



**Summary of
Global Environmental
Action Report
2000**

[Scope of Report 2000]

This report is based on the activities of the Tohoku Electric Power Co., in FY 1999.

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*The FY runs from April 1 to March 31 of the following year.

Foreword

With the 21st century, the "century of the environment," just around the corner, conventional social and economic systems have reached a major turning point. The Japanese electric utility industry entered a period of intense competition in March 2000 when deregulation for the industry went into effect, leading to a significant change in the business situation for the utilities. Tohoku Electric Power Co. (Tohoku EPCO) recognizes that measures for dealing with environmental issues, specifically the implementation of stricter environmental regulations and promotion of energy conservation, will have an increasing influence on its management and operations.

The new corporate vision Tohoku EPCO formulated in March 2000 as a future guidepost for its management and that of the Group places environmental conservation measures at the top of its list of activities for promotion of the public good. The vision calls for the Group to achieve environmental conservation and cost curtailment while maintaining mutual trust with local communities by ensuring a stable supply of electricity.

In FY 1999, Tohoku EPCO implemented measures to prevent global warming that included development of nuclear power and improved operational efficiency at its thermal power stations. In addition, the company took positive steps for more efficient use of energy, environmental conservation and recycling programs in local communities, and for global environmental conservation that included participation in an afforestation project overseas. Tohoku EPCO continues to promote these measures in FY 2000, the last year of the Global Environment Action Plan (Phase III; FY 1998 - FY 2000).





Tohoku EPCO hopes that the information in this brochure makes you realize our positive commitment to conservation and preservation of the environment.

November 2000
Tohoku Electric Power Co., Inc.

Environmental Policy

Following the United Nations Conference on Environment and Development (UNCED; Earth Summit) in 1992, Tohoku EPCO formulated "Guidelines for Global Environmental Action" in July of the same year. After thorough review of the element of this plan, Tohoku EPCO adopted its present environmental policy in July 1998.








Fundamental Principles

-  Global environmental issues are common to all members of the human race.
-  A shift toward a social and economic system which enables sustainable development is necessary.
-  Commitment to resolving environmental issues is the responsibility of the energy industry.
-  The entire Tohoku EPCO group shall continually make efforts to build up an energy system which is in harmony with the global environment.

Environmental Policy

"Tohoku EPCO shall contribute to the creation of a society that is in harmonious balance with the global environment." The following are major elements of our environmental policy:

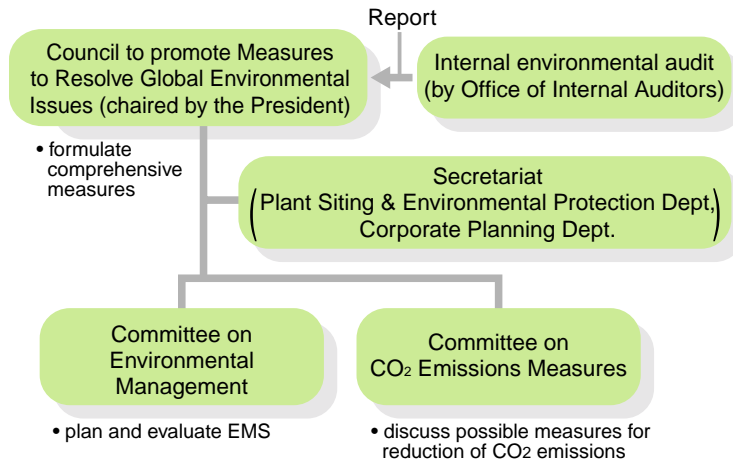
Tohoku EPCO commits itself to:

-  Fully comply with the laws, ordinances, agreements, etc. relating to environmental protection and conservation, and do its best to reduce environmental loads.
-  Build a stable and economical electric supply system.
-  Continue its efforts to promote effective use of energy through communication with customer.
-  Take necessary measures to improve environmental awareness among its employees and promote activities as a member of the local communities.
-  Cooperate and contribute to protect and preserve global environment.
-  Set objectives and targets for environmental protection activities and review them periodically for improvement.
-  Disclose information on its environmental protection activities.

