

NTT Group Environmental Protection Activity Report 2002

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Editor's Postscript

In last year's version of our report, we estimated the social impact of reducing environmental loads when using IT, but in this year's version, we concentrated on several concrete services and their effects. Sharing environmental information can alter our awareness of the environment and of our activities. We therefore aspire to contribute to the implementation of a sustainable and developing society through the utilization of IT.

The NTT Group is a corporate group of about 430 companies as of the structural reform effectuated in May 2002. Due to the immense size of the organization, gathering environmental data from all group companies is difficult. One of the measures taken to resolve this issue was the employment of IT in our data processing activities, and some of the data in this year's report was collected through the environmental information database system. Although the systems are still under development, we expect to collect NTT Group environmental data through our network system.

This is the fourth year we have issued an NTT Group Report, and we believe it contains many things which we need to improve. We would like to hear what you think about it. Please respond to the attached questionnaire, e-mail your comments, or answer the questions on our website. We will consider them for the production of next year's Environmental Report.



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Declaration. Ecommunication

NTT Group
Environmental Protection
Activity Report 2002

Toward increasing genuine corporate value

We are directly engaging environmental issues, ready at all times to consider new steps, which we meticulously implement. This report provides facts and figures detailing the results on our path into the future as a corporate member of the global community.

We will enhance the free exchange of information about the environment. From this dialogue, we will strive to discern the new steps we must take and how we can most effectively integrate them into our management. In doing so, we will thoroughly and publicly disclose our actions, thereby opening an avenue of mutual understanding between the NTT Group and society.

This is ecommunication.

Cover Page Notes:

The NTT Group believes that environmental protection activities are a vital human concern that must be addressed on a global scale. Although these activities must be implemented as part of corporate responsibility, we believe action must be taken not only from the perspective of the corporation, but also from a global outlook. We expressed such a thought greatly in the term "ecommunication," thus the strong determination of NTT Group in tackling environmental protection issues is being shown.

At present, corporate activities have two sides. While corporations are carrying out activities to provide convenience, abundance and comfort to society, they are also generating harmful by-products which endanger our common prosperity and contribute to global warming and the destruction of the ozone layer.

Lately, the theme of "sustainable development" has been taken up as a major subject in companies who will succeed and continue to take part in the "corporate citizenship" of society. This is because the notion that these two divergent features of corporate activities should be simultaneously evaluated has grown into mainstream thinking.

Although the NTT Group makes many widespread and diverse contributions to society, we cannot deny that in doing so we place a large load on the environment. We have a slogan, "Global Information Sharing Corporate Group," in the "NTT Group Three-Year Business Plan." Furthermore, the creation of a broadband (HIKARI) market as an important mainstay of our future business will, for example, include ubiquitous services using integrated wire and wireless technologies. By providing these services, we intend to develop corporate activities that will enrich the communication of people and contribute innovations to the industrial system. On the other hand, loads on the environment such as increased energy and resources consumed in networks, servers, and terminals will inevitably expand.

However, it is not impossible to create new businesses while we are continuously striving to reduce the environmental burden.

If our research and development staff and all NTT Group employees make sincere efforts together with manufacturers and customers, we will surely accomplish our goals. We also take it for granted that our appeal and leadership of such efforts are our responsibility as a corporate member of society.

The NTT Group considers it ideal that a contribution to the environment is not meant to restrict corporate activities while focusing on a reduction of expenditures, but to generate a creative business that will positively contribute to industrial development while promoting environmental protection. These activities will help to solve environmental problems, they will create new industries, and they will contribute to the progress of Japan's economy.

We would appreciate your inspection of this Environmental Protection Activity Report 2002, which we believe explains our attitude and concerns about the environment.

Furthermore, we welcome your candid opinions and advice. These valuable voices will be seriously considered for positive application to our future business activities.



Norio Wada

Norio Wada
President,
NIPPON TELEGRAPH AND TELEPHONE CORPORATION

Guidelines Used to Edit this Report

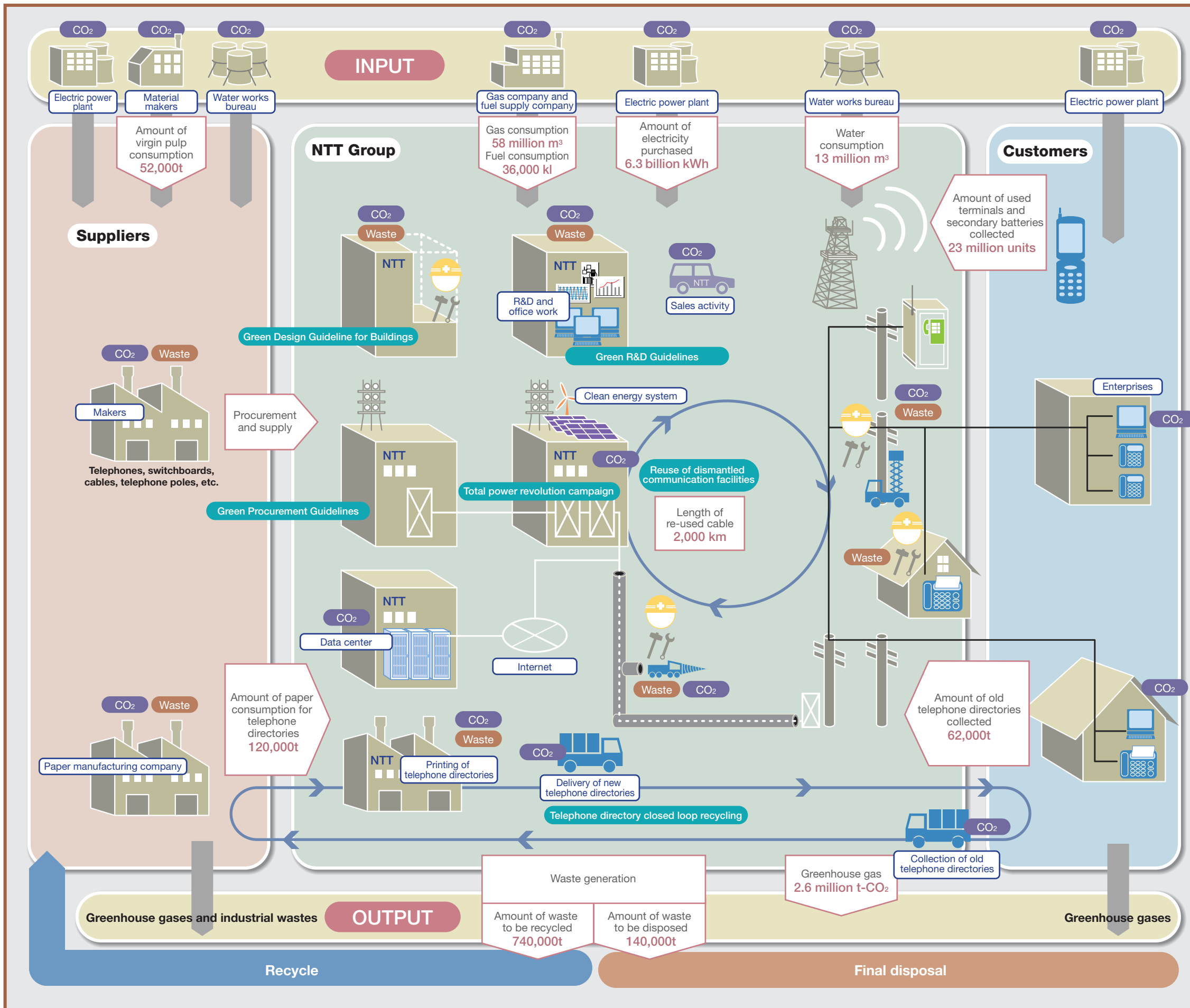
- The Environmental Protection Activity Report 2002 has been compiled from data collected from April 1, 2001 to March 31, 2002, and also includes activities after April 1, 2002 as well as our future plans.
- The NTT Group's 2002 Environmental Report amalgamates the 2001 data collected mainly from NTT (holding company), NTT EAST, NTT WEST, NTT Communications, NTT DoCoMo's nine companies, NTT DATA, NTT FACILITIES, and NTT COMWARE. Furthermore, data before 1999 was collected from the NTT Group prior to its restructuring, the details of which are included in the data file section of this report.
- The NTT Group undertook unique report guidelines in 2000 based on various guidelines suggested for environmental reports. Attempts were made to use the guidelines of the Ministry of the Environment and the guidelines of GRI (Global Reporting Initiative), which typify worldwide trends, as models for information disclosure that include social and economic aspects together with a report of environmental activities that have been tried in the past. Although the guidelines referred to in this year are the same as in the previous year, there is greater emphasis on sustainability, and certain aspects of the message to investors are also stressed. We consider this year important in determining the quality, characteristics, and role of future reports on environmental protection activities.
- The "NTT Group Environmental Accounting Guidelines (2002 Version)" was compiled and used as a reference tool.
- The amount of CO₂ emissions calculated from customer facilities installed in Group companies were reported separately. Similarly, in the 2001 report, emissions caused by data center operations, were also acknowledged.
- The NTT Group's environmental activities have largely been disclosed on our website. It consists of a list of questions that visitors can search easily. Please refer to the website map at the end of the report for further details. This booklet version contains a minimum of essential information and data. The size was reduced to half of the previous year's version due to a heightened consideration toward paper resource conservation. We continue to implement activities covered in the 2001 report that are not included in the 2002 edition.
- Although third party certification of NTT Group's Environmental Report was not implemented, we regard this report as an honest and unbiased account, and an essential communication tool.
- Names of organizations are as of March 31, 2002.

August 2002

Activities Covered in the 2001 Report Not Included in the 2002 Edition

Action Plan	Page	Items
Utilizing the IT Revolution to Benefit Environmental Preservation	6	What is the IT Revolution?
	8	IT Revolution and Global Warming
	10	Predictions of the Amount of Electricity Consumption
Tackling Environmental Issues with an Expanded Use of IT	12	IT-driven Factory Changes Videoconferencing Intelligent Transport System (ITS)
	14	Environmental Education Using WebAngel Electronic Field Notebook Cherry Blossom Research
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LCA Environmental Loads of NTT Group



Environmental Load Map illustrates the process stream from input to output, from suppliers to customers

According to the Basic Law for Establishing a Recycling-based Society, corporations, on the basis of EPR (Extended Producer Responsibility), are expected to reduce environmental loads across the entire life cycle of products and services, and not only in the course of business operational activities. Therefore LCA (Life Cycle Assessment) has been generally used to quantitatively assess environmental loads caused by products and services from production through disposal. The NTT Group plays a positive role as a Global Information Sharing Corporate Group in creating an affluent, more comfortable society by increasing the connections between people through IT. However, the large-scale business activities associated with these benefits place a significant burden on the environment. For example, the NTT Group consumes 0.7% of the total electricity purchased in Japan, disposes 0.2% of total national industrial wastes, and represents 0.5% of the total national consumption of paper resources.

Conversely, IT has proven to be beneficial by improving efficiency in the process of distribution and production and reducing the use of energy and resources, thereby alleviating environmental loads. Mindful of its importance, we strive to center our efforts toward the realization of an IT society. The NTT Group will further strengthen its activities to reduce environmental loads by means of expanding the scope of LCA in order to fully comprehend the environmental impact of communication services on society and promote further measures for the reduction of environmental loads.

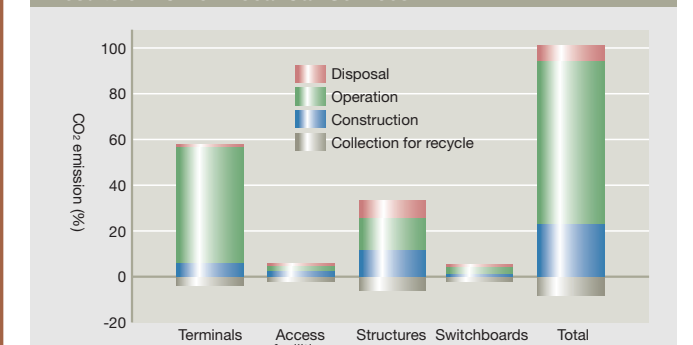
Environmental impact assessment of local call services

We have evaluated the environmental load associated with our local call service as an initial application of LCA.

The NTT Lifestyle and Environmental Technology Laboratories and NTT EAST have implemented LCA to assess the environmental loads caused by local calls (access-type fixed network). The assessment model assumed an average configuration of facilities* (terminals, access facilities, structures, switchboards) for a population of 10,000 people in the suburbs of a metropolitan area and assessed the environmental loads of the construction of each product (manufacturing and cabling) with the operation and waste treatment (removal, disposal, and recycling) of each product assessed at each phase. The results to date are:

- Among the three phases, construction, operation, and waste treatment, the largest amount of CO₂ emissions, accounting for 70% of the total, is a result of operations.
- Terminals, structures, switchboards, and access facilities, in that order, generate the largest volumes of environmental loads. Therefore it has been verified that reducing the loads caused by the terminals during the operation phase would be the most effective way to decrease environmental loads caused by local calls service.

Results of LCA on Local Call Services



* Terminals: telephones, fax machines, PCs
 Access facilities: cables
 Structures: buildings, air conditioning equipment

Basic Policies of NTT Group Global Environmental Charter

Compliance with laws and regulations and fulfillment of social responsibilities

To observe all laws and regulations regarding environmental protection issues and to carry out our responsibilities as global corporate citizens.

Reducing environmental loads

To establish action plans for energy conservation (reduction of greenhouse gas emissions), resource conservation (conservation of materials such as paper), waste reduction and to strive to make continuous improvements.

