NTT Group Environmental Protection Activities

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Abstract

The "NTT Group Ecology Program 21" defines the basic principles for environmental protection activities. NTT is endeavoring to reduce environmental loads by establishing Major Action Plan Targets (targets to be achieved by 2010), which involve reducing paper consumption, reducing waste material, and preventing global warming. This article introduces these three areas of activity being undertaken by the NTT Group.

1. NTT Group and its initiatives on environmental protection

In 2002, Japan ratified the Kyoto Protocol. This is just one sign of the increased awareness by Japan and its people of the importance of environmental protection. It is now considered a critical business management issue for enterprises to fulfill their share of social responsibility for conserving the environment. NTT has a longer history than one might expect of taking measures to protect the environment. Back in 1946, NTT started recycling telecommunications cables. Later, NTT reinforced its efforts by using recycled paper for telephone directories, and it has continued to undertake various initiatives. In 1991, NTT reaffirmed its company-wide commitment to environmental protection by establishing the "NTT Global Environment Charter", which details the basic principles for specific measures to be taken. This article introduces the basic concepts and specific initiatives taken by the NTT Group towards this goal.

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2. NTT Group Ecology Program 21

Taking the opportunity of NTT's major reorganization in 1999, the NTT Group reaffirmed the importance of global environmental protection and formulated the "NTT Group Ecology Program 21" (**Fig. 1**).

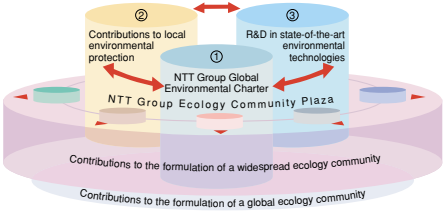

Fig. 1. NTT Group Ecology Program 21.

This consists of three pillars: the "NTT Group Global Environment Charter", "Contributions to local environmental protection", and "R&D in state-of-the-art environmental technologies". Based on these pillars, the NTT Group has been promoting environmental protection.

The "*NTT Group Global Environment Charter*" serves as the foundation for the environment charter adopted by each NTT Group company. Its principal philosophy is to pay the utmost attention in its business activities to the conservation of the global environment to achieve sustainable development. It indicates the directions of the Group's activities for environmental protection by spelling out six basic principles: (1) complying with laws and regulations and fulfilling social responsibilities, (2) reducing environmental loads, (3) establishing and maintaining environmental management systems, (4) developing environmental technologies, (5) making social contribution efforts, and (6) disclosing environmental information.

As for "*Contributions to local environmental protection*", each operating company has been conducting grassroots activities in various areas, a clear sign of its commitment to play its part as a member of the community. The Clean Environment Campaign, which started in 1988 and is still running, encourages NTT operating companies' employees and their family members to participate in cleaning activities sponsored by local communities. In addition, the Iwate and Aomori branches of NTT East and the Shiga branch of NTT West have opened Ecology Community Plazas, which carry out a wide range of environmental activities in cooperation with local communities, schools, and NTT Laboratories.

"*R&D in state-of-the-art environmental technologies*" has been promoted by setting up an NTT Energy and Environment Systems Laboratories and Environmental Management & Provisioning Project within the NTT Information Sharing Laboratory Group. The main R&D areas addressed include fuel cells and other energy-related systems, energy saving devices, sensors to monitor environmental information, environmental information technologies to distribute and add value to collected environmental information and assessments of the environmental impact of services provided by the NTT Group.

3. Targets of environmental protection activities

The main areas within the NTT Group's business activities that can have a significant impact on the environment (i.e., producing significant environmental loads) are the large quantity of paper used, the dismantling of telecommunications equipment and buildings, waste material from offices, and energy consumption arising from normal business operations. Specifically, the NTT Group is responsible for using about 0.4% of the paper produced in Japan, along with about 0.2% of the volume of industrial waste discharged, and about 0.8% of the power purchased. The NTT Group has been endeavoring to reduce its environmental loads by setting up the following targets for Action Plans:

Targets for Action Plans (to be achieved by 2010)

- Paper resource management: Total virgin pulp consumption to be reduced by more than 20% from 1990 levels by 2010. (i.e., reduced to 84,000 tons or less)
- Waste management: Volume of waste to be reduced by more than 85% of 1990 levels by 2010. (i.e., reduced to 72,000 tons or less).
- Prevention of global warming: CO_2 emissions to be reduced below 1990 levels by 2010. (i.e., reduced to 1.69 million tons or less).

4. Paper resource management

The business area that consumes the most paper within the NTT Group is the publication of telephone directories. Around 120 million telephone directories are published annually. To reduce paper consumption, NTT East, NTT West, and NTT Directory Services cooperated with paper manufacturers to succeed in closing the loop for recycling telephone directories in 2001 (**Fig. 2**). The telephone directories used to be made using paper that was dyed yellow, but such paper was difficult to recycle. NTT solved this problem by using printing to turn the paper yellow. Paper manufacturers themselves developed technology to crush and recycle used telephone directories in their entirety, even without needing to remove the spine paste. NTT also collects old telephone directories when delivering a new edition (if the customer is absent, collection is made later), thus closing the loop for the recycling system. In 2002, the percentage of successful collection was as high as 64%. NTT also refrains from delivering telephone directories if the customer so wishes.

