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## Editorial Policy

The composition of this Data Book closely corresponds with items in the NTT Group Sustainability Priority Activities in order to report comprehensively and in an easy to understand manner to stakeholders, including investors who value ESG. While the report covers the status of the NTT Group overall as much as possible, the scope of data is clearly noted when it is limited to a part of the Group.

For detailed information on the business strategies of NTT (hereinafter “the Company”) and operations, please refer to Annual Report 2021. For details on ongoing efforts related to sustainability and achievements at NTT Group companies, please refer to the Sustainability Report published separately by each company.

■ **NTT IR Site**  
<https://group.ntt.jp/ir/>

■ **NTT Group Sustainability Site**  
<https://group.ntt.jp/csr/>

**Reporting Period** April 1, 2020 to March 31, 2021 Certain activities implemented after March 31, 2021 and the outlook for the future are also included.

**Publication Date** December 27, 2021 (Previous report: September 2020; Next report (tentative): September 2022)

**Decision Making Process for Published Content** To determine the content requirements for the publication, the Board of Directors discussed sustainability and other basic policies in November 2021, and then the representative director and senior executive vice president acted on their authority under the organizational rules to confirm and approve the content.

**Reference Guidelines**

- GRI Sustainability Reporting Standards 2016/2018/2019
- Environmental Reporting Guidelines 2018, Japan Ministry of the Environment
- ISO 26000: Guidance on Social Responsibility

**Legend**

- Nippon Telegraph and Telephone Corporation is abbreviated as NTT, Nippon Telegraph and Telephone East Corporation as NTT East, and Nippon Telegraph and Telephone West Corporation as NTT West. Some group companies of the NTT Group are defined with “エヌ・ティ・ティ” for registration purposes, but in general use the NTT notation. In principle, notations for status of incorporation have been omitted from the names of NTT Group companies.
- Figures in the numerical tables have been rounded and therefore may not necessarily add up to the total figures.
- The names of companies, products and services are the registered trademarks or trademarks of each company.

**Third-Party Assurance** The NTT Group obtained third-party assurance from Sustainability Accounting Co., Ltd. with regard to indicators for the fiscal 2020 results of “Improving prosperity for all people and cultures” and “Maximizing well-being for all,” and for the indicators of CO<sub>2</sub> emission volumes (Scopes 1, 2, and 3), waste disposal volumes, and water intake (clean water) within the fiscal 2020 results of “Ensuring the positive coexisting of nature and humanity,” from the NTT Group CSR Priority Activities. (See page 143)

### Scope of Disclosure

The Data Book covers the NTT Group in its entirety. The scope of reporting for some sections are as follows.

**[A] Main companies: 8** NTT, NTT East, NTT West, NTT Communications, NTT DOCOMO, NTT DATA, NTT Facilities, NTT COMWARE

**[B] Domestic Group companies: 282**

**[C] Domestic and overseas Group companies: 964**

**[D] Main companies + operating companies**

<Operating companies: 10> NTT East Group, 6 companies (NTT EAST-HOKKAIDO, NTT EAST-TOHOKU, NTT EAST-KANSHINETSU, NTT EAST-MINAMIKANTO, NTT EAST SERVICE, NTT-ME), NTT West Group, 4 companies (NTT MARKETING ACT, NTT BUSINESS SOLUTIONS, NTT FIELDTECHNO, NTT BUSINESS ASSOCIE WEST)

**[E] Companies subject to NTT Group plans to double the number of female managers**

<[D] + the companies below: 23> NTT Urban Development, NTT FINANCE, NTT BUSINESS ASSOCIE, NTT BUSINESS ASSOCIE EAST, NTT Electronics, NTT Advanced Technology, NTT LOGISCO, NTT ADVERTISING, NTT TechnoCross, InfoCom Research, NTT LEARNING SYSTEMS, NTT TRAVEL SERVICE, NTT CLARUTY

Note: Unless specifically stated otherwise, the scope of environmental performance statistics refers to domestic companies.

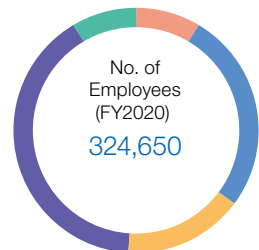
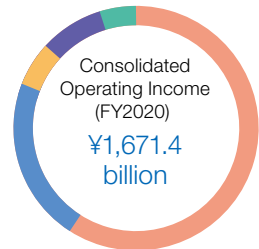
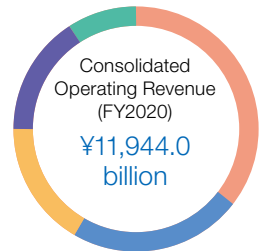
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# At a Glance NTT Group

The experience and advanced technologies developed by the NTT Group will be used to achieve a “paraconsistent”<sup>\*</sup> society, and contribute to resolving social issues faced by society as a whole.

(\*Where opposing concepts or matters are both achieved inclusively)



		Consolidated Operating Revenue Ratio (FY2020)	Consolidated Operating Income Ratio (FY2020)	No. of Employees Ratio (FY2020)
<b>Mobile communications business</b>	The Mobile Communications Business Segment focuses on sales of Gigaho and Gigalight, which are simplified and reasonable billing plans, and docomo Hikari, as well as providing 5G services and collaborating with various business partners in the smart life area in an effort to provide new value-added services.	<b>34.3%</b> (¥4,725.2 billion)	<b>54.2%</b> (¥913.2 billion)	<b>8.7%</b> (28,100)
<b>Regional communications</b>	The Regional Communications Business Segment is centered on the Hikari Collaboration Model, which provides wholesale fiber-optic access services to various service providers, and also strengthens its solutions business with the aim of revitalizing local communities and regional economies.	<b>23.3%</b> (¥3,207.4 billion)	<b>25.0%</b> (¥420.2 billion)	<b>23.2%</b> (75,400)
<b>Long distance and international communications business</b>	In addition to enhancing capabilities for providing ICT solutions that combine network, security, and other services, the Long Distance and International Communications Business Segment concentrates efforts on enhancing service provision in growth areas such as cloud and managed services.	<b>15.0%</b> (¥2,065.6 billion)	<b>8.7%</b> (¥146.2 billion)	<b>15.4%</b> (49,950)
<b>Data communications business</b>	The Data Communications Business Segment involves efforts for responding to growing customer DX on a global level, and their increasingly diversified and sophisticated needs, by expanding business in the global market and provides a more extensive and consistent range of IT services, such as digitalization and system integration offerings, capable of responding to the changes in the market.	<b>16.8%</b> (¥2,318.7 billion)	<b>8.3%</b> (¥139.2 billion)	<b>43.0%</b> (139,700)
<b>Other businesses</b>	The Other Businesses Segment mainly provides services related to the real estate business, finance business, electric power business, and system development business.	<b>10.6%</b> (¥1,467.1 billion)	<b>3.8%</b> (¥64.8 billion)	<b>9.7%</b> (31,500)

\* The percentage of each segment's simple total (including inter-segment transactions)

List of Memberships (as of December 1, 2021) Keidanren (Japan Business Federation, general incorporated association; vice chair) Tokyo Employers' Association (honorary chairman) Telecommunications Carriers Association (incorporated association; chairman) ITU Association of Japan (general incorporated association; council member) Association of Radio Industries and Businesses (general incorporated association; director) ICT Ecology Guideline Council Telecommunication Technology Committee (incorporated association; vice chairman)

# NTT Group's Roots

NTT Group has continued to develop a range of solutions as a partner that drives society and industry forward.

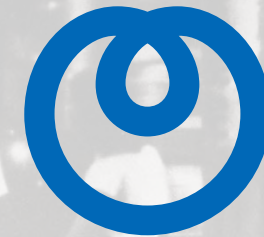
It was some 70 years ago that the telephone and telegraph services provided by the Ministry of Communications and Ministry of Telecommunications were handed over to Nippon Telegraph and Telephone Public Corporation. With economic growth booming following the country's post-war recovery, the company began exploring a range of avenues to meet growing public demand for telephone services that connect in an instant.

After subsequently undergoing a name-change to NTT, the company expanded its businesses including the regional communications, long-distance and international communications, mobile communications, and global data communications sectors, based on its roots that aim to respond to the needs of customers and challenges faced by industry and society.

Focused on creating a better future for Japan and the world...  
Never losing sight of the goal as "Your Value Partner."

## Privatized in 1985. Our Dynamic Loop – The Heart of NTT

The single continuous curve represents the dynamism and our commitment for continuous innovation and delivering value to people and society.



A small inner loop at the top of the mark ensures that the voice of customers and society is always heard. This symbol represents NTT's vision and its commitment to developing a harmonious society through both business and cooperation.

## NTT Group's History

# NTT has contributed to lifestyles of people through its business activities.

Ever since being established as the Nippon Telegraph and Telephone Public Corporation in 1952, the NTT Group has developed a wide range of technologies and services, and has been delivering infrastructure for services like mobile phones, internet and cloud computing that could never have been imagined in the past. At the heart of these achievements is its NTT's underlying commitment of working as a partner that supports society and industry as a whole.

### 1952

"Nippon Telegraph and Telephone Public Corporation" established



In 1952, the telephone and telegraph services delivered by the Ministry of Communications and Ministry of Telecommunications were handed over to Nippon Telegraph and Telephone Public Corporation. The company developed various technologies to meet growing public demand for telephone services that connect in an instant.

### 1980s

NTT Group born from telecommunications liberalization

Nippon Telegraph and Telephone Public Corporation was privatized in 1985 following liberalization of telecommunications services, resulting in the birth of "Nippon Telegraph and Telephone Corporation (NTT)."



#### 1987

Mobile telephone services launched

#### 1988

NTT Data established  
World's first ISDN service launched

### 1990s

Expanded telephone services with view of building an advanced telecommunications society



Phone services with a broad range of plans to suit customer usage scenarios were launched. The Open Computer Network (OCN) was launched with the view of expanding Internet use.

#### 1991

NTT DOCOMO established

#### 1996

OCN internet connection services launched

#### 1998

i-mode services launched

#### 1999

NTT Group transitioned to holding company structure

### 2000s

Full-scale roll-out of broadband ubiquitous services

NTT began offering the FLET'S ISDN always-on service as well as the B FLET'S optical fiber service, facilitating the widespread roll-out of high-speed, high-capacity communication services.



#### 2007

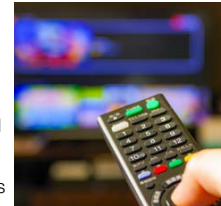
Hikari TV services launched

#### 2008

Cloud services launched

#### 2009

Android OS smartphones launched



#### 2000

ISDN flat-rate services launched

#### 2001

Optical fiber services launched for general households

#### 2004

Osaifu-Keitai (Mobile Wallet) announced Hikari Denwa services launched

### 2010s

Global ICT services framework developed

NTT Group had chiefly been operating in markets in Asia, Europe, and the US, and acquired Dimension Data and Keane in preparation for delivering total ICT services around the globe, including Australia, South America, Africa, and the Middle East.



#### 2010

Acquired Dimension Data  
LTE (Xi) services launched  
Acquired Keane (currently NTT DATA, Inc.)

#### 2013

iPhone launched

#### 2014

"Kake-hodai & Pake-Aeru" phone plans launched  
"Hikari Collaboration Model" launched  
"docomo Hikari" launched

#### 2016

Acquired Dell Services (currently NTT DATA, Inc.)

#### 2018

"Your Value Partner 2025" medium-term management strategy formulated

### 2020s

IOWN concept released

Framework involving devices, networks and information processing infrastructure built on optical and other innovative technologies, to deliver high-speed and high-capacity communications, and vast computing resources exceeding the limits of existing infrastructure. Specifications are planned to be finalized by 2024 for a 2030 roll-out.



#### 2020

5G services launched from March 25  
Communication speeds up to 4.1 Gbps downstream

#### 2021

Provided support for the Olympic and Paralympic Games Tokyo 2020 as a Gold Partner

#### 2021

Green Innovation toward 2040 announced  
A new management style unveiled



# message

CEO Message

**Jun Sawada**President and Chief Executive Officer,  
Representative Member of the Board

## NTT's Vision of a Sustainable Society

We are faced with many dangerous challenges in today's modern society—major natural disasters, abnormal weather conditions, pandemics, infodemics, economic disparities, inequalities, and much more. Considering these challenges to our well-being, the NTT Group aims to help build a sustainable society through the acceptance of diverse values and by taking an all-inclusive approach. This would be difficult to achieve through traditional dualistic thinking that results in a judgmental view and a lack of mutual understanding – and therefore believe in another approach.

In concrete terms, I believe it will be vital to take a “Self as We” approach throughout society into the future. Individuals do not exist in a sole “Self as I” manner but are also supported by their connections with a broad range of people, nature, objects, and technologies. If we have a greater awareness of these relationships, the ideal approach is to aim towards coexistence much the same way as the natural world does.

Moving forward, even the “people,” objects and technologies we interact within cyberspace, like the metaverse and other similar services, will also need to be included as part of this “We.” Thus, we need to explore the “Self as We” concept in more detail.

## Driving Business Forward in line with the New Global Sustainability Charter

The NTT Group established its Global Sustainability Charter in Autumn when it restructured its medium-term management strategy. This new charter encompasses three key themes.

- (1) Ensuring the positive coexisting of nature and humanity:  
Aiming to solve environmental issues as well as achieve economic growth
- (2) Improving prosperity for all people and cultures:  
Accepting diverse, democratic cultures while aiming to build a better society and create value
- (3) Maximizing well-being for all:  
We aim to maximize the well-being of everyone by respecting human rights and encouraging diversity and inclusion.

Nine challenges and thirty business activities have been established under these three themes, to be implemented alongside business operations as part of our goal to achieve a sustainable society.

We have also developed a structured approach for our environmental vision, management style, and human rights policy based on this new sustainability charter.

The Environment and Energy Vision outlines NTT's carbon-neutral goals by 2040. The new management style that

the NTT Group will be adopting is highlighted in "Transformation to a New Management Style," which aims to build a decentralized network-based society focusing on remote work that was vital during the COVID-19 pandemic and will become even more so in the post-COVID age. And finally, the "NTT Group Global Human Rights Policy" sets forth our policies governing respect for human rights and the promotion of diversity and inclusion, based on the concept of "Self as We."

The NTT Group is committed to implementing these various initiatives to build a sustainable society aligned with its new Sustainability Charter.

December 2021



Jun Sawada

President and Chief Executive Officer,  
Representative Member of the Board  
Nippon Telegraph and Telephone Corporation



# NTT's Mission, Vision, Values

## Our Vision

### Your Value Partner

Your valued partner that is committed and can be trusted

NTT promises to always listen to our clients and the world at large. We engage with clients and society as a valued partner with a deep commitment to trust, long-term relationships and mutual success.

We believe in achieving transformative results through technology innovation for ourselves, our clients, and society.

VISION

MISSION

VALUES

## Our Mission

### Resolving social challenges

Contributing to society through our business operations

NTT seeks to solve social challenges and create a sustainable society through our business operations and partnerships for people, organizations, and communities.

We commit to providing the confidence needed to move into the digital future that is a better place for all of us.

## Our Values

### Connect Trust Integrity

Our shared values informs all our decision making

NTT's values are based on trust, integrity, and connecting. We always act with a moral and ethical code in our trusted relationships with clients, employees, partners, and society.

We are a trustworthy human company that believes in the value of diversity and inclusion in our people and the world.

## We are NTT.

NTT will continue to innovate through imagination and by challenging ourselves. We always listen to our clients, employees, and the world at large. NTT's culture is based on our core belief of responding to the needs of our clients and society to help achieve their best future possible. This is NTT's vision and its commitment to developing a harmonious society through both business and cooperation.

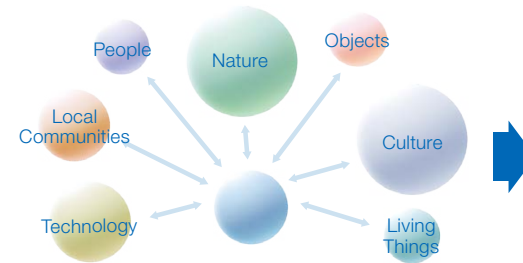
# Three themes for achieving a sustainable society

## NTT's Vision of a Sustainable Society

For a sustainable society, we need to consider current and future issues that will challenge us. These challenges include global and local social problems, environmental obligations, future epidemics and natural disasters, equitable economic prosperity, human rights issues, and technology's power for good or harm. People can interpret an event or reality very differently depending on their perspective. The constant and increasing flow of information in today's world, combined with many diverse values and beliefs, can result in multiple points of view based on the same facts. Because of this, many ideas, perceptions, and values that seem contradictory exist simultaneously. However, to create a more harmonious society, these ideas need to coexist in a paraconsistent manner. In other words, accepting that contradictory views can be true and are accommodated in a nondiscriminatory way. This approach will lead to a clearer recognition and a greater understanding of potentially conflicting ideas and values. Only in this way can we together take the right actions to help create a better society with more acceptance, prosperity and a long-term sustainable future for all. To help realize this harmonious society, the NTT Group has developed our Sustainability Charter based on the concept of moving towards the "Self as We." In other words, moving from standalone individuals or isolated groups and towards more diverse cultures and communities that are highly connected. This approach is based on enabling our connection to all things, including other people, goods, nature, and technology. We will maximize society's well-being and achieve a more sustainable future when we create these positive connections. By connecting through a common thread of shared ethics and values, we create a better world to achieve equitable economic prosperity for all cultures in communities, nations, and society. In addition, since nature is an altruistic and giving entity that we are part of, we believe it is necessary to reduce our burden on nature to remain in a harmonious society.

### Paraconsistent

New value generated when contradictory concepts are weaved together in harmony.



Global and local; the environment and the economy; the old and the new. People can interpret an event or reality very differently depending on their perspective.

### Self as We

Our existence is supported by the interactions we have with a broad range of other people, objects technologies, and nature.



Self as we is the core to the concept of altruistic coexistence (coexistence of one's own happiness along with the happiness of others).

## Three themes for achieving a sustainable society

Nature is altruistic...  
And "We" are part of it



Ensuring the positive coexisting of nature and humanity

A prosperous culture and society created by connecting through a common thread of shared ethics and values



Improving prosperity for all people and cultures

Altruistic coexistence (people seek to increase their happiness along with the happiness of others)



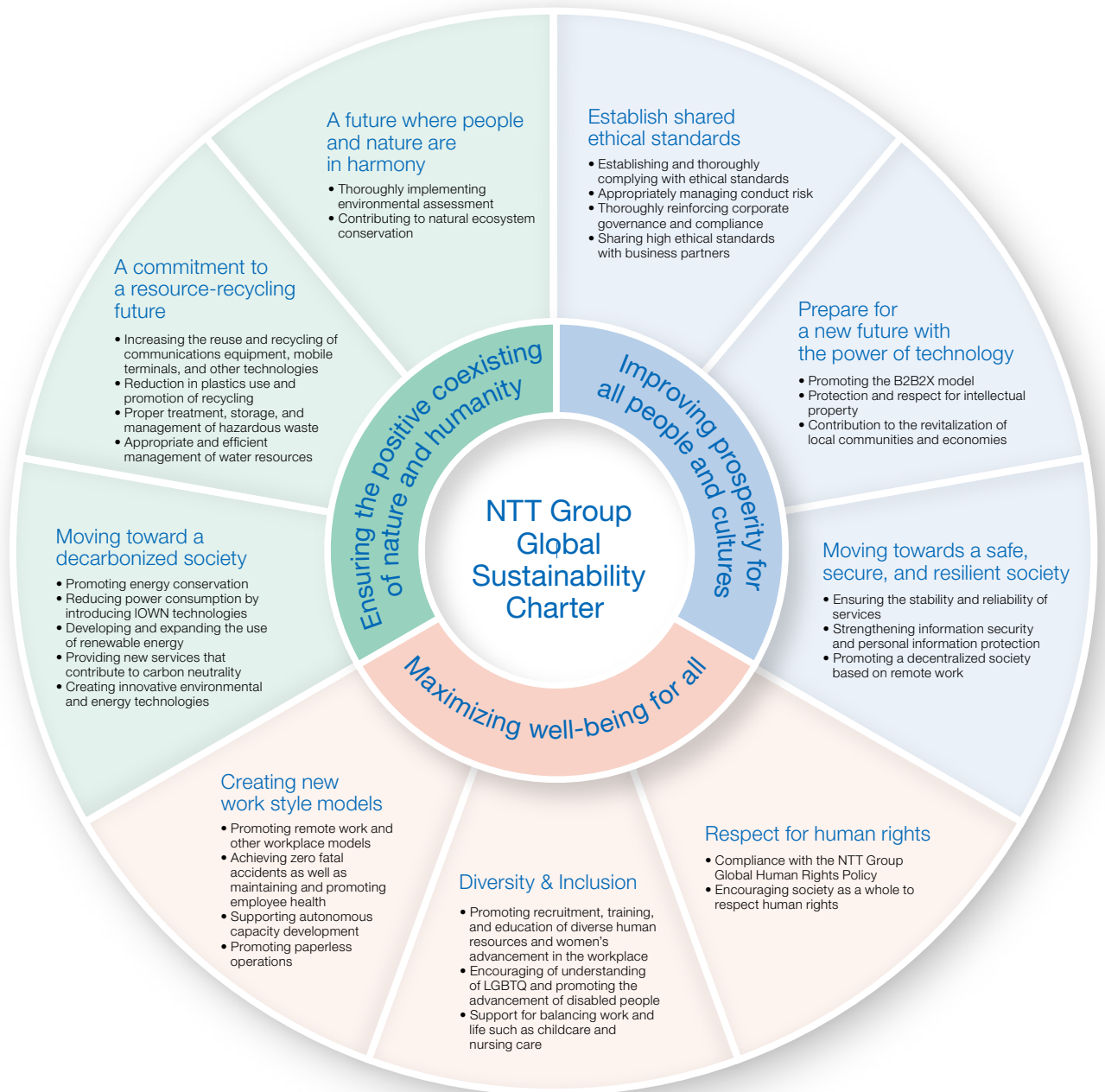
Maximizing well-being for all

# The three themes cover nine challenges and thirty business activities

Nine challenges and thirty business activities have been defined under these three themes in order to help build a sustainable society. Various ESG indexes will be established as part of these initiatives.

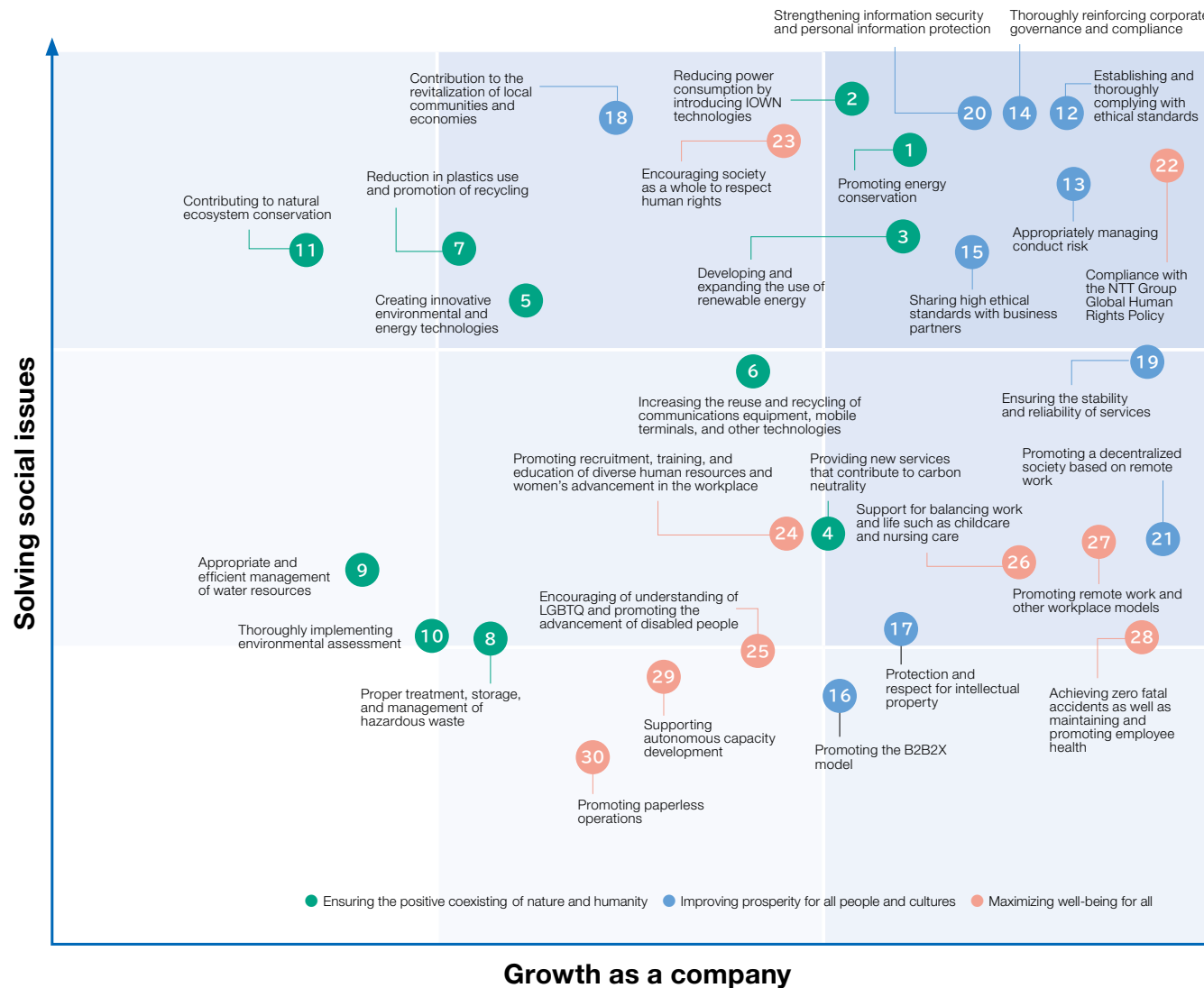
Of these, the following items have been added as key financial indicators, with compensation of members of the board and audit & supervisory board members linked accordingly:

- “Carbon neutrality” as an indicator for environmental issues
- “B2B2X earnings” as an indicator for resolving social issues
- “Ratio of women newly promoted to management positions” as an indicator for human rights, and diversity and inclusion



# Process for Selecting Material Issues

Material issues (materiality) are selected using the following steps based on the GRI materiality standards and processes.



