



NTT Communications Corporation CSR Report 2018

Expanded Version

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Expectations are high for actions of ICT businesses to protect the global environment. We have established a Green ICT Vision 2020 that focuses on three areas: the realization of a low-carbon society, the promotion of a closed-loop recycling, and the preservation of biodiversity. And we are promoting a multifaceted approach to those areas. In fiscal 2016, we implemented results-based enhancements and reforms and established an Environmental Statement and Eco Strategy 2030 as our new vision.

Moreover, we proactively promote these activities because they are necessary for the upgrading and strengthening of an environmental management framework. We are going to make efforts to strengthen our global, seamless environmental management framework Groupwide. To this end, we will aggressively pursue protection of the global environment in all processes pertaining to our business activities, ranging from reduced electricity use and improvements in efficiency and procurement to operations and waste disposal. Therefore, the Group, through its core businesses, will do what it can to establish a society that is friendly to the environment while at the same time ensuring that our planet remains healthy for future generations.

Our Ambition

**A society in harmony with nature, preserving
the planet's abundance**

- ◆ A low-carbon society with a light environmental footprint that thoroughly recycles resources
- ◆ A society that respects biodiversity and protects abundant natural resources

Targeted
SDGs





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Fiscal 2017 Activity Results and Fiscal 2018 Targets

Actions Implemented in Line with CSR KPIs

In line with the three underpinning themes of fiscal 2017: “realizing a low carbon future,” “implementing closed-loop resources,” and “planning a future of natural harmony,” we worked to reduce the environmental impact associated with all our business activities and were particularly aggressive in our efforts to reduce CO₂ emissions, improve our final waste disposal ratio, and raise awareness of biodiversity activities in Japan and around the world. Some of the examples of our accomplishments across Group companies in Japan and overseas are expanding environmental management at overseas bases, implementing measures for new greenhouse gas reduction initiatives, and improving our final waste disposal ratio while organizing a biodiversity photo contest. In fiscal 2018, we will continue expanding and developing various measures globally as we focus on activities that include reducing electricity consumption, promoting waste recycling, and preserving ecosystems.

◆ Fiscal 2017 Activity Results and Fiscal 2018 Targets

Priority Activities	Initiatives	Medium-Term Targets (Form We Want to Take in Five Years' Time)	Fiscal 2017 Targets	Fiscal 2017 Activity Results			Fiscal 2018 Targets	Scope	
				Specific Activities	Quantitative Results	Self-Assessment		Activities	Data
Realizing a Low Carbon Future	Cutting carbon emissions from businesses	We will raise power efficiency per data transmission in our telecommunications businesses (including data centers) by at least 10 times compared with fiscal 2013 levels (fiscal 2030 target)	<ul style="list-style-type: none">• Raise power efficiency per data transmission in our telecommunications businesses (including data centers) by at least 10 times in 2030 compared to fiscal 2013 levels (fiscal 2017 target was 2.8-fold)• Ongoing implementation of, for example, adjustment of telecommunications equipment intake/exhaust direction, improvement of airflow, optimization of indoor temperature, air-conditioning control by humidity sensors, switching off of unnecessary power usage• CO₂ emission amount: 252,000 t-CO₂<ul style="list-style-type: none">- In telecommunications and data center: 235,000 t-CO₂- In office buildings: 17,000 t-CO₂	<ul style="list-style-type: none">• Adjustment of telecommunications facility intake/exhaust directions, improvement of airflow, optimization of indoor temperature, and air-conditioning control by humidity sensors• Switching off of unnecessary power usage	<ul style="list-style-type: none">• Increase in power efficiency: 3.4-fold• CO₂ emission amount: 257,000 t-CO₂ (+ 5,000 t)<ul style="list-style-type: none">- In telecommunications and data center: 240,000 t-CO₂ (+ 5,000 t)- In office buildings: 17,000 t-CO₂ (on par)	★★★	<ul style="list-style-type: none">• Raise power efficiency per data transmission in our telecommunications businesses (including data centers) by at least 10 times in 2030 compared to fiscal 2013 levels (fiscal 2018 target was 3.3-fold)• Implement following energy management measures for further reduction of electricity use<ul style="list-style-type: none">- Remove the equipment that consumes large amounts of power and shutdown surplus air-conditioners- Use Dash Board to visualize efficiency of air-conditioning and usage of power and air-conditioners- Improve air flows and promote air-conditioning controls that take into account outside and room temperatures through visualization- Install DASH (air-conditioning control system) to data center	Within organization	Group companies in Japan
	Cutting society's carbon emissions through products and services	We will contribute to reducing CO ₂ emissions across society by at least 10 times more than the NTT Com Group's own emissions (fiscal 2030 target)	Expand the use of the Environmental Solutions Label System to contribute to reducing CO ₂ emissions across society by at least 10 times more than the NTT Com Group's own emissions in 2030 (fiscal 2017 target was 17.2-fold)	Maintain and promote the sales of Environmental Solutions Label certified services capable of contributing to the reduction of CO ₂ in society	Contribution to CO ₂ reduction in society/the Company's own emission: 19.8-fold	★★★	We are aiming to expand the use of the Environmental Solutions Label System to contribute to reducing CO ₂ emissions across society by at least 10 times more than the NTT Com Group's own emissions in 2030 (fiscal 2018 target is 16.5-fold)	Within/outside organization	Group companies in Japan

Achievement levels (self-assessment set at three levels) ★★★: Target achieved, ★★: Target almost achieved, ★: Target only partially achieved




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Priority Activities	Initiatives	Medium-Term Targets (Form We Want to Take in Five Years' Time)	Fiscal 2017 Targets	Fiscal 2017 Activity Results			Fiscal 2018 Targets	Scope	
				Specific Activities	Quantitative Results	Self-Assessment		Activities	Data
Implementing Closed-Loop Recycling	Realization of a low environmental impact business model	Realization of a low environmental impact business model	Building and maintenance of a low environmental impact business model - Implementation of measures to reduce electricity use - Installation of energy-saving equipment - Appropriate management of hazardous substances	• Nationwide deployment of airflow control • Installation of energy-saving equipment • Appropriate management of PCB/asbestos hazardous substances	—	★★★	• Building and maintenance of a low environmental impact business model - Implementation of measures to reduce electricity use - Installation of energy-saving equipment - Appropriate management of hazardous substances	Within organization	Group companies in Japan and overseas
	Thorough implementation of a 3R policy in businesses	• Thorough implementation of a 3R policy—reduce, reuse and recycle—with regard to all the resources relevant to our business activities - Improvement in final waste disposal ratio: final disposal ratio of 1.5% or lower (fiscal 2030 target)	• Thorough implementation of a 3R policy—reduce, reuse and recycle—with regard to all the resources relevant to our business activities - Improvement in final waste disposal ratio: final disposal ratio of 2.4% or lower • Strengthen measures at the level of individual organizations based on data on multifunction printer usage, and promote a paperless working style that utilizes ICT equipment	• Enhance promotion of 3R policy • Confirm waste process flow and method, promote thermal recycling to improve final disposal ratio • Promote paperless working style based on data on multifunction printer usage	Final disposal ratio: 0.85%	★★★	• Continue implementation of a 3R policy—reduce, reuse and recycle—with regard to all the resources relevant to our business activities - Improvement in final waste disposal ratio: final disposal ratio of 2.1% or lower • Strengthen measures at the level of individual organizations based on data on multifunction printer usage and promote a paperless working style that utilizes ICT equipment	Within organization	Group companies in Japan
Planning a Future of Natural Harmony	Facilities that show consideration for biodiversity	• Facility construction, maintenance and repair based on NTT Group building concepts • Compliance with action guidelines with regard to biodiversity conservation	• Facility construction, maintenance, and repair based on NTT Group building concepts • Compliance with action guidelines with regard to biodiversity conservation	• Facility maintenance based on NTT Group building concepts • Compliance with action guidelines with regard to biodiversity conservation	—	★★★	• Facility construction, maintenance and repair based on NTT Group building concepts • Compliance with action guidelines with regard to biodiversity conservation	Within organization	Group companies in Japan and overseas
	Utilize ICT to contribute to biodiversity	Utilize ICT to contribute/respond to biodiversity	Utilize ICT to contribute/respond to biodiversity	• Coral reef conservation activities through business activities at NTT Plala • Expansion of Mimawari Rakutaro • Information dissemination and educational activities through goo Green Label	—	★★★	Utilize ICT to contribute/respond to biodiversity	Within/outside organization	Group companies in Japan and overseas

Achievement levels (self-assessment set at three levels) ★★★: Target achieved, ★★: Target almost achieved, ★: Target only partially achieved

◆ Activity Indexes and Achievements (at Overseas Bases)

Activity	Implementation Ratio
Switch off unnecessary lighting, air-conditioning, and PCs	92%
Promote waste sorting and recycling according to the circumstances of each building	46%
Implement double-sided and double-page office paper printing	83%



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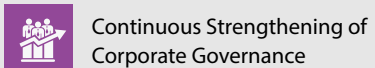
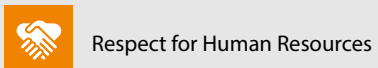
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Basic Philosophy and Vision

While emphasizing the philosophy in the Global Environmental Charter established by the NTT Group, our environmental protection activities take shape as the Environmental Statement, which applies the philosophy to the characteristics of our business. We set initiative goals and implement measures on an ongoing basis.

NTT Communications Group Global Environmental Charter

The NTT Group has established the NTT Group Global Environmental Charter to promote Groupwide consideration and actions relating to environmental protection from a global perspective. This philosophy and policy form the basis for the NTT Communications Group Global Environmental Charter, which is being disseminated among employees of the Group as a set of guidelines for the implementation of environmental protection activities.



For more information on the NTT Communications Group Global Environmental Charter, see:

<https://www.ntt.com/about-us/csr/eco/details.html>

Environmental Statement and Formulating Eco Strategy 2030

The NTT Communications Group has formulated "The NTT Communications Group Environmental Statement" as its overarching policy for promoting environmental activities. In this statement, we have expressed how we should act as a company in order to fulfill our responsibilities toward the global environment in the future. We also established Eco Strategy 2030 as a means of identifying priority issues that

should be addressed to realize the future outlined in the statement.

Working in unison, each and every NTT Communications Group employee around the world will engage in environmental activities to realize a future in which people and the planet remain in harmony by providing technologies and services that pioneer eras.

The NTT Communications Group Environmental Statement

Dedicated to global environmental management for a future
in which people and the planet remain in harmony

We will address three futures by providing technologies and services that pioneer eras.



Realizing a Low Carbon Future

We are contributing to the reduction of CO₂ emissions and facilitating adaptation to climate change risk.



Implementing Closed-Loop Recycling

We are working toward more effective resource allocation.








Planning a Future of Natural Harmony

We are contributing to the preservation of ecosystems.






