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NTT西日本グループ

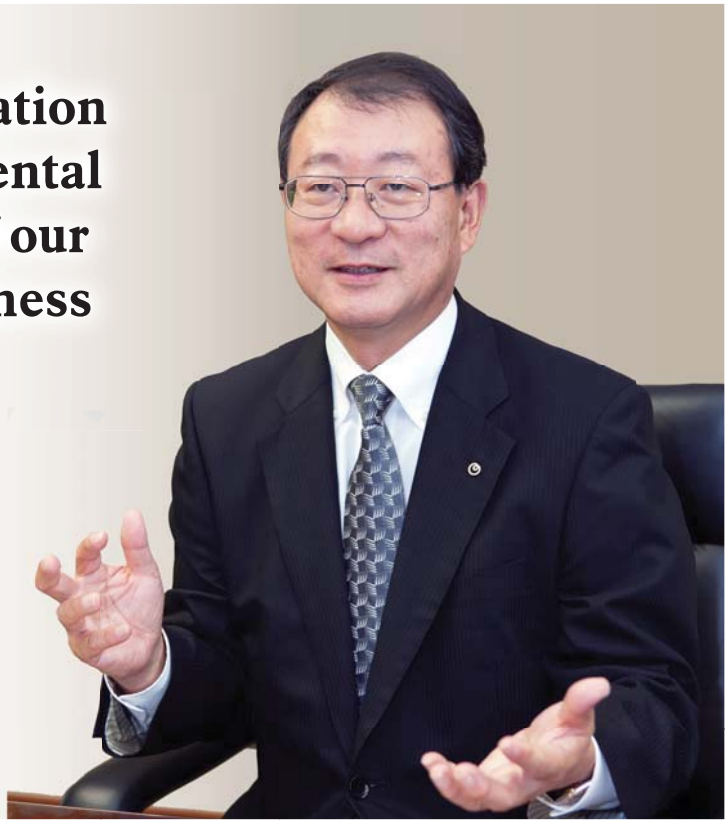
# 環境報告書 2013

Environmental Report

NTT西日本

# CONTENTS

# We will contribute to the realization of a society with less environmental load through the deployment of our environmental and energy business by using ICT.



村尾 和俊
*Kazutoshi Murao*
President
Nippon Telegraph and Telephone West Corporation

NTT West Group has been actively working on reducing our environmental load. In addition, when considering our corporate social responsibility in the consumption of as much as 2 billion kWh of electricity per year, in order to declare our maximum effort in reducing the use of electricity and other environmental issues, NTT West Group established the “Green NTT West Strategy” in June 2012. The “Green NTT West Strategy” consists of three pillars. The first pillar is “Achievement of the Environmental Grand Design.” In this activity, we will contribute to society by reducing our environmental load. In the “Deployment of Our Environmental and Energy Business”, which is the second pillar, we will contribute to the environment by deploying business activities using and utilizing ICT. Finally, the third pillar is “Promotion of Activities for Biodiversity Conservation.” In biodiversity conservation activities, individual employees contribute to environmental protection in society.

In “Achievement of the Environmental Grand Design,” we aim “to reduce our energy use by at least 40% by FY 2020 compared to the FY 2010 level and actively work on the reduction of our energy use. For example, in telecommunication facilities, which constitute much of our energy use, we launched a trial in cooperation with group companies on an air conditioning system that uses open air to drastically reduce energy use. In our office facilities, we are trying to save energy by visualizing our energy use. In addition, for the reduction of paper usage, an internal newsletter became electronic, and for the reduction of waste, we achieved zero emissions* which means a 1% or less final disposal rate in FY 2012.

In the “Deployment of Our Environmental and Energy Business,” NTT West Group is also contributing to society by using ICT and real estate. For example, the NTT WEST ASSET PLANNING CORPORATION opened a hydroponic culture rental farm called “Mieru Eco Bata” in April 2013. “Mieru Eco Bata” provides urban residents, who rarely come into contact with nature, with a great opportunity to think about nature through vegetable cultivation. “Mieru Eco Bata” enables growers to check the growth of their vegetables anytime they like with ICT. Together with a rental outdoor vegetable garden known as “Mieru Saien,” 9 rental vegetable gardens are deployed in western Japan. Moreover, for the introduction of renewable energy, the electric power generation capacity reached 1,200kW, and the annual electric power generation amount achieved 920 MWh by March 2013. Furthermore, NTT West Group now rents out sites suitable for solar power generation including the former NTT West Suzuka Training Center site, and NTT FACILITIES, INC. has built large-scale solar energy systems in the sites. In this way, we actively deploy efforts for renewable energy by utilizing our assets. As another example of our contribution to the promotion of the use of renewable energy, from June 2013, NTT SMILE ENERGY INC. is also providing “Eco Megane” measurement data, whose total power generation capacity reached 100MW as of December 2013, to The National Institute of Advanced Industrial Science and Technology in order to cooperate with their activity to manage statistical data on power generation with solar power generation systems.

Meanwhile, in the “Promotion of Activities for Biodiversity Conservation” approximately 2,000 employees and their families along with retired employees have been working on biodiversity conservation activities in 18 prefectures. In order to deploy and promote these activities as ongoing activities, the “NTT West Midori Ippai Project” was inaugurated, and in November 2012, a tree planting event at “Kyosei no mori” (Forest of co-existence) in Sakai City, Osaka Prefecture was held to kick off the project. Activities for biodiversity conservation must be suitable for each respective area. The activities could be tree planting, satoyama conservation, and conservation of endangered species or others. NTT West Group will promote activities with the aim of implementation in 30 prefectures that make up the service areas of NTT West and the goal of creating an activity participation scale numbering a minimum of 10 thousand people. The plan calls for activities in all 30 prefectures to begin within FY 2013.

NTT West Group promises that each and every one of our employees will contribute to society by continuously and actively addressing environmental issues through these activities.

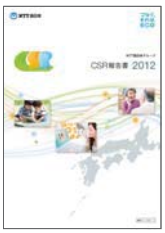
* This is the concept advocated by United Nations University. It aims for production that does not generate any waste overall by using all waste products and by-products generated from industries as resources for other industries. NTT West Group defines a 1.0% or less final disposal rate as zero emission.

Believing that it is a corporate social responsibility (CSR) to realize a sustainable society by paying attention to the environment, NTT West Group has been engaging in environmental conservation activities, and reporting details of these activities in the Environmental Report since FY 2000.

Also, our CSR activities have been released through the CSR report since FY 2005.

We sincerely hope that you can read through these reports and send us your valuable comments to the following e-mail address.

To view our CSR effort, please visit http://www.ntt-west.co.jp/csr/




To view our 2013 Environmental Report, please visit http://www.ntt-west.co.jp/kankyo/report/2013/

## Reference

■ “Environmental Report Guidelines 2012” Ministry of the Environment

## Applicable to

■ 39 NTT West group companies and NTT BUSINESS ASSOCIE Co.,Ltd

Organization Charts　Branches　http://www.ntt-west.co.jp/corporate/about/sosikizu.html
Group Companies　http://www.ntt-west.co.jp/corporate/about/group.html

## Applicable period

■ Based on records from April 2012 to March 2013

【Contact】
Environment Management Promotion Office, Technology Innovation Department, NTT West,
3-15 Bamba-cho, Chuo-ku, Osaka, Japan 540-8511
Email: kankyo@ml.hg.west.ntt.co.jp

Feature 1

# NTT West Midori Ippai Project

## Activities for biodiversity conservation focusing on tree-planting

### Introduction

Annually, NTT West Group uses approximately 2 billion kWh of electricity which is accompanied by a large volume of $CO_2$ emissions. Thus, we believe it is the responsibility of NTT West Group as a major energy user to actively work on protecting the global environment as well as reducing our energy use.

Therefore, aside from efforts toward reducing the environmental load generated from our businesses, based on the "NTT West Spirit Code of Conduct", "NTT West Group Environmental Policies," and "NTT West Group Charter for Global Environment", we inaugurated the "Midori Ippai Project". In this project, activities for biodiversity conservation focusing on tree-planting are deployed, and the activity to kick off the project was held on November 27, 2012.

Together with these efforts, we will contribute to reducing the environmental load by deploying our environment/energy business using ICT.

### NTT West Midori Ippai Project Outline

In order to conserve biodiversity according to natural and social conditions of the area, NTT West aims to implement activities for biodiversity conservation focusing on tree-planting as listed below in coordination with municipalities/NPOs in all prefectures in western Japan and to create an activity participation scale numbering 10 thousand people which includes our employees, their families, and retired employees under the unified name of "Midori Ippai Project" across NTT West business regions.

## Examples of the "Midori Ippai Project"

Various forest creation activities with biodiversity in mind such as appropriate forest management that includes clearing underbrush and making man-made forests, broad-leaved forests, and mixed forests of conifers and broad-leaved trees

**Clearing the Underbrush of Hinoki Cypress**
(NTT West Wakayama Group)

Activities to conserve and restore the original ecosystem in the area by removing alien species

**Alien Fish Removal in Lake Biwa**
(NTT West Shiga Group)

Activities to conserve, reproduce, and create green space and waterfronts that become habitats and fostering space for living creatures including the conservation of lignosa areas in urban parks, etc., greening the premises of architectural structures, and providing better biotopes

**Reed mowing in Lake Biwa**
(NTT West Shiga Group)

Activities to mainly work on the protection and breeding of endangered species and domestic endangered species of wild fauna and flora designated by the Act on Conservation of Endangered Species of Wild Fauna and Flora

**Protection of Rosy Bitterling**
(NTT West Nara)

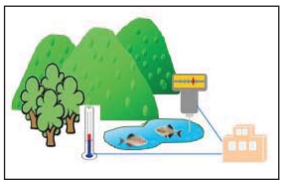
Activities to conserve natural fields, windswept grasslands, and climax forests and other highly natural environments as well as activities to conserve habitats and growing environments of living creatures in forests, farmlands, and reservoirs in satochi-satoyama, green spaces in parks, and biotopes, etc.

**Conservation of the Environment by Cleaning the Nagara River**
(NTT West Gifu Group)

Activities including nature tours, nature experience events, and symposiums to disseminate and educate the meaning, etc. of activities to conserve biodiversity

**Hosting of the Afuhi Summit**
(NTT West Nara/NTT Communication Science Laboratories)

Research activities to understand and assess the current state of regional biodiversity including the state of vegetation and habitats as well as weather, water quality, soil, and other conditions where vegetation and habitats grow



**Research on the Conditions for Rosy Bitterling Breeding with a Sensor Network**
(NTT West Nara/NTT Communication Science Laboratories)

Activities to indirectly support activities for the conservation of biodiversity such as the provision of sites for activities and the use and sales of products and by-products accompanying the activities

**Offices using timber from forest thinning**
(NTT Smile Energy)

Information on these activities is available on the NTT West website.
For details, please visit the official NTT West website: URL: http://www.ntt-west.co.jp/kankyo/create/

## Activities and Future

At the time of inauguration of the “Midori Ippai Project,” activities for biodiversity conservation began in 18 prefectures with approximately 2,000 participants, and in FY 2013, approximately 5,000 participants in activities in 30 prefectures covering all of our business regions is expected. In addition, 5 new collaboration arrangements with local organizations are also scheduled. The hosting of summits connecting remote areas and provision of classes regarding biodiversity and other activities using ICT are being deployed as well.

We will continue to promote activities for biodiversity conservation, and we are committed to society by using ICT for the environment and biodiversity.

### Example of a Summit and Class Using ICT

## Midori Ippai Project Supported by Green West (Midori Nishino)

Ms. Hikari Nishino, our official concierge for NTT West FLET'S, was appointed as spokesperson Midori Nishino for local biodiversity conservation activities by NTT West Group and introduces our activities in the Midori Ippai Project.

Information on activities in western Japan is available on the official NTT West website.
http://www.ntt-west.co.jp/kankyo/create/


## Midori Ippai Project Activities Coordinated with “Green goo”

NTT West Group will contribute to protection of the environment by driving ICT use, and we will continue to work on reducing our load on the global environment. In this context, NTT West Group began cooperating with “Green goo” provided by NTT Resonant, and started the promotion of its internal use 4 years ago for the purpose of further promoting our activities to contribute to society and educating our employees so they become aware of contributing to the environment.

More specifically, employees are encouraged to register the “Green goo” website on the start-up page of computers in the office or bookmark the website so each employee voluntarily works on activities for the environment.

We are also working on “Green goo” as a part of our “Midori Ippai Project” launched in FY 2012. The frequency of using “Green goo” in FY 2013 increased by approximately 40% compared to the previous fiscal year.

In the 14th donation period (April 2013 to September 2013), NTT West Group’s contribution to the overall use of “Green goo” was approximately 7% or 2,538,071 hits.

## Round-table Talk by a Nature Conservation Group Representative and NTT West Group Representatives from Each Region

3 NTT West Group representatives working on the conservation of biodiversity in each region and Hitoshi Okawada, Director of the Nature Conservation Society of Osaka ("Nature Osaka"), discussed their activities and future prospects.


**Hitoshi Okawada, Director, Nature Conservation Society of Osaka**

As the director of a nature conservation group with approximately one thousand members (as of March, 2012), Okawada has been working on the dissemination of nature conservation activities through actively carrying out coordination with various organizations and PR activities for his nature conservation society.

**Tomohiko Tamura, Personnel Department, NTT West**

Tamura participates in protection and conservation activities of the endangered rosy bitterling by Kinki University. Tamura is expanding the circle of the activities by planning events that not only our employees but also their families can enjoy.

**Takayuki Yoshida, Hokuriku Branch, NTT BUSINESS ASSOCIE WEST Co., Ltd.**

Yoshida has been continuously working on activities to conserve satoyama and satoumi in the Hokuriku area. Yoshida also contributed to the dissemination of "biomass plastic" using corn as a raw material in his company.

**Masayuki Konno, Kansai Branch, NTT BUSINESS ASSOCIE WEST Co., Ltd.**

Konno publishes the environmental information magazine, "Kansai Eco Joho" (Kansai Eco Info) that marked 126 issues as of September 2013 on an internal website when necessary. In addition, Konno is involved in tree planting and satoyama conservation activities mainly in the Kansai area.

### -Can you tell us about your activities?

**Masayuki Konno, Kansai Branch, NTT BUSINESS ASSOCIE WEST Co., Ltd. (Hereinafter, Konno)**
I started environmental activities about 3 years ago. The "NTT West Group Afuhi Project" was my first activity. Since I enjoyed interacting with my fellow participants that I became acquainted with in the project, I have continued environmental activities up until now. I also participate in activities organized by "Nature Osaka".

**Hitoshi Okawada, Director, Nature Conservation Society of Osaka (Hereinafter, Okawada)**
Our activities aim to pass down the natural environment to the next generation. We came to interact with NTT West Group through a tree planting activity, and we hope to continue working with NTT West Group.

**Takayuki Yoshida, Hokuriku Branch, NTT BUSINESS ASSOCIE WEST Co., Ltd. (Hereinafter, Yoshida)**
My work experience on the acquisition of ISO14000 certification in the Fukui Branch inspired me to be aware of environmental issues. Now, I help with conservation activities of satoyama and satoumi in the Hokuriku area mainly in Ishikawa Prefecture.

**Tomohiko Tamura, Personnel Dept. NTT West (Hereinafter, Tamura)**
I used to work at the Nara Branch of NTT West Miyako until August 2013. At that time, I learned about Kinki University's environmental activities and I started to participate. My main activity is helping to establish an indispensable environment for protection of the rosy bitterling.

**Okawada:** "Enjoyment" is important for continuously working on environmental activities. What kind of methods do you use or what kind of efforts do you make in order to intensify the activities?

**Konno:** In my case, I put information on the events on "Kansai Eco Joho," and I ask my close friends in environmental activities to participate in the events with me. We joined the activity to protect the rosy bitterling across borders between our branch offices the other day. In addition, I also participate in events organized by municipalities as efforts for the outside. I try to energize the activities by expanding the human network.

**Tamura:** I also plan and implement events that make children feel like participating in the activities such as rice planting and crayfish fishing in the rosy bitterling protection activity. If children participate, their parents and grandparents also participate, and if all family members become more aware of environmental activities, they will continuously participate in activities. Moreover, I also promote meaningful activities that satisfy the desires of adults to learn by arranging simple lectures by an associate professor of Kinki University.

**Yoshida:** The challenge for the activities regarding satoyama is to increase the number of participants since there are times when we have less than 10 people. Ishikawa Prefecture has a "Satoyama Point System" where you can exchange points for cash vouchers according to the frequency of participation in activities for satoyama. I actively recruit participants in the company by using the system.

**Okawada:** I think the activities will develop and continue due to the expansion of the circle of activities from employees to their families and others. Planting trees is a greening plan looking 100 years into the future, and I hope environmental protection activities will be passed down to the next generations together with all of you in NTT West Group.

### -What do you think about the NTT West "Midori Ippai Project"?

**Tamura:** I hope we can promote activities that can only be done by NTT West. For example, coordination with "our ICT business." I think we can enhance the awareness of environmental activities if we visualize the growing process of fauna and flora with the Internet and information devices and share the process internally and externally.

**Yoshida:** I feel it's necessary to make coordination among NTT West Group closer and to deepen communication with each other to energize environmental activities even more than before. We must participate in environmental activities while performing our work, therefore, if more employees participate and support each other, we will be able to obtain high-quality results while reducing the burden on each employee.

**Konno:** I think that increasing the recognition of the activities further deepens understanding of the activities not only by employees but also by their families and our business partners, and as a result, we can expect more participants. I believe it's important to broadly publicize our activities internally and externally.

**Okawada:** According to the experience of "Nature Osaka," the rate of repeaters increases when the activities continue. For example, in case of the tree planting activity, it means that the activity does not end with just planting trees but also includes having the participants look at how the trees they planted before grew. This kind of continuity of activities allows the participants to visibly see the "results of their activities" and find new rewarding activities. I'd like all of you in NTT West Group to promote efforts with an awareness of continuity of the activities.

## Comments from Collaborators in Activities in Each Community

### Rosy Bitterling Protection Activity

In this activity, in addition to a direct contribution with personnel, a new effort in the telecommunication field that makes use of NTT West's business expertise has already been launched.
I expect it will be a model case to disseminate and establish activities to conserve biodiversity starting with the activity to conserve the rosy bitterling.

**Tadao Kitagawa, Associate Professor, Aquatic Ecological Laboratory, Department of Environmental Management, Faculty of Agriculture, Kinki University**

### Satoyama and Satoumi Creation by Participation by Various Organizations

In June 2013, an environmental education session for NTT West Group environmental personnel organized by NTT West Kanazawa Branch was held in Okunoto. The participants experienced the hard work involved in raising rice through the removal of weeds in rice terraces, etc. I expect NTT West Kanazawa Branch to actively participate in activities to conserve satoyama and satoumi from the position of a business enterprise in a satoyama area where depopulation and population aging are progressing.

**Tsutomu Okumoto, Director, Satoyama Creation Office, Environment Department, Ishikawa Prefectural Government**

Feature 2

# Middori Ippai Activities Using ICT

## "Mieru Eco Bata"

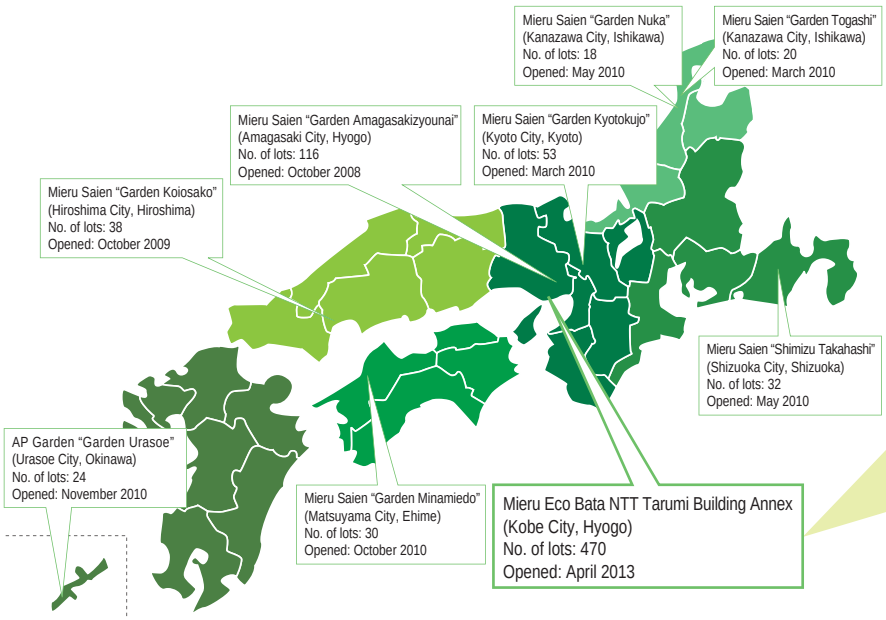
In NTT West's Midori Ippai Project, "Midori Ippai Activities" using ICT are also promoted. We conduct remote meetings regarding the environment and biodiversity, and we monitor endangered species using sensors. ICT enables the monitoring of important things from remote areas.

NTT WEST ASSET PLANNING opened a hydroponic culture rental farm, "Mieru Eko Bata," in an annex of NTT Tarumi Building (Kobe City, Hyogo Prefecture) so residents can enjoy growing vegetables in urban areas with little farmland.

A hydroponic culture is a nutriculture which involves growing vegetables with only water (culture fluid) containing necessary nutrition without soil. In order to grow vegetables under the most suitable conditions by using the culture fluid and controlling light/temperature, a hydroponic culture is characterized by quicker vegetable growth compared to soil cultures. For example, lettuce can be harvested in approximately 40 days after the planting of seeds.

In "Mieru Eco Bata," an indoor farm was built in a NTT West building to provide individual lots to users as rental farms. Since vegetables are grown indoors, there are nearly no worries about pests and growing vegetables without pesticides can be enjoyed. In addition, by using HEFL (Hybrid Electrode Fluorescent Lamp), which is suitable for growing vegetables, power savings are realized. Therefore, "Mieru Eco Bata" is an environmentally-friendly farm. There are 9 NTT West Group rental farms including "Mieru Eco Saien" in total across Japan.


### "Mieru Eco Bata/ Mieru Saien"




**NTT Tarumi Building Annex**

1st floor: Community Room

2nd floor: Greenhouse Nursery Room

# Feature 3

## Contribution to Clean Energy

As part of the “Green NTT” Project promoted by the NTT Group since 2008 as one of NTT’s global warning countermeasures, a solar power generation system with 63kW installed capacity and 60MWh estimated annual energy production was completed in the premises of NTT Yodo Athletic Grounds (Kuse-gun, Kyoto Prefecture) in March 2012. 256 solar panels are in use to generate power, and the power generated using this solar system is scheduled to cover approximately 60 thousand kilowatts or approximately 20% of power used in the entire facility.

Upon this completion, the plan in 2008 of generating 5MW with solar power in the entire NTT Group was realized, and at the same time, the annual energy production in 43 NTT West facilities reached 920MWh. (Figure 1)

In addition, NTT Smile Energy Inc. is cooperating with the activity of managing the statistical data of power generated by solar power generation systems in Japan by providing data from solar power generation systems measured by “Eco Megane” to the System Team of the Research Center for Photovoltaic Technology, The National Institute of Advanced Industrial Science and Technology.

The standard solar power panel generation capacity of “Eco Megane” users reaches 100MW*, and the area of the panels is 12 times greater than the area of Tokyo Dome. NTT Smile Energy Inc. contributes to the development of the solar power generation market through the provision of information regarding power generation without including personal information, collection of power generation data of solar power generation systems, and management of statistical data.

*As of December 2013

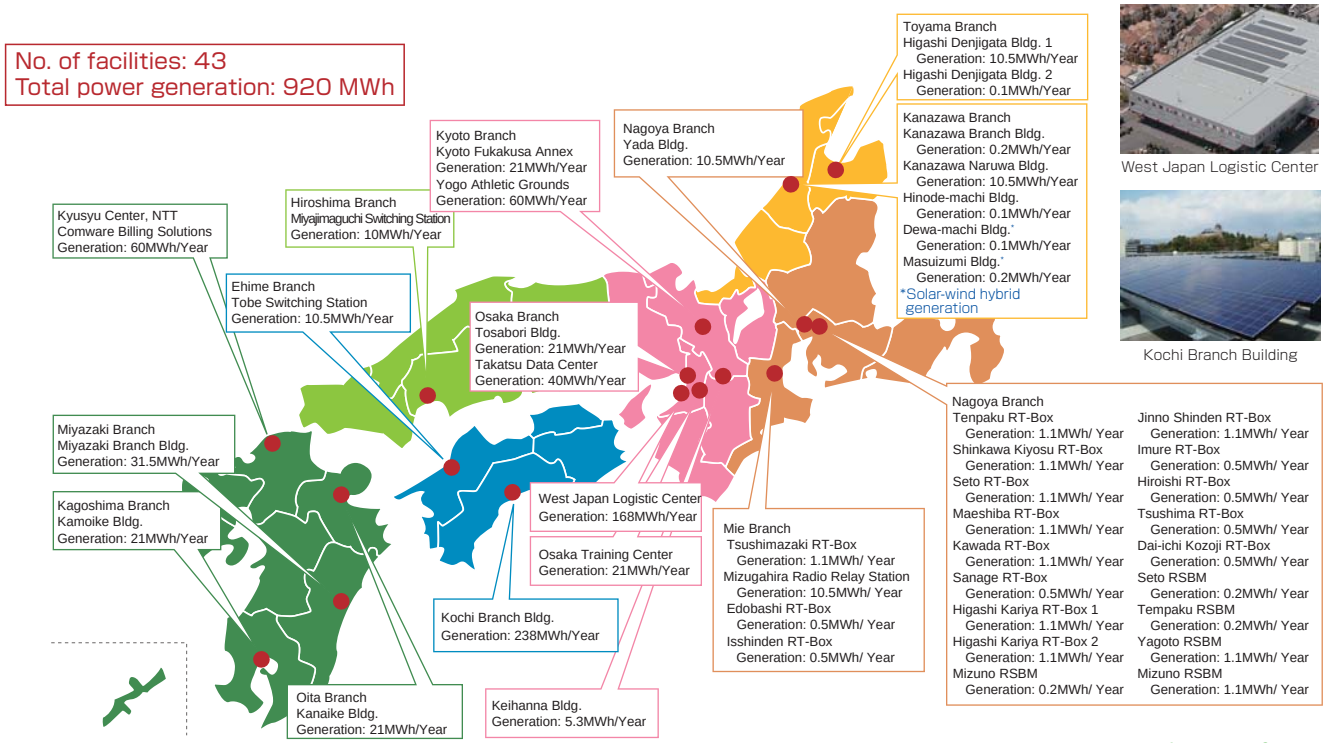
Under the Green NTT West Strategy, NTT West Group will continue to promote efforts for reducing the use of power and increasing the use of clean energy with the aim of becoming an environmentally-friendly company.