## STEP 1 Identifying material issues

Using evaluation organizations like third party institutions, ISO26000 and GRI Standards, global trends, internal workshops, and materiality at other companies as a guide, we identify material issues through comprehensive review of new problems related to sustainability, in order to discuss and select important issues that NTT should address on a global scale.

## STEP 2 Setting priority

NTT assesses the priorities to be addressed based on their impact on two aspects, "Growth as a company" and "Solving social issues." To achieve management that simultaneously helps resolve social issues and achieve business growth, NTT assesses priorities by incorporating the opinions of outside experts.

## STEP 3 Confirming validity & approval

NTT also incorporates the opinions of third parties from a global perspective, which are then deliberated by the Sustainability Committee and approved by the Board of Directors.

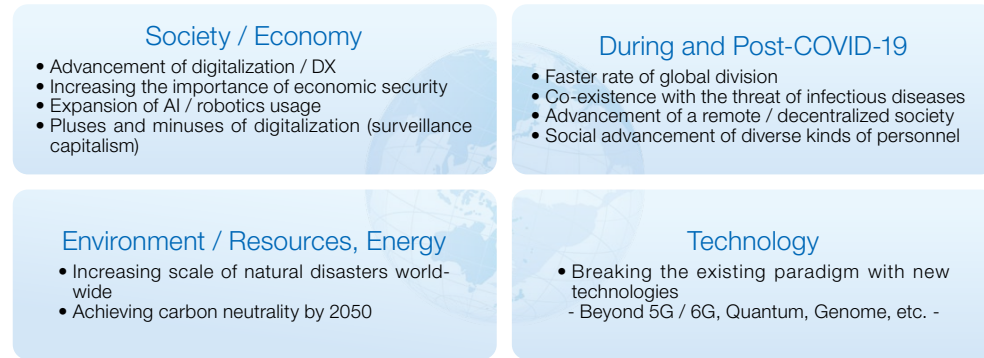
\* These are reviewed regularly (once/year) and revised when necessary.

## Contributing to development of a sustainable society with medium-term strategies

NTT Group works together with its partners as “Your Value Partner” to resolve social issues through its business operations and thereby respond to future changes in the operating environment, such as the advancement of digitalization and DX. To guide us in this pursuit, we refined the NTT Group Medium-Term Management Strategy announced in November 2018 in order to accelerate our transformation into an open, global, and innovative new NTT.

### Background of the Re-Examination of the Medium-Term Management Strategy and New Strategic Frameworks

#### Future Changes in the Operating Environment



### Directionality of NTT Group's Transformation and New Strategic Frameworks

Social / Economic Directionality	NTT Group's Directionality	New Strategic Frameworks	Initiatives to Achieve the Strategy
Society During COVID-19 and Post-COVID-19	A New Management Style Suitable for a Decentralized Network Society	Transformation to a New Management Style	<ul style="list-style-type: none"> <li>• New style based on remote work</li> </ul>
Advancement of Digitalization / DX	Enhance Domestic and Global Business	Enhance Domestic and Global Business	<ul style="list-style-type: none"> <li>• Growth and strengthening of the newly formed DOCOMO Group</li> <li>• Promotion of the IOWN development / rollout plan</li> <li>• Enhance competitiveness in global business</li> <li>• Promote B2B2X model</li> <li>• Strengthening of new businesses</li> </ul>
Achieving a Well-Being Society	Enhancement of Corporate Value through ESG Initiatives	Enhancement of Corporate Value	<ul style="list-style-type: none"> <li>• New Environmental and Energy Vision</li> <li>• Disaster countermeasures initiatives</li> <li>• Enhancement of returns to shareholders</li> </ul>

Contribute to Achieving a Sustainable Society

## Organization for Implementation

In November, the NTT Group moved to a new organizational structure by establishing the “Sustainability Committee” under the Board of Directors, chaired by the Chief Executive Officer. The committee reviews and discusses strategies concerning sustainability, the status of implementation of activities, and information disclosure, and implements relevant initiatives. The Sustainability Committee includes the Corporate Ethics Committee, Human Rights Committee, and Green Innovation Committee to handle the individual topics relevant to each sub-committee. Efforts toward sustainability throughout the entire group are also implemented by holding Group Sustainability Committee meetings (with senior executive vice presidents of major group companies). The meetings are for sharing common challenges and successful examples from each Group company, and for monitoring progress on sustainability implementation with respect to PDCA cycles and further promoting a sense of unity throughout the group.

- (1) Evaluation** The viability, effectiveness, and progress of measures are checked every year by employing the PDCA cycle to review and expand the focus of activities. Attainment levels are also linked to the evaluation standards of directors.
- (2) Disclosures** Internal conferences involving global group companies are held for reporting the results of efforts and facilitating dialogue, which are then disclosed on the website and in sustainability reports. The impact of climate change risks and revenue opportunities on business activities and revenue are disclosed in accordance with TCFD, an international framework created to develop such disclosures.
- (3) Dialogue with Third Parties** Each process involves dialogue with experts and other third parties, with a PDCA cycle used to obtain evaluations from third parties for reviewing and expanding the focus of activities as needed.

### New Organizational Structure (from November 10, 2021)



# Stakeholder Engagement

## The Fundamental Principle

The NTT Group provides products and services to diverse stakeholders around the world, and its value chain continues to expand globally and grow in complexity. Along with these changes, our stakeholders' needs and expectations are also becoming increasingly diverse, and we must accurately understand and reflect them in our business activities through stakeholder engagement. Stakeholder input, particularly on social and environmental issues, can help us to become more competitive and accountable while guaranteeing our public license to conduct operations in the various regions in which we conduct business. Stakeholder engagement forms the building blocks of trust-based, value-generating relationships. To properly develop these relationships, the NTT Group follows global guidelines based in part on the AA1000 Stakeholder Engagement Standard (AA1000S-ES) and AA1000 Account Ability Principles Standard (AA1000APS), and applies them to all of our worldwide operations. By having all Group companies apply the same principles to engaging with stakeholders, we intend to promote effective, efficient, and ultimately value-creating interactions between the NTT Group and its stakeholders. It goes without saying that all means of engagement shall be conducted according to relevant laws, regulations, and legal requirements.

### Benefits of Stakeholder Engagement

#### Benefits for the NTT Group

- Identify emerging environmental/social trends and reflect them in strategy formulation
- Identify potential risks and develop countermeasures
- More closely manage our brand reputation
- Identify opportunities for potential new businesses, collaboration, and innovation
- Improve community relations and support for operations, in particular by involving stakeholders in decisions to ensure their needs are taken into consideration
- Improve our understanding of sensitive issues and of stakeholders' opinions of us
- Make more sustainable business decisions based on stakeholder input

#### Benefits for Stakeholders

- Clearer understanding of the NTT Group's strategy and projects
- Provide feedback regarding their needs and expectations

## Process of Stakeholder Engagement

### Step 1 Plan

#### Levels and Methods of Engagement

Level of engagement	Examples of engagement methods
Monitor	Tracking of media and one-way communications to the company
Inform	Provision of information from the company to stakeholders through letters, bulletins, websites, speeches, reports, etc., with no invitation to respond
Consult	Two-way exchange of information between the company and stakeholders through surveys, focus groups, workshops, etc., with an expectation of responses from both sides
Involve	Two-way exchange of information between the company and stakeholders, with stakeholders more actively involved in decision-making, through establishment of advisory panels or multi-stakeholder dialogues
Collaborate	Joint ventures and partnerships on specific projects

#### Potential Risks of Engagement with Specific Stakeholders

- Unwillingness to engage on the part of stakeholders
- Disruptive stakeholders
- Creation of unrealistic and unfulfillable expectations of the company on the part of stakeholders
- Inter-stakeholder conflicts and other issues could potentially result in criticism of the company and damage to the company's reputation or a waste of company resources

### Step 2 Do

While engaging with stakeholders, discussions should be held on mutual expectations regarding such engagement, and any necessary revisions to initial engagement plans should take into consideration stakeholder requests as well as the NTT Group's initial intentions.

#### Factors Requiring Consideration during Engagement

- Levels of contribution and a clear definition of participant roles
- Details of the process, including timelines and methods
- Timely provision of instructions and required materials for participation in and meaningful contribution to the engagement process
- Boundaries of disclosure of required information, including confidentiality requirements
- Communication of the results of the engagement

When holding events attended by multiple stakeholders, care must be taken to ensure balanced participation to minimize risk and maximize value.

### Step 3 Follow-up and Review

After concluding the engagement, results must be reported both internally and to participating stakeholders as well as externally to the wider public as necessary to conduct both an evaluation of the outcome of the engagement and a review of the engagement process itself and define KPIs for the assessment of results.

#### Factors that Should Be Included in Reports and Information Disclosure

- The purpose, scope, method and participants of the engagement
- A summary of content, including issues and concerns raised during the process
- NTT Group response to the outcomes of the engagement

Regarding the review of the engagement process itself, an internal review should be conducted and feedback should be sought from participating stakeholders regarding how they felt about their involvement, and a plan for improvement should be developed based on the results of these.

## Identifying Stakeholders

Our stakeholders are organizations or individuals who have an interest, in one way or another, in the business activities or decision making of the NTT Group. Major stakeholders of the NTT Group include customers (corporations and individuals), shareholders and investors, employees (employees, their families and retired employees), local communities, business partners, ICT companies and industry associations, and, central government and administrative agencies.

The NTT Group will fulfill its responsibilities and the expectations of its various stakeholders related to these businesses.

### Customers (Individuals and Corporations)

All customers, both corporate and individual, who use services provided by the NTT Group

#### NTT's Approach

As we strive to be chosen as "Your Value Partner," each individual employee will strive for an even higher awareness of sustainability to provide safe, secure services that are high in quality and convenient from the customer's standpoint.

#### Methods of Engagement (examples)

- Customer information service
- Customer satisfaction surveys
- Website, social media

#### Why We Engage

The NTT Group endeavors to enhance customer satisfaction and become "Your Value Partner" for our customers by understanding their needs and standpoints in order to provide higher quality services and products.

### Shareholders and Investors

Individual and institutional investors including the shareholders and creditors of the NTT Group

#### NTT's Approach

We will return profits to shareholders while maintaining a sound financial standing and enhancing our corporate value. We will also endeavor to disclose information related to the Group in a timely, appropriate, and fair manner.

#### Methods of Engagement (examples)

- General Meeting of Shareholders, earnings reports
- Explanatory presentation for individual investors
- Explanatory presentation for institutional investors
- Annual reports

#### Why We Engage

We endeavor to disclose information in a timely, appropriate, and fair manner to return solid profits to shareholders while maintaining a sound financial standing and enhancing our corporate value.

### Employees (Employees, Their Families, and Retired Employees)

Employees who work at the NTT Group and retired employees who support the NTT Group's sustainability ideals

#### NTT's Approach

We will pursue various employee initiatives to create safe and healthy workplaces in which everyone can realize their full potential and be rewarded in their work and daily lives. We will also value communication with retired employees.

#### Methods of Engagement (examples)

- Employee satisfaction surveys
- Regular interviews
- Dialogue between labor and management
- Corporate ethics helplines
- Hold sustainability conferences

#### Why We Engage

We create safe and healthy workplaces for our employees and support their daily lives so that each individual employee can realize their full potential and carry out their work with a strong awareness of CSR.

### Local Communities

People in local communities who are connected to us through the core businesses of NTT Group companies

#### NTT's Approach

We will advance alongside local communities by implementing social contributions and disaster countermeasures through our ICT business.

#### Methods of Engagement (examples)

- Support and collaboration through social contribution activities
- Negotiations with local residents on construction work, system development, and other activities
- Support through donations and sponsorships

#### Why We Engage

We seek to contribute to the further development of a flourishing and vibrant community and to understand and identify the issues faced by local communities in order to implement social contributions and disaster countermeasures through our ICT business.

## Business Partners

Business partners who offer their cooperation in various ways as the NTT Group provides its services

NTT's Approach	Methods of Engagement (examples)	Why We Engage
We will seek to work together to create and implement services that address a variety of social issues.	<ul style="list-style-type: none"> <li>■ Inquiry forms</li> <li>■ Disclosure of procurement policies and guidelines</li> <li>■ Questionnaires of suppliers</li> <li>■ Briefing for suppliers</li> </ul>	By procuring products with due consideration to the environment and human rights, and by forging partnerships based on fairness, we will fulfill our social responsibilities as a company and achieve sustainable growth alongside our business partners.

## ICT Companies and Industry Associations

Other ICT companies and people in industry associations who are striving to develop Japan's information and telecommunications

NTT's Approach	Methods of Engagement (examples)	Why We Engage
We will engage in discussions on the direction and initiatives for the information and telecommunications industry, not only in Japan but from a global perspective, and seek to address diverse social issues together.	<ul style="list-style-type: none"> <li>■ Participation in industry associations and related initiatives</li> <li>■ Participation in conferences</li> </ul>	We will engage in discussions on the direction and initiatives for the information and telecommunications industry. By doing this, we will invigorate the entire industry and contribute to society by promoting development and progress in information and telecommunications.

## Central Government and Administrative Agencies

Central and local governments and administrative agencies that make policy decisions on information and telecommunications, employment and the economy, the environment, and other issues

NTT's Approach	Methods of Engagement (examples)	Why We Engage
We will fulfill our responsibility as an information and telecommunications company by adhering to the policies of the central government, administrative agencies, and local governments.	<ul style="list-style-type: none"> <li>■ Response to laws and regulations</li> <li>■ Policy proposals</li> <li>■ Participation in joint projects between the government and private sector</li> </ul>	We will respond to and comply with central and local government and administrative agency policies. Therefore, we will carry out business activities in an appropriate manner and contribute to resolving social issues faced by the Japanese people and local governments.

## NGOs, NPOs, and Experts

NGOs, NPOs, and experts who are positioned within the NTT Group's domain of activities including sustainability

NTT's Approach	Methods of Engagement (examples)	Why We Engage
We will contribute to creating a sustainable society by sharing the expert knowledge and experience of NGOs, NPOs, and experts, and by incorporating them into the telecommunications industry.	<ul style="list-style-type: none"> <li>■ Participation and collaboration with study groups and activities of each organization</li> <li>■ Dialogues</li> <li>■ Collaborative projects</li> </ul>	The NTT Group provides services that extend beyond telecommunications to broader domains, and gaining the specialized perspectives of NGOs, NPOs, and experts allows the Group to appropriately and effectively develop business activities.

# Ensuring the positive coexisting of nature and humanity

The NTT Group is contributing to solving environmental issues as well as achieving economic growth.



## message

Message from Management  
(Senior Executive Vice President)



**Akira Shimada**

Representative Member of the Board  
(Senior Executive Vice President)

### Addressing environment problems with “NTT Green Innovation toward 2040”

Climate change and other environmental issues are increasing in severity year by year, and are leaving a greater social and economic impact as natural disasters become more extensive on a global scale. The NTT Group views resolving issues like climate change as one of its key corporate activities in its goal of building a sustainable society, and implements various initiatives in line with its “Your Valued Partner” management philosophy.

In September 2021, we unveiled our new environment and energy vision, “NTT Green Innovation toward 2040” aimed at achieving zero environmental impact while continuing economic growth, by reducing the environmental impact of our business activities and creating breakthrough innovation. This vision was designed so that the NTT Group is able to achieve carbon neutrality in fiscal 2040, ten years before the 2050 goal for carbon neutrality set by the Japanese government. As interim milestones, we are aiming to reduce greenhouse gas emissions by 80% from fiscal 2013 levels by fiscal 2030, as well as achieve carbon neutrality for our mobility communications (NTT DOCOMO) and data center businesses—two areas in particular where electricity usage is expected to rise—by fiscal 2030.

More specifically, rolling out our “IOWN (Innovative Optical and Wireless Network) Concept” will help us to significantly reduce power consumption throughout networks and other infrastructure, resulting in a 45% reduction in greenhouse gas emissions by fiscal 2040. This will be in conjunction with better energy-saving efforts to cut emissions by a further 10%. We will be slashing greenhouse gas emissions by another 45% by fiscal 2040 through greater use of renewable energy sources.

We are also placing a greater emphasis on green financing initiatives as a means of achieving a sustainable society, by issuing green bonds of around 300 billion yen for the year applicable to 5G-related investments, FTTH-related investments, and research and development toward building the IOWN concept.

### Contributing to the Reduction of Society’s Environmental Impact

In addition to reducing our own impact on the environment, NTT is working on initiatives aimed at reducing the environmental impact of society as a whole. One way to achieve this is with the IOWN concept, which promises to slash electricity consumption. By working to increase uptake and scope of applications in not just the communications but also other industrial sectors such as computers, we are aiming to help cut greenhouse gas emissions throughout Japan by 4% by fiscal 2040 (and a 2% reduction on a global level). In May 2020, NTT became the first private company in Japan to conclude a comprehensive collaboration agreement with the International Thermonuclear Experimental Reactor (ITER) Project, where we will support the successful development of nuclear fusion reactors—the most promising power source of the future—by providing IOWN’s ultra-low-latency, high-speed, high-capacity network and digital twin computing. We established “NTT Space Environment and Energy Laboratories” in July 2020 to conduct research into the regeneration of the global environment and development of a sustainable society. In addition to these developments, NTT DOCOMO will also begin offering consumers green energy plans, with “docomo Denki” kicking off from March 2022. Initiatives like these illustrate just some of the ways that the NTT Group is helping to alleviate the impact that society as a whole has on the environment.

## Efforts for climate change-related information disclosure

Ensuring disclosure and transparency to society is vital. In May 2020, NTT declared its support for the Task Force on Climate-related Financial Disclosures, or TCFD, which is a framework encouraging companies to disclose information related to their climate change initiatives so investors can make sound investment decisions, in line with the target of keeping global temperatures to well below 2°C above pre-industrial levels as stipulated under the 2015 Paris Agreement. NTT discloses information related to climate change, while improvements to ensure that its own growth strategies remain sustainable. In conjunction with the Environment and Energy Vision “NTT Green Innovation toward 2040” that we have developed, we also raised NTT Group’s fiscal 2030 greenhouse gas emissions reduction target from the “well-below 2°C level” of Science Based Targets (SBT) (approved in 2020) to the “1.5°C level,” a move that was approved by SBT in December 2021. The NTT Group will continue to set more challenging targets as part of its initiatives for tackling climate change.

## Greater awareness by each and every employee

Reducing society’s impact on the environment calls for a major shift in attitude, from traditional business activities involving the consumption of resources and energy, to decarbonized and circular business activities. Moving to such decarbonized and circular businesses processes will only be possible when both employees and management team alike have a thorough understanding of the vision we have developed, and employees take autonomous and independent action accordingly. Moving forward, employees and management will be working together as a single team to help develop a decarbonized and circular society.



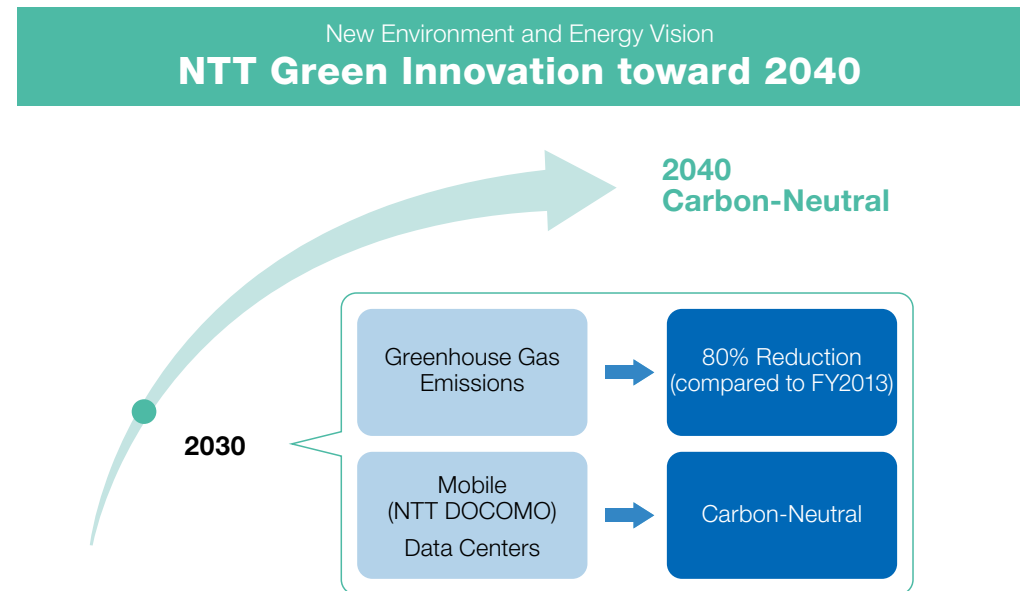
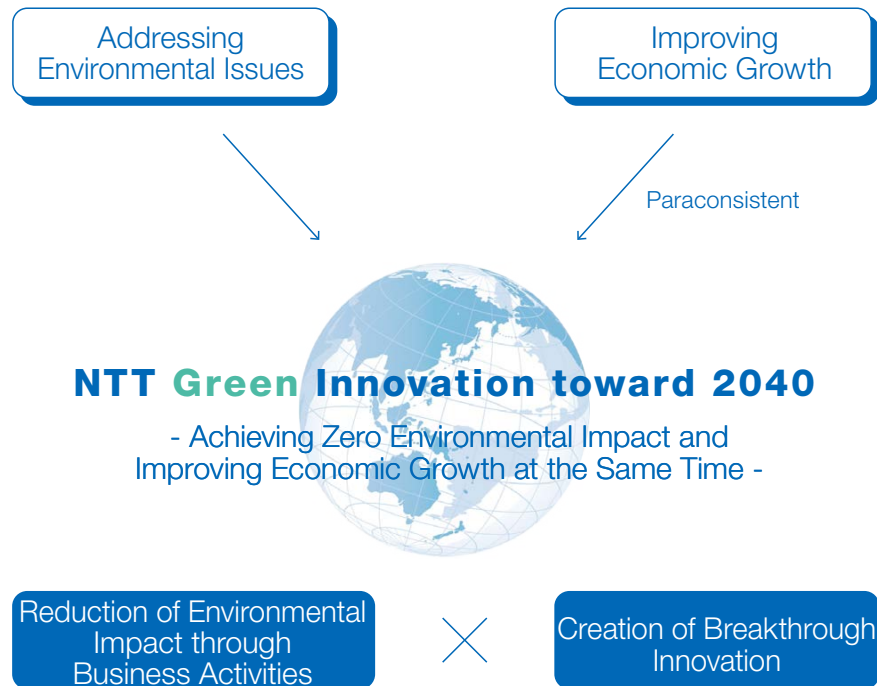
# Feature 1: Environment and Energy Vision

## Achieving carbon neutrality

In September 2021, the NTT Group unveiled its new environment and energy vision, “NTT Green Innovation toward 2040” for achieving “zero environmental impact” while continuing “economic growth” by reducing the environmental impact of its business activities and creating breakthrough innovation, with the aim of creating a well-being society and boosting corporate value through ESG initiatives. NTT will aim to achieve carbon neutrality by fiscal 2040 based on this vision.