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Eco Strategy 2030

Under the "Eco Strategy 2030," we have set out specific initiatives to help realize the three futures outlined in the "Environmental Statement." We also changed the names of the priority activities to accommodate the strategy.

The Three Futures We Are Targeting	Initiative	
 Realizing a Low Carbon Future	Contributing to the reduction of CO ₂ emissions across society	We will contribute to reducing CO ₂ emissions across society by at least 10 times more than the NTT Communications Group's own emissions.
	Raising power efficiency in our telecommunications businesses	We will raise power efficiency per data transmission in our telecommunications businesses by at least 10 times compared to fiscal 2013 levels.
	Adapting to climate change	We will play our part in adapting to climate change by actively promoting initiatives through all our activities and by collaborating with our stakeholders.
 Implementing Closed-Loop Recycling	Final waste disposal ratio	We will aim to keep the final disposal ratio of the waste generated by the NTT Communications Group at 1.5% or less.
 Planning a Future of Natural Harmony	Preservation of ecosystems	We will play our part in preserving ecosystems by actively promoting initiatives through all our activities and by collaborating with our stakeholders.

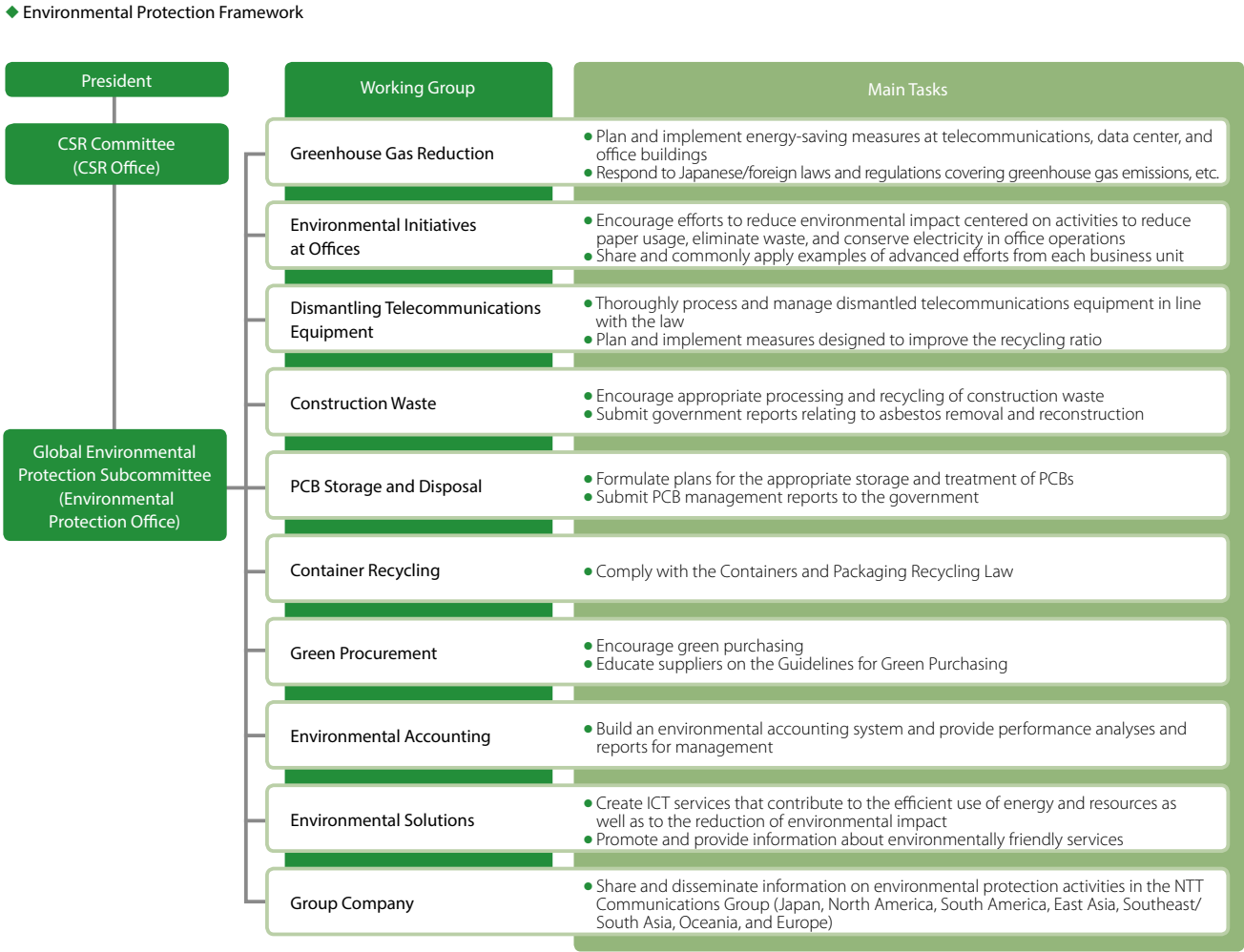
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Environmental Management

Promotion Framework for Reducing Environmental Impact, and Fiscal 2017 Initiatives

In order to continuously promote environmental protection initiatives, we formed a working group for each relevant issue while involving the entire NTT Group. Specifically, we hold Environmental Protection Subcommittee meetings at Group companies once a year to formulate an overall plan that encompasses a wide range of issues, including the reduction of greenhouse gas emissions and waste and the promotion of environmental solutions. Through these meetings, we also share information on the results of actions taken and promote the horizontal deployment of various initiatives. Particularly in recent years, we have been making efforts to ascertain and curb environmental impact by means of Scope 3 at the supply chain level, and since fiscal 2014 we have expanded the scope of the categories covered.






As for the environmental management structure for our bases in Japan, we promote environmental protection activities at 14 companies. At our overseas bases, with a view to promoting global environmental management, we have been expanding our management bases, appointing environmental officers, and strengthening capabilities for gathering and sharing information on activities. Looking ahead, we will hold global environmental management meetings with a focus on saving energy and measures for reducing energy use with the intention of having these activities lead to further reductions in environmental impact.





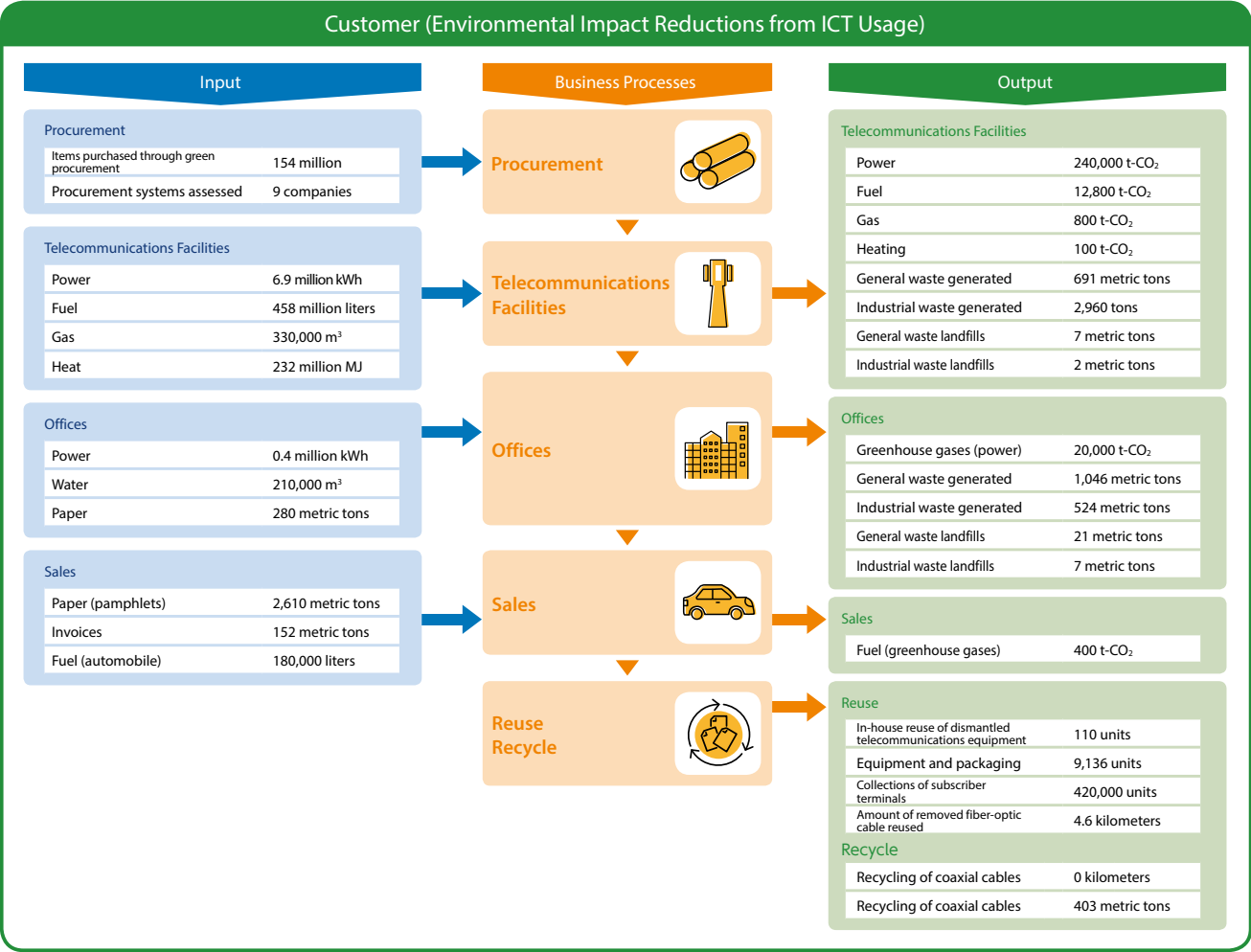
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Environmental Impact of Business Activities

Fiscal 2017 Material Flow



Estimates of Scope 3 Emissions

In performing these calculations, we have referred to unit emission databases and other materials produced through studies by the Ministry of the Environment and other government ministries and agencies and expanded the scope of target categories. Of the 15 target categories, our calculations include 10 that are relevant.

Volumes of Scope 3 Emissions by Category

	Category	Share	Emissions (t-CO ₂)
1	Purchased goods and services	26.7%	1,159,083
2	Capital goods	15.9%	692,121
3	Fuel and energy activities not included in Scope 1 and Scope 2	2.1%	91,078
4	Upstream transportation and distribution	0.2%	10,811
5	Waste generated through business activities	0.0%	387
6	Business travel	0.3%	14,713
7	Employee commutations	0.3%	12,468
11	Use of products sold	51.9%	2,255,279
12	Disposal of products sold	2.1%	90,221
14	Franchise	0.4%	16,906
	Total	100.00%	4,343,067



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Environmental Accounting in Fiscal 2017

The NTT Communications Group tabulates its environmental conservation costs (categories corresponding to business activities) and the economic benefit derived from its environmental conservation activities (real financial impact) in line with the Environmental Accounting Guidelines 2005, issued by the Ministry of the Environment, and the NTT Group Environmental Accounting Guidelines.

