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# Environment

## Achieving carbon neutrality for a green and sustainable future

Public expectations for environmental protection are growing along with the responsibilities of ICT companies for engaging in these activities. We are pursuing a multifaceted approach focused on the three themes of promoting a decarbonized society; developing a closed-loop society; and co-existing with nature, including the preservation of biodiversity. We therefore established and announced the Environmental Statement and Eco Strategy 2030.

In March 2021, we reviewed the Eco Strategy 2030 to respond to a rapidly changing global environment and accompanying social conditions and set specific goals and initiatives for decarbonization. In addition to reducing the environmental impact of our own business activities, we will contribute to reducing the environmental impact of society as a whole while aiming to achieve both solutions to environmental problems and economic development.

Targeted SDGs



Priority Activities

- ▶ 049 Basic Philosophy and Vision
- ▶ 051 Environmental Management
- ▶ 056 Promotion of a Decarbonized Society
- ▶ 067 Development of a Closed-loop Society
- ▶ 070 Co-existing with Nature
- ▶ 075 Prevention of Environmental Pollution





## Basic Philosophy and Vision

While emphasizing the philosophy in the NTT Group Global Sustainability Charter, established by the NTT Group, our environmental protection activities take shape as the NTT Communications Group Global Environmental Charter and Eco Strategy 2030, 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 Sustainability Charter to promote Groupwide consideration and actions relating to environmental protection from a global perspective. This policy forms the basis for the NTT Communications Group Global Environmental Charter, which is 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 Eco Strategy 2030

Under the NTT Communications Group Environmental Statement and Eco Strategy 2030, we have continued to strengthen our environmental activities while closely monitoring global trends. In March 2021, we revised the Eco Strategy 2030 in response to increasing corporate roles and responsibilities regarding global climate change. Following the revision, we declared our intention to achieve carbon neutrality by fiscal 2030 (net-zero emissions)\* based on the NTT Group's New Environment and Energy Vision, formulated in September 2021.

In May 2023, the NTT Group announced its new medium-term management strategy for achieving carbon neutrality by fiscal 2040 with net-zero emissions from its own operations as well as from its supply chains (Scope 3). The NTT DOCOMO Group subsequently declared in November 2023 its commitment to the Net-Zero by 2040 plan. The NTT Communications Group will implement concrete measures toward the goal of the Net-Zero by 2040 plan by providing pioneering technologies and services, and all our employees around the world will unite in promoting environmental activities to realize a future in which people and the planet exist in harmony.

\*Targeted GHG Protocol: Scope 1 (direct emissions of greenhouse gases from our own sources) and Scope 2 (indirect emissions from the use of electricity, heat, and steam supplied by other companies)

### The NTT Communications Group Environmental Statement

We are dedicated to global environmental management for a future in which people and the planet remain in harmony, and

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



#### Realizing a Decarbonized Future

We are contributing to the reduction of CO<sub>2</sub> 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 Eco Strategy 2030, we have set out specific initiatives\*1 to help realize the three futures outlined in the Environmental Statement, based on the NTT Group's Environment and Energy Vision.

To achieve carbon neutrality or net-zero emissions by fiscal 2030 to establish a decarbonized future, we intend to increase the rate of renewable energy use to at least 50% in fiscal 2030, including the amount used by customer equipment at the data centers, while further saving power through the use of advanced technologies. We plan to achieve this goal by, for example, increasing the rate of renewable energy use by the NTT Communications Group to 100%.

Three Futures We Are Targeting	Initiative	
<p><b>Realizing a Decarbonized Future</b></p>	Rate of renewable energy use in the Company*2	We will increase the rate of renewable energy use in the NTT Communications Group to 50% or more. (→ Scopes 1 and 2: 100% by fiscal 2030)
	Reducing GHG emissions from the Company (Scopes 1 and 2)	We will reduce GHG emissions in the NTT Communications Group by 50% compared to fiscal 2018*3. (→ Scopes 1 and 2: carbon neutrality by fiscal 2030)
	Reducing GHG emissions from the supply chain (Scope 3)	We will reduce GHG emissions from the supply chain by 15% compared to fiscal 2018. (→ Scopes 1, 2, and 3: Net-Zero by 2040)
	Conversion rate of our corporate fleet to EVs in Japan (%)	We will make EVs account for 100%*4 of our corporate fleet used in Japan.
	Contributing to the reduction of GHG emissions across society	We will contribute to reducing GHG emissions across society by at least 10 times more than the NTT Communications Group's own emissions.
	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.
<p><b>Implementing Closed-loop Recycling</b></p>	Landfill waste disposal ratio	We will set our target for increasing the landfill rate of the waste generated by the NTT Communications Group to at least 99%.
<p><b>Planning a Future of Natural Harmony</b></p>	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.

\*1 Quantitative targets for fiscal 2030. The scope of these targets set in March 2021 encompasses NTT Communications Corporation and 15 Group companies.

\*2 Including the amount used by customer equipment at the data centers

\*3 Equivalent to 1.5°C SBT

\*4 50% by fiscal 2025 as the starting point. Following the reorganization with the then-NTT DOCOMO Group in July 2022, the target interim fiscal year was revised due to the acceptance of corporate fleet vehicles from the Group.



## Environmental Management

### Promotion Framework for Reducing Environmental Impact

In order to continuously promote environmental protection initiatives in a Groupwide effort, we have established the Global Environmental Protection Subcommittee within the Sustainability Management Committee, headed by the executive vice president in charge of CSR, and also formed working groups for each related issue. The Global Environmental Protection Subcommittee formulates an overall plan that encompasses a wide range of issues, including the reduction of greenhouse gas emissions and waste, shares information on the results of actions taken, and promotes the horizontal deployment of various initiatives.

Sustainability Office coordinates responses to the TCFD and TNFD and related activities of the NTT DOCOMO Group as a whole, along with other issues, under the Group's sustainability management.

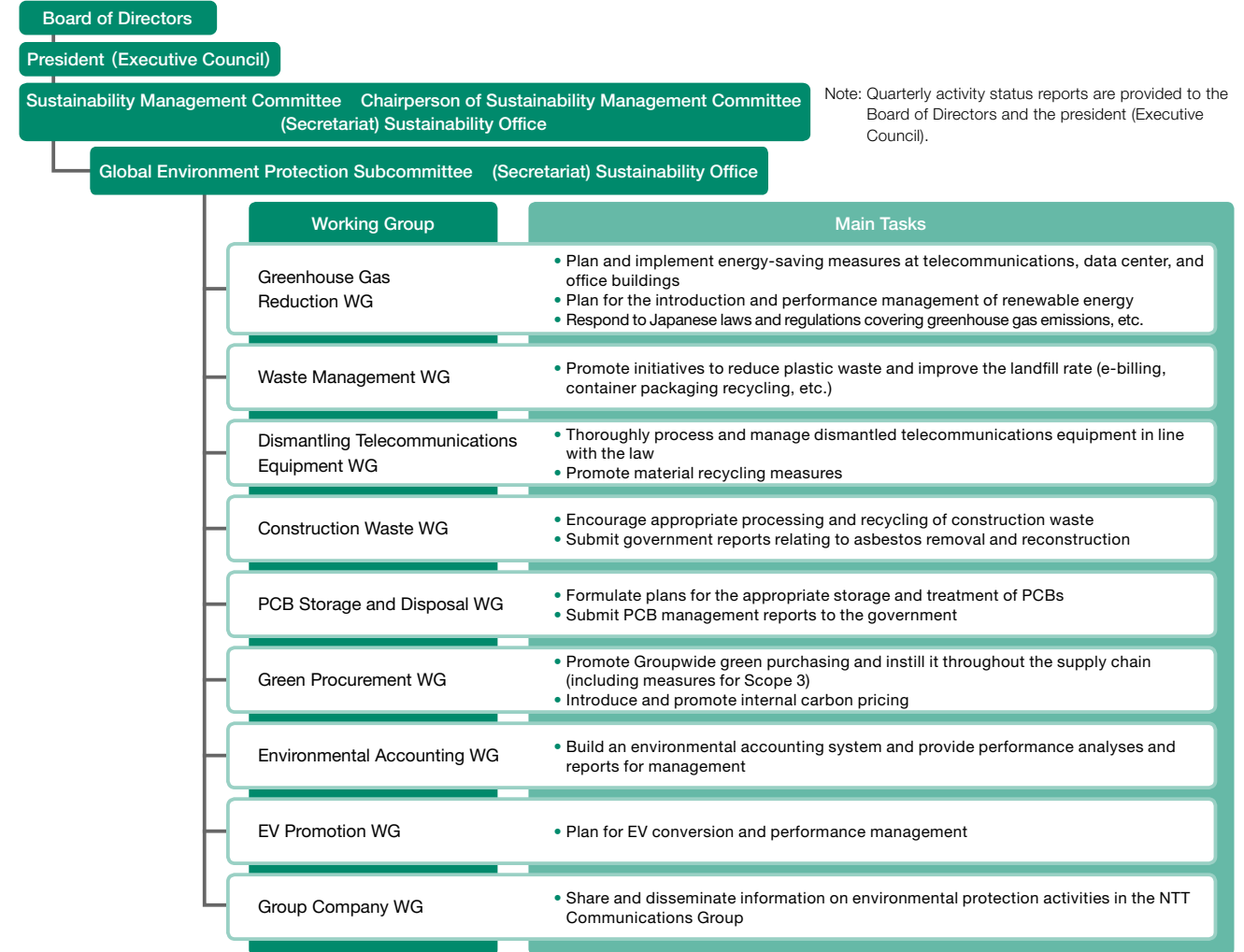
We believe that our approach to environmental issues is a key aspect of our business risk management. To that end, our Business Risk Management Committee, consisting of the senior executive president and other senior executives, assesses all potential risks and discusses appropriate measures to address them.

We will continue to improve our management systems as necessary to more effectively respond to environmental trends.

**P019** For more information on our approach to sustainability management, see the "Sustainability Management" section of the report.

**P112** For more information on our approach to business risk management, see the "Risk Management" section of the report.