### “NTT Green Innovation toward 2040” targets

NTT has set targets for groupwide carbon neutrality by fiscal 2040 on its way to achieving zero environmental impact. The mobility communications (NTT DOCOMO) and data center business will be the first within the NTT Group to achieve carbon neutrality, as targets have been set to reduce greenhouse gas emissions by 80% of fiscal 2013 levels, by the fiscal year ending March 31, 2031. This target was approved as the 1.5°C level by SBT in December 2021.



\* Scope of reduction targets  
 GHG protocol: Scope 1 (own direct emissions of GHG) and Scope 2 (indirect emissions from using electricity, heat and steam supplied by other companies)  
 Mobile: 15 companies in NTT DOCOMO Group (as of September 28, 2021)

# Feature 1: Environment and Energy Vision

## Achieving carbon neutrality

### Basic Policy and Action Guidelines

#### Basic Policy

The NTT Group is committed to achieving a new level of prosperity where humanity can coexist and preserve nature for generations to come. To this end, we will work to balance solving ecological problems and improving economic development by reducing the environmental impact of our business activities and creating new technologies and innovations.

#### Action Guidelines

##### 1. Reducing greenhouse gas emissions

The NTT Group is committed to initiatives that reduce greenhouse gas emissions throughout its business activities and society as a whole, by rolling out IOWN technology, increasing development and use of renewable energy sources, and providing services that contribute to carbon neutrality.

##### 2. A commitment to resource recycling

We will shift from a one-time use consumption-oriented company to a recycling-oriented one. We will promote the effective use of resources throughout the entire life cycle of products and systems, from procurement to use and disposal.

##### 3. Conserving ecosystems

Through our business and employee activities, we will promote initiatives related to conserving ecosystems within nature.

##### 4. Compliance with laws and regulations and fulfillment of social responsibilities

We comply with the laws and regulations related to environmental issues in each country and region, and act with high ethical standards.

##### 5. Establishing and maintaining environmental management systems

We will establish the Green Innovation Committee chaired by the Representative Director and Senior Executive Vice President, and discuss basic strategies concerning environmental issues, the status of implementation of activities, and information disclosure, and implement relevant initiatives.

##### 6. Stakeholder engagement

We will engage with stakeholders throughout our entire value chain to help resolve environmental issues.

### NTT Group's Environmental Activities

The NTT Group established the NTT Group Global Environmental Charter in 1991 based on the NTT Group CSR Charter, which lays out the basic policy for CSR activities. The NTT Group Global Environmental Charter outlines the basic principles and policies for conservation of the global environment, and was used as the basis for formulating the "The NTT Group Environmental Statement," "The Eco Strategy 2030" and the "Environment and Energy Vision" that NTT Group as a whole has adopted for its environmental activities.

1991	April	Set up the Environmental Response Office.
	July	Set up the Global Environmental Protection Promotion Committee as a decision-making organ.
	October	Established the NTT Global Environmental Charter stipulating the basic environmental principles, basic policies and promotion system. Formulated the Basic Program of Environmental Protection to set targets for key action plans.
1992	March	Formulated a detailed program compiling the action plans of each business unit.
1997	November	Set up issue-based committees for promoting initiatives on six key issues.
1999	July	Changed the name of the organization to the Environmental Protection Office following the restructuring of NTT. Established the new NTT Group Global Environmental Charter to clearly express our basic principles and policies. Formulated NTT Group Ecology Program 21 as our basic concept for promoting environmental protection.
2000	March	Set our targets for fiscal 2010 on global warming prevention, waste management, etc.
2006	May	Formulated the NTT Group Vision for Environmental Contribution.
2010	November	Added "conservation of biodiversity" to the basic policy of the NTT Group Global Environmental Charter. Announced THE GREEN VISION 2020 as the NTT Group's environmental vision for fiscal 2020.
2016	September	Announced "The NTT Group Environmental Statement," which expresses the future of our planet and the kind of enterprise we would like to become in that future. Set "The Eco Strategy 2030" as the targets for fiscal 2030.
2018	October	Became a Member of the "EP100" and "EV100" Global Initiatives.
2020	May	Formulated the "Environment and Energy Vision." Declared our support for the TCFD.
	October	Obtained SBT "well-below 2 degrees" certification.
	December	Earned first top rating for Japanese telecommunications company in CDP Climate Change Evaluation, securing an 'A List' position.
2021	September	Formulated the Environment and Energy Vision "NTT Green Innovation toward 2040."
	December	Obtained SBT "target 1.5 degrees" approval.

# Feature 1: Environment and Energy Vision

## Achieving carbon neutrality

### Key Initiatives Toward Carbon Neutrality

With the current situation, data traffic will increase significantly, leading to an increase in energy consumption and thus greater greenhouse gas emissions. In order to achieve carbon neutrality, IOWN will be rolled out to reduce energy consumption, increase the use of renewable energy sources, and cut down on greenhouse gas emissions.

### Illustration of NTT Group Greenhouse Gas Emission<sup>\*1</sup> Reductions

- **Increased use of renewable energy:** Reduce greenhouse gas emissions by 45%<sup>\*2</sup> — 1
- **Lower energy consumption with IOWN technologies:** Reduce greenhouse gas emissions by 45%<sup>\*3</sup> — 2

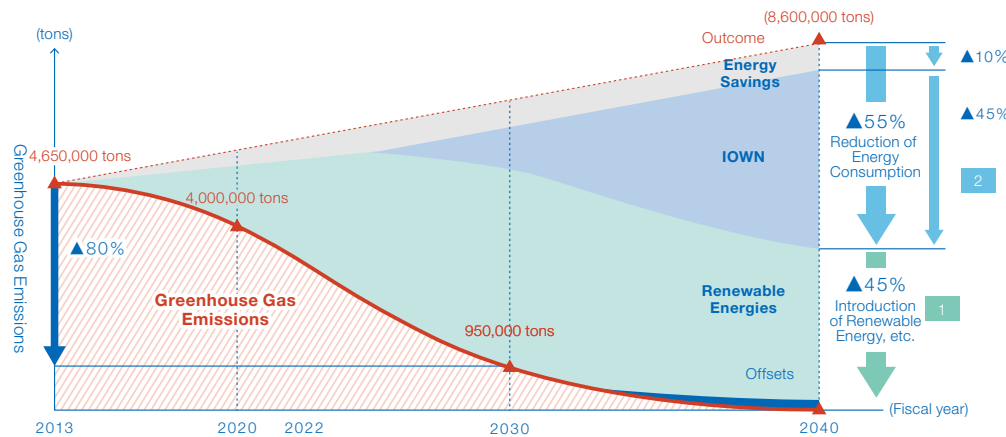


Illustration of NTT Group Greenhouse Gas Emission Reductions (Domestic + Overseas)

\*1 GHG Protocol: for Scope 1 and 2

\*2 Estimated Introduction of Renewable Energy (including actual renewable energy through Non-Fossil Fuel Certificates) → FY2020, 1.0 billion kWh; FY2030 to FY2040, around 7.0 billion kWh. The introduction of renewable energy will have the optimal types of energy determined on the basis of each country's energy composition, etc.

Approximately half of the domestic renewable energy usage is anticipated to be from energy sources owned by NTT (FY2030).

\*3 Estimated Reduction of Energy Consumption through the Introduction of IOWN (Comparison to Outcome). → FY2030, (2.0) billion kWh (15%); FY2040, (7.0) billion kWh (45%) Percentage of Introduction of IOWN (Photonics-electronics Convergence Technologies, etc.) out of Total Energy Volume → FY2030, 15%; FY2040, 45%

### Initiatives for the reduction of society's environmental impact

The concept of "Self as We," where people will seek to increase their happiness along with the happiness of others, forms the basis of NTT Group's initiatives for achieving a sustainable society, while every effort is being made toward "Green by ICT" to help reduce the environmental impact of society as a whole. Due to the very nature of the NTT Group's businesses, greenhouse gas emissions arising from the supply chain (Scope 3) are much higher than direct emissions from the group's own activities (Scope 1+2), and measures will be implemented to reduce such emissions from across the entire supply chain.

### Contributing to the reduction of society's environmental impact, together with reductions throughout the NTT Group

#### Expanding adoption of IOWN technologies from the telecommunications field into other industries

- Contribute to the reduction of greenhouse gases in Japan and the world<sup>\*1</sup>  
Japan ⇒ reductions, over 0.02 billion tons; reduction rate, over 4%  
World ⇒ reductions, over 0.3 billion tons; reduction rate, over 2%
- Further accelerate DX<sup>\*2</sup> (such as introduction of digital twin computing)
- Promote greenhouse gas reduction across the entire supply chain

#### Providing new services that contribute to carbon neutrality

#### Strengthening development and expanding introduction of NTT Group's Renewable Energy Plan

- Promotion of local energy production for local consumption

\*1 Conditions for reduction estimates

- Target: beginning in FY2040
- Adoption rate of IOWN for electric semiconductors, etc. (Photonics-electronics convergence technologies, etc.): approximately 50%
- CO<sub>2</sub> Emission factor: Japan, 0.185kg-CO<sub>2</sub>/kWh; World, 0.130kg-CO<sub>2</sub>/kWh

\*2 CO<sub>2</sub> Reduction potential: approximately 50% (2030; Target, World; calculated based on GeSI and IEA estimates)

# Feature 1: Environment and Energy Vision

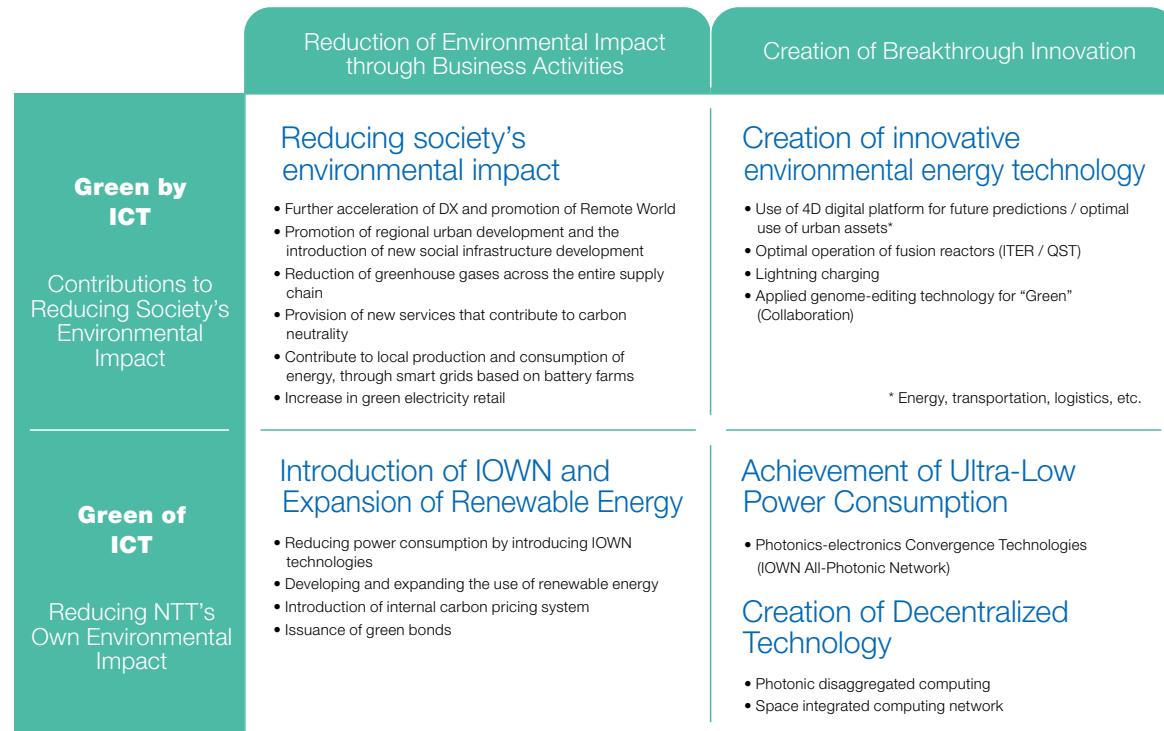
## Achieving carbon neutrality

### Specific Initiatives

In addition to the “Green of ICT,” which will curb the environmental impact of NTT Group by introducing IOWN technologies and increasing the use of renewable energy, we will also work on “Green by ICT,” which will contribute to reducing the environmental impact of society as a whole.

### Toward Introduction of Internal Carbon Pricing System

The NTT Group will introduce an Internal Carbon Pricing System from FY2022, as it is planning to revise its procurement system that factors in carbon pricing. NTT believes that this framework will be essential for lowering risks related to a decarbonized society and for promoting decarbonization.



## Social Challenge 1

# Moving toward a decarbonized society

### Business Activity

1. Promoting energy conservation
2. Reduction of power consumption by introducing IOWN technologies
3. Developing and expanding the use of renewable energy
4. Providing new services that contribute to carbon neutrality
5. Creation of innovative environmental energy technology



### Why it matters

The NTT Group views one of its core roles as helping to resolve environmental issues that society faces, and is continuing its existing activities aimed at reducing greenhouse gas emissions. There are increasingly high hopes that the ICT sector will be able to help resolve environmental issues, and this has been outlined in the Paris Agreement. The NTT Group remains committed to measures that utilize ICT services and cutting-edge technology to reduce greenhouse gas emissions.

### What can be accomplished

The NTT Group is committed to initiatives that reduce greenhouse gas emissions throughout its business activities and society as a whole, by rolling out IOWN technology and increasing development and use of renewable energy sources.

### Future vision

The NTT Group is pushing ahead with research and development aimed at curbing climate change, encouraging employees to take part in nature conservation activities, increasing awareness inside and outside the group of its activities that help improve the environment, and many other activities to contribute to a reduction in greenhouse gas emissions throughout society as a whole.

## message

Message from Management  
(Executive Vice President,  
Head of Research and Development Planning)



**Katsuhiko Kawazoe**

Executive Vice President  
Head of Research and Development Planning

### Promoting Sustainability based on the IOWN Concept

The NTT Group has created the Sustainability Charter based on the philosophy of “Self as We” to guide us in contributing to the well-being of the planet, society and people everywhere. At the heart of this Sustainability Charter is our IOWN (Innovative Optical and Wireless Network) Concept, a future communication infrastructure that will enable environmentally friendly, sustainable growth and diversity-tolerant total optimization. This concept is characterized by ultra-high capacity, ultra-low latency, and ultra-low power consumption, which is made possible through adoption of photonic and other innovative technologies.

### Three Technological Layers that Constitute IOWN

IOWN comprises three main technology components: “All-photonic networks” communications infrastructure that uses photonic-based technologies for everything from networks to terminals; the “Cognitive Foundation” for optimal matching of all manner of ICT resources and distributing necessary information inside the network; and “Digital Twin Computing” for analyzing and feedback processing in real-time using physical world models recreated in cyberspace. In other words, IOWN a new communication infrastructure enabling for enormous communications bandwidth through the use of photonics-based communications infrastructure, technology with multi-orchestration capabilities for low-latency control of information within the network, and interactive connectivity with communications between the real world and cyberspace.



### IOWN Concept for Reducing Environmental Impact and Achieving Well-being

IOWN also contributes significantly to reducing the environmental impact on the planet, as outlined in the Sustainability Charter. The NTT Group has already successfully developed optical semiconductors (optical nonlinear devices) with the world’s lowest energy consumption, using nanostructures called photonic crystals that can control the speed that light is confined. The results of this development were published in “Nature Photonics” in 2019. Optical semiconductors have minimal electrostatic capacity and operate with an extremely low current, and have been developed with significantly lower energy loss when converting between optical signals and electrical signals. These results are slated to be applied in the future for forming light transmitting circuits on silicon chips, and developing opto-electronic integrated optical transmitter receiver and modules. The next step of development will be to replace all chips with optical semiconductors, such that the functions of CPUs, GPUs, storage, memory, and other devices are all based on photonics. Connecting all devices with optical signals essentially means building a new type of low power consumption computing architecture that extends far beyond that of mere server boxes. IOWN aims to improve power efficiency by 100 times by maximizing the use of such optical technology.

And as processing power increases, computations required for interactions between digital twins and for long-term forecasting of their behavior will become available, leading to highly accurate future prediction and resolution of various social issues. The NTT Group views happiness not as an instantaneous event but, rather, as an integral value that can be sustained from the past into the future. By harnessing the immense computing power of IOWN, the NTT Group aims to deliver comprehensive and sustainable happiness to society as a whole. Indeed, IOWN will help achieve well-being for all members of society. In addition to rolling out this IOWN Concept, the NTT Group remains committed to the diversity and consistency of future research topics, and will work with its various operating companies as well as industry players in a broad range of sectors to help resolve various social issues and achieve a sustainable society.

## Business Activity 1

# Promoting energy conservation

### Our commitment

The NTT Group is committed to converting its corporate fleet to electric vehicles (EV) and improving the energy efficiency of its operations (EP100·EV100)

### Our objectives

## Two times

2025: Power efficiency (compared to FY2017)

## 100%

2030: Ratio of EV adoption in Japan

\*1 ICT Ecology Guideline Council: An organization established jointly by the Telecommunications Carriers Association, Telecom Services Association, Japan Internet Providers Association, Communications and Information Network Association of Japan and ASP-SaaS-IoT Cloud Consortium to drive industry-wide efforts to address the issue of global warming.

ICT Ecology Guideline Council  
<https://www.tca.or.jp/information/ecoict/index.html>

\*2 The eight NTT Group companies are NTT, NTT East, NTT West, NTT Communications, NTT DOCOMO, NTT DATA, NTT FACILITIES, and NTT COMWARE.

\*3 Power Usage Effectiveness: PUE is calculated by dividing the total power consumption of a data center by the power consumption of the computing equipment it houses. It is a figure larger than 1, with higher efficiencies represented by values approaching 1.

\*4 EP100: An international initiative comprising companies pledging to double the energy efficiency of their operations (improve energy efficiency by 50%) as participants.

\*5 EV100: International initiative for promoting commercial use of EV and development of the service environment.

## Pursuing Initiatives across the Industry for Energy-Efficient ICT Devices

NTT is a member of the Telecommunications Carrier Association (TCA) and in that capacity, participates in the ICT Ecology Guideline Council\*1, an organization that seeks to enhance the energy efficiency of telecommunications-related products. The council formulates guidelines on the criteria for evaluating the energy efficiency of telecommunications devices, and NTT has contributed to the technical aspect of this effort. The NTT Group's Energy Efficiency Guidelines are based on the guidelines created by this council. In August 2010, eight NTT Group companies\*2 acquired the Eco ICT Logo on submitting self-evaluations of their CO<sub>2</sub> emissions reduction efforts, including the establishment of Energy Efficiency Guidelines. The Eco ICT Logo was created by the ICT Ecology Guideline Council to signify efforts by telecommunications service providers to reduce CO<sub>2</sub> emissions. We will continue to drive the development and procurement of energy-efficient equipment, and work with the ICT Ecology Guideline Council to help bring both vendors and carriers together to promote the industry-wide procurement of energy-efficient equipment. We will ensure that vendors are consistently provided with requirements for NTT Group specification processes, and include energy efficiency information disclosure and our corporate stance on energy efficiency in our criteria for selecting vendors.

## Group-Wide TPR Campaign to Reduce Electricity Usage

The NTT Group has been working on Group-wide energy conservation activities named the TPR (Total Power Revolution) Campaign since October 1997 with respect to the electricity it consumes, which accounts for over 90% of the CO<sub>2</sub> emissions from its business activities. By promoting efficient energy management at buildings owned by NTT and installing energy-efficient electrical power units, air conditioning systems and telecommunications equipment, we managed to continue to reduce electricity usage across the NTT Group by approximately 380 million kWh from projected levels in fiscal 2020.

## Energy-Saving Data Centers

NTT Communications offers data centers with a PUE\*3 of less than 1.2, and NTT COMWARE offers data centers with a PUE of less than 1.1, which are at the top worldwide for energy efficiency. We are striving to enhance PUE for our other data centers as well, introducing five-star equipment with the highest level of energy efficiency in accordance with the NTT Group Energy Efficiency Guidelines. NTT FACILITIES has been developing technology for reducing the electricity consumption of data centers by incorporating higher efficiency technology for electrical power units and air conditioning systems as well as central air conditioning control systems.

## Promotion of EP100 & EV100



The NTT Group is committed to using power more efficiently as a means of reducing the risk of business disruptions and mitigating climate change. It has set itself the target of improving power efficiency per data transmission of the telecommunications business including data centers to double fiscal 2017 levels by fiscal 2025. It is also committed to reducing its corporate fleet and converting to electric vehicles (EV). We will replace 50% of our general-purpose vehicles with EV by 2025 and 100% of our fleet by 2030. Accordingly, we are establishing battery charging stations for EVs on the grounds of our telecommunications buildings.

To demonstrate our commitment to the public, in October 2018 NTT became the first telecommunications operator in the world to become a member of the Climate Group's EP100\*4 and EV100\*5 initiatives. In May 2020, we established the Electric Vehicle Promotion Consortium in a joint effort with Hitachi, Ricoh, and Tokyo Electric Power to expand the use of electric vehicles in the commercial sector. Looking ahead, we will promote the shared use of vehicles, decarbonization in the area of mobility, use of EV at times of a disaster, and initiatives related to systems and regulations.

## Business Activity 2

# Reduction of power consumption by introducing IOWN technologies

### Our commitment

The reduction in power consumption resulting from rolling out IOWN will help reduce greenhouse gas emissions throughout the NTT Group's its business activities and society as a whole

### Our objective

Reduce power consumption with the introduction of IOWN, and reduce the NTT Group's greenhouse gas emissions \*1 compared to outcome.

### Background and Concepts

There is urgent need to create a society that can cope with global environmental changes such as climate change, major disasters, and pandemics. Developing next-generation energy technologies and technologies to enable resilient environmental adaptation will reduce the burden placed on the global environment and thereby prevent environmental destruction, opening the door to a sustainable society in which humans can continue to live in harmony with the environment.

The NTT Group is committed to initiatives that reduce power consumption emissions throughout its business activities and society as a whole, by rolling out IOWN technology and increasing development and use of renewable energy sources.

### Initiatives for Realizing the IOWN Concept

The development of ICT has dramatically increased the volume of information being transmitted through networks. Up to now, energy has been saved by enhancing power efficiency through the introduction and renewal of highly energy-efficient telecommunications equipment. However, the performance and efficiency of integrated circuit technology which has grown in line with Moore's law, is thought to be approaching its limits in terms of speed and energy consumption due to the restrictions of nanoscale fabrication and integration density. NTT Laboratories is advancing research and development that incorporates optical technology into signal processing with the aim of using photonics to realize a base for a new kind of computing. This has resulted in the development of a modulator with the lowest ever reported energy consumption and an optical transistor which transfers a high-speed optical signal to another light with gain (announced in April 2019).

The NTT Group is advancing the development of photonic technology and we have established the IOWN (Innovative Optical & Wireless Network) concept as one of the pillars of an all-photonic network that incorporates photonic-based technology throughout entire networks, including terminals. The target of this all-photonic network will be to realize power efficiency that is 100 times greater in areas where photonics technology is applied, and we expect it will radically reduce energy consumption.

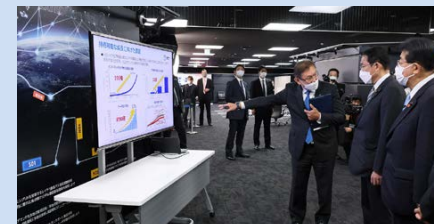
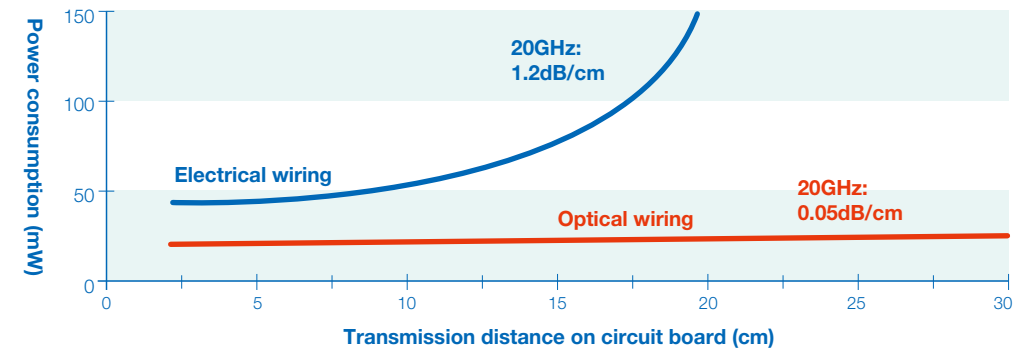
We are collaborating with global partners and specialists in a wide range of research and technological fields with the aim of realizing the IOWN concept.

### Promoting Energy Conservation with IOWN

Conservation of the global environment and development of a sustainable society is the management theme of countless companies. The use of the NTT

Group's next-generation communication platform "IOWN" for various ICT services used at customer companies not only helps to support these initiatives, but using IOWN extensively throughout NTT Communications' data centers, networks, and other infrastructure will lead to energy savings, paving the way to achieve carbon neutrality at data centers and networks by fiscal 2030.