Establishing and maintaining environmental management systems

To establish an environmental management system enabling each business unit to pursue voluntary environmental protection activities.

NTT (holding company) obtains and analyzes information on new domestic and international environmental laws and regulations to quickly prepare new measures in collaboration with each environmental committee. NTT swiftly gathers information on new environmental laws and gives its abstracts to all of the Group companies' departments in charge of environmental protection within the day of their proclamation. Each NTT Group company exercises its responsibility as a corporate citizen by taking advantage of its strength as an information sharing company.

The NTT Group has established "Green Procurement Guidelines," "Green R&D Guidelines," and the "Green Design Guideline for Buildings" to reduce the environmental loads caused by its business activities. Special committees and working groups have been established to deal with important environmental issues.

The NTT Group is working to establish an environmental management system in compliance with ISO 14001. Each business unit establishes and employs an environmental management system suitable for its business. In regard to risk management, our first priority is to reduce environmental loads on a daily basis. We are prepared to deal with unexpected events, which could have serious environmental impacts, in the most effective manner. In 2000, environmental accounting was introduced to quantitatively grasp the effects of these environmental protection activities (material and economic effects), strengthening our environmental management.

Long-Term Targets (2010)

- Paper resource management: Reduce virgin pulp consumption by at least 20% of 1990 levels
- Prevention of global warming: Reduce CO₂ emissions below 1990 levels
- Waste management: Reduce the volume of waste by at least 85% of 1990 levels

■ No Fines or Penalties

In regard to environmental laws and regulations, the NTT Group received one warning from the government, but no fines, penalties, or improvement orders.

■ Donations

The NTT Group made contributions to a fund for the cleanup of illegal dumpsites, as requested by the Japan Federation of Economic Organizations (Keidanren).

■ Announcement of Support to "The Earth Charter"

In January 30, 2002, the NTT Group announced that it would support "The Earth Charter," which was expected to be endorsed at the "World Summit on Sustainable Development 2002" to be held in Johannesburg in August.

■ Establishment of an Environmental Information Sharing System

Environmental information sharing systems have been established and efficiently used among environmental sections in Group companies.

■ Management of Paper Resources

- Total virgin pulp consumption was reduced by approximately 50% from 1990 levels.
- Paper consumption for telephone directories was 120,000t, which is a 19% decrease from the previous year.
- 62,000t of old telephone directories were collected, a 6.9% increase from the previous year.

■ Prevention of Global Warming

The total amount of CO₂ emissions increased by approximately 55% over 1990 levels. However, our eco-efficiency (sales per CO₂ emission in tons) was 4.47 million yen/t-CO₂, an improved 20% compared to 1990 levels. The above figure includes 26,000 t-CO₂ which is emitted by the energy consumption of customer facilities installed in the buildings of the Group companies (such as the data center). Also, it includes the emission of 10,000 t-CO₂ greenhouse gases, other than CO₂.

■ Waste Management

The amount of waste was 140,000t, reduced by approximately 71% from the 1990 level.

■ Development of Energy Conservation Facilities

- DC power supply system
- The conversion loss of this power supply system has been significantly improved in comparison with the AC power system. [P13]

■ Introduction of Clean Energy Equipment

- 90 photovoltaic power generation system
- 1 wind power generation system
- 7 fuel battery system [P13]
- 7 hybrid power generation system (photovoltaic and wind power)

■ Number of Low Pollution Vehicles

- 288 hybrid vehicles
- 223 natural gas vehicles
- 17 electric vehicles

- Besides the intensification of conventional internal inspection, we implemented preventive measures against the excessive levels regulated by the Sewage Law. (NTT Information Sharing Laboratory Group)
- A decision was made to eliminate contaminated soil in a parking lot which was discovered by a voluntary soil investigation. (NTT URBAN DEVELOPMENT)

- Revision of the publication method for Hello Pages (NTT EAST, NTT WEST)
- Development of Telephone Directory Closed Loop Recycling System (NTT EAST, NTT WEST, NTT DIRECTORY SERVICES)
- Services to provide telephone billing information via the Internet (NTT EAST, NTT WEST, NTT Communications, NTT DoCoMo) [P15]

- At the end of March 2002, an additional 21 facilities, now totaling 73 facilities (55 companies) have acquired ISO14001 certification.

Basic Policies of NTT Group Global Environmental Charter

Developing environmental technologies

To contribute to the reduction of the environmental load through various areas of research and development, including multimedia services.

"Research and Development of State-of-the-Art Environmental Technologies" is one of the three main themes proclaimed in the "NTT Group Ecology Program 21." We are engaged in a wide range of research and development activities related to environmental protection technologies, including technology to prevent global warming, waste recycling technology, and IT-based technology to reduce environmental loads.

■ Implementation of LCA (Life Cycle Assessment)

The environmental load of local calls (through the access-type fixed network) is assessed according to LCA. (NTT Lifestyle and Environmental Laboratories, NTT EAST) [P4]

■ Implementation of a Recycling System for Used Optical Cables

This enables the recycling of optical cables into, for example, construction materials. (NTT Access Network Service Systems Laboratories) [P14]

■ Development of a Plastic Identifier

Plastic materials can be identified with approximately 95% accuracy. (NTT Lifestyle and Environmental Laboratories) [P14]

■ Development of PRTR-GIS System and Roadway Environmental Assessment System

PRTR data management and tabulation system for local governments enables graphical tabulation and analysis on a map by GIS. And an assessment system for noise pollution on roadways was developed. (NTT Lifestyle and Environmental Laboratories) [P15]

■ Development of a Non-soil Discharge Mole Robot

A "mole robot" that can excavate without discharging waste soils out of the hole. (NTT Access Network Service Systems Laboratories) [P14]

■ Development of a Network Distribution Service

Technology for the on-line distribution of various content. (NTT Cyber Communications Laboratory Group) [P16]

■ Development of a Digital Testing System

A digital testing system with a client-server method. (NTT Cyber Communications Laboratory Group) [P16]

■ Development of a Electronic Voting System

A voting system using the Internet. (NTT Information Sharing Platform Laboratories) [P16]

- Tamagawa River and Basin Museum (NTT-AT) [P15]
- Fuel reforming machine and disposal vehicles for sewage and sludge. (NTT AUTO LEASING) [P13]
- Ozone water generator (NTT-ME) [P14]
- Automatic remote-supervisory landslide monitoring system (NTT-ME CHUGOKU) [P15]
- Launch of Environmental Monitoring Consortium (NTT DATA, NTT DoCoMo, NTT DoCoMo KANSAI, NTT DATA INSTITUTE OF MANAGEMENT CONSULTING) [P15]

Social contribution efforts

To promote daily environmental protection efforts in coordination with citizens and government agencies.

"Contributions to Local Communities in the Environmental Protection" is one of the three main themes proclaimed in the "NTT Group Ecology Program 21." To pursue this policy, we were actively involved in the environmental protection activities of each local community in 2001.

■ Cooperation with Organizations in Japan

- Green Purchasing Network (GPN)
- Global Environmental Forum (GEF)
- Japan Environmental Education Forum (JEEF)
- Zero Emissions Forum (ZEF)
- Global Environmental Action (GEA)
- World Business Council for Sustainable Development (WBCSD)

■ Ecology Community Plaza

The NTT EAST Iwate Branch, Aomori Branch, and the NTT WEST Shiga Branch have set up an "Ecology Community Plaza." Its aim is to promote various environmental protection activities closely tied to the local community in collaboration with the local government and NPOs. [P8]

- The NTT WEST Operation Clean 2001 in Shiga A volunteer activity to clean Lake Biwa. [P8]
- Biwako NPO Networks This website was established in order to vitalize environmental NPO and NGOs. [P17]
- Workshop for Sharing of Environmental Information Opinion exchange on environmental education took place, connecting four locations in Iwate prefecture. [P8]

■ Employee Awareness Survey

A survey on employees' environment awareness involving about 1,000 NTT Group employees was conducted.

- 95% of employees showed interest in the environment.
- Approximately 90% of employees want to participate in the environmental activities of a local community. [P18]

- Establishment of the Sapporo EMS Network (NTT DoCoMo HOKKAIDO) [P17]
- The "7th NTT-ME World Bird Count" (NTT-ME) [P17]
- Workshop on local currency (NTT EAST Iwate Branch)
- Support to NPO search database NPO Hiroba (NTT Communications)
- The 5th "DoCoMo Woods" Tree-planting project (NTT DoCoMo)

Disclosure of environmental information

To enhance both internal and external communications through the disclosure of environmental information.

The NTT Group promotes internal and external communications by the disclosure of environmental information through the NTT Group Environmental Protection Activity Report (website version and booklet version) and other publications. Its 55 group companies also disclose their environmental information on their website. In 2001 we conducted advertising activities to promote the concept of "ecommunication" proposed by the NTT Group.

■ Publication of Environmental Reports and the Establishment of an Environmental website

- The NTT Group Environmental Protection Activity Report 2001 (website and booklet version) was published.
- "NTT Group employees discuss the environment" and "Cross Talking on The Earth," dialogues with distinguished environmental specialists, are shown on the website. [P18]

■ Environmental Advertising

To provide a wide range of people with information on our environmental protection activities and to encourage their understanding and participation, we have developed environmental advertisements.

- 7 magazine advertisements
- 8 banner advertisements [P18]

■ Public Survey

A public survey on the environmental protection activity report was conducted on the Internet.

- Approximately 90% of respondents appreciated NTT Group's disclosure of environmental information.
- Approximately 85% of respondents appreciated NTT Group's attitudes toward environmental issues.
- Approximately 60% of respondents were interested in knowing more information. [P18]

- Establishment of a program to award individuals or groups who have achieved remarkable results. (NTT, NTT EAST, NTT WEST, NTT DATA) [P18]
- NTT-AT TECHNO FAIR 2001 TOKYO (NTT-AT) [P17]
- Received a grand award by the Minister of Environment and grand award for environmental advertisement in the poster section of 11th Environmental Advertisement Contest. (NTT DoCoMo TOKAI)
- Hosted a "Global Environmental Forum" (NTT DoCoMo SHIKOKU, NTT DoCoMo, NTT DoCoMo CHUGOKU, NTT DoCoMo KYUSHU) [P17]
- Organized Energy Solution Seminar (NTT FACILITIES)
- Kankyo-goo Grand Prize (NTT-X) [P17]

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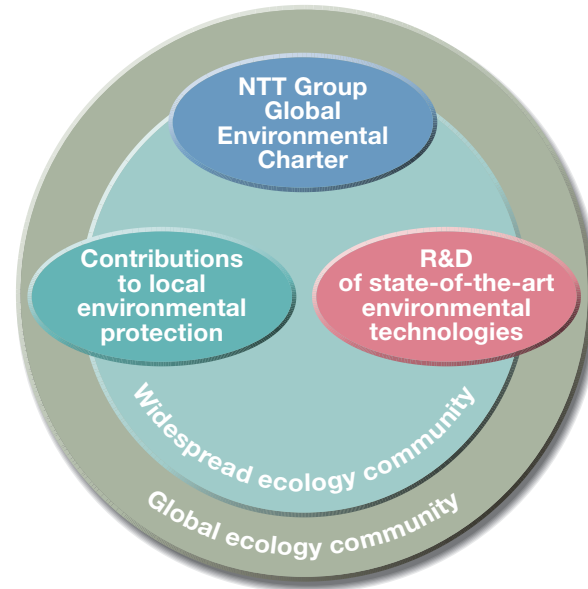
Website Map

“NTT Group Ecology Program 21” Links Business Management and Environment

Environmental considerations are designing the corporate management of the future.

http://www.ntt.co.jp/kankyo/e/2002report/qa/chapter1/q04_2.html

The global environmental issues we now face are believed to be the result of our social systems. We hold ourselves accountable for the business activities associated with these problems. By recognizing and understanding these issues and their causes, we seek to achieve complete compatibility between our business activities and environmental protection toward supporting a sustainable society with less pollution for generations to come. Our basic approach for protecting the environment is expressed in the “NTT Group Ecology Program 21,” which presents the Group’s environmental protection activities and contributes to the broader dissemination of environmental information.



NTT Group Global Environmental Charter

We need to recognize the extent and gravity of current environmental issues, including global warming, ozone layer depletion, destruction of the tropical rain forests, desertification, acid rain, and contamination of the oceans. We must also recognize the degree to which these issues are the direct result of current societal systems, which are intimately linked to corporate activities.

As a business enterprise, we have a responsibility to dedicate ourselves to harmonizing our business activities with global efforts to protect the environment in order to realize sustainable growth and to eliminate problems for future generations. Based on this fundamental recognition, we here establish the NTT Group Global Environmental Charter to clarify our basic policies and actions concerning these issues.

Basic Principle

To ensure the harmonious co-existence of people with nature and to achieve sustainable growth, we will do our utmost to protect the global environment in all our corporate activities.

Basic Policies

1. **Compliance with laws and regulations and fulfillment of social responsibilities**
To observe all laws and regulations regarding environmental protection issues and to carry out our responsibilities as global corporate citizens.
2. **Reducing environmental loads**
To establish action plans for energy conservation (reduction of greenhouse gas emissions), resource conservation (conservation of materials such as paper) and waste reduction, and to strive to make continuous improvements.
3. **Establishing and maintaining environmental management systems**
To establish an environmental management system enabling each business unit to pursue voluntary environmental protection activities.
4. **Developing environmental technologies**
To contribute to the reduction of environmental load through various areas of research and development, including multimedia services.
5. **Social contribution efforts**
To promote daily environmental protection efforts in coordination with citizens and government agencies.
6. **Disclosure of environmental information**
To enhance both internal and external communications through the disclosure of environmental information.