[ Environmental Protection Framework ]

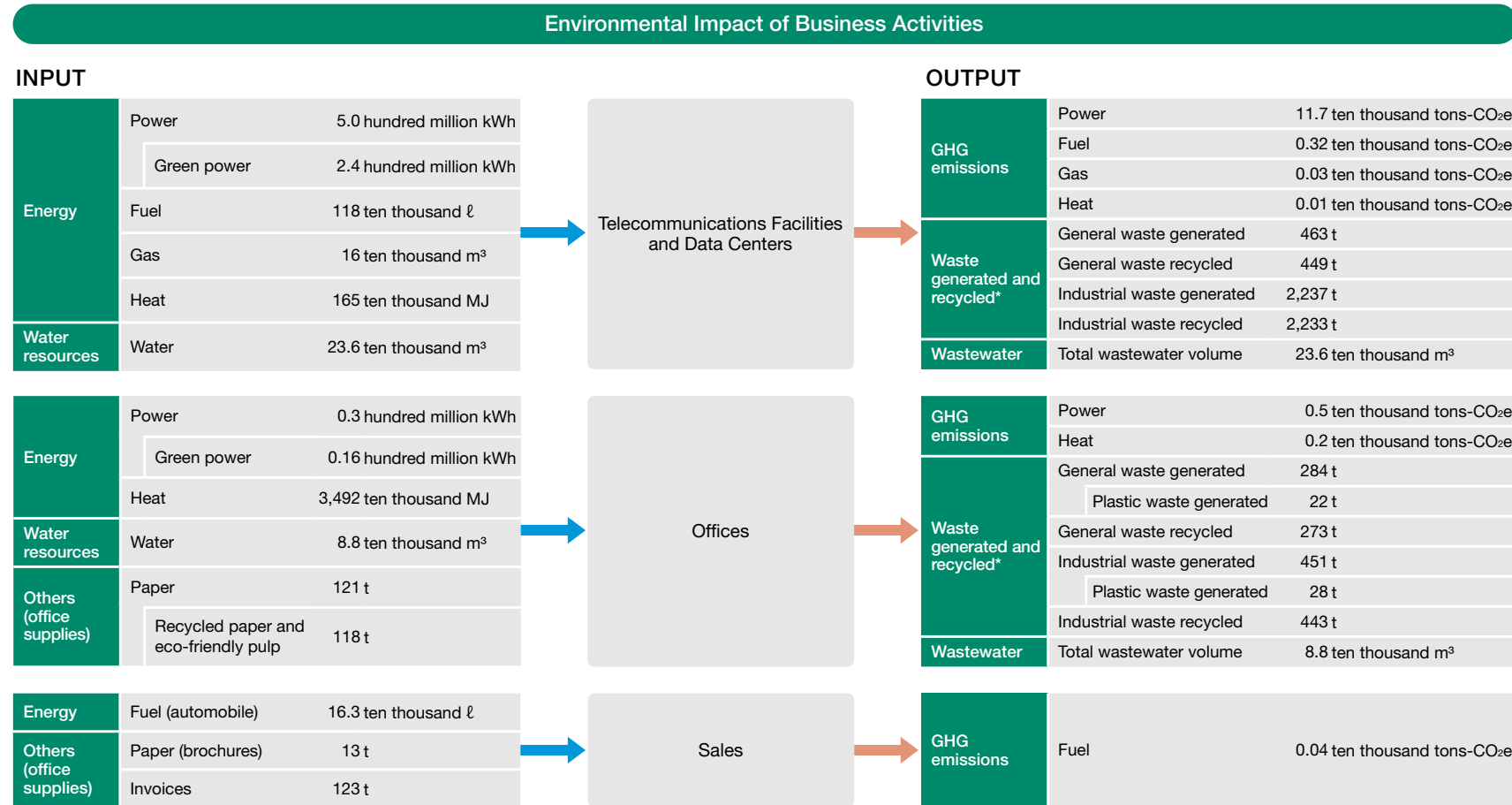


(As of March 31, 2023)



Environmental Impact of Business Activities

Fiscal 2022 Material Flow



Scope: NTT Communications Corporation and 17 Group companies

\*We separate waste insofar as possible to improve the recycling rate. Note that waste volumes in this table do not include construction waste.

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Environmental Accounting in Fiscal 2022

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

The total amount of environmental conservation cost in fiscal 2022 was approximately 3.63 billion yen, consisting of around 2.27 billion yen in investments and about 1.36 billion yen in expenses. Despite an increase in our introduction rate of renewable energy (including virtually renewable energy using non-fossil fuel certificates), global environmental conservation costs (expenses) decreased because of a decline in the unit price of renewable energy. On the other hand, an increase in global environmental conservation costs (investments) mainly due to the replacement of air-conditioning systems that consume a significant amount of electricity led to an increase in total expenses by approximately 1.04 billion yen from the previous fiscal year.

The economic benefit derived from environmental conservation in fiscal 2022 increased by approximately 210 million yen year on year to 1.73 billion yen, mainly due to increased reductions in electricity rates resulting from energy conservation measures.

[ Environmental Conservation Costs (Categories Corresponding to Business Activities) ]

(Millions of Yen)

Category	Key Measures	Investment		Expenses*	
		FY2021	FY2022	FY2021	FY2022
(1) Business area cost		942	2,234	1,549	1,250
Breakdown	Pollution prevention costs	198	353	93	76
	Global environmental conservation costs	744	1,881	600	467
	Resource circulation costs	0	0	856	707
(2) Upstream/downstream costs	Measures to recover, recycle, and reuse telecommunications equipment	32	39	1	1
(3) Administration costs	Environmental conservation management activities	0	0	70	79
(4) R&D costs	Allocated portion of the NTT Group's environmental R&D costs	0	0	0	23
(5) Social activity costs	Costs of supporting volunteer participation	0	0	2	7
(6) Environmental remediation costs		0	0	0	0
Total		974	2,272	1,622	1,360

\*Not including depreciation  
Scope: NTT Communications Corporation and 17 Group companies )

[ Economic Benefits Associated with Environmental Conservation Activities (Actual Benefits) ]

(Millions of Yen)

Category	Key Measures	FY2021	FY2022
Revenue	Revenues from sales (cables, metal scrap, etc.)	374	341
Cost reductions	Reductions in expenses as a result of measures such as those related to reducing electricity use	401	691
	Reductions in purchase cost as a result of reusing dismantled telecommunications equipment	274	174
	Decrease in postal and paper costs due to increased use of Mypage (online account page)	470	521
	Others	1	4
Total		1,521	1,731

Period: April 1 to March 31 of each year  
Scope: NTT Communications Corporation and 17 Group companies  
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 Initiatives

Acquiring ISO 14001 Certification

Three companies in the NTT Communications Group have acquired ISO 14001 certification as of March 31, 2023. We have contracted outside environmental consultants to perform annual internal audits of the certified companies and departments in order to ensure the appropriate implementation of environmental management and continual improvements that will allow for a steady reduction of the environmental impact of business activities. Regular reviews and renewal examinations are undertaken by an independent certification body as well. 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.

[ Companies Certified under ISO 14001\*1 ]

Organizations Certified		Date Certified
NTT Communications Corp*2	Procurement and Billing Department	October 1999
	Business Solution, Solution Services Department	March 2004
NTT Com DD Corporation		June 2012
NTTPC Communications, Inc.	Service Creation Division, System and Service Integration Department, System and Service Integration Group, Supplier Business Team	November 2003
	Technology and Operations Development Division, Business Process Service Department development and operation Group Service delivery team	

(As of March 31, 2023)

\*1 Percentage of employees or target organizations to total Group employees: 13%  
 \*2 Percentage of employees of target organizations to total employees: 25%

Promoting Groupwide Environmental Management

Guided by its Global Environmental Charter, the NTT Communications Group shares PDCA and other reports at the Global Environmental Protection Subcommittee, an organization under the Sustainability Management Committee. These reports outline details of the various initiatives administered by the nine working groups that drive the Group's environmental protection efforts. 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 is committed to ensuring legal compliance and proper risk management while liaising closely with the other NTT Group companies. All legislation, including environmental laws and regulations aimed at curtailing pollution, emissions standards, and the PRTR Law\*, is fully communicated to related departments, and independent guidelines and enhanced compliance education have been established for in-house application. We were not involved in any litigation or legal violations pertaining to environment-related accidents, infringements, fines, or complaints in fiscal 2022.

We will 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

ESG management is a pillar of the NTT Group's medium-term management strategy. The NTT Group Environment and Energy Vision was formulated in May 2020 as part of this strategy, and the NTT Group was approved by the SBT initiative in October of that year. The NTT Group Green Procurement Standards were subsequently established in April 2022 by revising the NTT Group Green Procurement Guidelines to clarify the latest environmental policies and targets of the NTT Group, specific laws and standards that we require suppliers to refer to, and evaluation items for procurement.

In the Green Procurement Standards, NTT Communications clearly specifies factors in our 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. The standards also include a request for cooperation from our suppliers in reducing GHG emissions as well as initiatives equivalent to SBTs to RFP conditions at the time of procurement and KPI management to ensure concrete and effective operations. In addition, we conducted a supplier self-assessment questionnaire (SAQ) mainly targeting the top 90% of suppliers in procurement value and suppliers of critical components to determine compliance with environmental and other relevant guidelines and technical requirements as part of the NTT Group, and we held interviews in person with some of these suppliers. These activities helped confirm that our suppliers are accelerating their efforts to obtain SBT certification and reduce GHG emissions. Through our efforts for green procurement (procuring products taking

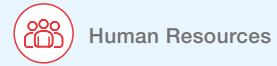
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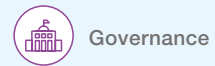
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into account their impact on the environment) under the Green Procurement Standards, we will work to improve our environmental protection activities with our suppliers and seek to commit to further social contribution.

**Utilization of Internal Carbon Pricing**

NTT Communications has been utilizing internal carbon pricing (ICP) since September 2022 to guide investment decisions. For example, we applied an internal carbon price (6,500 yen/t-CO<sub>2</sub>e) in fiscal 2022 when investing in capital equipment that can reduce GHG emissions. More specifically, ICP is applied for procuring network equipment and other necessary items. We will continue to use ICP to achieve net-zero emissions.

**Sharing of Green Procurement Policies**

We have posted our NTT Communications Corporation Guidelines for Sustainability in Supply Chain and Green Procurement Guidelines on our official website to share with suppliers our basic approach and requirements for procuring environmentally sound parts and products.

We will continue to closely communicate with our suppliers and work together to promote green procurement.

**Fostering a Sense of Environmental Stewardship**

We offer all employees environmental education with the intention of raising their awareness of environmental

matters. We are also proactive in environmental awareness activities as part of our sustainability efforts, extending the scope of participation to include not only employees but also their family members and our business partners.

In fiscal 2022, we conducted sustainability training for all employees (94.6% attendance), held workshops on the SDGs and business activities, and shared articles on our environmental activities with employees to deepen understanding of domestic and international social trends such as the SDGs, ESG investment, decarbonization efforts, and global risks. In November 2022, we conducted the CO<sub>2</sub> Reduction Challenge as an internal campaign for all employees. The campaign was intended to raise environmental awareness and encourage responsible conduct using the Green Program for Employee™, an app that visualizes CO<sub>2</sub> emissions from daily life and promotes eco-action, leading to further reductions in CO<sub>2</sub> emissions. In a follow-up survey, about 80% of the respondents reported that the campaign had raised their environmental awareness, and about 70% noted that they had been acting more responsibly toward the environment.

We are also working to raise employee awareness by posting monthly reports on how much electricity and paper is used and how much waste is generated in each office.

In response to the growing importance of co-existing with nature, we have conducted a range of environmental awareness and educational activities, including cleaning up around our offices in ways that allow employees to easily participate, collecting PET bottle caps for donation, and preserving woodlands by maintaining trees and growing rice and vegetables year-round. In fiscal 2023 and

beyond, we will continue to promote initiatives in which many employees can easily take part.

[ Screen images of Green Program for Employee ]



[ Chiyoda Ward Cleanup Day ]



[ Shirai Woodland Preservation Project ]






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Priority Activities

## Promotion of a Decarbonized Society

### Our Approach

While the advance 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. We continue to reduce greenhouse gas (GHG) emissions, recognizing our responsibility to contribute to addressing environmental problems, including climate change as one of the most pressing issues for realizing a sustainable future. We are also taking various initiatives to reduce GHG emissions in our supply chain as a whole. For example, we set “Realizing a Decarbonized Future” as one of the themes for our Environmental Statement to contribute to the realization of a decarbonized society, and we are reducing power consumption and improving the efficiency of our facilities as well as providing services that contribute to decarbonization and care for the environment. To promote a decarbonized society, we will further increase the use of renewable energy, replace our general fleet vehicles with EVs, and reduce GHG emissions from our Groupwide business activities toward achieving carbon neutrality for Scopes 1 and 2 by fiscal 2030 and net-zero emissions across Scopes 1, 2, and 3 by 2040.