### Higher efficiency and lower power consumption using light



### Highlighting the reduction in power consumption and other benefits of IOWN to the government

The NTT Group highlighted to the Japanese government the benefits of using its IOWN advanced technology, as a cutting edge communications infrastructure with major future potential for developing businesses in a wide range of fields.

Rolling out IOWN to reduce power consumption and help achieve carbon neutrality provides Japan with a significant opportunity to lead the world in this sector.

\*1 GHG Protocol: for Scope 1 and 2

### Looking to the Future: IOWN

NTT R&D is envisaging the arrival of new smart societies that are not yet possible with today's Internet, with features such as mobility as a service (MaaS) for extreme fail-safe systems and entertainment services offering deep immersion. To realize such smart societies, we will require innovation that cannot be achieved merely by extending the trajectory of current technologies; we will need to realize ultra-low power consumption, high-speed signal processing, and the fusion of virtual worlds that can equal or surpass reality with sophisticated prediction technologies. The NTT Group has proposed the Innovative Optical and Wireless Network (IOWN) concept to realize new smart societies, and we are committed to realizing this concept.

In January 2020, the IOWN Global Forum was established in the United States by industry leaders NTT, Intel Corporation, and Sony Corporation, all three of which have superior expertise in the technological areas that form the core of IOWN. Wide-ranging recruitment efforts began in March 2020, with many companies both in Japan and overseas signing up as members, and specific technological considerations commenced through the use of online video conferencing. Going forward, we will work with a variety of partners for the earliest possible implementation of the IOWN concept.







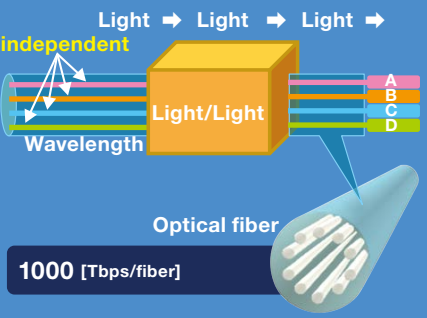



### Three Technological Layers that Constitute IOWN

#### Cognitive Foundation®

We seek to achieve optimal matching of all manner of ICT resources and distributing necessary information inside the network. We will lead the shift from a world of electronics to a world of photonics and drive technological development for resolving various global social issues and creating innovative services.

Technology development roadmap for realizing the IOWN concept  
<https://group.ntt/en/newsrelease/2020/04/16/200416a.html>  
 NTT proposes the "Digital Twin Computing Initiative"  
<https://group.ntt/en/newsrelease/2019/06/10/190610a.html>

#### Advantages of the All-Photonics Network

<div style="background-color: #0056b3; color: white; border-radius: 50%; padding: 10px; display: inline-block;"><b>Low power consumption</b></div>	<div style="background-color: #0056b3; color: white; border-radius: 50%; padding: 10px; display: inline-block;"><b>High quality and high capacity</b></div>	<div style="background-color: #0056b3; color: white; border-radius: 50%; padding: 10px; display: inline-block;"><b>Low latency</b></div>												
<b>Power efficiency:</b> <b>100 times higher*1</b>	<b>Transmission capacity:</b> <b>125 times higher*2</b>	<b>End-to-end delay:</b> <b>1/200*3</b>												
<table border="0" style="width: 100%;"> <tr> <td style="width: 70%;">Transmission media</td> <td></td> </tr> <tr> <td>Optical fiber cables</td> <td></td> </tr> <tr> <td>Transmission systems</td> <td></td> </tr> <tr> <td>Light (wavelength) throughout</td> <td></td> </tr> <tr> <td>Information processing platform</td> <td></td> </tr> <tr> <td>Photonics-electronics convergence devices</td> <td></td> </tr> </table>	Transmission media		Optical fiber cables		Transmission systems		Light (wavelength) throughout		Information processing platform		Photonics-electronics convergence devices		<p>• Wavelength (optical signal)</p> 	<ul style="list-style-type: none"> <li>• Transmission per wavelength</li> <li>• No queueing</li> <li>• No data compression</li> </ul> <div style="display: flex; align-items: center; margin-top: 10px;"> <div style="margin-right: 10px;">Wavelength A</div> <div style="background-color: #90c040; border-radius: 15px; padding: 5px; display: inline-block;">High-capacity video (uncompressed)</div> </div> <p style="text-align: center; margin: 5px 0;">No latency</p> <div style="display: flex; align-items: center; margin-top: 10px;"> <div style="margin-right: 10px;">Wavelength B</div> <div style="background-color: #66b3ff; border-radius: 15px; padding: 5px; display: inline-block;">Speech</div> </div>
Transmission media														
Optical fiber cables														
Transmission systems														
Light (wavelength) throughout														
Information processing platform														
Photonics-electronics convergence devices														

\*1 Target power efficiency for portion where photonics technology is applied

\*2 Target communication capacity per optical fiber cable

\*3 Target latency in video traffic not requiring compression within the same prefecture

### Research and Development to Support the IOWN Concept

By using light as a means for transmitting signals inside the processors that perform information processing and calculations inside a computer, we hope to create a hybrid opto-electrical processor that will solve problems that arise with electrical processing, such as power consumption and increase in heat emission, and realize ultra-low power consumption and high-performance information processing. We have realized ultra-compact photo-electric conversion elements such as an optical transistor that uses nano-photonics technology.

To conduct a comparative time experiment by connecting several optical lattice clocks that are more precise than atomic clocks, the current standard for measuring seconds, we used the optical fiber network of NTT East for an optical frequency transmission experiment with the University of Tokyo. As a result, the required frequency precision for the comparative experiment was achieved, representing a major step toward conducting the experiment.

### Increasing the Capacity of Optical Fiber Communication Networks

Increasing the capacity of mission-critical optical fiber communication networks has become an economic necessity. We have developed new proprietary technology for digital signal processing and ultra-wide area optical devices, increasing the channel capacity per wavelength to the point that transmission speeds achieve a level more than 10 times that of current commercial systems, and achieving a global first of 1 Tbps of capacity in long-distance wavelength-division multiplexed transmission trials. Furthermore, we also succeeded in developing an ultra-high-speed compact optical front-end module with integrated compact, wide-band InP optical modulator.

As another accomplishment, we realized high-capacity wireless transmissions at approximately 10 times the speed of LTE and Wi-Fi, and five times that of 5G, by using the following two technologies.

The first one enables wireless transmissions at rates of 100 Gbps by using a method devised by NTT combining a principle called "OAM multiplexing" with MIMO technology. This generates multiple radio waves of different frequencies so that they can transmit simultaneously without interfering with each other. The result is a dramatic increase in the volume of data that can be transmitted simultaneously, enabling large-capacity communications.

The second one, which was jointly developed with the National University Corporation Tokyo Institute of Technology, enables wireless transmissions of 100 Gbps in the 300 GHz band. It is easier to expand the transmission bandwidth or terahertz waves, including the 300 GHz band, although they require high-performance devices. We developed an ultra-high-speed integrated chip (IC) for wireless front-end devices, leading to the world's first 100 Gbps wireless transmission in the 300 GHz band.

### Optical Transistor Capable of High-Speed Operation with Ultra-low Power Consumption

As Moore's law approaches its limit in electronic circuits, there are expectations for a new, high-speed, energy-saving computing platform that incorporates optical technology. Achieving this requires technologies that have hitherto been considered difficult to achieve with low energy consumption, such as opto-electronic signal conversion and high-speed signal processing in the optical area. NTT has been developing a semiconductor nanostructure called photonic crystals with which to realize various tiny optical devices. In this work, we used our nanotechnology to realize a nano electro-optic modulator (E-O converter) and a nano photodetector (O-E converter) with extremely small capacitance and low energy consumption. Moreover, through their integration, we also realized an O-E-O conversion optical transistor. These nano-optical technologies have opened the way to realizing high-speed, low-energy integrated opto-electronic information processing.

## Business Activity 3

# Developing and expanding the use of renewable energy

### Our commitment

Developing and promoting greater use of renewable energy

### Our objective

Increase the use of renewable energy, and reduce the NTT Group's greenhouse gas emissions\*<sup>1</sup> compared to outcome\*<sup>2</sup>.

### Development of Renewable Energies

Renewable energy like solar power, wind power, geothermal, and biomass do not generate greenhouse gases when producing power, an advantage that makes developing and expanding the use of renewable energy an essential part of initiatives aimed at achieving a decarbonized society. The NTT Group established NTT Anode Energy in June 2019 with the aim of delivering smart energy solutions that leverage the technology, expertise, and resources of the NTT Group. Focused on achieving a decarbonized society and the promotion of local energy production for local consumption, NTT Anode Energy operates on three core approaches: (1) Providing customers with green energy solutions; (2) Promoting NTT's own decarbonization efforts; and (3) Utilizing battery farms to increase use of renewable energy.

NTT Anode Energy is working together with various partners to develop renewable energy power plants in order to meet the green energy requirements of NTT Group companies. With a primary focus on sustainability, the company advancing development that takes into consideration ecosystems and living environments.

The power generated from renewable energy at these plants is supplied to customers in a range of different plans catering to their specific requests. This is achieved through a corporate PPA (Power Purchase Agreement), where customers use the electrical power generated from renewable energy power plants constructed on their sites or in remote locations. Leading companies focus on the "Additionality" concept, where companies are encouraged to make investments in renewable energy projects as their selected source of financing, as a way of displacing the use of fossil fuels. NTT Anode Energy projects comply with the "Additionality" framework, so customers are able to use power generated from renewable energy via a corporate PPA.

One key fact to note is that with communications facilities located around Japan, the NTT Group accounts for approximately 1% of total electricity in Japan. The NTT Group is pushing ahead with development of renewable energy sources with the

aim of generating around half of its renewable energy target, or 3.8 billion kWh/year, from its own facilities by fiscal 2030.

The NTT Group is also expanding its concept of local energy production for local consumption to stabilize the power grid by charging and discharging its constructed battery farms. There are some 7,300 NTT buildings located around Japan, housing around 4 million kWh of battery storage capacity that the NTT Group uses to maintain communications in the event of power outages. The group will develop battery farm operations around Japan by utilizing these battery farms to increase the use of renewable energy and help stabilize the power grid.

With these businesses, NTT Anode Energy will partner with subsidiaries ENNET and NTT Smile Energy to help overcome various challenges on the way to developing a carbon-free environment for all of society.

### Expanding the Use of Renewable Energy

The whole NTT Group is increasing its use of renewable energy as part of efforts to achieve the NTT Group's Environment and Energy Vision.

In 2020, the NTT Holdings head office and four facilities of NTT Laboratories made the switch to effectively 100% renewable energy. The NTT East Group has also followed suit, with office buildings, communications buildings, data centers and other facilities in eastern Japan making the shift to renewable energy; as of April 2021, 132 buildings in eastern Japan have completed their switch to effectively 100% renewable energy, including the head office building in Hatsudai. The NTT West Group is in a similar situation, with office buildings, communications buildings, data centers and other facilities in western Japan making the shift to renewable energy; as of October 2021, 58 buildings in western Japan have completed their switch to effectively 100% renewable energy.



### NTT Anode Energy

Supplying 100% renewable energy to Seven & i Holdings stores and operations

In a joint project with Seven & i, NTT Anode Energy began powering 40 Seven-Eleven stores and the Ario Kameari shopping center completely with renewable energy. NTT Anode Energy supplies electricity via the power grid from two solar power plants established through an off-site corporate PPA\*<sup>3</sup>. The NTT Group's green power plants are used to cover any shortfall in power supply.

\*1 GHG Protocol: for Scope 1 and 2

\*2 The introduction of effectively 100% renewable energy (including actual renewable energy through non-fossil fuel certificates) will have the optimal types of energy determined on the basis of each country's energy composition, etc. Approximately half of the domestic renewable energy usage is anticipated to be from energy sources owned by NTT (FY2030).

\*3 Japan's first off-site corporate PPA scheme, which involves business operators building renewable energy power plants in locations removed from users for use exclusively by specified consumers, such as companies or municipalities, and supplying these users with electricity via the power grid over the long term.

## Business Activity 4

# Providing new services that contribute to carbon neutrality

### Our commitment

Promoting the provision of new services that contribute to carbon neutrality

### Our objective

Provide new services designed with the environment in mind, such as the development of services that use renewable energy, and visualization of the reduction in greenhouse gas emissions.

### NTT Group's Strengths

In addition to the Green of ICT, which will curb the environmental impact of NTT Group by introducing IOWN technologies and increasing the use of renewable energy, we will also work on Green by ICT, which will contribute to reducing the environmental impact of society as a whole.

### NTT DOCOMO Initiatives

In September 2021, NTT DOCOMO announced its commitment to reduce the greenhouse gas emissions arising from its business activities effectively to zero by 2030. In addition to its own business activities, DOCOMO has started a new ecosystem called "Caboneu™" together with its partner companies, under the slogan "Saving Our Planet With You" to help achieve carbon neutrality throughout the whole of society.

#### (1) Development of services that use renewable energy

The ratio of effectively 100% renewable energy (includes non-fossil fuel certificates designated as renewable energy) to total electricity consumption will be greater than the ratio of the number of 5G subscriptions to DOCOMO's total subscriptions, making 5G environmentally friendly without greenhouse gas emissions. From October 1, 2021, 5G services will be rolled out as Green 5G™. The docomo Denki™ service planned to be rolled out from March 2022 (tentative) will be available with "docomo Denki Green," an earth-friendly plan that makes extensive use of effectively 100% renewable energy (includes non-fossil fuel certificates designated as renewable energy).

#### (2) Provide new services designed with the environment in mind

Environmentally friendly services include providing THEO Green and the addition of SDGs/ESG as topics investment targets for the Points Investment service. A dedicated section for environmentally friendly brands and products was also opened on the d fashion® website. A range of services will be provided with the aim of achieving carbon neutrality with customers.

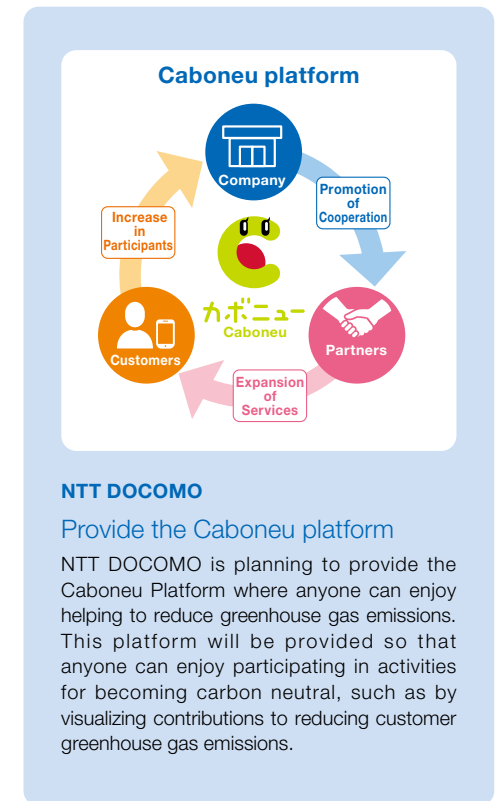
See the following docomo site for more details.  
[https://www.nttdocomo.co.jp/corporate/csr/ecology/enviromanagement/carbon\\_neutral/](https://www.nttdocomo.co.jp/corporate/csr/ecology/enviromanagement/carbon_neutral/)

#### (3) Provide the Caboneu platform

A platform is planned where anyone can enjoy participating in activities for becoming carbon neutral, such as by visualizing contributions to reducing customer greenhouse gas emissions. Studies are being conducted for partner companies supporting the Caboneu initiative, as well as the type of content that will be provided on the platform.

### NTT DATA Initiatives

NTT DATA is implementing companywide initiatives with the aim of making society carbon neutral. Examples of these initiatives include the creation of standards for measuring CO<sub>2</sub> emissions from a software development and system development perspective, enhanced cooling efficiency and the shift to immersion cooling to help conserve energy at data centers, projects that make use of metal 3D printers, and measures for accurately measuring CO<sub>2</sub> absorption volumes by focusing on forests as carbon sinks on a global scale. The new Green Innovation Office was also established in October 2021 to develop companywide green innovation strategies aimed at achieving carbon neutrality.



## Business Activity 5

# Creation of innovative environment and energy technologies

### Our commitment

Creation of innovative environmental energy technology for reducing global environmental impact

### Our objective

Promoting the creation of innovation with next-generation energy technologies.

### Regenerating the global environment and achieving a sustainable society

The NTT Group is creating innovative technologies aimed at addressing a range of issues related to the environment and energy such as climate change. In July 2020, we established the NTT Space Environment and Energy Laboratories for regenerating the global environment and achieving a sustainable and inclusive society. We will create technologies that will drive innovation in the field of smart energy, including next-generation energy, and for the future of the global environment.

### Energy network technologies

Indoor direct-current power supply technology—a field that the NTT Group excels at—is being developed for outdoor use with the aim of achieving a high-resilience, autonomous, decentralized, and coordinated energy network to link NTT buildings and consumers in the surrounding area with direct current supply, for a flexible and efficient power supply system that is also reliable when disasters strike. Research is being conducted into technology that simulates information on energy demand, generation and storage capacities in cyberspace in an integrated manner, and applies the optimal figures to control the actual grid and achieve an ideal balance between supply and demand. Another field of study is focusing on technology for the spatial and temporal reallocation of communications traffic between multiple regions or calculations and other information processing capabilities for more efficient use of renewable energy, which is prone to fluctuations due to weather conditions.

### Sustainable systems technologies

Practical applications of technology that reduces CO<sub>2</sub> in the atmosphere or water are being developed, covering artificial photosynthesis (based on an electrochemical approach) achieved with semiconductor technology and catalyst technology, as well as technology that maximizes the capabilities of plants and algae (based on a biological approach). The electrochemical approach utilizes materials informatics to test combinations of materials that would not have been possible to discover using traditional experimental techniques or existing concepts. The biological approach involves research using digital twins, where various cultivation environments are recreated in cyberspace to test the effects of genome editing or climate control, before applying them to the real world for additional testing.

### Proactive environmental adaptation technologies

We are focusing our efforts on research topics enabling society to take a proactive stance and adapt physically to extreme weather or environmental conditions. Lighting is an example of research being conducted on weather control. We have developed advanced technologies as a means of protecting communications facilities from lightning strikes, and we are now expanding our research in this field to develop lightning control and lightning charging technologies. More specifically, this research involves high-precision forecasting of areas prone to lightning strikes, employing lightning control technology so that drones trigger lightning strikes, and then lightning charging technology to store the energy from that lightning. The future goal is to develop floating lightning energy absorption systems that operate autonomously using natural energy including that from lightning strikes to absorb energy before the lightning strikes the ground.



### Next-generation energy technologies

We are involved in initiatives related to fusion energy and space-based solar power generation. Fusion energy is a power generation technology that uses nuclear fusion. NTT entered into a comprehensive partnership with the ITER International Fusion Energy Organization in May 2020, and concluded a collaboration and cooperation agreement with the National Institutes for Quantum Science and Technology, the ITER Japan Domestic Agency, in November 2020. The ITER experimental reactor is planned to begin operating from 2025, creating a miniature sun with plasma temperatures at the core reaching 150 million degrees Celsius. The immense amount of data obtained from sensors used with the experimental reactor will be transmitted via the ultra-low latency, ultra-high speed and capacity IOWN network and analyzed by AI and machine learning to instantaneously forecast the plasma conditions for real-time feedback control. Looking further ahead, we will be harnessing digital twin computing for future performance forecasting, as a way of helping to optimize operations.

## Social Challenge 2

# Implementing closed loop recycling

### Business Activity

6. Increasing the reuse and recycling of communications equipment, mobile terminals, and other technologies
7. Reduction in plastics use and promotion of recycling
8. Proper treatment, storage, and management of hazardous waste
9. Appropriate and efficient management of water resources



### Why it matters

Although our one-way society of mass production, mass consumption, and mass disposal has brought affluence and convenience to our lives, it has brought about various problems such as the creation of massive amounts of refuse, illegal dumping and concern about the depletion of natural resources. To resolve these issues we must first review how companies manage their businesses as well as our social and economic systems, and shift to a closed loop society.

### What can be accomplished

In an effort to realize a future with closed loop recycling, the NTT Group promotes the 3Rs (reduce, reuse, and recycle), working to reduce the amount of materials consumed by our business activities and reuse or recycle the resources that are consumed.

### Future vision

We will shift from a one-time use consumption-oriented company to a recycling-oriented one. We will promote the effective use of resources throughout the entire life cycle of products and systems, from procurement to use and disposal.

## Business Activity 6

# Increasing the reuse and recycling of communications equipment, mobile devices, and other technologies

### Our commitment

Promoting the 3Rs (reduce, reuse, and recycle), working to reduce the amount of materials consumed by our business activities and reuse or recycle the resources that are consumed

### Our objective

**99% or higher**

FY2030: Recycling ratio of disposed waste generated by the NTT Group

### Targets and Results

The NTT Group has established a target for achieving a 99% or higher recycling ratio of disposed waste generated by the NTT Group by fiscal 2030.

We require a large amount of resources in order to sustain our business operations and provide various services including information communication. This is why we have set a target to contribute to both the avoidance of business continuity risks and achievement of closed loop recycling.

In fiscal 2020, the recycling ratio of disposed waste was 98.4%. We will continue to work hard to promote the 3Rs toward our goal of 99% or higher. Regarding decommissioned telecommunications equipment, we have achieved zero emissions (1% or lower final disposal ratio of waste) for 17 consecutive years since fiscal 2004.

### Main Initiatives

The NTT Group owns various types of telecommunications equipment and related items including telephone poles, switching equipment, communications cables, public telephone booths, and public telephones. These are decommissioned and disposed of when they reach the end of their service life or are replaced during system upgrades for new services and so forth. We promote the reuse, or recycling, of telecommunications equipment within the NTT Group; for example: recycling concrete waste from discarded concrete poles as road building material. Public telephone booths and public telephones are taken to a specialized intermediate treatment plant, where parts of the booths are sorted into aluminum, stainless steel, glass, and plastic. Similarly, the baseboards, copper wires, and various plastics in the public telephones are meticulously sorted. They are then sent to a recycling plant to become recycled materials such as rare metals, copper, and pellets. The recycling rate there is reflected in the precision, as a result of careful hand sorting, at the intermediate treatment plant. To prevent the inappropriate treatment of the materials, such as illegal dumping, NTT East collaborated with NTT-ME to construct a system that uses GPS and photography to confirm proper disposal from the site of discharge to the disposal plant.



### NTT DOCOMO

#### Recycling Process for Mobile Phones

Since 1998, NTT DOCOMO has collected used mobile phones from customers at its approximately 2,300 docomo shops throughout Japan, and through various events. Containing gold, silver, copper, palladium, and other metals, mobile phones could be regarded as a valuable recycling resource in Japan with its paucity of mineral resources.

1. In fiscal 2020, we collected about 3.09 million\*<sup>1</sup> mobile phones, bringing our cumulative total to 118.32 million units collected.
2. In fiscal 2011, the company introduced a new recycling process for pyrolyzing any plastic used in mobile phones to turn it into oil for use as a fuel, after which gold, silver, and other metals are recovered from the residues of this process.

\*1 The number of units collected for reuse is included in the figure after fiscal 2015.

### Initiatives

Held in Japan for the first time in 56 years, the 2020 Summer Olympics and Paralympics featured 55 different sports events, far exceeding the 29 types at the 1964 Summer Olympics and Paralympics held in Tokyo in 1964. Hopes were high for the Japanese team to win an impressive medal haul. The Tokyo Organising Committee of the Olympic and Paralympic Games kicked off the "Tokyo 2020 Medal Project—Making medals using urban mines" citizen-participatory project from April 2017. Medals were made using gold, silver, and copper metals recycled from discarded electronic devices, including mobile phones and other small household appliances. Used mobile phones were collected at DOCOMO shops throughout the country, with existing recycling processes used to assist with the project.

In 2017, the number of households using mobile devices as telecommunications equipment was 94.8%. Of this figure, smartphones made up 75.1%\*, exceeding that of personal computers. As information devices that are essential for day-today-life, results of a consumer trend survey indicate that people upgraded their mobile phones every four or so years. This was the first project of its kind in the world that aimed to achieve a 100% recycling rate for used mobile phones and other small household appliances, so that they can be remade into medals as part of a recycling program for these valuable resources.

Containing gold, silver, copper, palladium, and other metals, mobile phones contain extremely valuable resources in Japan, where such mineral resources are scarce. Used mobile phones were collected at the approximately 2,300 DOCOMO shops located throughout Japan. Initiatives aimed at recycling were extensive, and included collection of recyclable materials at a wide range of events throughout the duration of the Olympic and Paralympic Games, as well as collection activities organized by Tokyo 2020 Olympic partner companies. This project left a lasting legacy, as 2020 led to recycling of small household appliances becoming ingrained by the people, helping to achieve an environmentally friendly, sustainable society.