Long-Term Targets (2010)

- Paper resource management** Reduce virgin pulp consumption by at least 20% of 1990 levels
- Prevention of global warming** Reduce CO₂ emissions below 1990 levels
- Waste management** Reduce the volume of waste by at least 85% of 1990 levels

1 NTT Group Global Environmental Charter

http://www.ntt.co.jp/kankyo/e/2002report/qa/chapter1/q04_1.html

The NTT Group Global Environmental Charter affirms the Group’s earnest responsibility and commitment to global environmental issues, and is a first pillar of the “NTT Group Ecology Program 21” together with the “Contributions to Local Environmental Protection” and “Research and Development of State-of-the-Art Environmental Technologies.” The policies of the charter govern detailed plans, including reductions in environmental loads and the establishment and maintenance of

environmental management systems, community support, and the disclosure of environmental information. Special offices have been designated within NTT (holding company) and other Group companies under the NTT Group Global Environmental Protection Promotion Committee to promote environmental management with this charter, and each have implemented a substantial array of activities.

2 Contributions to Local Environmental Protection

http://www.ntt.co.jp/kankyo/e/2002report/qa/chapter1/q07_1.html

We believe it is important to develop environmental protection activities on a global scale and to start these activities locally. Therefore we have positioned “Research and Development of State-of-the-Art Environmental Technologies” as the second pillar of the “NTT Group Ecology Program 21” and will focus on environmental protection activities through projects deployed in communities. Some of the leading activities are the cleaning volunteer activities which have been continuing in each region since 1985, and the “Ecology Community Plaza” established for the purpose of developing solidarity within the local community.

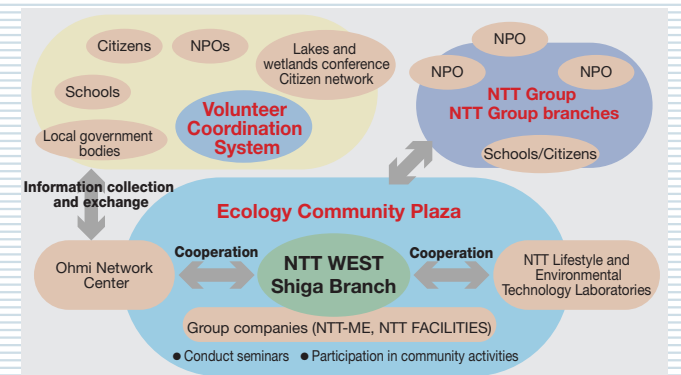
Ecology Community Plaza

In the “Ecology Community Plaza,” the NTT Group has built a network to study global environmental conservation and to provide and exchange information with people in the community. For example, NTT EAST Iwate Branch and NTT WEST Shiga Branch opened plazas as model branches, and NTT EAST Aomori Branch set up a plaza on the Internet. These plazas are engaged in community-based activities for environmental protection in cooperation with local governments. Building on the results of the model branches activities, we are planning to develop the plaza nationwide.

To celebrate the opening of the Ecology Community Plaza, we launched “NTT WEST Operation Clean Environment 2001 in

Shiga,” with the goal of protecting Lake Biwa.

As a part of the Ecology Community Plaza, NTT EAST Iwate Branch and NTT Lifestyle and Environmental Technology Laboratories hosted a workshop, providing an opportunity for exchanging ideas aiming to promote and establish an environmental education. The enriching dialogue that took place from four different locations within the prefecture was broadcasted through a TV conference system connected to the information highway.



Shiga Branch Ecology Community Plaza

3 Research and Development of State-of-the-Art Environmental Technologies

http://www.ntt.co.jp/kankyo/e/2002report/qa/chapter3/q05_1.html

The NTT Group considers “Research and Development of State-of-the-Art Environmental Technologies” as the third pillar of the “NTT Group Ecology Program 21,” because environmental technology R&D is a vital component in resolving global environmental problems. Among our group companies, NTT Lifestyle and Environmental Technology Laboratories and NTT Telecommunications Energy Laboratories are core research groups taking initiatives in these areas.

Main issues of environmental research and development are (1) structuring a system to achieve the development of a sustainable society by the use of IT, a roadway environmental assessment system, a digital testing system, and an electronic voting system; (2) development of fuel cells, a recycling-system for discarded optical cables and a fuel reforming machine for diesel engines.

(Details of these technologies are provided on pages 13–16.)

Our Activities Stem from a Discernment of Environmental Issues and Virtue Ethics Management

NTT Group companies work as a single corporate entity engaged in environmental issues.

1 Three Corporate Guidelines for Earning the Trust of Society

http://www.ntt.co.jp/kankyo/e/2002report/qa/chapter1/q05_1.html

The NTT Group has the following business features: (1) no manufacturing operations, (2) an active research and development division, (3) a vast number of buildings owned nationwide.

Based on these characteristics we have constructed the following three guidelines:

Green Procurement Guidelines

Compiled to promote the procurement of environmentally friendly products (Green Procurement). We assess the suppliers and products through a corporate policy assessment as well as a product assessment. We are now considering the introduction of a comprehensive assessment based on LCA.

Green R&D Guidelines

Established to reduce the harmful environment impact associated with research and development activities method and results. The effects are subject to environmental assessment.

Green Design Guideline for Buildings

Established to further promote building designs that can co-exist with the environment. From this view point, we have established seven criteria: (1) extending building life; (2) restricting the use of halon and CFCs; (3) restricting the use of and removing harmful substances; (4) conserving resources and energy; (5) reducing waste; (6) promoting reuse and recycle; (7) and considering the local environment.

2 NTT Group's Environmental Protection Promoting Systems

http://www.ntt.co.jp/kankyo/e/2002report/qa/chapter1/q08_1.html

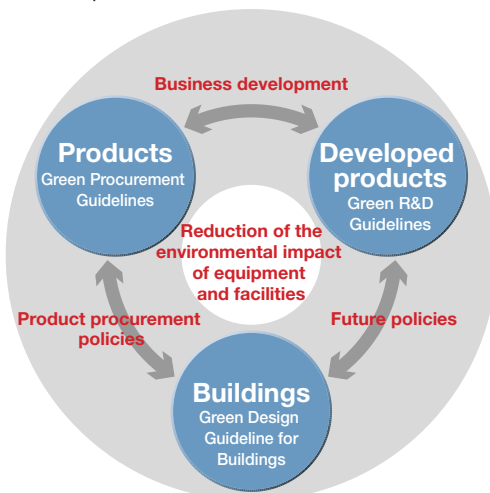
At the dawn of the 21st century, the Century of the Environment, many new laws and regulations have been introduced. The NTT Group strictly complies with these new laws and regulations and has quickly implemented new environmental measures and established a system to promote the "NTT Group Ecology Program 21."

The structure of the NTT Group organization for promoting environmental protection consists of the NTT Group Global Environmental Protection Promotion Committee as the top decision-making body and various special committees and working groups underneath. In addition, the NTT Environmental Protection Office and divisions in charge of environment-related sections of each participating company work in collaboration.

In order to guide the work of special committees and swiftly respond to any changes, NTT's Environmental Protection Office gathers information on environmental laws and regulations in Japan and overseas. The analysis and comprehensive implications of this information are provided to divisions in charge of the environment, each committee and working group in every company.

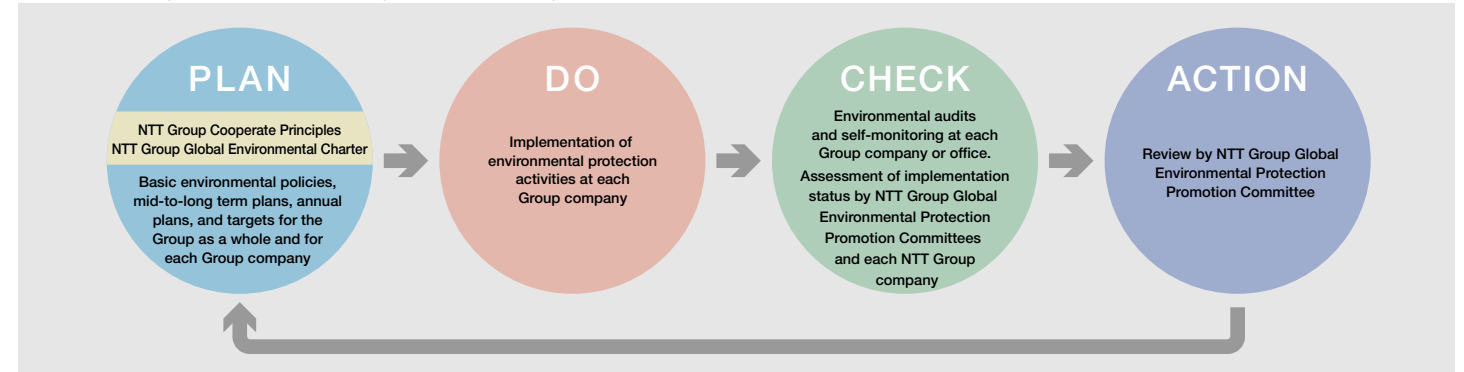
The special committees consist of the CO₂ Reduction Committee, Waste Disposal and Recycling Committee, Environmental Load Reduction Network Committee, and Environmental Technology R&D Committee. The various task-oriented committees are organized with specialists from Group companies, in collaboration with research laboratories to pursue the most efficient environmental measures.

NTT Group Environmental Guideline

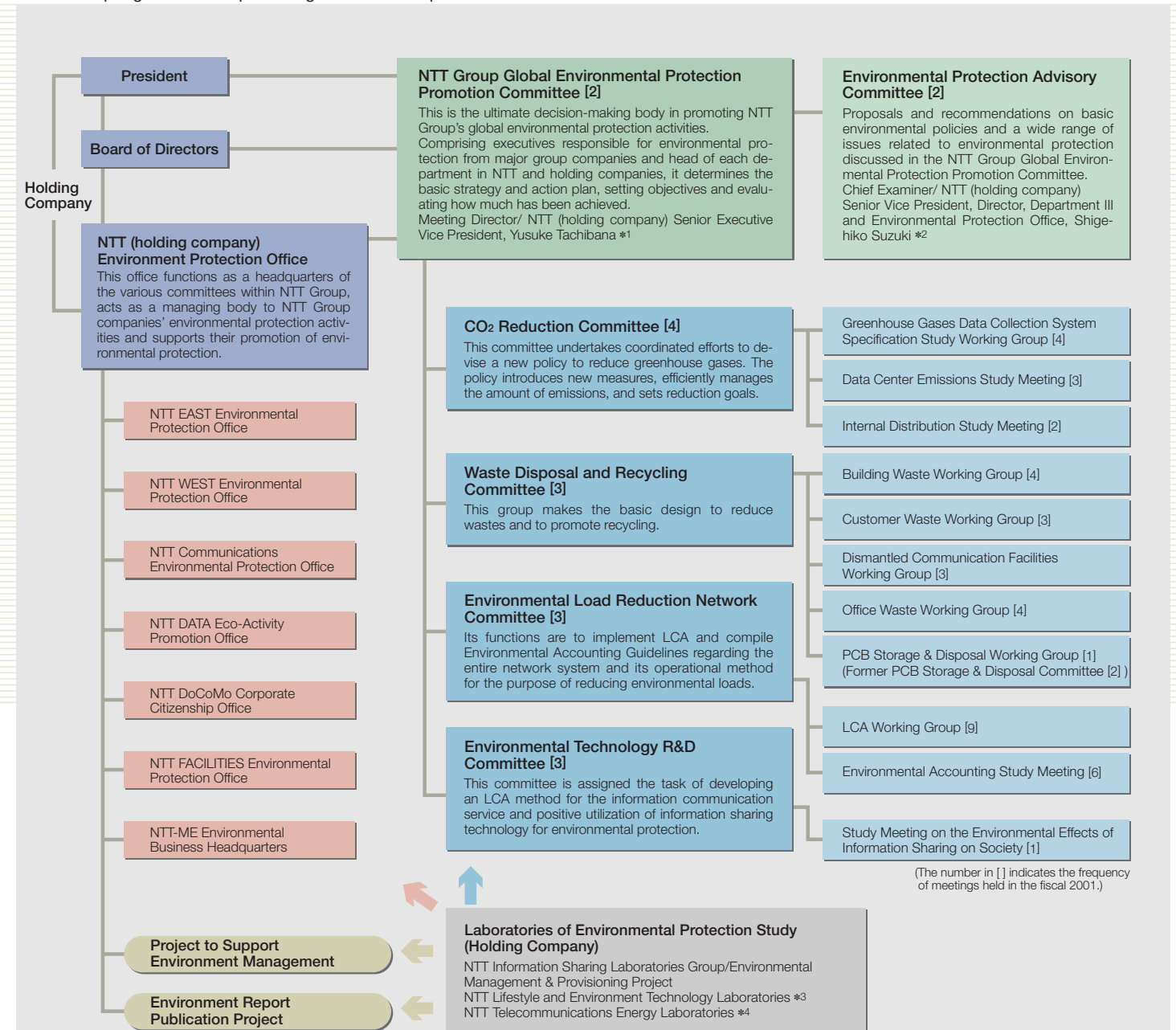


● Green Procurement Guidelines ● Green R&D Guidelines ● Green Design Guideline for Buildings

PDCA for the promotion of NTT Group's environmental protection activities



NTT Group organization for promoting environmental protection



As of March 31, 2002 | As of July 1, 2002, the following details have been revised:
 *1 Hiromi Wasai
 *2 Yuji Inoue
 *3 NTT Energy and Environmental Systems Laboratories
 *4 NTT Energy and Environmental Systems Laboratories

3 Establishing Environmental Management Systems and Risk Management

http://www.ntt.co.jp/kankyo/e/2002report/qa/chapter2/q01_1.html
http://www.ntt.co.jp/kankyo/e/2002report/qa/chapter2/q02_1.html
http://www.ntt.co.jp/kankyo/e/2002report/qa/chapter2/q04_1.html

● Acquisition of ISO 14001

The NTT Group promotes the establishment of environmental management systems in compliance with ISO 14001 to realize the "NTT Group Global Environmental Charter" and to effectively promote "NTT Group Ecology Program 21." Our Group companies and offices adhere to the corporate mission and have developed operation-specific programs for environmental management. We acquire ISO 14001 certificates for more facilities every year, including 21 facilities in 2001, totaling 73 facilities in 55 companies as of March 2002. All our major Group companies have an ISO 14001 certificate for their entire or part of facilities.