The environmental conservation cost in fiscal 2017 declined by approximately 0.27 billion yen year on year to 1.84 billion yen, consisting of around 0.68 billion yen in investments and about 1.15 billion yen in expenses. This was mainly due to a decrease in investment in facilities related to oil tanks. Meanwhile, the economic benefit derived from environmental conservation in fiscal 2017 was 1.76 billion yen, almost the same as in the previous fiscal year.

Environmental Conservation Costs (Categories Corresponding to Business Activities) (Millions of Yen)

Category	Key Measures		Investment		Expenses	
			Fiscal 2016	Fiscal 2017	Fiscal 2016	Fiscal 2017
(1) Business area cost			937	603	583	739
Breakdown	Pollution prevention costs	Oil tank facility for power generator use Management of items using PCBs	204	73	80	72
	Global environmental conservation costs	Measures to reduce CO ₂ emissions resulting from electricity use	733	530	156	205
	Resource circulation costs	Waste disposal and reuse expenses	0	1	347	462
(2) Upstream/downstream costs	Measures to recover, recycle, and reuse telecommunications equipment		90	79	379	315
(3) Administration costs	Environmental conservation management activities		0	0	65	66
(4) R&D costs	Allocated portion of the NTT Group's environmental R&D costs		0	0	57	32
(5) Social activity costs	Costs of supporting volunteer participation		0	0	5	5
(6) Environmental remediation costs			0	0	0	0
Total			1,027	683	1,089	1,156

Economic Benefits Associated with Environmental Conservation Activities (Real Financial Impact) (Millions of Yen)

Category	Key Measures	Fiscal 2016	Fiscal 2017
Revenue	Revenues from sales (cables, metal scrap, etc.)	104	243
Cost reductions	Reductions in expenses as a result of measures such as those related to reducing electricity use	617	591
	Reductions in purchase cost as a result of reusing dismantled telecommunications equipment	494	404
	Decrease in postal and paper costs due to utilization of Mypage (online account page)	505	527
	Other	2	3
Total		1,723	1,768

Target period: April 1–March 31

Scope: 14 domestic companies of the NTT Communications Group






Tabulation and disclosure: Figures were tabulated in line with the Ministry of the Environment's Environmental Accounting Guidelines 2005 and the NTT Group Environmental Accounting Guidelines.

Expenses include personnel expenses but exclude depreciation.



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Environmental Management Structure

Acquiring ISO 14001 Certification

Three companies in the NTT Communications Group had acquired ISO 14001 certification as of March 31, 2018. We have contracted outside environmental consultants to perform internal audits once a year to certified departments and companies in order to ensure the appropriate implementation of environmental management and continual improvements that will allow a steady reduction of the environmental impact of business activities. Regular reviews and renewal examinations are also undertaken by an independent certification body. Outstanding issues are thus identified, and remedial measures are taken swiftly. Besides our initiatives centering on reductions of office paper and electricity use and the promotion of waste recycling, we encourage the adoption of measures aimed at creating an environmentally friendly society.

ISO 14001-Certified Companies

Company Certified		Date
NTT Communications Corp.	Procurement Dept.	October 1999
	Solution Services Dept.	March 2004
NTTPC Communications, Inc.		November 2003
NTT Plala Inc.		December 2011

As of March 31, 2018

Environmental Audits and Environmental Surveys

Guided by its Global Environmental Charter, the NTT Communications Group shares yearly PDCA and other reports at the Global Environmental Protection Subcommittee, an organization that comes under the CSR Committee. These reports outline details of the various activities administered by the 10 working groups that drive the Group's environmental protection activities. In addition to sharing information and calling for the further development of effective initiatives, we are promoting environmental management on a Groupwide basis.

Compliance with Environmental Legislation and Regulations

The NTT Communications Group devotes itself to ensuring legal compliance and proper risk management while liaising closely with the other corporations of the NTT Group. Including environmental laws and ordinances that look to curtail pollution, emissions standards and the PRTR Law*, legislation of all kinds is fully communicated to related departments, and independent guidelines have been established for in-house application. Also, we are enhancing compliance education. We were not involved in any litigation or legal violations pertaining to environment-related accidents, infringements, fines, or complaints in fiscal 2017. We plan to continue our Companywide efforts to prevent pollution and comply with related laws and regulations.

*Act on Confirmation, etc. of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management Thereof.

Promoting Green Procurement

NTT Communications issued its Guidelines for Green Purchasing in 1999. In 2010, the Company brought these guidelines into compliance with the Energy-Saving Performance Guidelines enacted by the NTT Group and added the perspective of ICT-related energy-saving that the Company recognized as an important issue, while changing the name to the Guidelines for Green Procurement. Application of these guidelines drove NTT Communications to include new factors in its set of criteria applied when selecting suppliers, such as the supplier's actions toward environmental conservation and an environmental conservation element of the procured item. Through its green procurement initiatives, NTT Communications works to improve its environmental protection activities with its suppliers and seeks to commit to further social contribution.






Status of Green Procurement and Green Purchasing (1,000 Units)

	Fiscal 2013	Fiscal 2014	Fiscal 2015	Fiscal 2016	Fiscal 2017
Green procurement of goods, excluding office supplies	1,410	1,200	1,050	900	1,540
Green procurement of office supplies	240	250	200	200	220



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Environmental Education Initiatives

We offer all employees environmental education, aiming to raise their awareness of environmental matters. We are also proactive in environmental awareness activities as part of our CSR efforts, extending the scope of participation to include not only employees but also their families and business partners.

In fiscal 2017, all-employee training sessions covered international trends, such as the SDGs and ESG investments. Additionally, we undertook a range of environmental awareness and education activities, including a cleanup of the areas surrounding our offices and the seaside, promotion of the ecocap movement, and a biodiversity-related photo contest. Moreover, woodland conservation activities were carried out at NTT Com Solutions and NTT Com Marketing in a bid to raise the level of understanding regarding the importance of protecting the natural environment.



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Realizing a Low Carbon Future

Our Approach

Our range of approaches to reduce CO₂ emission includes saving energy and improving the efficiency of our facilities as well as offering services that incorporate excellent low-carbon features and engaging in environmental contribution activities. For our environmental initiatives in relation to Company facilities, we have set targets from three viewpoints: telecommunications facilities, offices, and overseas bases, and all of our employees are working together to reduce CO₂ emissions. Particularly, since electricity consumption accounts for more than 90% of total CO₂ emissions from business activities, we can expect great advantages as a result of saving energy and improving the energy efficiency of telecommunications equipment. We are thus making strong efforts in such respects as leading the industry in introducing cutting-edge technologies.

Primary Concept

While the advancement and spread of ICT has helped to bring about an affluent society and convenient lifestyles, the increase in power consumption from ICT-related equipment is placing enormous pressure on the environment. Against such a backdrop, SDN 13 is urgently combating climate change. Reducing CO₂ emissions, the main cause of climate change, is a matter of utmost urgency not only for humans but also for the prosperity of all living creatures. As part of our initiative to contribute to the creation of a low-carbon society, we set "realizing a low carbon future" as one of the theme for our Environmental Statement. In order to make our statement concrete, we will take on activities with a strong awareness of specific effects while continuing to strengthen our efforts from a global perspective and taking into account the expansion of our businesses' supply chains.

Main Achievements in Fiscal 2017 and Goals for the Coming Years

In fiscal 2017, we continued our ongoing efforts to raise power efficiency per data transmission in our telecommunications businesses. Our comprehensive activities to improve power efficiency included adjusting telecommunications facility intake/exhaust directions, using humidity sensors to improve airflow, optimizing the room temperature by controlling air-conditioning, and turning off unused equipment. As a result, power efficiency increased by 3.4 times, exceeding the target of 2.8 times. In addition, when putting our solutions on the market, those that are assessed as having a certain level of environmental impact reduction benefits are given an Environmental Solutions Label to make visible their effects. Consequently, the reduction of CO₂ emissions has contributed to society, which were over 17.2 times of the target volume and exceeded the Company's emissions by more than 19.8 times. Going forward, we will further develop these initiatives and commit to realizing a low-carbon society.



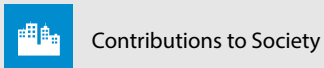
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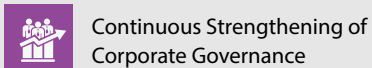
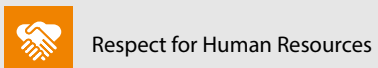
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Reduction of Greenhouse Gases

> Fiscal 2017 Results and Fiscal 2018 Outlook

When calculating the volume of greenhouse gas that we release, we include the buildings owned by other companies, such as those where we rent space as well as data centers that provide colocation services, in addition to buildings owned by the NTT Communications Group. In fiscal 2017, CO₂ emissions*¹ by the NTT Communications Group totaled 257,000 t-CO₂. This exceeded the Group's target by 5,000 t-CO₂, equal to an increase of approximately 4.9% compared to the previous fiscal year. Furthermore, in fiscal 2017, CO₂ emissions per sales decreased by around 2.4% year on year.

As for telecommunications equipment, at communications and data centers we visualized the power usage in server and machinery rooms and concentrated on curtailing the power used for air-conditioning by conducting airflow improvement initiatives and expanding the installation of integrated air-conditioning control systems such as SmartDASH. In offices, we conducted year-round energy-saving activities while bearing in mind operational efficiency and workplace comfort.

In fiscal 2018, the NTT Communications Group will work together and continue to reduce CO₂ emissions through ongoing energy-saving activities and other new measures, including research and development of technologies and implementing rules for saving energy. It has set a target for CO₂ emissions at the level of 263,000 t-CO₂ or below.

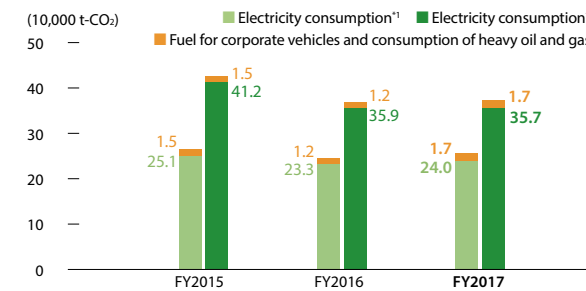
At our overseas facilities, CO₂ emissions in fiscal 2017 showed an upward trend of about 495,000 t-CO₂ (approximately 490,000 t-CO₂ for data centers and 5,000 t-CO₂ for offices), reflecting a significant increase in demand for cloud services and data centers as well as the commencement of operations at new data centers in addition to expanding the scope of aggregation. We are working to reduce electricity

use at overseas data centers by combining highly energy-efficient buildings and facilities such as LEED*²-certified data centers. To the same end, in Japan, we are rolling out high-performance solutions designed to reduce air-conditioning energy consumption. We will continue these measures in fiscal 2018. Furthermore, we intend to continue providing energy-efficient data centers and cloud services to society, having customers' servers and their peripheral equipment including air-conditioning, UPS, and lighting integrated at our data center, consequently improving the power consumption efficiency of all of society.

