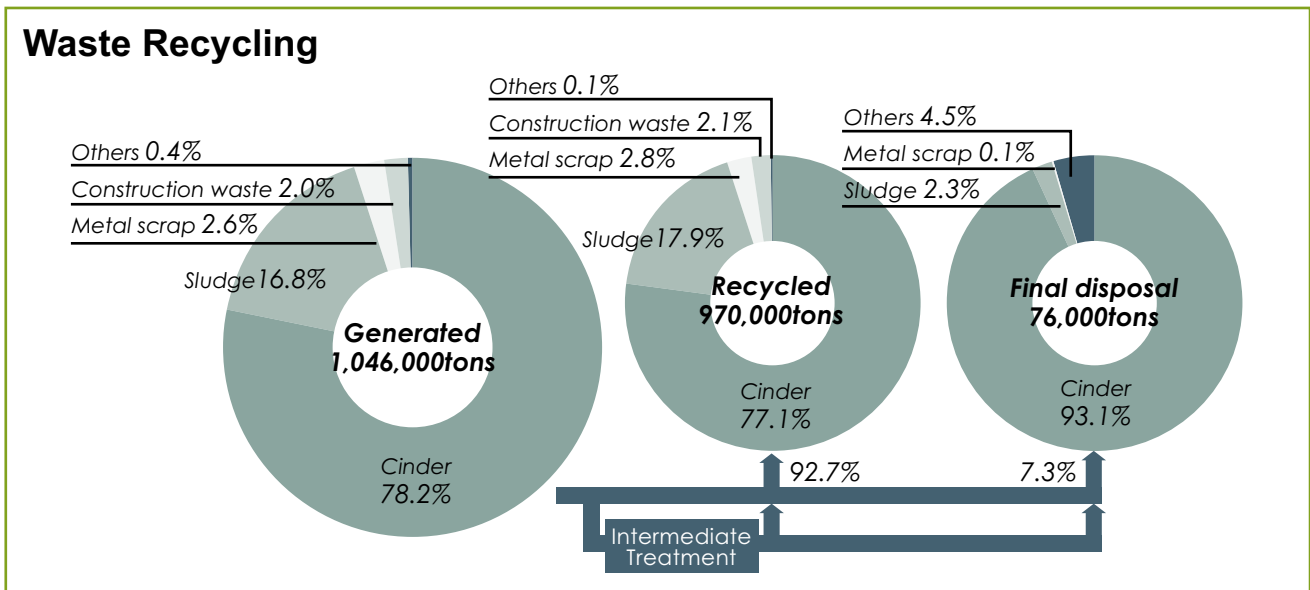
Uralsk Heat Power Station

Resource Conservation and Recycling

TohokuEPCO, together with the corporate group, has actively contributed to the creation of a recycle-based society through proper management and promotion of the three R's: Reduction, Reuse and Recycling of waste.

Management and Recycling of Industrial Waste

Industrial waste from TohokuEPCO includes cinders/soot (e.g., coal ash), sludge, and gypsum. In FY 2003, industrial waste amounted to 1,046 million tons and the recycled volume resulted in 0.98 million tons through the effective use of waste. Consequently we attained our target (90% or more) for two years in succession.