### Tokyo 2020 Medal Project

- Collection period  
April 1, 2017 to March 31, 2019
- Volume collected  
Collected by NTT DOCOMO (collection of mobile phones)  
Approx. 6.21 million units  
(equivalent to 5,000 gold, silver, and bronze medals)  
Collected by participating municipalities around Japan  
(collection of small household appliances including mobile phones)  
Approx. 78,985 tons



\*1 2018 Ministry of Internal Affairs and Communications, Information and Communications in Japan Whitepaper, ICT Service Utilization

**NTT Communications**

**Sustainable Systems Produced by Subsea Cable Recycling**

The normal length of subsea cables installed in Japan's territorial waters is 20 to 30 km per cable run, but the cable managed by NTT Communications connecting Kagoshima Prefecture with Okinawa Prefecture is 250 km in length as it passes through various islands en route. The cable went out of service in 2018 and was expected to result in about 850 tons of waste, presenting a significant challenge in terms of environmental impact and disposal costs. Therefore, NTT Communications concluded an agreement with South Africa's Mertech Marine, the only operator in the world capable of completely disassembling subsea cables to the level of raw materials, to develop a new scheme for controlling both environmental impact and disposal costs by recycling 99% of the cable that requires disposal. It is also contributing to creating regional safety nets through Marine Mertech with the employment of unskilled workers and donations to non-profit organizations engaged in initiatives such as supporting impoverished families.



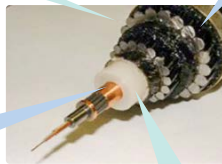
Coal tar coating for armor wire completely separated and pelletized



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 (99% of total volume).**



## Business Activity 7-8

# Reduction in plastics use and promotion of recycling Proper treatment, storage, and management of hazardous waste

### Our commitment

Reduction in plastics use and promotion of recycling  
Proper treatment, storage, and management of hazardous waste

### Our objective

Reduction in plastics use and promotion of recycling of plastics including telecommunications equipment, hazardous waste disposed of in compliance with laws and regulations, and ensure proper storage, management, and disposal.

### Reduction in Plastics Use and Promotion of Recycling

The NTT Group is seeking to reduce the use of plastics and promoting recycling. For example, plastic parts of telecommunications equipment such as coverings for branch lines and ready access terminal boxes are used in a closed recycling system in which similar types of disposed covers are recycled into plastics to manufacture new products. We are also seeking to abolish the use of plastic packaging materials for devices used at customers' homes when connecting optical lines such as optical network units (ONU) and home gateway (HGW) units.

### Hazardous Waste

For NTT Group operations, hazardous waste as defined by law applies to asbestos contained in waste generated from construction work on relay stations, waste such as transformers and condensers containing PCBs, and lead batteries. These are disposed of appropriately and in compliance with the Waste Management and Public Cleansing Law (Waste Disposal Law) as well as other laws and regulations, and the NTT Group does not have a record of disposing of such waste in foreign countries. We also pay meticulous attention to the proper storage and management of equipment containing PCBs and PCB contaminated wastes, and dispose of them with safe and appropriate methods in conformity with the Law Concerning Special Measures Against PCB Waste.



### NTT BUSINESS SOLUTIONS

#### Demonstration Research into Various Methods for Reducing Food Loss and Decreasing Waste Volume

Reducing food loss and decreasing the volume of waste has become a major challenge in Japan. NTT BUSINESS SOLUTIONS has teamed up with Well Create to rent the "Four Stars" food waste fermentation/decomposition system to food-related business operators without any initial investment costs. The fermentation/decomposition beds are turned into fertilizer and soil enhancer, and provided or sold to farmers as part of the food recycling system it has developed. A "mobile recycling truck" equipped with the system is used to demonstrate the collection and processing efficiency, and we work with restaurant chains to predict future demand based on numbers of customers and orders, weather information and other data. Calculating the amount of required ingredients helps to reduce the amount of overall food waste.

## Business Activity 9

# Appropriate and efficient management of water resources

### Our commitment

Managing water usage and protecting valuable water resources

### Our objective

The NTT Group is Reducing its Consumption of Tap Water, and Implementing Thorough Measures Against Leakages of Chemical Substances into Wastewater.

### Water Management

Due to the nature of the NTT Group's business, little water is consumed in our operations. In Japan, one-year domestic and industrial water consumption totaled 25.6 billion m<sup>3</sup>\*1, while the NTT Group's water consumption totaled 5.142 million m<sup>3</sup>, only about 0.02% of the total for all of Japan. Moreover, our water use is spread out across the country and so we believe our water intake does not have any significant impact on water sources. The NTT Group reduces its consumption of tap water by using recycled wastewater and rainwater. Research centers where we use chemical substances in our research activities implement individual measures against leakages of chemical substances into wastewater. For example, at the Atsugi R&D Center, which carries out research on the physical properties of materials, we have installed equipment to treat chemical-infused waste liquid discharged by the laboratories. Furthermore, we regularly monitor the quality of this wastewater to confirm that it is within legal regulation values. The NTT Group has not been involved in any significant spills.



### NTT DATA Italia

#### Providing People All Over the World with Clean, Safe Drinking Water

NTT DATA Italia has been researching smart water management systems that incorporate IoT since 2016. Through processes such as hackathons, in which various engineers from throughout the company meet to share opinions and ideas, it has developed origAMI (original Advanced Metering Infrastructure).

In addition to enabling appropriate monitoring, such as reducing leakage rates by monitoring pipe networks in real time, this infrastructure also functions as a tool for the prevention of accidents by running simulations and accumulating measurement data for each region. Currently it is being used in public works in Italy and we plan to expand its use to other parts of Europe and then Asia.

\*1 From the Ministry of Land, Infrastructure, Transport and Tourism website. Actual water use in 2017 (water intake basis) was approximately 79.3 billion m<sup>3</sup> per year (domestic and commercial use of water: approximately 14.6 billion m<sup>3</sup>; water for industrial use: approximately 11 billion m<sup>3</sup>; water for agricultural use: approximately 53.7 billion m<sup>3</sup>).

### Social Challenge 3

# A future where people and nature are in harmony

#### Business Activity

- 10. Thoroughly implementing environmental assessment
- 11. Contributing to natural ecosystem conservation



### Why it matters

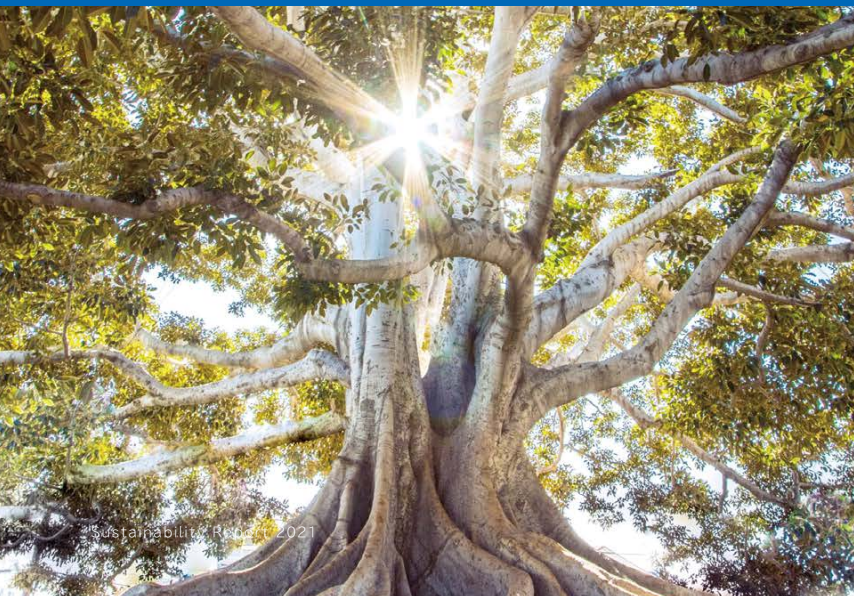
The NTT Group's businesses have an impact on ecosystems. For example, the telecommunication equipment essential to our business operations, particularly telephone poles and communications cables, is installed in the natural environment. At the same time, we are sometimes affected by the ecosystem, for example cables are bit and damaged by squirrels or crows. Ecosystems full of biodiversity provide the bounty, such as water and food, which is critical to supporting all forms of life on earth, and thus require a proper approach for conservation.

### What can be accomplished

Through our business and employee activities, we will promote initiatives related to conserving ecosystems within nature, in order to ensure that nature is left untouched for future generations.

### Future vision

The NTT Group is working to preserve the ecosystems, which are the foundation of society's activities, while also conducting environmentally friendly business activities that take into consideration the mutual influence between ecosystems and the NTT Group.



## Business Activity 10

# Thoroughly implementing environmental assessment

### Our commitment

Implementing environmental assessments during the construction of data centers and other buildings

### Our objective

The NTT Group adheres to its Green Design Guideline for Buildings when constructing new data centers or other buildings, and endeavors to reflect the necessary aspects in the facility's design.

### Environmental Assessments during the Construction of Data Centers and Other Buildings

When planning to construct new data centers or other buildings, we research the historical, social, geographical, biological, and environmental attributes of the prospective building site and surrounding district based on our NTT Group Green Design Guideline for Buildings, and endeavor to reflect the necessary aspects in the facility's design. For example, we use native plant species as vegetation for greening our data centers, which have in recent times become the core components of ICT infrastructure. When drawing up proposals for the construction of new data centers for customers, the NTT Group applies the Comprehensive Assessment System for Built Environment Efficiency (CASBEE<sup>\*1</sup>) and submits proposals designed to obtain the highest CASBEE rank of S. While paying due consideration to the environment in this way, we also take care to minimize noise and vibration and maintain the scenic appeal of the district during construction while endeavoring to ensure that exhaust heat and noise from the air conditioning outdoor units and emergency generators of functioning data centers will have minimal impact on neighboring areas.

<sup>\*1</sup> CASBEE: A system for the comprehensive assessment of the quality of a building from such perspectives as environmental performance, interior comfort, and scenic appeal

<sup>\*2</sup> ZEBs are defined as buildings using advanced architectural designs that aim to realize substantial energy savings while maintaining the indoor environment by (1) reducing the energy loads, (2) positively utilizing natural energy by applying passive technologies, and (3) introducing high efficiency equipment and systems. They additionally aim to achieve the highest degree of energy independence and reduce the annual primary energy balance to zero by (4) introducing renewable energy.



### NTT Urban Development

#### Shinagawa Season Terrace acquires "ZEB Ready" certification

Compared to standard buildings, Shinagawa Season Terrace is able to reduce its annual primary energy consumption in its office areas by 51% (43% for the entire building), and acquired the top 5 star rating in the Building-Housing Energy-efficiency Labelling System (BELS) and ZEB<sup>\*2</sup> Ready" certification in December 2019 for the office area that is its main application. Featuring atriums filled with natural light and wind, a heat discharge system using cool external air, air-conditioning using a sewage heat recovery system, recycled water, and more, Shinagawa Season Terrace is one of the highest standard environmentally friendly office buildings in Japan, with eco designs and facilities offering excellent comfort and energy efficiency.

## Business Activity 11

# Contributing to natural ecosystem conservation

### Our commitment

Business activities that contribute to preservation of the ecosystem

### Our objective

The NTT Group is working on activities that contribute to preservation of the ecosystem by harnessing our information dissemination capabilities.

### Activities That Contribute to Preservation of the Ecosystem

As a company providing ICT services, we are working on contribution activities that harness our information dissemination capabilities. As with the portal site “Midori no goo” that makes it possible to contribute to environmental protection by using it, we are working to disseminate information and support information exchanges for raising greater awareness about the importance of the ecosystem among society.



### “Midori no goo”

From August 21, 2007, NTT Resonant began donating part proceeds from users using the “Midori no goo” service to environment conservation groups involved in addressing environmental issues. To date it has donated 58,790,000 yen to 46 environment conservation groups, including FoE Japan, the Wild Bird Society of Japan, the National Land Afforestation Promotion Organization, and the Nature Conservation Society of Japan to help support their conservation activities. (As of March 31, 2021) “Midori no goo” is endorsed by 59 companies and their employees, who are making extensive use of the service within those companies.

Lifestyle-related columns include write-ups about enjoying natural lifestyles, details on nature experiences and outdoor activities, and information about how to coexist with Japan’s beautiful and abundant nature. Content related to learning about nature and the environment includes features of a wide range of natural environments, information on environmental approvals, environmental terminology, and more.



### NTT Ltd.

#### Monitoring System to Protect South African Rhinoceroses from Poaching

It is feared that rhinoceroses will become extinct by the year 2025. To prevent their becoming extinct due to poaching, NTT Ltd. is implementing ICT infrastructure that monitors and tracks the movements of people in the rhino habitat. This provides safe havens for the rhinoceroses, without putting them under stress.

# NTT Group Disclosures in Line with TCFD Recommendations

In May 2020, the NTT Group declared its support for Task Force on Climate-Related Financial Disclosures (TCFD) established by the Financial Stability Board (FSB), and in its sustainability report of the same year, began disclosing information related to eleven items recommended in the TCFD declaration.

The results of scenario analysis conducted on the impact that climate change will have on the NTT Group in the future revealed various risks, particularly those related to policies, regulations and social demand aimed at transitioning toward a decarbonized society. To address these risks, the NTT Group established the new environment and energy vision “NTT Green Innovation toward 2040” with the aim of reducing emissions by 80% by 2030 and becoming carbon neutral by the year 2040, by increasing development and use of renewable energy sources and rolling out IOWN to significantly reduce power consumption and alleviate the impact of these risks. The NTT Group will be focusing on resilience linked to growing its own businesses, while also helping to resolve social issues caused by climate change and develop a sustainable society by providing services that contribute to carbon neutrality.

Item	Details																						
<p><b>Governance</b></p> <p>a. Supervision system for directors</p> <p>b. Role of executives</p>	<p>The NTT Group recognizes that environmental issues are one of the most important challenges for management, and items of particular importance such as creating environmental targets for the entire group are decided based on discussions held with directors. An example that highlights this is NTT’s environment and energy vision “NTT Green Innovation toward 2040” announced in September 2021—this was established following discussions with all directors, including outside directors, held three times throughout the fiscal year. The Board of Directors made the decision in November 2021 to include non-financial KPIs such as GHG emissions into the business plans of each group company, with those attainment levels to be reflected in the compensation of directors as critical indicators.</p> <p>The supervision system for directors consists of the Sustainability Committee (chaired by the President) established in November 2021 directly under the Board of Directors, with the Green Innovation Committee established as an internal unit under the Sustainability Committee. The Global Environmental Protection Promotion Committee had previously managed and implemented environmental activities policies and their progress across the entire group, but these functions will be transferred to the Green Innovation Committee moving forward, to create a system where policies related to sustainability (the Charter and creating and abolishing accompanying policies, particularly deciding critical indicators) will be decided by the Board of Directors via the Sustainability Committee, and other matters will be decided by the Executive Officers Meeting. The role of the senior executives is to identify environmental issues and risks, and promoting businesses while taking into consideration these situations.</p>																						
<p><b>Strategy</b></p> <p>a. Specific risks and opportunities</p> <p>b. Impact on businesses, strategy and financial planning</p> <p>c. Resilience of strategy</p>	<p>The NTT Group carried out scenario analysis based on its own processes for selecting key environmental issues. The results revealed various risks, particularly those related to policies, regulations and social demand aimed at transitioning toward a decarbonized society. To combat these risks, the medium-term management strategy was revised with a focus on addressing environmental issues as a key priority. These will be linked to businesses via activities such as “Enhancement of corporate value through ESG initiatives,” “Reducing power consumption with innovation such as IOWN,” and “Developing and expanding the use of renewable energy,” to help develop a sustainable society.</p> <div style="border: 1px solid black; padding: 5px;"> <p><b>Risks Identified with Scenario Analysis</b></p> <ul style="list-style-type: none"> <li>■ Increase in costs for decarbonization and renewable energy charges</li> <li>■ Criticism related to fewer efforts toward ESG</li> <li>■ Increase in natural disasters such as heavy rain and flooding</li> <li>■ Increases in air-conditioning and other electricity costs</li> </ul> <p><b>Response measures (Environment and Energy Vision “NTT Green Innovation toward 2040”)</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="background-color: #e0f2f1;">Green of ICT</th> <th style="background-color: #e0f2f1;">Green by ICT</th> </tr> </thead> <tbody> <tr> <td style="vertical-align: top;"> <ul style="list-style-type: none"> <li>■ Reduction of power consumption by introducing IOWN technologies</li> <li>■ Developing and expanding the use of renewable energy, etc.</li> </ul> </td> <td style="vertical-align: top;"> <ul style="list-style-type: none"> <li>■ Acceleration of DX and promotion of Remote World</li> <li>■ New services that contribute to carbon neutrality</li> <li>■ Green electricity retail, etc.</li> </ul> </td> </tr> </tbody> </table> <p style="text-align: right; font-size: small; color: #0070c0;">To business strategy opportunities</p> </div>	Green of ICT	Green by ICT	<ul style="list-style-type: none"> <li>■ Reduction of power consumption by introducing IOWN technologies</li> <li>■ Developing and expanding the use of renewable energy, etc.</li> </ul>	<ul style="list-style-type: none"> <li>■ Acceleration of DX and promotion of Remote World</li> <li>■ New services that contribute to carbon neutrality</li> <li>■ Green electricity retail, etc.</li> </ul>																		
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<p><b>Risk Management</b></p> <p>a. Risk identification, assessment processes</p> <p>b. Risk management processes</p> <p>c. Integration into overall risk management</p>	<p>The NTT Group strives to minimize the impact of losses that could result from the materialization of risk by anticipating and preventing the occurrence of potential risks, and has established Risk Management Regulations with the aim of defining fundamental policies concerning risk management. The Business Risk Management Committee has also been established, chaired by the representative director and senior executive vice president. The Committee takes a 2-pronged approach by analyzing risks from their degree of influence on business operations and frequency of occurrence, and identifies risks with the potential to have the greatest impact as material risks. The degree of impact that climate change will have is also analyzed by the degree of influence on business operations and frequency of occurrence, and as such, measures to tackle climate change like reducing greenhouse gas emissions were identified as a material risk.</p> <p>Should the NTT Group’s efforts to tackle climate change or disclosure of related information be viewed as lacking, there is the possibility that it could affect business management due to an insufficient level of understanding amongst customers, partner shareholders, employees, the local community, and other stakeholders. Furthermore, there could also be an increase in costs if new laws and regulations are enacted or intensified, which has the possibility of impacting business performance and financial conditions. In light of such risks, the NTT Group responded by holding discussions three times throughout the fiscal year involving all directors, including outside directors, to establish the environment and energy vision “NTT Green Innovation toward 2040,” by announcing in September 2021 the NTT Group’s commitment to measures aimed at addressing environmental issues. Looking ahead, the Green Innovation Committee operating under the Sustainability Committee will manage related processes and progress, and coordinate with the Business Risk Management Committee to integrate efforts with overall risk management and operate a PDCA cycle.</p>																						
<p><b>Metrics and Targets</b></p> <p>a. Metrics</p> <p>b. Actual GHG emissions</p> <p>c. Targets and actual results</p>	<p>The NTT Group has set the target of an 80% reduction in Scope 1 + 2 by fiscal 2030 (compared to fiscal 2013 levels), with the aim of becoming carbon neutral by the year 2040. This target was subsequently approved as the 1.5°C level by SBT in December 2021. Of electricity purchased during fiscal 2020, switching to renewable energy sources for more than 1.2 billion kWh (approx. 11% of purchased electricity) used by the entire group reduced greenhouse gas emissions by 3.99 million tons, a reduction of 14% compared to FY2013 levels. Scope 3 emissions in fiscal 2020 were 22.23 million t, a 5% reduction compared year-on-year<sup>1</sup>. Furthermore, in addition to these targets, various metrics like EP100 and EV100 were incorporated into group company business plans, highlighting the commitment of the entire group for tackling climate change.</p> <div> <table border="1" style="width: 100%; border-collapse: collapse; font-size: small;"> <caption>GHG emissions (Scope 1,2)</caption> <thead> <tr> <th>Year</th> <th>Results</th> </tr> </thead> <tbody> <tr> <td>2013</td> <td>4.65 million tons</td> </tr> <tr> <td>2018</td> <td>4.72 million tons</td> </tr> <tr> <td>2019</td> <td>4.61 million tons</td> </tr> <tr> <td>2020</td> <td>3.99 million tons (-14% year-on-year)</td> </tr> <tr> <td>2030 Target</td> <td>0.95 million tons</td> </tr> <tr> <td>2040 Target</td> <td>Carbon Neutral</td> </tr> </tbody> </table>   <table border="1" style="width: 100%; border-collapse: collapse; font-size: small;"> <caption>GHG emissions (Scope 3)</caption> <thead> <tr> <th>Year</th> <th>Results</th> </tr> </thead> <tbody> <tr> <td>2018</td> <td>2,363 ten thousand tons</td> </tr> <tr> <td>2019</td> <td>2,350 ten thousand tons</td> </tr> <tr> <td>2020</td> <td>2,223 ten thousand tons (-5% y-o-y)</td> </tr> </tbody> </table> </div> <p><sup>1</sup> Estimated based on the Ministry of the Environment’s “Basic Guidelines on Accounting for Greenhouse Gas Emissions Throughout the Supply Chain.”</p>	Year	Results	2013	4.65 million tons	2018	4.72 million tons	2019	4.61 million tons	2020	3.99 million tons (-14% year-on-year)	2030 Target	0.95 million tons	2040 Target	Carbon Neutral	Year	Results	2018	2,363 ten thousand tons	2019	2,350 ten thousand tons	2020	2,223 ten thousand tons (-5% y-o-y)
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NTT Group Disclosures in Line with TCFD Recommendations

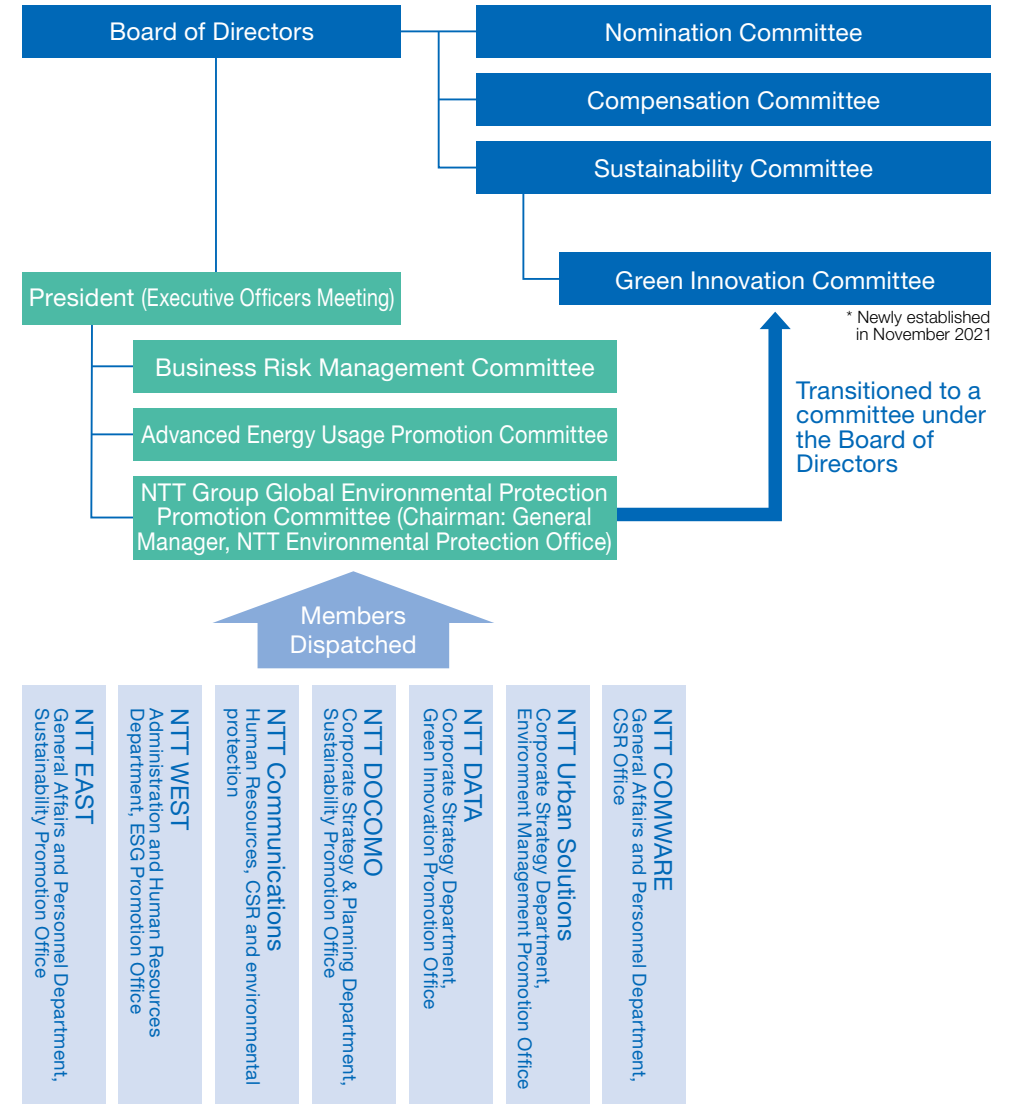
# Environmental Management

The NTT Group recognizes that environmental issues are one of the most important challenges for management, and items of particular importance are decided based on discussions held with directors. An example that highlights this is the new environment and energy vision “Green Innovation toward 2040” announced in September 2021 – this was established following a decision made by the Board of Directors involving discussions with all directors, including outside directors, held three times throughout the fiscal year. In addition to incorporating greenhouse gas emissions into the business plans of each group company, attainment levels will be reflected in the compensation of directors as critical indicators.