### Clean Energy System in NTT Yodo Athletic Grounds

### Management of Statistical Generated Electricity Data Using Eco Megane


“Solar Power Generation Status Watchdog Report” Screen

Figure 1: Solar Power Generation (as of 31 March 2013)






West Japan Logistic Center



Kochi Branch Building

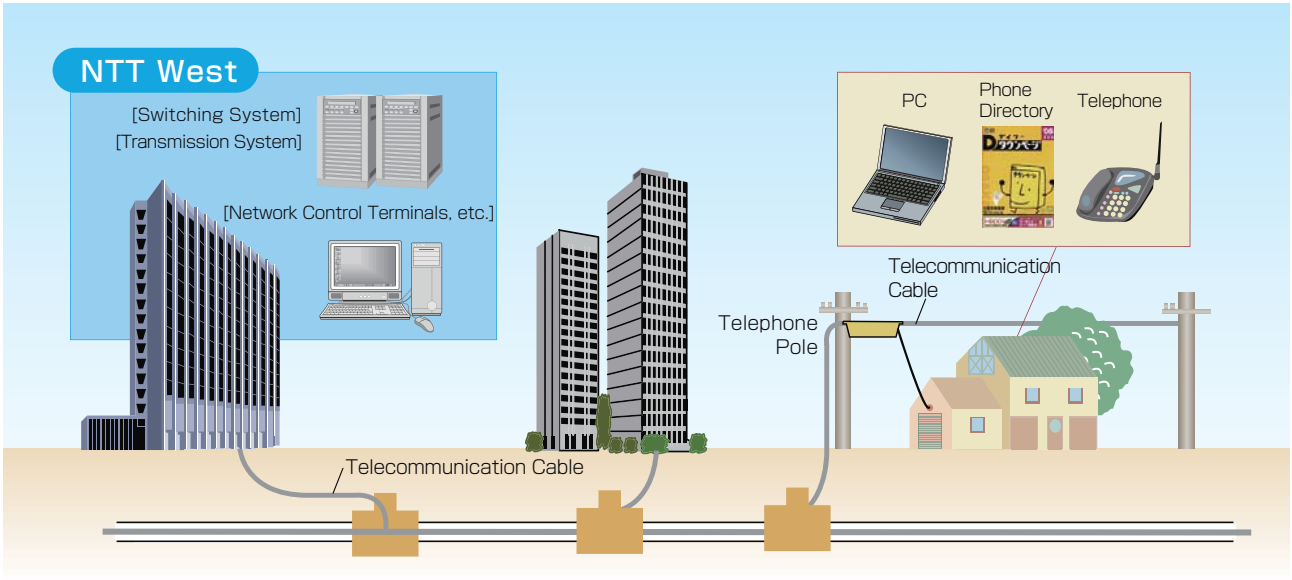
# Overview of Our Business and the Environment

## Overview of Our Business and the Environment

The business of NTT West Group covers the entire region of western Japan. The scale of our operations is in proportion to the extent of their influence on the environment. In order to allow our customers to make and receive calls, for example, phones and networks consisting of telecommunication cables and switching systems embracing the western part of the country are required (Figure 1). In addition, all related business operations such as logistics, construction works, management, servicing, and provision of products also affect the environment in a significant way.

The material flow in the next page describes the specific elements that constitute the major burden on the environment.

Figure 1: NTT West Network for Telephony and Communications



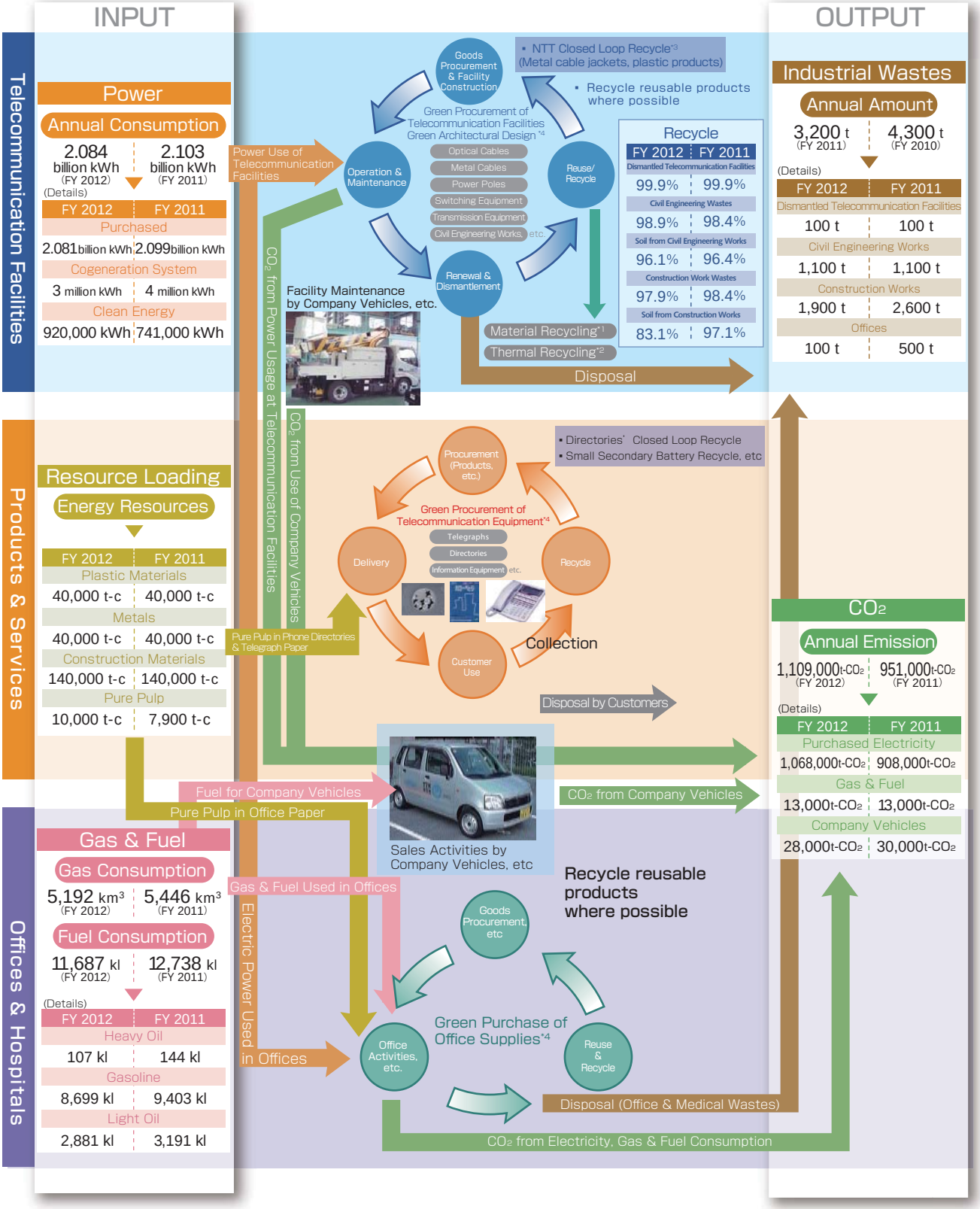

## Harmony with the Environment

Placing the global environment issue as one of the important corporate responsibilities when carrying out our business operations, we have implemented measures toward harmonious coexistence with the environment.

Specifically, these measures include reduction of power consumption at our telecommunication facilities (global warming prevention measure), cutting down of the amount of industrial wastes produced from dismantling of telecommunication facilities, civil engineering and construction works, and our offices, and also improvement of recycling rate (industrial waste reduction measure and recycling measure). Other actions include saving paper used for phone directories (paper resource saving measure) and promoting the recycling of telecommunication equipment and PCs (recycling measure).

Our Group grasps the material flow (see next page) quantitatively and periodically, and conducts reviews so as to continuously reduce the load on the environment.

# Material Flow in FY 2012




※1 Material recycling: reusing collected wastes as raw materials of products

※2 Thermal recycling: wastes collected are burned and reused as thermal energy.

※3 NTT closed loop recycle: a form of material recycling. The name comes from the process of recycling wastes produced in our operations as NTT products. For example, old phone directories are used to produce new directories.

※4 Green Procurement/Design/Purchase: refers to eco-minded procurement, design and purchase operations ranging from the construction of telecommunication facilities to office supplies and products offered to our customers.

# NTT West Group Charter for Global Environment

Based on the belief that corporations, which are inseparable from the society, are responsible for promoting activities to protect the environment, we established the “NTT West Charter for Global Environment.” Based on the provisions of the charter, our Group set forth targets and execution management items for promoting activities to conserve the environment.

## NTT West Group Charter for Global Environment

### Basic Philosophy

In order to harmonize with the nature and to realize sustainable development for years to come, NTT West Group shall, in compliance with the charter, make the best effort in all its business activities together with its group companies toward protecting the global environment.

### Main Principles

**1. Legal Compliance & Social Responsibility**

We shall comply with the relevant laws and regulations on environmental protection, and fulfill our corporate responsibilities from a global perspective.

**2. Reduction of Environmental Load**

We shall set action goals for reducing greenhouse gas emission, saving energy, saving materials such as the amount of paper used, and cutting down wastes, and we shall strive to make continuous improvements.

**3. Establishment & Maintenance of Environmental Management System**

By establishing an environmental management system, each office shall take actions voluntarily to protect the environment in order to prevent pollution and reduce environmental risks.

**4. Dissemination of Eco-technology**

We shall contribute to reducing the environmental load through actively disseminating the achievements of research and development efforts such as through multi-media services.

**5. Contributions via Social Support**

Cooperating with local residents and the government offices, we shall strive to support the activities for environmental protection.

**6. Disclosure of Environment-related Information**

We shall engage in active communication within and outside the Group by disclosing information related to the environment.

**7. Preservation of Biodiversity**

We shall grasp the relationship of biodiversity with business, and promote efforts for it to be inherited by future generations.

# NTT Group Environment Vision“THE GREEN VISION 2020”

With the aim to realize the development of a sustainable society with man and the Earth coexisting in harmony, NTT Group has, in November 2010, established the NTT Group Vision for Environmental Contributions, named “THE GREEN VISION 2020,” which sets forth policies on new efforts up to FY 2020 (Figure 1).

“THE GREEN VISION 2020” positions three ongoing environmental themes to be tackled in the future. They are “realization of a low carbon society,” “formation of a circulating society,” and “conservation of biodiversity.”

## 3 Environmental Themes

### 1. Realization of a low carbon society

To prevent global warming, we aim to realize a low carbon society by cutting down on $CO_2$ emission from our business activities, while at the same time spread the use of ICT services to contribute to $CO_2$ reduction in the entire society.

### 2. Formation of a circulating society

To make effective use of limited resources, we aim to realize the formation of a resource-circulating society by reducing all wastes generated from our business activities as well as cutting down on paper use.

### 3. Conservation of biodiversity

To contribute to the conservation of biodiversity, we aim to improve and further develop our existing efforts based on the concept of the two newly-formulated approaches.

Figure 1 「THE GREEN VISION 2020」


NTT West is also working to achieve the targets for the three environmental themes based on the three actions of “Green of ICT,” “Green by ICT,” and “Green with Team NTT.”

NTT West Group has established the “Environmental Grand Design,” which sets forth, in particular, targets for power usage reduction, paper usage reduction, and final waste disposal rate, in order to realize a low carbon society and form a recycling-oriented society.

The targets to achieve by FY 2020, which are set forth in the Environmental Grand Design, are as follows.

## Environmental Grand Design

### Global Warming Countermeasures

To reduce total $CO_2$ emission by 2020 by 40%[*1] compared to FY 2008.

(Reference)

$CO_2$ emission in FY 2008 was 910,000 t.[*2]

### Reduction of Paper Resources

To reduce total paper usage by 2020 by at least 40% compared to FY 2008

(Reference)

Total paper usage in FY 2008 was 39,900 t

To reduce office paper usage per head by FY 2015 by at least 50% compared to FY 2008.

(Reference)

Office paper usage per head in FY 2008 was 9,900 sheets

### Reduction of Wastes

To achieve a total final disposal rate of 1.0% for all wastes by FY 2020 (zero emission[*3])

(Reference)

Final disposal rate in FY 2008 was 2.1%.

To maintain the final disposal rate for wastes from dismantled telecommunication facilities at 0.1%.

*1 Calculation is based on the target emission coefficient of 0.33 kg/kWh to achieve by FY 2020, which was announced by the Federation of Electric Power Companies of Japan prior to the Great East Japan Earthquake.

*2 The target value may be subject to change following any changes in the emission coefficient due to impact of the said earthquake. Performance in FY 2008 is calculated based on the emission coefficient of 0.44 kg/kWh announced by the Federation of Electric Power Companies of Japan.

*3 Proposed by the United Nations University, this is a concept that aims at production that does not generate wastes on the whole by utilizing all wastes and byproducts generated by an industry as resources for another industry. NTT West Group defines zero emission as a final disposal rate of 1.0% or lower.

We have implemented a wide variety of endeavors to help achieve the targets set forth in the Environmental Grand Design.

## Reduction of Power Use

NTT West Group is aiming to reduce power use, which has an effect on the amount of greenhouse gas emission, by promoting the five pillars of efforts as shown below.

### Streamlining of legacy equipment, etc.

To promote energy saving during renewal of old switching equipment models into new ones, and to optimize the airconditioning system in the telecommunication equipment rooms.

### Development of energy-saving IP devices

To develop energy-saving type IP devices, and promote their introduction.

### Renewal of air-conditioning and enhancement of efficiency

To renew old air-conditioners that are still running, and to ensure efficient operation of air-conditioners through thorough temperature control.

### Promotion of eco office

To promote efforts to save electricity within the offices, such as ensuring proper air-conditioner temperature setting and proper brightness of lights, and cutting down on unnecessary use of lights.

### Employment of new technologies

To utilize new technologies, such as recyclable energy including solar cells and fuel cells.

## Reduction of Paper Use

The types of paper used by NTT West Group include office paper, bills, telegrams, and phone directories.

Phone directories, in particular, consume a relatively large amount of paper. Thus, we are making efforts to cut down on paper use by ensuring thorough collection of old directories and increasing the ratio of used paper in them (p.38 to p.41).

## Reduction of Wastes

Industrial wastes generated by NTT West Group can be divided into office wastes, such as unwanted computers, furniture and fixtures, construction wastes following dismantlement of facilities such as telecommunication buildings and offices, wastes from civil engineering works following duct line and telephone tunnel works, as well as wastes from telecommunication facilities as a result of dismantling transmission cables and switching equipment. We are working to improve the final disposal rate [*4] (p.25 to p.37).

*4 Final disposal rate: the final landfill ratio that is calculated based on (final disposal amount / total amount generated).

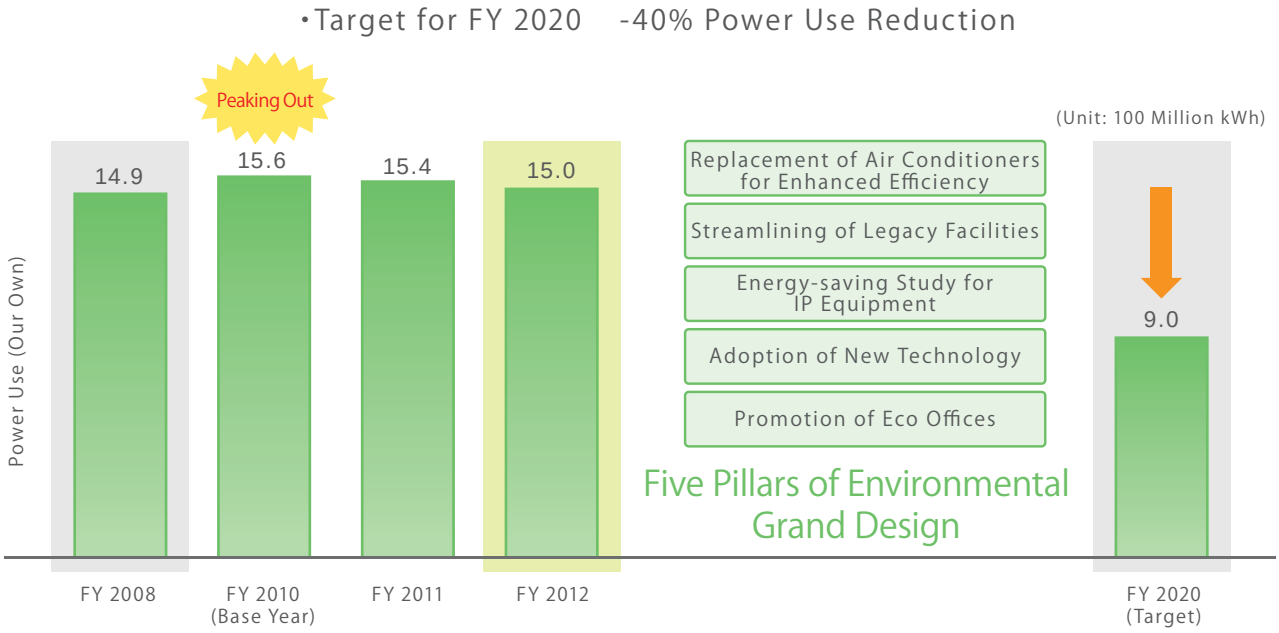
# Green NTT West Strategy

As a major energy consumer, NTT West Group formulated in June 2012 the “Green NTT West Strategy” to engage actively in power-saving and environmental conservation efforts.

## 1. Contribution to Global Warming Prevention by Reducing Our Energy Use

As a company that consumes a large volume of electricity, NTT West Group will contribute to the prevention of global warming.

More specifically, we have been promoting our efforts through the five pillars as a global warming countermeasure item of the Environmental Grand Design which aims for “reducing our energy use by at least 40% by FY 2020 compared to the FY 2010 level,” excluding the amount consumed by our customers.




## 2. Contribution to Society and the Environment by the Environmental and Energy Business

### “Eco Megane” and “Flet’s Eco Megane” – Business from “Energy Creation” and“Energy Saving” Approaches

We will contribute to society and the global environment through our operations and businesses by using ICT. For example, for energy saving in households, we can contribute to energy saving and $CO_2$ emission reduction through the visualization of power consumption. NTT West provides a cloud-based power consumption visualization service, “Flet’s Eco Megane”. In addition, there is an “Eco Megane” service that visualizes power generation by solar power panels. The provision of power generation data from solar power panels as statistical renewable energy data has started.

## 3. Contribution to the Community and Environment by Expansion of Biodiversity Conservation Activities

We contribute to the local community and natural environment protection through our efforts on the protection of local biodiversity by individual employees as representatives of our companies. More concretely, we have been implementing the “NTT West Midori Ippai Project” which mainly focuses on tree planting in cooperation with local organizations with the aim of implementing the project in all prefectures and creating an activity participation scale numbering 10 thousand people.

# NTT West Group Charter and Implementation Management Programs

NTT West Group manages the implementation of environmental protection measures based on the NTT West Group Charter for Global Environment by organizing them into implementation management programs. Among the programs, those deemed more important in terms of the influence on the environment are managed by establishing action plan targets, while indicators such as that for environmental contribution to the whole society through the ICT services we offer are managed by establishing them as part of NTT Group's vision for environmental contributions.

Correlations of Charter and Implementation Management Programs

| NTT West Group Charter for Global Environment <Fundamental Principles> | Implementation Management Programs: Establishment of specific eco-protection measure programs based on the fundamental principles of the Charter | |
|---|---|---|
| 1. Legal Compliance & Fulfillment of Social Responsibility | | |
| 2. Reduction of Environmental Load | Global-warming prevention (power use, etc.) | Action Plan Targets |
| | Industrial waste reduction (wastes from dismantling of telecommunication facilities, etc.) | Action Plan Targets |
| | Paper resource saving (quantity of pure pulp for directories, etc.) | |
| | Recycling (quantity of plastic materials, etc.) | |
| | Proper processing & management of industrial wastes (batteries, etc.) | |
| | Ozone-layer protection (discontinuing the use of halon in fire control equipment) | |
| | Green R&D and procurement | |
| | Use of clean energy | |
| 3. Establishment & Maintenance of Environmental Management System (EMS) | Support for EMS establishment at branch offices, etc. | |
| 4. Dissemination of Eco Technologies | Contribution to whole society through offering ICT services | NTT Group Vision for Environmental Contributions |
| | Development & provision of eco-friendly products (telecommunication equipment, etc.) | NTT Group Vision for Environmental Contributions |
| 5. Contributions via Social Support | Clean environment mission (cleaning activities for regional environment) | |
| 6. Disclosure of Environment-related Information | Issuance of environmental reports and release of other environment-related information | |
| 7. Preservation of Biodiversity | Number of participants of Midori Ippai Project | |

# Details of Implementation Management Programs

The above programs are managed regularly based on the following criteria and values.

Implementation Management Programs for Protection of Global Environment

■Items on Numerical Value Management

| Measure | Implementation Management Item |
|---|---|
| Global Warming Prevention | $CO_2$ emission from use of electricity |
| | $CO_2$ emission from vehicles |
| | $CO_2$ emission from gas & fuel consumption |
| Industrial Waste Reduction | Amount of waste disposal from civil engineering works |
| | Amount of waste disposal from construction works |
| | Amount of waste disposal from dismantled telecommunication facilities |
| | Amount of waste disposal from offices |
| Paper Resource Saving | Amount of pure pulp used for directories |
| | Amount of pure pulp used for telegraph paper |
| | Amount of pure pulp used for office paper |

■Items on Recycling Quantity Management

| Measure | Implementation Management Item |
|---|---|
| Recycling | Quantity of displaced soil from civil engineering works |
| | Quantity of displaced soil from construction works |
| | Recycle quantity of plastic from dismantled telecommunication facilities |
| | Recycle quantity of small secondary batteries for telecommunication equipment |
| | Quantity of polystyrene foam used for packagings |

■Items on Proper Processing Management

| Measure | Implementation Management Item |
|---|---|
| Proper Processing & Management of Wastes | Control of products with PCB content |
| | Remaining amount of asbestos in bridge support |
| | Proper processing of disposed telecommunication equipment |
| | Proper processing of disposed batteries |
| | Proper processing of medical wastes |
| Ozone Layer Protection | Discontinued use of halon for fire control equipment |

■Items on Progress Management

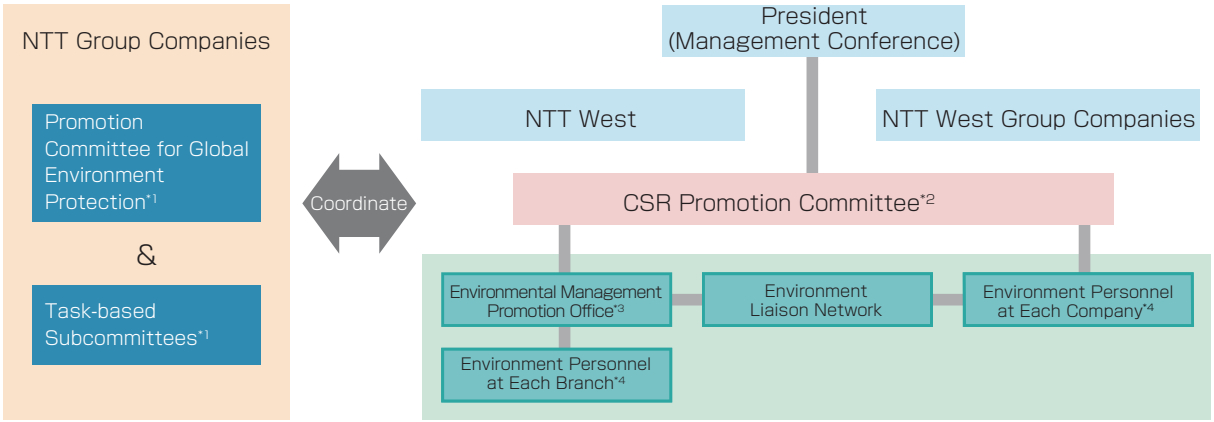
| Implementation Management Item |
|---|
| Green R&D and procurement |
| Use of clean energy |
| Development & provision of eco-friendly products (telecommunication equipment, etc.) |
| Clean environment mission (cleaning activities for regional environment) |
| Promotion of social contributions |
| Support for establishment of EMS at branch offices, etc. |
| Coordination with group companies |
| Issuance of environmental reports and release of other environment-related information |

# Environmental Protection Promotion System

The CSR Promotion Committee was established under NTT West' s management conference for conducting deliberations on the formulation of environmental policies and environmental protection measures for the entire NTT West Group. Decisions by the committee are conveyed to the whole NTT West group through NTT West Environmental Management Promotion Office and the personnel-in-charge for environmental issues at each group company.

Coordinating with NTT Group (holding company) and group companies like NTT East, NTT Communications, NTT Data, NTT Docomo, and NTT Facilities, we have built a system for promoting environmental protection as a group by sharing the latest trends, examining measures jointly, and reviewing progress toward achieving the target with regard to each task.

Environmental Protection Promotion System




*1 Decide, manage and review NTT Group's environmental policies and measures for each task.

*2 Establishes basic principles in NTT West Group's promotion of CSR, and strive to ensure a consistent stance at the management level.

*3 Coordinates with the Promotion Committee for Global Environment Protection of NTT Group (holding company) to study the environmental policies and measures of NTT West Group, and to apply them to NTT West group companies as well as manage the application.

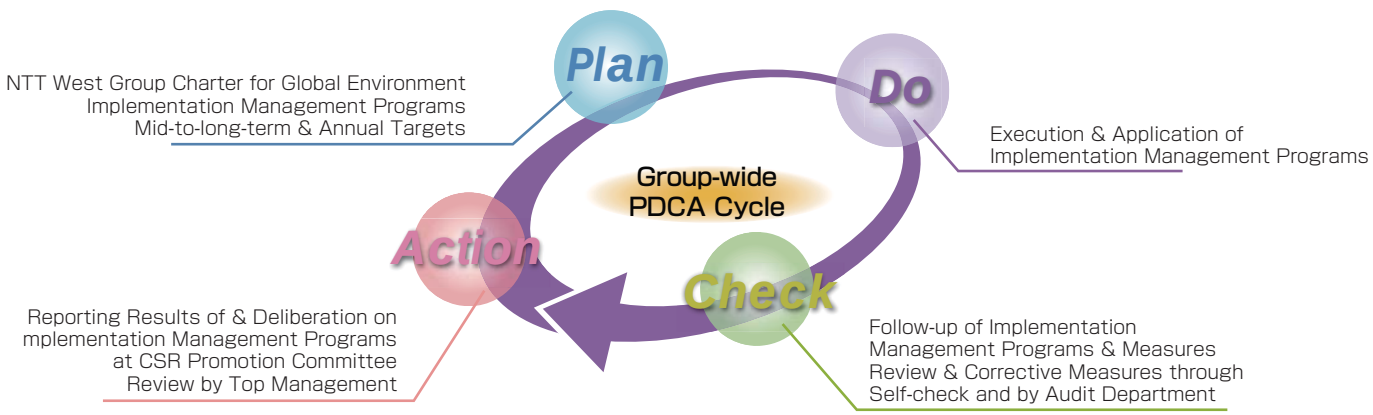
*4 Promote the implementation of environmental measures at each of the branches and NTT West Group companies.

# System of Implementation Management and Acquisition of ISO 14001

During implementation of the management programs related to the entire NTT West Group, NTT BUSINESS ASSOCIE Co.,Ltd is also included to make our Plan-Do-Check-Act (PDCA) cycle a truly group-wide effort (Figure 1).

As of FY 2012, a total of 16 sections (branches, regional companies, etc.), including two sections at the head office, have obtained the ISO 14001 certification. We will continue to improve our environmental management system in future.

Figure 1: Group-wide PDCA Cycle



# NTT West Group's Business Activities and Environmental Laws

The following list shows the major laws and regulations for which the business activities of NTT West Group are subject to.

Environmental Laws and Regulations Related to Business Activities

| | Major Laws & Regulations | Wastes Generated from NTT West Group's Business Activities |
|---|---|---|
| Wastes/ Recycling | Wastes Disposal and Public Cleansing Law | · Wastes from dismantled telecommunication facilities<br>· Wastes generated from construction works<br>· Wastes generated from civil engineering works<br>· Wastes generated from office activities<br>· Medical wastes generated from hospitals<br>· Asbestos used in fire-resistant materials of bridge pipes & cables, etc. |
| | Law for Promotion of Effective Utilization of Resources | · Small secondary batteries used for information terminals, etc. |
| | Construction Materials Recycling Law (Law Concerning Recycling of Materials from Construction Work) | · Wastes generated from construction works<br>· Wastes generated from civil engineering works, etc. |
| | Containers and Packaging Recycling Law (Law for Promotion of Sorted Collection and Recycling of Containers and Packaging) | Polystyrene foam, plastic bags, wrapping paper for packaging information terminals |
| | Act on Promoting Green Purchasing (Law Concerning the Promotion of Procurement of Eco-friendly Goods and Services by the State, etc.) | Procurement of office supplies, etc |
| Energy & Global Environment | Energy Saving Act (Law Regarding the Rationalization of Energy Use) | · Electricity & gas consumed at telecommunication facilities & offices<br>· Goods & facilities transported in business activities |
| | Ozone Layer Protection Act (Act for Protection of the Ozone Layer through the Control of Specified Substances, etc.) | · Halon used for fire control equipment at buildings<br>· Old-type air-conditioners used in company vehicles, etc |
| | Fluorocarbons Recovery and Destruction Law (Law Concerning the Recovery and Destruction of Fluorocarbons) | Old-type air-conditioners used in company vehicles, etc. |
| Chemical Substances | Act on Special Measures Concerning the Proper Treatment of Polychlorinated Biphenyl Waste | Electrical equipment (fluorescent ballasts, transformers, capacitors, etc.) |
| Air Pollution | Automobile NOx PM Control Law (Law Concerning Special Measures for Total Emission Reduction of Nitrogen Oxides and Particulate Matters) | Exhaust gas from use of company vehicles |
| | Air Pollution Control Law | Exhaust gas from boilers installed in buildings, etc. |

# Environmental Audit

## Self-check

Each relevant section conducts an annual self-check on compliance with the environmental laws, progress of the implementation management programs, and the degree of establishment of environmental protection activities.