Since electricity consumption accounts for more than 90% of total CO<sub>2</sub> emissions from business activities of the NTT Communications Group, we can particularly 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. In addition, we will continue to help society as a whole become carbon neutral by providing platforms, solutions, and services that lead to decarbonization.



### Main Achievements in Fiscal 2022 and Goals for the Coming Years

In fiscal 2022, we continued our 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 4.3 times that of fiscal 2013, making steady progress toward achieving the target of an increase of 10 times more by fiscal 2030. In addition, when putting our solutions on the market, those assessed as having a certain level of environmental impact reduction benefits are given the NTT Group’s Environmental Solutions Label to make visible their effects. Consequently, our contribution to reducing society’s GHG emissions was 17.1 times the volume of our own GHG emissions, thereby exceeding our fiscal 2030 target of a reduction of 10 times the volume.

Our introduction rate of renewable energy (including virtually renewable energy by using non-fossil fuel certificates) also increased from 8.4% in fiscal 2020 to about 48.6% in fiscal 2022. In fiscal 2023, we will continue these efforts and strengthen services and solutions that contribute to the realization of a decarbonized society.

In addition, we will further accelerate the introduction of renewable energy and the transition of our general fleet to EVs to achieve carbon neutrality for Scopes 1 and 2 by fiscal 2030 and net-zero emissions across Scopes 1, 2, and 3 by 2040.

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Climate Scenario Analysis and Initiatives

In May 2020, the NTT Group declared its support for the Task Force on Climate-Related Financial Disclosures (TCFD), established by the Financial Stability Board (FSB). Following our new beginning as the NTT DOCOMO Group in July 2022, we conducted a fresh scenario analysis as a member of the DOCOMO Group in addition to our conventional analysis as a member of the NTT Group, and based on the results, we examined our efforts and actions as the NTT Communications Group. The analysis of the DOCOMO Group adopted two scenarios of climate-related risks and opportunities associated with the Group's operations: a well-below 2°C (e.g., 1.5°C) scenario of rapid decarbonization and a 4°C warmer scenario assuming apparent physical impacts.

Taking into account the DOCOMO Group's scenario analysis as an alternative perspective, we will continue to adopt various approaches for decarbonization and net-zero emissions, including our choice of scenario models.

\*Reference scenarios  
 • A scenario assuming rapid decarbonization: IEA (International Energy Agency) World Energy Outlook 2018 Sustainable Development Scenario (SDS), and IEA Energy Technology Perspectives 2017 Beyond 2°C Scenario (B2DS)  
 • A scenario assuming apparent physical impacts: IPCC (Intergovernmental Panel on Climate Change) Fifth Assessment Report, and IPCC Special Report on Global Warming of 1.5°C

For more information on related risk management initiatives, see the "Sustainability Management" section of the report.

For more information on indicators and targets, see the "Indicators and Targets" section of the report.

[ Risks and Opportunities Identified with Scenario Analysis, and a Summary of the Group's Initiatives ]

			Potential Impact on Business (Risks and Opportunities)	Materiality (Business/Financial)	Timeframe	Initiatives by the NTT Communications Group	
Well below 2°C scenario (e.g., 1.5°C scenario)	Transition risk	Policies/regulations	Carbon price/carbon tax	High	Long term	<ul style="list-style-type: none"> <li>Reducing GHG emissions by improving the power efficiency of air-conditioning and IT equipment at data centers through new technologies (Green Nexcenter*) and by implementing power reduction measures</li> <li>Actively introducing renewable energy (including virtually renewable energy by using non-fossil fuel certificates) to achieve carbon neutrality by fiscal 2030</li> <li>Introducing internal carbon pricing</li> <li>Introducing Net-Zero by 2040 plan</li> </ul>	
		Industry/market	Increased policies and regulations for products and services	Medium	Long term	<ul style="list-style-type: none"> <li>Early launch of services based on customer trends and social needs                             <ul style="list-style-type: none"> <li>Providing green power menu in data centers</li> <li>Visualizing CO<sub>2</sub> emissions in cloud services</li> <li>Providing PFs and solutions for decarbonization</li> </ul> </li> </ul>	
		Industry/market	Energy price fluctuations	High	Long term	<ul style="list-style-type: none"> <li>Reducing GHG emissions at data centers by improving the power efficiency of air-conditioning and IT equipment at data centers through new technologies (Green Nexcenter*) and by implementing power reduction measures</li> <li>Securing stable power sources through long-term fixed contracts with power companies, development of special power sources (e.g., PPA), etc.</li> <li>Promoting IOWN Initiative</li> </ul>	
	4°C scenario	Physical risks	Chronic	Changes in customer reputation, demands, and behavior	Medium	Long term	<ul style="list-style-type: none"> <li>Disclosing the 2030 carbon neutrality target and introducing renewable energy ahead of schedule</li> <li>Early deployment of services based on customer trends and social demands                             <ul style="list-style-type: none"> <li>Green power menu at data centers</li> <li>Visualizing CO<sub>2</sub> emissions in cloud services</li> <li>Providing PFs and solutions for decarbonization</li> <li>Participating in carbon credit projects</li> </ul> </li> </ul>
			Chronic	Increased average temperatures and midsummer days	Medium	Long term	<ul style="list-style-type: none"> <li>Reducing GHG emissions by improving the power efficiency of air-conditioning and IT equipment at data centers through new technologies (Green Nexcenter*) and by implementing various power reduction measures. Latest cooling technology to be offered commercially in selected data centers by the end of fiscal 2023. To be expanded in the future</li> <li>Promoting IOWN initiative</li> </ul>
			Acute	Severe extreme weather conditions	Medium	Short term	<ul style="list-style-type: none"> <li>Reliable risk assessment when selecting a construction site</li> <li>Redundant facilities based on disaster simulation</li> <li>Securing multiple power supply routes assuming power supply interruption</li> <li>Reviewing and establishing equipment procurement plans addressing the risk of flooding at manufacturing plants</li> </ul>

High materiality: Extremely important in climate action for business continuity and financial reasons  
 Medium materiality: Relatively less important, although potentially damaging  
 Low materiality: Limited impact on business, including future prospects

Timeframe: Short term (less than 3 years)  
 Timeframe: Medium term (less than 3 to 6 years)  
 Timeframe: Long term (6 years or more)

\*For more information on our Green Nexcenter and future plans, see: [https://www.ntt.com/about-us/press-releases/news/article/2023/1004\\_2.html](https://www.ntt.com/about-us/press-releases/news/article/2023/1004_2.html) (Japanese only)

For more information on our other initiatives, see: <https://www.ntt.com/en/about-us/csr/sustainability/policy/environment/report01.html#anc2>

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Calculation of GHG Emissions (Fiscal 2022 Results)

For Scope 3, we calculated emissions by referring to unit emission databases and other materials produced through studies by the Ministry of the Environment and other government ministries and agencies.

[ GHG Emissions by Scope and Category ]

Category	Composition Ratio (%)	GHG Emissions (ten thousand tons-CO <sub>2</sub> e)
Total emissions	100	216.1
Scope 1 (direct emissions of greenhouse gases from our own sources, such as fuel combustion)*1	0.3	0.6
Scope 2 (indirect emissions from the use of electricity, heat, and steam supplied by other companies) (market-based))*2	5.8	12.4
Scope 3 (indirect emissions other than Scopes 1 and 2, such as emissions by others related to activities of the NTT Communications Group)		203.1
Category 1 (purchased goods and services)*3, 4	33.7	72.8
Category 2 (capital goods)*3, 4	13.6	29.5
Category 3 (fuel and energy activities not included in Scopes 1 or 2)	1.7	3.8
Category 4 (upstream transportation and distribution)	0.5	1.1
Category 5 (waste generated through business activities)	0.0*8	0.0*8
Category 6 (business travel)*3	0.3	0.5
Category 7 (employee commutations)*2	0.0*8	0.0*8
Category 8 (upstream leased assets)*5	—	—
Category 9 (downstream transportation and distribution)*6	—	—
Category 10 (processing of products sold)*7	—	—
Category 11 (use of products sold)*3	30.8	66.6
Category 12 (disposal of products sold)	0.1	0.3
Category 13 (downstream leased assets)	13.2	28.5
Category 14 (franchise)*9	—	—
Category 15 (investments)*10	—	—

\*1 Includes emissions of greenhouse gases other than CO<sub>2</sub>, such as CFC substitutes  
 \*2 Emissions associated with electricity are calculated using emission factors obtained from electric power companies.  
 \*3 We revised the calculation method for categories 1, 2, 6, 7, and 11 of Scope 3 to improve accuracy from FY2021 results.  
 \*4 Calculated by multiplying each supplier's transaction amount by their emissions intensity (calculated from their disclosed data) or by the emissions intensity according to the transaction details.  
 \*5 Counted for calculation, but no results were available (fuel and electricity used by leased assets are calculated under Scope 1 or 2)  
 \*6 Counted for calculation, but no results were available (mostly outsourced transportation calculated under category 4)  
 \*7 Counted for calculation, but no results were available (no intermediate product processing in main businesses)  
 \*8 Less than 0.05  
 \*9 Counted for calculation, but no results were available (not applicable)  
 \*10 Counted for calculation, but no results were available (calculated in Scope 1 or 2) Scope: NTT Communications Corporation and 17 Group companies

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Reduction of GHG

### Fiscal 2022 Results

**GHG Emissions**

Fiscal 2022 Target

**14.0** ten thousand tons-CO<sub>2</sub>e or lower

(The target of 2.8 ten thousand tons-CO<sub>2</sub>e for the three Group companies that have been consolidated since the third quarter of FY2022 was added to the initial target of 11.1 ten thousand tons-CO<sub>2</sub>e\*)

\*YoY -20%

➔

Fiscal 2022 Result

**13.0** ten thousand tons-CO<sub>2</sub>e

Includes emissions of greenhouse gases other than CO<sub>2</sub>, such as CFC substitutes

We were able to meet our GHG emissions target (Scopes 1 and 2)\* for fiscal 2022, mainly by expanding the introduction of renewable energy (including virtually renewable energy by using non-fossil fuel certificates), while further striving to save energy in telecommunications facilities and data centers and promoting remote work, which resulted in a decrease in power consumption in offices. The GHG emissions per unit of sales were 0.11 t-CO<sub>2</sub>e per millions of yen (fiscal 2021 result: 0.13 t-CO<sub>2</sub>e per millions of yen).

In fiscal 2023, the NTT Communications Group will work together to expand the introduction of renewable energy, continue its ongoing energy-saving activities, and utilize R&D technologies and new measures to reduce GHG emissions by 10% from the previous fiscal year. Through these efforts, we plan to become carbon neutral by fiscal 2030, with net-zero GHG emissions generated by our data centers, networks, and other facilities.

\*Emissions related to electricity are calculated using emission factors obtained from electric power companies.