At present, 65% of the paper for telephone directories comes from recycled paper, thus cutting down the amount of virgin pulp used for telephone directories to about 36,000 tons compared with more than

90,000 tons used in 1990. As a result of these efforts, the total amount of virgin pulp used by the NTT Group was reduced from 100,000 tons in 1990 to 40,000 tons in 2002. Thus, the target for 2010 has already been achieved in this area (**Fig. 3**). The NTT Group will further its efforts by monitoring and reducing the consumption of paper used for advertisements, operating manuals, and other publications.

5. Waste management

The NTT Group is promoting both the reuse and recycling of materials to reduce the quantity of waste material that is finally disposed of. Information about telecommunications equipment and cables to be dismantled is shared between NTT Group companies via an intranet so that reusable equipment and cables can be reused in other locations. If equipment or cables cannot be reused, metals are extracted from them for recycling. In addition, the sheaths of discarded telecommunication cables are recycled. While the cable sheaths (polyethylene) used to be processed by thermal recycling, NTT East, NTT West, NTT Laboratories, and cable vendors jointly developed a closed recycling system, which directly recycles the sheaths of waste cables. The system is now in operation. **Figure 4** outlines the procedures for the recycling of discarded optical cables. The sheaths of collected waste cables are removed and turned into pellets. The remaining parts of the cables are crushed and

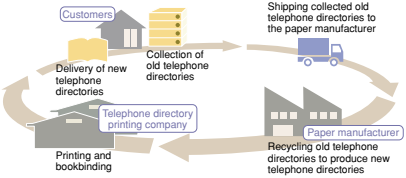

Fig. 2. Telephone directory closed loop recycling.

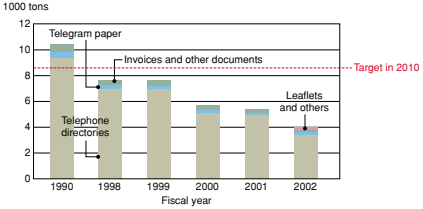

Fig. 3. Annual use of virgin pulp.

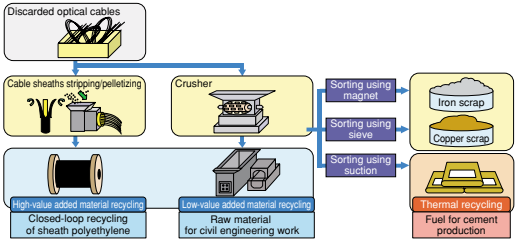

Fig. 4. Recycling of discarded optical cables.

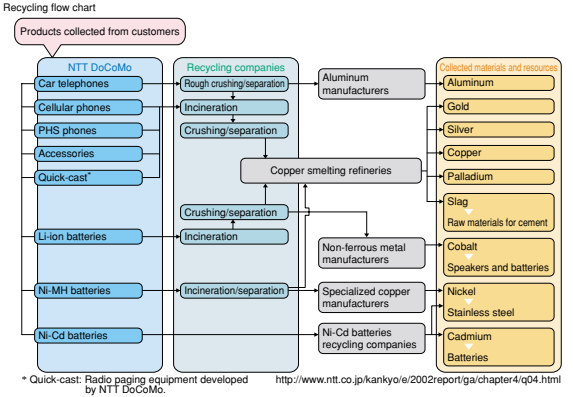

Fig. 5. Recycling of customer devices that are no longer used (NTT DoCoMo).

sorted for material recycling. The sheaths, now in a form of pellets, are used as raw material for the sheaths of new cables. In 2002, about 10,000 tons of scrap cables were processed in this way, thus reducing the demand for new raw materials for new cables. Various other waste materials from ordinary offices are collected separately at each site, and these efforts have increased the overall level of recycling. In recent years, many companies, branches, and departments in the NTT Group have acquired ISO14001 certification. As of March 2003, the number was 105.

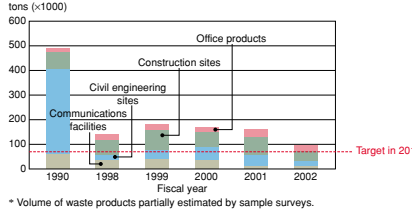

Fig. 6. Annual quantity of waste.