● "Project to Support Environmental Management"

The purpose of this project is to provide environmental consulting services to each Group company, to expand the visibility of the "NTT Group Ecology Program 21," and to promote the implementation of environmental protection activities. One of our major activities in 2001 included hearing from each Group company about its environmental protection activities. Based on the results of these hearings, we conducted a study group seminar with representatives from the environmental division of each Group company in Tokyo and Osaka.

● Environmental Risk Management

Because of its business scale, the NTT Group believes that daily efforts to reduce environmental loads associated with its business activities are fundamental to environmental risk management. We have taken action to prevent accidents and pollution through guidelines and checklists, including specific measures for soil contamination found by our voluntary soil survey, electromagnetic waves, and transferring PCB treatment from the in-house facility to a suprapregional facility led by the government.



● "Project to Support Environmental Management"

4 NTT Group Environmental Audits Function

http://www.ntt.co.jp/kankyo/e/2002report/qa/chapter2/q03_1.html

The NTT Group establishes and maintains an environmental management system, as we have stated in the "NTT Group Global Environmental Charter." Environmental audit is essential in order to ensure the system functions properly. Our environmental audit is broken down into the three levels.

┃ Level 1 ┃

Initial environmental audits to ensure compliance with laws and regulations.

┃ Level 2 ┃

Environmental management system audits in compliance with ISO 14001.

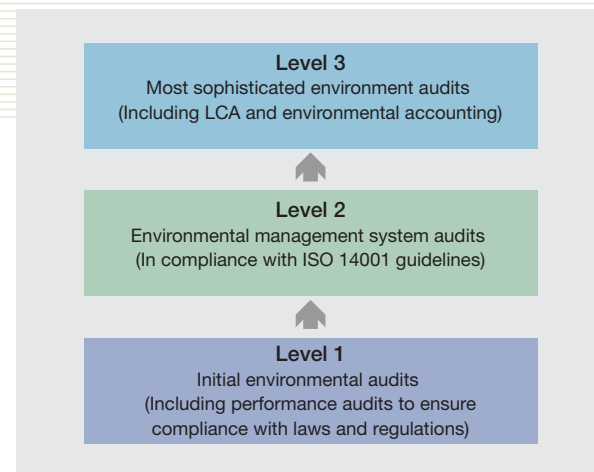
┃ Level 3 ┃

The most sophisticated environmental audits which apply LCA or environmental accounting.

Details of audit activities at each level include self-monitoring, internal audits in compliance with ISO 14001, external audits and inspections, and an implementation of audits by the lead division of Implementation Management Programs.

Since 1995, all business offices within NTT Group have undertaken self-monitoring at least once a year. By examining our own organization's level of environmental protection, we can promote the self-purification of environmental protection. The criteria includes compliance with environmental laws and regulations and Implementation Management Programs. Only staff with specific skills are responsible for self-monitoring, and reporting results to the NTT departments in charge of environmental protection.

The internal audits in compliance with ISO 14001 are conducted by internal auditors to ensure that the implemented environmental management system complies with ISO 14001 and that PDCA (Plan-Do-Check-Act) is functioning. We scrutinize every review, determine major and minor variances based on audit results, and take action to resolve any discovered problems.



● Levels in the environmental audit

5 Environmental Accounting that We Want to Reflect on Corporate Management

<http://www.ntt.co.jp/kankyo/e/2002report/qa/chapter2/q09.html>

In 2000, the NTT Group introduced environmental accounting to grasp the costs necessary for environmental protection activities and to quantitatively grasp the effects of these activities (in physical quantity units and monetary units) for environmental management use.

The "NTT Group Environmental Accounting Guidelines (2002 Version)" was developed in compliance with the "Environmental Accounting Guidelines (2002 Version)" issued by the Ministry of the Environment.

1. Scope of Totalization

The companies subject to consolidated environmental accounting are NTT (holding company), NTT EAST, NTT WEST, NTT Communications, NTT DoCoMo Group's nine companies, NTT DATA, and NTT FACILITIES.

2. Period of Totalization

From April 1, 2001 to March 31, 2002

3. Method of Totalization

● Accounting is conducted in accordance with "NTT Group Environmental Accounting (2002 version)."

● The NTT Group's consolidated environmental accounting table shows preservation costs (units in currency), preservation effects (units in quantity), and economic effects associated with environmental preservation measures (units in currency).

● According to amended guidelines from the Ministry of the Environment, (1) expenditure of greening outside the company is transferred from social activity costs to management costs, (2) all expenditures for the research and development division is transferred to research and development costs.

● Personnel costs are included in expenses, but depreciation expense is not.

4. Tabulated Results

● The environmental costs were approximately 14.1 billion yen as an investment and 36.6 billion as an expense.

● The economic effect was approximately 35.1 billion yen. The reduction in costs by the reuse of cables, exchange systems, and transmission equipment was of approximately 28 billion yen. The effect of energy conservation was approximately 2.7 billion yen and the benefit of using electronically tabulated bills 1.1 billion yen.

● The effects expressed in physical quantity units as a result of environmental conservation was 74,000 tons, in terms of a CO₂ emissions reduction, of which 72,000 tons was due to power consumption. The quantity recycled was 740,000 tons. The major items recycled included communications cables, concrete telephone poles, and telephone directories.

● The results of research and development were estimated. The data were reported on page 16 along with the contents of the actual measures.

5. Future Policies

● The deemed effects (those estimated by means of hypothetical calculations) and the effects expressed in physical quantity units outside of NTT (customers and society) are currently being calculated. We are working on the establishment of guidelines for the deemed effects of future disclosures.

● We plan to expand the scope of corporations which are subject to our tabulations.

● The amount of depreciation expense will be included in our future tabulations.

Environmental Preservation Costs (¥100 million)

	Environmental preservation cost	
	Investment	Expense
(1) Total cost within business areas	63.2	155.2
■ Pollution prevention costs	0.8	4.4
■ Global environmental preservation costs	48.7	18.8
■ Resource circulation costs	13.7	132.1
(2) Fluctuation costs	4.7	32.3
(3) Management activities costs	1.2	39.2
(4) Research and development costs	71.9	138.4
(5) Social activities costs	0.0	1.2
(6) Costs corresponding to environmental damages	0.0	0.0
Total	141.0	366.4

Investments and R&D Costs (¥100 million)

Total amount of investment for the period under review	22,919.3
Total amount of research and development costs for the period under review	3,908.9

The total amount of investments and research and development costs for the period under review is the sum total of NTT Group companies subject to consolidated accounting.

Environmental Preservation Effects

Effects expressed in physical quantity units	
Amount of CO ₂ emission reduced (breakdown: 72,000t by electricity consumption; 2,000t by gas, vehicles and others)	74,000t
Amount of materials recycled	740,000t

Effects expressed in monetary units (¥100 million)

Reduced expenses from decreased energy consumption	27.0
Amount gained from recycling	32.6
Reduction of waste disposal expenses with recycling	0.2
The amount of reduced expenses of new purchases through reuse	
■ Dismantled telecommunications facilities	278.6
■ Wastes at offices	1.0
Reduced postage by digitization	11.0
Other economic effects	0.6
Total	351.1

We Tackle Environmental Issues by Making Full Use of Technologies

We conduct our technology development activities from the perspective of global environmental protection.

1 Promotion of Environmental Preservation Technologies in Diverse Areas

<http://www.ntt.co.jp/kankyo/e/2002report/qa/chapter3/q01.html>
http://www.ntt.co.jp/kankyo/e/2002report/qa/chapter3/q05_1.html
http://www.ntt.co.jp/kankyo/e/2002report/qa/chapter3/q06_1.html
http://www.ntt.co.jp/kankyo/e/2002report/qa/chapter5/q03_1.html

The NTT Group embraces a wide range of research and development activities related to environmental protection technologies, including global warming prevention technology, waste recycling technology, and IT-based technology to reduce environmental loads.

● Energy Development

To ensure sustainability and environmental responsibility in the information age, the NTT Group has restricted energy use related to telecommunications and has focused on developing clean, highly efficient energy technologies, including a photovoltaic power generation system, a cogeneration system, fuel cells, and fuel reforming machines.

In regard to fuel cells, the NTT Telecommunications Energy Laboratories has already completed development of a system that uses a phosphoric acid fuel cell (PAFC) and is now in the field testing phase of a polymer electrolyte fuel cell (PEFC). The company has also developed a compact, high-performance "Plate-Fin Type Methanol Reforming Device for Fuel Cells," which produces the hydrogen

necessary for power generation.

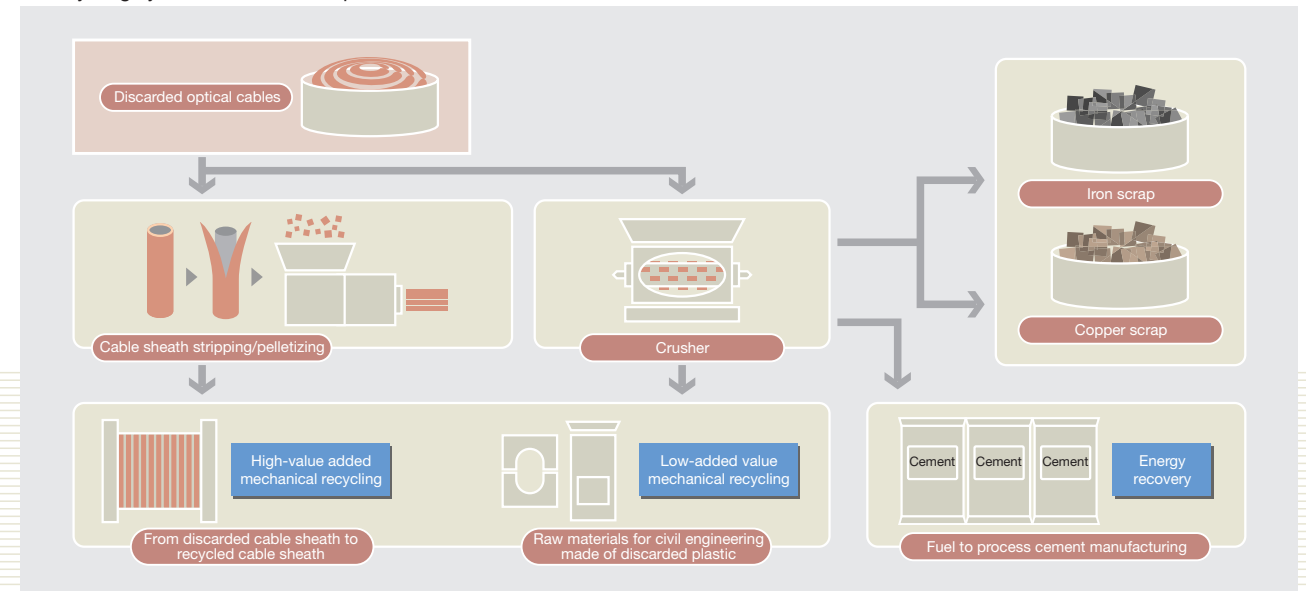
NTT Facilities supports the implementation of DC power systems as one strategy for reducing energy consumption as more data centers are constructed toward achieving our goal of an IT-based society. The approach dramatically reduces transformer power loss compared to AC power systems and also enhances reliability and saves space. DC power systems are ten times more reliable than AC power systems, with 20% improved electricity generation efficiency resulting in the reduction of both electricity charges and CO₂ emission by 20%.

● Environmental Enhancement

The NTT Group has been developing technologies to reduce waste, including the dismantling of telecommunication facilities (Reduce, Reuse, Recycle).

The NTT Access Network Service Systems Laboratories has developed key technology for the realization of an optical cable recycle system. Optical cables are made of expensive materials; the disassembly, crushing and separation into different materials was economically unfeasible. With this new technology, energy recovery in the cement manufacturing process, mechanically recycling into engineering materials, and sheath-material recycling of optical

● Recycling system of discarded optical cables



cables have become possible.

We have also developed a high-speed excavation robot which digs forward by vibrating the soil on the front side of the propulsion machine without discharging soils outside the hole. This robot is different from conventional "mole robots" and can excavate through firm soil.

NTT Lifestyle and Environmental Technologies Laboratories has developed a compact, light, high-precision plastic identifier which instantly distinguishes types of plastic materials on site with an accuracy of 95%. The NTT Group and many other waste treatment facilities use this identifier, expecting to encourage the recycling of plastic.