Task Force for Global Environmental Issues

Task Force

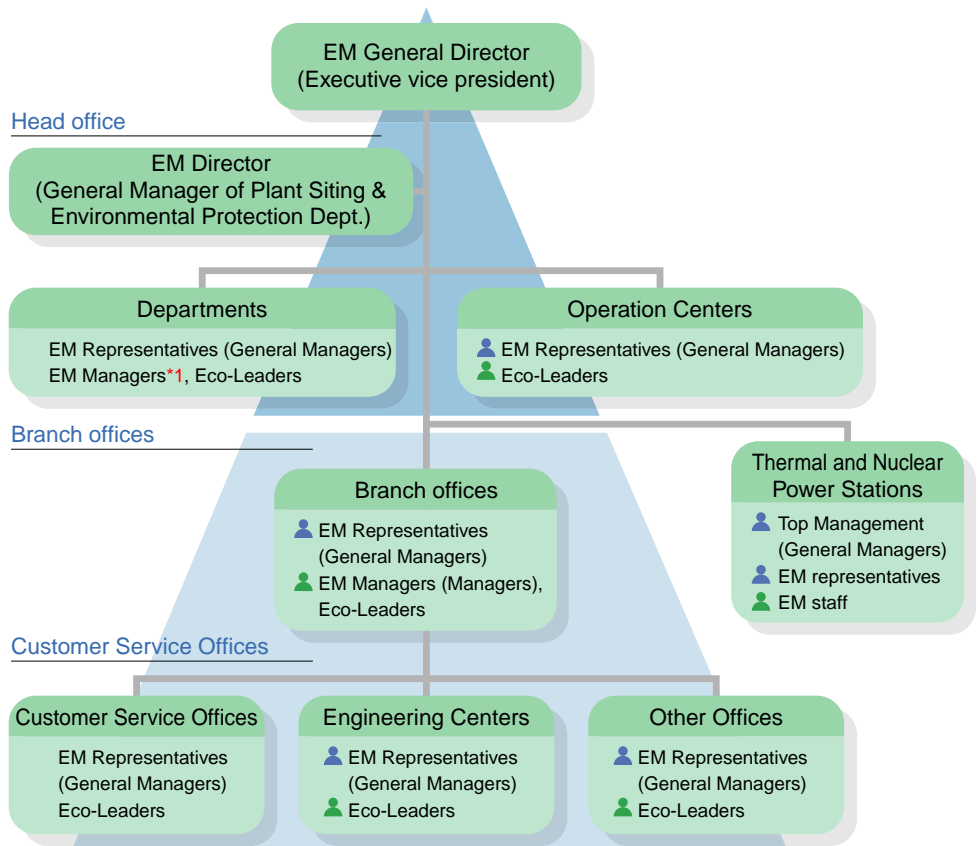
In March 1990, Tohoku EPCO established three different task forces to deal with environmental issues.



Environmental Management System (EMS)

In order to further promote environmental measures, Tohoku EPCO appointed persons to be in charge of environmental activities in each Department and office in April 2000. At the same time Tohoku EPCO introduced an EMS based on ISO 14001 at corporate offices except its thermal and nuclear power stations. In addition, some 360 "Eco-leaders" were assigned to effectively promote activities.

The ISO 14001 management system is being implemented at all Tohoku EPCO thermal and nuclear power stations. They plan to obtain ISO 14001 certification by the end of FY 2000.



*1 : Positioned mainly at facilities-related departments (head office)

Environmental Management System

Targets and Results of Global Environmental Action Plan (Phase III)

Tohoku EPCO has periodically revised its Global Environmental Action Plan first established in 1992 to promote environment-related activities in all aspects of its business operations. In the Action Plan (Phase III) currently in effect, Tohoku EPCO set specific measures and numerical targets that cover FY 1998 - 2000.

Major Environmental Indicators - Targets and Results

Environmental indicators	Unit	Results for FY 1999	Target (Phase III)
Measures to prevent global warming			
CO ₂ emission intensity (all power stations)	kg-CO ₂ /kWh	0.44	[0.42]
CO ₂ emission	Mton-CO ₂	3,144	---
Thermal efficiency (TPSs)	%	40.6	[40.0 or more]
SF ₆ emission reduction (recovery rate)	%	94.6	90 or more
Protection of the ozone layer			
Consumption of specified CFCs	t	0.56	Limitation to the greatest degree possible
Specified halons consumption	t	0.09	Limitation to the greatest degree possible
Preservation of air quality			
SO _x emission intensity (ave. TPSs)	g/kWh	0.26	Limitation to the greatest degree possible
NO _x emission intensity (ave. TPSs)	g/kWh	0.37	Limitation to the greatest degree possible
Effective use of resources			
Gypsum (utilization rate)	%	100	100
Coal ash utilization (utilization rate)	%	68.4	[82.4]
Load leveling			
Peak shift	kW	Approx. 60,000 (FY 1997-1999)	Increase by approx. 60,000 (FY 1999-2001)
Bottom up (development of night load)	kW	Approx. 160,000 (FY 1997-1999)	Increase by approx. 180,000 (FY 1999-2001)
Measures in the workplace			
Paper (qty. purchased)	Millions of sheets	127.0	124.7
Electricity consumed	GWh	110.0	103.7
Low-emission vehicles	Total No.	37	40
Volume of recycled paper	t	623	Increase to the greatest degree possible
Power stations with ISO 14001 certification	Total No.	4	9 (all thermal and nuclear power stations)