The items for this self-check, which are classified into three levels as follows, are subject to an annual review by the responsible sections according to amendments of the relevant laws and internal regulations.

A. Matters related to laws and administrative directives

B. Matters related to internal regulations

C. Other matters to be implemented

## Environmental Audit by Audit Department

With the environmental laws and regulations becoming stricter each year, our Audit Department performs an environmental audit on environment-related operations that particularly require legal compliance. Unlike the self-check, this audit is objectively conducted by auditors from specialized organizations, and plays the additional role of verifying the effectiveness of the self-check.

# Environmental Audit Results

During the audit conducted in FY 2012, one minor case was brought to attention, which was subsequently corrected. No administrativepenalty or fine was imposed for violation of the environmental laws.

# Progress of Company-wide Environmental Management in FY 2012

Since FY 2012, along with reporting on our environmental protection activities to a CSR Committee, the following progress situation of the Environmental Grand Design is reported to management every quarter, and discussions are held for further improvement. The results are disseminated to the entire NTT West Group through the employees of the Group companies who are responsible for the activities.

These efforts realized 0.9% of our final waste disposal rate for the first time in FY 2012, and we achieved zero emissions.

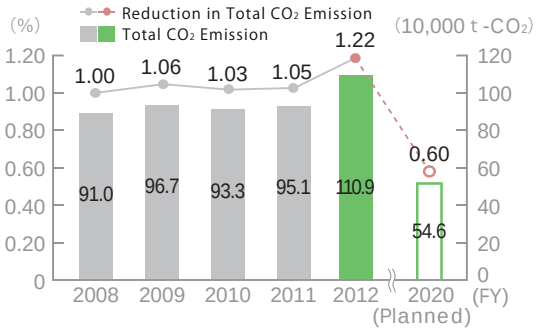
# Progress of Environmental Grand Design

## Global Warming Countermeasures

The contributing factors of $CO_2$ emission at NTT West Group are our use of power, company vehicles and fuel (gas and oil). Among these, power use is the largest emission source.

While a comparison with FY 2011 shows a decrease in our power use in FY 2012, $CO_2$ emission went up due to a rise in the emission coefficient following the stoppage of the nuclear plants.

Total $CO_2$ Emission



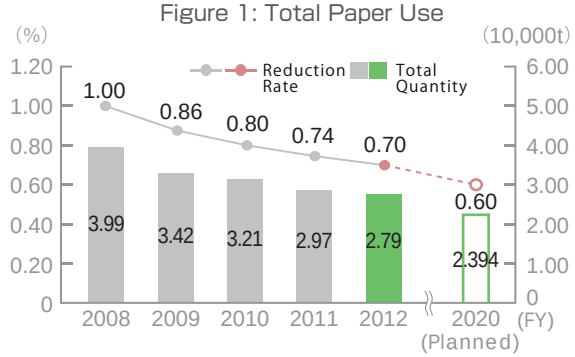

## Reduction of Paper Use

NTT West Group uses paper for phone directories, bills, office work and telegraphs.

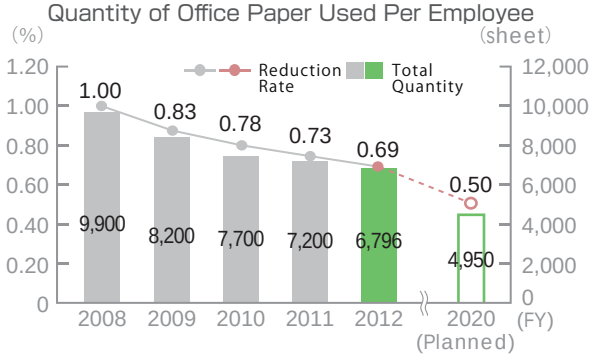
The total amount of paper used during FY 2012 was 27,900 tons (Figure 1), of which 22,700 tons (city life guide 1,300 tons as mentioned elsewhere) were used for directories, while for bills, office work, and telegraphs, we consumed 2,600, 2,200 and 400 tons respectively.

Besides being committed to paperless meetings and making thorough and systematic efforts to reduce paper use within the company, we are also promoting a web-based paperless billing service, My Billing, with understanding and support from our customers.

Figure 1: Total Paper Use




Quantity of Office Paper Used Per Employee



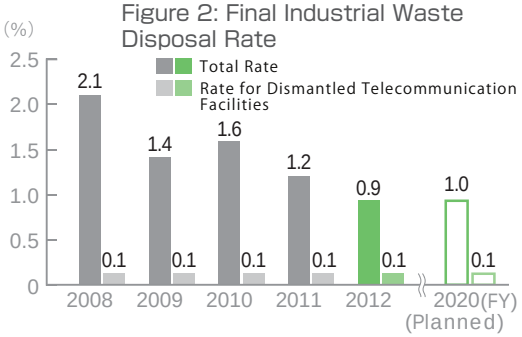

## Reduction of Final Waste Disposal Rate

Industrial wastes are generated mainly from dismantled telecommunication facilities, civil engineering projects, construction projects, and office work.

The final industrial waste disposal rate for FY 2012 was 0.9% (Figure 2), and we achieved zero emissions for the first time. For the breakdown, 0.03% was from dismantled telecommunication facilities while civil engineering projects, construction projects, and office work generated 1.1%, 2.1%, and 1.2% respectively.

While the rate for dismantled telecommunication facilities was low, that of officework was comparatively high. Because of this reason, we keep in mind to procure environmentally-friendly office supplies that can be easily reused or recycled.

Figure 2: Final Industrial Waste Disposal Rate



NTT West Group currently conducts training sessions to increase the eco awareness among our employees.

## 1.Environmental Self-check Seminars

NTT West Group holds environmental self-check seminars for the personnel who are in charge of conducting self-checks (Page 17) at each section.

Being a part of the overall environmental education, the seminars are designed not only to enable participants to learn the skills for performing self-check, but also to familiarize them with the relevant environmental laws and related social trends as well as enhance their awareness toward activities for protecting the environment. In FY 2012, 173 employees participated in the seminars. Since FY 2006, the seminars have been held in the form of distant training to help ease the burden on the environment.

Environmental Self-check Seminar

## 2.Training Sessions for Environmental Protection

In order to develop awareness in each employee of NTT West Group toward activities for environmental protection, we conducted web-based training sessions on environmental protection to about 80,000 employees.

In addition to conveying the importance of environmental measures, the sessions have designed action plans for each employee through acquiring knowledge such as that on NTT West Group's approach toward environmental management.

Environmental Protection Training Material

## 3.Midori Ippai Project Training

FY 2012 environmental education sessions for our environmental personnel were held on February 21 and 22 in Okunotani (Satoyama Conservation Field), Tondabayashi City, Osaka Prefecture.

For the purpose of understanding the efforts for biodiversity conservation and the activities as a corporation, 2 lecture sessions and a hands-on satoyama conservation activity experience as well as a group discussion for carrying out the activities as one from now on were held for 2 days.

A lecture was given by Yoshihiro Natsuhara. Natsuhara is a Professor, Graduate School of Environmental Studies, Nagoya University, and he is also Head of the Nature Conservation Society of Osaka ("Nature Osaka") that assists us with activities in "Kyosei no mori" (Forest of co-existence) in Sakai City, Osaka Prefecture. The lecture was entitled, "What is biodiversity?," and the importance of working on the respective issues of each area, living creatures, and people as well as the impact on society from drastic changes in ecosystems were addressed.

In addition, in the Satoyama Conservation Field, Takeo Tabuchi, president of the Nature Conservation Association for Tondabayashi, explained the nature of satoyama such as biotopes, living creatures in fields and rice fields, bamboo invasion, forests, etc. while actually observing these examples in the satoyama.

Regarding activities as a corporation, a lecture was given by Tetsuya Maruo and Sadayoshi Hishikawa from TSU.NA.GO Research Institute which conducts environmental campaigns mainly in Lake Biwa in Shiga Prefecture and facilitates between NPOs, corporations, and residents in each area. In the lecture titled, "'Biodiversity' in NTT West," in addition to an introduction on the activities of the NTT Group in Shiga beginning from reed mowing, it was explained that what is important in environmental conservation activities and activities to contribute to society is for respective participants to utilize their strengths. In the lecture, recent trends in social networks and business through the social contribution of emotional value creation were discussed as well.

On Day 2, a workshop on "biodiversity conservation and ICT" and a group discussion under the theme of "Toward the promotion of the Midori Ippai Project" were held to make the Midori Ippai Project better.






### Location

■ Okunotani, Tondabayashi City, Osaka Prefecture

### No. of Participants

■ 37

## Performance in FY 2012

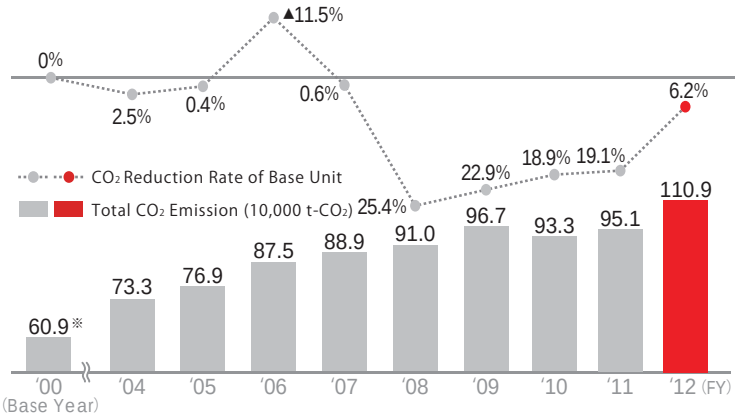
In FY 2012, we achieved a 19 million kWh reduction in energy use. However, there was a 16.6% increase in $CO_2$ emissions due to the deterioration of $CO_2$ emission coefficients.

The base unit is a 6.2% reduction compared to a standard year. (Figure 1)

* For $CO_2$ emission coefficients, until FY 2003, the official coefficient of the Federation of Electric Power Companies of Japan was used. From FY 2004 onward, the coefficients (0.378kg-$CO_2$/kWh for FY 2004 and 0.555kg-$CO_2$/kWh for FY 2005) based on the "Law Enforcement Ordinance on Promotion of Countermeasure against Global Warming" are used.
For FY 2012 and FY 2011, the coefficients on the table right are used.

| Electric power company | Actual emission coefficient kg-$CO_2$/kWh) | |
|---|---|---|
| | FY 2012 actual use value | FY 2011 actual use value |
| Tokyo Electric Power Company | 0.464 | 0.375 |
| Chubu Electric Power Co., Inc. | 0.518 | 0.473 |
| Hokuriku Electric Power Company | 0.641 | 0.423 |
| Kansai Electric Power Co., Inc. | 0.450 | 0.311 |
| Chugoku Electric Power Co., Inc. | 0.657 | 0.728 |
| Shikoku Electric Power Co., Inc. | 0.552 | 0.326 |
| Kyushu Electric Power Co., Inc. | 0.525 | 0.385 |
| Okinawa Power Company, Incorporated | 0.932 | 0.935 |
| ENNET Corporation | 0.409 | 0.409 |

Figure 1:
Change in Total $CO_2$ Emission and Its Base Unit




# Energy Saving through TPR Campaign

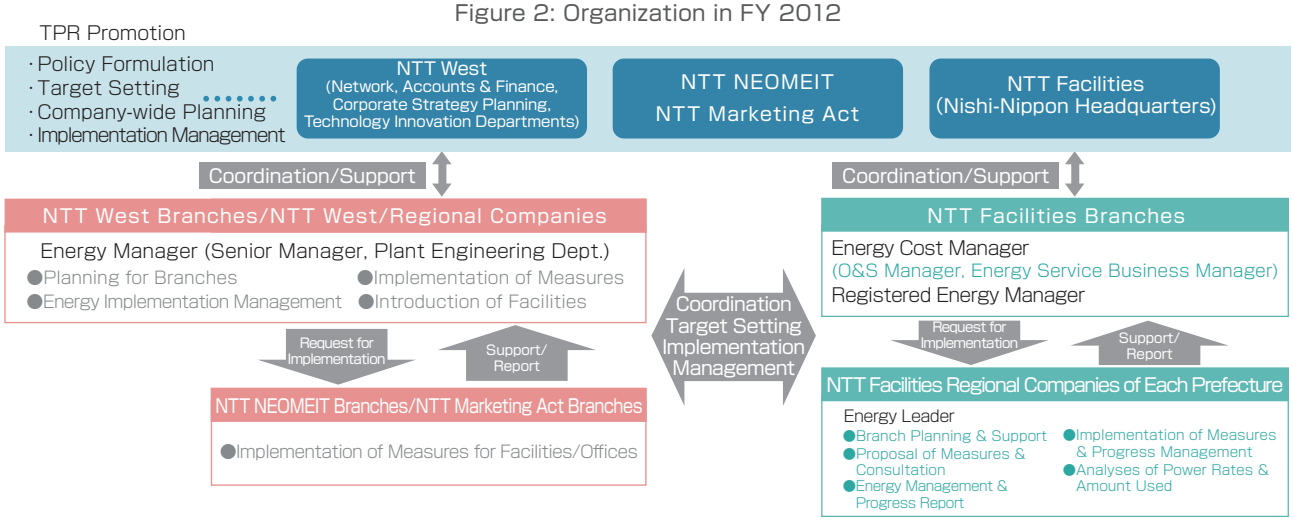
## TPR Campaign

As part of our effort to reduce the consumption of electricity, NTT West Group launched the Total Power Revolution (TPR) Campaign about 10 years ago. Back then, one of the issues was how to slow down the accelerating pace of energy consumption as a result of prolonged and high-volume network connections following the expansion of multimedia services. To resolve the issue, we expanded our scope of effort, which ranged from the establishment of facilities to their operation, to include the R&D phase. The TPR Campaign was therefore introduced to achieve collective reduction (Figure 2).

With the subsequent development of an information sharing society, there is a continuous increase in the development of highspeed and large-capacity facilities as well as the amount of energy consumed, making the importance of the TPR Campaign even greater.

The TPR Campaign is promoted with the concerted effort of all relevant departments based on the system shown below.

Figure 2: Organization in FY 2012

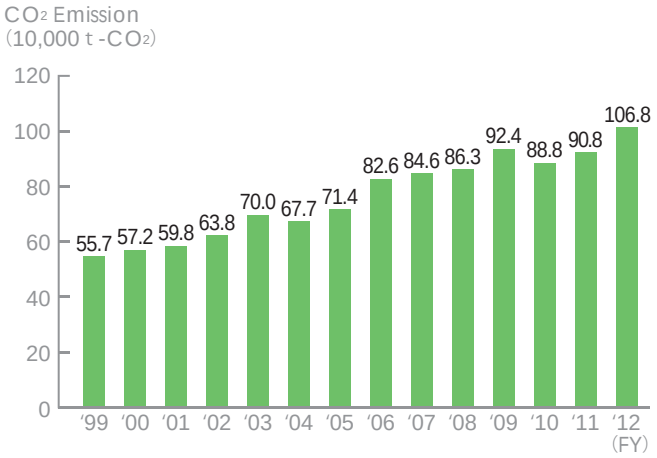


## Performance in FY 2012

In FY 2012, while the scale of our optical IP services grew, our TPR activities contributed to reducing power use by 8 million kWh. With a higher emission coefficient, our $CO_2$ mission increased by 160,000 t-$CO_2$ (Figure 3).

We will continue to promote the TPR Campaign and efficient migrations (transition to next generation) so as to lower the amount of emission.

Figure 3: $CO_2$ Emission by Power Use




## Power Saving for New Facilities

### DC Power Supply

Efficient power supply to ICT equipment is able to attain equally effective energy-saving results as reducing the power consumption needed for ICT equipment, such as routers and servers, or enhancing the efficiency of the air-conditioning system. Being a power-saving system with fewer conversions than an AC supply, a DC power supply can help reduce power consumption by about 15% (including that for air-conditioning). It has been adopted in existing telecommunication systems, and 96% of the NGN facilities also support DC supply.

As there are very few servers and storage systems that support DC power supply, we are now encouraging our vendors to expand the lineup of compatible products.

### Introduction of High-efficiency Facilities

In addition to upgrading the facilities for our new services, we are also implementing a systematic conversion of digital telephone switches to power-saving models.

## Improving Efficiency of Existing Facilities

Increasing the efficiency of existing facilities is fundamental in advancing energy conservation. We are making everyday efforts to improve the utilization rate of facilities and enhance the efficiency of air-conditioning systems by consolidating the telecommunication facilities and power supply systems, as well as rationalizing the number of the units and packages.

### Improving Air-conditioning Efficiency

For proper application of telecommunication facilities, the telecommunication equipment rooms are air-conditioned all year round.

We are keeping a close watch particularly on the maintenance and improvement of air-conditioning efficiency, as a vast amount of electricity is required to power the airconditioning system.

Firstly, we are making company-wide efforts to optimize the thermal environment in the equipment rooms, such as by controlling the air flow to improve the efficiency of coolair supply to areas that emit a large amount of heat, as well as to enhance the recovery efficiency of heat generated from the telecommunication facilities. These efforts make it possible for us to further reduce electricity consumption by the air-conditioning system, while maintaining the stability of the telecommunication services. Secondly, to minimize a drop in the cooling efficiency of equipment, the outdoor units and filters of the air conditioning system are regularly cleaned.

Since FY 2005, the entire NTT West Group has come together to implement power-saving measures to help prevent global warming. These include thorough efforts to maintain the air-conditioning temperature at 28°C in summer and 20°C in winter.

## Main Approaches

### 1. Strict Control of Room Temperature

NTT West Group is making thorough efforts to maintain the air-conditioning temperature setting at 28°C in summer and 20°C in winter.

By doing so, annual power use is expected to reduce by about 7.5 million kWh. This is equivalent to the amount of $CO_2$ absorbed in a year by a forest with an area that is 140 times larger than that of the Koshien Baseball Stadium.

### 2. Power-saving Measures

To enhance the awareness among our employees toward power saving, we are ensuring even more strictly the habit of turning off the lights, air-conditioner, and office equipment that are not in use.

Awareness Poster (Summer 2012)


Awareness Poster (Winter 2012)

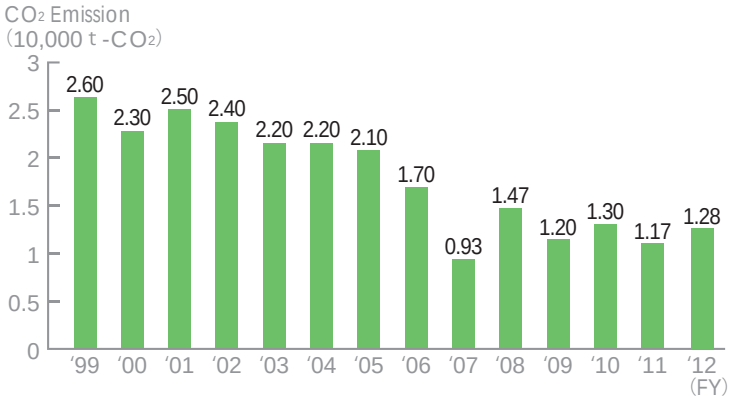

# Reduction of Gas & Oil Fuel Consumption

## Performance in FY 2012

In FY 2012, the amount of $CO_2$ emission from gas fuel (mainly for cogeneration systems) and oil fuel (mainly for boilers) at the main buildings owned by NTT West Group was 12,800 t-$CO_2$ (compared to about 11,700 t-$CO_2$ in the previous fiscal year) (Figure 4).

We will continue our effort to further reduce the consumption of gas and oil.

Figure 4:
Change in $CO_2$ Emission from Gas and Oil Fuel



# Reduction of $CO_2$ Emission from Company Vehicles

## Performance in FY 2012

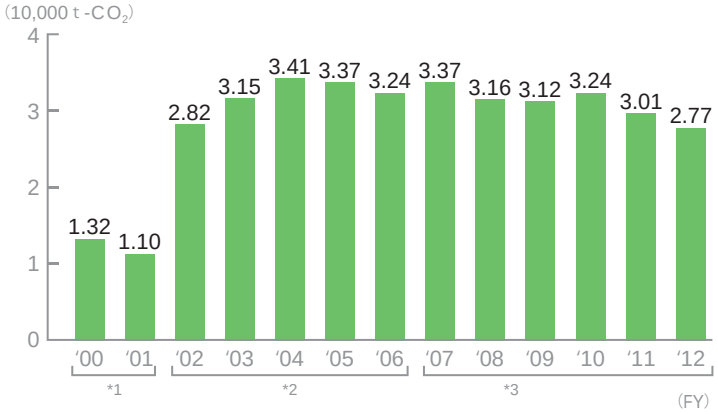
In order to bring down the amount of $CO_2$ emission from the company vehicles, NTT West Group has launched an “Eco Drive” as described below. We are also taking the initiative to rationalize the number of vehicles and introduce fuel-efficient and low-emission vehicles. In FY 2012, the amount of $CO_2$ emission from our company vehicles was 27,700 t-$CO_2$ (Figure 5).

*1 NTT West up to 2001

*2 NTT NEOMEIT and NTT Marketing Act included from FY 2002

*3 39 NTT West Group companies and NTT BUSINESS ASSOCIE Co.,Ltd from FY 2007

Figure 5: $CO_2$ Emission from Company Vehicles




## Eco Drive

NTT West Group owns about 14,000 vehicles. To reduce the $CO_2$ emission from these vehicles, we launched the “Eco Drive”in FY 2004, which added information on new ecofriendly driving techniques to the preexisting “Idling Stop Campaign.” (Figure 6)

As part of the measures to further enhance the awareness of our employees, we are putting in efforts to participate in the “Eco Drive Declaration” campaign organized by the Japan Automobile Federation (JAF).

Figure 6: Manual for Eco Drive

## Overview

Facilities and equipment such as cables and telephone switches are necessary for the telecommunication services we offer to our customers.

They are dismantled for upgrading, such as upon reaching the end of life or for making functional improvements, and subsequently treated as wastes.

In addition to setting a mid-to-long term target "to achieve a final disposal rate of 1.0% (zero emission*) by FY 2020," NTT West Group has been making efforts toward the following targets for FY 2012.

(1) To reduce the final disposal rate for dismantled telecommunication facilities to 0.1% and below

(2) To reduce the final disposal rate for civil engineering projects to 1.2% and below

(3) To reduce the final disposal rate for construction projects to 2.1% and below

(4) To reduce the final disposal rate for office work to 5.0% and below

(5) To reduce the total final disposal rate for FY 2012 to 1.4% and below

* Zero emission

Proposed by the United Nations University, this is a concept that aims at production that does not generate wastes on the whole by utilizing all wastes and by-products generated by an industry as resources for another industry. NTT West Group defines zero emission as a final total amount of non-recycled wastes that is 1.0% or lower.

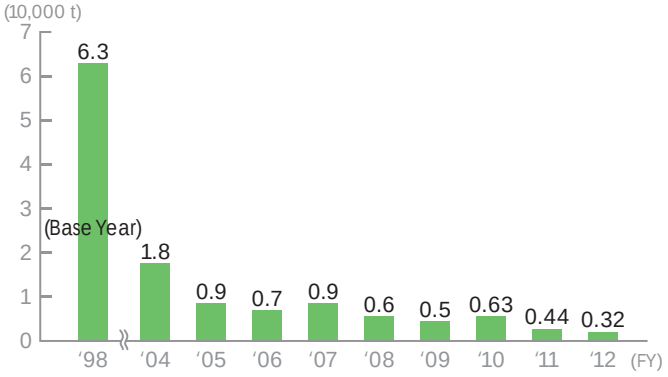
### Performance in FY 2012

Our performance in FY 2012 toward meeting the target set for the year was steady, achieving a reduction of 1,000 tons (Figure 1) compared to the previous fiscal year, and a final disposal rate of 0.9% against our target of 1.4%.

For the breakdown, 0.03% was from dismantled telecommunication facilities while civil engineering projects, construction projects, and office work generated 1.1%, 2.1%, and 1.2% respectively.

* Industrial wastes include wastes generated from dismantled telecommunication facilities, civil engineering and construction works, and also offices.

Figure 1: Final Total Amount of Industrial Wastes*




# Proper Handling and Reduction of Dismantled Facilities

Instead of simply disposing dismantled facilities, we have implemented the three Rs: Reduce, Reuse and Recycle to further reduce the final total amount of wastes.

### Performance in FY 2012

Though the telecommunication facilities dismantled in FY 2012 amounted to as much as 135,800 tons, 135,700 tons of which was recycled, leaving a final disposal amount of 100 tons (Figure 2 and Figure 3 on Page 26).

Thanks to the thorough instructions provided by our branches and regional companies to the waste disposal companies as well as the effort of the disposal companies, an overall recycling rate of 99.9% was achieved. Meanwhile, the recycling rate for plastic materials from terminal equipment was 99.7% (Figure 6 on Page 28). We will make more effort to improve the slightly lower rate for plastic wastes so as to maintain the zero emission rate.