NTT EAST and NTT WEST have developed an environmentally friendly fax machine that bears the environmental label, "Dynamic-eco."

NTT AUTO LEASING and a venture company have been collaborating in the development of a fuel reforming machine as a solution to growing concerns over nitrogen

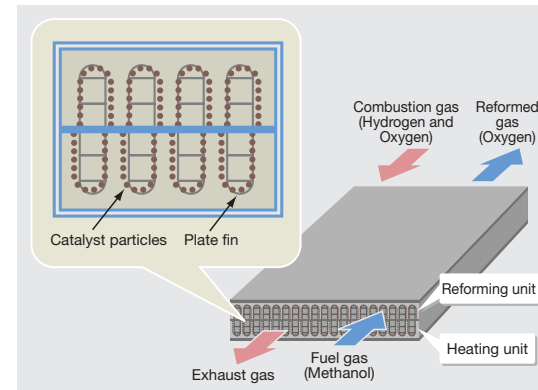
oxides and black smoke, as well as particles such as PM and SPM emitted from diesel cars. The machine reforms fuel during combustion and reduces the amount of harmful air-polluting substances in the emitted gases.

As an answer to the ever-present sewage and sludge disposal concerns, we have also been developing sewage and sludge disposal vehicles. These vehicles are equipped with an onboard organic excess polluted-soil stabilizing system for the active treatment of polluted water at sewage-treatment facilities. Additionally, each vehicle is rigged with an automatic monitor and control system for unattended operation, thus providing exciting mobile eco-solution.

NTT-ME has developed an ozone water generator, using oxygen in the atmosphere, perfectly suited for sanitizing, cleaning, deodorizing, and bleaching. This machine is utilized in agriculture to prevent or remove damage from disease, pests, or disease-causing germs, and as a result it effectively reduces the use of agricultural chemicals.

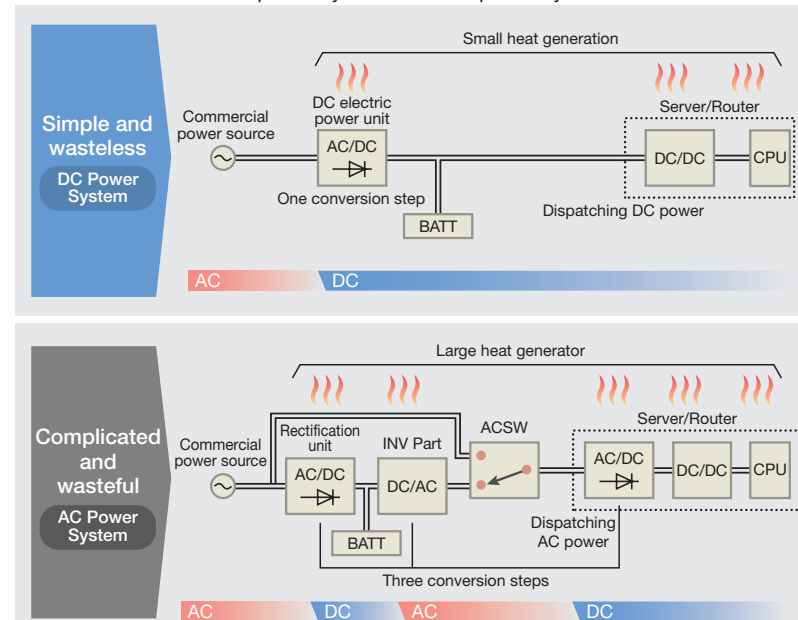
● Kinds and characteristics of fuel cells and their development phases

Fuel cell	Phosphoric Acid Fuel Cell (PAFC)	Polymer Electrolyte Fuel Cell (PEFC)	Solid Oxide Fuel Cell (SOFC)
Operating temperature	150~200°C	70~100°C	800~1000°C
Electricity generation efficiency	35~45%	35~45%	45~60%
Phases	Marketing	Field testing	Research and development



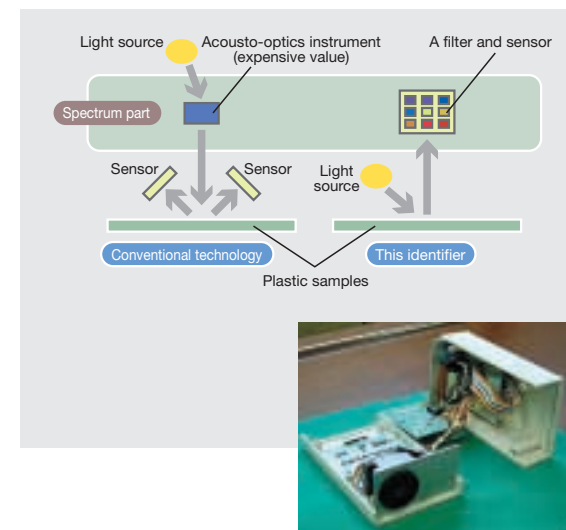
● Plate-fin Type Methanol Reforming Device

● Difference between DC power systems and AC power systems

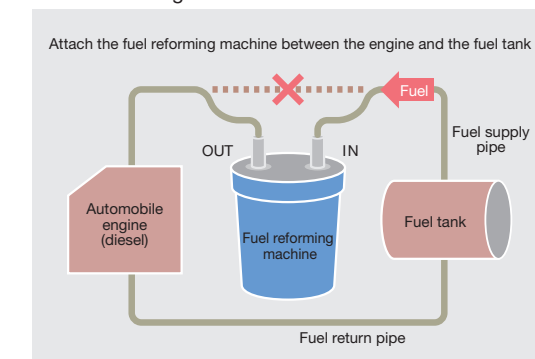


AC: alternate current DC: direct current AC/DC: conversion point from AC to DC DC/AC: conversion point from DC to AC ACSW: AC switcher BATT: backup battery

● Plastic identifier



● Fuel reforming machine



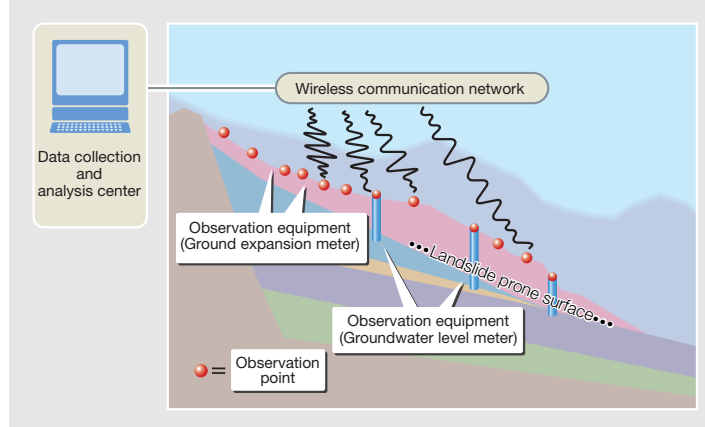
● Ozone water generator



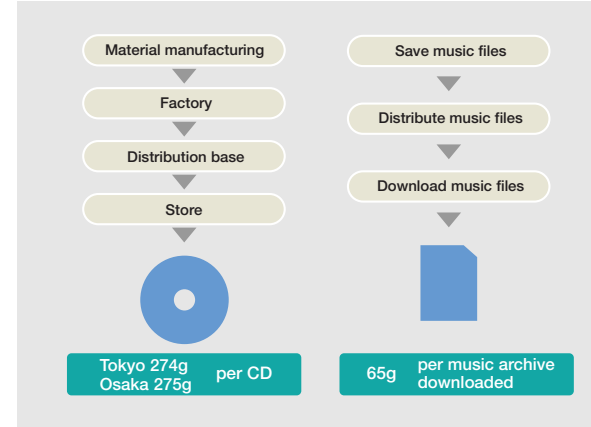
● Result of noise pollution displayed by the roadway environmental assessment system



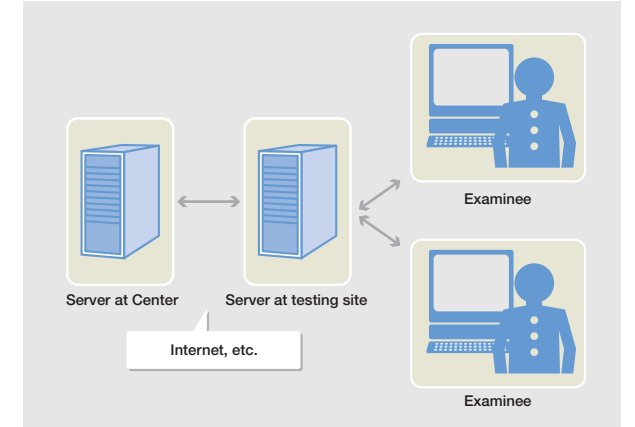
● Automatic remote-supervisory landslide monitoring system



● Deemed effects: environmental load for obtaining music files (CO₂ emission)



● Digital testing system



2 Environmental Issues Solved through IT

http://www.ntt.co.jp/kankyo/e/2002report/qa/chapter3/q02_1.html

The NTT Group recognizes IT as an important tool to address environmental issues in addition to the contributions it provides toward improving the quality of life. Here are some of our latest IT developments.

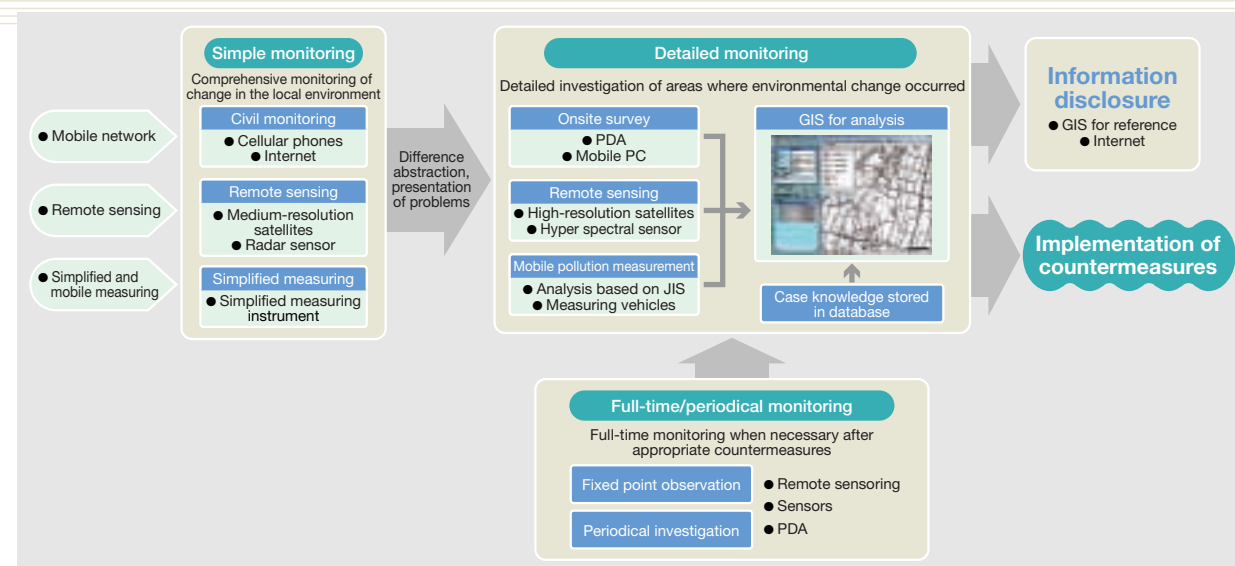
NTT Lifestyle and Environmental Technology Laboratories has developed a PRTR-GIS system and a roadway environmental assessment system. The former is a PRTR data management and tabulation system which enables graphical tabulation and analysis on a map using the Geographic Information System (GIS). Local governments can leverage information disclosure with this system to promote reduction of environmental loads. The latter is a forecast system which enables the swift evaluation of noise pollution experienced by the surrounding areas, by inputting noise values measured on the road.

NTT-ME CHUGOKU has developed an automatic remote-supervisory landslide monitoring system that uses the wireless data communications service, through NTT DoCoMo's packet communications. The data from observation equipment such as ground expansion meters and groundwater level meters installed on landslide prone surfaces are collected at remote monitoring data centers through the communication network. In the event of abnormal readings, the data collection and analysis center is alerted.

NTT EAST, NTT WEST, NTT Communications and NTT DoCoMo have introduced a new service to notify customers of their bank transfers through the web instead of through postal mail. The service contributes to the conservation of paper resources.

In September 2001, six companies, including NTT DATA, NTT DoCoMo, NTT DoCoMo KANSAI, and NTT DATA INSTITUTE OF MANAGEMENT CONSULTING, launched the Environmental Monitoring Consortium. The consortium builds systems that monitor various environmental issues, including illegal dumping, destruction of natural environments, and localized pollution by harmful substances, using the latest IT such as cellular phones, GIS, and the advanced monitoring technology, including an artificial satellite and a simplified measuring instrument.

NTT-AT, in charge of basic design and service design of the system for the Tama River and Basin Museum, is focusing on three activities: support of a river observation group; maintenance of the community's river facilities, such as the riverside walking trails as to create a space where people can come close together, and providing information availability for access by personal computers and cellular phones, enabling information exchange and search.