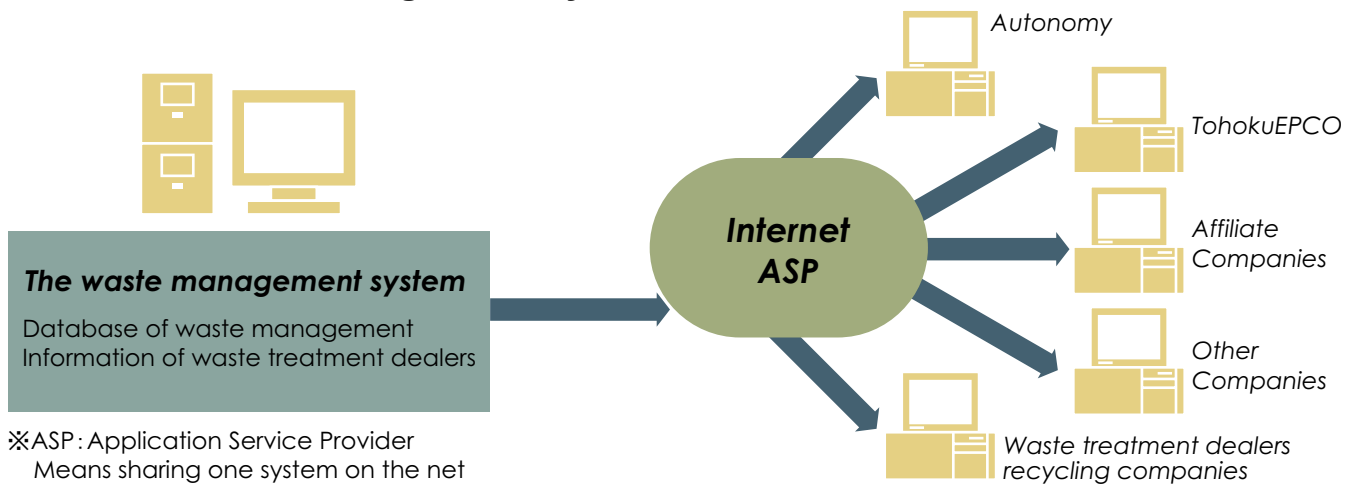
Examples of Recycling

Waste	Recycled usage	Recycling ratio
Cinders (coal ash, etc.): 815,000 tons	Cement materials, cement admixtures, etc. : 745,000 tons	91.5%
Gypsum: 173,000 tons	Gypsum board: 173,000 tons	100%
Construction waste (concrete pillars, etc.): 20,000 tons	Road sub-base materials, etc : 20,000 tons	100%
Metal scrap (iron scrap, power-cable waste, etc.): 28,000 tons	Power cables, metal products, etc.: 28,000 tons	99.8%
Total amount : 1,046,000 tons	Recycled amount: 970,000 tons	92.7%

Waste Management System

TohokuEPCO has developed a waste management system which uses internet technology to ensure proper management. Since FY2003, 40 offices have been integrated into this system, which is the official infrastructure for waste management.

Outline of the Waste Management System



Management of Radioactive Waste

Radioactive waste in the nuclear power station is separated from industrial waste and treated appropriately, depending on the properties and types of the radioactive materials.

Conservation of Energy and Resources in the Offices

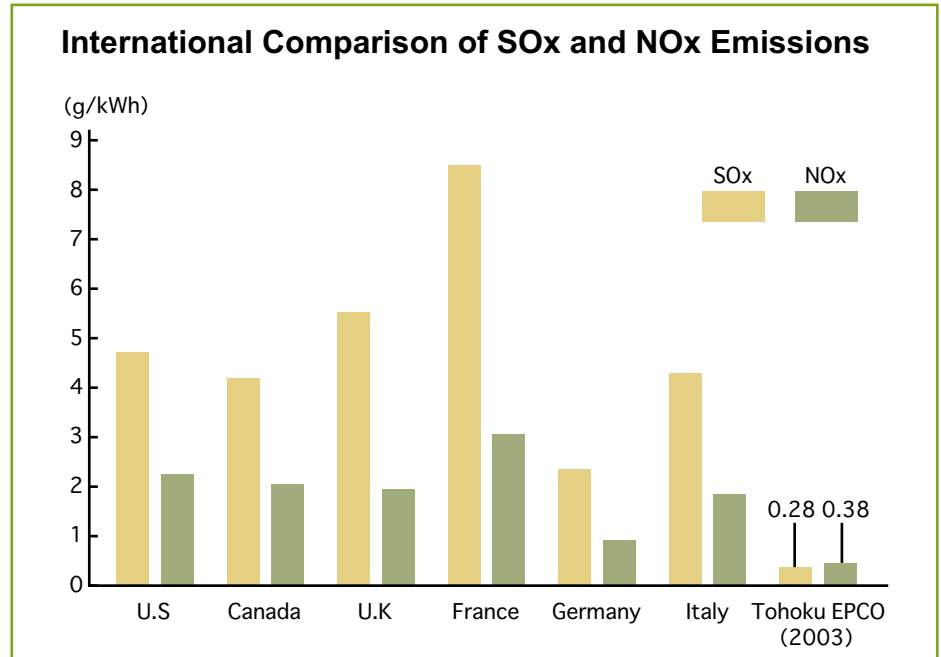
In order to reduce the environmental impact in office operations, TohokuEPCO is promoting conservation of office resources (paper, electricity, etc.) and recycling of waste paper. In addition, we have started green purchasing for office supplies and introduced low-emission vehicles. In April 2002, TohokuEPCO formulated and announced the Green Procurement and Purchasing Guidelines, which are applied to office supplies, materials, and equipment at all its power facilities. We will continue working to contribute and to promote a recycling-based society, through the preferential use of environmentally-friendly products.

Protection of the Regional Environment

TohokuEPCO operates thermal, nuclear and geothermal power stations under legal regulations, and through voluntary agreements with local municipalities, which have set standards more strict than those of the federal government.