Figure 2:
Final Total Amount of Wastes from Dismantled Facilities

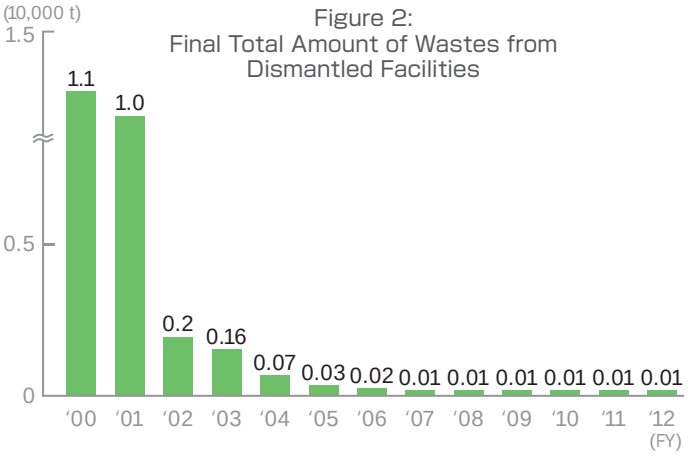
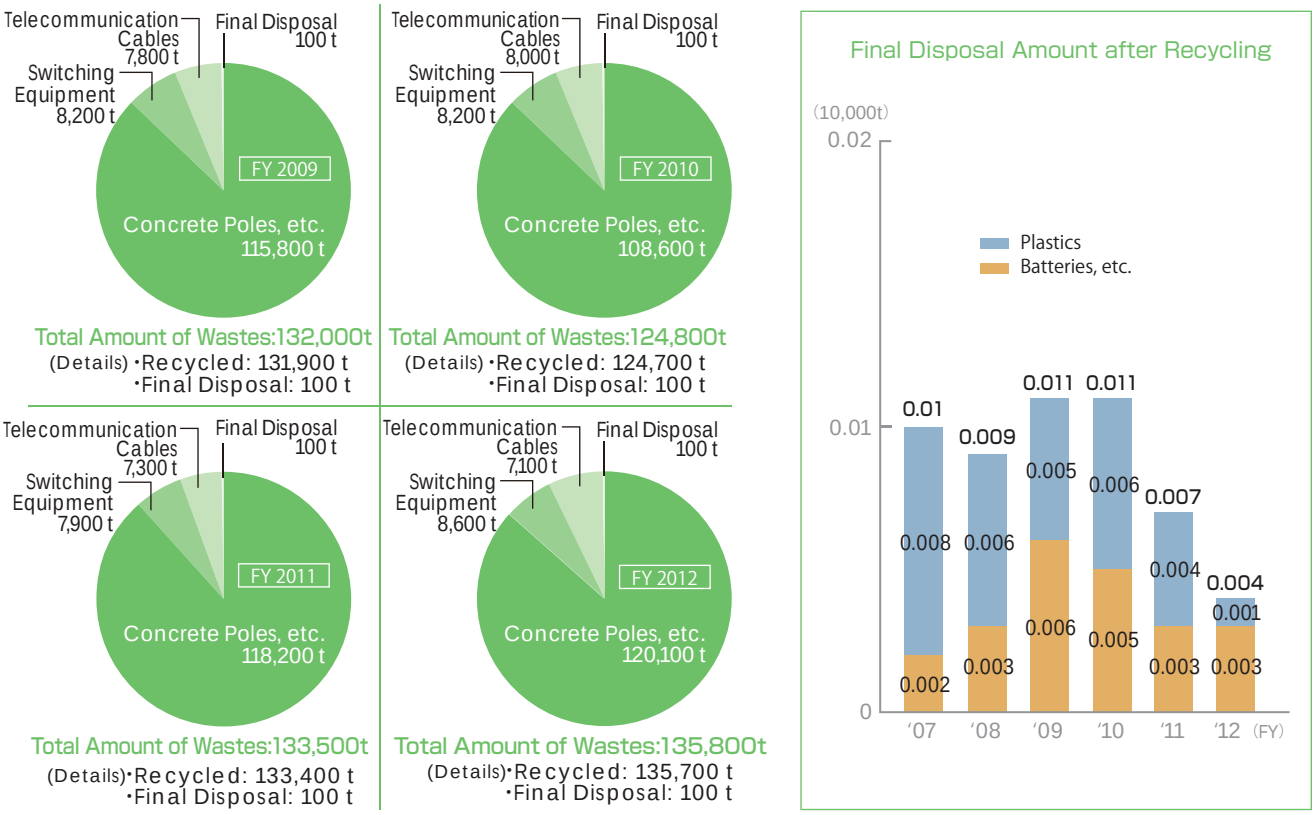


Figure 3: Total Amount of Wastes from Dismantled Facilities and Final Disposal Amount




## Industrial Waste Subject to Special Control

A type of waste that is subject to special control* is batteries for emergency power supply, such as those used in telephone switches. All waste types that require special control are handled according to the laws by the assigned managers at every branch. While the total amount of such wastes generated in FY 2012 was 3,693.0 t, recycling of the lead polar plates and plastic housings helped to reduce the final disposal amount to 9.9 t.

* The Waste Disposal Law defines "explosive, toxic or infectious wastes that may cause damage to people's health or the living environment" as general and industrial wastes subject to special control, and sets forth required disposal standards to regulate these wastes more strictly than other types of wastes.

## Proper Processing of Wastes from Dismantled Facilities

In order to offer telecommunication services, we make use of many kinds of facilities and equipment, including telecommunication cables and telephone switches. During upgrading of the facilities following the introduction of new services, dismantling works for the existing facilities take place.

The recyclable parts of the dismantled facilities are reused, and when reuse is impossible, we will select qualified companies for waste disposal and outsource disposal of parts that are not reusable to them upon strictly assessing the companies' past records, handling capacity, and costs of disposal.

Moreover, we require the selected disposal companies to report on dismantlement and disposal works performed in Japan. We also conduct onsite inspections from time to time to ensure that the works are being performed properly (Figures 4 and 5 on Page 27).

Figure 4: Flow from Dismantlement of Facilities to Recycling/Disposal

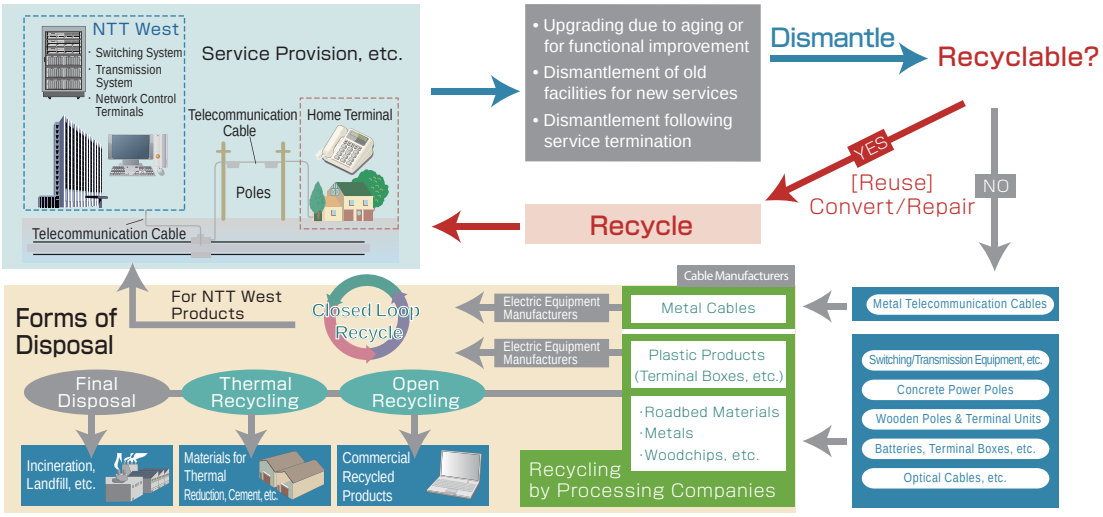
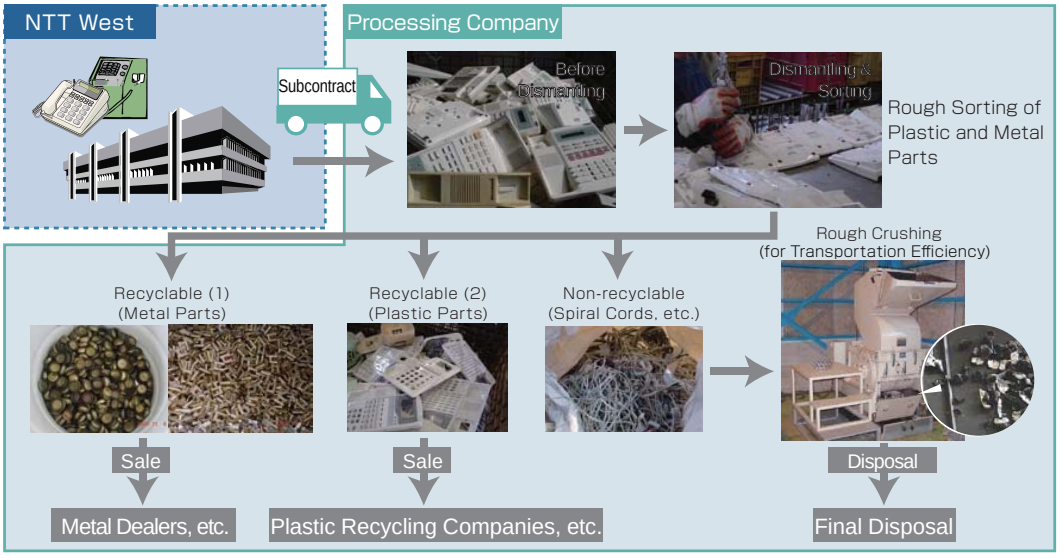



Figure 5: Processing Flow of Terminal Units (Telephones, etc.)




## Electronic Management of Waste Disposal

In FY 2001, we introduced to the entire western Japan region an electronic manifest system* for the “manifest for industrial waste,” for which its issuance by waste-producing companies is made mandatory under the Wastes Disposal and Public Cleansing Act. The electronic manifest system helps us to thoroughly manage operations from waste production to final disposal, and collect data of processing results efficiently.

* Electronic manifest system

A system that converts manifest information, which was previously paper-based, into electronic data for distribution on the Internet. It is administered by the Japan Industrial Waste Technology Center, designated by the Ministry of Health, Labor and Welfare.
Its advantages include preventing omission in the entries, and eliminating the need to store and manage the paper data for five years. Also, central control of data by the data processing center makes manifest management easier and stricter.

### Voices of Our Employees

**Akira Ichikawa**, Procurement Planning Subgroup, First Procurement Section, Procurement and Supply Center, Network Department

While taking appropriate actions during the generation of wastes, NTT West is also constantly tackling the issue as to how they can reduce the amount of the final waste disposal from the disposal of dismantled telecommunication facilities. The NTT West employees who are responsible for the disposal of dismantled telecommunication facilities request our recycling contractors to introduce detailed sorting processes and are steadily working to persuade them on the importance of efficient resources. As a result, we have been able to maintain a minimum 99% final disposal rate. I hope we can contribute to reducing the global environmental load as much as possible by examining efforts to increase closed loop recycling while maintaining the current final disposal rate.

# Recycling of Dismantled Facilities

## Promoting Recycling of Dismantled Facilities

In promoting measures for recycling, the first thing that NTT West considers is material recycle*1 into goods that it uses (closed-loop recycle). NTT West sees it as part of its responsibility to do so, and promotes such an effort as a measure for contributing toward the formation of a circulating society, which would help to overcome national issues such as depletion of natural resources and shortage of final disposal sites.

Parts of our telecommunication facilities that are not reused are recycled for various usages according to the item and material (Figure 6). While promoting recycling, we prioritize the different methods of recycling (Figure 7). In other words, NTT West first considers whether the wastes it generated can be used for material recycle to create things that it uses (closed loop recycle). When closed loop recycle is not possible, the wastes are considered for external recycle (open recycle). If open recycle is also not possible, they will be considered for use as heat sources (thermal recycle).

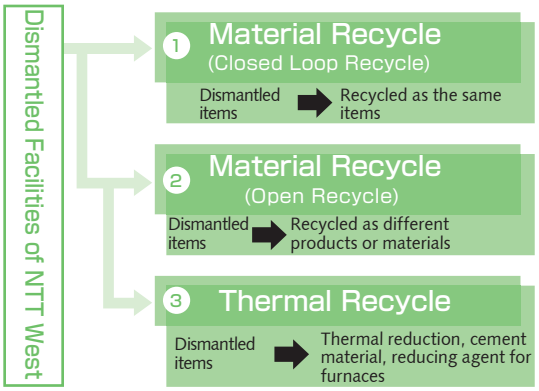
*1 Material recycle
Reusing of wastes as materials. Specifically, it refers to collecting used products or wastes generated from manufacturing processes, and processing them into readily usable forms, so that they can be utilized as materials for new products.

Figure 6: Recycling of Dismantled Facilities

| Waste Item | | Main Use after Recycling | Recycling Rate*2 |
|---|---|---|---|
| Telecommunication Cable | Metal Cable | Recycled Metal Cable Jacket for Recycled Optical Cable | 100.0% |
| | Optical Cable | Imitation Wood, Construction Material, Cement Material, Fuel | 100.0% |
| Indoor Facilities (Switching Equipment, etc.) | | Metal Material, Construction Material | 99.9% |
| Concrete Power Pole | | Roadbed Material, Metal Material | 100.0% |
| Wooden Pole | | Square Log, Board, Woodchip, Fuel | 100.0% |
| Terminal Unit, etc. | | Metal Material, Plastics, Imitation Wood, Construction Material, Fuel | 99.7% |
| Battery | | Recycled Battery | 99.7% |
| Total | | | 99.9% |

*2 Estimate

Figure 7: Recycling Method Prioritization

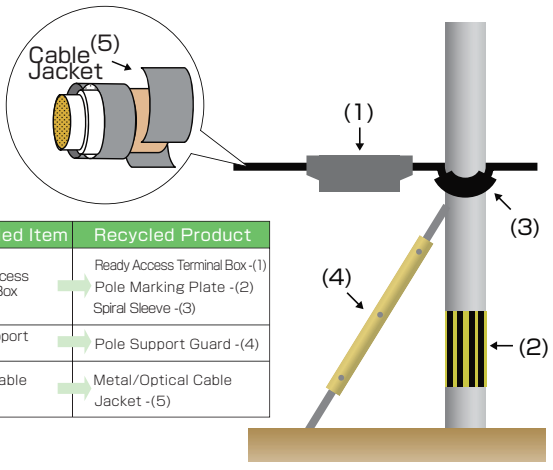



## Efforts for Closed Loop Recycle of Facilities

To resolve the national issues of depletion of natural resources and shortage of final disposal sites, we need to"implement closed roop recycling." To make it happen, NTT West takes up the promotion of recycling as part of its responsibility. As already described, in promoting recycling, it is our top priority to examine material recycle (closed loop recycle), which recycles items into the same forms for our own use.

A representative example of NTT West's material recycle is shown in Figure 8 and the following page.

Figure 8: Closed Loop Recycling of Plastic Parts




| Dismantled Item | Recycled Product |
|---|---|
| 1. Ready Access Terminal Box | Ready Access Terminal Box -(1)<br>Pole Marking Plate -(2)<br>Spiral Sleeve -(3) |
| 2. Pole Support Guard | Pole Support Guard -(4) |
| 3. Metal Cable Jacket | Metal/Optical Cable Jacket -(5) |

## Recycling of Metal Cable Jackets

For dismantled metal cables, we used to implement the closed loop recycle for only metal materials, such as the copper parts of core wires. In FY 2002, we established and started operating a circulating recycling system for the plastic parts of metal cable jackets to recycle them into the same types of jackets.

It is the first attempt in the world to build a circulating recycling system for recycling products that require a high quality standard into the same products, such as jackets for telecommunication cables. Our pioneering effort as a telecom carrier was highly rated at the 5th International Conference on EcoBalance*1.

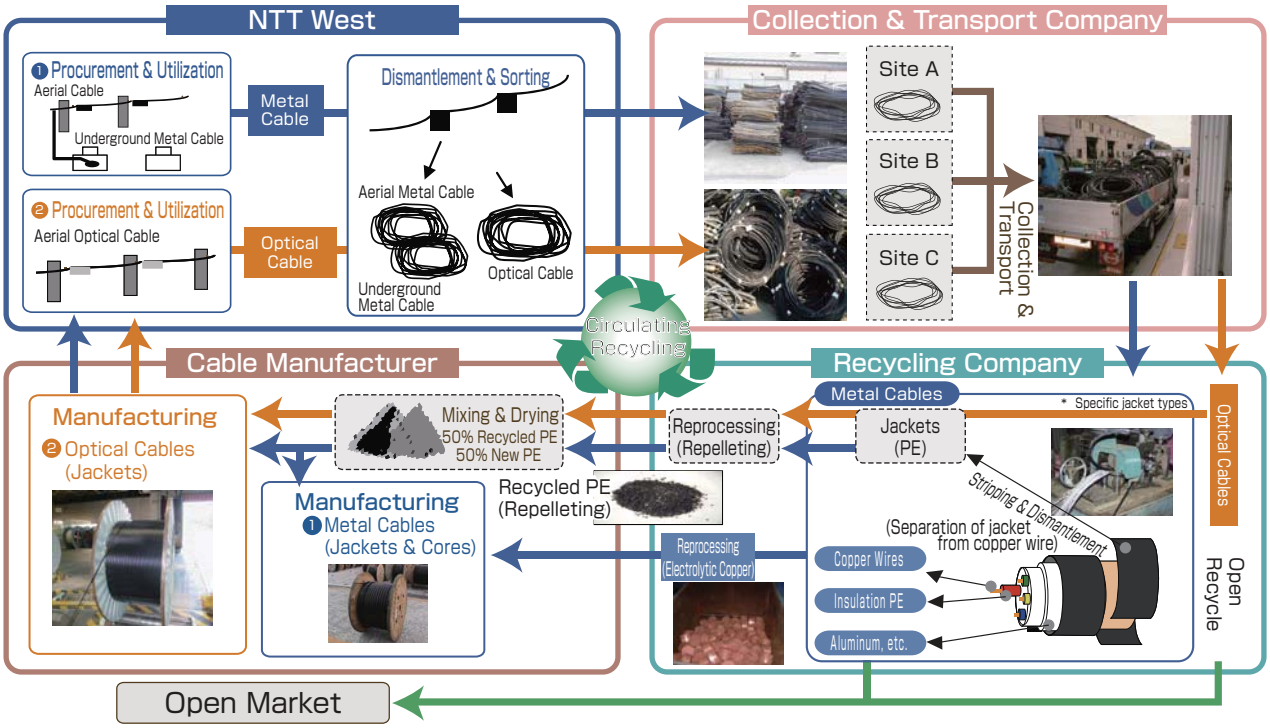
By using this know-how, we succeeded in FY 2005 in the reuse of jackets for metal cables as those for optical-fiber cables, establishing a closed loop recycling system of metal cable jackets (Figure 9).

Our recycling performance in FY 2012 was 144 t.

*1 International Conference on EcoBalance
Supported by the Ministries of Education, Culture, Sports, Science and Technology, Agriculture, Forestry and Fisheries, Economy, Trade and Industry, Land, Infrastructure, Transport and Tourism, and the Environment, this international conference focuses on the discussion of eco-harmony evaluation, including life cycle assessment (LCA)*2, and also studies on and implementation of evaluation methods. Starting from 1994, the conference has been held biennially in Tsukuba, Japan. About 450 professionals participated in the fifth meeting (6 to 8 November 2002). There were 93 overseas participants from 21 foreign countries, mainly in Europe and Asia.

*2 LCA Life Cycle Assessment
LCA attempts to measure the “cradle-to-grave” load of products on the environment quantitatively and comprehensively.

Figure 9: Closed Loop Recycle Flow of Cable Jackets




## Efforts for Closed Loop Recycle of Optical Cable Jackets

To realize a large-capacity and high-speed (broadband) telecommunication environment, NTT West is moving rapidly from the use of metal cables to optical fiber ones.

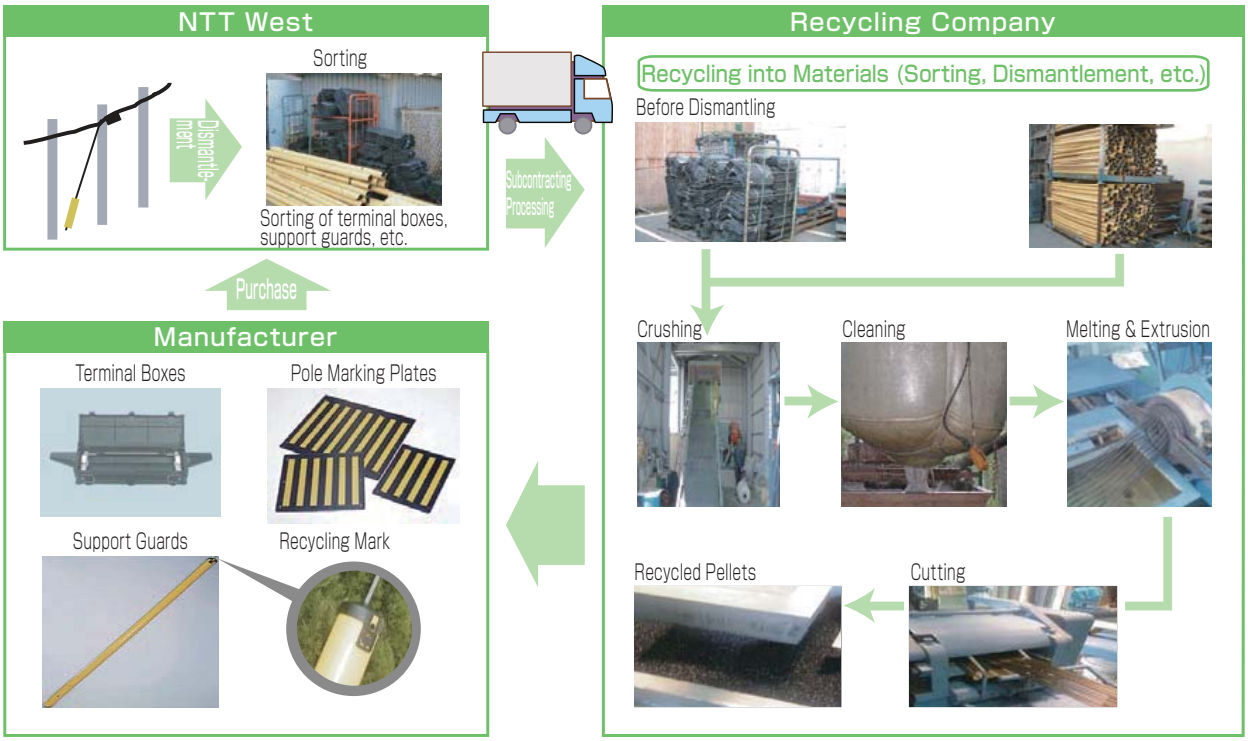
Previously, we had been cooperating with the manufacturers to implement the open recycling of wastes from dismantled optical fiber cables according to each type of material. Currently, however, we are studying the potential of establishing a circulating recycling system in which the plastic parts of dismantled optical cable jackets can be recycled into the same products.

As optical cables are structurally more complex than metal ones, sophisticated technology is required for jacket stripping. To address the anticipated increase in the amount of wastes, we hope to set up a closed loop recycle system.

## Closed Loop Recycle of Plastic Products (Terminal Boxes, Pole Support Guards, etc.)

We are currently implementing a closed loop recycling system for recycling plastic products such as terminal boxes and power pole support guards into the same products (Figure 10). Since the inauguration of NTT West in 1999 to last year, a total amount of 4,579 tons has been recycled. We are continuing our effort to expand the system further to make it possible to recycle terminal boxes for optical cables.

Figure 10: Closed Loop Recycle Flow of Plastic Products



## Topic: Reuse of Flet'sTerminal

The network services that NTT West offers require different information equipment (including ONUs, CTUs, VoIP adapters, home gateways and ADSL modems) to be installed at the customers' premises (Figure 11). Following the spread of broadband services, the number of such equipment has increased greatly. At the same time, with the advancement of high-speed and diversified services to address the needs of the customers, equipment required for a particular service is utilized for a shorter period of time due to the shorter demand cycle for services.

In response to this situation, NTT West Group is promoting the effective utilization of resources by reinforcing activities to reuse information equipment for the network services we are offering (Figure 12).

Due to reasons such as customers changing the type of services they subscribe to or moving to a different address, most equipment that are no longer needed as a result are retrieved in the "collection kit" through couriers or dismantlement works. NTT West Group cleans the collected equipment, replaces missing components, and performs thorough checks on their operation before repackaging them for reuse. The aim of these recycling actions is to reinforce our contribution to a circulating society by reducing wastes and utilizing the limited resources efficiently. In FY 2012, about 1.18 million equipment were reused (Figure 13). We will continue to advance our efforts toward protecting the environment.

Figure 11: Flet'sTerminal Equipment


Figure 13: Reuse Quantity of Flet'sTerminal Equipment, etc.

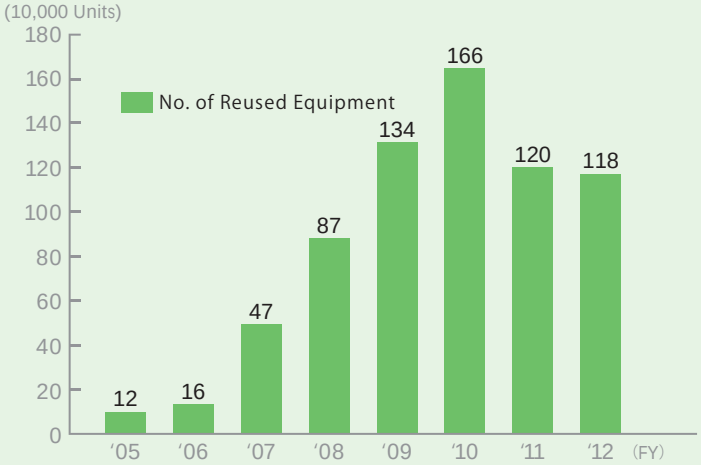
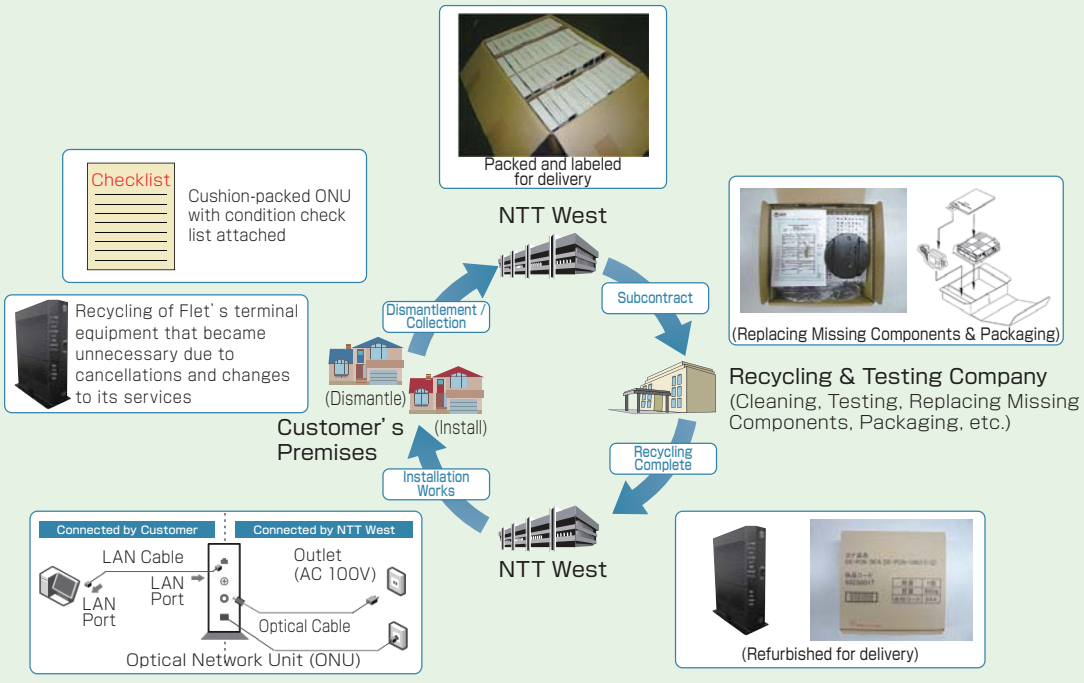



Figure 12: Reuse of Flet'sTerminal Equipment, etc.




Optical Network Unit (ONU): An equipment that is installed at the customers' premises for converting from optical fiber signal to 1000BASE-TX Ethernet ones.

# Recycling of Resources Used in Information Equipment

## Collection and Recycling of Used Rechargeable Batteries for Wireless Phones, etc.

Since the “Law for Promotion of Effective Utilization of Resources” went into effect in April 2001, awareness in the society on small secondary batteries*1 (henceforth “rechargeable batteries”), such as those used for wireless phones, has been enhanced with each manufacturer beginning to take voluntary actions such as collecting used rechargeable batteries.

A rechargeable battery contains nickel, cadmium, lithium, and other metal compounds that can be recycled In 1994, NTT West started its collection and recycling of nickel-cadmium batteries. Since April 2001, we have expanded it to nickel-hydride and lithium-ion batteries.Collecting used rechargeable batteries upon repair visits to our customers, we have been engaging in the recycling and efficient reuse of resources. In FY 2012, we collected a total of 28,000 of used rechargeable batteries.

Also, our customers can bring used batteries to any of our recycling-partner shop*2 to dispose of them into the Recycling Box (Figure 14).

For details of NTT West Group’s collection activities to promote recycling of resources used in information equipment, please visit the following websites.