[>> Non-financial KPI performance evaluations](#)

The supervision system for directors also consists of the Sustainability Committee (chaired by the President) established in November 2021 directly under the Board of Directors, with the Green Innovation Committee established as an internal unit under the Sustainability Committee. The Global Environmental Protection Promotion Committee had previously managed and implemented environmental activities policies and their progress across the entire group, but these functions will be transferred to the Green Innovation Committee moving forward. Under this system, policies related to sustainability (the Charter and creating and abolishing accompanying policies, particularly deciding critical indicators) will be decided by the Board of Directors via the Sustainability Committee, and other matters deemed important will be decided by the Executive Officers Meeting. The role of the senior executives is to identify environmental issues and risks, and promoting businesses while taking into consideration these situations. The Global Environmental Protection Promotion Committee is chaired by the NTT executive vice president, who is the head of NTT’s Environmental Protection Office (Head of Research and Development Planning), with membership comprising the heads of the environmental departments at major Group companies. This committee met twice a year to raise suggestions for the basic policy related to environmental conservation such as developing the Environment and Energy Vision, as well as manage targets and resolve issues.

As electricity usage accounts for more than 90% of the NTT Group’s greenhouse gas emissions, the committee also coordinates efforts with the Advanced Energy Usage Promotion Committee (chairperson: Vice President), responsible for managing the NTT Group’s energy conservation activities (Total Power Revolution [TPR] campaign), to develop plans for reducing electricity consumption as well as managing implementation and progress.



NTT Group Disclosures in Line with TCFD Recommendations

# Scenario Analysis

The NTT Group formulated the medium-term management plan “Your Value Partner 2025” to resolve social issues by advancing digital transformation through the Group’s business activities. Under the keywords “Your Value Partner,” we are working to achieve this plan by utilizing the Group’s management resources and capabilities, such as R&D, ICT infrastructure, and personnel as well as collaborating with partners.

In accordance with TCFD recommendations, we used two scenarios to identify risks and opportunities involved in the Group’s operations based on climate change: the first scenario limiting the increase in average temperatures at below 2°C from before the industrial revolution (2°C Scenario); and the second scenario where temperatures will increase by almost 4°C with measures to combat global warming maintained at existing levels (4°C Scenario).

Applying NTT Group’s selection process for identifying key issues to the 2°C scenario revealed transition risks associated with policies, regulations, and social demand aimed at transitioning to a decarbonized society. The 4°C scenario is also likely to bring about physical risks including those required for responding to frequent or more intense heavy rain and flooding, as well as increasing electricity costs due to severe temperature increases. In contrast, increased demand for cutting greenhouse gas emissions and switching to renewable energy sources as society as a whole moves toward decarbonization is thought to present an opportunity for the NTT Group as it will be able to provide a range of ICT services that help achieve carbon neutrality. Details of each risk and the degree of impact they may have, as well as the results of analysis and assessment of the growth opportunities arising from addressing each of these risks are outlined below.

[>> Key Issues Identification Process](#)

## STEP1 Scenario Definitions

Scenario	Overview	Reference Methodology for Scenario
Transition Risk Scenario	Scenario in which the decarbonization of society is achieved rapidly..... a future in which the target increase of below 2°C (1.5°C) has been attained	IEA WORLD ENERGY MODEL DOCUMENTATION 2019
Physical Risk Scenario	Scenario in which physical risks materialize..... a future in which the average temperature has risen by 4°C	IPCC Fifth Assessment Report, Synthesis Report on Observations, Projections and Impact Assessments of Climate Change, 2018

## STEP2 Risks and Opportunities Identified with Scenario Analysis (Overview)

Overview	2°C*1 Scenario	4°C*1 Scenario	Type	Timeframe*2	Response
Increase in costs for decarbonization and renewable energy charges	<b>Loss</b> ▼▼	—	Transition risk (policies, regulations)	Long-term	<ul style="list-style-type: none"> <li>Initiatives for realizing the IOWN concept</li> <li>Introducing and expanding the use of renewable energy</li> <li>Promotion of energy conservation, high-efficiency data centers</li> </ul>
Social criticism related to fewer efforts toward ESG (drop in market share)	▼	Minor	Transition risk (market, criticism)	Long-term	<ul style="list-style-type: none"> <li>Proactive disclosure of information on environmental initiatives</li> </ul>
Expanding sales of services that help reduce society’s environmental impact	▲▲	<b>Profit</b> ▲	Opportunity (products and services, energy)	Long-term	<ul style="list-style-type: none"> <li>Creating new services that contribute to carbon neutrality</li> <li>Increase in green electricity retail</li> </ul>
Achieve the IOWN concept	▲▲	▲	Opportunity (investment toward R&D)	Long-term	<ul style="list-style-type: none"> <li>Acceleration of DX and promotion of Remote World</li> <li>Reduction of greenhouse gases across the entire supply chain</li> </ul>
Disasters caused by heavy rain and typhoons	Minor	▼	Physical risk (acute)	Short-term	<ul style="list-style-type: none"> <li>Provide disaster response and disaster prevention training</li> </ul>
Increased air-conditioning costs due to increasing temperatures	Minor	▼	Physical risk (chronic)	Long-term	<ul style="list-style-type: none"> <li>Promoting energy conservation</li> </ul>

\*1 Degree of impact with 2°C scenario and 4°C scenario in FY2030

\*2 Timeframes refer to Short-term (less than 3 years), Medium-term (3-6 years), Long-term (6 years or more). Degree of impact expressed in 3 levels (▲, Low; ▲▲, Medium; ▲▲▲, High)

NTT Group Disclosures in Line with TCFD Recommendations

# Strategy

## STEP3 Response to Risks and Growth Opportunities (2°C Scenario)



<b>Risk Outline</b>	<b>Increase in costs for decarbonization and renewable energy charges</b>	
<b>Type</b>	Transition risk (policies, regulations)	
<b>Timeframe</b>	Long-term	
<b>Risk Details</b>	<p>The NTT Group uses more than 8 billion kWh of electricity each year to operate its telecommunications facilities in Japan, and this figure is expected to increase moving forward as data-driven society gains momentum. As society approaches decarbonization, renewable energy charges due to greater use of renewable energy and carbon tax systems will have a significant impact on the NTT Group's businesses. The Act on Special Measures concerning the Procurement of Renewable Electric Energy by Operators of Electric Utilities, which came into force in July 2012, stipulates that renewable energy charges due to the feed-in tariff will be recovered from users through a surcharge on electricity charges. Electricity prices were also raised in October of the same year on the use of all fossil fuels as part of measures to combat global warming. Carbon taxes aimed at achieving decarbonization of society as a whole are also already being introduced by governments in many countries and regions, and there are concerns about ever-increasing prices, as highlighted by the ten-fold increase in prices within the EU in five years.</p>	
<b>Response to Risks and Growth Opportunities</b>	<p>In September 2021, the NTT Group unveiled the new environment and energy vision, "NTT Green Innovation toward 2040" aimed at achieving zero environmental impact while continuing economic growth, by reducing the environmental impact of our business activities and creating breakthrough innovation. In accordance with this Vision, the following initiatives will be implemented with the aim of reducing emissions by 80% by 2030 and becoming carbon neutral by the year 2040*1, to alleviate the impact of carbon taxes and associated risks.</p> <p>Key initiatives toward becoming carbon neutral by 2040</p> <ul style="list-style-type: none"> <li>(1) Increase the use of renewable energy, to reduce greenhouse gas emissions by 45%</li> <li>(2) Lower energy consumption with IOWN technologies, to reduce greenhouse gas emissions by 45%</li> <li>(3) Reduce greenhouse gas emissions by 10% with ongoing energy conservation initiatives</li> </ul> <p>Meanwhile, increasing demand for switching to renewable energy sources as society as a whole moves toward decarbonization will present an opportunity for the NTT Group.</p> <p>In addition to reducing our own environmental impact (Green of ICT), the Environment and Energy Vision also covers initiatives to reduce the environmental impact of society (Green by ICT) by providing services that help to achieve carbon neutrality. An example that highlights this is the planned green electricity retail, where renewable energy sources developed by NTT Group are not only used within the company but also made available to customers. As companies seek to cut their greenhouse gas emissions, they will switch from on-site data centers to cloud-based data centers that have a higher energy efficiency. This is expected to increase demand for such services, and the increased use of high-efficiency data centers is another area that presents an opportunity for the NTT Group.</p>	<ul style="list-style-type: none"> <li>&gt;&gt; <a href="#">[Feature 1] Environment and Energy Vision NTT Green Innovation toward 2040</a></li> <li>&gt;&gt; <a href="#">Business Activity 3 Developing and expanding the use of renewable energy</a></li> <li>&gt;&gt; <a href="#">Business Activity 2 Reduction of power consumption by introducing IOWN technologies</a></li> <li>&gt;&gt; <a href="#">Business Activity 4 Providing new services that contribute to carbon neutrality</a></li> <li>&gt;&gt; <a href="#">Business Activity 1 Promoting energy conservation</a></li> </ul>

\*1 Compared to FY2013 (GHG Protocol: for Scope 1 and 2)

NTT Group Disclosures in Line with TCFD Recommendations

# Strategy

## STEP3 Response to Risks and Growth Opportunities (2°C Scenario)

<b>Risk Outline</b>	<b>Social criticism related to fewer efforts toward ESG (drop in market share)</b>							
<b>Type</b>	Transition risk (market, criticism)							
<b>Timeframe</b>	Long-term							
<b>Risk Details</b>	<p>The NTT Group provides a comprehensive range of ICT services, including NW services and data centers. It is focusing efforts on cutting greenhouse gas emissions through increased use of ICT services, such as accelerating efforts toward DX for business operations, promoting Remote World including TV conference systems, and other forms of energy management systems.</p> <p>As awareness of issues related to climate change increase and there societal preferences toward companies making efforts to tackle climate change, there is the risk of decreased revenue and profits due to a drop in market share if the company is seen as lagging behind its competitors with respect to climate-related awareness. And should greenhouse gas emissions increase as a result of expanding business faster than energy-efficiency initiatives can cut down those emissions, stakeholders may view the NTT Group as lacking in its motivation to cut emissions and negatively affect their valuation of the company. This presents a financial risk caused by lower revenue and falling share prices as customers move to other companies.</p>							
<b>Response to Risks and Growth Opportunities</b>	<p>NTT Group will help develop a sustainable society by implementing the following initiatives to achieve carbon neutrality by 2040:</p> <ul style="list-style-type: none"> <li>(1) Expanding the use of renewable energy</li> <li>(2) Reduction of power consumption by introducing IOWN technologies</li> <li>(3) Ongoing energy conservation initiatives</li> </ul> <p>The NTT Group is also proactive in disclosing information to stakeholders, with proactive disclosure of information on environmental initiatives and through general meetings of shareholders and engaging in dialogue with stakeholders. In fiscal 2020, the NTT Group acquired the highest A List rating by CDP, the Carbon Disclosure Project. It also announced its environment and energy vision, “NTT Green Innovation toward 2040” in September 2021, outlining a specific target for achieving carbon neutrality. Approval of that target as the 1.5°C level was received by SBT in December 2021.</p>	<p>NTT Group's greenhouse gas emissions reduction target based on 1.5°C level approved by Science Based Targets initiative</p> <p><b>Tokyo, Japan - December 3, 2021</b> - NTT Corporation (NTT) has revised its greenhouse gas (GHG) emissions reduction target in the new environment and energy vision “NTT Green Innovation toward 2040”. The Science Based Targets (SBT)<sup>1</sup> initiative approves NTT Group's FY2030 GHG reduction target based on limiting global temperature rise to no more than 1.5°C.</p> <p>The NTT Group formulated the new environment and energy vision “NTT Green Innovation toward 2040” on September 28, 2021. The NTT Group aims to reduce GHG emissions by 80% (carbon neutrality for mobile and data centers sectors) by FY2030 and to be carbon-neutral by FY2040.</p> <p>With respect to Scope 1 (direct emissions by businesses, such as fuel combustion) and Scope 2 (indirect emissions from the use of electricity, heat and steam supplied by other companies), we have raised the NTT Group's FY2030/31 GHG emissions reduction target from 30% (Well-below 2°C level, approved in 2020) to 80% (1.5°C level), and is approved by the SBT initiative.</p>   <p><b>DRIVING AMBITIOUS CORPORATE CLIMATE ACTION</b></p> <table border="1"> <thead> <tr> <th colspan="2">NTT Group's GHG emissions reduction targets</th> </tr> </thead> <tbody> <tr> <td>Scope 1 and 2</td> <td>80% reduction by FY2030/31 from a FY2018/19 base year (1.5°C level)</td> </tr> <tr> <td>Scope 3<sup>3</sup></td> <td>15% reduction by FY2030/31 from a FY2018/19 base year</td> </tr> </tbody> </table> <p>For the benefit of society, the NTT Group will step up its efforts to achieve carbon neutrality to society and contribute to the Japanese government's targets of reducing GHG emissions by 46% in FY2030 from FY2013 levels and achieving carbon neutrality by 2050.</p> <p><small>1 Scientifically based greenhouse gas emission reduction targets for corporates in accordance with the Paris Agreement. The SBT initiative, a climate change initiative led by the United Nations Global Compact (UNGC), the CDP (formerly the Carbon Disclosure Project), the World Resources Institute (WRI), and the World Wide Fund for Nature (WWF), designates the targets.</small></p> <p><small>2 NTT Group's New Environment and Energy Vision “NTT Green Innovation toward 2040” <a href="https://group.ntt/en/news/essse/2021/09/28/210283.html">https://group.ntt/en/news/essse/2021/09/28/210283.html</a></small></p> <p><small>3 Scope 3: Indirect emissions other than Scope 1 and Scope 2 (emissions in the supply chain related to business activities)</small></p>	NTT Group's GHG emissions reduction targets		Scope 1 and 2	80% reduction by FY2030/31 from a FY2018/19 base year (1.5°C level)	Scope 3 <sup>3</sup>	15% reduction by FY2030/31 from a FY2018/19 base year
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NTT Group Disclosures in Line with TCFD Recommendations

# Strategy

## STEP3 Response to Risks and Growth Opportunities (2°C Scenario)

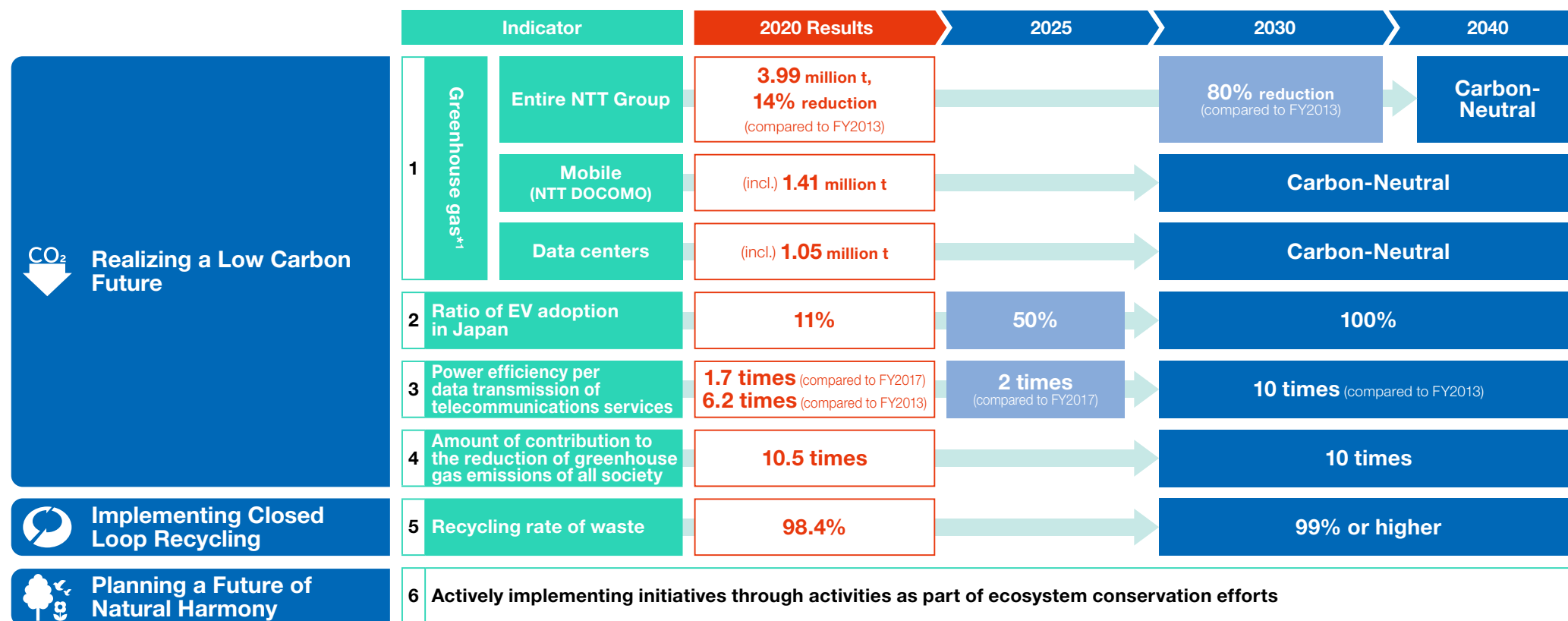
<b>Risk Outline</b>	<b>Disasters caused by heavy rain and typhoons</b>
<b>Type</b>	Physical risk (acute)
<b>Timeframe</b>	Short-term
<b>Risk Details</b>	The NTT Group supports society and business activities through its telecommunications networks and information systems. In addition, the NTT Group provides a multitude of services that serve as necessary lifelines that ensure people’s safety in their everyday lives. Earthquakes, tsunamis, typhoons, floods, and other natural disasters may cause disruptions to business operations, and present a risk in providing reliable services. The NTT Group may also be held liable for related damages, potentially damaging the NTT Group’s credibility and corporate image.
<b>Response to Risks and Growth Opportunities</b>	<p><b>Provide disaster response and disaster prevention training</b></p> <p>To reduce the risk of service interruptions due to natural disasters, the NTT Group is working to strengthen the resilience of our equipment and ensure early restoration of telecommunications services by expanding base stations equipped to deal with disasters, deploying and enhancing the functions of mobile power supply vehicles, portable satellite equipment, and other mobile equipment as well as participating in disaster drills held in the respective regions. NTT’s telecommunications equipment and buildings are designed to withstand natural disasters. For example, our facilities are equipped with flood doors and other defenses according to their location to prevent the inundation of telecommunications equipment. Customers also face the same risk of natural disasters and system failures, and an increase in demand for BCP-related ICT services is expected as they also will seek appropriate contingencies. The NTT Group is focusing on the development of smart grids based on battery farms, to contribute to local production and consumption of energy.</p>
<b>Risk Outline</b>	<b>Increased air-conditioning costs due to increasing temperatures</b>
<b>Type</b>	Physical risk (chronic)
<b>Timeframe</b>	Long-term
<b>Risk Details</b>	The NTT Group owns a large number of communications buildings and data centers in Japan and abroad. The equipment used at our telecommunications facilities and data centers is set to operate within a specific range of temperatures. Those exceeding this range could cause equipment shutdowns and failures. For this reason, we maintain room temperatures within a certain range, including through the use of air conditioners. When ambient temperature rises, the energy efficiency of air conditioners declines and that in turn raises electricity consumption.
<b>Response to Risks and Growth Opportunities</b>	<p><b>Promoting energy conservation</b></p> <p>We have been pursuing measures for reducing electricity usage related to air conditioning equipment to minimize the increase in operating costs. Specifically, we operate air conditioner optimal control systems that save energy. We have installed wireless temperature sensor modules that automatically control the air conditioners in response to temperatures detected by the sensors. We also seek to conserve electricity by maintaining appropriate temperature settings for air conditioners, by installing diffusers and blank panels to release exhaust heat from equipment, and by efficiently laying out double flooring to improve airflow and prevent hotspots.</p> <p style="text-align: right;"><a href="#">&gt;&gt; Business Activity 1 Promoting energy conservation</a></p>

NTT Group Disclosures in Line with TCFD Recommendations

# Metrics and Targets

In accordance with the NTT Group's selection process for identifying key issues, key performance indicators (KPIs) have been established for verifying the practicality and effectiveness, and monitoring progress of initiatives covered by the three challenges of "Ensuring the positive coexisting of nature and humanity."

[>> Key Issues Identification Process](#)



Disclosure Boundary

Boundary [C]: Greenhouse gas (No. 1), Amount of contribution to the reduction of greenhouse gas emissions of all society (No. 4)

Boundary [B]: Ratio of EV adoption in Japan (No. 2), Resource recycling rate (No. 5)

The telecommunications businesses subject to the calculation for power efficiency per data transmission of telecommunications services are the six domestic businesses of the telecommunications business segment appearing in our Annual Report (NTT East, NTT West, NTT Communications, NTT DOCOMO, and NTT DATA)

\*1 GHG Protocol: for Scope 1 and 2

NTT Group Disclosures in Line with TCFD Recommendations

# Greenhouse Gas Emissions

The NTT Group's emissions across its entire supply chain in fiscal 2020 was 26.21 million tons, a reduction of 1.89 million tons (7%) compared to the previous year. More than 1.2 billion kWh of renewable energy (approx. 11% of purchased electricity) was made available during fiscal 2020, resulting in Scope 1 + 2 emissions of 3.99 million tons, a reduction of 6.2 million tons (13%) compared to the previous year. Scope 3 emissions for fiscal 2020 were 22.23 million tons, a reduction of 5% compared to the previous year (estimated based on the Ministry of the Environment's "Basic Guidelines on Accounting for Greenhouse Gas Emissions Throughout the Supply Chain").

Due to the very nature of the NTT Group's businesses, greenhouse gas emissions arising from the supply chain (Scope 3) are much higher than direct emissions from the group's own activities (Scope 1+2), and measures will be implemented to reduce such emissions from across the entire supply chain. The NTT Group will revise its own Guidelines for Green Procurement to achieve more effective reductions through fiscal 2021.

[>> Guidelines for Green Procurement](#)

### Amount of greenhouse gas from entire supply chain (Scope 1, 2, 3)

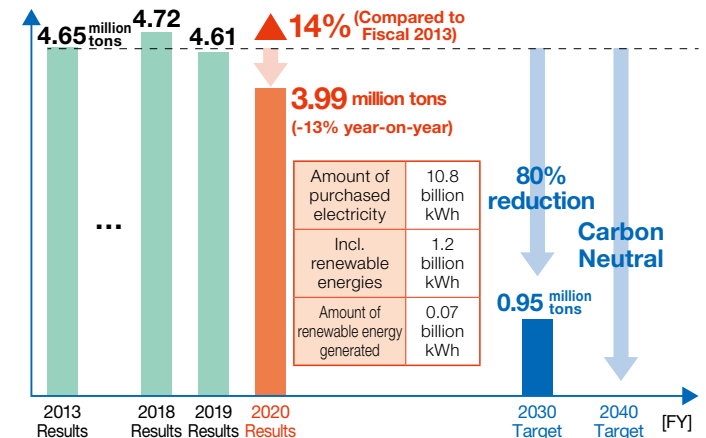
Scope, Category	Scope and method of calculation	Emissions (ten thousand tons)		
		Fiscal 2018	Fiscal 2019	Fiscal 2020
GHG emissions	—	2,835	2,811	2,621
Scope 1 (direct emissions)	—	25	25	24
Scope 2 (indirect emissions from energy use)	—	447	436	375
Scope 3 (indirect emissions from the value chain)	—	2,363	2,350	2,223
Category 1 Purchased goods and services	Calculation based on the number of units and monetary value of purchases of devices and services sold to customers	741	599	624
Category 2 Capital goods	Calculation based on capital investment costs on telecommunications and other equipment	591	628	554
Category 3 Fuel- and energy-related activities not included in Scope 1 or 2	Calculation based on annual consumption by energy type	38	60	61
Category 4 Upstream transportation and distribution	Calculation based on weight and distance, or number of devices with regard to the transport of devices sold to customers	8	5	8
Category 5 Waste generated in operations	Calculation based on volume of waste by type	1	1	1
Category 6 Business travel	Calculation based on paid expenses for business travel	10	19	4
Category 7 Employee commuting	Calculation based on paid expenses for employee commuting	6	7	3
Category 8 Upstream leased assets*1	Excluded from calculation*1	—	—	—
Category 9 Downstream transportation and distribution*2	Excluded from calculation*2	—	—	—
Category 10 Processing of sold products*3	Excluded from calculation*3	—	—	—
Category 11 Use of sold products	Calculation based on number of service subscriptions, number of devices and monetary value of telecommunications services and devices used by customers	706	735	668
Category 12 End-of-life treatment of sold products	Calculation based on number of service subscriptions, number of devices and monetary value of communications devices used by customers	5	5	4
Category 13 Downstream leased assets	Calculation based on amount of electricity consumption such as equipment by other businesses Calculation based on average use of leased assets	87	75	74
Category 14 Franchises	Calculation based on total floor area of sales franchises	11	9	8
Category 15 Investments	Calculation based on Scope 1 and 2 emissions of investees in proportion to shareholding	159	207	214

\*1 We have excluded Category 8 (upstream leased assets) from the calculation because the fuel and electricity used by leased assets is included in Scope 1 and 2 calculations.