● Information flow of comprehensive environmental monitoring system

3 Effect of Reducing Environmental Loads Utilizing IT

http://www.ntt.co.jp/kankyo/e/2002report/qa/chapter3/q04_1.html

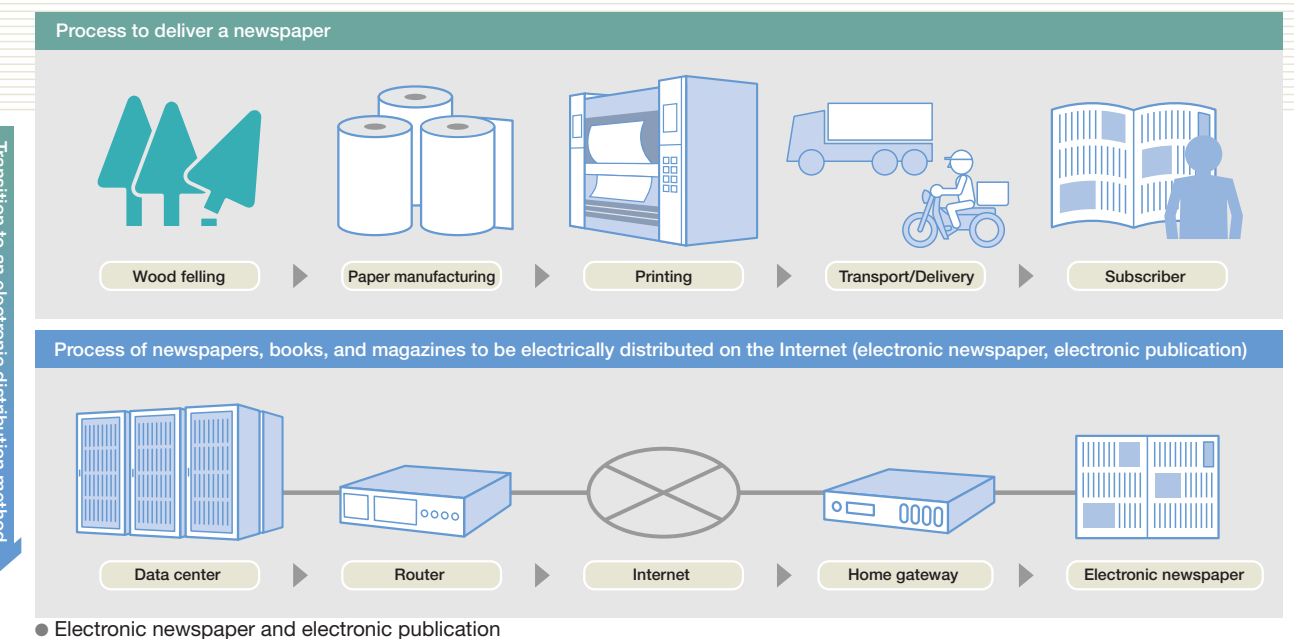
The sustainability of society, avoidance of risks, and reduction of environmental loads are possible through IT.

Music distribution by downloading provides clear environmental advantages. The environmental load, measured in terms of CO₂ emissions, generated when obtaining music through conventional CDs reached 274g in Tokyo and 275g in Osaka per CD, while when one music file was downloaded from a music distribution service using mobile terminals the emissions amounted to 65g.

The NTT Cyber Communications Laboratory Group is engaged in the development of technology necessary for the distribution of various content (newspapers, magazines, books, music and films) over network services. It is estimated that we impose environmental loads of 19.12 million tons per year in CO₂ emissions (1.59% of national emission) and 6.26 million tons per year in the usage of pulp products when reading a newspaper or a book. On the other hand, the amount of CO₂ emissions are 2.94 million tons per year when these publications were over network services. According to these estimates, CO₂ emissions could be reduced by 1.61 million tons per year (0.13% of national emission) and the

amount of pulp products could be cut back by 0.62 million tons per year if 10% of printed newspaper and books were replaced by electronic newspapers and electronic publications. The Laboratory Group also estimates the reduction of environmental loads by implementing a digital testing system, which allows remote examinees to take a test with terminals that are connected to a server at testing sites. If 510,000 examinees used this site for an exam twice a year, CO₂ emissions could be reduced by 87 tons.

NTT Information Sharing Platform Laboratories estimates the reduction of environmental loads by comparing electronic voting to existing, paper-based voting methods. The conditions of the assessment were: approximately 3.3 million voters; electronic voting using an exclusive server to gather all votes from voters' homes via the Internet; and taking into account the existing method that uses paper ballots, which must be manually collected and counted at 76 voting stations. The estimate indicates that electronic voting reduces energy consumption by 8.2% and CO₂ emissions by 42.1%, or 55 tons.



● Electronic newspaper and electronic publication

Communication with Society is a Vital Component of Environmental Management

Sharing information with communities and actively encouraging greater environmental education are central to NTT Group's environmental duties.

1 Social Contribution Activities

http://www.ntt.co.jp/kankyo/e/2002report/qa/chapter5/q01_2.html
<http://www.ntt.co.jp/kankyo/e/2002report/qa/chapter5/q02.html>

"Promote the routine coordination of environmental protection efforts with citizen and government agencies" is a fundamental policy statement in the "NTT Group Global Environmental Charter." The year 2001 marks further progress in the environmental protection activities within each region.

- **Start of the Biwako NPO Networks**
(NTT Lifestyle and Environmental Technology Laboratories)
On the occasion of the "9th International Conference on the Conservation and Management of Lakes in Shiga Prefecture" in November 2001, in partnership with environmental citizens groups and NPOs, NTT Lifestyle and Environmental Technology Laboratories launched the Biwako NPO Networks website toward fulfilling the main objective of the conference, to encourage the activities of grass-roots environmental groups.
- **Start of the Sapporo EMS Network**
(NTT DoCoMo HOKKAIDO)
NTT DoCoMo HOKKAIDO joined together with the Environ-

ment Bureau of Sapporo City in November 2001 to start the Sapporo EMS Network with ISO 14001 certified enterprises and organizations in Sapporo City.

- **NTT-ME World Bird Count (NTT-ME)**
NTT-ME conducted the world's biggest bird-watching event, the "7th NTT-ME World Bird Count," throughout the month of October 2001, with the participation of many elementary schools who joined the activity as part of their environmental studies.
- **Development of Community based Activities at the Ecology Community Plaza (NTT WEST Shiga-Branch)**
In May 2001, we became involved with the Ohmi Network Center by providing IT support with the purpose of establishing it as a base for local ecological activities. We have also assisted the "Volunteer Coordination System," deployed in an environmental information network as a joint project with citizens.

2 Information Provision and Sharing

<http://www.ntt.co.jp/kankyo/e/2002report/qa/chapter6/q02.html>

The NTT Group widely disseminates information to promote environmental protection and offers opportunities for information sharing.

- **Kankyo-goo Grand Prize (NTT-X)**
Kankyo-goo is a portal website that specializes in environmental information. The site is operated by NTT-X, sponsor of the *kankyo-goo* Grand Prize, to support information sharing related to environmental preservation by consumers, enterprises, local governments, and NGOs. The prize consists of a website segment and an activity segment (a project implementation fund grant), with certificates awarded for each segment.



● Page presenting the *kankyo-goo* Grand Prize

- **NTT-AT TECHNO FAIR 2001 TOKYO (NTT-AT)**
NTT-AT TECHNO FAIR 2001 TOKYO was held in September 2001 in Shinjuku. The theme of the event was "Advanced technologies heat up business." Some 50 exhibits were presented in six different categories: Environment Systems, Medical Systems, Electronic Local Government, E-Business, Broadband Systems, Fiber Optics and LSI products that support the IT. The fair bustled with over 2,000 visitors.
- **Sponsorship of Global Environmental Forum (NTT DoCoMo SHIKOKU)**
NTT DoCoMo SHIKOKU hosted the 4th Global Environmental Forum in March 2002 to promote a recycle-oriented society in Shikoku. After a keynote speech by author Wahei Tatematsu on the theme of "Together with Nature," an enthusiastic panel discussion followed on the issue of the "Establishment of Local Communities Coexisting with the Environment." Other Global Environmental Forums were held by NTT DoCoMo, NTT DoCoMo CHUGOKU, and NTT DoCoMo KYUSHU.



● NTT-AT TECHNO FAIR 2001 TOKYO ● Global Environmental Forum TOKYO

3 Environmental Communication

<http://www.ntt.co.jp/kankyo/e/2002report/qa/chapter6/q04.html>

Mutual communication has been supported through the disclosure of environment related information presented in the NTT Group's Environmental Protection Activity Report (comprising both a booklet and a website). In 2001, widespread advertising activities further emphasized the idea of ecommunication proposed by the NTT Group.

In-house

- **Employee Education and Development Program**
The NTT Group has implemented education and development seminars to target new and existing employees by creating environmental pamphlets; an environmental education video, "The Boy and the Forest"; and a CD-ROM "Telecommunications in Symbiosis with the Earth—NTT." The "NTT Group employees talk about the environment" web page was created as a space where employees can share their experiences. The most recent discussion involved the staff of the environmental information network, and those active in fuel cell research and development appeared on the web page and freely expressed their thoughts regarding the environment.

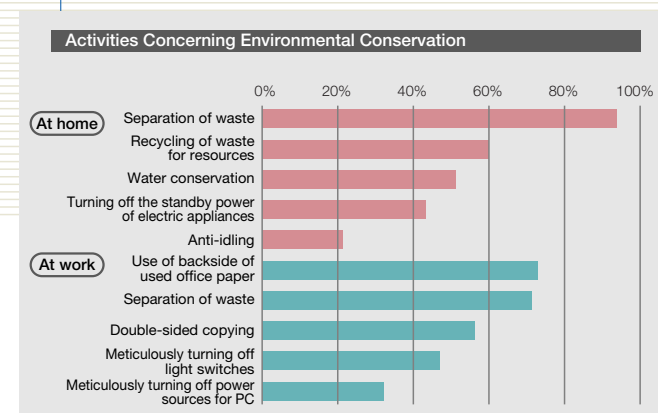
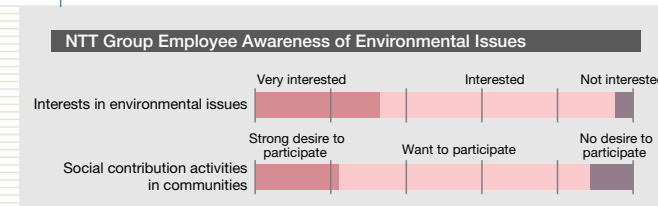
- **Environmental Awards**

NTT Group activity encourages the work of individuals or groups who achieve remarkable results through the presentation of various environmental awards. The award programs are currently a permanent feature at NTT (holding company), NTT EAST, NTT WEST, and NTT DATA.

- **Employee Awareness Survey**

An annual survey on environmental awareness has been completed, documenting the awareness levels of approximately 1,000 employees.

A brief descriptive analysis of the results show:



Interest in environmental issues was as high as 95%; notably, the separation of waste and the recycling of backsides of used office paper were regularly practiced. However, the trend toward meticulously turning off power sources for PCs was only 32%. We will further encourage our employees to be involved in our in-house developmental activities and advertisements for environmental conservation.

For the public

- **Issuing the environmental reports and disclosure of information on our website**

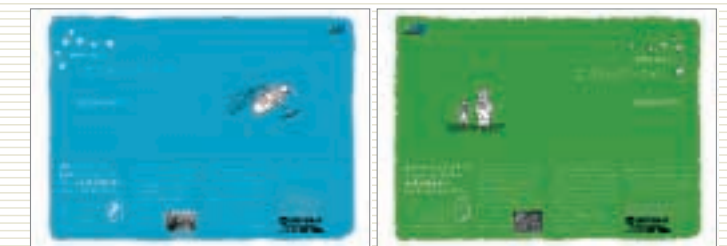
The NTT Group Environmental Protection Activity Report 2001 was issued. On our website we also published

the report and collected opinions from readers through a questionnaire.

- **Development of Environmental Advertisements**

The NTT Group implemented advertising development for consumers to learn about our environmental activities and the Group's keyword, "ecomunication," which means "we will freely communicate and exchange ideas about the environment everywhere and at all times." Every effort has been made to encourage a broader understanding of "ecomunication."

Implementations of environmental advertising: magazine advertisement—7, banner advertisement—8 websites



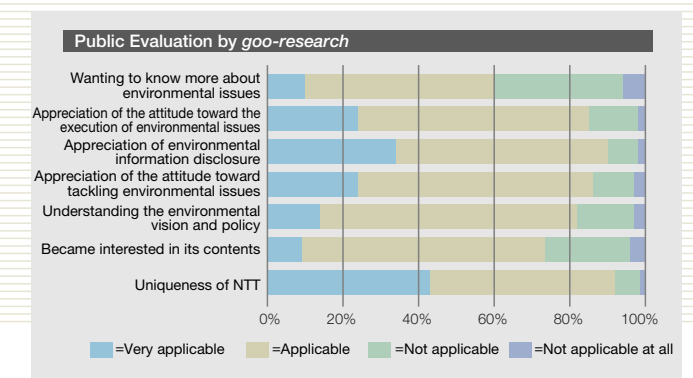
● Environmental advertisements

The web dialog "Cross Talking on the Earth" has also started. Ken Noguchi (mountaineer) and Jack Moyer (marine ecologist) discussed global environment issues under the theme "Thinking of ecology: the view from the mountains / Thinking of ecology: the view from the oceans."

- **Research on NTT Group Environmental Activities**

Questionnaire about the environmental protection activities of NTT Group was implemented in *kankyo-goo* of NTT-X in March 2002. With an age distribution centered predominantly within the 30's age group, we received responses from 1,216 people.

A brief descriptive analysis of the results shows:



On the whole, we gathered comments such as "I realized the importance of environmental issues" or "I understood NTT's concepts and actions." On the other hand, some expressed that the concepts were too hard to understand by saying that "it is important to make expressions simpler so that a child can understand" or "too much information to read."