The NTT Group is not only keen to reduce the amount of waste material from its own business activities, but also taking measures to process devices such as terminals no longer used by its customers. NTT East, NTT West, and NTT DoCoMo collect used devices from their customers for recycling. In the "DoCoMo Come-Back" hardware recycling program, mobile phone shops collect mobile terminals, batteries, and accessories for 100% recycling (**Fig. 5**). In 2002, NTT DoCoMo formed a "Mobile Recycle Network" with other mobile communications providers to collect each others' used devices. Thanks to customer cooperation, NTT DoCoMo collected about 9 million mobile terminals, 7.6 million battery units, and 2 million battery chargers and other accessories during fiscal 2002.

These reuse and recycling efforts led to a reduction in the quantity of waste material from 480,000 tons in fiscal 1990 to 98,000 tons in fiscal 2002, only one step away from achieving the target for 2010 (**Fig. 6**).

We will continue these endeavors to increase the rate of recycling.

6. Prevention of global warming

Ninety percent of greenhouse gases emitted by the NTT Group are carbon dioxide exhaust from the use of electric power. Since the latter half of the 1990s, the use of the Internet and cellular phones has grown explosively, ushering in the age of the IT (information technology) society. However, to support this growing IT society, the NTT Group has been consuming more and more power. To rein in this power consumption, the NTT Group has been intensifying its energy saving efforts through successive initiatives: "Save Power Campaign" from 1987, "Super Save Power Campaign" from 1995, and "Total Power Revolution (TPR) Campaign" from 1997. These initiatives have introduced energy saving facilities and clean energy systems. The NTT Group now has 95 photovoltaic power plants besides wind-power generation plants and fuel cell plants. Together these plants generated 12.6 million kWh of clean energy in fiscal 2002. All told, the Total Power Revolution is responsible for saving about 1.2 billion kWh of power over the course of five years.

As the IT society advances, the NTT Group expects to increase its installation of datacom equipment, such as routers, switches, and servers, in its buildings to provide various application services and ADSL and FTTH access services. Although most datacom equipment can run on either direct current (DC) or alternating current (AC) supplies, a lot of it uses 100V AC. When such equipment is installed in telecommunications buildings, it is usually given an uninterruptible power supply (UPS) to avoid any service interruption resulting from an outage of the commercial power supply. The UPS converts the commercial AC to DC in its rectification section and charges a storage battery. Then it converts DC back to AC in the inverter section. Within the datacom equipment itself, the supplied AC is converted to DC to feed the electronic circuits. These successive conversions inevitably reduce the efficiency of the power supply. In contrast, the DC supply system shown in **Fig. 7** reduces the number of conversion stages and can improve energy efficiency by about 20%. In addition, because fewer conversions are involved, a DC supply is more reliable than an AC one. The guidelines for power supply systems adopted by the NTT Group call for a DC power supply for newly installed datacom equipment.

Besides the above-mentioned power saving measures, the NTT Group is reducing the emission of greenhouse gases by using low-pollution cars and encouraging the practice of switching off rather than leaving a car idling. A total of nearly 1200 low-pollution cars were used by the NTT Group in 2002. In spite of these numerous efforts, however, the advent of the IT society in the late 20th century has forced the NTT Group, which is entrusted to support the IT society, to increase its energy consumption and consequently the emission of carbon dioxide. In fact, carbon dioxide emissions by the Group increased from a little less than 1.7 million tons in 1990 to nearly 3 million tons in 2002. This far exceeds the Group's tar-

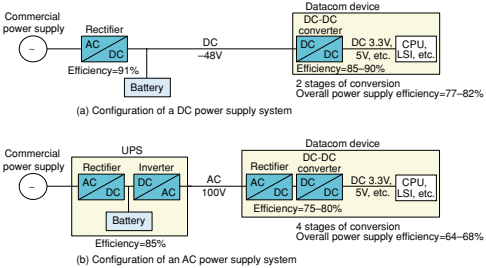

Fig. 7. Comparison of DC and AC power supplies.

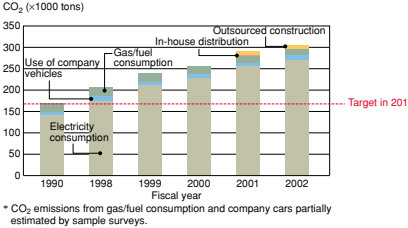

Fig. 8. Annual emission of greenhouse-effect gases.

get of returning to the 1990 level by 2010 (**Fig. 8**).

7. Effects of using IT to reduce environmental loads

The IT services provided by the NTT Group contribute to enhancing the efficiency of social systems and people's lifestyles and thus cutting overall energy consumption. Telephones, fax machines, email, and videoconferencing can reduce the amount of physical movement of people. The information exchanged through IT services increases the efficiency of physical distribution, reduces excessive production, and renders physical media, such as paper or CDs, unnecessary for the exchange of information. In other words, the power consumed by the NTT Group to provide IT services to its customers is more than offset by the energy saved by the customers, resulting in an overall reduction in the emission of greenhouse gases. Our provisional estimate of the energy saving attributable to the use of IT services in 2010 is 3.6% of the total energy consumption in Japan compared with 1.1% consumed by IT devices.

References

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