**“Collection and Recycling of Used Batteries for Wireless Phones, etc.” and “Collection and Recycling of Used Toner Cartridges for Plain Paper Fax Machines”**

Website:

http://www.ntt-west.co.jp/kiki/support/eco/eco_c3.html

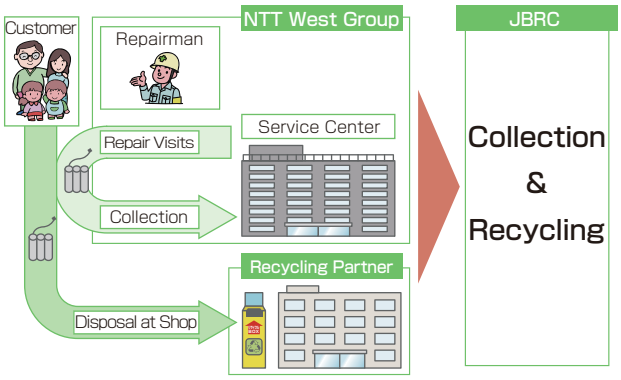
**“Collection and Recycling of Used PCs (‘Southern Cross’ PCs) from Residences”**

Website:

http://www.ntt-west.co.jp/kiki/support/southern/recycle.html

To ensure the recycling of information equipment, we have also released a “Handbook on Global Environmental Protection Activities by Sales, Equipment Works and Maintenance Personnel” as part of our in-house educational activities. At the same time, each employee who is involved in the sales, equipment works and maintenance operations of NTT West Group is also actively promoting the reuse of these equipment to help protect the global environment.

Figure 14:
Recycle Flow of Small Secondary Batteries




*1 Secondary Battery
Batteries are classified into two types, disposable primary (dry cell, lithium, etc.) and reusable secondary batteries. The secondary type can be further divided into a large type, such as those used for vehicles, and a small type for portable equipment.
<Representative Small Secondary Batteries>
Nickel-cadmium, nickel hydride, and lithium-ion batteries

*2 Recycling-partner shop
A shop that is registered as a member of the Japan Bioassay Research Center (JBRC), and assists in the collection of small secondary batteries.
The JBRC members include electrical appliance shops, supermarkets, hardware stores and bicycle shops.

## Minimizing Use of Polystyrene Foam in Equipment Packaging

From the viewpoint of protecting the global environment, we are minimizing the use of polystyrene foam, which we have been using for packaging information equipment and as a cushioning material.

We make use of polystyrene foam for packaging equipment we offer as the material possesses excellent properties: it provides fine cushion and strength to protect products against impact, can be shaped easily according to the product, and allows us to reduce transportation costs because of its lightweight.

Despite these merits, however, polystyrene foam has environmental drawbacks as, when disposed of, it cannot be readily decomposed under natural conditions.

Taking into consideration that cushioning materials for homeuse equipment are likely to be disposed of by our household customers, instead of using those made of polystyrene foam, NTT West now employs cardboards, which can be recycled easily and economically.

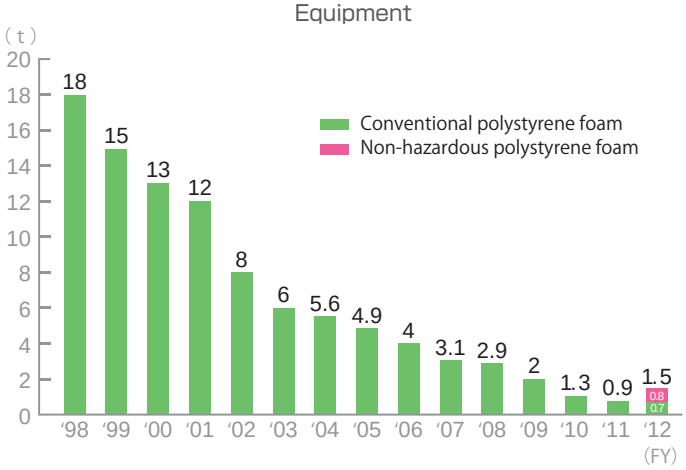
At the same time, for large products such as office-use fax machines and telephone switches, as well as precision equipment, for which there is no alternative that has the same strength as polystyrene foam, we have been reducing the amount of use, for example, by thinning the foam.

Currently, out of about 1,800 items we have on the market, approximately 98% of them do not make use of polystyrene foam packaging. In FY 2012, we have reduced its use to 0.7 t (Figure 15).

Also, during the launch of new products, we try to reduce the amount of polystyrene foam employed for packaging. For example, for the optical network products which saw an increase in shipment in recent years (about 1.13 million units in FY 2012), we have completely eliminated the use of polystyrene foam ever since the release of these products.

Complying with the mandatory recycling regulations set forth in the Containers and Packaging Recycling Act, which took effect in April 2000, recycling work is currently subcontracted to qualified companies.

Figure 15:
Use of Polystyrene Foam for Cushioning Information Equipment



# Reduction and Recycling of Wastes and Soil Generated from Civil Engineering Works

## Performance in FY 2012

NTT West Group owns underground pipes (conduits) and telephone tunnels for laying telecommunication cables. Wastes are generated from civil engineering works for their construction and expansion.

The disposal amount in FY 2012 was 1,100 tons which is the same as the previous year. (Figure 16)

Active recycling efforts were made to leverage intermediate processing in the basic wastes disposal flow (Figure 17), thereby improving the recycling rate by 0.5% to 98.9% (98.4% in FY 2011).

In FY 2013, we will continue our endeavor to reduce wastes so as to improve the recycling rate further.

Figure 16:
Disposal and Recycling of Wastes from CivilEngineering Works

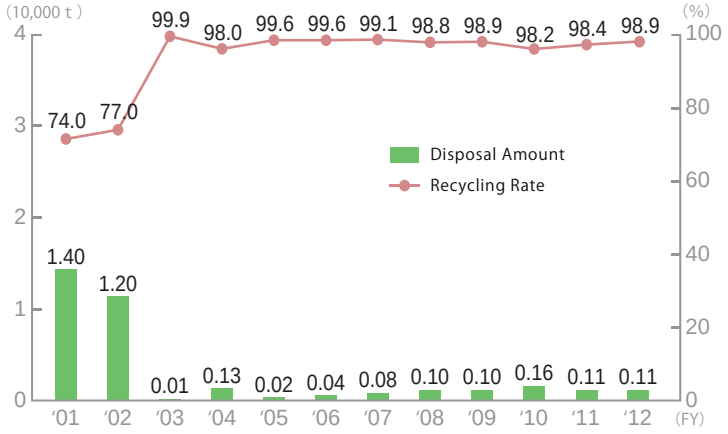



Figure 17:
Flow of Industrial Waste Disposal in Civil Engineering Works


## Recycling of Wastes and Soil Generated from Civil Engineering Works

In order to minimize the amount of wastes (concrete, asphalt sludge, etc.) and soil generated from civil engineering works, we put into practical use the pipe jacking (trenchless) method (Figure 18) as a replacement for the traditional technique of digging a trench in the road. Since FY 2001, we have been making further improvements to expand the scope of application to different types of ground.

Also, in order to cut down facility upgrading works due to aging underground ducts that we own (total of about 330,000 km), NTT West has been actively promoting efficient utilization of facilities by developing and introducing the TM lining method for renewing conduits in FY 2001 (Figure 19). Furthermore, in FY 2012, we developed the PIT Lining Method (Figure 20) that can be used even for conduits where cables are laid, and we have been promoting the effective use of facilities.

Under the Construction Material Recycling Act, which went into effect on 30 May 2002, it has become obligatory to perform dismantlement and sorting at work sites, and also recycle specific construction materials, including concrete and asphalt, for works larger than a certain size. Based on this law, NTT West duly revised the agreements with our civil engineering subcontractors, making it mandatory for them to subcontract recycling operations to intermediary processing companies. This has contributed to an increase in the recycling rate since 2003.

In FY 2012, we also instructed our civil engineering contractors to ensure that recycling of wastes inevitably generated due to the work conditions or environment are also outsourced to intermediary processing companies. Moreover, we are also making consistent efforts to make sure that the intermediary processing companies take thorough actions to achieve the recycling rate, final disposal amount, and also final recycling rate targets.

Figure 18:
Trenchless Method (Schematic Diagram)

A method for constructing conduits while generating a minimum amountof waste and soil by employing an" Acemole,"which is able to advance underground without the need to dig a trench.

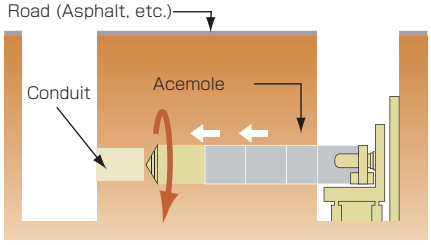



Figure 19:
TM Lining Method (Schematic Diagram)

This is a method for repairing conduits by inserting a lining material inversely into the conduit, followed by hardening the material, such as by using hot water, so that a new layer of resin film can be formed.

* "TM lining" stands for "Thick Membrane Lining."

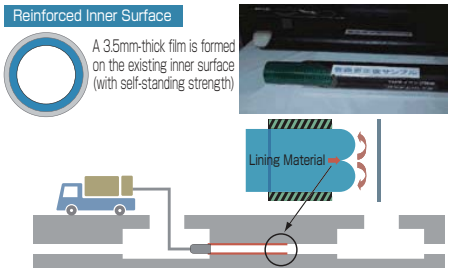
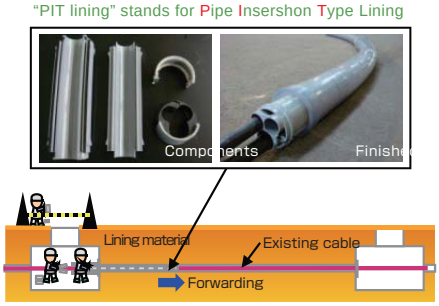



Figure 20:
PIT Lining Method (Schematic Diagram)

This is a method for securing a new space to store cable (3,000 cores) by attaching short length lining materials and inserting in a conduit while encompassing existing cables.

"PIT lining" stands for Pipe Insershon Type Lining

"PIT lining" stands for Pipe Insershon Type Lining



## Voices of Our Partner Companies

**Shin Tsuda,** Engineering Section, Engineering Department, Nagoya Branch Office, NDS CO., Ltd.

Under the current circumstances where the importance of reduction and proper handling of industrial waste has been in the spotlight in recent years, the NDS Group has been promoting environmentally-friendly activities as part of fulfilling our Corporate Social Responsibility and broadly contributing to society under our Company Concept. In this activity, we as the contractor of construction work for engineering departments of NTT West, are making the following efforts.

(1) We are carrying out reinforcement and repair work of concrete structures that also contribute to suppressing the generation of industrial waste. By implementing reinforcement and repair work, the strength and durability of the structures can be improved and lifespan can be extended. As a result, concrete waste can be reduced.
For example, in the reinforcement work of manholes, the lifetime of manholes that need to be replaced due to the increase of weight on roads can be extended by reinforcement with the sheet method and block method. In addition, we are highly conscious of looking for deterioration (cracks, water leaks, floating, separation, etc.) of manholes that are the subject of the work, and we make suggestions to our customers about repairs for deterioration at the same time as the reinforcement work. We believe appropriate maintenance like this further improves durability, which leads to a reduction in waste. We conduct similar maintenance activities for concrete structures including telephone tunnels for laying telecommunication cables.

(2) In the reduction of asphalt waste, we adopt a circular construction method in lid height adjustment and work on the sufficient rolling on roadbeds. In the circular method in the lid height adjustment, the pavement breaking area can be greatly reduced compared to the regular square construction method. Sufficient rolling on roadbeds and secure filling of sand on the periphery of pipes decreases the subsidence of the surface layer of asphalt and enables the sound paving of roads. As a result, the durability of the manholes increases, which leads to a reduction of waste.

(3) For proper handling, we manage our contracted waste hauling/processing companies according to an ISO integrated management system manual. In addition, we try to sort out recyclable discharged items with the aim of recycling in mind.

As individuals working on engineering work, we will work hard while keeping in mind that waste reduction and proper handling of waste is an action to bear the formation and promotion of a recycling-oriented society.

# Reduction and Recycling of Wastes Generated from Construction Works

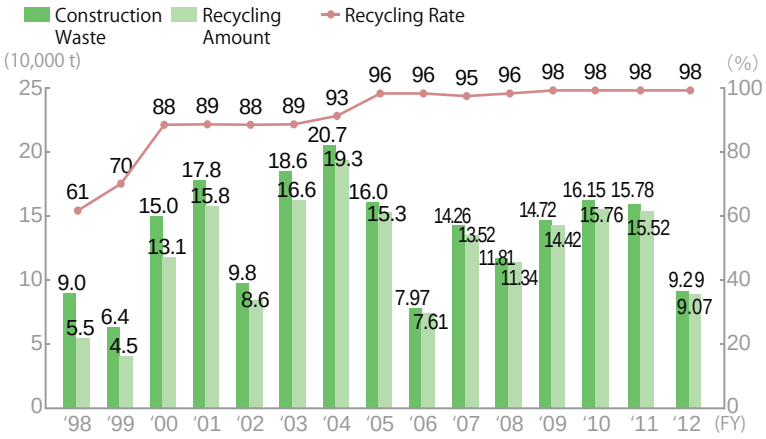
## Performance in FY 2012

As NTT West Group owns many structures including telecommunication facilities and offices, wastes are generated during their demolition, such as when the lands are sold off.

In FY 2012, the total amount of wastes from construction works decreased by 64,900 tons to 92,900 tons (157,800 tons in the previous fiscal year). We also achieved the annual recycling rate target of 98% which is the same as in previous fiscal year (Figure 21).

We will continue our effort for a better recycling rate in FY 2013 while reducing the final amount of wastes.

Figure 21:
Disposal and Recycling of Wastes from Construction Works



## Reduction of Wastes and Recycling of Soil Generated from Construction Works

NTT West is promoting the efficient utilization of recyclable resources, such as concrete mass, and minimization of wastes generated by making it obligatory for its main construction contractors to prepare plans for processing wastes. For construction works, in particular, not only do we manage the total amount of wastes generated, we make sure that recycling is being promoted regardless of any fluctuations in the total waste amount.

Taking into account our social responsibility as the outsourcer, we ensure that industrial wastes generated from all our construction works (including industrial types subject to special control) are properly processed by using the manifest system.

Although soil generated from construction works is not classified as an industrial waste, we have implemented voluntary efforts to minimize its production and set a target recycling rate.

### Voices of Our Employees

**Shin Hiraga**, Real Estate Strategy Subgroup, Real Estate Strategy Office, Account & Finance Department

In order to reduce the final disposal rate of wastes from construction works, I believe it is important to raise environmental awareness at the work site.

To this end, we are currently examining measures such as case study of model works and awarding good companies.

# Reduction and Proper Processing of Industrial Wastes at Offices

## Performance in FY 2012

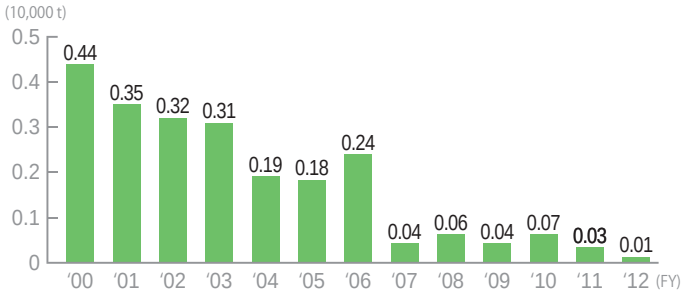
Promoting the reuse and recycling of unnecessary office computers and furniture such as desks, chairs, and bookshelves, NTT West Group aims at reducing the amount of industrial wastes generated at our offices.

In FY 2012, our thorough efforts on reusing and recycling have reduced the amount to 100 tons (Figure 22).

Industrial wastes at offices are properly handled by strictly complying with the Wastes Disposal and Public Cleansing Act. At the same time, as an industrial waste discharge company, we ensure that agreements concluded with processing companies and the administrative procedures are appropriate.

As with FY 2013, we will continue to advance our efforts to reduce wastes in FY 2012 such as by further promoting recycling, while setting targets for each office and ensuring more thorough progress management.

Figure 22:
Final Disposal Amount of Industrial Wastes at Offices




### Voices of Our Employees

**Yoshio Matsumoto**, General Affairs Subgroup (Office/Welfare), General Affairs Section, General Affairs Department.

Thanks to the recycling effort and increased awareness toward reusing, the amount of industrial wastes generated from our offices has been decreasing. However, this area is attracting much concern in the society, and I foresee that further reduction will be required under the new regulations in future.

To achieve further improvements, I will work toward creating an environment that allows each of us to think about what we can do, followed by putting them into action.

# Proper Processing of Medical Wastes

Generally, medical wastes can be divided into infectious wastes*1 and non-infectious wastes. Wastes of an infectious nature are classified as “industrial wastes subject to special control,” *2 and are subject to particularly strict storage and disposal regulations.

The medical facilities of NTT West generate medical wastes. At each medical facility, thoroughgoing efforts are made to ensure the proper processing of infectious wastes, with all employees exercising utmost care in their disposal.

*1 Infectious wastes
These wastes may contain blood, etc. and be contaminated with pathogens that may transmit infectious diseases to humans.
(Syringe needles, blood products and pathological wastes such as surgically removed human organs)

*2 Industrial wastes subject to special control
Wastes that are explosive, toxic or infectious, or those that may pose a potential hazard to human health or the living environment.
(Article 2-5 of the Wastes Disposal and Public Cleansing Act)

# Storage of Polychlorinated Biphenyl

Polychlorinated biphenyl (PCB) is a chemically stable substance that cannot be thermally decomposed readily. Because of its excellent insulation and incombustible properties, PCB has been widely used as the insulating oil for transformers and capacitors of electrical equipment, heating medium, and pressure-sensitive copying paper. However, the toxicity that PCB poses became an issue, and although its production was terminated and use minimized in 1972, not much advancement has been made on its detoxification process. To this day, the storage of PCB wastes has been entrusted to the relevant companies. For these companies, which have been storing them for many years, the detoxification of PCB wastes has become an important issue.

Under the Law Concerning Special Measures against PCB Waste, which was enacted on 15 July 2001, companies storing PCB wastes are obliged to dispose of the stored PCB wastes by 31 March 2027 on their own or by subcontracting their disposal to other parties and produce annual reports on the storage.

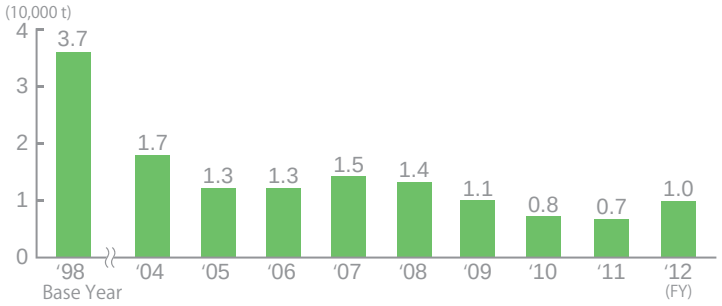
In accordance with the instructions from the Ministry of the Environment, we are performing more detailed classification of the PCB wastes to enable more appropriate management of their storage.NTT West, as a PCB-storage company, has formulated a storage guideline on the functions of the required facilities and the storage procedures to ensure appropriate storage of PCB wastes. Among the items that we store, those over 10kg were registered at an early stage with our contractor, Japan Environmental Safety Corporation (JESCO), and in FY 2012, 54 capacitors were detoxified.

In FY 2013, we will continue our detoxification efforts at the plants.

## Overview

"Reducing the total amount of pure pulp used to four tons or lower by FY 2010" was one of the medium-to-long-term action plan targets of NTT West Group. As of FY 2006, we have already substantially achieved this "target on the total amount of pure pulp." In addition, with the ratio of used paper in telephone directories, which consume a vast majority of the amount of paper, reaching its technological limit, and our offices now purchasing only recycled paper supplies, we will continue to control the amount of pure pulp used, and strive to achieve further reductions.

Total Amount of Pure Pulp Consumption



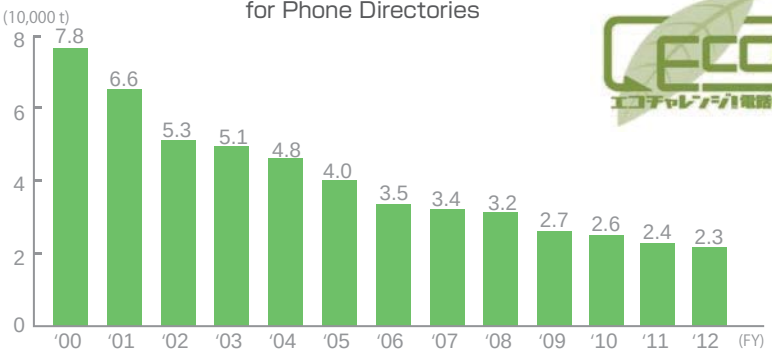

# Use of Recycled Paper for Phone Directories

NTT West publishes about 42.90 million copies of phone directories with an approximate paper quantity of 23,000 t (Figure 1).

Precisely because the directories are consuming so much paper, we are implementing many eco measures to strike a balance between the directory business and reduction of the environmental load. The specific measures we are taking are described at our "Eco Challenges! Directories"* website.

* "Eco Challenges! Directories"
"Eco challenges" is a slogan that declares our active environmental stance, with "Eco" referring to the "environment," and "Challenges" representing our actions and attitudes.
Website: http://eco.tpnet.ntt-tp.co.jp

Figure 1: Amount of Paper Consumption for Phone Directories




## Reduction of Pure Pulp Use

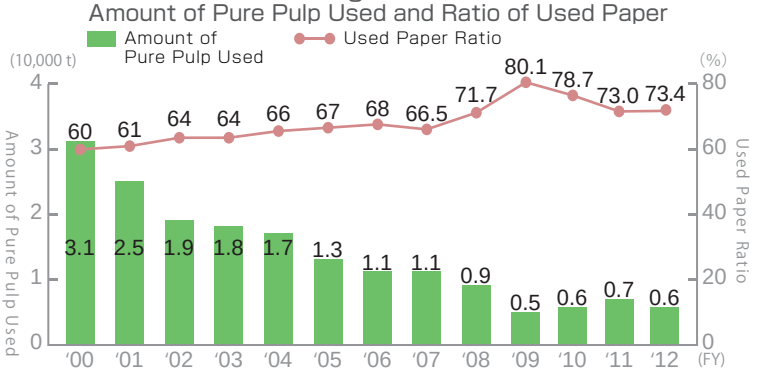
Aiming at reducing the amount of pure pulp consumption, we have taken various measures over the past years in publishing telephone directories.

The pages of phone directories are made with a blend of pure woodchip pulp* and paper pulp recovered from used directories. For the procurement of paper materials for our directories, we have set clear requirements for blending recovered pulp. Also, by encouraging paper manufacturers to formulate their own effort, we are committed to reducing the use of pure pulp, therefore increasing the content of recovered pulp. Because of our effort, we have, since FY 2002, exceeded the standard set by the Japan Paper Association "to increase the recovered pulp content to over 64% by 2015." Today, we continue to maintain a high standard (Figure 2).

In an attempt to determine the correct number of directories to be printed, we take thorough actions to check with new and moving subscribers whether they wish to have a copy, and do not distribute directories to those who do not wish to receive one. We have also been printing two editions of "Hello Page" (white pages), one corporate and the other residential, and have started selective distribution to subscribers who need a copy based on prior check of their demands for residential directories.

In FY 2013, we will continue to advance our efforts toward reducing paper use.

Figure 2:
Amount of Pure Pulp Used and Ratio of Used Paper




* To maintain a certain level of quality in paper used for directories, pure pulp is indispensable. However, to minimize direct co sumption of forest resources, we are using remaining wood materials from housing construction works.

Woodchips

## Recycling of Directories

### Establishment of "Closed Loop Recycle System for Directories"

We have established a circulating "closed loop recyclesystem for phone directories," in which old directories are reprocessed into new ones (Figure 3).

A closed loop is a system for recycling old products into the same items, and is said to help minimize the wasting of resources. At NTT West, we are recycling old directories that we have collected into new ones.

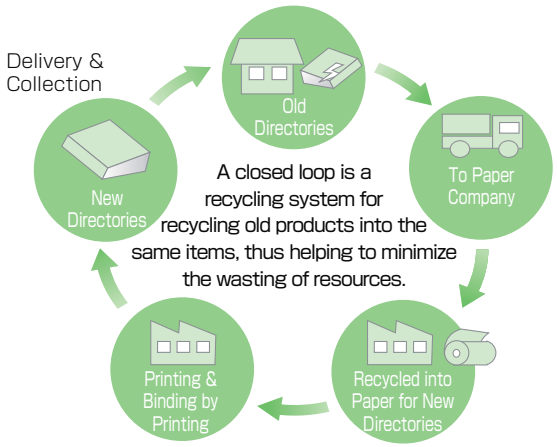
The first step to establishing this system was taken in February 2000, when we started publishing directories using white recycled paper*. By March 2001, we have employed the same type of paper to all directories.

As illustrated in Figure 3, collected directories are processed by a paper company into recycled paper, after which they are printed and bound into new directories. The copies our subscribers receive are recycled using such a system. In addition, since September 2001, we have been publishing directories by collecting old copies made from white recycled paper and transforming them into new ones.

In the past, we have been collecting outdated copies of directories while we deliver new ones. With improvements made to the quality, old directories can now be recycled as normal used paper.

We will continue to make contributions toward building an environment-friendly community by reviewing the collection method, while at the same time implement efforts including those to reduce $CO_2$ emission.

Figure 3:
Closed Loop Recycle System for Directories




* Directories using white recycled paper
In other countries, business-classified directories are called Yellow Pages"- because of the color of the paper used. The Yellow Pages of NTT West,"Townpage," used to be printed on yellow-dyed recycled paper. However, an issue with this type of paper was that it could not be fully decolorized in the recycling process. For this reason, we adopted the use of white recycled paper instead, and created yellow pages by applying yellow ink to the white paper.

* Townpage Center
Phone: 0120-506-309 (operating hours: 9:00 to 17:00 on weekdays, closed on Saturdays, Sundays, public holidays and new-year holiday season)
Fax: 0120-817-548 (24 hours)

# Use of Recycled Paper for Telegrams

NTT West is taking measures to promote the use of recycled paper for telegrams, so as to reduce the consumption of pure pulp. As of 31 March 2013, there are 75 types of telegram package paper for different occasions, such as celebration, condolence and others, and the materials used include fabric as well as paper. In FY 2012, we handled as many as 5.48 million telegrams (out of 10.36 million nationwide), and the amount of paper used for the package paper was 409 tons. As part of our telegram package paper recycling efforts, we have been implementing measures to raise the ratio of used paper when we develop new types of package paper or renew existing ones.

By paying attention to the paper materials used for our products, we achived the target of the total amount of pure paper consumption in FY 2012 which was 1 ton while the target was set less than 2 tons. Also, the ratio of used paper to the total amount of paper consumption was maintained at 68% and kept the same level compared to the previous year (69%).

To address the needs of our customers further, we have plans to launch new products in FY 2013. We will continue our efforts to develop products that utilize recycled paper as well as eco-friendly paper materials.

In addition to the package paper, we also have fabric stuffed-toy telegrams such as “Hello Kitty Denpo,” “Dear Daniel Denpo,” “Doraemon Denpo,” “Mickey Mouse Denpo,” “Minnie Mouse Denpo,” “Winnie the Pooh Denpo” and "Stitch Denpo." The fabric used for these telegrams are materials that do not impact the environment, such as those that are compliant with the ordinance on acetylacetone method (with a formalin content of 75 ppm or below) issued by the Ministry of Health and Welfare (No. 34, 1974). Another measure that we adopted to help reduce the consumption of pure pulp is the employment of eco-friendly recycled paper for the tubes into which telegrams are inserted.

We will advance further our effort in the development of telegram package paper using materials that have “less impact on the environment,” such as recycled paper.

Embroidery Telegram
“Kikusetsuka”
(Consolatory)

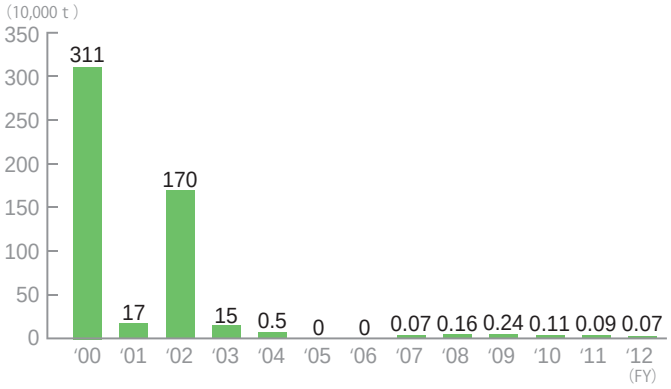
Embroidery Telegram
“Shochikubai”
(Congratulatory)

# Reduction of Pure Pulp Used for Office Supplies

We have already switched to 100% use of recycled paper as paper supplies at our offices (Figure 4). As we have been classifying eco-friendly pulp* as pure pulp since FY 2008, the amount consumed has increased. We will continue our efforts to reduce the consumption of pure pulp.