*1 CO₂ emissions are calculated using the fiscal 2020 CO₂ emission coefficient target of 0.33 kg-CO₂ per kWh, provided by the Federation of Electric Power Companies in Japan in June 2010.

*2 Leadership in Energy and Environmental Design: A certification system run by the U.S. Green Building Council to assess the energy saving capacity and environmental impact of an entire building.

◆ CO₂ Emissions from Business Activities

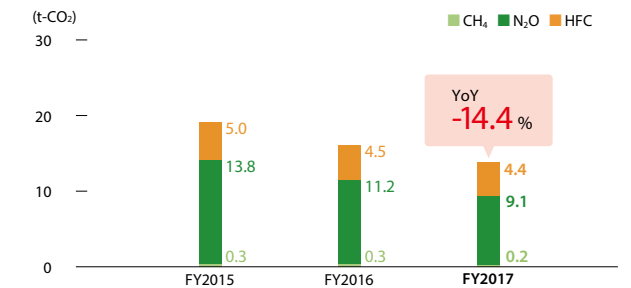


Scope: 14 domestic companies of the NTT Communications Group

*1 For the light green bar graphs, the 0.33 kg-CO₂ per kWh numerical target value for CO₂ emission coefficients provided by the Federation of Electric Power Companies in Japan was used.

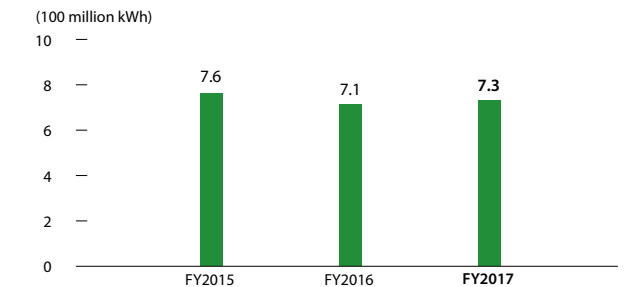
*2 For the dark green bar graphs, the CO₂ emission coefficients used were obtained from electric power companies.

◆ Other Greenhouse Gas Emissions (Converted to CO₂ Equivalents)



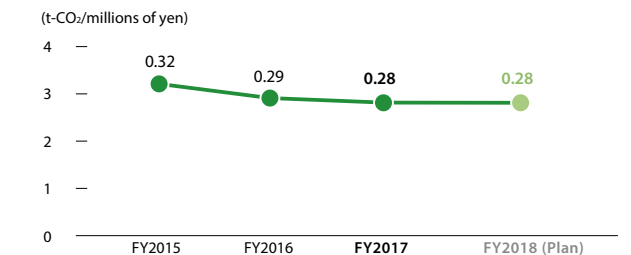
Scope: 14 domestic companies of the NTT Communications Group

◆ Power Purchases



Scope: 14 domestic companies of the NTT Communications Group

◆ CO₂ Emissions per Unit of Sales





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Initiatives Related to Telecommunications Facilities

➤ Fiscal 2017 Results and Plans for Fiscal 2018

In fiscal 2017, CO₂ emissions increased by approximately 5.3% year on year to 240,000 t-CO₂ (exceeded the target by 5,000 t-CO₂). Despite augmented and expanded measures, such as reducing electricity use in air-conditioning systems by making visible the power usage status of machinery and server rooms, emissions increased due to the rise in demand for sales at data centers in Tokyo and Osaka as well as the installation of new cloud servers.

We expect CO₂ emissions to continue the upward trend in fiscal 2018 due to ongoing robust data center and cloud service sales. However, we have set our emissions target at below 246,000 t-CO₂, which we aim to achieve through the expansion of ongoing visualization of power usage as well as by new measures that include a removal of extra equipment for the purpose of implementation of newly developed technologies, improvement of airflow, and optimization of equipment for telecommunications services.

➤ Building Cutting-Edge Data Centers with Advanced Low-Carbon Technologies

Data centers require a constant supply of electric power to operate. As a global ICT company, we introduce the latest equipment and technologies from around the world with the aim of reducing the carbon footprint of our data centers.

In Japan, the Osaka No. 5 Data Center, built in 2016, features improved cooling efficiency and lower power consumption in its air-conditioning systems owing to the deployment of an indirect external air-cooling system that applies the cooler temperatures outside the building and an air circulation

method that blows air from the walls. In addition, we will be installing an indirect evaporative air-conditioning system for data centers currently under development. This will make us the industry's first to use the system that will reduce the annual energy cost by 60% compared to the average air-conditioning system. Meanwhile, the expansion work at our Hong Kong Financial Data Center, one of the largest in Hong Kong, included server racks featuring better cooling efficiency and the cooling wall system as well as water-side economizers that switch off air-conditioners during cold weather and turn to cooling towers instead as thermal exchangers. As a result, energy efficiency was improved by roughly 16% for the entire air-conditioning system.

We are accelerating global efforts to reduce the carbon footprint of our data centers by continuing to introduce leading-edge equipment and technologies.

➤ Ongoing Efforts to Cut Air-Conditioner Power Consumption at Telecoms Facilities in Japan

Having targeted a 20% reduction in the electricity consumed by air-conditioning, we have implemented a range of measures, including SmartDASH, an automated system that visualizes temperature zones in server rooms, detects areas that are too cold, and automatically controls air-conditioning, and Aisle Capping, a technique that physically separates the intake (low temperature) and exhaust (high temperature) air from IT equipment by placing sidewalls and ceilings around IT equipment in the aisles between rows of server racks.

To further optimize air-conditioning in terms of electricity use, we have been implementing measures through cross-organizational teams to reduce various power uses and electricity costs. Evolved around the ICT-driven visualization of both temperature and power consumption, the measures have included the implementation of thorough airflow improvement, temperature adjustments, and air-

conditioning shutdown initiatives based on adjustments to telecommunications facility intake/exhaust directions and temperature sensor information, upgrading old types of telecommunications equipment and power facilities to increase capacity and efficiency, and air-conditioning controls that take into account the temperatures outside and in the room. Going forward, we will work on more finely tuned air-conditioning power management, such as renovating rooms with low efficiency, which are found when more rooms are visible in regard to their air-conditioning efficiencies. Cutting back on power use at peak times and implementing temporary temperature adjustments made for comfort include a shutoff feature for use at night and during the winter.

➤ Introducing Solar Power Generation Systems that Actively Utilize Renewable Energy

Since 2009, NTT Communications has been engaged in power generation using solar power generation systems at its communications and data centers in Tokyo. Now with four system units in operation, we generated approximately 353,000 kWh of electricity in fiscal 2017. The power generated is used to light the building's communal areas.

Overseas we generate solar power at our data centers in Singapore and Malaysia. We have installed a solar thermoelectric power generation system in Hong Kong, a wind power generation system in India, and hydroelectric power generation systems in Vietnam and Germany. In fiscal 2017, these facilities generated approximately 165 million kWh of electricity. In the years to come, we will continue to promote the utilization of environment-friendly renewable energy.

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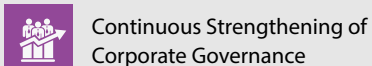
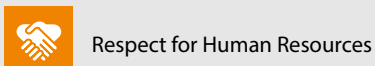
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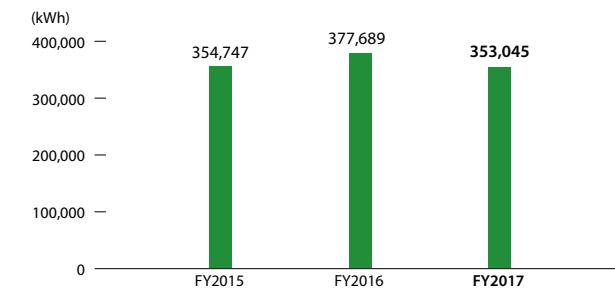
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Overall Amounts of Electricity Generated by Solar Panels at Data Centers in Japan



Solar panels installed at the Tokyo No. 5 Data Center



Solar panels installed on the rooftop of our data center building in Malaysia



Office Initiatives

Fiscal 2017 Results and Plans for Fiscal 2018

Drastic measures are being called for in the form of office initiatives to cut electricity use, while considerations are being made to place a limit on initiatives for communications facilities, such as data centers and telecommunications buildings that require a certain amount of continuous power supply to provide their services.

In fiscal 2017, CO₂ emissions amounted to 17,000 t-CO₂ (approximately on target), the same level as in fiscal 2016, as a result of our energy-saving measures, which were not as tight as those implemented in the period following the Great East Japan Earthquake. From fiscal 2018 onward, we will implement energy savings that take into consideration comfortable working environments as well as work efficiency, and we are targeting emissions not exceeding 17,000 t-CO₂, by revising our energy saving rule and also by expanding the use of thin-client PCs.

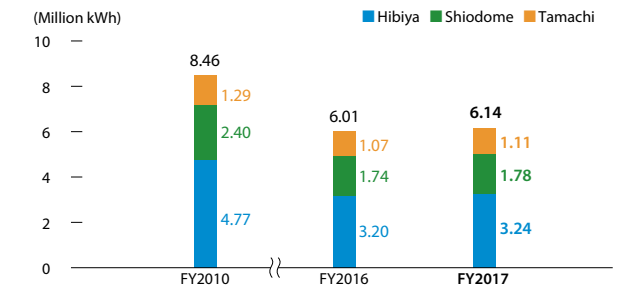
Summer and Winter Energy-Saving Measures

In addition to summer and winter energy-saving measures, the NTT Communications Group implements ongoing electricity-saving measures throughout the year, including the use of energy-saving settings on PCs, reducing the number of lights in elevators and our operations, and adjusting air-conditioner settings, and we are striving to reduce our energy consumption in Japan.

During the summer months, the Group targeted a reduction of electricity consumption at its office buildings, of 30% from the fiscal 2010 level. Some of the main initiatives taken by the Group to achieve that target were: maintaining higher air-conditioner settings (at 28°C in the summer), cutting back

on the number of lights used, encouraging the use of stairs when going up four floors or down five, reviewing the dress code, and switching off office equipment when leaving the office. Thanks largely to these endeavors, in fiscal 2017 the Group achieved a reduction in total electricity consumption of approximately 27.5% at its three principal buildings in Hibiya, Shiodome, and Tamachi. We implemented similar energy-saving measures in winter as well such as the setting of air-conditioning temperatures at 20°C.