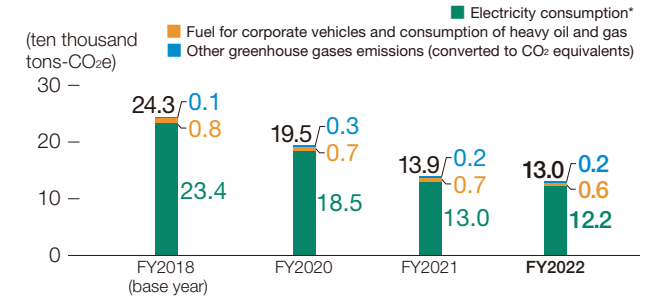
Contributing to the Decarbonization of Customers and Society

NTT Communications contributes to reducing the environmental impact of our business, our customers, and society as a whole through two approaches: "Green of ICT" to reduce our own environmental impact and "Green by ICT" to help our customers and society reduce their environmental impact. Based on the Green by ICT approach, we are offering DX, GX, WX, and CX\* solutions to help customers reduce their GHG emissions. We are also providing energy-efficient data centers and cloud services to society, having customer servers and their peripheral equipment, including air-conditioning,

UPS, and lighting, integrated at our highly power-efficient data centers, consequently improving the efficiency of public power consumption. To fulfill our social responsibility as a member of the NTT Group, which endorses and participates in the GX League Basic Concept announced by the Ministry of Economy, Trade and Industry, we are actively participating in policy-making activities to realize a society in which companies that adopt GX can contribute to reducing GHG emissions while achieving growth with appropriate external recognition.

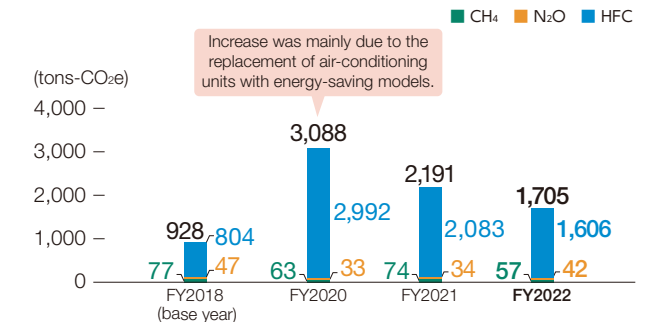
\*DX: Digital transformation, GX: Green transformation, WX: Work style transformation, CX: Customer experience

[ GHG Emissions from Business Activities ]



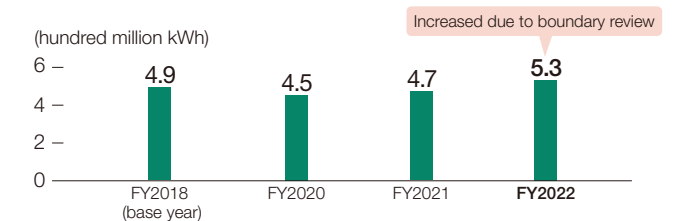
Scope: NTT Communications Corporation and 17 Group companies  
\*Emissions associated with electricity are calculated using emission factors obtained from electric power companies.

[ Other GHG Emissions\* (Converted to CO<sub>2</sub> Equivalents) ]



Scope: NTT Communications Corporation and 17 Group companies

[ Power Consumption (including electricity and renewable energy derived from GHG Protocol Scope 2 emissions from business activities) ]



Scope: NTT Communications Corporation and 17 Group companies

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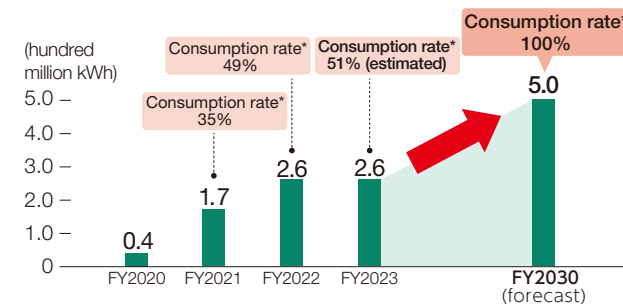
## Expanding the Use of Renewable Energy

Since April 2020, we have been actively introducing and expanding the use of renewable energy, including virtually renewable energy by using non-fossil fuel certificates, and in fiscal 2022 achieved a 100% renewable energy rate in 42 of our 85 telecommunications facilities, including data centers. In fiscal 2023, we will continue to expand the use of renewable energy.

[ Saitama 1 Data Center (100% powered by renewable energy from fiscal 2022) ]



[ Consumption rate of electricity derived from renewable energy sources (including virtually renewable energy by using non-fossil fuel certificates) ]



Scope: NTT Communications Corporation and 17 Group companies  
\*Targeted GHG Protocol: Scope 2 emissions from business activities

## Efforts to Achieve Net-Zero Emissions by 2040

In May 2023, the NTT Group announced its new medium-term management strategy for achieving carbon neutrality by fiscal 2040 with net-zero emissions from its own operations as well as from its supply chains (Scope 3). In response to this, the NTT Communications Group is also promoting concrete efforts to achieve the Net-Zero by 2040 plan announced in November 2023 by the NTT DOCOMO Group, including the launch of services that help customers and partner companies reduce their GHG emissions.

## Evaluation by National and Local Governments

In fiscal 2022, NTT Communications was evaluated as “S” class, the highest rank, as an outstanding energy-saving business that achieved its targets, under the business operator classification system implemented by the Agency for Natural Resources and Energy based on the Act on Rationalizing Energy Use (Energy Conservation Act).

We also received “S” ratings (Otemachi Place, Granpark Tower, and Shiodome Building) from the Tokyo Metropolitan Government for our global warming countermeasure plans for specified tenant buildings\*.

We will continue to comply with laws and regulations on global warming countermeasures and actively help local communities achieve a decarbonized society through such means as participating in the Yokohama Decarbonization Innovation Council and registering in Osaka Prefecture’s decarbonization management

declaration system.

\*Specified tenant buildings are those occupied by businesses that use at least 6 million kWh of electricity per year or lease at least 5,000m<sup>2</sup> of floor space.

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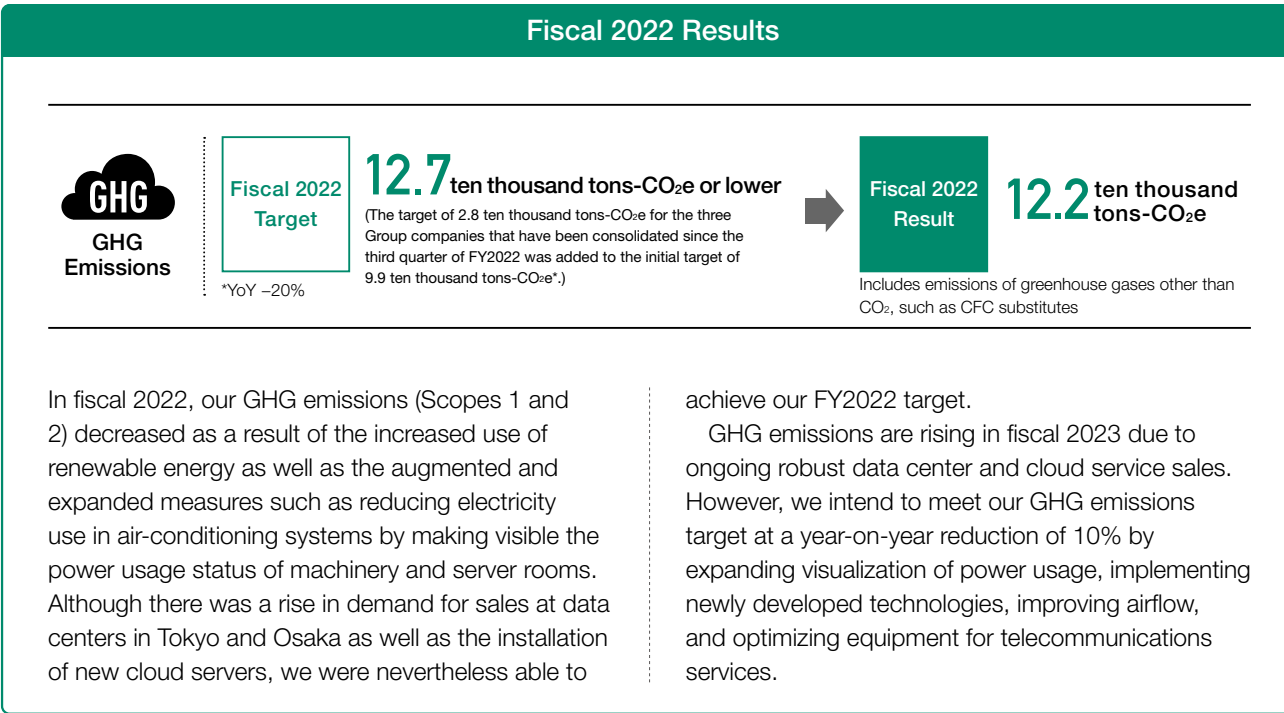
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Initiatives Related to Telecommunications Facilities and Data Centers



The NTT Communications Group contributes to reducing GHG emissions from its own operations as well as its customers through the following initiatives.

- Introducing and utilizing energy-saving technologies in data centers
- Forecasting and visualizing CO<sub>2</sub> emissions in cloud services and offering carbon neutral services
- Offering customers a renewable energy menu for using data centers

**P008** For more information, see the “Special Feature: Data Center Services Supporting DX in Society for a Carbon Neutral Future” section of the report.

Data Center Initiatives

Operating data centers requires a constant supply of electric power. As an ICT company, we proactively introduce leading-edge equipment and technologies for reducing the carbon footprint of our data centers

For example, our relatively new data centers are equipped with improved cooling efficiency and lower power consumption in their air-conditioning systems owing to the use of outside air for cooling IT equipment, precise automatic temperature measurement, and proactive AI-based air-conditioning control based on these measurements. In addition, we have installed an indirect evaporative cooling system for the new data center in Tokyo. This made us the industry’s first to use the system, which is expected to reduce the annual energy cost by 60% compared to a conventional system.

In addition to cooling systems, we are working toward decarbonization by introducing a solar power generation system and an automatic motion sensor lighting system to promote a more effective use of energy and energy conservation.

In fiscal 2024, we plan to launch Green Nexcenter™, a service that supports the use of liquid-cooled equipment in ultra-energy-saving data centers. The service reduces the power used for cooling server equipment such as ChatGPT, which consumes vast amounts of energy and generates considerable heat, by approximately 30% compared to conventional data centers.

We will accelerate the decarbonization of our data centers by introducing leading-edge equipment and technologies.



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Cooling Solutions for Servers Equipped with the Latest Technologies

Along with the recent increased demand for servers with robust processing capabilities, managing the extremely high heat generated by their equipment continues to be a challenge that requires cooling facilities or systems that can efficiently cool the super-heated servers. We have introduced the following cutting-edge cooling solutions to demonstrate and test their efficiency as well as operating systems at Nexcenter Labs in each NTT Communications' data center.