* Eco-friendly pulp
- This type of pulp is produced in compliance with the laws and regulations in effect in the country of origin (logging area).
- The raw materials for eco-friendly pulp are FSCC-certified, planted or recycled/unused wood.
- Eco-friendly pulp is not bleached without chlorine gas.

Figure 4:
Amount of Pure Pulp Used as Office Supplies



# Reduction of Paper Use for Bills, etc.

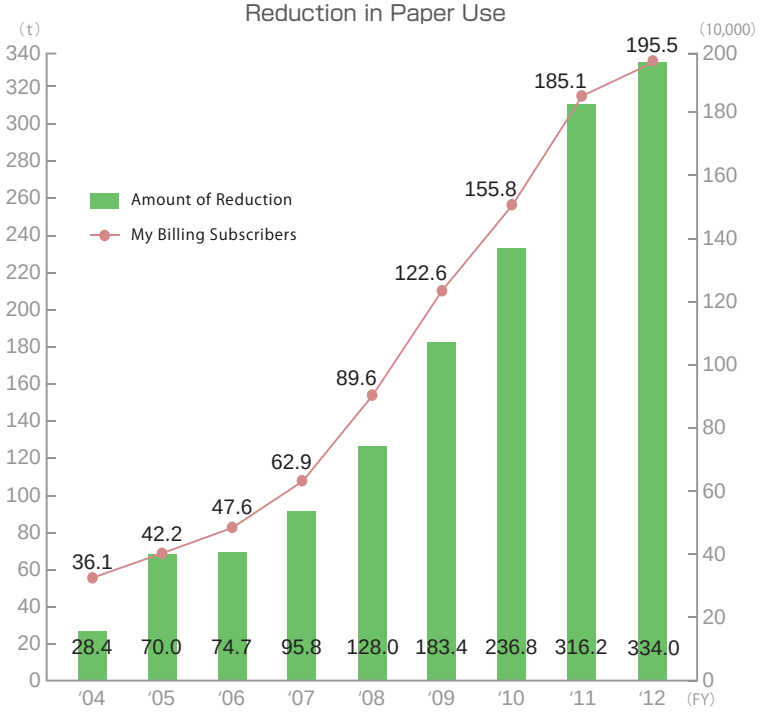
For NTT West customers who settle their bills by credit card or account transfer, we are recommending them to use our Web-based system, “My Billing*” (membership service), which allows subscribers to check the service charges on the Internet, instead of sending out printed bills to them.

Our attempt to cut down paper resources for printed bills and envelopes has resulted in a reduction of 334.0 tons in FY 2012, while the number of subscribers for the “My Billing” service has increased to 1.955 million (Figure 5).

* My Billing (membership service)

- Subscribers will need to bear the Internet connection charges when using this service.
- Users can view the monthly billing notices and also paid bills for the previous 12 months. However, this is only applicable to users who have subscribed to the My Billing service.

Figure 5 :
Number of “My Billing” Subscribers and Accompanying Reduction in Paper Use



# Removal of Asbestos

## Removal of Asbestos from Bridge Facilities and Telecommunication Cable Bridges

We had been using fire-retardant asbestos to protect the facilities (conduits and cables) attached to bridges from fire that could break out under the bridges (Figure 1).

However, following the amendment of the "Ordinance on Prevention of Hazard Due to Specified Chemical Substances" and the "Wastes Disposal and Public Cleansing Act," asbestos has been defined as a substance subject to special control given its hazards. In response to this, we developed and adopted the rockwool method*1, which makes use of new harmless materials for protecting the bridge facilities from fire. In 1983, we have started the removal and upgrading of asbestos fire protection facilities.

Through further technical improvements made to the fire protection methods, we have, in 1997, introduced the precast construction method*2(Figure 2), which excels in fire resistance and economic efficiency, and have since then been active in promoting the upgrading our fire protection facilities.

Specifically, for the removal and upgrading of the facilities, we investigated their conditions while developing the method. We then prepared a "checklist for upgrading old fire protection facilities" to judge the extent of degradation and damage through periodic checks. As a result of such effort, and based on works such as bridge replacement planned by the managers responsible for bridges, we expected fire protection facilities containing asbestos (total 550 tons approximately) as of end FY 1999 to be fully eliminated by the end of FY 2003. However, during the course of our inspections and construction works in FY 2003, more bridges that required removal and upgrading were found, and 14 t of asbestos remained at the end of FY 2005. We ensured that removal and upgrading of the remaining facilities were performed, and systematically completed our works on removal of asbestos from and upgrading of bridge facilities and telecommunication cable bridges by the end of FY 2006.

Unfortunately, fragments of the remaining asbestos were discovered in some of the upgraded bridges in FY 2007, and we have conducted works to remove them appropriately. We will perform inspections of the bridge facilities to check if there are any other remaining fragments, and will duly remove them should any be found.

*1 Rockwool method
A construction method that uses harmless new materials to wrap the heatinsulating material (rockwool) and covering material individually.

*2 Precast construction method
A construction method that uses harmless new materials to wrap the heat insulating material (ceramic fiber) and covering material together.

Figure 1:
Fire protection Area of Bridge Facilities

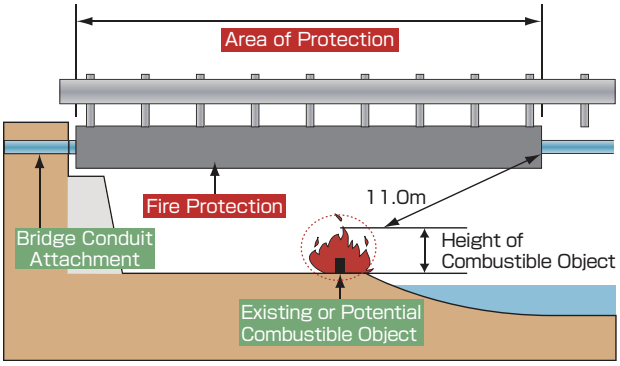
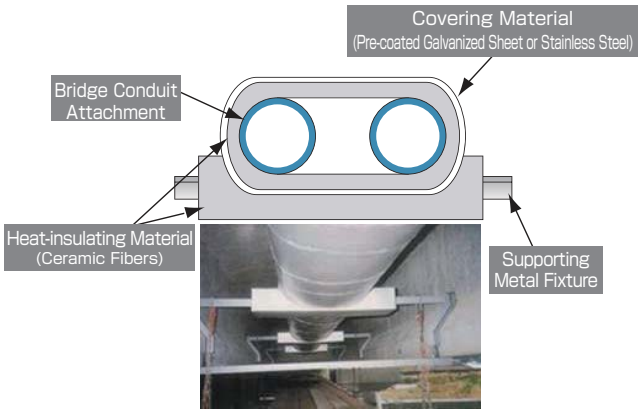



Figure 2: Precast Construction Method




## Removal of Spraying Material with Architectural Asbestos

NTT West had about 120,000 m$^2$ of spraying asbestos in its buildings. To reinforce our asbestos removal plan, we set a target "to remove all asbestos for which this is feasible by the end of FY 2000," and we were able to do so as planned for all of the spraying asbestos for architectures. Meanwhile, based on the directive for inspection of private structures issued on 14 July 2005 by the Ministry of Land, Infrastructure, Transport and Tourism, we performed a stricter investigation in FY 2005. As a result of this investigation, spraying materials with asbestos content equivalent to about 65,000 m$^2$ were newly found, and we removed about 500 m$^2$ in FY 2008, about 1,200 m$^2$ in FY 2009 and 5,800 m$^2$ in FY 2010. The remaining asbestos either cannot be removed or are unlikely to detach, and we are monitoring the condition by performing yearly measurements of the air condition. From FY 2011 onward, we will conduct asbestos removal works accordingly if the measurements for an area exceed the criteria.

In FY 2013, we will continue to implement removal measures. Materials that do not contain asbestos are used for ongoing construction works.

# Discontinuing Use of Halon for Extinguishers

As part of our measures to protect the ozone layer, we have been advancing efforts to discontinue the use of halon in fire-extinguishing equipment, while introducing halon alternatives at the same time. The main substance that has been used for fire suppression is halon 1301 due of its excellent fire-extinguishing performance and properties such as high insulation, low toxicity and low ozone depletion. At NTT West, halon 1301 is employed at locations including equipment rooms, computer rooms, and power rooms, and we possess approximately 410 t of it. Since 1992, we have stopped constructing any new structure that contained halon.

As a substitute for halon, we are introducing a halon-alternative fire-extinguishing system, which provides high fire-extinguishing performance and safety to human body and telecom systems by adopting new extinguishing agents*1 that pose no risk to the ozone layer.

For the halon extinguishers, we are also taking measures to prevent accidental release, and are progressively adopting an early detection system to increase the level of safety against fire (Figure 3). Equipped with an air-sampling smoke detector, which is superbly sensitive, the system is capable of detecting low-concentration smoke. This enables it detect a fire quickly in a large space where airconditioned air circulates, leading to enhanced safety.

In 2013, we will continue to implement the necessary measures.

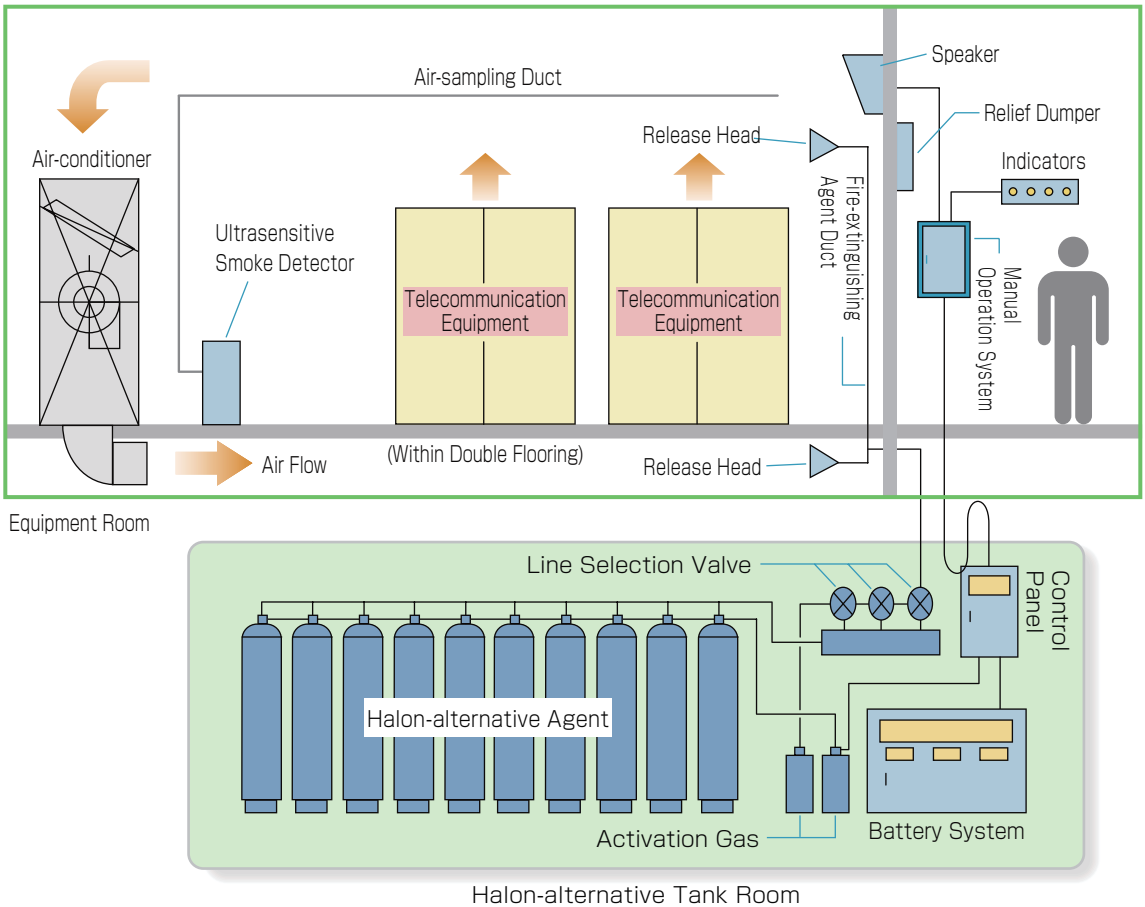
*1 The agent is any of the three substances, NN100*2, Inergen*3 or FM200*4. The most appropriate substance is selected for each building based on comprehen sive consideration of issues such as construction costs.

*2 NN100
An inert agent, which, employing nitrogen gas, has zero ozone depletion potential and zero global warming potential.

*3 Inergen
An inert agent, which is a mixture of three gases, nitrogen, argon and carbon dioxide. It has zero ozone depletion potential and zero global warming potential.

*4 FM200
A fluorochemical agent with a limited releasing time. Compared with NN100 and Inergen, FM200 requires a fewer number of tanks as the agent is stored in the liquid form. It has zero ozone depletion potential and a global warming potential of 2050.

Figure 3:
New Fire-extinguishing/Fire Protection System for Equipment Rooms



# Environmental Load Reduction through e-comics - from Hard to Soft Media -

Given the improved broadband infrastructure and the prevalent use of mobile phones, NTT Solmare is offering a web-based service for comics, which used to be read as books. This “e-comics” service is rapidly spreading especially among young people (Figure 1).

In this service, each frame of a manga work is digitized meticulously to allow the subscribers to view it clearly on their mobile phone screen. It realizes an unprecedented reading style, which allows readers to enjoy their favorite comics on their mobile terminal anytime and anywhere.

The advantages of such a paperless electronic service on the environment are not limited to reduction of paper resources. We believe that it can help to further ease the environmental load in many respects, including a reduced amount of $CO_2$ emission as it involves no printing and transportation.

Figure 1: e-comics Frame


# Environmental Solutions

## Environmental Load Reduction through Environmental Solutions

We offer a wide variety of solutions to assist our customers in tackling environmental issues. These solutions not only contribute to environmental protection, but also have benefits with regard to cost management and enhancement of business efficiency.

In the initial stage, we held interviews with customers to sort out their situations and challenges, based on which we put forward appropriate proposals. For example, if they do not know where to start, we would help them analyze their current situations, formulate approaches and plan how to implement them.

If a customer is not sure of what specific measures to take to reduce $CO_2$ emission, we would offer solutions for conserving energy and resources by means of systems for video-conferencing or e-learning (Figure 2).

In addition, for a customer who wishes to establish an efficient data collection system for calculating the amount of $CO_2$ emission, we would propose the introduction of an “environmental monitoring system.”

Figure 2: Environmental Solution Examples Offered by NTT West

### Video-conferencing System

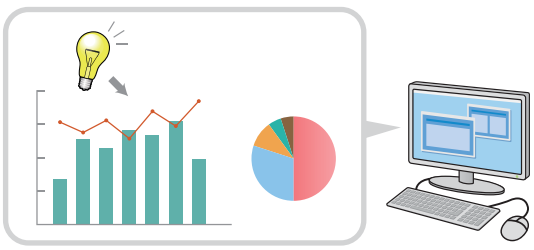
**Overview**

A remote conference system that utilizes a network.

**Benefits**

Reduces environmental load due to transportation with a fewer number of meeting trips.

### Environmental Monitoring System



**Overview**

A data collection system for measuring the consumption of energy, such as electric power.

**Benefits**

By obtaining a detailed grasp of the amount of energy consumed,conservation plans and reports can be created more efficiently.

# Green by ICT – Efforts of LCA in Hosting and Housing Services

It was found that our hosting service (Biz Hikari Cloud) has an 83% $CO_2$ reduction effect and that our housing service (Biz Hikari Cloud) has a 17% $CO_2$ reduction effect compared to on-premises.

## About LCA

As part of “Green by ICT” efforts, under the cooperation of NTT SmartConnect Corporation, we conducted a Life Cycle Assessment (LCA) of “Biz Hikari Cloud.”

While promoting the “Green of ICT,” NTT West Group has also been working on “Green by ICT” where we are working to make how we work and live environmentally-friendly by using IT along with improving the efficiency of the business. ICT not only enables saving energy and a paperless existence by systemizing business, it leads to a decrease in the movement of people and reforms how we work, therefore, it plays a large role in reducing the environmental load. LCA is a method of displaying the effects quantitatively.

Generally, the process is (1) setting of objectives for assessment and range of research, (2) estimating (inventory analysis) the emissions of environmentally hazardous substances ($CO_2$, etc.) along with the lifecycle of the products, and (3) impact assessment due to the calculated environmental load. The figures below illustrate a comparison of procedures up to the emission of $CO_2$ in (2) above among existing on-premise environments, general data centers, and services in NTT West.

This assessment was carried out based on The “Guideline for Information and Communication Technology (ICT) Eco-Efficiency Evaluation” published by the Japan Forum on Eco-Efficiency in March 2006.

## LCA of Posting Services

As a result of calculations based on the assessment conditions and assessment models illustrated below, it was found that our hosting service (Biz Hikari Cloud) has an 18,728t-$CO_2$/year or 83% $CO_2$ reduction effect compared to on-premise. When our hosting service (Biz Hikari Could) is used, network infrastructure use increases, while on the other hand, the use of ICT devices, movement, and work of people can be reduced.

### Basic Conditions of LCA Assessment (Hosting)

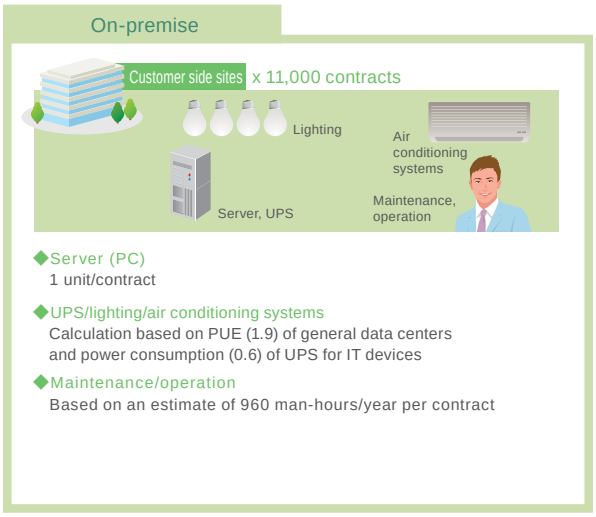
[Function Unit]
Use including maintenance and operation of a server under contract for a year

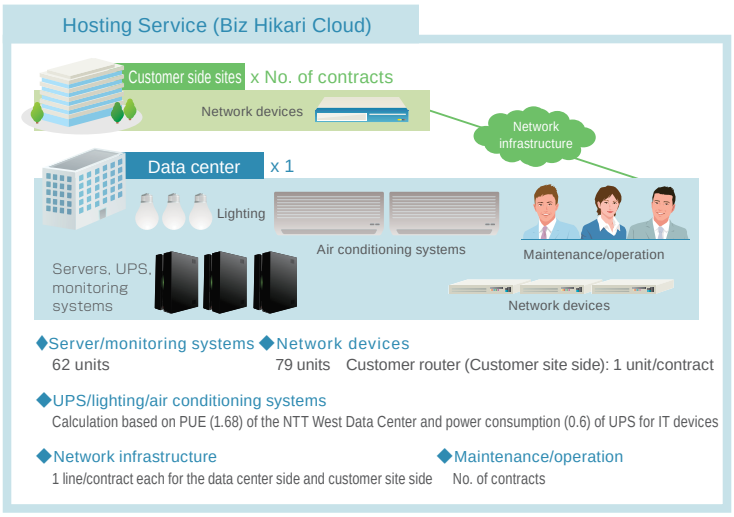
[Basic Unit Database]
Embodied Energy and Emission Intensity Data for Japan Using Input−Output Tables (3EID)

[System Boundary]

| Environmental pact Factors | On-premise | Hosting service (Biz Hikari Cloud) |
|---|---|---|
| ICT device use | Servers, UPS, air conditioning systems, lighting | Servers, UPS, network devices (Data center sides, customer site sides), air conditioning systems, lighting |
| Network infrastructure use | — | Network lines |
| Software use | — | Data center monitoring systems |
| Movement of people | Commuting related to maintenance and operation | Commuting related to maintenance and operation |
| Movement of objects | — | — |
| Material and energy consumption | — | — |
| Object storage | — | — |
| Work of people | Maintenance and operation | Maintenance and operation |

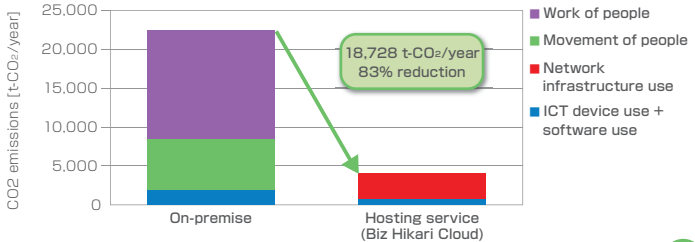
### Hosting Service Assessment Model (All Contracts)




PUE: Power Usage Effectiveness (Ratio of IT equipment and other power use)　UPS: Uniterruptable Power Supply

### Hosting Service Assessment Results




Unit: t-$CO_2$/year

| | ICT device use + software use | Network infrastructure use | Movement of people | Work of people | Total |
|---|---|---|---|---|---|
| On-premise | 1,770 | 0 | 6,811 | 14,096 | 22,677 |
| Hosting service (Biz Hikari Cloud) | 642 | 3,300 | 2 | 5 | 3,949 |

## LCA of Housing Services

As a result of calculations based on the assessment conditions and assessment models illustrated below, it was found that our housing service (Biz Hikari Cloud) has an 11.6t-$CO_2$/year or 17% $CO_2$ reduction effect per contract compared to on-premise. When our housing service (Biz Hikari Could) is used, network infrastructure use increases, while on the other hand, the use of ICT devices, movement and work of people can be reduced.

### Basic Conditions of LCA Assessment (Housing)

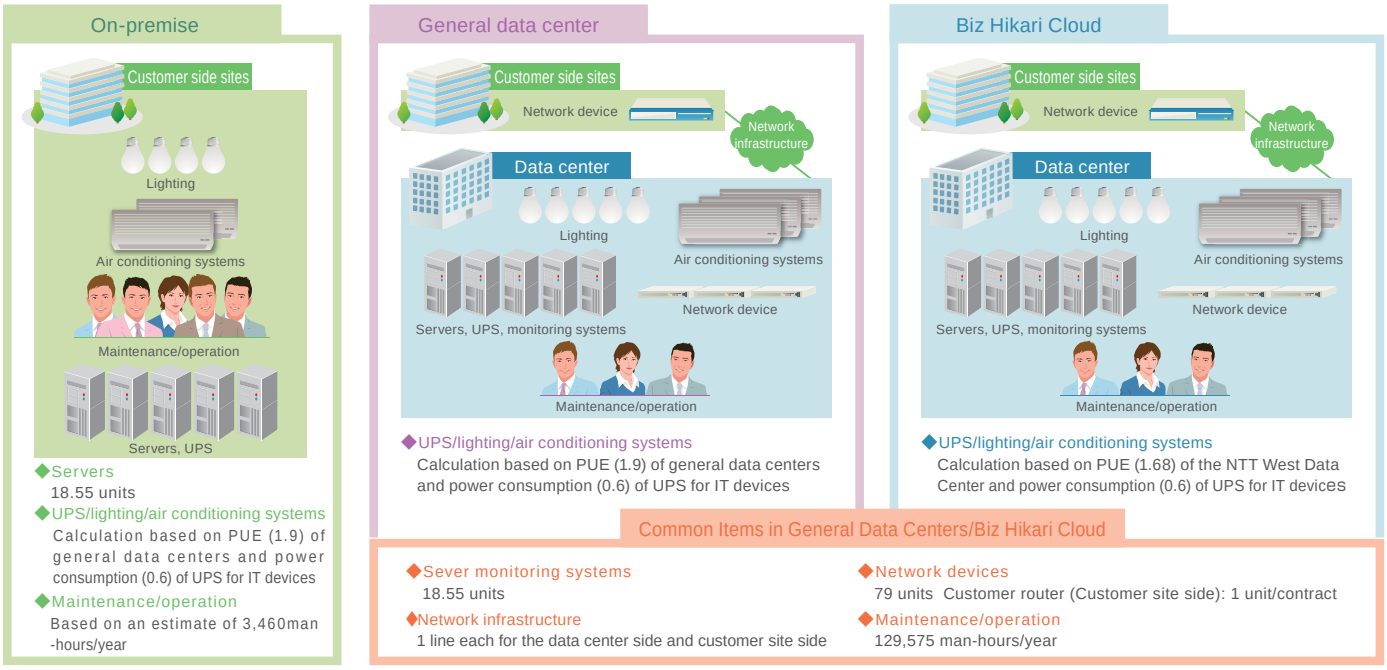
[Function Unit]
Use of 18.55 servers (per contract out of 200 contracts) for a year including maintenance and operation

[Basic Unit Database]
Embodied Energy and Emission Intensity Data for Japan Using Input−Output Tables (3EID)

[System Boundary]

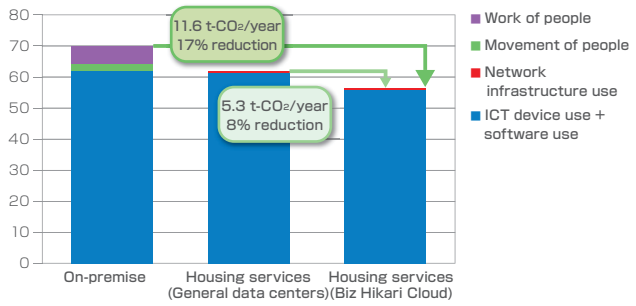
| Environmental Impact Factors | On-premise | General data centers | Biz Hikari Cloud |
|---|---|---|---|
| ICT device use | Servers, UPS, air conditioning systems, lighting | Servers, UPS, network devices (data center side, customer site sides), lighting, air conditioning systems | Servers, UPS, network devices (data center side, customer site sides), lighting, air conditioning systems |
| Network infrastructure use | — | Network lines | Network lines |
| Software use | — | Systems such as data center monitoring | Systems such as data center monitoring |
| Movement of people | Commuting related to maintenance and operation | Commuting related to maintenance and operation | Commuting related to maintenance and operation |
| Movement of objects | — | — | — |
| Material and energy consumption | — | — | — |
| Object storage | — | — | — |
| Work of people | Maintenance and operation | Maintenance and operation | Maintenance and operation |

### Housing Service Assessment Model (Per Contract)




PUE: Power Usage Effectiveness (Ratio of IT equipment and other power use) UPS: Uninterruptable Power Supply

### Housing Service Assessment Results




Unit: t-$CO_2$/year

| | ICT device use + software use | Network infrastructure use | Movement of people | Work of people | Total |
|---|---|---|---|---|---|
| On-premise | 62.9 | 0.0 | 2.2 | 4.6 | 69.8 |
| Housing services (General data centers) | 62.9 | 0.3 | 0.1 | 0.2 | 63.5 |
| Housing services (Biz Hikari Cloud) | 57.7 | 0.3 | 0.1 | 0.2 | 58.2 |

*For the electrical power consumption rate, the default value of the environmental impact assessment system is used.
Default value: 2010 (The Federation of Electric Power Companies of Japan/ Published value of the Federation)

[References]
"Embodied Energy and Emission Intensity Data for Japan Using Input−Output Tables (3EID) 2005 version" Issued by the National Institute for Environmental Studies, Japan
http://www.cger.nies.go.jp/publications/report/d031/jpn/datafile/index.htm *$CO_2$ emission base unit related to the manufacturing of ICT devices and $CO_2$ emission base unit related to disposal are quoted.

"Regarding Examination of the Data Center Energy Efficiency Evaluation Index DPPE from Japan in Global Conferences" Issued by the Green IT Promotion Council
http://www.greenit-pc.jp/topics/release/pdf/dppe_j_20110228_2.pdf *Average PUE value is quoted.