Average Electric Consumption in Office Buildings from June to September





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Our overseas bases are working proactively to reduce power consumption by applying the same guidelines as in Japan: turning off unnecessary lights, air-conditioners, and PCs. The implementation rate was 92%, the same as in the previous fiscal year. The main initiatives involve switching off lights, air-conditioning, and PCs when not in use and at the end of the work day; using the power saving setting on PCs; and making a thorough effort to adjust office thermostats. The same level of energy saving awareness as at our offices in Japan has spread to our overseas bases, and other initiatives are being implemented in each region.

In China and Vietnam, power saving targets have been set while a proactive and progressive approach is being taken for reduction measures to achieve those goals.

East Asia	Upgrade to LED lighting, adjust air-conditioner settings in the summer and winter, stop using air-conditioners in the spring and autumn, make sure power is turned off when the last person leaves the office
Southeast and South Asia	Turn off lights during lunch hour and while working, when possible; deploy LED lighting; make sure the power is turned off when the last person leaves the office
Europe	Install LED lighting, automatically turn off lighting and air-conditioners, car leasing, make sure the power is turned off when the last person leaves the office
United States	Install LED lighting, implement and announce Environment Day, make sure the power is turned off when the last person leaves the office

Encouraging Energy Conservation in Offices by Managing Individual Air-Conditioner

NTT Communications manages individual air-conditioners for each section on the floors of its office buildings as a way to conserve energy. At the Hibiya Building, our head office, employees are in principle prohibited from using individual air-conditioners. However, they can be used in the event that a building-wide air-conditioning system is set at 28°C in the summer and 20°C in the winter when this does not create a working environment that impedes work or affects employee health, or after the operating hours of the building-wide air-conditioning system. An example of energy conservation when using individual air-conditioners is to keep a logbook to record the name of the person and the time it was turned on. In addition, a timer should be used so that the air-conditioner shuts down automatically after three hours, in case the employee forgets to turn it off. The last person to leave the office is responsible for making sure that each floor air-conditioner is turned off. All of our offices take these and other incremental steps with the aim of having a major conserving effect on energy usage.

Promoting Use of the Company's Internal Cloud

NTT Communications possesses a number of internal systems to provide its services to customers. Migrating these internal system networks to and integrating them with internal ICT infrastructure by means of a private cloud using server virtualization lessens energy consumption and other environmental impact. Backed by such environmental awareness, we are striving to promote the use of an internal cloud platform and, as a result, over two-thirds of the internal system now operates on the internal ICT platform.

Looking ahead, we plan to continue migrating and integrating our internal ICT infrastructure and work on

reducing environmental impact.

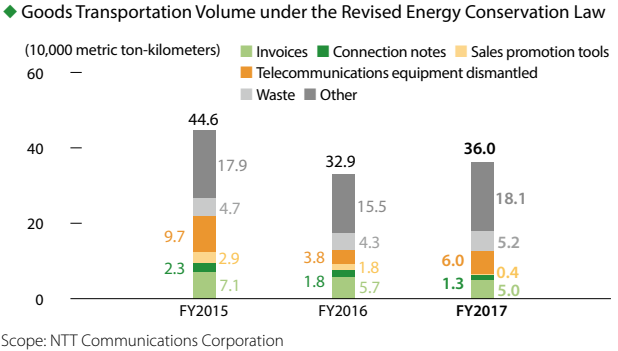
Transportation Initiatives

Fiscal 2017 Results and Fiscal 2018 Outlook

We annually audit the amount of transportation for invoices, sales promotion tools, and office waste. Also, we voluntarily seek ways to streamline transportation, such as by reducing the number of transportation trips, the volume of items transported and the transportation distance, and otherwise enhance logistics.

In fiscal 2017, NTT Communications worked to reduce the amount of paper by digitalizing sales tools and manuals as well as by expanding online application forms. Despite our efforts, transportation increased by 9.4% year on year to 360,000 metric ton-kilometers.

In fiscal 2018, we will continue our efforts to reduce transportation volume by digitalizing internal tools and pamphlets as well as encouraging the use of online application forms.



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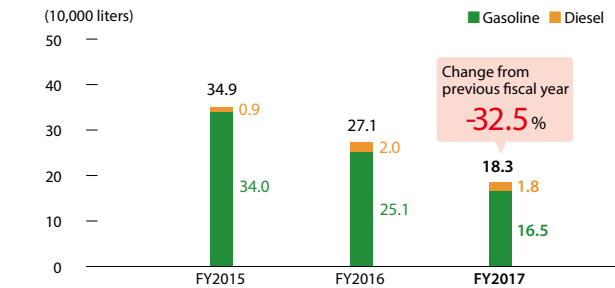
Contributions to the Global Environment | Realizing a Low Carbon Future

> Reducing Fuel Use by Company Vehicles

To help solve pollution problems and contribute to the realization of a low-carbon society, we have devised measures to introduce environmentally friendly vehicles and are addressing to reduce the amount of fuel used by Company vehicles across the entire Group.

We are currently reviewing the number of its sales vehicles and steadily promoting eco-driving and other measures. As a result, gasoline and diesel consumption by Company vehicles in fiscal 2017 totaled 165,000 liters and 18,000 liters, respectively. Compared to the previous fiscal year, this figure represents a decrease of about 88,000 liters (approximately 32.5%). We will continue to use environmentally friendly Company vehicles based on our Eco-car Introduction Policy.

◆ Fuel Consumption by Company Vehicles



Scope: 14 domestic companies of the NTT Communications Group

> Preventing Air Pollution and Promoting Energy Conservation through Electric Propulsion Ships

The subsea cable-laying vessels Kizuna and Subaru utilize an electric propulsion system* that optimizes the number of engines in operation in accordance with the load from the type of the subsea cable being laid and changes in the weather at sea. By controlling the number of engines in operation, we keep down the amount of heavy fuel oil A used while reducing emissions of, for example, CO₂ (carbon dioxide), NOx (nitrogen oxides), and SOx (sulfur oxides).

When in operation, we work to optimize fuel consumption by the most effective operating methods (which include optimum route selection that takes into consideration the ship's speed, ocean currents, and weather conditions as well as other factors) in order to curtail the amount of CO₂ emitted based on a Ship Energy Efficiency Management Plan (SEEMP).

We are also promoting the saving of energy by the partial installation of LED lighting for ships.

*An electric propulsion system is a type of ship that turns a generator with its engines, driving motors with the electrical power obtained, and turns propellers and bow thrusters for propulsion.

◆ Construction work completed on the cable-laying ship Kizuna (8,598 metric tons) in March 2017



◆ The cable-laying ship Subaru (9,557 metric tons)



Reducing the Carbon Footprint of Society through Our Services

> Fiscal 2017 Results and Fiscal 2018 Outlook

We are aiming to contribute to realizing a low-carbon society by reducing the Company's carbon footprint as well as by expanding services that help reduce carbon emissions. To this end, we believe that developing technologies that are ahead of the times and providing state-of-the-art services that utilize such technologies are important factors. Following this idea as an ICT solutions company, we will continue to create services that will lead to a reduction in environmental impact as well as to a host of technical innovations and contribute to a future where people and the Earth are in harmony. In fiscal 2017, we conducted an environmental assessment of Nexcenter facilities, expanded sales of cloud services and data center services, and contributed to a reduction in the environmental impact on society.

In fiscal 2018, we will continue to proactively develop solutions and services that effectively reduce carbon footprint, while seeking to raise the profile of the Environmental Solutions Label System, so that we are recognized as a company that contributes to the reduction of CO₂ emissions.

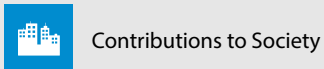
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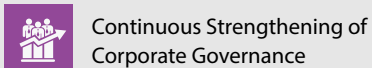
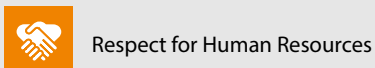
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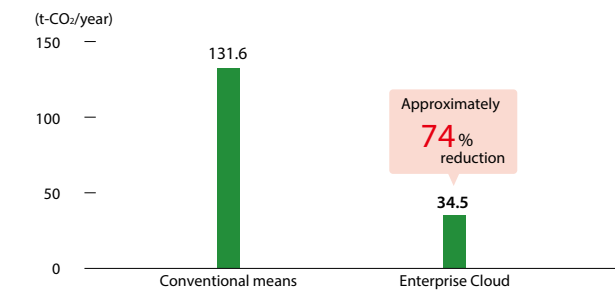


> Reducing CO₂ by Enterprise Cloud Service

On a global basis, NTT Communications provides ICT solutions, including networks, cloud services, applications, and security. In addition to contributing to society, these solutions help reduce environmental impact by curtailing CO₂ emissions.

Enterprise Cloud, a cloud service offered to companies, is an example of such a service that only telecommunications operators can provide by combining their resources, data centers, networks, and servers. The service features a host of options, such as the capability to allocate resources flexibly in accordance with customer needs and an environment to run core operations for the customer. By using Enterprise Cloud as a virtual server and migrating conventional servers and storage that had been installed and operated by customers, the number of servers are reduced to achieve the annual carbon footprint reduction of 97 t-CO₂ (approximately 74% reduction) for each small- and medium-sized company. By enabling the configuration of a system environment to share the same specifications in Japan and overseas, configuration and operational costs are substantially reduced compared to what a client would experience if they were to install their own independent systems.

◆ CO₂ Reduction Effect from Using Enterprise Cloud Service



> Environmental Solutions Label System

The NTT Group is exploring the idea of an Environmental Solutions Label System for self-certification of environmentally friendly ICT solutions and services. To qualify, ICT solutions and services will have to achieve CO₂ reductions of at least 15%, as assessed through the objective evaluation of environmental impact reduction benefits. The entire NTT Group provides these environmentally friendly services to help reduce the environmental impact of society.

Although no service obtained the Environmental Solutions Label in the NTT Communications Group in fiscal 2017, we did obtain the label for Nexcenter in fiscal 2016 under the certification system and now have a cumulative total of 10 solutions registered. We aim to obtain more certifications for the Environmental Solutions Label System.



For more information on the Environmental Solutions Label System, see:
<http://www.ntt.co.jp/kankyo/e/protect/label/index.html>

> Acquisition of the eco-ICT Mark

We conducted a self-assessment of our CO₂ reduction measures and submitted an application in accordance with the ICT Ecology Guidelines created by the ICT Ecology Guideline Council* and acquired the eco-ICT Mark.

The Council created and published guidelines for appropriate CO₂ reduction measures to be implemented by telecommunications carriers, clearly defining the standards for procuring systems and data center services from the viewpoint of reducing power consumption. These guidelines have been subsequently revised, with an eighth version publicly announced in February 2018. We will continue to participate in this initiative and work to disseminate the guidelines throughout the Group on an ongoing basis.