[] : Estimates based on FY 1998 plan
TPSs : Thermal Power Stations

Legal Regulations and Other Requirements

Tohoku EPCO is operating thermal, nuclear and geothermal power stations under legal regulations, and voluntary agreements that call for environmental pollution control (thermal and geothermal power) or environmental protection and safety (nuclear power) with the respective local public governments. Tohoku EPCO was not involved in any environmental lawsuits in FY 1999.

Environmental Accounting

Tohoku EPCO has reviewed environmental protection measures and disclosed them in its Environmental Action Report. In order to promote environmental protection activities more effectively and enhance communication with the public, Tohoku EPCO realizes the importance of estimating and disclosing numerical values in environmental accounting.

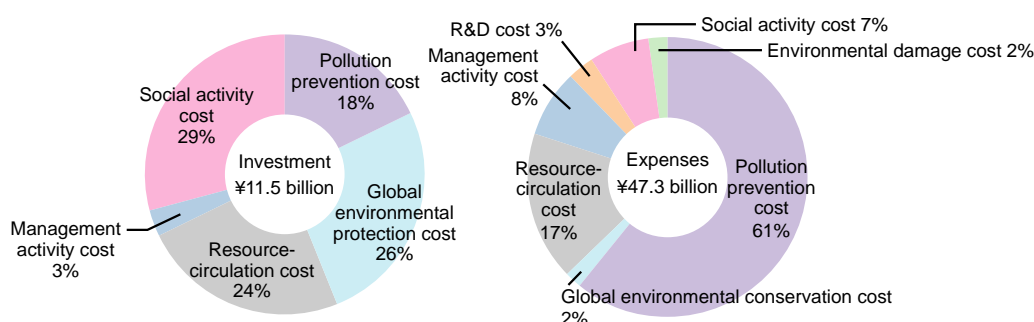
Tohoku EPCO calculated internal environmental costs and their effectiveness in FY 1999 based on the guideline published in May 2000 by the Environment Agency, Japan. The estimate showed that the costs for equipment investment required for environmental conservation measures came to ¥11.5 billion and expenses amounted to ¥47.3 billion, accounting for 3.8% and 3.7% of the total amount for investment and expenditure (expenses for electric utility operations), respectively.

Environmental Costs

(billions of yen)

Category	Principal measures	Investment	Expenses
Costs in service area*		7.9	38.1
Pollution prevention cost	Preservation of air quality (reduction in SOx, NOx, and dust emissions), water quality, noise control, and offensive odor control.	2.1	28.9
Global environmental conservation cost	Improvement of thermal efficiency of LNG-fired TPSs, introduction of low-loss equipment (e.g., transformers, wires), utilization of renewable energy, protection of the ozone layer, etc.	3.0	1.1
Resource circulation cost	Treatment and recycling of wastes	2.8	8.1
Upstream and downstream cost	Green purchase	-	▲ 0.1
Management activity cost	Environmental education, environmental management activities, environmental load monitoring, etc.	0.3	3.5
R&D cost	Environment-related R&D	-	1.4
Social activity cost	Afforestation, beautification, landscaping, disclosure of environmental information, local environmental activities, etc.	3.3	3.4
Environmental damage cost	Pollution load levy	-	1.0

* The cost does not cover the main facilities for nuclear power, hydro power or LNG-fired thermal power stations because of difficulties in calculating their environmental costs.