\*2 We have excluded Category 9 (downstream transportation and distribution) from the calculation because these emissions are almost entirely from our own transportation and use in our own facilities (included in Scope 1 and 2) or from outsourced transportation (included in Category 4).

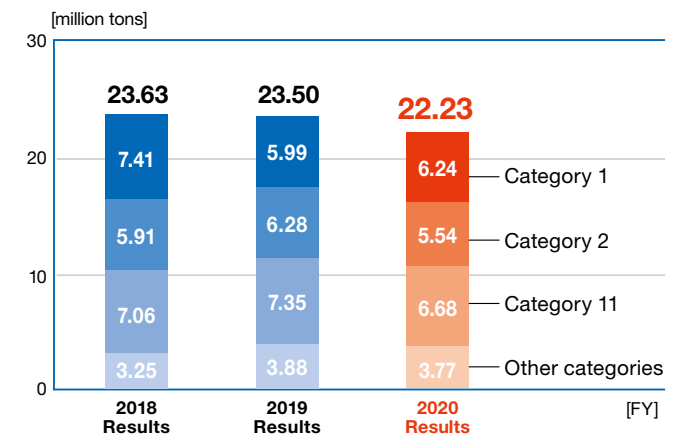
\*3 We have excluded Category 10 (processing of sold products) from the calculation because our main businesses involve no processing of intermediate products.

### Greenhouse Gas Emissions (Scope 1, 2)



Amount of purchased electricity	10.8 billion kWh
Incl. renewable energies	1.2 billion kWh
Amount of renewable energy generated	0.07 billion kWh

### Greenhouse Gas Emissions (Scope 3)



#### Change in calculation method

Calculations for Category 1 and Category 2 in FY2019 used emission intensity defined by the Ministry of the Environment, but for FY2020 emission intensity of each company is used for some supplier (calculated from figures released by each company), to factor in reduction efforts by each supplier.

NTT Group Disclosures in Line with TCFD Recommendations

# Reduction of Greenhouse Gas Emissions across Society and Power Efficiency of the Telecommunications Business

## Reduction of Greenhouse Gas Emissions across Society

The NTT Group has established a target for fiscal 2030 calling for it to contribute to reducing greenhouse gas emissions of society as a whole by at least 10 times more than the NTT Group's own emissions through its services and technologies. This target is intended to contribute to the reduction of greenhouse gas emissions across society by providing ICT services and technologies while curbing greenhouse gas emission amounts from our own business activities. The use of information communication, which is expanding each year through the spread of smartphones and high-speed and large-capacity networks, requires energy. On the other hand, by improving efficiency and reduction of goods through digitalization, the use of information also contributes to the reduction of greenhouse gas emissions across society by reducing environmental load more than the energy consumption it requires.

\* The reduction of greenhouse gas emissions across society quantifies the energy savings effects obtained through ICT services using greenhouse gas volume. The energy saving effect is quantified with references to the Telecommunication Technology Committee (TTC) Standard "Methodology for the assessment of the environmental impact of information and communication technology goods, networks and services (JT-L1410)" and the calculation method specified by the "LCA of Information and Communication Technology (ICT) business organizations" research group of the Life Cycle Assessment Society of Japan.

\* The effects of energy savings obtained through the introduction of ICT services include, for example, reduced electricity usage by homes, companies and factories from energy management, alleviation of traffic congestion using analysis of congestion and operation information, and reduced electricity usage from the streamlining and optimization of transportation schedules.

\* The amount of greenhouse gas emissions for the NTT Group includes the emissions from facilities necessary for other telecommunication carriers and data centers to provide their services.

## Power Efficiency of the Telecommunications Business

The NTT Group has established the target for fiscal 2030 to improve the power efficiency per data transmission in our telecommunications business to at least 10 times higher\*<sup>1</sup> than in fiscal 2013\*<sup>1</sup>. Electricity is essential to the continuity of the telecommunications business and it also accounts for more than 90% of the NTT Group's greenhouse gas emissions. We set this target because improving the efficiency of using electricity both reduces the risk of business disruptions and helps mitigate climate change. We are introducing highly energy efficient equipment and improving the efficiency of network structures based on our Energy Efficiency Guidelines.

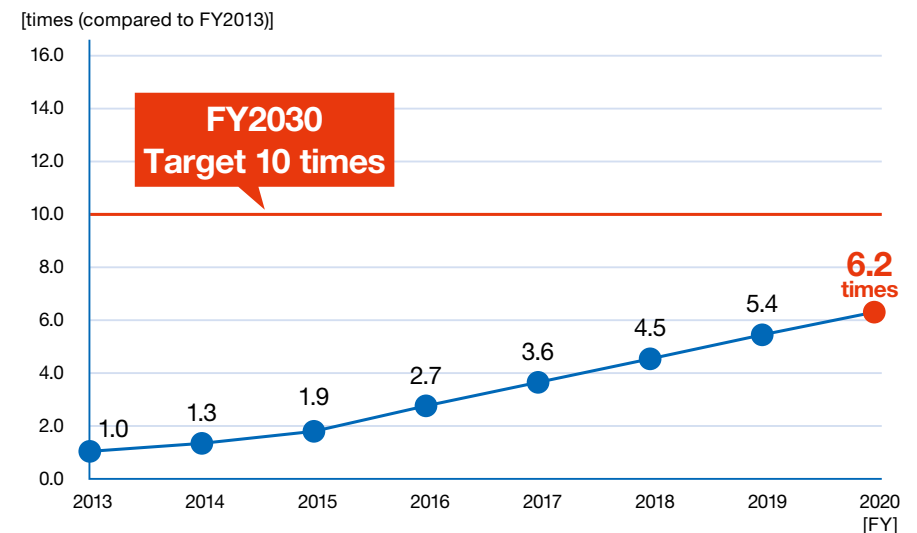
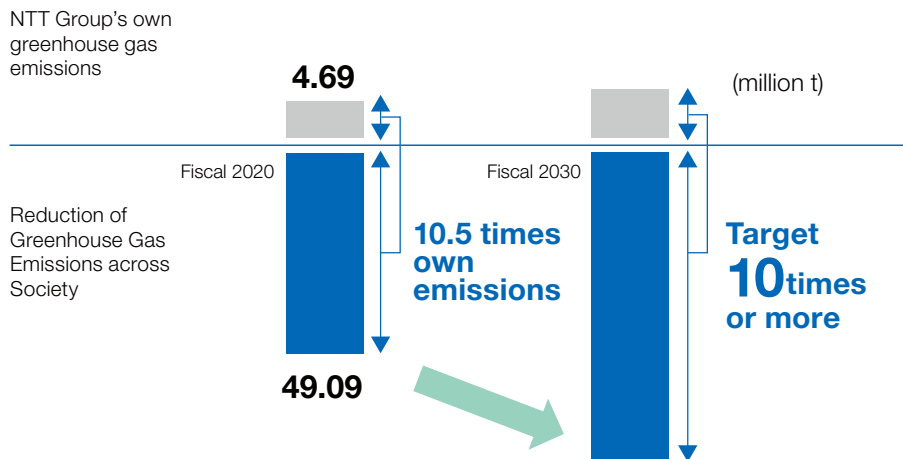
[>> Energy Efficiency Guidelines](#)

In October 2018, NTT became the first telecommunications carrier in Japan to join the EP100\*<sup>2</sup> international initiative on energy efficiency led by The Climate Group. By participating in such an international initiative, we intend to publicly declare the NTT Group's commitment to the environment and express our stance on international environmental issues.

\*<sup>1</sup> The telecommunications businesses subject to the calculation for power efficiency are the domestic businesses of the five telecommunications business segment appearing in our Annual Report (NTT East, NTT West, NTT Communications, NTT DOCOMO, and NTT DATA).

\*<sup>2</sup> An international initiative comprising companies pledging to double the energy efficiency of their operations (improve energy efficiency by 50%) as participants.

## Power efficiency of the telecommunications business (improvement rate with FY2013 as benchmark)



## NTT Group Disclosures in Line with TCFD Recommendations

## Environmental Performance Data (Realizing a Low Carbon Future)

		Unit	FY2016	FY2017	FY2018	FY2019	FY2020	
Status of ISO 14001 Certification Acquisition (employee coverage)		%	47.1	47.9	45.1	46.5	49.5	
		Unit	FY2016	FY2017	FY2018	FY2019	FY2020	
Direct Greenhouse Gas Emissions (Scope 1)		million tons of CO <sub>2</sub>	0.19	0.185	0.164	0.138	0.131	
Indirect Greenhouse Gas Emissions (Scope 2)* <sup>2</sup>		million tons of CO <sub>2</sub>	4.40	4.21	3.29 (4.14)	3.06 (3.79)	2.87 (3.57)	
CO <sub>2</sub> Emissions from Business Operations* <sup>1</sup> , * <sup>2</sup>	Total CO <sub>2</sub> emissions	million tons of CO <sub>2</sub>	4.58	4.38	3.44 (4.29)	3.19 (3.92)	2.98 (3.69)	
	Breakdown		Use of electricity	4.375	4.183	3.259 (4.115)	3.031 (3.764)	2.839 (3.544)
			Use of gas and fuel	0.134	0.135	0.118	0.101	0.096
			Use of vehicle operation	0.038	0.033	0.031	0.027	0.021
			Use of heat	0.029	0.027	0.029	0.03	0.029
Greenhouse Gas Emissions other than CO <sub>2</sub> Emissions (CO <sub>2</sub> emissions-equivalent)	Total GHG emissions other than CO <sub>2</sub>	million tons of CO <sub>2</sub>	0.018	0.016	0.016	0.011	0.014	
	Breakdown		CH <sub>4</sub> (methane)	0.002	0.003	0.002	0.002	0.002
			N <sub>2</sub> O (nitrous oxide)	0.003	0.002	0.002	0.002	0.001
			HFC	0.01	0.007	0.007	0.006	0.009
			PFC	0.003	0.003	0.004	0.0005	0.001
			SF <sub>6</sub> (sulphur hexafluoride)	0.001	0.001	0.001	0.0004	0.001
NF <sub>3</sub> (nitrogen trifluoride)	0	0	0	0	0.0			
Electric Power Consumption	Electricity purchased* <sup>2</sup>	billion kWh	8.36	8.23	6.54 (82.4)	6.59 (82)	6.67 (82.8)	
	Renewable energy, new energy consumption		0.09	0.08	0.07	0.07	0.07	
Total amount of non-renewable energy used* <sup>2</sup> , * <sup>3</sup>		billion kWh	9.36	9.2	7.43 (9.13)	7.38 (8.98)	7.41 (9.01)	
Clean Energy Generation (Solar power, wind power, etc.)		million kWh	5.204	5.822	5.858	6.764	6.33	
Number of Clean Energy Generators (Solar power, wind power, etc.)		Units	258	336	360	332	392	
Number of Low-Emission Company Vehicles (Hybrid vehicles, electric vehicles, natural gas vehicles, and methanol vehicles)		Units	2,065	2,181	2,346	1,740	2,760	
Fuel Consumption by Company Vehicles	Gasoline consumption	kl	12,545	10,631	10,111	8,767	6,646	
	Diesel consumption	kl	3,347	2,970	2,701	1,868	2,224	
	LPG/natural gas consumption	m <sup>2</sup>	12,937	30,760	39,320	52,905	63,058	

\*1 The CO<sub>2</sub> emissions from business operations exclude emissions of greenhouse gases other than CO<sub>2</sub>.

\*2 The NTT Group provides equipment and the like necessary for other telecommunications carriers and data center providers to carry out their businesses. To date, we have included the fuel and electricity required for this equipment in our disclosed emission and consumption volumes in accordance with reporting methods outlined by the Act on Promotion of Global Warming Countermeasures. However, as calculation methods have been established based on the Ministry of the Environment's Basic Guidelines on Accounting for Greenhouse Gas Emissions Throughout the Supply Chain (Ver. 2.3), we have adopted these for calculating the above CO<sub>2</sub> emissions as Scope 3. Emission amounts calculated using the previous method have been placed within parentheses. Similarly, for amounts of electricity purchased and total amount of non-renewable energy, from fiscal 2018 onward we are excluding the amount consumed by other telecommunications carriers and data center providers, and values calculated using the previous method will be placed within parentheses, and we have adopted these for calculating the above CO<sub>2</sub> emissions as Scope3 from fiscal 2019.

\*3 For the total amount of non-renewable energy used, the volume of fuels such as gasoline and utility gas consumed have been converted into Wh values and added to the amount of electricity purchased.

\* Disclosure Boundary: Boundary [B]

## NTT Group Disclosures in Line with TCFD Recommendations

## Environmental Performance Data (Implementing Closed Loop Recycling)

		Unit	FY2016	FY2017	FY2018	FY2019	FY2020		
Waste and Final Disposal Waste	Total Waste	million t	0.608	0.531	0.562	0.744	0.469		
	Recycling rate*1	%	98.8	98.6	98.9	98.7	98.4		
	Recycling	Total amount of recycling	million t	0.601	0.524	0.556	0.735	0.462	
		Breakdown	Recycled decommissioned telecommunications equipment	million t	0.24	0.22	0.176	0.146	0.14
			Recycled construction works waste	million t	0.175	0.133	0.223	0.325	0.185
			Recycled civil engineering works waste	million t	0.14	0.129	0.115	0.228	0.106
			Recycled office waste	million t	0.036	0.033	0.03	0.027	0.024
	Others		million t	0.01	0.008	0.012	0.009	0.007	
Amount of waste reduced by incineration		million t	0.001	0.001	0.001	0.001	0.001		
Amount of final disposal waste		million t	0.006	0.006	0.005	0.008	0.006		
Final Disposal Ratio*2	All waste	%	1.03	1.18	0.91	1.13	1.38		
	Recycled decommissioned telecommunications equipment	%	0.07	0.07	0.05	0.06	0.19		
Asbestos Removed from NTT Group Facilities	Total amount of asbestos removed		t	18	19	6	52	73	
	Breakdown	Buildings	t	5	4	4	19	68	
		Bridges	t	12	15	2	32	6	
Use of Water Resources	Water Use*		Million m <sup>3</sup>	12.422	12.591	12.066	11.044	9.938	
	Water Withdrawal (tap water)		Million m <sup>3</sup>	—	—	6.275	5.834	5.142	
	Volume of recycled wastewater and rainwater	Reused	Million m <sup>3</sup>	0.524	0.492	0.489	0.167	0.358	
		Reuse rate*3	%	4.2	3.9	7.2	2.8	6.5	
Virgin Pulp Consumption	Total		million t	0.019	0.017	0.014	0.012	0.008	
	Breakdown	Telephone directories	million t	0.013	0.012	0.009	0.007	0.004	
		Telegrams	million t	0.0002	0.0002	0.0002	0.0002	0.0	
		Office paper	million t	0.002	0.002	0.002	0.002	0.001	
		Billing statements	million t	0.004	0.003	0.003	0.003	0.003	
Paper Consumption Reductions from Web Billing Service	Number of users		Millions	36.07	35.36	33.71	33.64	3201	
	Paper consumption reductions		t	3,362	3,216	3,082	2,981	2,871	

\*1 Recycling rate: Recycling/Total waste

\*2 Final disposal ratio: Amount of final disposal waste/Total waste

\*3 The reuse rate shown up to fiscal 2017 corresponds to the total volume of tap water and sewage, recycled water, and rainwater used, while the reuse rate from fiscal 2018 onward corresponds to the total volume of tap water, recycled water, and rainwater.

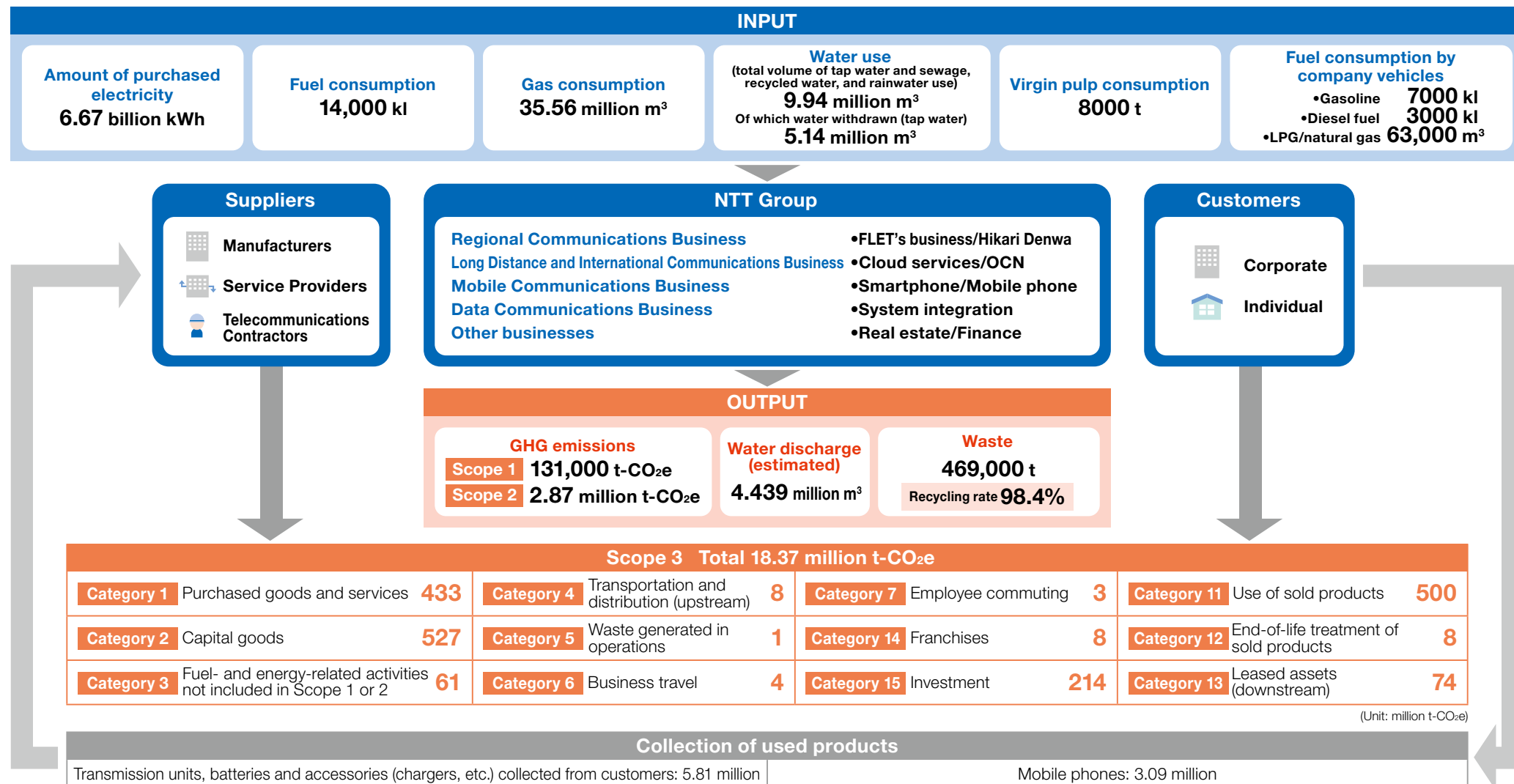
\* Disclosure Boundary: Boundary [B]

	Unit	FY2016	FY2017	FY2019	FY2020
Expenditures on Biodiversity Preservation Projects	Million yen	421.4	544.7	558.0	332

NTT Group Disclosures in Line with TCFD Recommendations

# Material Balance of the NTT Group (Fiscal 2020)

To minimize the environmental impacts of our business activities, the NTT Group endeavors to gather and analyze information on the resources and energy that it consumes and the resulting environmental impacts.



\* Disclosure Boundary: Boundary [B]

## NTT Group Disclosures in Line with TCFD Recommendations

## Environmental Accounting

The NTT Group introduced environmental accounting in fiscal 2000 to boost the efficiency and effectiveness of its environmental conservation efforts by quantitatively determining the costs of environmental conservation programs undertaken as part of its business activities as well as their effects (economic and material benefits). Moving forward, we aim to implement even more efficient and effective environmental management by continuously carrying out quantitative monitoring and analysis to understand the effects of our environmental activities, clarifying outstanding issues, and sharing information.

- **Scope of data**  
The companies subject to consolidated environment accounting are NTT, NTT East, NTT West, NTT Communications, NTT DATA, NTT DOCOMO and their group companies.
- **Applicable period**  
Data for fiscal 2019 is from April 1, 2019 to March 31, 2020.  
Data for fiscal 2020 is from April 1, 2020 to March 31, 2021.
- **Accounting method**  
Accounting is based on the NTT Group Environmental Accounting Guidelines. These guidelines comply fully with the Environmental Accounting Guidelines 2005 issued by the Ministry of the Environment.  
Environmental conservation costs are tabulated separately as environmental investments and environmental costs. Personnel costs and depreciation costs are also included in environmental costs.  
Reductions in CO<sub>2</sub> emissions through energy conservation measures are calculated by subtracting actual emissions from projected emissions in the event that no such measures were taken.

Category	Environmental investment (billion yen)		Environmental costs (billion yen)		Economic benefits (billion yen)			Material benefits (thousands of tons)		
	FY2019	FY2020	FY2019	FY2020		FY2019	FY2020		FY2019	FY2020
(1) Business area costs	9.35	7.13	19.83	22.52						
• Pollution prevention costs	0.24	0.29	5.05	3.24						
• Global environmental conservation costs	8.92	6.77	3.01	7.98	Cost reductions through energy conservation	6.37	5.42	Reductions in CO <sub>2</sub> emissions through energy conservation measures	119	102
• Resource recycling costs	0.19	0.07	11.77	11.30	Revenues from sale of recyclable waste (decommissioned telecommunications equipment, etc.)	6.51	5.96	Recycled decommissioned communications equipment	146	140
					Waste disposal cost reductions through recycling	0.16	0.19	Recycled construction waste	325	185
					Cost reductions through reuse of decommissioned telecommunications equipment	23.02	14.04	Recycled civil engineering works waste	228	106
					Cost reductions through reuse of telecommunications devices	13.86	11.21	Recycled office waste	27	24
					Cost reductions through reuse of office waste materials	0.00	0.00	Other recycled items	9	7
(2) Upstream/downstream costs	0.08	0.05	9.77	10.20	Revenues from sale of recyclable waste (subscriber communications devices, etc.)	0.47	0.71	Number of communications devices collected from customers (thousands)	7581	5810
					Cost reductions in postal expenses through computerization	1.37	11.90			
(3) Administrative costs	0.17	0.21	5.13	4.49						
(4) R&D costs	3.16	2.00	8.45	9.77						
(5) Social activity costs	0.00	0.00	0.06	0.04						
(6) Environmental remediation costs	0.00	0.00	0.00	0.00						
Total	12.76	9.40	43.24	47.01	Total	64.16	49.43			

## NTT Group Disclosures in Line with TCFD Recommendations

# Main Initiatives

### Environmental Guidelines

NTT Group operations have the following four key attributes: (1) procurement of a great many products; (2) possession of many buildings; (3) high electricity consumption by telecommunications equipment; (4) in-house R&D facilities. To promote the effective reduction of our environmental impacts, we have drafted the following green guidelines that address each of these four key attributes:

- “Guidelines for Green Procurement”
- “Green Design Guideline for Buildings”
- “Energy Efficiency Guidelines”
- “Green R&D Guidelines”

In particular, the development and procurement of ICT devices with outstanding energy efficiency is essential for the effective reduction of greenhouse gas emissions of the NTT Group.