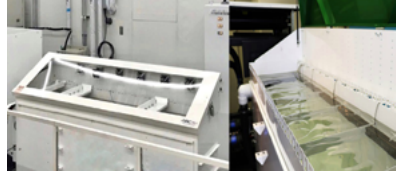
Examples of cooling solutions

- A cooling system mounted on the rear door of server racks suitable for high-density server rack applications
- A liquid cooling system that circulates chilled water from an outdoor cooling tower to the servers via cooling pipes placed on metal plates attached to the processors inside the servers (scheduled to be available in fiscal 2024)
- A liquid immersion cooling system that delivers excellent cooling efficiency by directly immersing the server board in a nonconductive cooling liquid

[ Rear-door coolin ]



[ Liquid cooling ]



[ Liquid immersion cooling ]



Use of Renewable Energy in Data Centers

With the expansion of the digital society, demand for power in data centers is increasing year by year. The issue is that while it is possible to improve the energy consumption efficiency of data centers, it is not possible to eliminate power consumption itself.

In addition to our data centers located in telecommunications buildings that began using renewable energy in fiscal 2020, our new data center established in Tokyo in fiscal 2021 also relies on renewable energy. In fiscal 2022, we began featuring a wide range of renewable energy options to meet customer needs at our five data centers in the Tokyo metropolitan area. This enables our customers to comply with RE100\* and other international environmental initiatives as well as to promote their ESG management toward decarbonization.

Going forward, we will expand our efforts to spread the use of renewable energy not only inside the Company but with our customers.

Starting in the second half of fiscal 2025, we will be offering services at the new Keihanna Data Center (provisional name) to be constructed in Kyoto Prefecture by NTT Global Data Centers Corporation. We are currently working on a system that will virtually eliminate CO<sub>2</sub> emissions from this data center by using renewable energy according to customer needs.

\*A global initiative that brings together companies that intend to switch to 100% renewable energy sources for electricity used in their business activities.

Providing CO<sub>2</sub> Emissions Forecasting and Visualization Functions in Our Cloud Service

In our Smart Data Platform Cloud/Server service, which utilizes NTT Communications' data centers to provide cloud computing services, we have started to provide simulation to forecast CO<sub>2</sub> emissions and a dashboard to visualize emissions free of charge in fiscal 2022, the first cloud service provider in Japan to do so. The service allows customers to simulate the CO<sub>2</sub> emissions reduced by migrating from their conventional on-premise environment to the SDPF Cloud/Server, and to confirm the volume of CO<sub>2</sub> emitted by their usage on the portal. We will continue to promote efforts to help customers further reduce their environmental impact.

[ Screen image of the Carbon Footprint Simulation for forecasting CO<sub>2</sub> emissions ]



[ Screen image of the Carbon Footprint Dashboard for visualizing CO<sub>2</sub> emissions ]



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Carbon Neutral Initiatives in Our Cloud Service

In June 2023, we successfully achieved the goal of making our Smart Data Platform Cloud/Server service carbon neutral by introducing renewable energy to all our sites by the end of fiscal 2023. With this service, we will support our customers in moving their on-premise environments to the cloud and reduce GHG emissions in their value chains.

Ongoing Efforts to Cut Cooling Power Consumption at Telecoms Facilities and Data Centers

In past efforts to reduce power consumed by cooling, we have implemented a range of measures, including SmartDASH® an automated AI system that visualizes temperature zones, 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 in the aisles between rows of server racks.

As a further step to reduce power used for cooling at our data centers, we are moving beyond ICT-driven visualization of both temperature and power consumption to continue our work on more finely tuned air-conditioning power management. This includes calculating the power usage effectiveness (PUE)\*1 of each room to improve low-efficiency rooms by implementing thorough airflow improvement, temperature adjustments, and air-conditioning shutdown initiatives. These efforts led to a 15% reduction in power consumed by cooling in fiscal 2022 compared to business-as-usual (BAU)\*2 levels.

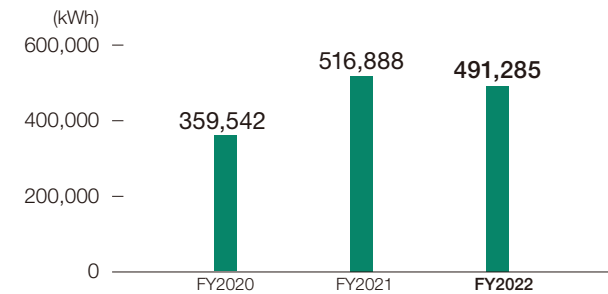
To address the migration in ICT equipment from old models to highly efficient new ones, we will also seek to cut down on power consumed by ICT and air-conditioning systems through the timely discontinuation of use of the old models.

\*1 Power usage effectiveness: (Power consumption of the entire data center)/(Power consumption of ICT equipment in the data center). An indicator for measuring the energy efficiency of a data center; the closer the number approaches 1, the more efficient the data center.  
\*2 A situation in which no special measures are taken.

Introducing Solar Power Generation Systems that Actively Use 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, and six system units are currently in operation.

[ Overall Amounts of Power Generated by Solar Panels ]



Power Generated by Solar Power in Fiscal 2022  
Approx. 49 ten thousand kWh



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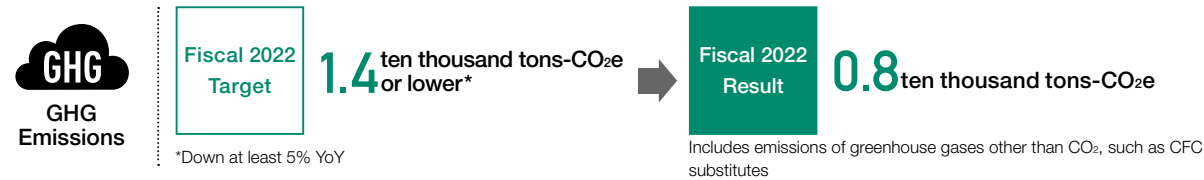
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Office Initiatives

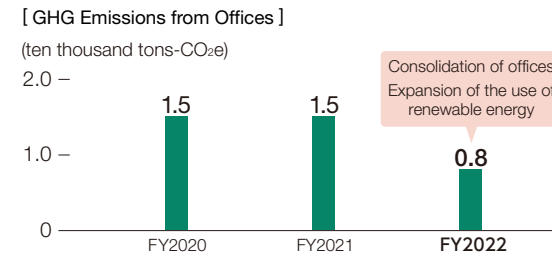
Fiscal 2022 Results



In fiscal 2022, we moved out of one of our largest offices, the Shiodome Building, to consolidate offices in the Tokyo metropolitan area, assuming that the maximum employee attendance rate would be 30%, as remote work is becoming common practice, which resulted in a decrease in our power consumption. We also expanded the use of renewable energy for electricity (including virtually renewable energy using non-fossil fuel certificates), and as a result, our GHG emissions decreased significantly compared to fiscal 2021.

In fiscal 2023, we expect to see more employees back in the office due to changes in social demands with COVID-19, but we will further reduce electricity consumption in the office and expand the use of

renewable energy for electricity consumption, and set a target for reducing GHG emissions by at least 5% compared to fiscal 2022.



\*Includes emissions of greenhouse gases other than CO<sub>2</sub>, such as CFC substitutes  
Scope: NTT Communications Corporation and 17 Group companies

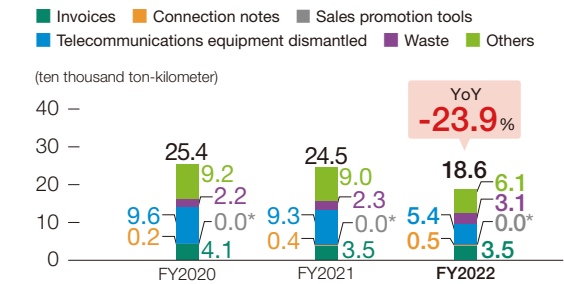
Transportation Initiatives

Fiscal 2022 Results

NTT Communications annually audits 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, volume, and distance required for transport and by otherwise enhancing logistics.

In fiscal 2022, we worked to reduce the amount of paper by expanding web-based applications, digitalizing sales tools, and promoting remote sales. We also observed a decrease in the volume of dismantled telecommunications equipment transported due to the reorganization with NTT DOCOMO in July 2022. As a result, total transportation volume was 186,000 tkm. In fiscal 2023, we will continue to reduce transportation volume by promoting the use of web-based application systems and digitalization.

[ Goods Transportation Volume under the Revised Energy Conservation Law ]



\*Less than 0.05  
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Reducing Fuel Use by Company Vehicles

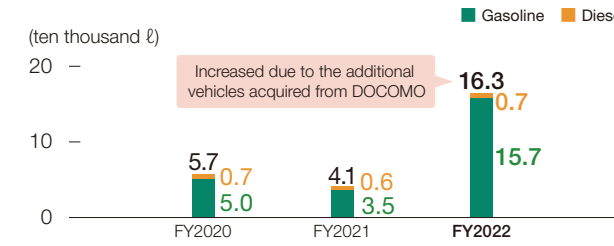
To help solve pollution problems and contribute to the realization of a low-carbon society, we are working to have EVs account for 100% of our corporate fleet by fiscal 2030 under the EV100 initiative declared by the NTT Group in October 2018. We are also reviewing the number of our sales vehicles and steadily promoting eco-driving and other measures to reduce the volume of fuel used by Company vehicles across the entire Group.

In fiscal 2022, we continued our efforts to introduce EVs, replacing 6 vehicles with EVs and scrapping 44 vehicles with the expansion of remote sales. As a result, the number of Company vehicles was 131 (including 46 EVs) at the end of fiscal 2022, compared to 197 (32 EVs) at the end of fiscal 2020.

Following the reorganization with the former NTT DOCOMO Group in July 2022, our Company fleet now possess an additional 443 vehicles (including 114 EVs) that were acquired from the former NTT DOCOMO Group. To this end, we started monitoring fuel consumption and other relevant data in the second quarter of fiscal 2022, and we have been managing the planned and actual number of vehicles since fiscal 2023.

Mainly due to the impact of these additional Company vehicles, gasoline and diesel consumption by Company vehicles in fiscal 2022 totaled 157,000 liters and 7,000 liters, respectively. The combined volume increased by 122,000 liters year on year.

[ Fuel Consumption by Company Vehicles ]



Scope: NTT Communications Corporation and 17 Group companies

For more information on EV 100, see: <https://japan-clp.jp/en>

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 used while reducing emissions of, for example, CO<sub>2</sub>, NO<sub>x</sub>, and SO<sub>x</sub>.

When in operation, we work to optimize fuel consumption by the most effective operating methods (including optimum route selection that takes into account the ship's speed, ocean currents, and weather conditions as well as other factors) in order to curtail the amount of CO<sub>2</sub> emitted based on a Ship Energy Efficiency Management Plan (SEEMP).

We are also carrying out the partial installation of LED energy-saving lighting for the ships (cable-laying ship Kizuna was fully equipped with LED lighting when it was first built).

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

[ Cable-laying ship Kizuna (8,598 tonnes) ]



[ Cable-laying ship Subaru (9,557 tonnes) ]



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**Reducing the Carbon Footprint of Society through Our Products and Services**

**Environmental Labeling System for Solutions**

The NTT Group is exploring the idea of an Environmental Labeling System for Solutions for self-certification of environmentally friendly ICT solutions and services. To qualify, ICT solutions and services will have to achieve CO<sub>2</sub> 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.

The NTT Communications Group has obtained a cumulative total of 12 solutions registered, which includes two certified services transferred from NTT DOCOMO to NTT Communications following the reorganization in July 2022. Looking ahead, we aim to obtain more certifications for the Environmental Labeling System for Solutions.