Composition of environmental costs

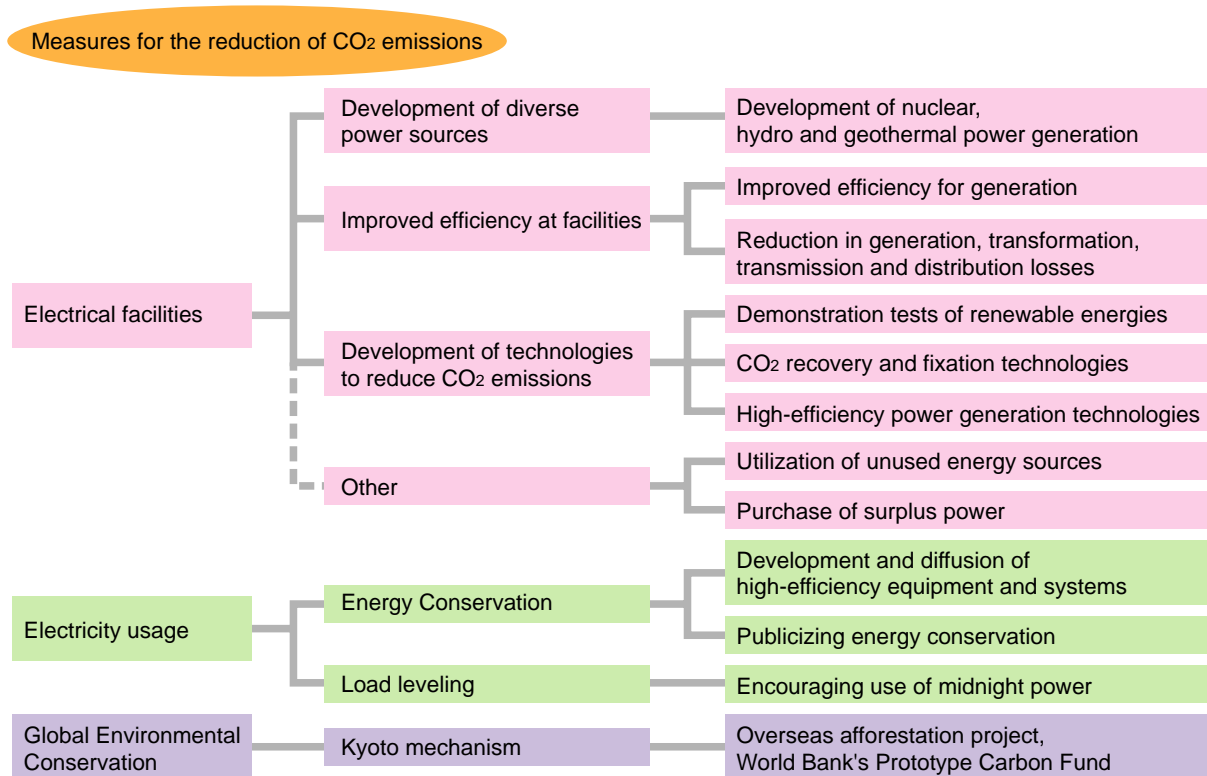
The environmental costs required for these measures (the depreciation cost and management cost for environmental conservation facilities) amounted to ¥22.6 billion.

The total reduction in environmental impacts attained by facilities for environmental conservation (compared with the case without these facilities) was comprised of 62,000 t of SOx, 26,000 t of NOx and 779,000 t of dust.

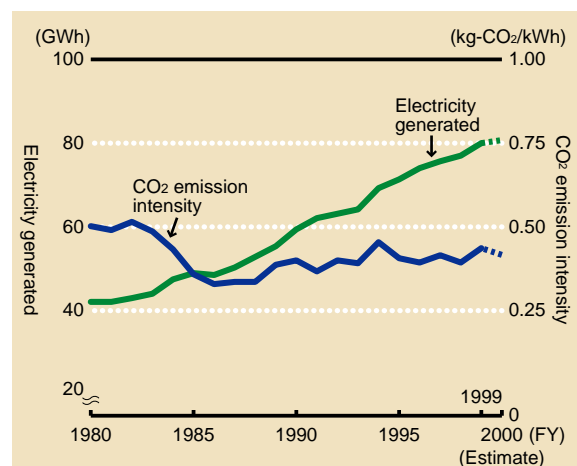
Development and Operation of Electrical Facilities Taking the Environmental Protection into Consideration

Measures to Prevent Global Warming

Tohoku EPCO has endeavored for years to reduce CO₂ emission intensity as follows.