*A council established on June 26, 2009, by five industry organizations: The Telecommunications Carriers Association, the Telecom Services Association, the Japan Internet Providers Association, the Communications and Information Network Association of Japan, and the ASP-SaaS Industry Consortium (designated nonprofit organization).



For more information on the eco-ICT Mark, see:
http://www.tca.or.jp/press_release/2010/0701_400.html
For more information on the self-assessment checklist, see:
<http://www.ntt.co.jp/kankyo/e/management/guideline/ecoint.html>

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Contributions to the Global Environment | Implementing Closed-Loop Recycling



Implementing Closed-Loop Recycling

Our Approach

As symbolized by SDG 12 "Responsible Consumption and Production," the thoroughness and extent of penetration of a recycling-oriented society continues to gain in importance as a problem shared by us all. To contribute to the realization of a recycling-oriented society, the NTT Communications Group works to improve the reuse and recycling ratios on a daily basis while building business models with low environmental impacts. Specifically, the we are working to reduce the volume of waste in three areas: dismantled telecommunications equipment, construction waste, and office waste, while also promoting reuse and recycling in various aspects of its business.

Primary Concept

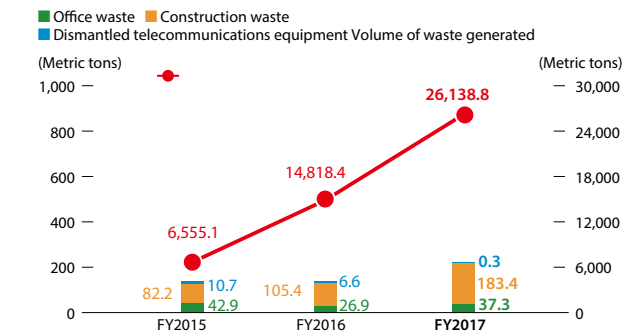
In order to contribute to the realization of a recycling-oriented society, we are pursuing the creation of a low environmental impact business model in addition to making daily efforts to improve the reuse and recycling ratio. Specifically, we have organized working groups in three areas, dismantled telecommunications equipment, construction waste, and office waste, and we are cooperating with other NTT Group companies in the promotion of waste reduction and reuse and recycling in various aspect of our business. Furthermore, in addition to our internal efforts, we will leverage our

knowledge, technologies, and knowhow to contribute to the creation of a recycling-oriented society.

Main Achievements in Fiscal 2017 and Goals for the Coming Years

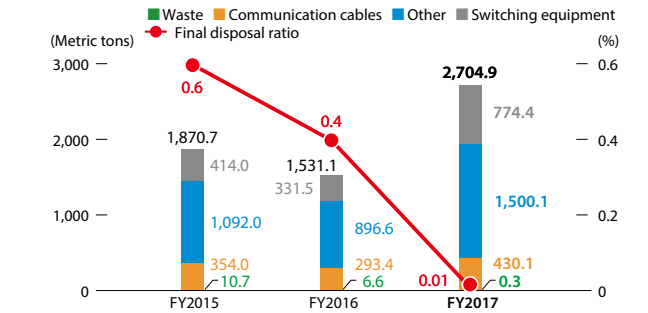
In fiscal 2017, the final disposal of waste from dismantled telecommunications equipment amounted to 0.3 metric tons, construction waste 183.4 tons, and office waste 37.3 metric tons. The total volume of final waste disposal increased by 82.0 tons, compared to the previous fiscal year, to 220.9 metric tons, while the total volume of waste generated increased by 11,320.4 metric tons to 26,138.8 metric tons due to increased construction work of wireless relay stations. Going forward, we will thoroughly implement the 3Rs (reduce, reuse, and recycle) in our business activities.

NTT Communications Group Final Waste Disposal and Total Waste Generation



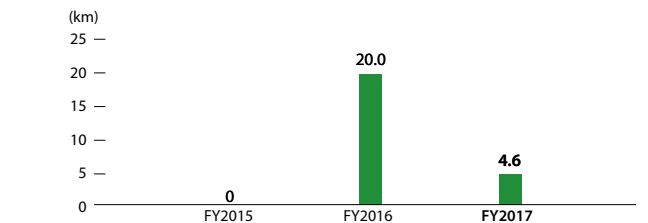
Scope: 14 domestic companies of the NTT Communications Group
Figures are adjusted retroactively to increase accuracy.

Total Volume and Final Disposal Ratio of Dismantled Telecommunications Equipment



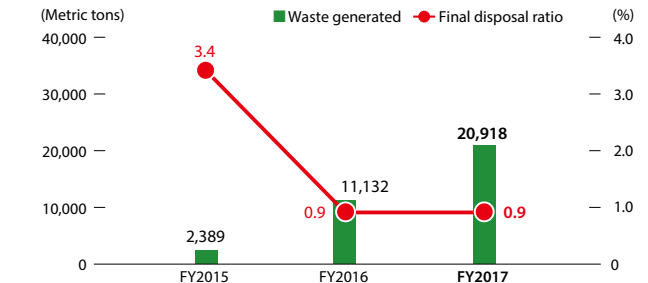
Scope: 14 domestic companies of the NTT Communications Group

Volume of Reused Fiber-Optic Cable



Scope: 14 domestic companies of the NTT Communications Group

Construction Waste Generation and Final Disposal Ratio



Scope: 14 domestic companies of the NTT Communications Group

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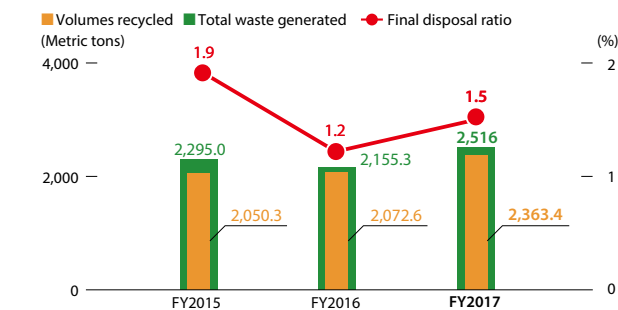
Building Business Models with Low Environmental Impact

> Initiatives to Improve the Final Disposal Rate

We believe that one of our most important obligations as a company that provides ICT services is to create business models that emphasize recycling. In line with this, we are carefully selecting waste processors for DCs, telecommunications buildings, and office buildings based on their recycling ratios, and since fiscal 2013 we have been accelerating our efforts to improve the final disposal ratio.

We select seven or eight target buildings each year to implement final disposal ratio improvement measures and change disposal methods, and even the waste management companies themselves if we find they are necessary after conducting on-site surveys, checking the disposal workflow, and interviewing employees at those sites. As a result, the final office waste disposal ratio, which was 6.1% in fiscal 2013, has been reduced to 1.5% as of fiscal 2017.

◆ Total Office Waste and Final Disposal Ratio



Scope: 14 domestic companies of the NTT Communications Group
Figures are adjusted retroactively to increase accuracy.

Thorough Implementation of the 3Rs in Office Buildings

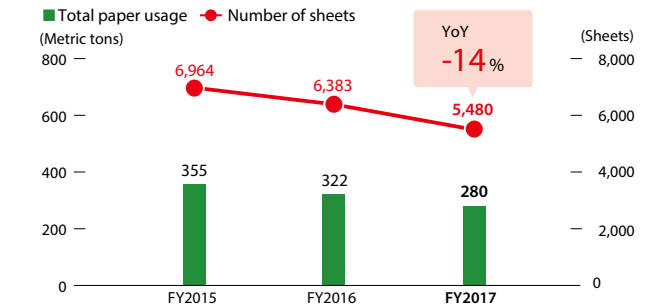
> Reduction in Paper Use for Business Purposes

NTT Communications is working to reduce usage of all kinds of paper for business purposes, including that for printing customer billing statements. In fiscal 2007, we established a paper usage indicator per full-time employee in order to reduce office paper usage.

Specifically, we encourage reduction efforts that include curbing the use of paper and increasing the rate of double-sided printing by using printing log data from IC card multifunction printers. Initiative status data per individual and section are collected and disclosed to all employees on a monthly basis. As a result of having continued to encourage the digitization of paper documents and paperless meetings that make use of projectors and tablets, in fiscal 2017 paper consumed per full-time employee (converted to A4-size office paper) was 5,480 sheets, which was less than the previous year.

Turning to our operations outside Japan, Group companies also reduced copy paper usage and promoted paperless meetings. Targets were set and initiatives accelerated in China, South Korea, Hong Kong, Thailand, Indonesia, Vietnam, Malaysia, Singapore, the U.S., and Germany.

◆ Total and Per-Employee Office Paper Usage



Scope: 14 domestic companies of the NTT Communications Group
Figures are adjusted retroactively to increase accuracy.






> Water Conservation Initiatives in Offices

NTT Communications is working to reduce the amount of water used in its offices. As one aspect of these activities, in May 2013 we began installing water-saving valves on the toilet units at our head office building (the NTT Hibiya Building). The water-saving valves are capable of controlling the amount and flow of water to cut water use by around 45%. The valves also employ usage data to verify water savings and the degree of environmental contribution. We have installed these water-saving valves in 90 toilet units within the NTT Hibiya Building. It has contributed to an approximately 3% decrease in annual water use for fiscal 2017, in comparison with the building's overall water usage prior to the installation of the valves.



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Effective Utilization of Food Waste






In addition to giving due consideration to the effective use of resources in offices, dealing with waste from the cafeterias is taking on added importance. NTT Communications has introduced a raw garbage disposal machine to treat the waste generated in its employee cafeteria and recycles it into organic compost by consigning the operation to the Gunma branch of NTT East Kanshinetsu.

In fiscal 2017, we processed 21 metric tons of kitchen waste. As a result, this was recycled and generated 2.1 metric tons of compost, which was put to use by farmers in the Kanto region and elsewhere. The initiative is not merely an effective utilization of resources; it is also important to note the CO₂ reduction effect from reducing the amount of waste to be incinerated. While continuing to promote this initiative, we are strengthening our environmental friendliness in our day-to-day operations and raising employee awareness.



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Planning a Future of Natural Harmony

Our Approach

We place a high priority on conservation of biodiversity throughout our business activities, from the construction of facilities to their operation and dismantling, in addition to promoting preservation activities by inspecting the progress of initiatives, finding problems, and making improvements. Moreover, we will implement multifaceted initiatives for environmental contribution activities, including participation in local conservation activities and the dissemination of information.

Development of Activities in Line with Action Guidelines

Having formulated the Biodiversity Conservation Action Guidelines, we have been proactively developing our approaches. There is a growing awareness on a global scale for biodiversity conservation. In the years to come, we will promote inspection efforts, identify issues, and promote improvements across the Group as a whole, including at overseas bases.