(Unit: %)

Certified Solutions (Excerpt)	CO <sub>2</sub> Reduction Effect (at the Time of Certification)
Nexcenter	43
Enterprise Cloud	74
Arcstar IP Voice	30
Arcstar Universal One Mobiles	24

For more information on the Environmental Labeling System for Solutions, see: <https://group.ntt/en/environment/protect/lowcarbon/label/>

● Nexcenter, a Data Center that Combines Energy-saving Performance with Leading-edge Quality  
NTT Communications' data center (DC) service, the Nexcenter, offers leading-edge quality, safety, and security, among the highest standards in the industry.

The Nexcenter proved to be capable of operating nonstop, 24 hours a day, 365 days a year, with full disaster countermeasures and of reducing GHG emissions associated with maintenance, operation, and the use of ICT equipment in a DC by at least 50% per year compared to a conventional DC with the latest cooling system.

**Acquisition of the Eco ICT Logo**

We conducted a self-assessment of our GHG 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 GHG 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, and the tenth version was published in February 2023. Working together with our Group companies participating in this initiative, we will continue to roll out our ecological initiatives in the ICT field.



\*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-IoT Cloud Industry Consortium (designated nonprofit organization)

For more information on the Eco ICT Logo, see: [https://www.tca.or.jp/press\\_release/2010/0701\\_400.html](https://www.tca.or.jp/press_release/2010/0701_400.html) (in Japanese only)

For more information on the self-assessment checklist, see: <https://www.ntt.com/about-us/csr/eco/ecoict.html> (in Japanese only)

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Priority Activities Development of a Closed-loop Society

Our Approach

To contribute to the realization of a closed-loop society, the NTT Communications Group promotes the reduction and reuse of waste and improving recycling rates while building business models with low environmental impact. Waste and resource recycling is a rising public concern, and if we do not take appropriate action on a global scale, we run the risk of long-term damage to our natural environment and ecosystems as well as soaring prices and the depletion of various resources around the world. Also, failing to effectively respond to the growing demand of society for resource recycling may create business risks, such as not being able to meet the procurement standards of our suppliers and possibly damaging the reputation of our Company.

To fulfill our social responsibility regarding this issue, we organized working groups in the three areas of dismantled telecommunications equipment, construction waste, and office waste and are working in cooperation with other NTT Group companies to thoroughly implement the 3Rs (reduce, reuse, and recycle) while also promoting plastic recycling. In addition, we are working to provide and co-create ICT platforms and solutions/services that lead to a closed-loop society, which can also

provide a business opportunity for increasing our corporate value. Through these initiatives and many other efforts, we are committed to a greener future with the most effective use of resources through proper waste management and promotion of reusing and recycling in our business activities.

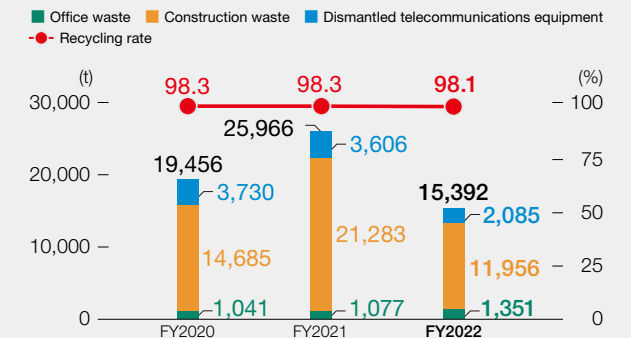


Main Achievements in Fiscal 2022 and Goals for the Coming Years

In fiscal 2022, the total volume of waste from dismantled telecommunications equipment amounted to 2,085 tonnes, construction waste to 11,956 tonnes, and office waste to 1,351 tonnes. The total volume of waste generated decreased by 10,574 tonnes, compared to the previous fiscal year, to 15,392 tonnes, mainly due to a decrease in construction waste. The recycling rate for the total volume of waste was 98.1%, a slight decrease compared to the previous fiscal year (98.3%).

We will continue to manage the recycling rate as part of our efforts to create a recycling-oriented society and ensure that the 3Rs are thoroughly implemented in our business activities.

[ Volume of Waste Generated and Recycling Rate ]



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Building Business Models with Low Environmental Impact

Effectively Using Water Resources

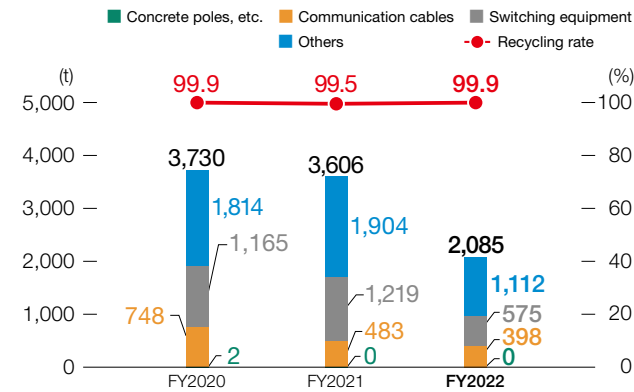
Water resources are indispensable for the survival of all living things, including humans, but the increasing world population and economic development have led to concerns over water shortages and pollution. We are striving to use water resources more effectively by recycling and reusing air-conditioning and cooling water in our data centers and switching to water-saving toilets in our major office buildings. We are also developing a water demand prediction system, as part of a social infrastructure that utilizes ICT, to contribute to addressing social issues related to water resources. The total volume of water used in fiscal 2022 was 324,000 m<sup>3</sup>.

Initiatives to Improve the Recycling Rate

We believe that one of our most important obligations as an ICT services provider is to create business models that emphasize recycling. We are therefore carefully selecting waste processors for data centers, telecommunications buildings, and office buildings based on their recycling rates. In selecting waste processors, we seek to ensure proper disposal and improve the recycling rate by screening candidates based on our criteria and consigning work to businesses that meet the qualifications. As a result,

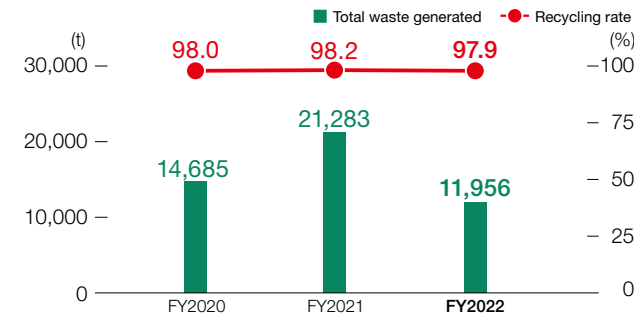
the recycling rate of office waste, which was 81.5% in fiscal 2013, has improved to 97.3%, as of fiscal 2022, showing steady progress.

[ Total Volume and Recycling Rate of Dismantled Telecommunications Equipment ]



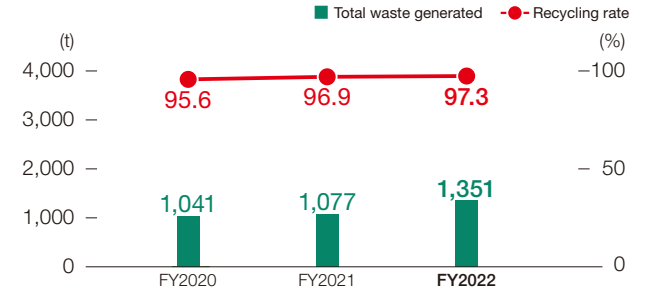
Scope: NTT Communications Corporation and 17 Group companies

[ Total Volume and Recycling Rate of Construction Waste ]



Scope: NTT Communications Corporation and 17 Group companies

[ Total Office Waste and Recycling Rate ]



Scope: NTT Communications Corporation and 17 Group companies

Promoting the Reuse of Fixed Assets

From the perspective of promoting the efficient operation and reuse of fixed assets across the Company, including small assets and equipment, we are matching organizations that need assets with those that do not. Thanks in part to this effort, in fiscal 2022 we reused 75 items of dismantled equipment and 3,057 units of equipment and packages overall. In fiscal 2023, we will continue to promote the reuse of fixed assets and strive to reduce the amount of waste we generate.

Thorough Implementation of the 3Rs in Office Buildings

Reduction in Paper Use for Business Purposes

NTT Communications is working to reduce its use of all kinds of paper for business purposes, including that for printing customer billing statements. In fiscal 2007, we

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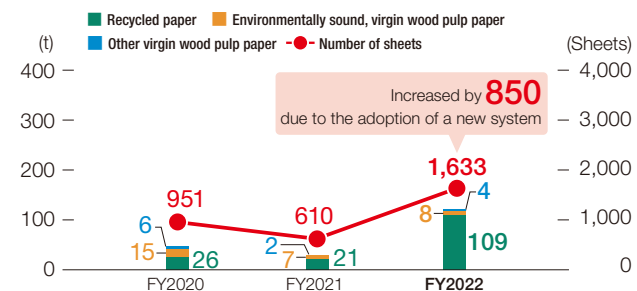


established a paper use indicator per fulltime employee in order to reduce the use of office paper. Since then, we have been working to raise awareness among employees through various efforts such as curbing the use of paper and increasing the rate of double-sided printing by using printing log data from IC card multifunction printers, and collecting the initiative status data per individual and section and disclosing it to all employees on a monthly basis.

Since fiscal 2020, we have made significant progress in digitizing paper documents as part of our initiatives to promote remote work and work-life balance, resulting in a substantial decrease in the amount of paper used per employee (converted to A4-size office paper) from fiscal 2019 (3,585 sheets).

In fiscal 2022, the amount of office paper used per employee was 1,633 sheets, mainly due to the adoption of a system that uses a large amount of office paper following the reorganization with the NTT DOCOMO Group in July. When excluding the paper used by that system, the amount of office paper used per employee was 784 sheets (estimated), which was 174 sheets more than in fiscal 2021, mainly due to an increase in the number of employees coming to the office. We will continue to reduce the amount of office paper used by improving our business processes.

[ Total and Per-employee Office Paper Use ]



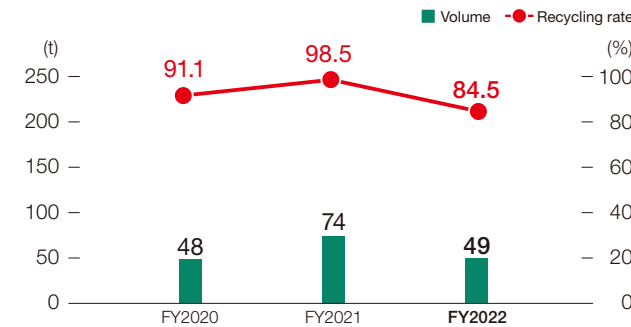
Scope: NTT Communications Corporation and 17 Group companies

Response to Plastics Pollution

Concern has been growing around the world over plastic waste, including the pollution of marine environments. NTT Communications upholds the implementation of closed-loop recycling as a CSR Priority and is working on reducing and promoting the recycling of plastic waste.

In fiscal 2022, although the volume of plastic waste generated decreased due in part to the disposal of fixtures following a large-scale office relocation, the rate of plastic recycling worsened significantly. We will continue addressing plastic pollution through our business activities.