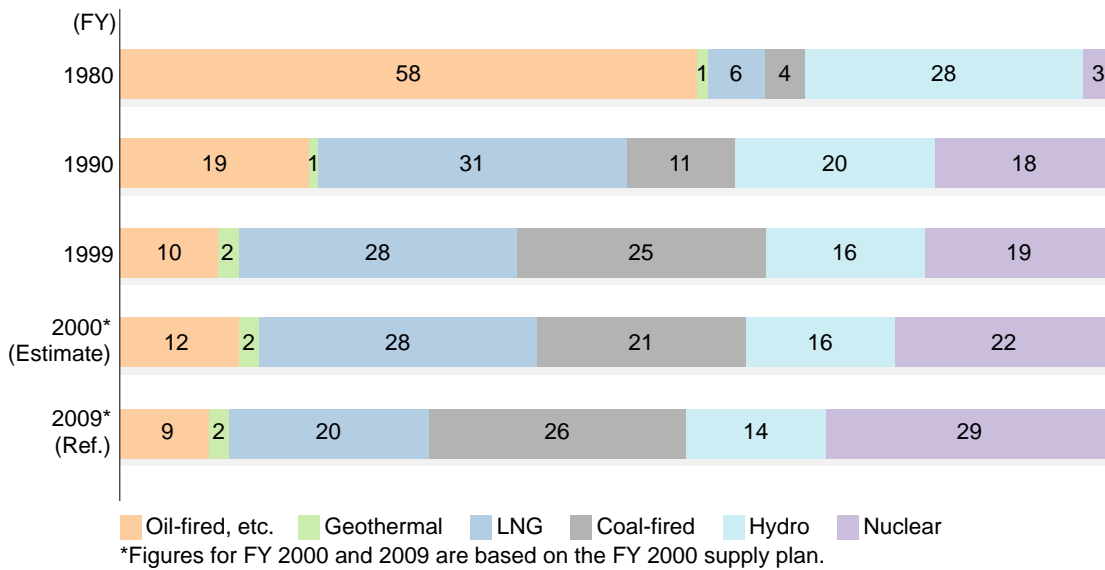
In FY 1999, CO₂ emission intensity was 0.44kg-CO₂/kWh with CO₂ emissions amounting to approximately 31.44Mton. Over the last 20 years, the amount of electricity generated by Tohoku EPCO has increased about 1.9 times, while its CO₂ emission intensity has decreased by 13%. As a result, the amount of CO₂ emission from its power stations has been limited to some 1.7 times.



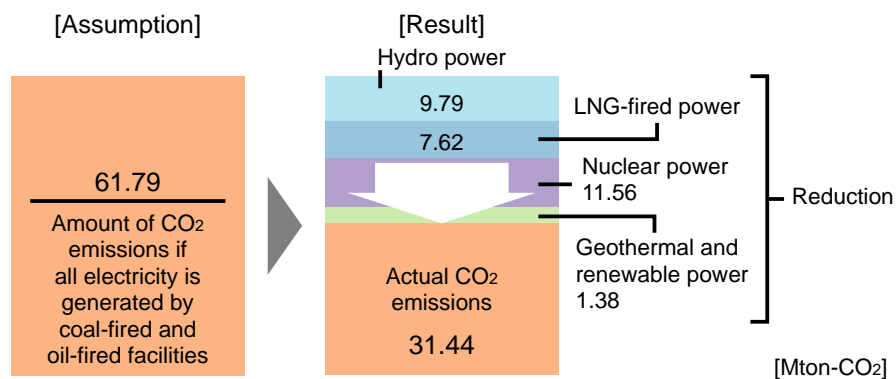
Changes in CO₂ Emission Intensity and Amount of Electricity Generated

Development of Diverse Power Sources

Tohoku EPCO is developing a well-balanced system of power sources with the following fundamental features: 1) centering on nuclear power generation 2) recognizing the importance of environmental impact 3) implementing economic efficiency and 4) supplying stability and operability of available power sources. Installation of a combination of hydro, LNG-fired and nuclear power generation systems has resulted in the reduction of CO₂ emissions by half, when compared with electricity generated by all coal-fired or oil-fired power stations.



Type of Electricity Generated by Power Source (%)



Reduction of CO₂ Emission

High-efficiency power generation technologies

Unit 4-1 System (capacity : 805 MW, LNG combined cycle power plant) at Higashi Niigata Thermal Power Station, which started commercial operations in July 1999, has attained a thermal efficiency of 50.6% - the highest level in the world - by adoption of new technologies. Improved thermal efficiency enables the whole Unit 4 System (1,610 MW) to save some 370,000 t in annual fuel consumption, and reduce annual CO₂ emissions by 22%, compared with conventional LNG-fired systems. As a result, Tohoku EPCO has won many awards for this system.