Primary Concept

As advocated in SDGs 14 and 15, conserving the biodiversity of life below water and on land, together with the prevention of global warming and the preservation of ecosystems, has recently developed into a major environmental challenge with regard to the creation of a sustainable society. NTT Communications has set “planning a future of natural harmony” as part of our environmental declaration and established a set of action guidelines with regard to biodiversity conservation in order to promote environmental preservation activities. The entire group, including overseas companies, will actively engage in activities that are in line with the action guidelines.

Action Guidelines with Regard to Preservation of Biodiversity

- 1. Basic Policy: NTT Group Biodiversity “Approach Concept,” Established by the NTT Group
 - Development Centered on Business Activities
The Group recognizes that all activity is inextricably linked to the planet and to biodiversity, understands that the scope and impact at home and overseas are related depending on the nature of a business, and promotes initiatives that are recognized as having a preservation effect.
 - Development Centered on Contribution to Society
In partnership with its stakeholders the Group widely promotes initiatives toward the preservation of biodiversity, regardless of their relevance to its business.
- 2. Action Guidelines
 - Implement actions that take into account the preservation of biodiversity in business activities.
 - Contribute to preservation of social biodiversity in business activities.
 - Deepen understanding of biodiversity, promote nature conservation activities together with employees, their families and the community.






Achievements in Fiscal 2017 and Goals for the Coming Years

We engaged in building, maintaining, and repairing facilities in compliance with the Action Guidelines with Regard to Preservation of Biodiversity as well as the concept of the environmentally friendly Green Building* established by the NTT Group in addition to ongoing initiatives leveraging the features of ICT enterprises. For example, NTT Plala promoted coral reef conservation activities utilizing its media services, and NTT Resonant disseminated information and raised awareness regarding environmental issues through the “goo Green Label,” where users can make a donation to environmental preservation organizations by changing their “goo” web portal to “goo Green Label.” In fiscal 2018, we will continue promoting initiatives by leveraging our capacity to serve society as an ICT enterprise.

*Environmentally sound buildings with reduced waste emissions that make use of energy, water and air-conditioning systems to reduce their consumption of natural resources.

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Considerations during Data Center Construction

> Minimizing the Influence and Impact on Local Ecosystems

Large-scale facilities like data centers must keep in mind the effect they have on the surrounding ecosystem, such as the use of water resources at such facilities causing water pollution or a water shortage. It is also important in terms of biodiversity conservation to find ways not to ruin the indigenous vegetation but rather to take advantage of it when developing or maintaining land within the Company's site.

For example, at the Serangoon Data Center in Singapore, an approach was thoroughly developed to make use of rainwater and recycled water (desalinated or re-treated water) for sprinkling and cooling within the data center site, in addition to ensuring that the water is not contaminated by hazardous substances such as oil. While planting a wide range of trees that are native to the area, great consideration is given to the on-site vegetation by conducting tree felling in consultation with the National Environment Agency (NEA).

◆ Plants at data centers with due consideration of indigenous species



> Consideration for Local Landscaping and Greening

We feel it is important to take into consideration the biodiversity in facility designs toward contributing to local greenery in our surroundings. The Tokyo No. 6 Data Center, one of the largest of such centers in Tokyo, received a subsidy from the Tokyo Metropolitan Park Association's Urban Green Fund and is working closely with the community to promote greening activities. The green spaces within the site have been separated into two zones, spring/summer and autumn/winter, and planted accordingly so that visitors can enjoy flowers at the site throughout the year. We seek to achieve harmony between the data center and the surrounding environment. For example, we simulated a wind environment around the building and planted evergreen trees in the southwest corner, which is affected by wind.

◆ Spring/summer zone



◆ Autumn/winter zone



Laying Subsea Cables

In constructing its subsea communications cable network, NTT Communications' fundamental policy is to prevent marine pollution. We are signatories to treaties on the prevention of marine pollution and, in addition to complying with environmental legislation, undertake initiatives that place importance on coexistence with marine organisms and the fisheries industry. Group company NTT World Engineering Marine Inc. (NTT-WE Marine), which handles the laying, burying, and maintenance of subsea cables, develops business with a strong awareness toward the preservation of the marine environment.

> Assessing Biodiversity

NTT Communications is committed to biodiversity conservation toward realizing a future where people and nature exist in harmony, by operating biodiversity-friendly facilities as well as by leveraging ICTs to minimize the impact on ecosystems based on an understanding of the relationship between biodiversity and our business. We also strive to pass on biodiversity to future generations through initiatives such as activities by cable-laying ships to preserve ecosystems, promoting consideration for ecosystems upon the construction and dismantling of a relay station, and cooperative activities with stakeholders.

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➤ Taking Environmental Impact into Consideration when Laying Cables

Prior to subsea cable-laying and burying work, we conduct an environmental assessment and cooperate with related government authorities and municipalities in carefully designing cable routes and drawing up construction plans. For example, in shallow sea areas we give consideration to the preservation of the marine environment, such as by deciding on cable-laying routes that avoid coral reefs and other inhabited areas. There are also cases in which minesweeping operations are undertaken on the seabed prior to laying or burying the cables. We collect debris from the seabed, including fishing nets, rope, and wire pulled out by the minesweeping operations, and we properly process this as industrial waste after returning to port.

◆ Cables laid on sand, away from coral reefs



◆ Debris collected from the seabed



➤ Measures to Preserve Ecosystems Taken on Cable-Laying Ships

There are concerns that the marine organisms that infest the ballast water used to maintain the stability of vessels will destroy ecosystems by being discharged into other parts of the ocean as vessels navigate from one area to another. In order to prevent the destruction of ecosystems by ballast water, the subsea cable-laying vessels Kizuna and Subaru are equipped with ballast water treatment equipment, based on the Ballast Water Management Convention* set by the International Maritime Organization (IMO), so that they discharge water that does not contain marine organisms.

Furthermore, the ballast water treatment equipment installed on both of our cable-laying vessels is an ultraviolet sterilization system, which does not use chemical substances and is thus regarded as having low environmental impact. With regard to ship paints, we use those that are in compliance with the AFS Convention (the International Convention on the Control of Harmful Anti-fouling Systems on Ships), which regulates the use of anti-fouling paint containing organic tin compounds on the bottom of ship hulls.

*Adopted by the IMO in 2004, the convention took effect on September 8, 2017 to prevent the movement of marine organisms across habitat boundaries from affecting the marine environment.

Upon the Construction and Dismantling of Relay Stations

Wireless relay stations, the backbone of data communication networks, are often in rich natural areas, such as on hills and islands. We thus emphasize consideration for biodiversity in their operations. As of March 31, 2018, 12 of our 90 wireless stations were in national parks or quasi-national parks. The NTT Communications Group will carefully build micro-roads if needed for patrolling and maintaining these facilities while also strictly adhering to the law and our own environmental assessment methods. In undertaking assessments, we establish specific areas of concern and align construction processes accordingly. We adopt a multifaceted approach to avoid and minimize any impact on the ecosystem. In addition, we strive to restore the environment to its original state, prior to construction, when dismantling a wireless station. We fully take into account the existence of rare animals, consult with local environmental organizations and residents, and use local soil in our restoration activities.

Moreover, we have been acting appropriately and conducting activities to provide facilities from the perspective of wildlife conservation. For example, every year since September 2012, the Amami Ornithologists' Club NPO has held a Chinese sparrow hawk migration birdwatching meeting within the NTT Communications wireless relay station in Amami City, Kagoshima Prefecture. Wireless relay stations are normally off limits, but having received a request stating that the area is suitable for monitoring the status of the ecosystem, events are held with employees.

◆ Chinese sparrow hawk migration



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Contributing to Ecosystem Conservation Using ICT

> Contributing through Products and Services

The damage to agriculture caused by wild boars and deer is becoming an issue of increasing concern across Japan's farming and mountain communities. The setting of traps is being used as one countermeasure to minimize the damage caused by wildlife.

NTT PC Communications Inc. has developed "Mimawari Rakutaro" as one part of its "IOT service." This is a wildlife observation and alarm device that uses an outdoor sensor that transmits data. In this manner, the Company is contributing to countermeasures aimed at minimizing the damage caused by wildlife. Employing the communication services of NTT Docomo to transmit a message automatically to a designated mail address when a trap has been activated, the Mimawari Rakutaro device has brought about a significant reduction of the burden placed on patrols. As one version of Mimawari Rakutaro also comes equipped with a camera, the transmission of images further ensures an immediate response should a person be caught in a trap by mistake. Since first going on sale in July 2011, Mimawari Rakutaro has been used by more than 50 local governments across Japan and contributed to ecosystem conservation in woodlands. As a recent example of its use, Saga City is utilizing subsidies for a Ministry of Internal Affairs and

◆ Mimawari Rakutaro



Communications ICT project to realize more efficient countermeasures against wildlife damage.

> Work to Preserve Coral Reefs through Business Activities

As a leader in media services, NTT Plala, Inc. has taken action to protect coral reefs, which play a vital role in the ecosystems of our oceans, by enlisting the help of its six million members.

Specifically, NTT Plala, Inc. produced and distributed 4K videos about the state of coral reefs and activities to protect them, creating opportunities for people to think more about protecting coral reefs. Since 2016, it has been donating a portion of proceeds from people who watched the video for initiatives to protect coral reefs.

NTT Plala, Inc. will continue to protect the environment with help from its members by providing projects linked with its business activities.

Contribution through the Provision of Information

In response to growing public expectations to the ICT business to provide useful information through Internet media, we will continue to proactively use a variety of online media to communicate the importance of biodiversity and encourage a diverse range of people to engage in ecosystem conservation.

> Activities by goo Green Label

The goo Green Label portal is an initiative for donating a portion of the profits generated through use of the site to organizations engaged in environmental protection and social activities. All users can participate in this initiative simply by changing the top design version of the "goo" web portal to "goo Green Label" and using the search engine. A total of 55 companies, including those in the NTT Group, have signed up as "Corporate Partners," a program that has been recommended for in-house use within those companies. Since its inception in August 2007, donations totaling 56.3 million yen have been made to 46 organizations, the majority of which are NPOs engaged in global environmental protection activities.



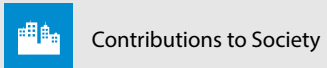
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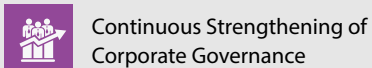
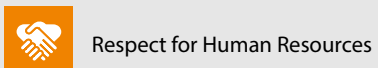
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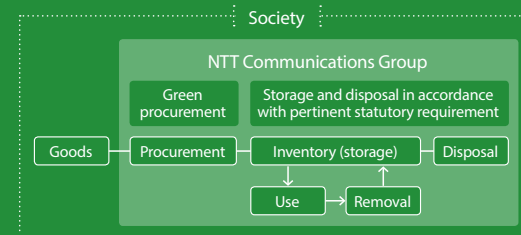
Preventing Environmental Pollution

Our Approach

We are seeking to avoid environmental risks generated by business activities, such as pollution and hazardous substance leaks. Actions include the formulation of guidelines on the introduction of low-emission vehicles, improvements to equipment and operations, the bolstering of management, and education and training.