[ Volume of Plastic Waste and Recycling Rate (Office)\* ]



Scope: NTT Communications Corporation and 17 Group companies  
\*Tabulated general and industrial waste generated from office buildings, including PET bottles, plastic waste, and other sources

Developing a New Recycling Scheme for Subsea Cables

While the typical length of subsea cables laid in Japan's territorial waters is 20 to 30 km per cable, the cable

managed by NTT Communications connecting Kagoshima and Okinawa prefectures is approximately 260 km long, passing through many islands along the way. When the cable went out of service in 2018, approximately 850 tonnes of waste was expected to be generated, raising major issues in terms of environmental impact and disposal costs.

To address these issues, NTT Communications signed an agreement with South Africa's Merteck Marine, the only company in the world with the technology to recycle subsea cables to the level of raw materials, to develop a new scheme to recycle 99% of subsea cables to reduce both environmental impact and disposal costs. Additionally, the scheme is contributing to creating regional safety nets by actively employing unskilled workers at the recycling plant in South Africa through Merteck Marine, and donating 30% of the profits from this recycling initiative to charitable organizations that support the education of impoverished families in Africa and the Middle East.

Coal tar coating for armor wire completely separated and pelletized

Outer armor wire properly coiled

Copper tape separated and pelletized

High-purity polyethylene used for outer cover can be sold at high price if completely separated and pelletized

Currently, all components other than optic fibers are completely recycled (over 99% of total volume)



## Co-existing with Nature

### Primary Concept

In addition to the international deliberations related to the SDGs\*, the UN Decade for Ecosystem Recovery from 2021 to 2030, and the Post 2020 Global Biodiversity Framework (GBF) adopted in December 2022, significant discussions have recently focused on the importance of conserving biodiversity and co-existence with nature as key environmental issues for realizing a sustainable society. These issues have also become key topics for risks related to the sustainability of business operations.

We have set “Planning a Future of Natural Harmony” as part of our environmental declaration and established the Biodiversity Action Plan. Under these policies, we are carrying out business activities from the construction of facilities to their operation and dismantling in accordance with the NTT Group Sustainability Design Guideline for Buildings and other guidelines. We are also engaged in local conservation efforts, such as conservation of satoyama (Japanese rural landscape) and local greening.

To fulfill our corporate social responsibility, we will continue to place a high priority on conservation of biodiversity throughout our business operations and conduct business while inspecting the progress of initiatives, identifying problems, and making improvements. We will also adopt a multifaceted approach, including the provision and co-creation of ICT/DX solutions and services that contribute to nature-positive economic activities, which can become business opportunities, as well as environmental contribution efforts such as participating in local conservation projects and disseminating environmental information.

\*Goal 14 Life Below Water, Goal 15 Life On Land

### Biodiversity Action Plan

#### 1. Basic Policy

##### • 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 the preservation of social biodiversity in business activities
- Deepen understanding of biodiversity, promote nature conservation activities together with employees, their families, and the planet

### Main Achievements in Fiscal 2022 and Goals for the Coming Years

We engaged in building, maintaining, and repairing facilities in compliance with the Biodiversity Action Plan as well as the concept of the environmentally sound Green Building\*, established by the NTT Group in addition to ongoing initiatives that leverage the features of ICT enterprises. We contributed to resolving environmental issues through our businesses, disseminated information, and raised awareness through the provision of ICT solutions for sustainable agriculture for increasing the number of wild ibis, and the provision of the “goo Green Label” on the “goo” web portal (users can participate in donating to environmental groups by setting their browser start page to the “goo Green Label” homepage).

In fiscal 2023, we will continue promoting initiatives by leveraging our capacity to serve society as an ICT enterprise.

\*Environmentally friendly 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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Promoting Biodiversity Conservation Initiatives

NTT Communications is committed to biodiversity conservation toward realizing a future of co-existing with nature. It operates biodiversity-friendly facilities and leverages ICT to minimize the impact on ecosystems, based on an understanding of the relationship between biodiversity and our business. We also strive to pass on abundant biodiversity to future generations through various actions.

These include satoyama conservation for environmental education, protecting ecosystems by cable-laying ships, assessing the potential environmental impact from the construction and dismantling of telecommunications facilities and data centers, and providing agricultural ICT solutions as part of nature-positive initiatives. We will continue to conserve ecosystems and work with our stakeholders through these efforts.

Initiatives Related to the TNFD

In accordance with the LEAP approach\*1 proposed by the TNFD, the NTT DOCOMO Group conducted an analysis\*2 of its nature-related dependencies, impacts, risks, and opportunities. The analysis also encompasses the business areas and value chains of NTT Communications. The Sustainability Office, responsible for promoting environmental activities, participated in the analysis through the identification of potential material issues, analysis of the value chain's location-specific issues, determination of material issues, and review of countermeasures, as a member of the DOCOMO Group.

\*1 A location-based approach to prioritizing impacts on natural capital and actions to address them. The approach involves four phases: locate interface with nature, evaluate dependencies and impacts on nature, assess nature-related risks and opportunities, and prepare to respond to nature-related risks and opportunities and report to investors.

\*2 This report is based on TNFD beta v0.4, released in March 2023. We will review the contents based on v1.0, released in September 2023, and take any necessary actions.



For the NTT DOCOMO Group TNFD Report, see:

<https://www.docomo.ne.jp/corporate/csr/ecology/protection/tnfd/> (in Japanese only)

[ Risks and Opportunities Identified through Scenario Analysis and Overview of Initiatives ]

Material nature-related risks and opportunities	The NTT DOCOMO Group's analysis based on the LEAP approach also includes the corporate business areas of NTT Communications. We identified "development of land with high conservation value," "impact on the surrounding ecosystem," and "resource extraction" as material issues based on an assessment of the relationship between the interests of stakeholders and our own business and considering the results of analyzing the value chain's location-specific issues described below.	
	Potential impacts on business	Potential business risks and opportunities were examined under the categories of nature-related risks and opportunities outlined in the TNFD.
Potential impacts on business	Risks	Various potential risks (e.g., price increases and unstable supply of telecommunications equipment necessary for offering services may affect our financial plans when there is a shortage of supplies from resource extraction) have been identified, but as reviewed by the NTT DOCOMO Group, we have verified that there are no immediate material risks that would affect our business.
	Opportunities	We have identified many opportunities that could help with conserving biodiversity, including the provision of smart agriculture and fisheries services as well as services and solutions that contribute to reducing environmental impact.
Analysis of the value chain's location-specific issues	The analysis of the value chain's location-specific issues includes telecommunications facilities and equipment related to NTT Communications' business. Potential material issues were organized by each stage of the value chain (upstream, downstream, and direct operations) and risk hotspots and potential risks to be addressed in each value chain were identified through the analysis using IBAT*1 and Aqeduct*2 for risk themes including resource extraction, water use, land development, and surrounding ecosystems. In addition, a GAP analysis was conducted to prioritize items to address based on the identified material issues, and the SBTN's Action Framework*3 AR3T was used to examine measures to address them.	

\*1 Integrated Biodiversity Assessment Tool, developed by the United Nations Environment Programme World Conservation Monitoring Centre (UNEP-WCMC)

\*2 A global water risk mapping tool developed by the World Resources Institute (WRI)

\*3 A framework proposed by the SBTN, comprised of a series of four steps (avoid, reduce, regenerate and restore, and transform) to plan countermeasures for actions damage the environment



For more information on related governance and risk management initiatives, see the "Sustainability Management" section of the report.



For more information on indicators and targets, see the "Environmental Declaration" and "Eco Strategy 2030" section of the report.




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## Considerations for Building Construction

### Biodiversity-conscious Guidelines

When constructing new buildings such as data centers, we strive to understand the historical, social, geographical, and biological environment characteristics of the building site and its surrounding areas in accordance with the NTT Group Sustainability Design Guideline for Buildings (established in December 2022), and we reflect that understanding into our designs insofar as possible. In addition to our ongoing efforts to promote decarbonization, resource recycling, and co-existence with the environment, we are also working to create an environment that is safe and resilient to natural disasters, which are becoming more frequent and devastating, and to create more people-friendly workplaces to promote diversity and inclusion as well as health and productivity management. These efforts will contribute to the realization of a sustainable society.

Along with these considerations, we ensure that construction is completed with consideration for minimal noise and vibration and with attention to community beautification during the work. Furthermore, our outdoor air-conditioning units and emergency power generators are designed to generate exhaust heat and noise levels that do not adversely affect the community.

 For more information on the NTT Group Sustainability Design Guideline for Buildings, see:  
<https://group.ntt.jp/design/> (in Japanese only)

### Complying with the Environmental Impact Assessment

All developers planning large-scale projects, such as data center construction, are required to conduct a preliminary survey, forecast, and assessment of how the project will affect the surrounding environment, and to submit an Environmental Impact Assessment (EIA) report. The details of all submitted EIA reports are made public, and developers can modify their plans to be more considerate of neighboring residents and the surrounding environment by incorporating into their project plans comments from the national government, local governments, and the public.

NTT Communications has conducted an EIA to proceed with the expansion project for the sixth building of the Osaka 7 Data Center. We used a compliance checklist to ensure that the project is environmentally sound at each stage, including design, construction, and completion, and have completed checking the design phase as of August 2023.

### Local Landscaping and Greening

We believe biodiversity should be considered in facility design toward contributing to local greenery in our surroundings.

At the Tokyo No. 6 Data Center, one of the largest of such facilities in Tokyo, we have been working closely with the community to promote greening activities by applying a subsidy from the Tokyo Metropolitan Park Association's Urban Green Fund. The green spaces at the site have been divided into two zones, spring/summer and autumn/winter, and planted accordingly so that visitors can enjoy

flowers there 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 exposed to 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 co-existence with marine organisms and the fisheries industry.

Group company NTT World Engineering Marine Inc., which handles the laying, burying, and maintenance of subsea cables, develops business with a strong awareness of the need to preserve marine environments.

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Considerations for the Impact of Laying Subsea 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, we duly consider shallow areas for preserving marine environments and generally exclude coral reefs and other inhabited areas when designing cable routes, insofar as possible, or transplanting them outside the cable-laying area.

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 it as industrial waste after returning to port.

[ Cables laid on sand to avoid 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 after 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, in accordance with 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 thus has low environmental impact. With regard to ship paints, we use those that are in compliance with the AFS Convention (International Convention on the Control of Harmful Antifouling Systems on Ships), which regulates the use of anti-fouling paint containing organic tin compounds on the bottom of 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.

P.015 For more information, see the “CASE 5: Submarine Cables Connecting the World to the Future” section of the report.

Considerations for the Construction and Dismantling of Relay Stations

Wireless relay stations, the backbone of data communication networks, are often in areas rich with nature such as on hills and islands within national and quasi-national parks, so we emphasize consideration for biodiversity in their operations.

For our 32 wireless stations nationwide, we build micro-roads if needed for the patrol and maintenance of these

stations while strictly adhering to the law and our own environmental assessment standards. These assessments identify specific concerns associated with construction processes to enable the application of multifaceted approaches for preventing or minimizing impact on the ecosystem.

In addition, when dismantling a wireless station, we strive to restore the environment to its original state by paying careful attention to the presence of rare animals and plants and using local soil for restoration while also consulting local environmental organizations and residents.