Higashi Niigata Thermal Power Station

Demonstration Tests of Renewable Energies

Power generation systems using renewable energies, including solar power, wind power and wave power generating systems, are environment-friendly, because they emit no CO₂ while generating electricity. Although these systems have unresolved problems, such as low energy density, dependence on weather conditions that result in unstable output, and higher costs, these power sources are expected to be used more widely in the future.

Tohoku EPCO is conducting demonstration tests on renewable energies and fuel-cell power generation systems to assess and analyze their reliability, operability and economic efficiency, as well as taking into account the local features of installation sites.



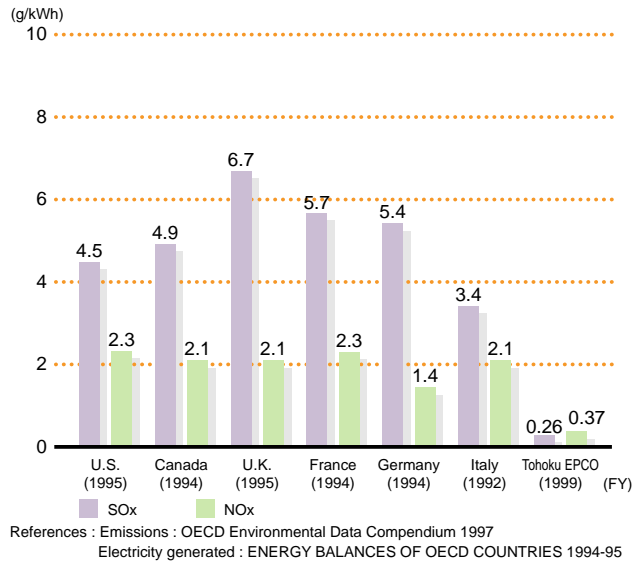
Tappi Wind Park

Purchase of Surplus Power

In order to help waste power generation and renewable energies develop further, Tohoku EPCO announced a surplus power purchasing menu in April 1992 and began buying such electricity from non-utility power producers and customers. In April 1998, Tohoku EPCO started purchasing surplus electricity from commercial wind power stations. In October 2000, Tohoku EPCO established the "Tohoku Green Fund" to support installation of solar power generation and wind power generation. Tohoku EPCO has also been purchasing surplus electricity from co-generation systems of non-utility facilities since August 1993, to extend cooperation for effective utilization of energy.

Environmental Protection Measures

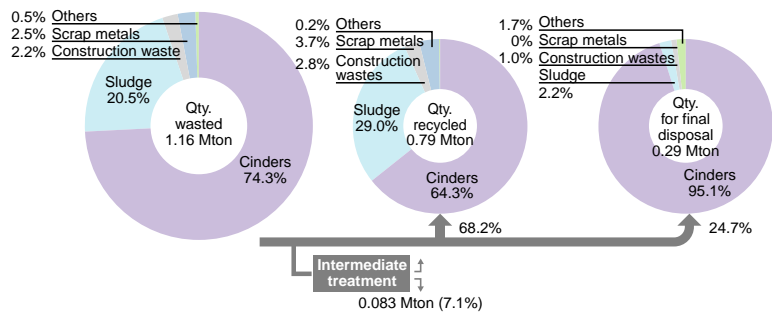
Tohoku EPCO has implemented a wide range of measures with respect to regional environmental issues, such as SOx and NOx emissions, since its foundation. Through these activities, Tohoku EPCO has attained a world-class level of advanced technology and environmental performance.



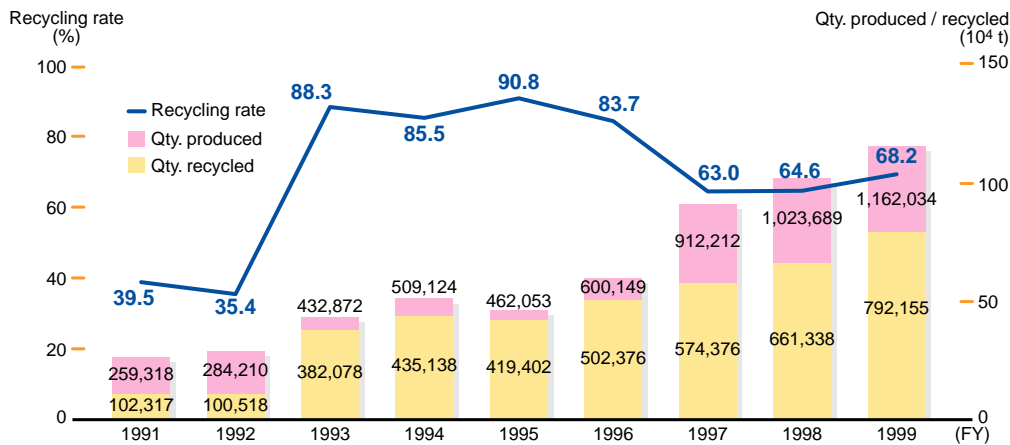
International Comparison of SOx and NOx Emissions