Reduction of Pollutant Emissions

In order to reduce pollutant emissions from thermal power stations, high-quality fuels and control technologies have been adopted at each power station. Through these measures, TohokuEPCO has attained world-class levels of performance for SOx and NOx emissions.



Scrap Coal Power Plants to Build a LNG Combined Cycle System

To provide competitive prices and reduce CO₂ emissions, TohokuEPCO has begun scrapping coal power plants to build a high-efficient LNG combined cycle system. We are appropriately conducting an environmental impact assessment in order to protect the regional environment.

Management of Chemicals

TohokuEPCO has appropriately managed the amounts and usage of chemical substances, which are regulated by the PRTR (Pollutant Release and Transfer Register) law.

Management and Treatment of PCBs

TohokuEPCO is forwarding a project to treat insulation oil and pole-mounted transformers, which are contaminated by quite low concentrations of PCBs (Polychlorinated Biphenyl). We are planning to build the Sakata Recycling Center (Sakata, Yamagata prefecture), which will allow us to treat PCB-based oil and to recycle transformers using a safe, environment-friendly, government-regulated technology. In the whole process, we are giving priority to safety, environmental protection and public acceptance from the regional communities.



Sakata Storage Center

Harmonization of Power Facilities with Local Communities

To mitigate the impact of power facilities on the natural environment and on the landscape, TohokuEPCO is utilizing environment-friendly pylons and poles and developing wooded areas around power stations.

Environment Communications

Environmental Activities with the Regional Community

TohokuEPCO works together with the community to promote environmentally-friendly activities, including tree planting, volunteer environmental clean-up efforts and resource recycling, in order to strengthen relations and develop mutual trust within the community. In June 2003 (which is officially designated as Environmental Awareness Month), we carried out nearly 330 environmental programs with 33,000 participants.



Support Programs for Children's Environmental Education

TohokuEPCO has developed multimedia software for the practical application of an environmental education curriculum in elementary and junior high schools. To promote further interest and understanding concerning environmental issues, our thermal power stations and customer services offices organize environmental education programs which provide hands-on experience for the students.



Environmental Delivery School at Akita Customer Services Office

Communication through the Environmental Action Report

TohokuEPCO has promoted interactive communication with customers and local communities. In FY2003, we published 20,000 copies of our Environmental Action Report and distributed them to our customers, government administration offices, other companies and so on. Additionally, we have conducted a thorough questionnaire survey and collected comments and requests in order to improve environmental activities.

Environmental Management

ISO14001 Certification

In order to realize the Company's environmental policy, EMS (Environmental Management System) is an essential tool for the development of a comprehensive plan of action, implementation, periodic review, and upgrading. TohokuEPCO has obtained ISO14001 certifications at all thermal and nuclear power stations (a total of nine stations) and has introduced company-wide EMS since April 2000.

Collaboration with the Corporate Group

We have carried out environmental activities extensively through close collaboration with affiliated companies. In addition, we have established an environmental policy, an environmental committee, and in May 2004, an environmental action plan which relate to the corporate group.

Internal Environmental Audits

The audit office conducted 36 internal environmental audits in FY2003 and their remarks and suggestions were reported to executives.

Environmental Education

TohokuEPCO is providing an environmental education program designed to enhance the degree of environmental awareness among its employees. In FY2003, we provided an environmental education course called "Eco Clip" for 12,000 employees. "Eco Clip" provided information on environmental issues and helped employees recognize what they can do for the environment. Moreover, we encourage our employees to obtain licenses respecting environmental protection.

Corporate Profile

Established:

May 1, 1951

Capital:

¥251,441 million
(U.S.\$ 2,380 million; U.S.\$1.00= ¥ 105.63)
as of March 31, 2004

Operating Revenues:

¥1,477 billion
(U.S.\$ 13,704 million; U.S.\$1.00= ¥ 105.63)
as of March 31, 2004

Chairman of the Board:

Toshiaki Yashima

President:

Keiichi Makuta

Employees:

12,741 as of March 31, 2004

Directory:

(Head office)

7-1, Honcho 1-chome, Aoba-ku, Sendai, Miyagi 980-8550, JAPAN

(Branch offices)

Aomori, Iwate, Akita, Miyagi, Yamagata, Fukushima, Niigata, Tokyo

Web site: <http://www.tohoku-epco.co.jp/>

Number and Maximum Capacity of Power Stations (End of FY2003)

	Number of power stations	Max.capacity (GW)
Hydroelectric	210	2.41
Thermal (including geothermal and internal combustion)	17	10.93
Nuclear	1	2.17
Total	228	15.51

TohokuEPCO Utility Service Area