Moreover, we have been offering our stations to support wildlife conservation activities. For example, every year since September 2012, the Amami Ornithologists’ Club, an NPO, has convened a meeting for observing the migration of Chinese sparrow hawks on the premises of our wireless relay station in Amami City, Kagoshima Prefecture. Although wireless relay stations are typically off limits, these events are held under the observation of employees in response to a request that identified this area as particularly well suited for monitoring the ecosystem.

[ Watching the migration of Chinese sparrow hawks ]



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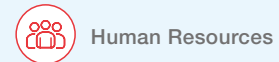


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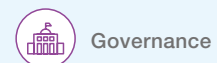


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### Contributing to a Nature-positive Future and Ecosystem Conservation Using ICT

#### Providing ICT Solutions for Sustainable Agriculture and Bringing Back the Crested Ibis

Since April 2022, we have been conducting a demonstration experiment in Niigata Prefecture’s Sado City, a site designated as a Globally Important Agricultural Heritage System, to promote rice farming in rice terraces with reduced or no pesticides and chemical fertilizers, which is contributing to the restoration and co-existence of ecosystems such as the crested ibis, by utilizing and verifying aerial drone photography, paddy weeding robots, and ICT-based advanced water management systems.

Note: This demonstration has been adopted by the Smart Agriculture Production Area Development Demonstration of the National Agriculture and Food Research Organization.

**P013** For more information, see the “CASE 3: Aiming for Eco-friendly and Sustainable Terraced Rice Paddy Farming” section of the report.

#### “goo Green Label” Activities

The “goo Green Label” portal is an initiative for donating a portion of the profits generated through the 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. Since its inception in August 2007, donations totaling 59.91 million yen have been made mostly to NPOs

engaged in global environmental protection activities.

In fiscal 2022, we donated 510,000 yen to the Nature Conservation Society of Japan, our 24th contribution from this program. The donation will be used to protect and preserve Japan’s beautiful nature for future generations, such as activities to protect the sea and sandy beaches, and to preserve biodiversity in Satoyama landscapes.

We will strive to maintain the “goo Green Label” as an easy way for more users to contribute to society.

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## Prevention of Environmental Pollution

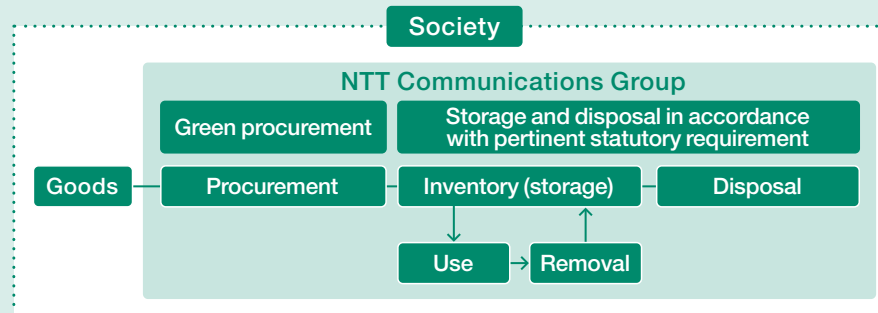
### Primary Concept

Everyday production and consumption generating emissions and waste and increasing environmental pollution has long been a social issue.

We are working to reduce emissions and waste generated from our business activities and properly manage and dispose of hazardous substances to prevent environmental pollution and create a safe and secure social environment. In addition, we are seeking to minimize environmental risks associated with business activities, such as pollution and leaks of hazardous substances, by formulating guidelines for introducing low-emission vehicles, improving equipment and operations, bolstering management, and conducting thorough inventories.

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 other disaster. We 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. In addition, we are striving to reduce the environmental impact of our supply chain by, for example, urging suppliers to reduce and thoroughly manage the use of hazardous materials based on our Green Procurement Standards.

[ Prevention of Environmental Pollution at Each Business Stage ]



### Main Achievements in Fiscal 2022 and Goals for the Coming Years

We established our policy and set a target for having electric vehicles account for 100% of the corporate fleet by fiscal 2030. In practice, we reviewed the number of sales vehicles owned and promoted eco-driving to reduce the fuel consumption of Company vehicles across the Group.

In fiscal 2022, we continued to introduce EVs and reduce the number of Company vehicles with the expansion of remote sales activities. However, following the reorganization in July 2022, we added 443 Company vehicles (including 114 EVs) that were acquired from the NTT DOCOMO Group. As a result, CO<sub>2</sub> emissions from Company vehicles increased by 292%, and NO<sub>x</sub> and SO<sub>x</sub> emissions by 247% and 105%, respectively. We will continue to review the number of vehicles owned and promote the use of EVs.



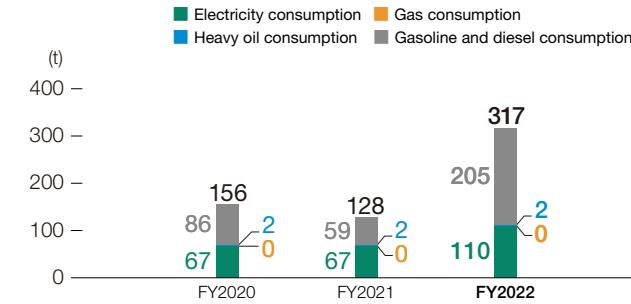
Initiatives to Address Environmental Pollutants

Preventing Air Pollution

Our business activities produce NOx and SOx emissions, which cause air pollution. Approximately half of the total NOx emissions has typically related to the use of gasoline and diesel in our operational vehicles. However, this was not the case in fiscal 2022, when total NOx emissions from vehicle use rose to 65%. This was due to a significant increase in the number of our Company vehicles following the reorganization with the NTT DOCOMO Group in July 2022, which resulted in higher gasoline and diesel fuel use. As for SOx, the majority (93%) is emitted during the generation of electricity that we use.

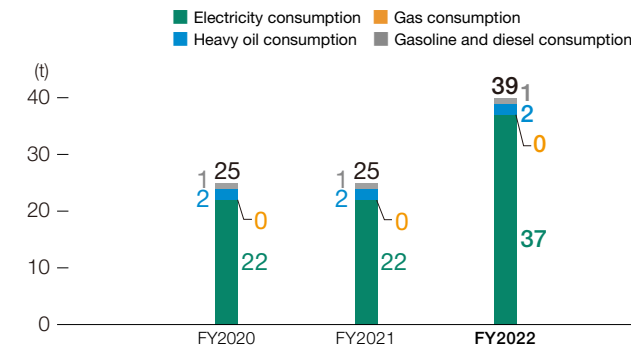
In fiscal 2022, NOx and SOx emissions were 317 tonnes (year-on-year increase of 147%) and 39 tonnes (year-on-year increase of 58%), respectively, as a result of the increased number of Company vehicles due to the aforementioned reorganization and increased use of reserve power due to legal inspections. We will continue to review our vehicle fleet numbers and promote the use of EVs toward contributing to the mitigation of global warming and prevention of air pollution.

[ NOx Emissions ]



Scope: NTT Communications Corporation and 17 Group companies

[ SOx Emissions ]



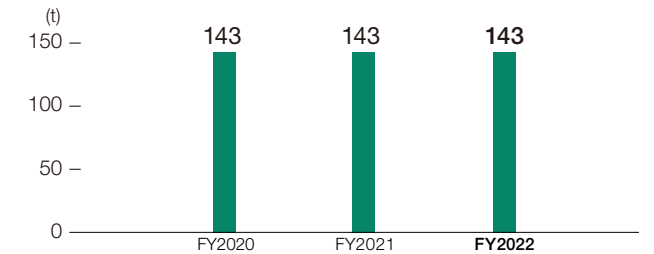
Scope: NTT Communications Corporation and 17 Group companies

Controlling Ozone-depleting Substances

We dispose of ozone-depleting substances in an appropriate manner. The volume of specified halons used in our fire extinguishing equipment in fiscal 2022 was approximately 143 tonnes, unchanged from the previous fiscal year.

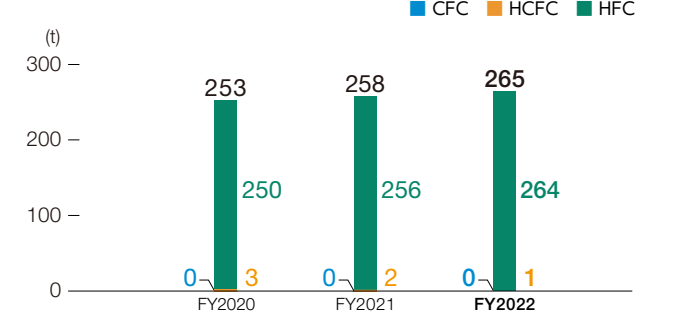
Meanwhile, the volume of specified chlorofluorocarbons (CFCs) used in our air-conditioning equipment in fiscal 2022 increased by around 7 tonnes from the preceding fiscal year to approximately 265 tonnes.

[ Volume of Specified Halons Used in Fire-extinguishing Equipment ]



Scope: NTT Communications Corporation and 17 Group companies

[ Volume of Specified CFCs Used in Air-conditioning Systems ]



Scope: NTT Communications Corporation and 17 Group companies



### Addressing Asbestos Concerns

Asbestos remediation 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, as revised in September 2006. Since fiscal 2019, we have been conducting an annual survey of four buildings to confirm that airborne emissions have been below the statutory limit at all buildings subject to legal compliance. We will continue appropriate measures, such as the removal, containment, or enclosure of asbestos in buildings where it is present, in compliance with manuals issued by the Japan Construction Occupational Safety and Health Association and local authorities.

### Storage and Management of PCBs

NTT Communications appropriately manages devices that contain polychlorinated biphenyls (PCBs). 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. Since fiscal 2021, we have been detoxifying equipment found to contain any PCBs based on the PCB inspection survey conducted in fiscal 2020.

With the completion in fiscal 2022 of treatment procedures for equipment containing high concentrations of PCBs, including those newly discovered, we plan to complete detoxification treatment by the end of fiscal

2023. Meanwhile, we are also removing existing low-voltage capacitors that may contain low concentrations of PCBs and are systematically working to complete this by the disposal deadline of the end of fiscal 2026.

[ Number of Transformers Stored ]

	FY2020	FY2021	FY2022
Number of Transformers Stored	6	0	0

Scope: NTT Communications Corporation and 17 Group companies

[ Number of Capacitors Stored ]

	FY2020	FY2021	FY2022	
Number of Capacitors Stored	High-voltage capacitors	0	0	0
	Low-voltage capacitors	2	12	4

Scope: NTT Communications Corporation and 17 Group companies

[ Number of Electric Ballasts Stored ]

	FY2020	FY2021	FY2022
Number of Electric Ballasts Stored	363	276	112

Scope: NTT Communications Corporation and 17 Group companies

### 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 operator of IT infrastructure, we have been thorough in establishing storage and management systems while also 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. Moreover, we maintain a system for quickly confirming the secure storage of chemical substances and reliably ensuring operational readiness in the event of major earthquakes and other disasters in order to prevent damage when one strikes as well as in the occurrence of secondary disasters.

[ PCB storage location ]



[ Storage of PCBs ]



### Cases of Major Leakage

There were no incidents involving major leakages in the NTT Communications Group in fiscal 2022.

### Transport, Import, and Export of Toxic Waste

We handle PCBs in accordance with the Act on Special Measures concerning Promotion of Proper Treatment of PCB Wastes and the PCB Waste Collection and Transport Guidelines issued by the Ministry of the Environment.