Effective Utilization of Resources

Industrial waste from Tohoku EPCO facilities include cinder(e.g. coal ash), sludge and gypsum. Large amount of these waste products have been recycled to make the most effective utilization of available resources.



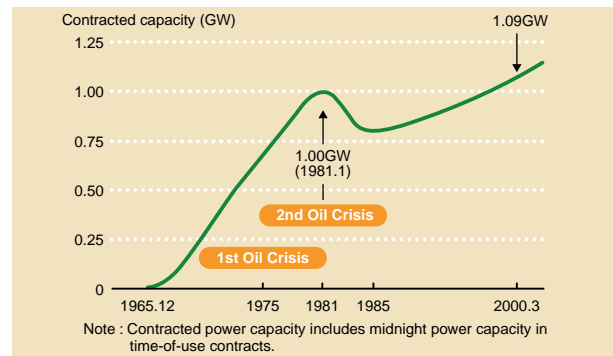
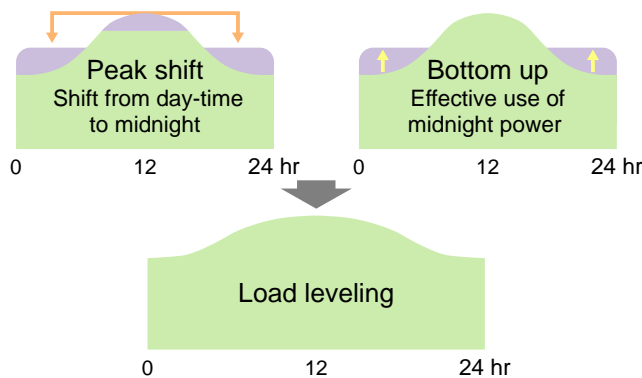
Volume of Waste and Recycled Material (FY1999)



Change in Volume of Waste and Recycling Rate

Effective Use of Energy

Recent trends in electrical demand show an increase in seasonal and hourly variations, thus impeding efficient utilization of the power supply. In order to promote more effective use of energy and electrical facilities, Tohoku EPCO is taking positive steps for a more flexible electricity rate (e.g. time-of-use rate and midnight power rate options) and innovative marketing (e.g. electric kitchens and all-electric houses).



Changes in midnight power utilization

Development of Environmental Network

Tohoku EPCO is expanding its network of environmental protection activities from company offices to the local communities and further to the international communities as a major step toward achieving sustainable development.

Measures for Energy and Resources Conservation in the Workplace

Tohoku EPCO endeavors to reduce its environmental load by quantitative management of office supplies, increase "paperless" activities through computerization, introduce low-emission vehicles and implement separate collection of used paper for recycling.

Joint Environmental Protection Projects with Local Communities

Since 1990, Tohoku EPCO has carried out various "eco-point activities" for environmental conservation and recycling at model offices in local communities. In FY 1999, the company carried out a total of 150 sets of activities for its "Environment Month Campaign." Many of these activities received awards.

Environmental Education

Tohoku EPCO is developing multimedia software with teachers for practical application in the environmental education curriculum taught at elementary and junior high schools. In FY 1999, the "Association for Multimedia Environmental Education in Sendai" and the "Akita Information Center for Environment and Energy," both organized by Tohoku EPCO, won awards for their activities.



Environmental Education with multimedia software

Communication on Energy and Environment

Tohoku EPCO first published Global Environmental Action Report in May 1995 based on activities in the Action Plan (Phase I : FY 1993-1995). After annual review, the company published its "Global Environmental Action Report 2000" which was a compilation of the results for FY 1999. The Action Report is also available on website (<http://www.tohoku-epco.co.jp/>).