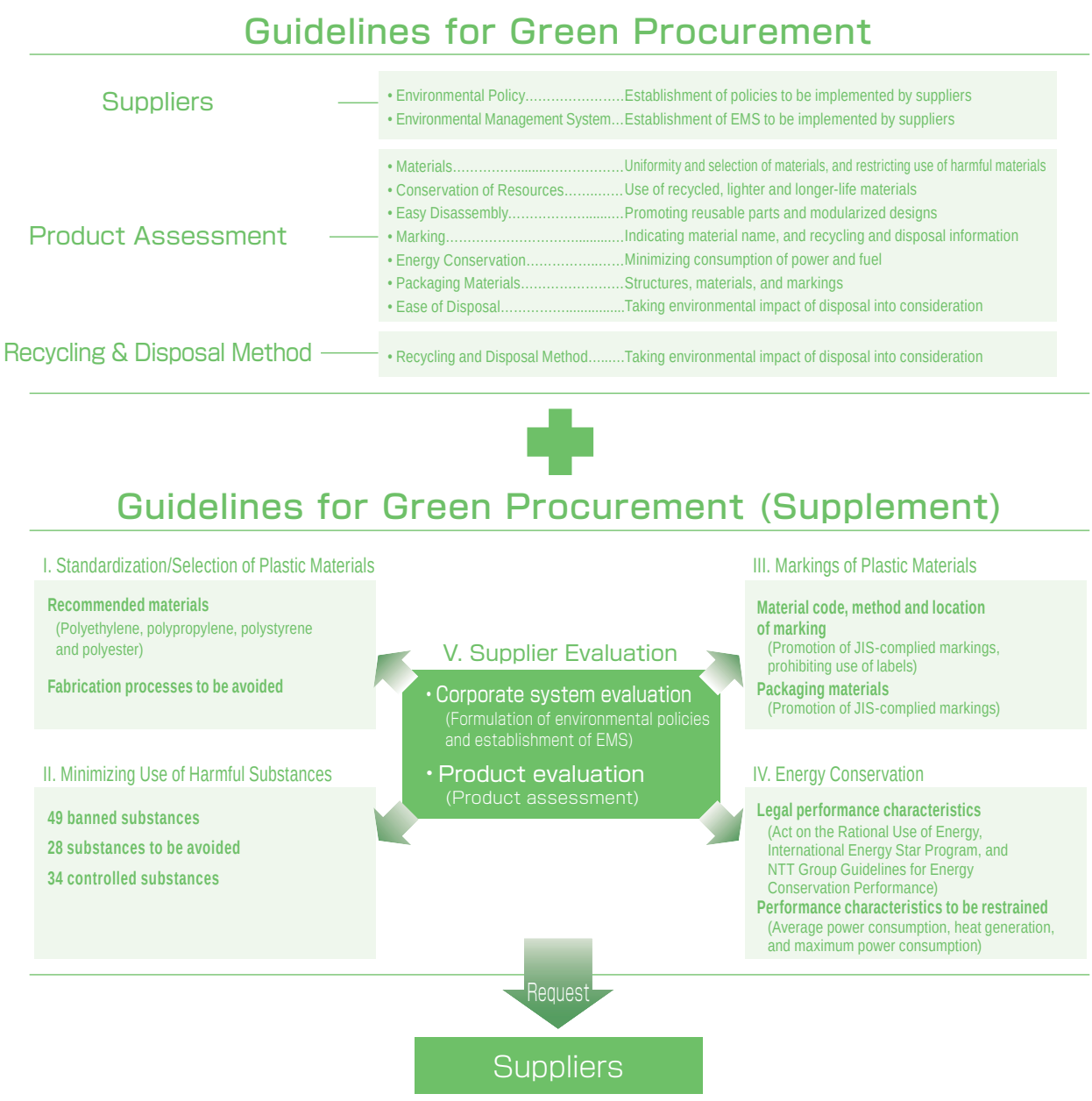
"Electrical Efficiency Modeling for Data Centers" Issued by American Power Conversion
http://www.apc.com/jp/s/products/isx/APC_WP_No113_J_Final.pdf *Electrical power consumption volume by UPS for ICT devices is quoted.

# Green Procurement at Telecommunication Facilities

While constructing telecommunication facilities, NTT West procures all necessary materials from external sources, which means that the impact of the procured materials on the environment is directly reflected on how our business activities affect the environment. For this reason, we set up the "NTT Group Guidelines for Green Procurement" in July 1997 (amended in April 2010, Figure 1), according to which we started green procurement activities. These activities aim at easing the impact on the environment by prioritizing products to be procured based on how eco-friendly they are.

In January 1998, we also drew up the "Guidelines for Green Procurement (Supplement)" (amended in December 2010) to request cooperation from our suppliers.

Figure 1: Outline of "NTT Group Guidelines for Green Procurement"



## Green Procurement through Supplier Evaluation

In April 2002, we organized an evaluation system by drawing up the “Guideline for Supplier Evaluation” based on the request items to suppliers already set forth in our “Guidelines for Green Procurement.”

The evaluation guidelines intend to determine and evaluate the eco-friendliness of the products we procure quantitatively in terms of both the suppliers’ corporate system and the product specifications.

Our full-scale green procurement activities began with the implementation of the evaluation guidelines.

In principle, the evaluation applies to all products that NTT West procures. Particularly, the products we purchase, or expect to purchase, in large volumes are our main focus. In FY 2012, we evaluated 8 products.

### (1) Corporate System Evaluation

Evaluations are performed on the environmental protection system adopted by the supplier (Figure 2).

This is to determine the willingness of the suppliers toward tackling environmental issues. We consider it significantly important to the whole society that more suppliers are actively involved in measures to protect the environment as having such suppliers can also enhance the eco-friendliness of our own products.

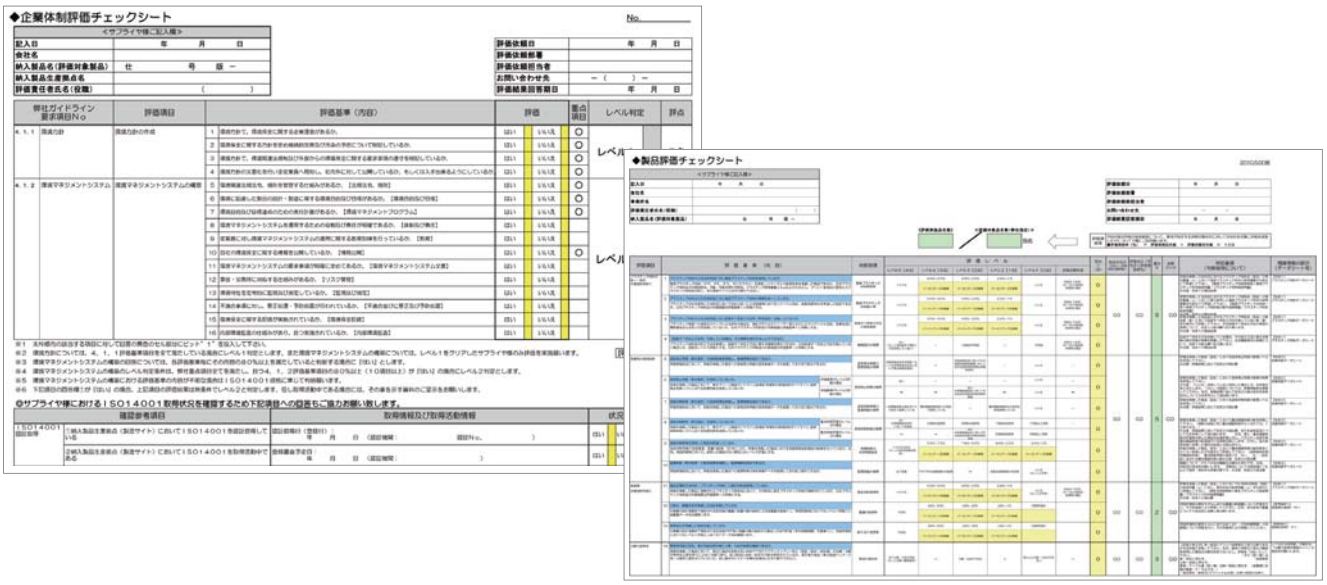
### (2) Product Evaluation

We are requesting our suppliers to assess all components of products whenever it is possible. We also ensure the fairness of our evaluation by assigning scores to suppliers according to the number of components they evaluated.

In accordance with the “Guidelines for Green Procurement,” the evaluation criteria include items such as “uniformity and selection of plastic materials,” “restriction of use of harmful materials,” “marking of plastic materials” and “energy conservation.”

Website: http://www.ntt-west.co.jp/procure/activity/

Figure 2: Supplier Evaluation Sheet




## Environmental Value Analysis Proposals

As a part of its effort to ward mitigating the environmental impact in the whole product life cycle from the R&D stage to disposal, NTT West is welcoming proposals for the products it procures from suppliers, such as ideas on the use of eco materials and improvement in manufacturing. This is called "Environmental Value Analysis (VA) Proposals."

# Green Designs of Buildings

Generally, a large amount of resource energy is required to construct, own and manage buildings, while the load on the environment increases from the wastes generated when they are dismantled. NTT West, owning many buildings, is advancing a“Green Design” concept to minimize the impact on the environment by paying attention to the protection of global environment from the planning and designing stages of buildings.

In October 2000, NTT Group established the “NTT Group Green Building Design Guidelines,” which summarize the basic ideas and aims for promoting eco-friendly building designs. To ensure that the guidelines are adhered to throughout the company, NTT West created another “Green Building Design Guidelines (NTT West Commentary),” which describe the measures in more detail. The “Green Building Design Guidelines” are reviewed to comply with the enactment and amendment of eco-related laws, including the Building Standards Act, Soil Contamination Countermeasures Act and Health Promotion Act. The current guidelines are the third edition, released in May 2004.

The third edition describes the details of our proactive efforts to realize building designs that are harmonious with the environment, including how we run the facilities.

# Green Procurement of Office Supplies

When purchasing office supplies such as copy paper and stationeries, NTT West Group considers not only their costs and qualities, but also their impact on the environment. Being a member of the Green Purchasing Network (GPN)[*1], we are applying the product guidelines of the network to promote the procurement of office supplies with a low environmental load.

After selecting items, 3,795 office items with a low environmental load have been introduced at the end of FY 2012 into the group-wide accounting system[*2] (Figure 3).

An “Environmental Classification” is included in the unit-price list for office supplies to ease the identification of products with a low environmental load.

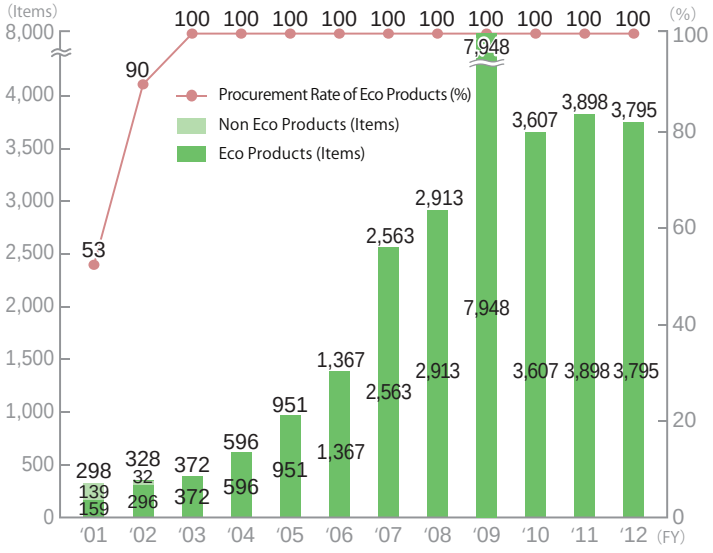
*1 Green Purchasing Network (GPN)

The GPN is a loose network established in February 1996. The members comprise companies, government offices and consumers. As of 18 November 2011, there is a total of 2,657 corporate and government organization members. members.

*2 Group-wide accounting system

Introduced in FY 2008 for the entire NTT Group, the system mainly manages credits and debts, and fixed assets. With an e-procurement function, procedures from purchase to payment can be processed.

Figure 3: Green Procurement of Office Supplies



# Development of Eco-friendly Information Equipment

For the information equipment that NTT West provides, further effort to promote the lowering of their impact on the human body and natural environment is needed, as they are used at the residences of our customers, touched by them and disposed of by them. In March 2000, we established the “Guidelines for Green Procurement of Telecommunication Equipment,” a supplementary document to our “Guidelines for Green Procurement.” Based on the guidelines, certain products are certified with the “Dynamic Eco” mark.

## Dynamic Eco Certification

To make known to the society information on our contributions through environmental protection activities, such as reduction of the environmental load, NTT West instituted the ISO 14021-compliant Dynamic Eco mark system in March 2001. The purposes of this self-declared system are to “promote ecofriendly products to our customers” and to “improve the product competitiveness with an enhanced corporate image by making our eco attitude widely known” (Figure 4).

The “Dynamic Eco” certification is given only to products that meet the stringent standards based on the provisions of the “Guidelines for Green Procurement of Telecommunication Equipment (Supplementary Edition).”

In order for our customers to gain a better understanding of our environmental conservation efforts through the information equipment we use, we have publicized the “Dynamic Eco” certification criteria on NTT West website.

Figure 4:
Dynamic Eco Certification Mark

Website:
http://www.ntt-west.co.jp/kiki/support/eco/eco_c2.html

### Dynamic Eco Certification Criteria

#### <Eco-friendly Materials>

- None of the banned substances specified by NTT West shall be used in the products.
- The use of restricted substances specified by NTT West shall be minimized, and the type and quantity of such substances to be used shall be administered.
- The use of lead that is hazardous to the human body when seeped into the ground due to acid rain shall be minimized.
- The use of polyvinyl chloride (PVC), which produces dioxin when incinerated, and halogenated fire retardants, with the exception of non-Deca-based flame retardants, shall be minimized.
- Taking disposal and recycling into consideration, recommended plastic materials (polyethylene, etc.) and recommended metal materials shall be used for the products
- The operation manual for the product shall make use of recycled paper, and the ink for printing the manual shall not contain any prohibited substance, such as ozone-depleting substances.

#### <Designs for Easy Recycling>

- The recycling rate for the products shall be 70% or higher.
- In order to make recycling easier, the materials’ names shall be displayed on all plastic products in such a way that does not impede recycling.

#### <Eco-friendly Packaging Materials>

- The use of polystyrene foam shall be minimized.

#### <Energy Conservation>

- The product design shall take energy conservation into consideration.
- For products subject to the International Energy Star Program, they shall be designed in compliance with the program.

## Dynamic Eco-certified Products

Every year since our launch in November 2001 of the first Dynamic Eco-certified product, which was an office use fax machine, we have been promoting the certification of such products (Figure 5).

Now, the Dynamic Eco certification applies to a wide range of products from office-use phones to office-use fax machines, VoIP adapters for “Hikari Denwa,” and home-use phones and fax machines. We are making an effort to ensure that the newlyre-leased successor models of existing products are certified.

Figure 5: Dynamic Eco-certified Product

Certified Care Phone for the Aged/Disabled
“Silver Phone Fureai S II”
(Telecommunication Device)

Certified VoIP Adapter
“Netcommunity OG400Xa”
(Telecommunication Device)

# System Products for Corporate Users

It is an important requirement to offer eco-friendly products when we construct the information and communication systems for our corporate customers.

Especially for client-server equipment such as PC terminals, which are specified as Particular Procurement items based on the Act on Promoting Green Purchasing, we are making effort to obtain a grasp of the product performance from the procurement stage. By doing so, we will be able to select, propose and establish a lineup of eco-friendly products that also meet the requirements of customers.

Specifically, our selection of products is made based on the following criteria.

<Described in the procurement description since the procurement in FY 2000 (invitation of suggestion)>

## Compliance with the International Energy Star Program

If a product is subject to the voluntary International Energy Star Program, which is approved by the governments of the United States and Japan, it shall be compliant with the specifications set by the program.

## Compliance with Act on Promoting Green Purchasing

When a product is subject to the Act concerning the Promotion of Procurement of Eco-Friendly Goods and Services by the State and Other Entities (Act on Promoting Green Purchasing), it shall be compliant with the criteria imposed by the act.

## Compliance with Energy Saving Act

When a product is subject to the Act on Temporary Measures for Promotion of Rational Uses of Energy and Recycled Resources in Business Activities (Energy Saving Act), it shall be compliant with the “criteria for vehicles, home appliances, office equipment, etc.”

## Exclusion of Prohibited Substances

The product shall not contain any substance prohibited by the “Guideline for Restriction of Use of Harmful Materials” in the “NTT Group Guidelines for Green Procurement (Supplementary Edition II),” or an established collection system for such substances must be available.

## Battery Recycling

Based on the "3Rs + $CO_2$" concept, which adds "$CO_2$ reduction" to the "environmental 3Rs (Reduce, Reuse and Recycle)," Telwel West Nippon is providing support to advanced measures by eco-minded companies. From the viewpoint of "Reduce," Telwel West Nippon has built a battery recycling plant to engage in battery recycling more actively.

By promoting "battery recycling," we can reduce the number of disposed batteries, which amounts to 40 million annually. Also, we can contribute to the formation of a circulating society by preventing environmental pollution or leakage of hazardous electrolytic solution (dilute sulfuric acid).

| | |
|---|---|
| [ Objectives ] | To contribute to the reduction of industrial waste ($CO_2$, etc.), as well as to cut costs. |
| [ Batteries for recycling ] | (Small) nickel-cadmium batteries, nickel hydride batteries |
| [ Recycling procedure ] | (1)Perform a discharge test before recycling and check the condition.<br>(2)Perform recycling processing with a special pulse current.<br>(3)After the recycling process, perform a discharge test to check the regenerative effect.<br>(4)After charging, ship the recycled batteries to customers. |

Deteriorated batteries are recycled in the procedure shown below.

(1) Discharging ▶ (2) Recycling ▶ (3) Discharge test ▶ (4) Charging

After recycling processing, the performance of recycled batteries is checked with either one of the following tests.

(1) Actual load test

A discharge test by applying the same load as the one used by customers for the device is performed.

[e.g.] Largest load of a device 3A At least 30 minutes must be maintained until the voltage drops to the level where the device stops.

(2) JIS standard test

When the condition of the actual load is unknown, a discharge test is performed according to JIS standards.

# Hard Disk Deletion Services Contributing to a Reduction of Environmental Load

NTT HOMETECHNO* contributes to the promotion of the reuse and recycling of PCs by completely deleting the hard disk data of used PCs.

Old PCs are recycled as secondhand machines and supplied to the market for reuse. We believe that doing so helps to yield marked results for lessening the impact on the environment, as the processes from resource mining to manufacturing can be eliminated (Figure 1).

We believe that disassembling and recycling old computers, which are not reused as secondhand ones, will contribute positively to reducing the environmental load.

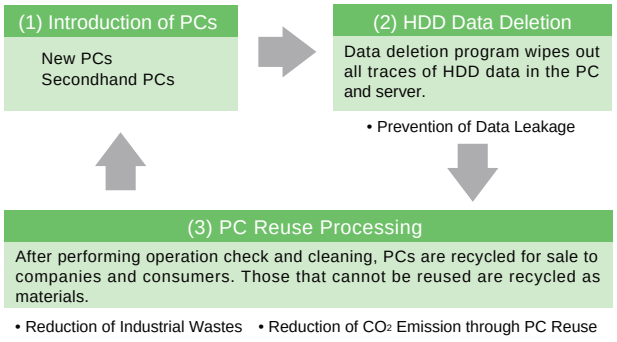
Since used PCs store important information such as personal information and confidential corporate information on their hard disks, in order to promote safe reuse and recycling, accidents whereby information is leaked must absolutely be prevented by completely deleting the data recorded on the hard disks.

NTT HOMETECHNO* has been providing “Hard Disk Data Deletion Services” mainly within NTT West Group since 2002 and has prevented information leak accidents and contributed to smooth reuse and recycling through the complete deletion of data recorded on hard disks in used PCs.

* NTT HOMETECHNO underwent a name change to NTT FIELDTECHNO in October 1, 2013.

[FY 2012 Hard Disk Data Deletion Result]
NTT West Group 14 thousand units

Figure 1: Flow of PC Reuse




Generally, formatting a HDD does not delete data completely. The data can be restored easily using some data recovery programs. For this reason, the Japan Electronics and Information Technology Industries Association (JEITA) made public its guidelines for data deletion, which set forth that the user is responsible for deleting data. The guideline also recommends that (1) data be deleted by overwriting the data at least once using a software program designed for data deletion, or (2) the HDD be destroyed physically or electromagnetically to make the data inside unreadable (Table1).

Table 1: HDD Data Deletion Methods

| Method | Description | PC Reuse | Environmental Effects |
|---|---|---|---|
| By Software | Overwriting of the whole HDD area with deletion program | Yes | Fewer new PCs, Resource utilization |
| Physical | Data destruction electromagnetically or physically, e.g. drilling holes Can be completed within a relatively short time | No | Resource utilization |

# Main Activities in FY 2012

As part of its effort to protect the global environment, NTT West Group cooperates with local communities and municipal governments to implement grass-root cleaning activities which are led by the respective branches and group companies.

The "Team NTT*," comprising our employees, their families, and also retired employees, participate actively in cleanup activities in many places such as the surrounding areas of our offices, parks, beaches, and river banks. In FY 2012, a total of 56,300 members took part in the activities.

As a "good corporate citizen" who strives to preserve the beautiful nature and protect the global environment, NTT West Group will continue to contribute to the local communities through our community-based "environmental communication" activities.

* Team NTT
Includes our full-time, temporary, contract employees, partner companies as well as retired employees who sympathize with the CSR activities of NTT group. They are the ones who carry out the social missions as members who share the NTT brand.

## Activities

### Global City Kyoto Citizen Street Beautification Activity

In the beautiful fall weather on November 4, 2012 (Sun), the NTT West Kyoto Group participated in "Global City Kyoto Citizen Street Beautification Activity" organized by the Kyoto City Machi-bika (Beautification) Promotion Enterprise.

This event is the largest volunteer event in Kyoto City with approximately 2 thousand participants every year. It is also a festival where residents as well as various groups and companies with high interest in beautification of the city get together and deepen exchanges once a year. The NTT West Kyoto Group has actively participated in this beautification activity as an annual group event since 2005.

On the day of the event, approximately 120 NTT West Kyoto Group employees, their families, and retired employees started from Kyoto City Hall and conducted cleaning activities around the city center. The participants promoted the importance of environmental protection in the globally famous ancient city of "Kyoto" by collecting litter in the city.


### "Team NTT Smile Nagoya" Activities

NTT West Nagoya Branch and NTT West – Tokai established a "Team NTT Smile Nagoya" for NTT's social contribution activities. With the "Supporters for Social Contribution" as leaders, we are involved in a diverse range of activities for environmental conservation.

In FY 2012, 85 of us, including the Supporters, employees of the Group companies in Nagoya and their families, participated in the 2011 Spring Mass Cleanup Operation for the Ramsar Convention-registered Fujimae Higata Wetland located in Minato-ku, Nagoya on May 19 (Sat).

Under the crisp weather of May, we cleaned up the area thoroughly.

### Environmental Green Operation
### Post summer vacation activities to clean up Nagara River and Gifu Park

In 1994, employees of NTT West Gifu Group founded an NTT volunteer group, "Himawari-kai." The group has been holding cleanup activities yearly as part of its local environmental conservation efforts. These activities have been gaining recognition with a growing number of participants including temporary and contract employees.

In FY 2012, three events were held, with two environmental green operations for Nagara River in August and September respectively, and a cleanup activity in March for Gifu Park, a symbol of the city. In total, 414 participants including NTT West Gifu Group employees, their families and retired employees collected litter.

We will, as good corporate citizens, keep up our activities to contribute to the local community.

### "Road Beautification Day"

The NTT West Hyogo Group is based in a building near Sannomiya and group employees use the nearby roads for commuting and business. Based on this fact, the NTT West Hyogo Group annually participates in "Road Beautification Day" which is a public-private sector collaboration activity held as an event for "Road Protection Month" organized by the Road Division, Construction Bureau, Kobe City. In FY 2012, 18 employees conducted cleaning on August 28 (Tue).

We will actively continue to cooperate in this activity since regular and continuous activities are indispensable for beautification of the environment in the community.

## Local Cleanup Activity

The NTT West Okayama Group agreed to join in the activities of a local cleaning volunteer group, and approximately 120 group members participate in cleaning activities in the Asahi-gawa River flowing near the “Okayama Castle and Korakuen garden” tourist site twice a year. Numerous residents including local corporations participate in this activity, and the NTT West Okayama Group will continue to actively take part as a community-oriented company.

## Spring Tottori Sand Dunes Cleanup Activity

On April 8, 2012 (Sun), many employees from NTT West Tottori Group participated in the traditional Tottori Sand Dunes cleanup activity in spring. On a fine, albeit slightly windy and chilly day, the participants worked hard on protecting the global environment and contributing to society.

## Beach Protection Activity

On May 27, 2012 (Sun), the “Clean Beach Ishikawa in Kanazawa 2012” beach protection activity organized by the Clean Beach Ishikawa Committee to clean the 583 km coastline in Ishikawa Prefecture was held. More than 170 volunteers from NTT West Hokuriku Group (Kanazawa Branch, NTT West-Hokuriku, NTT NEOMEIT, NTT HOMETECHNO, NTT Marketing Act, NTT WEST-HOKURIKU IT-MATE, etc.) participated.

## Rokudoji Beach Cleanup Activity

On June 10, 2012 (Sun), NTT West Toyama Group employees participated in “COSMO EARTH CONSCIOUS ACT in Rokudoji Beach” in Imizu City, Toyama Prefecture.
This annual activity is hosted by a local FM radio station, and employees from our company as well as other companies in the prefecture worked on cleaning the beach together.

## Tsu Akogiura Beach Cleanup Activity

The NTT West Mie Branch participates in the “Tsu Akogiura Beach Cleanup Activity.” This annual cleanup activity is organized by Mie Gyoren and Tsu City, etc. and is held in the early mornings on Saturdays in July around the time when the beach opens. Together with local residents and companies based in Tsu City, we pick up every single piece of driftwood, empty cans, and other litter swept ashore to keep the beach clean.

In FY 2012, 130 people including retired employees from our company participated in the activity on July 21 (Sat). Everyone worked hard during the cleanup from the early morning.

## Local Cleanup Activity

As part of our efforts to contribute to the local community, NTT West Kagoshima Branch holds volunteer activities every year, where Group employees and their families gather to clean up the area. In FY 2012, approximately 290 participants conducted a cleanup operation as a voluntarily measure from Kagoshima Chuo Park through the Tenmonkan area to the NTT Matsubara Building. In addition, we also actively participate in cleanup activities organized by local municipalities, etc. Through voluntary participation of the employees, Kagoshima Branch will continue its endeavors in community-based social contribution activities.

## Cleanup and Beautification Activities in Shizuoka

As part of our conservation activities, NTT West Shizuoka Group participates in cleanup and beautification activities in areas of Shizuoka. In FY 2012, we participated in the Lake Hamana Cleanup Operation in June, Mt. Fuji Cleanup Activity in August, and the River Abe Driftwood Cleanup Festival in November. Together with participants from local residents associations, civic groups, and other companies, 312 employees, their families, and retired employees from the Shizuoka Group worked hard to clean up litter.

The Mt. Fuji Cleanup Activity jointly organized by Shizuoka Prefecture and Yamanashi Prefecture was conducted on August 11 (Sat) before on-site research by International Council on Monuments and Sites (ICOMOS) under the theme of cleaning up Mt. Fuji to prepare for its inscription on the world heritage list. 96 employees, their families, and retired employees participated from the NTT West Shizuoka Group and conducted a cleanup operation together with many participants such as personnel from municipalities and local residents around Gotemba 5th station of Mt. Fuji.

Mt. Fuji Cleanup Activity

Hamana Cleanup Operation

## Website on Our Environmental Activities

We have launched a “Global Environmental Protection Activities” website to disclose NTT West Group’ s general efforts toward environmental protection. On this website, you can find the NTT West Group Charter for Global Environment, the main pillar of the group’ s environmental protection activities, as well as reports that give a full picture of these activities.