Also throughout the survey a number of opinions were common, these were; "I like the effort being done to create ingenious expressions"; "I want the company to be a leader in reducing environmental burdens by utilizing technology"; "This is the first time I realized that IT and the environment are related"; and "We should advertise more through media, such as TV and newspapers, about environmental conservation activities."

We would like to take into consideration these opinions in our future environmental protection activities and environmental communications.

2001 Activities, Facts and Figures

- **Profile of NIPPON TELEGRAPH AND TELEPHONE CORPORATION** (as of March 31, 2002)
 - | **Company name:** NIPPON TELEGRAPH AND TELEPHONE CORPORATION (NTT)
 - | **Address:** 3-1 Otemachi 2-Chome, Chiyoda-ku, Tokyo 100-8116 Japan | **Established:** April 1, 1985
 - | **Capital:** 937.95 billion yen | **Number of employees:** 3,165 | **Website:** http://www.ntt.co.jp/index_e.html
- **Consolidated profile** (as of March 31, 2002) | **Employees:** 213,000 | **Number of companies:** 128

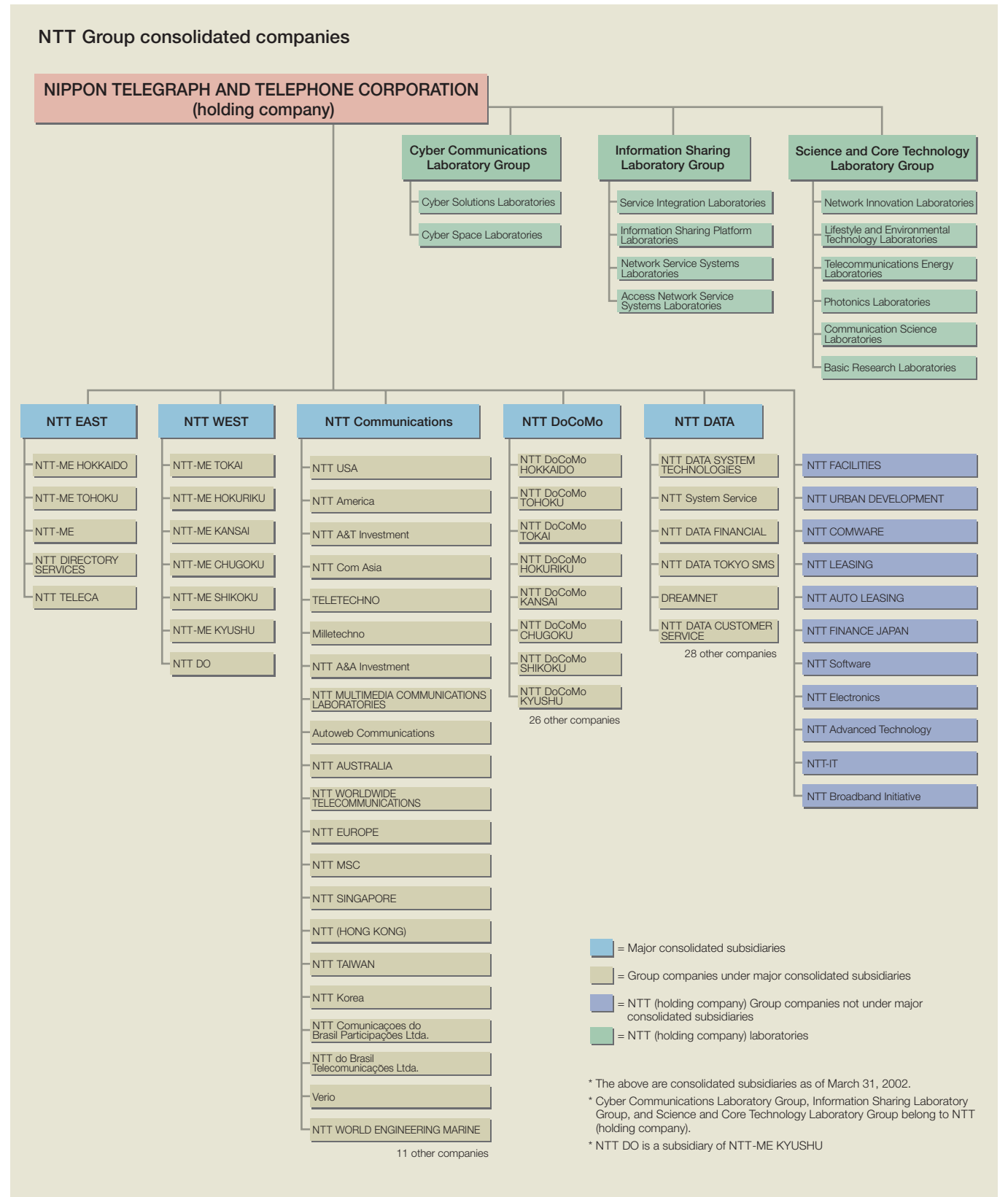
1 Economic Performance



● Corporate and Group Profiles

The NTT Group, with the holding company NTT at its core, offers a wide range of customer services through its wholly-owned subsidiaries NTT EAST, NTT WEST, NTT Communications, NTT DoCoMo, and NTT DATA. Group companies such as NTT COMWARE, NTT-ME, and NTT FACILITIES maintain resources for the entire Group, including software, communications facilities, power facilities, and buildings. Each subsidiary explores new business possibilities and endeavors in order to expand its business domains.

These efforts are supported by two types of R&D (research and development): basic R&D, which is centralized at the holding company level; and specific application R&D, which is engaged in by each subsidiary. Although it is unusual for a holding company to operate its own R&D department, NTT considers R&D a driving force for the management and development of the NTT Group today and in the future.



- For the amounts of materials used, the unit "t" (tons) is used.
- For the amounts of energy, the unit "J" (joules) is used, although "kWh" (kilowatt hours) is utilized for some data to facilitate ready comparison in the amounts of electricity. To convert kWh to J, we have used the factor 10,250 kJ/kWh based on the "Law Enforcement Policies for the Rationalization of Energy Use."
- For the amounts of the greenhouse gas, the unit "t-CO₂" is used. To convert the amount of CO₂ emitted with the use of electricity, calculate by the average electricity discharged coefficient 0.357 kg-CO₂/kWh.

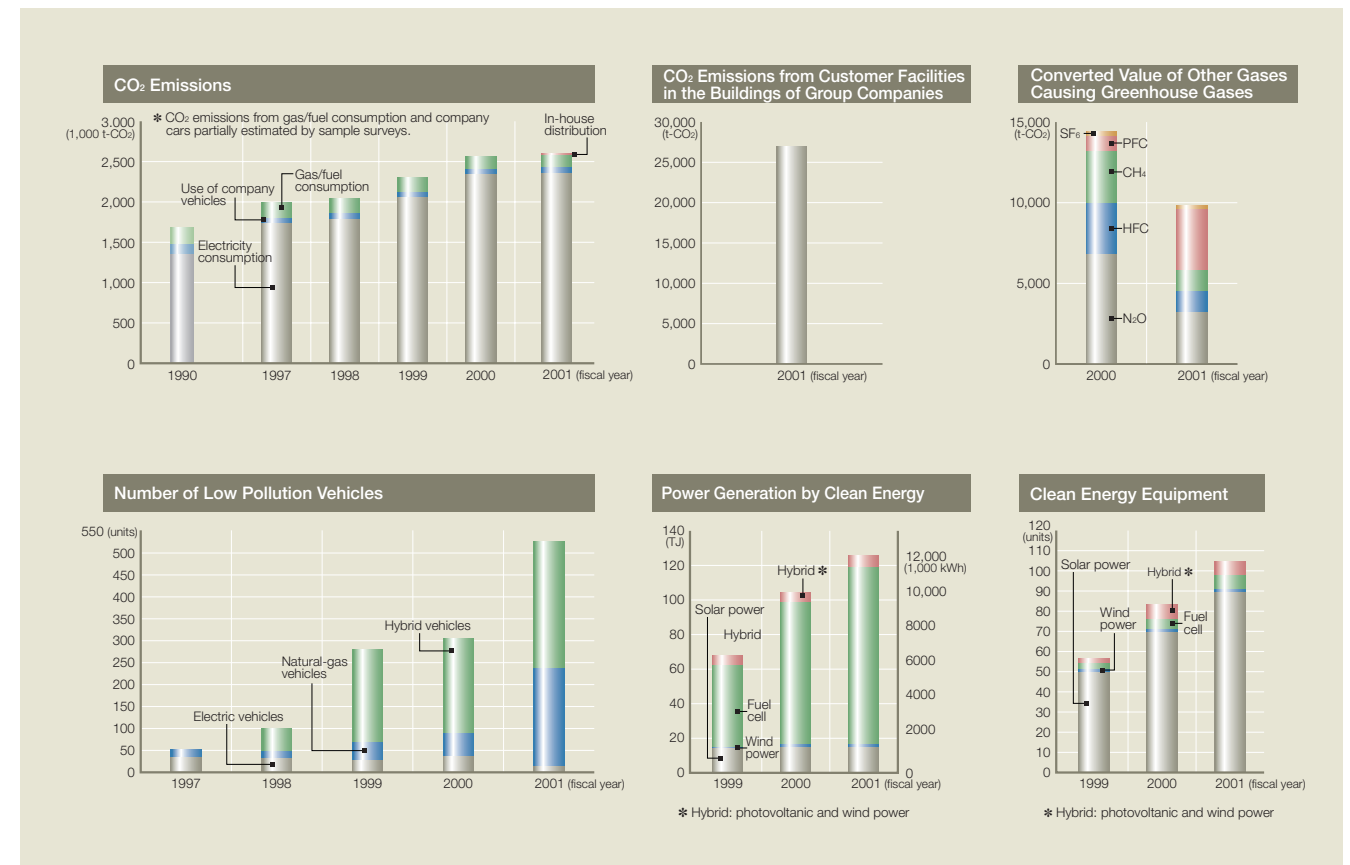
Group Companies Covered in this Report

Fiscal year	Item	NTT (holding company)	NTT EAST	NTT WEST	NTT Communications	NTT DoCoMo Group (9 companies)	NTT DATA	NTT FACILITIES	NTT COMMWARE	NTT URBAN DEVELOPMENT	NTT-ME Group (10 companies)	48 other companies
Thru fiscal 1998	Data on measures against global warming	○	○	○	○	○	○	○	○	○	○	○
	Other data	○	○	○	○	○	○	○	○	○	○	○
Fiscal 1999	Data on measures against global warming	○	○	○	○	○	○	○	○	○	○	○
	Other data	○	○	○	○	○	○	○	○	○	○	○
Fiscal 2000	Data on paper resource management	○	○	○	○	○	○	○	○	○	○	○
	Data on measures against global warming	○	○	○	○	○	○	○	○	○	○	○
	Data on waste management	○	○	○	○	○	○	○	○	○	○	○
	Data on measures for the protection of the ozone layer	○	○	○	○	○	○	○	○	○	○	○
Fiscal 2001	Data on paper resource management	○	○	○	○	○	○	○	○	○	○	○
	Data on measures against global warming	○	○	○	○	○	○	○	○	○	○	○
	Data on waste management	○	○	○	○	○	○	○	○	○	○	○
	Data on measures for the protection of the ozone layer	○	○	○	○	○	○	○	○	○	○	○

Paper Resource Management



Measures against Global Warming



Waste Management



001 Environmental Load Map

002 Activity Overview

003 Ecology Program

004 Management

005 Future Plan

006 Communication

007 Data File...1

007 Data File...2

007 Data File...3

Website Map

001 Environmental Load Map

002 Activity Overview

003 Ecology Program

004 Management

005 Future Plan

006 Communication

007 Data File...1

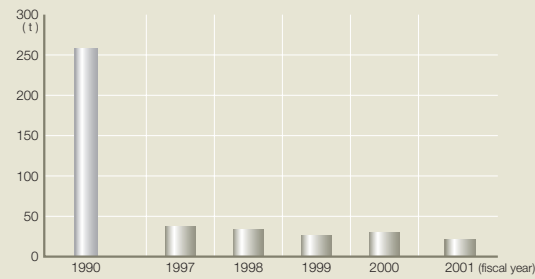
007 Data File...2

007 Data File...3

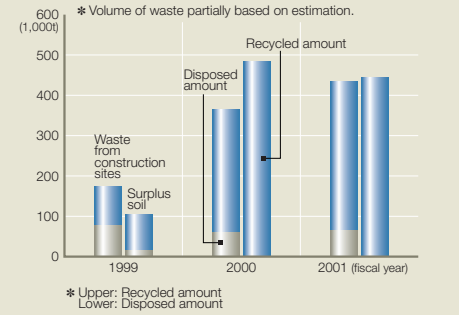
Website Map

Waste Management (continued)

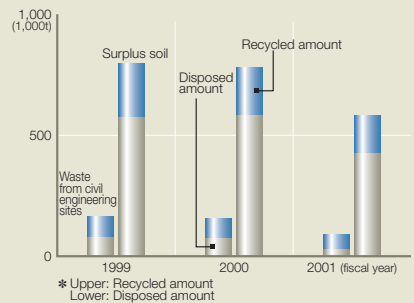
Use of Polystyrene for Packing



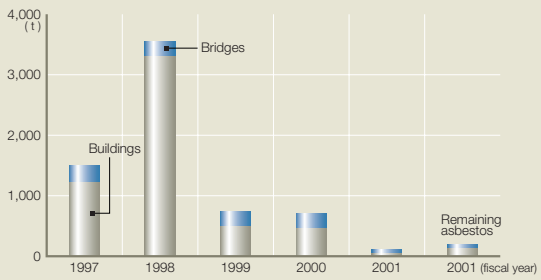
Waste and Surplus Soil from Construction Sites