Chemical substances are properly managed by our maintenance departments in accordance with the Waste Management and Public Cleansing Act, the Law Concerning Special Measures Against PCB Waste, and the Electricity Business Act, which include the assigning of managers. While conducting storage inspections on a regular basis, we maintain a robust system to ensure the rapid coordination of information among senior management and the president in the event of an earthquake or another disaster. We also always keep abreast of the revisions to laws through training sessions, share information among environmental working groups, and optimize our operations in a timely manner.

◆ Preventing Environmental Pollution at Each Business Stage



Basic Philosophy

The fact that various effluents and wastes are being generated from production and consumption activities and are causing a rise in environmental pollution is a social issue. As symbolized by SDG 12 "Responsible Consumption and Production," NTT Communications is reducing wastes and effluents that are generated from business activities and is managing and handling hazardous substances properly to prevent environmental pollution as well as to promote the realization of a safe and secure living environment.

Main Achievements in Fiscal 2017 and Goals for the Coming Years






In fiscal 2017, we continued our initiative to review the number of vehicles owned, introduced low-emission vehicles, and promoted eco-driving. As a result of reducing the number of cars by about 14% year on year, we succeeded in decreasing CO₂ emissions by 30%. These initiatives led to a remarkable achievement in reducing NO_x emissions. As for SO_x, despite our expanded effort to reduce electricity consumption in air-conditioning at telecommunications and DC buildings, emissions increased by 10% due to an increase in power demand.

Going forward, we will plan new strategies to reduce electricity use and expand the implementation of our ongoing activities. With regard to PCBs, we have disposed of these stored at our sites in eastern Japan, as planned. The remaining PCBs, in western Japan, will be properly stored until they are disposed of in fiscal 2019, scheduled in accordance with the operational status of the waste disposal site.



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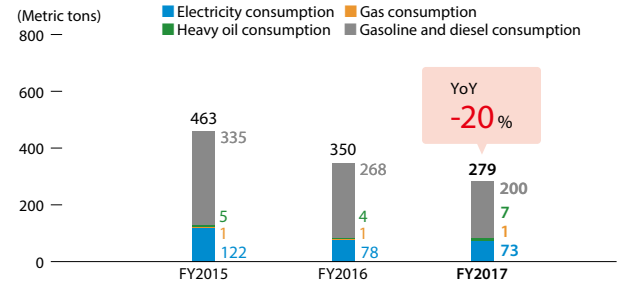
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Fiscal 2017 Results and Future Plans

Air Pollution Countermeasures

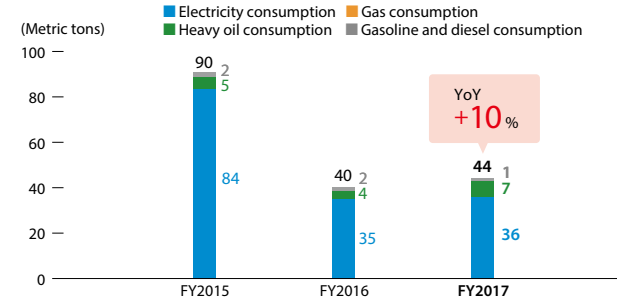
Our business activities produce NOx and SOx emissions, which cause air pollution. Approximately 71% of the NOx emissions are attributable to the use of gasoline and diesel in our operational vehicles, while the remaining 29% are emitted as a result of electric power generation at communications buildings and other facilities. Most SOx (around 82%) is emitted during the generation of electricity that we use. In fiscal 2017, NOx and SOx emissions were 279 metric tons (a year-on-year decrease of 30%) and 44 tons (a year-on-year increase of 10%), respectively, as a result of a decline in electricity use. We will continue to promote eco-driving and review our vehicle fleet numbers while making efforts to reduce electricity use in our operations toward contributing to the mitigation of global warming and prevention of air pollution.

NOx Emissions



Scope: 14 domestic companies of the NTT Communications Group

SOx Emissions

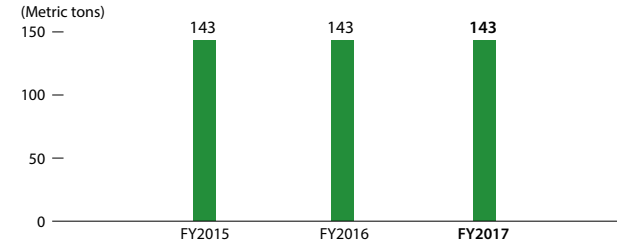


Scope: 14 domestic companies of the NTT Communications Group

Ozone-Depleting Substance Countermeasures

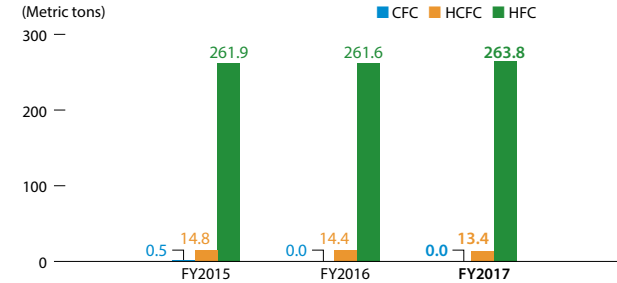
We dispose of ozone-depleting substances in an appropriate manner. The volume of specified halons used in our fire extinguishing equipment in fiscal 2017 was approximately 143 metric tons, roughly the same as in the previous fiscal year. Meanwhile, the volume of specified chlorofluorocarbons (CFCs) used in our air-conditioning equipment in fiscal 2017 was up by around 1 metric ton from the preceding fiscal year, to approximately 277 metric tons.

Volume of Specified Halons Used in Fire-Extinguishing Equipment



Scope: 14 domestic companies of the NTT Communications Group

Volume of Specified CFCs Used in Air-Conditioning Systems



Scope: 14 domestic companies of the NTT Communications Group



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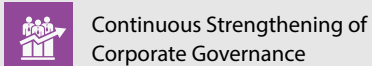
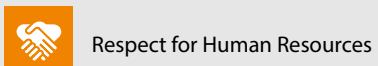
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> Asbestos Countermeasures

Asbestos countermeasures for buildings and offices involved the implementation of airborne asbestos surveys of buildings for which asbestos had been spray-applied in order to confirm that levels did not exceed statutory limits, revised in September 2006. There were no asbestos emissions in fiscal 2017. We are going to continue the systematic implementation of appropriate measures, such as the removal, containment, or enclosure of asbestos in buildings where it is present, in line with manuals issued by the Japan Construction Occupational Safety and Health Association and local authorities.

◆ Asbestos Emissions



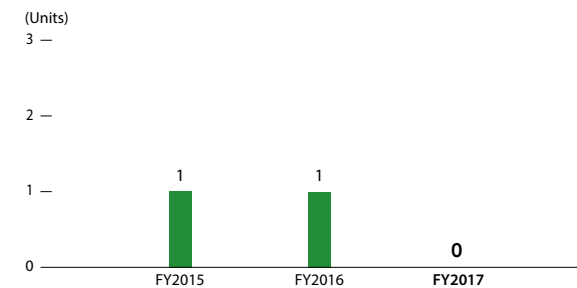
Scope: 14 domestic companies of the NTT Communications Group

> Storage and Management of PCB

NTT Communications appropriately manages devices that contain polychlorinated biphenyl (PCB). Such devices were used in the past as insulators for electrical facilities. As a policy for PCB storage, we have established a set of guidelines prescribing early detoxification treatment as well as methods for ascertaining conditions and management when the use of equipment containing PCBs is to be continued.

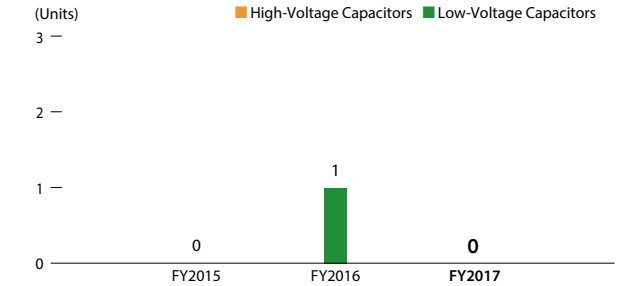
In fiscal 2017, we undertook the proper detoxification processing of 59 systems, comprising high-concentration PCB systems stored in Tokyo and Osaka and trace PCBs from all over Japan. For our currently stored high-concentration PCB systems, we are coordinating plans with waste disposal companies to commence detoxification processing in fiscal 2019 for inventory in Osaka and Hiroshima.

◆ Number of Transformers Stored



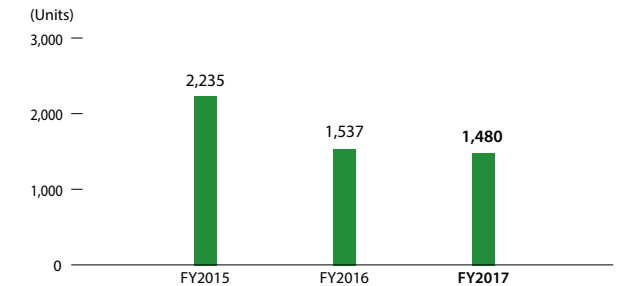
Scope: nonconsolidated NTT Communications Group

◆ Number of Capacitors Stored



Scope: nonconsolidated NTT Communications Group

◆ Number of Electric Ballasts Stored



Scope: nonconsolidated NTT Communications Group

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Chemical Substance Management in Anticipation of Emergencies

Against a backdrop of natural disasters occurring frequently on a global scale, there is a growing public concern over the management systems for environmental pollutants in times of emergency. As an owner and global operator of IT infrastructure, we have been thorough in establishing storage and management systems while bearing in mind the possible occurrence of unlikely events. In the management of PCBs in particular, we have implemented a management system while taking into account factors such as earthquakes, fires, flood controls, lightning protection, puncture resistance, ventilation, and security. By carrying out periodic inspections, we are constantly confirming that such substances are properly managed. With regard to such events as major earthquakes and disasters, we have built a rapid verification system designed not only to prevent damage when a disaster first strikes but also to prevent secondary disasters. We exercise great care in conducting uninterrupted operations safely and securely.

◆ PCB storage location



◆ Storage of PCBs



Cases of Major Leakage

There were no incidents involving major leakages in the NTT Communications Group in fiscal 2017.

Transport, Import, and Export of Toxic Waste

In line with our policy of an early effort to conduct the detoxification processing of PCBs, we processed waste stored in Kyushu and Hokkaido in fiscal 2014 and in Tokyo in fiscal 2016. The remaining waste in Osaka will be detoxified in fiscal 2018.