Also, the “Main Efforts” page on the website contains links related to environment that are available on the NTT West official website, thus fulfilling the function as a portal site on environmental information at the same time.

Website:
http://www.ntt-west.co.jp/kankyo/

## Internal Website

By posting internal publicity documents related to environmental conservation as well as the efforts and topics of each section, the site has helped to promote exchange of information between sections, enhance the efficiency of implementing environmental measures by each section, and heighten employees’ awareness toward environmental conservation.


## Release of CSR Report

NTT West Group’ s attitude toward CSR (Corporate Social Responsibility) and the corresponding systems, together with the concrete actions taken in each fiscal year are disclosed in simple terms for our stakeholders. By allowing stakeholders to gain a better understanding of our group’ s CSR efforts, we hope to widen our network of communication.

CSR reports have been released since FY 2005, and are scheduled to be prepared on a yearly basis.


Website:
http://www.ntt-west.co.jp/csr/

## External ExhibitionActivities

At the Osaka ATC Green Eco Plaza, NTT West Group’ s environmental activities and goods related to environmental protection are displayed and exhibited using panels for easy understanding by visitors.

Website:
http://www.ecoplaza.gr.jp/corp/exhibitors/ntt_w/index.html

## Provision of Hands-on Environmental Education Sessions for the Conservation of Biodiversity

For the conservation of biodiversity, activities to have nature and the environment known are also important. We provide hands-on environmental education sessions for children by taking advantage of the afternoons on days where tree planting activities are held.

## External Awards

| Awards | Description | Award subject | Organization |
|---|---|---|---|
| FY 2013 Fukui Prefecture Company (Organization) Volunteer Activity Certification System (Fpanet (Fukui Prefecture Company Volunteer and Contribution to Society Activity Network)) | We were certified as a company actively working on volunteer activities by participating in environmental beautification activities and local events in a wide range of areas. | NTT West Fukui Branch | NTT West Fukui Branch<br>*As was known when awarded |
| Environment Bureau Director Award for Excellent Waste Reduction Buildings | Promotion of reduction and proper handling of industrial waste | Telwel West Nippon | Telwel West Nippon |
| Waste Reduction Excellence Award | Presented with an excellence award by Osaka City for efforts made to reduce waste by securing different corners for raw garbage, items for recycling, etc., at the garbage collection point. | Osaka 113 Center | NTT HOMETECHNO Osaka 113 Center<br>*As was known when awarded |

# Environmental Accounting in FY 2012

With the aim to efficiently and effectively promote environmental conservation efforts, NTT West Group introduced an environmental accounting system in FY 2000. This system gathers and analyzes the costs for conserving the environment in business activities, as well as the economic effects obtained from these activities.

Data acquired from environmental accounting is utilized as the base data for promoting environmental management.

* Environmental conservation costs refer to the investments and expenses required for implementing corporate environmental protection measures.
Investments refer to investments in depreciable assets that are intended for environmental conservation. Expenses refer to costs incurred by environmental conservation activities.
Environmental conservation costs include items ranging from 1. Business Areas to 6. Environmental Damages.

* Environmental conservation effects (economic) refer to the economic effects on corporate management, including reduction in cost of disposal and gains from the sale of valuable resources, as a result of promoting environmental conservation.
Environmental conservation effects (economic) include items ranging from 1. Cost Reduction by Energy Saving to 4. Postage Expense Reduction through Online Correspondence.

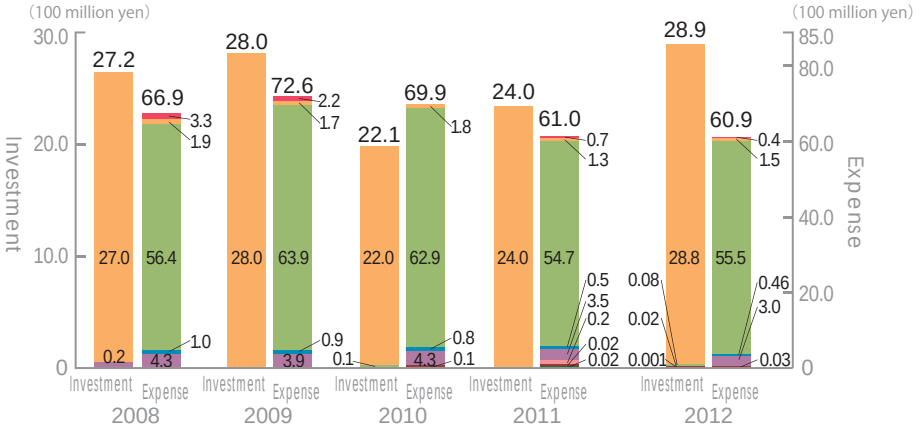
## Environmental Conservation Costs

As investment has increased due to the introduction of energy saving equipment for air conditioning and lighting, the investment for FY 2012 increased to 2.89 billion yen from 2.4 billion yen in FY 2011.

Although the construction waste recycling cost increased, the cost for FY 2012 decreased to 6.09 billion yen from 6.1 billion yen in FY 2011 due to the reduction in disposal costs caused by recycling promotion and reduction of construction by-product disposal costs caused by a decrease in construction work.

1. Business Areas
- (1) Prevention of Pollution (Asbestos, PCB, Oil Tanks)
- (2) Protection of Global Environment (Energy-saving Activities, Ozone-layer Protection)
- (3) Circulation of Resources (Industrial Waste Disposal, Reuse)

2. Upstream & Downstream (Recycling of Directories and Packaging)
3. Management Activities (ISO 14001, Environmental PR)
4. R&D (Environmental R&D)
5. Social Activities (Contributions to Local Communities)
6. Environmental Damages (Recovery of Environmental Damages)



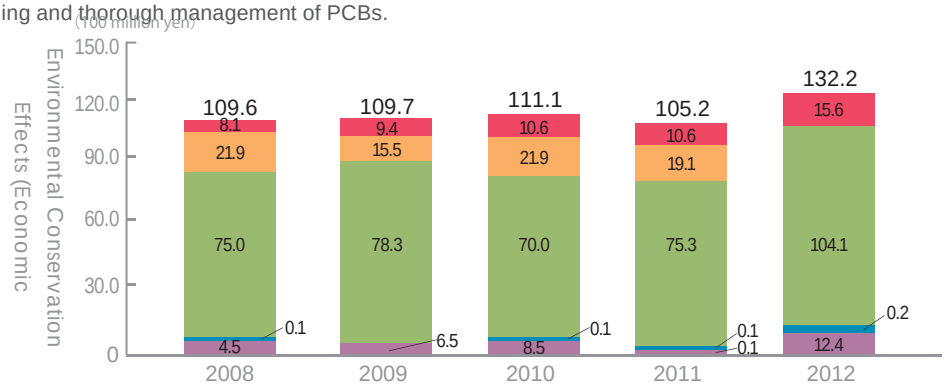

## Environmental Conservation Effects (Economic)

Environmental conservation (economic) effects for FY 2012 reached 13.22 billion yen which exceeded 10.52 billion yen for FY 2011.

The increase is attributable mainly to cost reductions from promoting the reuse of communication devices such as home gateways, ONU, CTU, and so on.

Separately from environmental conservation (economic) effects, as effects of avoiding illegal dumping risks, approximately 70 million yen is estimated due to the promotion of recycling and thorough management of PCBs.

- 1. Cost Reduction by Energy Saving
- 2. Revenue from Recycling
- 3. Cost Reduction by Reuse Promotion
  - •Dismantled Telecommunication Facilities
  - •Office Wastes
- 4. Postage Expense Reduction through Online Correspondence




1. Target Companies
・39 companies of NTT West Group and NTT BUSINESS ASSOCIE Co.,Ltd.
2. Applicable Period
・FY 2012 data: from 1 April 2012 to 31 March 2013, FY 2011 data: from 1 April 2011 to 31 March 2012
FY 2010 data: from 1 April 2010 to 31 March 2011, FY 2009 data: from 1 April 2009 to 31 March 2010
FY 2008 data: from 1 April 2008 to 31 March 2009
3. Data Tabulation Method
・Based on the “NTT Group Guidelines for Environmental Accounting 2012,” which is in compliance with the “Environmental Accounting Guidelines 2012” issued by the Ministry of the Environment.

## NTT West Group Environmental Report 2012 Data Sheet

| | | | | Unit | 2001 Performance | 2002 Performance | 2003 Performance | 2004 Performance | 2005 Performance | 2006 Performance | 2007 Performance | 2008 Performance | 2009 Performance | 2010 Performance | 2011 Performance | 2012 Performance |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Management of Action Plan Targets | Global Warming Prevention Measures | Power | $CO_2$ Emission | 10,000t-$CO_2$ | 16.3 | 17.4 | 19.1 | 18.4 | 28.6 | 82.55 | 84.57 | 86.34 | 92.4 | 88.8 | 90.8 | 106.8 |
| | | | Purchased Quantity | 100 mil kWh | 16.2 | 16.9 | 17.2 | 17.9 | 18.9 | 20.05 | 20.33 | 20.43 | 20.76 | 21.08 | 21.03 | 20.81 |
| | | | Electricity Generated by CGS | 100 mil kWh | 0.25 | 0.24 | 0.25 | 0.25 | 0.24 | 0.22 | 0.07 | 0.03 | 0.03 | 0.03 | 0.04 | 0.03 |
| | | Clean Energy System | No. of Equipment Introduced | Sets | 42 | 43 | 46 | 48 | 48 | 49 | 51 | 63 | 61 | 61 | 50 | 45 |
| | | | (Breakdown)Solar-generated Electricity, etc | Sets | 40 | 41 | 44 | 46 | 48 | 47 | 49 | 61 | 59 | 59 | 48 | 43 |
| | | | Fuel Batteries | Sets | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| | | | Electricity Generated | 100 mil kWh | 189.5 | 168.9 | 183.4 | 163.5 | 156.2 | 140.76 | 36.59 | 46.16 | 50.47 | 45 | 74.1 | 92.0 |
| | | Company Car | $CO_2$ Emission | 10,000t-$CO_2$ | | | | 0.93 | 3.37 | 3.24 | 3.37 | 3.16 | 3.1 | 3.24 | 3.01 | 2.77 |
| | | | No. of Low Emission Vehicle | Cars | 105 | 244 | 252 | 248 | 252 | 250 | 224 | 213 | 171 | 202 | 219 | 295 |
| | | | (Breakdown) Electric Vehicle | Cars | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| | | | Natural Gas Vehicle | Cars | 56 | 168 | 172 | 170 | 167 | 160 | 132 | 106 | 77 | 69 | 53 | 38 |
| | | | Hybrid Vehicle | Cars | 46 | 76 | 80 | 78 | 85 | 90 | 92 | 99 | 94 | 133 | 166 | 254 |
| | | Fuel | $CO_2$ Emission | 10,000t-$CO_2$ | | | | 0.61 | 0.58 | 1.73 | 0.93 | 1.47 | 1.2 | 1.3 | 1.3 | 1.28 |
| | Waste Reduction Measures | Telecommunications Facility | Disposal Quantity | 10,000t | 1 | 0.2 | 0.16 | 0.07 | 0.03 | 0.02 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| | | | Total Emission | 10,000t | 14.3 | 10.5 | 9.8 | 11.95 | 12.38 | 11.91 | 12.74 | 12.87 | 13.2 | 12.47 | 13.35 | 13.58 |
| | | | Recycled Quantity | 10,000t | 13.3 | 103 | 9.6 | 11.88 | 12.35 | 11.9 | 12.73 | 12.86 | 13.19 | 12.46 | 13.34 | 13.57 |
| | | | (Breakdown) Telecommunication Cables | 10,000t | 3.2 | 1 | 0.9 | 1.58 | 0.75 | 0.76 | 1.18 | 1 | 0.88 | 0.89 | 0.85 | 0.85 |
| | | | Switching Equipment | 10,000t | 0.7 | 0.6 | 0.8 | 0.85 | 0.9 | 0.76 | 0.76 | 0.79 | 0.84 | 0.82 | 0.79 | 0.86 |
| | | | Concrete Poles | 10,000t | 9 | 7.8 | 6.9 | 9.44 | 10.01 | 9.67 | 10.14 | 10.46 | 10.54 | 10 | 11.1 | 11.1 |
| | | | Others | 10,000t | 0.4 | 0.8 | 1 | 0 | 0.64 | 0.7 | 0.65 | 0.61 | 0.93 | 0.75 | 0.6 | 0.6 |
| | | | Disposal Quantity of Waste Batteries (Industrial Wastes Subject to Special Control) | t | 924 | 525 | 500 | 184 | 45 | 15 | 4 | 30 | 58 | 185 | 32 | 10 |
| | | | Quantity of Waste Batteries Generated | t | 4,621 | 5,718 | 5,261 | 3,961 | 2,669 | 2,788 | 2,229 | 2,895 | 6,689 | 4,981 | 3,578 | 3,693 |
| | | | Recycled Quantity of Waste Batteries | t | 3,697 | 5,193 | 4,761 | 3,777 | 2,624 | 2,773 | 2,225 | 2,865 | 6,631 | 4,930 | 3,546 | 3,683 |
| | | Wastes from Civil Engineering Works | Disposal Quantity | 10,000t | 1.4 | 1.2 | 0.01 | 0.13 | 0.02 | 0.04 | 0.08 | 0.1 | 0.11 | 0.16 | 0.11 | 0.11 |
| | | | Quantity Generated | 10,000t | 5.6 | 5.2 | 7.9 | 6.4 | 2 | 4 | 9.06 | 8.52 | 9.57 | 9.07 | 7.02 | 10.2 |
| | | | Recycled Quantity | 10,000t | 4.2 | 4 | 7.8 | 6.27 | 1.98 | 3.96 | 8.98 | 8.42 | 9.47 | 8.9 | 6.91 | 10.1 |
| | | | Recycle Rate | % | 75 | 77 | 99.9 | 98 | 99 | 99 | 99.1 | 99.8 | 98.9 | 98.2 | 98.4 | 98.9 |
| | | Wastes from Construction Works | Disposal Quantity | 10,000t | 2 | 1.2 | 2 | 1.4 | 0.7 | 0.35 | 0.74 | 0.47 | 0.31 | 0.3 | 0.3 | 0.19 |
| | | | Quantity Generated | 10,000t | 17.8 | 9.8 | 18.6 | 20.7 | 16 | 7.97 | 14.26 | 11.81 | 14.7 | 16.1 | 15.8 | 9.3 |
| | | | Recycled Quantity | 10,000t | 15.8 | 8.6 | 16.6 | 19.3 | 15.3 | 7.61 | 13.52 | 11.34 | 14.4 | 15.6 | 15.5 | 9.1 |
| | | | Recycle Rate | % | 89 | 88 | 89 | 93 | 96 | 95.6 | 94.8 | 96.0 | 97.9 | 97.76 | 98.4 | 97.9 |
| | | Offices | Disposal Quantity | 10,000t | 1.12 | 1.01 | 0.95 | 0.83 | 0.82 | 0.92 | 0.18 | 0.14 | 0.12 | 0,09 | 0.05 | 0.012 |
| | | Medical | Disposal Quantity of Medical Wastes | t | 1,279 | 1,305 | 1,211 | 1,162 | 1,095 | 1,139 | 1,108 | 1,179 | 1,135 | 1,018 | 438 | 487.7 |
| | | | [Reposted] Disposal Quantity of Infectious Wastes (Industrial Wastes Subject to Special Control) | t | 281 | 274 | 278 | 311 | 326 | 335 | 389 | 360 | 369 | 388 | 47 | 44.7 |
| | Paper Resource Reduction Measures | Phone Directories | Quantity of Pure Pulp Used | 10,000t | 2.5 | 1.9 | 1.8 | 1.7 | 1.3 | 1.1 | 1.1 | 0.9 | 0.5 | 0.6 | 0.7 | 0.6 |
| | | | Usage Rate of Old Paper | % | 61.4 | 63.5 | 64.1 | 65.5 | 67.2 | 67.6 | 66.5 | 71.7 | 80 | 78.7 | 73.0 | 73.4 |
| | | | Quantity of Paper Used | 10,000t | 6.6 | 5.3 | 5.1 | 4.8 | 4 | 3.5 | 3.4 | 3.2 | 2.7 | 2.6 | 2.4 | 2.27 |
| | | | Quantity Collected | 10,000t | 3.3 | 3.3 | 3.1 | 2.8 | 2.6 | 2.1 | 1.8 | 1.9 | 1.5 | 1.4 | 0.9 | 0.62 |
| | | Telegram Paper | Quantity of Pure Pulp Used | 10,000t | 0.03 | 0.03 | 0.03 | 0.02 | 0.02 | 0.02 | 0.03 | 0.03 | 0.03 | 0.005 | 0.03 | 0.01 |
| | | Office Paper | Quantity of Pure Pulp Used | 10,000t | 0.01 | 0.02 | 0.02 | 0.01 | 0 | 0 | 0.07 | 0.04 | 0.04 | 0.01 | 0.09 | 0.07 |
| Resource Recycle Management | | Telecommunications Facility | Repelleting Quantity of Dismantled Facilities (Plastic) | t | 208 | 567 | 462 | 303 | 272 | 292 | 428.9 | 189 | 157 | 159 | 146 | 143 |
| | | | Recycled Quantity of Optical Cables | t | 207 | 331 | 716 | 725 | 224 | 796.5 | 883.3 | 1024.0 | 1,027 | 933 | 1,148 | 1,398 |
| | | Soil Generated from Civil Engineering Works | Quantity Generated | 10,000t | 30.7 | 23.7 | 36.6 | 31.7 | 24.3 | 30.5 | 34.9 | 35.6 | 33.1 | 18.5 | 28.3 | 27.3 |
| | | | Recycled Quantity | 10,000t | 8.9 | 12.3 | 27.5 | 21.2 | 22.9 | 28.67 | 33.2 | 34.8 | 30.6 | 18 | 27.2 | 26.2 |
| | | | Recycle Rate | % | 29 | 52 | 75 | 67 | 94 | 94 | 95 | 97.9 | 92.7 | 97 | 96 | 96 |
| | | Soil Generated from Construction Works | Quantity Generated | 10,000t | 0.48 | 0.05 | 0.28 | 0.1 | 0.06 | 6.53 | 0.03 | 0.007 | 0.29 | 0.3 | 0.13 | 0.024 |
| | | | Recycled Quantity | 10,000t | 0.48 | 0.05 | 0.28 | 0.1 | 0.06 | 6.52 | 0.03 | 0.005 | 0.07 | 0.29 | 0.12 | 0.02 |
| | | | Recycle Rate | % | 100 | 100 | 100 | 100 | 100 | 99.8 | 100 | 69.2 | 26 | 98.4 | 97 | 83.1 |
| | | Secondary Small Cells | Quantity Collected | 10,000 | 15 | 13 | 10 | 9 | 6.8 | 75.6 | 63.5 | 4.75 | 4.79 | 5.53 | 2.22 | 2.8 |
| | | Packing Material | Quantity of Polystyrene Foam Used for Products | t | 12 | 8 | 6 | 5.2 | 4.9 | 4 | 3.1 | 2 | 1.4 | 1.5 | 0.9 | 0.7 (1.5) |
| Proper Disposal & Management of Wastes | | Asbestos | Quantity of Remaining Construction Asbestos | 10,000t | 0 | 0 | 0 | 0 | 6.12 | 6.8 | 5.93 | 6.62 | 6.61 | 6.04 | 6.65 | 0.015 |
| | | | Quantity of Remaining Bridge Asbestos | t | 11 | 2 | 42 | 19 | 13.7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | CFC | No. of Remaining Air-cons Using Specified CFCs | Sets | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Implementation Status | | | No. of ISO14001 Certified Organizations | Organizations | 14 | 22 | 33 | 42 | 45 | 33Br. +2Org. | 43Br. +2Org. | 42Br. +2Org. | 42Br. +2Org. | 42Br. +2Org. | 30Br. +2Org. | 16Br. +2Org. |
| | | | Total No. of Participants in Clean Environment Campaign | Persons | 13,200 | 14,800 | 21,536 | 16,900 | 17,628 | 14,948 | 32,178 | 41,500 | 64,003 | 64,000 | 53,000 | 61,741 |
| No. of NTT West Employees | | | | Persons | 50,450 | 14,750 | 13,750 | 12,850 | 12,250 | 5,800 | 5,800 | 5,700 | 5,700 | 5,550 | 5,300 | 5,100 |
| Operating Revenue of NTT West | | | | 100 mil yen | 24,067 | 22,150 | 21,669 | 20,980 | 20,296 | 19,515 | 19,012 | 18,243 | 17,808 | 17,508 | 16,763 | 16,279 |

* Starting from FY 2002, the targets of control have been expanded to the performance of NTT Marketing Act and NTT NEOMEIT group companies.
* Target organizations: 39 NTT West Group companies and NTT BUSINESS ASSOCIE Co.,Ltd

### $CO_2$ Emission (Achieved)

| | |
|---|---|
| FY 2001 Performance | 645,000 t-$CO_2$ |
| FY 2002 Performance | 693,000 t-$CO_2$ |
| FY 2003 Performance | 754,000 t-$CO_2$ |
| FY 2004 Performance | 733,000 t-$CO_2$ |
| FY 2005 Performance | 769,000 t-$CO_2$ |
| FY 2006 Performance | 875,000 t-$CO_2$ |
| FY 2007 Performance | 889,000 t-$CO_2$ |
| FY 2008 Performance | 910,000 t-$CO_2$ |
| FY 2009 Performance | 967,000 t-$CO_2$ |
| FY 2010 Performance | 933,000 t-$CO_2$ |
| FY 2011 Performance | 951,200 t-$CO_2$ |
| FY 2012 Performance | 1,109,000 t-$CO_2$ |

* Up to FY 2003, the official coefficient of the Federation of Electric Power Companies of Japan had been used as the $CO_2$ emission coefficient for power consumption. From FY 2004 onward, coefficients based on the "Law Enforcement Ordinance on Promotion of Countermeasure against Global Warming" are used (0.378 kg-$CO_2$/kWh in FY 2004, 0.555 kg-$CO_2$/kWh in FY 2005).
For FY 2012 and FY 2011, the following coefficients are used.

| Electric power company | Actual emission coefficient kg-$CO_2$/kWh) | |
|---|---|---|
| | FY 2012 actual use value | FY 2011 actual use value |
| Tokyo Electric Power Company | 0.464 | 0.375 |
| Chubu Electric Power Co., Inc. | 0.518 | 0.473 |
| Hokuriku Electric Power Company | 0.641 | 0.423 |
| Kansai Electric Power Co., Inc. | 0.450 | 0.311 |
| Chugoku Electric Power Co., Inc. | 0.657 | 0.728 |
| Shikoku Electric Power Co., Inc. | 0.552 | 0.326 |
| Kyushu Electric Power Co., Inc. | 0.525 | 0.385 |
| Okinawa Power Company, Incorporated | 0.932 | 0.935 |
| ENNET Corporation | 0.409 | 0.409 |

### Final Industrial Waste Disposal (Achieved)

| | |
|---|---|
| FY 2001 Performance | 48,000 t |
| FY 2002 Performance | 29,000 t |
| FY 2003 Performance | 25,000 t |
| FY 2004 Performance | 18,000 t |
| FY 2005 Performance | 9,000 t |
| FY 2006 Performance | 7,000 t |
| FY 2007 Performance | 9,000 t |
| FY 2008 Performance | 6,000 t |
| FY 2009 Performance | 5,000 t |
| FY 2010 Performance | 6,000 t |
| FY 2011 Performance | 4,000 t |
| FY 2012 Performance | 3,000 t |

Professor
*Katsuhiko Kokubu*

Graduate School of
Business Administration,
Kobe University

Professor Kokubu completed his doctoral program at the Graduate School of Business, Osaka City University, where he was conferred the degree of Doctor in Business Administration. After working as an associate professor at Osaka City University and Kobe University, he became a professor at the Graduate School of Business Administration in Kobe University in 2011. Professor Kokubu is thechairman of ISO/TC207/WG8 and the Material Flow Cost Accounting Forum Japan, and also holds posts such as the board member of the Society for Environmental Economics and Policy Studies and the Sustainable Management Forum of Japan. His major publis works include "Theory and Execution of Environment Management Innovation" (Chuokeizai-sha, 2010), "Material Flow Cost Accounting" (Nikkei Publishing, 2008), and "Environment Management and Accounting" (YuhikakuPublishing, 2007).

### Environmental Conservation Activities Reflecting Business Features

NTT West Group consumes a large volume of electricity and generates waste due to the use and removal of telecommunications equipment, and consequently the load on the environment provided by its business is significant. The Group properly recognizes this situation and has been taking measures particularly against global warming and waste reduction in addition to resource saving while identifying problems and setting an index in detail. It is to the group's credit that they have had a steady effect. In addition, the target of a 40% reduction in power use by 2020 is extremely challenging. I expect that their activities to achieve this target will become more activated. For that purpose, not only daily activities but also technical innovation is indispensable. I believe that strategic policy setting and specific deployment toward such innovation will become important from now on. Socially, this is a task at an extremely high materiality level, therefore, I hope for further enhancement of information disclosure.

### Challenges to New Tasks

In the reports for this fiscal year, proof that the Group attempted new tasks was found. One task is the Group's biodiversity conservation activities. The management of natural resources to protect natural resources is an important task in which handling not only by the country and regions but also by corporations is becoming necessary. There are many occasions where companies like NTT West Group that conduct business covering entire regions can make contributions in particular. It is highly commendable that the Group conducts activities for this point while promoting dialog with stakeholders. I hope they keep an eye on deployment to natural capital accounting in the future. Moreover, in Green by ICT, I think it is very convincing that the Group introduced LCA in the performance of its activities. I believe it is even more preferable for the Group to take another step to analyze what kind of impact is placed on overall corporate activities by these effects so actual activities are taken advantage of.

### Integration of Management Strategies and Environmental Activities

Although NTT West publishes its environmental report and CSR report separately, integrated reports where the financial report and social environmental report are integrated have been receiving attention globally. In integrated reports, business strategies to pursue economic interests and social and environmental activities must be "integrated." Integrated report can be brief. Important indexes for society and the environment are upgraded to the same level as financial targets and reported. I believe that environmental conservation activities by NTT West Group are precisely integrated with business strategies in the promotion of it activities. I feel it is about time that the Group incorporates the elements of integrated reporting in the aspect of information disclosure as well.

## Response to Third Party Opinions

Together with the public and our customers, NTT West Group has been making efforts that contribute to the realization of a sustainable society. In order for us to further enhance our activities, we sincerely accept the opinions of Dr. Kokubu, and will take appropriate actions so that we can reflect them in our report in the next fiscal year.

As mentioned by Dr. Kokubo, "to reduce our energy use by 40% by FY 2020 compared to the FY 2010 level" is a large target. In order to achieve this target, we also think technical innovation is indispensable, and we have been focusing on the development and introduction of new technologies as well. For example, we conducted trials in commercial environments including a trial for using open air to cool telecommunication devices, and we created a "Hikari Denwa" sleep function for when telephones are not being used for energy saving. Our individual development and introduction of new technologies are being released as needed on our website, etc., however, we will continuously evolve our activities so that we can release the technologies to be introduced full-scale as a roadmap.

For the activities that involve a wider range of stakeholders suggested by Dr. Kokubo last year, we are deploying activities together with local organizations in the format of biodiversity conservation activities. For the biodiversity conservation activities, we consider the numerical calculation of effects such as natural capital accounting as another important item. Our assessments including LCA have just started; therefore, we will conduct examination so that we can release our assessments one by one.

In regards to integrated reports where financial reports and social and environmental reports are integrated, we have positioned our CSR report as an integrated report and our environmental reports as detailed versions. We will attempt to describe the relationship in a brief and easy-to-understand format.

Under our "Green NTT West Strategy," and recognizing that every aspect of our business imposes load on the environment, we, NTT West Group, understand that it is our corporate social responsibility to lead efforts that contribute to the realization of a sustainable, environment-friendly society. We will strive to engage in more active efforts than before.

Environment Management Promotion Office
Technology Innovation Department
Nippon Telegraph and Telephone West Corporation