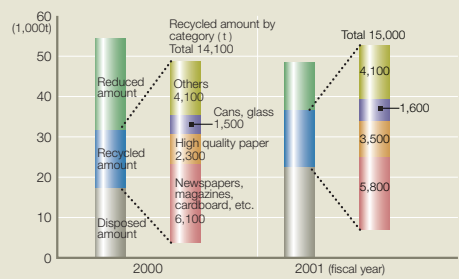
Waste from Civil Engineering Sites/ Surplus Soil from Civil Engineering Sites



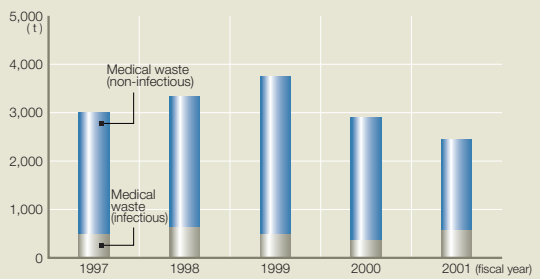
Asbestos Emissions and Remaining Asbestos



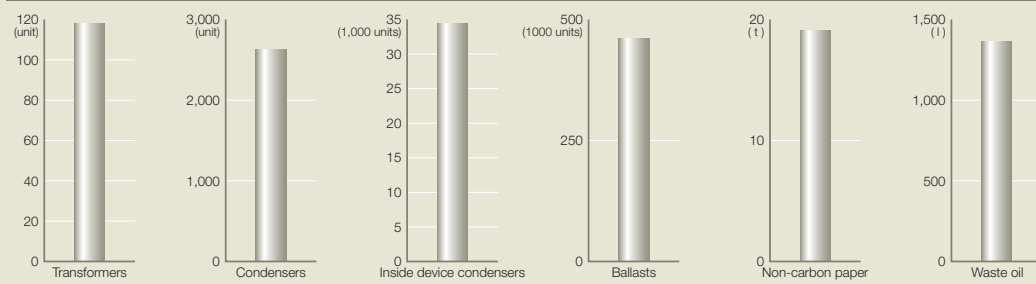
Volume of Office Waste



Volume of Medical Waste

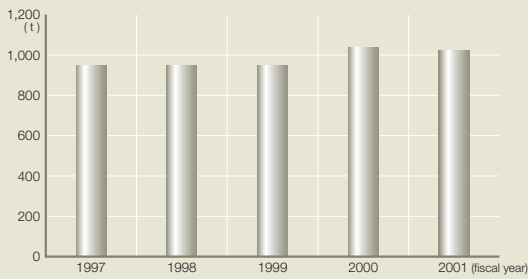


Storage Amount of Used PCB Devices

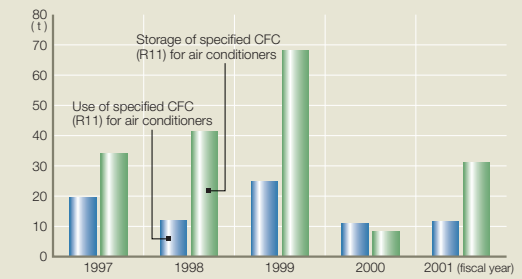


Protection of the Ozone Layer, Other Activities

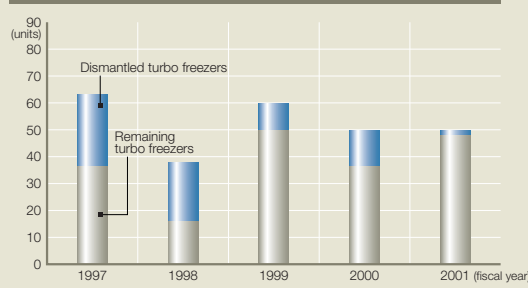
Use of Specified Halon for Fire Extinguishing Equipment



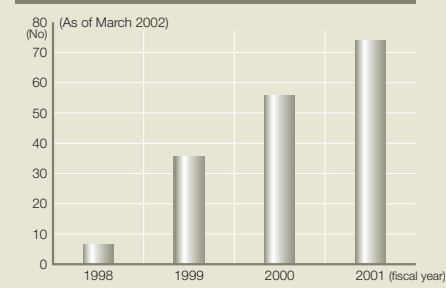
Amount of Specified CFCs for Air Conditioners



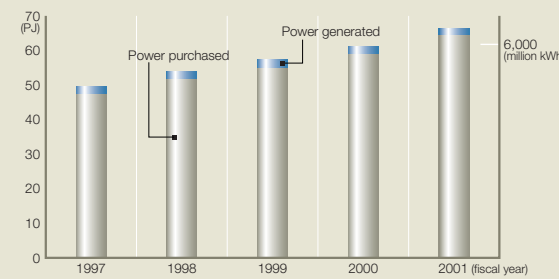
Number of Dismantled Turbo Freezer Units



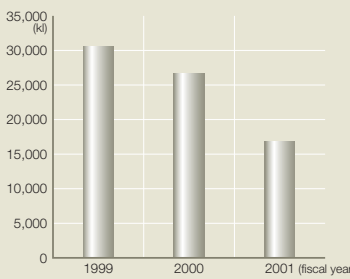
ISO 14001 Certification for NTT Group



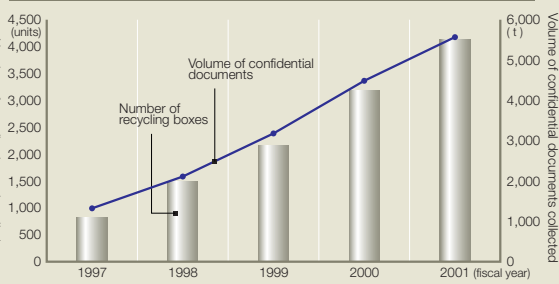
Electricity Consumption



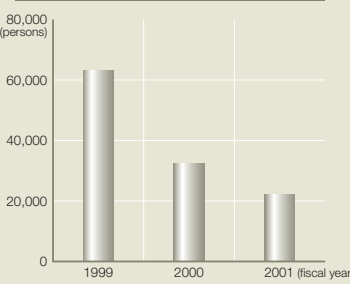
Fuel Consumption by Company Vehicles



Recycling Boxes Installed and Volume of Confidential Documents



Number of Participants in "Operation Clean Environment"



http://www.ntt.co.jp/kankyo/e/

NTT Group
Environmental Protection
Activity Report 2002

Website Map



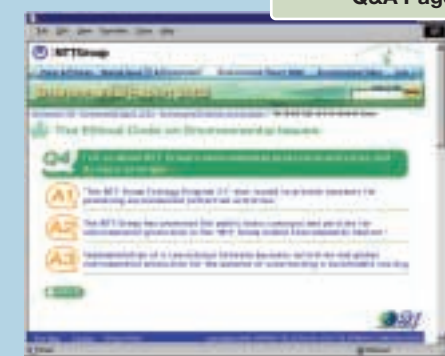
Environmental Top Page



Environmental Report 2002



Q&A Top Page



Q&A Page

▶ Answer page
Concise answers to one question are provided here.

By contributing a wide range of content and highlighting our specific measures with ideas and approaches concerning the environment, we intend the website to be utilized as an archive for people who are interested in environmental issues.

This Q&A format allows viewers to directly access pages of interest

- ▶ Assumed questions and answers were arranged into 37 areas. It provides an at-a-glance question list as well as a search function to serve readers' specific interests.
- ▶ The environmental activities of each NTT Group company can be viewed.

○ Digest

This contains general terms of NTT Group's environmental protection activities in 2001, and is a quick reference to NTT Group's environmental protection activities.

○ Booklet PDF Version

A PDF version of the Environmental Protection Activity Report is available, facilitating reading or printing of the report in a book format which can be viewed at an appropriate size with helpful navigation functions.

○ Topics

We selected specific items and recent cases among NTT Group 2001 activities. You can easily view NTT's recent trends in environmental protection activities under this link.

○ Data File

- An outline of NTT and NTT Group companies
- Economic performance by NTT Group's environmental protection activities
- Environmental protection activity data
- Items listed in 2001 but not in 2002

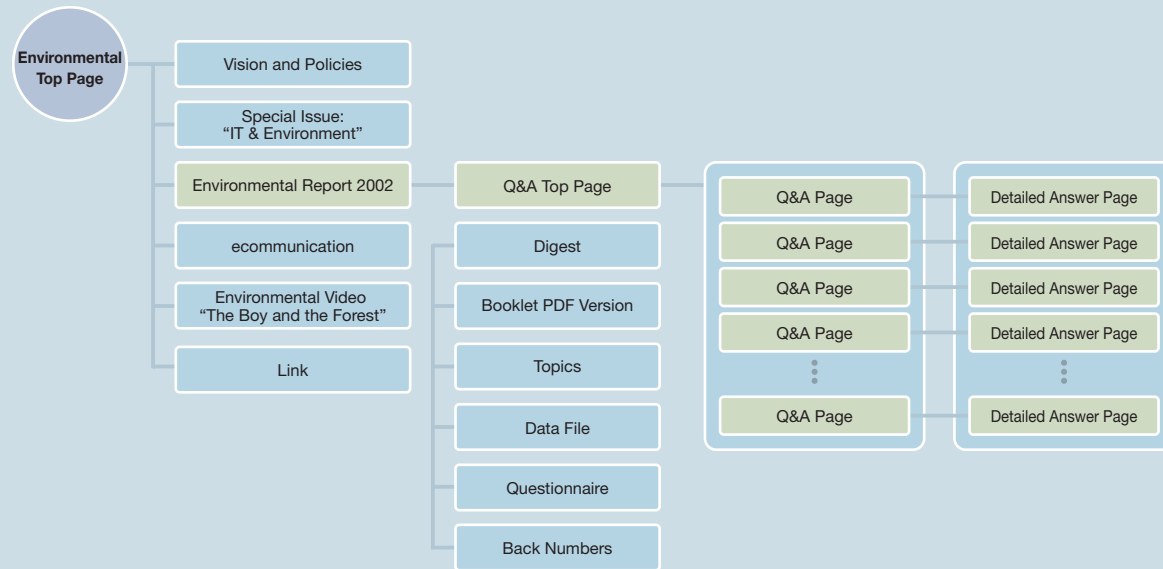
○ Back Numbers

- Environmental Protection Activity Report 2001
- Environmental Protection Activity Report 2000
- Environmental Protection Activity Report 1999

Detailed Answer Page



▶ Detailed answer page
Some of the answers provided in the "Answer Page" are extensively explained with graphs and illustrations.



■ URL List of NTT Group Companies Mentioned in this Report

NIPPON TELEGRAPH AND TELEPHONE CORPORATION (holding company)	http://www.ntt.co.jp/index_e.html	NTT DoCoMo CHUGOKU	http://www.docomo-chugoku.co.jp/
Cyber Communications Laboratory Group	http://www.ntt.co.jp/cclab/e/index.html	NTT DoCoMo SHIKOKU	http://www.docomo-shikoku.co.jp/ja/index.html
Information Sharing Laboratory Group	http://www.islab.ecl.ntt.co.jp/e/index.html	NTT DoCoMo KYUSHU	http://www.docomokyusyu.co.jp/
Information Sharing Platform Laboratories	http://www.islab.ecl.ntt.co.jp/e/index.html	NTT DATA	http://www.ntdata.co.jp/en/index.html
Access Network Service Systems Laboratories	http://www.islab.ecl.ntt.co.jp/e/org/as.html	NTT DATA INSTITUTE OF MANAGEMENT CONSULTING	http://www.keieiken.co.jp/
Science and Core Technology Laboratory Group	http://www.sctlg.ecl.ntt.co.jp/index_e.html	NTT FACILITIES	http://www.ntt-f.co.jp/profile-e/index.html
Lifestyle and Environmental Technology Laboratories (Energy and Environment Systems Laboratories)	http://kankyo.lslab.ecl.ntt.co.jp/eng/index2.htm	NTT URBAN DEVELOPMENT	http://www.nttud.co.jp/english/index.html
Telecommunications Energy Laboratories (Energy and Environment Systems Laboratories)	http://kankyo.lslab.ecl.ntt.co.jp/eng/index2.htm	NTT COMWARE	http://www.nttcom.co.jp/english/index.html
NTT EAST	http://www.ntt-east.co.jp/index_e.html	NTT-ME	http://www.ntt-me.co.jp/
NTT WEST	http://www.ntt-west.co.jp/index_e.html	NTT-ME CHUGOKU (NTT-Neomeit CHUGOKU)	http://www.chugoku.ntt-neo.com/
NTT Communications	http://www.ntt.com/index-e.html	NTT LOGISCO	http://www.ntt-logisco.co.jp/
NTT DoCoMo	http://www.nttdocomo.com/top.html	NTT AUTO LEASING	http://www.nttal.co.jp/
NTT DoCoMo HOKKAIDO	http://www.nttdocomo-h.co.jp/	NTT Advanced Technology	http://www.ntt-at.com/
NTT DoCoMo TOKAI	http://www.docomo-tokai.co.jp/	NTT-X	http://www.ntx.co.jp/
NTT DoCoMo KANSAI	http://www.docomo-kansai.co.jp/	NTT DIRECTORY SERVICES	http://bj.nttds.co.jp/english/index.html