International Cooperation and Aid

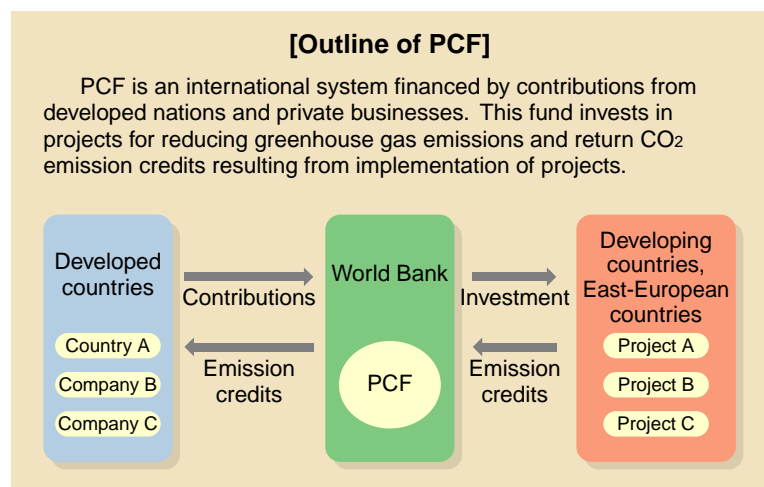
Tohoku EPCO has been accepting foreign trainees and sending experts in the company to other countries in various fields to provide technical guidance. In FY 1999, Tohoku EPCO invested in an afforestation project overseas and also participated in the World Bank's "Prototype Carbon Fund". In addition, the company participated in feasibility studies on projects to reduce greenhouse gas emissions in Russia.

Participation in Afforestation Project Overseas (Australia)

In July 1999, Tohoku EPCO invested in the Albany Plantation Forest Company of Australia Pty. Ltd. (APFL), as a voluntary measure for reduction of CO₂ emission. An APFL project is under way to plant trees on a total of 26,000 ha of land over 10 years from 1993 to 2002 to supply feedstock for the paper manufacturing industry. This project, which coexists with existing agricultural operations, makes a great contribution to environmental protection by preserving forest resources and preventing salt damage around the region.

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

In November 1999, Tohoku EPCO participated in the World Bank's PCF to acquire CO₂ emission credit, know-how in developing new projects and certification for emission reduction. Tohoku EPCO expects to make a contribution on a global scale through the PCF.



Demonstration Test for Hybrid System (Vietnam)

Tohoku EPCO and Electricity of Vietnam are installing one unit of the hybrid system, which combines solar power and wind power generation with a storage battery, to supply power to a non-electrified village in Vietnam, and to collect data on weather, electricity, and other characteristics for two years from FY 2000.

With this project as the start, Tohoku EPCO continues to investigate and examine for rural electrification in developing countries by utilizing renewable energies.

Corporate Profile (as of March 31, 2000)

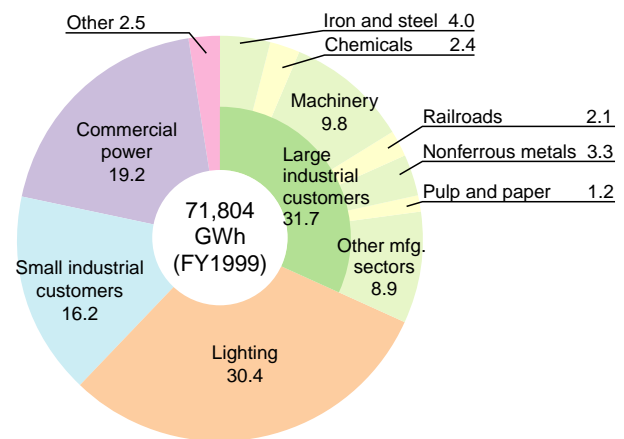
Established : May 1, 1951
Paid-in capital : ¥251,441 million (US\$2,372 million ; US\$1.00 = ¥106)
Chairman of the Board : Teruyuki Akema
President : Toshiaki Yashima
Number of employees : 13,729
Sales (in FY1999) : ¥1,539,606 million (US\$1,452 million ; US\$1.00 = ¥106)
Directory :
Head office : 7-1, Ichibancho 3-chome, Aoba-ku, Sendai, Miyagi 980-8550, JAPAN
Branch offices : Aomori, Iwate, Akita, Miyagi, Yamagata, Fukushima, Niigata, Tokyo
Overseas office : New York



Number and maximum capacity of power stations

		Power stations	Max. capacity (kW)
Hydro power		210	2,430,896
Steam power	Thermal power	8	11,200,000
	Geothermal power	4	223,800
Nuclear power		1	1,349,000
Internal combustion power		5	85,740
Total		228	15,289,436

Composition of Electricity Sales (%)



Trends of Electricity Sales