To address this issue, we have been applying the NTT Group Energy Efficiency Guidelines since May 1, 2010. These guidelines give concrete form to the ICT device-related energy-saving stipulations of our Guidelines for Green Procurement and Green R&D Guidelines, and define our basic philosophy and device-specific targets with respect to the development and procurement of routers, servers, and other ICT devices used in the NTT Group. Under the Energy Efficiency Guidelines, the NTT Group develops and procures ICT devices with consideration for energy-efficient performance in addition to function, performance, and cost. We are endeavoring to apply these initiatives to the reduction of electricity consumption and concomitant greenhouse gas emissions related to customer communications.

The “Guidelines for Green Procurement” were revised in April 2021, and now ask suppliers to include initiatives for reducing their environmental impact.

### Disseminating Environmental Activities Policies and Measures among Employees

NTT Group conducts environmental education to disseminate NTT Group policies and measures among employees and develop a shared understanding of Group-wide activities for promoting environmental protection. In fiscal 2020, we also provided training related to the Group’s environmental activities for all employees, such as group training and e-learning.

The NTT Environmental Protection Office organizes environmental education for staff in charge of environmental issues at each Group company and has been holding study sessions every year since fiscal 2001. Along with lectures for disseminating our environmental policies and sharing outstanding issues, we invite outside lecturers to speak on recent topics. These study sessions are intended for the NTT Group throughout Japan and are therefore offered via a teleconferencing system so that staff in remote areas can attend and ask questions through two-way connections. This paperless approach is also another way the NTT Group is helping to reduce greenhouse gas emissions resulting from holding meetings.

In fiscal 2020, we invited experts on environmental management and CSR to explain the SDGs and ESG and to speak about environmental management. Furthermore, related staff in Group companies introduced their environmental initiatives with the aim of promoting environmental activities at each Group company.

### Compliance with Environmental Laws and Regulations

The NTT Group complies with laws and regulations related to the environment and works to reduce its impacts on the environment. We have established a mechanism that can deal with cases of legal violations on a Group-wide basis by reporting to the Global Environmental Protection Promotion Committee. There were no legal violations nor payments of penalties in fiscal 2020, following the same result for fiscal 2019.

As part of its environmental management measures, the Group also tracks the number of complaints related to the environment for each fiscal year. In fiscal 2020, no complaints related to environmental impact were submitted, handled or resolved through our systems for dealing with complaints.

Going forward, we will maintain compliance with existing laws and regulations as well as set up a working group on environmental laws and regulations to help step up our preparations for complying with laws and regulations under review or scheduled to take effect.

# Improving prosperity for all people and cultures

The NTT Group is committed to contributing to the development of society by acknowledging diverse cultures.

# message

Message from Management  
(Senior Executive Vice President)



**Naoki Shibutani**

Representative Member of the Board  
(Senior Executive Vice President)

## Announcing our Transformation to a New Management Style

The list of issues that affect society these days is almost endless—economic disparity, shrinking birthrate and aging population, energy problems, deteriorating infrastructure, human rights, discrimination, and many more. To address such social issues, we announced “A New Management Style Suitable for a Decentralized Network Society” in October 2021 as the direction that the NTT Group will be taken for its transformation. More than ever, the world is counting on the management of companies to tackle social issues and help shape the future of society through their businesses, rather than simply focusing on corporate growth and profits like companies had done in the past. Underpinning the announcement of this new management style is the NTT Group’s commitment to responding to requests like this from society. More specifically, society during the spread of COVID-19 was supported by a social framework based on remote working styles, online seminars, deliveries, and more. We have worked towards developing a framework that allows working from home, created an environment where people can work anywhere, and been a major driving force behind DX (digital transformation) for the automation and standardization of actual business operations. Even after COVID subsidies, the NTT Group will be taking an active role in increasing and expanding remote work and the online society, creating an environment with a high level of productivity and secure operations.

Our proactive stance in implementing various systems enabling employees to work from anywhere demonstrates our views for pioneering the creation of an inclusive workplace. The Work in Life initiative is also one of our goals for enhancing the quality of both work and private life, and aims to achieve open, global and innovative business operations.

And we hope to contribute to DX of society as a whole, by associating our activities with support for our customers’ DX, promoting the vitalization of local economies, increasing resilience, and helping to achieve a decentralized society.

## Contributing to Work in Life building a decentralized society

### - Developing the right environment -

We are implementing initiatives in three major areas on our way to promoting Work in Life. The first of those is developing the right environment. Enabling remote work requires development of a Zero Trust IT environment that is easy to work in and offers a high level of productivity and security. With this approach we are aiming to achieve the Work from Anywhere concept, which provides an environment where anyone can work at any time, from a broad range of locations as their workplace. Even essential workers who need to work on site inspecting telephone poles or cables, or performing maintenance on equipment and other infrastructure are examples that highlight the approach we are developing—driving mobile mapping trucks means GPS, imaging and inspection data can be centralized in a database and processed as data science using AI, to automatically identify the condition of aging equipment, or conduct equipment inspection and design work from remote locations. Drones can also be used to take images of steel towers used for wireless communications, and compiled into a database to automate the deterioration diagnosis, design, installation, and ordering processes. Around half of our personnel, including those at our communications partner companies, will be involved in these changes to working styles by 2025. We hope to apply this type of smart infrastructure platform to help resolve other social issues, by rolling it out throughout society to electricity, gas, water, roads and other types of infrastructure services to achieve more efficient maintenance of infrastructure where deterioration is becoming a serious problem.

### - Promoting DX -

The second area is from the perspective of business transformation and DX by making full use of IoT, digital technologies, AI, and more. Developing an IT environment where anyone can work at any time from a range of locations not only requires cloud-based systems to be used for equipment and sales, but also for other operations like accounting, administration, and human resources. Implementing DX calls for Fit to Standard, which requires unified customer IDs, standardized codes, automated tasks, and business operations that comply with global standards. Customer contacts will need to change from labor-intensive approaches to sales harnessing digital marketing, to achieve a balance between customer convenience and operational efficiency. By employing DX and revising operations in these ways, we are aiming to reduce costs in fiscal 2023 by some 1 trillion yen compared to fiscal 2017. We will also provide our customers and partners with digital marketing platforms, to help build new value creation with what can be considered an open and trusted connected supply chain.

### - System and framework development -

The third area is revamping systems and frameworks related to human resources and labor. This approach cannot be achieved solely by developing an environment or systems that allow for a creative working style. Instead, I believe that it will be extremely important to forge a new corporate culture by coordinating the management team's commitment and raising everyday awareness amongst all employees. We currently have systems in place that allows employees to select a flexible working style, but the small number of women in management roles or the fact that people receiving care have to give up their careers are just

some examples of areas that are lacking. To address these deficiencies, the management team will need to take the lead and reform our corporate culture. While our efforts thus far have given employees more flexibility away from regular working hours, we hope to roll out even more changes by using remote-based working styles regardless of working location, so we can avoid undesired transfers or employees working away from their families. We will also be introducing a job-based system as a way of reforming the seniority-based hierarchy so that employees are able to develop their own careers, as we aim to create a workplace environment where anyone can enjoy both their work and private life.

### Achieving reliability and innovation

As an infrastructure company, NTT provides secure and reliable ICT services as part of its mission to connect people together. We use cutting-edge digital technologies to assist with our customers' digital transformation and achieve a sustainable society with the Your Value Partner approach. Looking forward, we will continue pioneering advanced methods of harnessing ICT and digital technologies across a wide range of fields including reforming work styles, moving toward a remote world, implementing DX, and renewable energy. We are aiming to become an innovative company that leads reforms throughout society by providing our knowhow and experience as services.



# Feature 2: Transformation to a New Management Style

## New style premised on remote work

These days there has been a growing need for increased spread and uptake of digital services (including deliveries and video streaming) as part of individual lifestyles. Companies have also had to face sudden changes in working styles toward remote work, and there is greater need for online access and digitalization of social infrastructure. As COVID-19 is now part of our lives, the time has come when society will be utilizing remote and online access technologies.

Under the approach of “Transformation to a New Management Style,” the NTT Group set a range of targets with the aim of transforming to a new style based on remote work.

1. Promotion of Work in Life (Health management)
2. Contribution to a decentralized society (facilitate regional economic development)
3. Improve social resilience
4. DX transformation

The management style was a typical one based on office work—where employees commute to offices or job transfers—with regular working hours and personnel allocated by the company.

Looking ahead, the NTT Group will be working towards a diversity-rich management style based on remote work. This will allow employees to choose where they work and reside, freeing them from the pressures of job transfers or working away from their family, give them the option to choose their own working time away from regular working hours, and let them choose their own career path without the constraints of a seniority-based system.

The system of governance we are using will also be re-examined to take into consideration the implementation of zero trust systems and systemization of IT security that is appropriate for remote work, enhanced resilience against epidemics, natural disasters and cyber-terrorism, and conduct risks. Various systems will also be revised for promoting DX transformation, together with reforms to business operations and development of the right environments so that the office is enhanced as a space for creation and co-creation.

We will also contribute to DX to society as a whole, by expanding customer reach with digital marketing as well as providing customers with platforms harnessing our own DX. These initiatives will be used to promote Work in Life (health management) and achieve work processes that are more open, global, and innovative. The NTT Group will be taking this approach based on its core concept of “Improving prosperity for all people and cultures.”

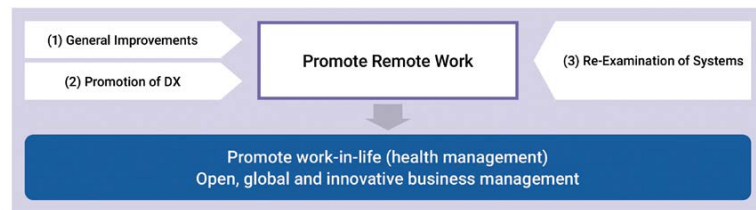


# Promotion of Work in Life

As work styles change, it is necessary to review work processes in order to accommodate diverse ways of working. Allowing diverse work styles leads to greater opportunities to employ people of diverse backgrounds, while improving their motivation to work and ease of working. This results in better employee engagement and sparks innovation.

The NTT Group engages in a variety of initiatives to promote diverse work styles. In particular, we are changing work styles while focusing on better treatment and environments for mainly remote work. When changing work styles, it is important to ensure openness, globalization and innovative work management from a business perspective. From the standpoint of employees, we believe the first step is to promote healthy workstyle-in-daily life and their well-being.

Shift to new work styles premised on remote work



Ratio of female directors *1	Ratio of female managers *1	Ratio of newly appointed female managers *1	Ratio outside personnel*1	Ratio of employees with disabilities *2
11.4% (July 2021)	7.3% (fiscal year ended March 31, 2021)	12.5% (fiscal year ended March 31, 2021)	27% (fiscal year ended March 31, 2021)	2.45% (June 2021)
Target <b>new</b> 25-30% by fiscal year ending March 31, 2026	Target 15% by fiscal year ending March 31, 2026	Target <b>new</b> 30% from fiscal year ending March 31, 2022	Target <b>new</b> 30% by fiscal year ending March 31, 2024	Target At least 2.3%

Remote work ratio*3*4	Male employees taking leave for childrearing *3*5	Total work hours*3	Employee satisfaction*6
65.5% (March 2021)	80.4% (fiscal year ended March 31, 2020 and 2021)	1,901 hours (fiscal year ended March 31, 2021)	3.9 (fiscal year ended March 31, 2021)
Target 70% by fiscal year ending March 31, 2023	Target 100% ratio of male employees taking time off for childrearing by the fiscal year ending March 31, 2023	Target Under 1,800 hours by fiscal year ending March 31, 2023	Target YoY improvement (5 points = perfect score)

\*1 Six major domestic companies (NTT, NTT East, NTT West, NTT Communications, NTT DATA, NTT DOCOMO)

\*2 Domestic Group companies (at least 43.5 employees)

\*3 NTT (holding company) only

\*4 Work-from-home ratio (excluding essential workers)

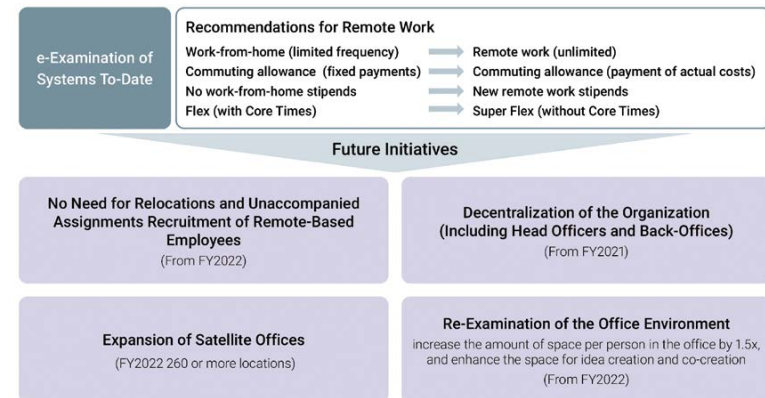
\*5 Percentage of total number of male workers using paternity leave or leave for purposes of child rearing (as disclosed by companies with "Platinum Kurumin Certification") (Number of employees with children entering elementary school in FY2019 to FY2020 who took time off work for child rearing) / (Number of employees who gave birth (or whose partners gave birth) in FY2019 to FY2020.)

\*6 Domestic Group companies

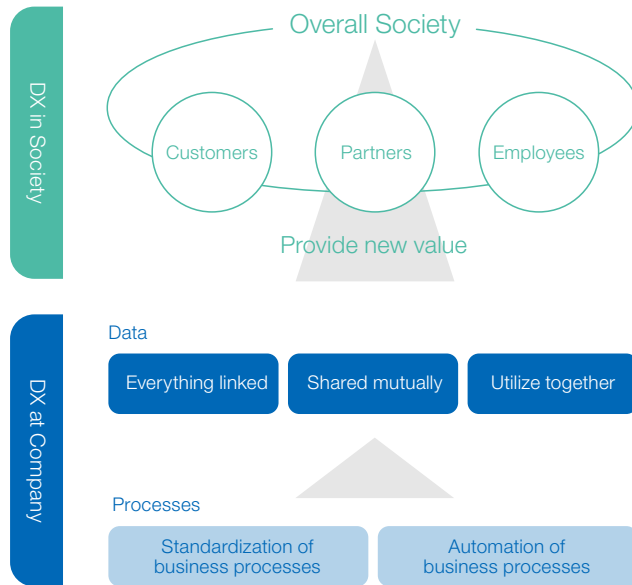
## Changes in Work Styles

NTT Group intends to shift toward new work styles centered on remote work, by upgrading IT environments and reviewing various systems, in addition to advancing DX projects and work reforms with an eye on the post-pandemic world.

During fiscal 2020, NTT introduced a super flex-time system, stopped subsidizing commuter passes, and created an allowance for employees working at home and other remote locations, in a bid to promote remote work styles. To encourage more remote work, we will update systems and work environments and advance reforms toward a decentralized, self-disciplined network-style organization. We aim to create a work-from-anywhere environment that frees employees from time and location constraints, allowing everyone to work anywhere and anytime.



### Overview of DX Transformation



## Promotion of DX

The NTT Group will be reforming various systems with the aim of promoting DX to create an IT environment where anyone is able to work in any location, at any time. In addition to the introduction of a cloud-based system, we will digitize processes to facilitate automation and standardization while expanding sales approaches by applying digital marketing to implement these initiatives. Some 100 automated processes will be rolled out under ten DX initiatives with the aim of increasing productivity of service provision operations 1.7-fold (in FY2025), to achieve cost reductions of more than ¥200.0 billion in fiscal 2023 (aggregate total of more than ¥1.0 trillion in cost reductions from FY2017).



Promote work-in-life (health management)  
Open, global, and innovative business management

## Achieving a decentralized society

The NTT Group will be promoting Work-in-Life (health management) by adopting a diversity-rich management style based on remote work that will enabling employees to work close to home.

More specifically, employees residing further out but working at headquarters, and the organization itself (including headquarters and back-office functions) will be decentralized and spread among various regions to create hubs that serve to revitalize those regions, while regional decentralization will also contribute to BCP operations by ensuring functionality in the event of disasters. Office environments will also be re-examined to enhance space for idea creation and co-creation.



## Improve social resilience

As a corporate group with the mission of serving society by sustaining telecommunications infrastructure in normal times, the NTT Group is committed to building highly reliable telecommunications networks that connect people anytime, anywhere, as part of helping to build a society that is resilient against disasters arising from the three major threats of this century—plagues, natural disasters, and cyber terrorism.

We will also be making a concerted effort to further reinforce communications infrastructure, ensure even better disaster response, and provide adequate information to affected people.

## Social Challenge 4

# Establish shared ethical standards

### Business Activity

12. Establishing and thoroughly complying with ethical standards
13. Appropriately managing conduct risk
14. Thoroughly reinforcing corporate governance and compliance
15. Sharing high ethical standards with business partners



## Why it matters

As maintaining high ethical standards with society and sharing those high ethical standards with business partners is an essential part of resolving social issues and ensuring sound corporate activities, a range of initiatives will be implemented for establishing and sharing such ethical standards.

## Future vision

The NTT Group is committed to contributing to the development of society by acknowledging diverse cultures, and thus we will contribute to solving social issues by connecting people, goods, and cultures, including communities, nations, and society, while promoting high ethical standards, diversity, and inclusion in fair and equitable ways, and work towards creating a better workplace through powerful and new digital technologies.

## What can be accomplished

We set high ethical standards for ourselves and share them with our business partners.



## Business Activity 12–13

# Establishing and thoroughly complying with ethical standards / appropriately managing conduct risk

### Our commitment

We set high ethical standards for ourselves and share them with our business partners

### Our objectives

100%

Participant rate of training of corporate ethics policy

0

Cases of legal actions for anti-competitive behavior, bribery

### Policies and Concepts

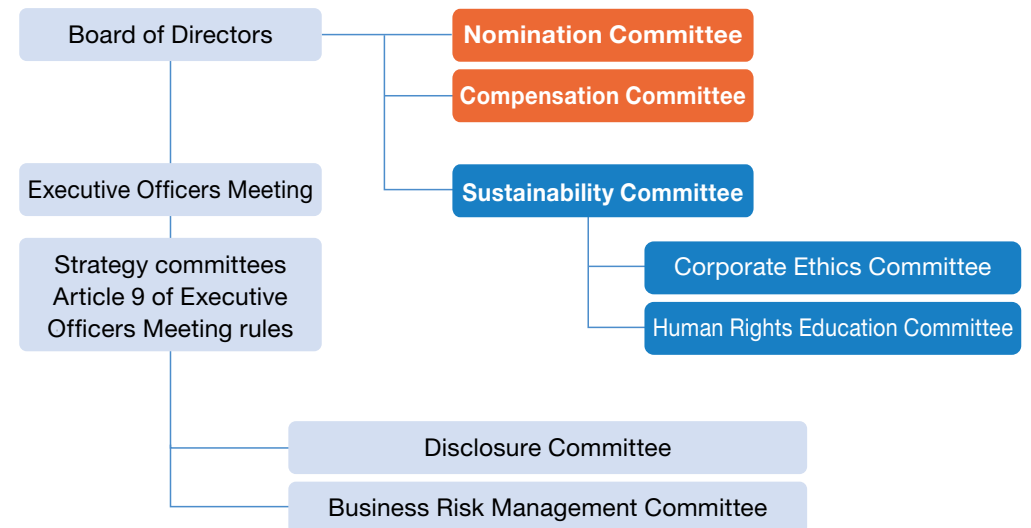
It is imperative to conduct business in compliance with laws and regulations in the jurisdictions where we operate, and maintain high ethical standards in order to promote sound corporate activities. Recognizing this, NTT established the “NTT Group Corporate Ethics Policy.”

These standards, which apply to all officers and employees of the NTT Group, lay out the basic principles of corporate ethics and provide specific guidelines for ethical behavior. These stipulations are intended to remind everyone of their duty as members of a corporate group that bears significant responsibility to society in terms of preventing dishonesty, misconduct, and the disclosure of corporate secrets, as well as refraining from exchanging excessive favors with customers and suppliers, and ensuring that they conduct themselves according to the highest ethical standards in both private and public activities.

### Organization for Implementation

NTT has a Corporate Ethics Committee with a senior executive vice president as chair. The committee meets twice a year with the aim of thoroughly promoting the NTT Group’s corporate ethics and maintaining discipline. It reports to the Board of Directors twice a year, particularly concerning the status of reports made to the Corporate Ethics Help Line, and the Board of Directors discusses reported matters when necessary.

The NTT Group has Corporate Ethics Committees and corporate ethics officers at Group companies. We foster a corporate climate of observing laws and corporate ethics, investigate wrongful acts and scandals based on our Corporate Ethics Help Line operational rules, hold regular meetings for the compliance officers of Group companies, and work across the Group to promote compliance.



## NTT Group Corporate Ethics Policy

1. Recognizing the establishment of corporate ethics as one of its most important missions, top management shall exert its leadership to ensure that the spirit of these Standards is adopted throughout the Company, and shall assume full responsibility for solving any problems when any event inconsistent with that spirit occurs.
2. Every person with subordinate employees shall not only act in a self-disciplined manner, but shall also always provide guidance and assistance to his/her subordinate staff to ensure that their conduct is in conformity with our corporate ethics.
3. Every officer and employee of the NTT Group shall not only comply with all laws and regulations, social standards, and internal company rules whether in Japan or overseas, but officers and employees shall also hold the highest ethical philosophy within himself/herself both in public and in any private situations. Among other things, each officer and employee, as an officer or employee of a member of a Global Information Sharing Corporate Group, shall keep himself/herself fully aware that any disclosure of customer or other internal privileged information constitutes a materially wrongful act. Also, as a member of a group of companies which holds great social responsibilities, he/she shall strictly refrain from giving or receiving from customers, business partners, and other interested parties excessive gratuities. Furthermore, when interacting with public officials and politicians, officers and employees shall not commit bribery or commit any other acts that cause the other party to violate the National Public Service Ethics Act/Code of Ethics and the Ministerial Code, or that cause suspicion that such a violation has occurred.
4. Each NTT Group company, at the first opportunity, shall take initiatives to provide training programs in order to help its officers and employees enhance their awareness of our corporate ethics.
5. Every officer and employee of the NTT Group shall direct his/her efforts to prevent wrongful or scandalous acts which may potentially occur as specialization and advancement of our business proceeds. Each NTT Group company shall improve its system to prevent such acts, including, for instance, the re-assignment of contract representatives who have remained with the same customers for a long period of time, and the improvement of monitoring tools to protect customer and other information.
6. Any officer or employee who may come to know of the occurrence of any wrongful act or any scandal shall promptly report the wrongful act or scandal to his/her superior or other appropriate persons. If he/she is not able to make such a reporting, he/she may contact the Corporate Ethics Help Line (External Contact Point). It should be noted that every officer and employee who reports the occurrence of any wrongful act or scandal shall be protected so that the reporting party shall not suffer any negative consequences due to such reporting.
7. In the event of an occurrence of any wrongful act or scandal, each NTT Group company shall be committed to the settlement of the problem by taking appropriate steps through a speedy and accurate fact finding process, and responding in a timely, suitable, and transparent manner in order to fulfill its social accountability.

## Main Initiatives

### Prevention of Bribery

The NTT Group Corporate Ethics Policy mandates compliance with all laws and regulations, social standards, and internal company rules whether in Japan or overseas. With regard to the prevention of bribery, we have an Anti-Bribery Handbook containing important matters to be understood and complied with by our employees. The contents of this handbook are made known to all employees in Japan and overseas through emails and other means.

In addition, NTT, NTT East, and NTT West stipulate that taking bribes is forbidden under the Act on Nippon Telegraph and Telephone Corporation, etc. (hereafter “the NTT ACT”) and that breaches are punishable by law. Following the Act on Prevention of Unjust Acts by Organized Crime Groups, contributions and other types of support are only given to charitable organizations deemed suitable by the NTT Group. We have a zero tolerance approach to corruption. In fiscal 2020 no illegal conduct associated with bribery or contribution/support was confirmed within the NTT Group.

### Political Contributions

As a holding company, and in compliance with Japan’s Political Funds Control Law, NTT does not make political contributions, while a few Group companies make political contributions at their own discretion and in accordance with the relevant laws and regulations as well as the companies’ respective codes of corporate ethics.

### Request to Business Partners for Compliance and Risk Assessment

The Guidelines for Sustainability in Supply Chain, the operational guidelines we issue to our suppliers, clearly outlines fair trade practices and business ethics (nine articles). With respect to critical suppliers, we conducted a survey on the status of Sustainable procurement. We checked activities concerning compliance in general, including their response to preventing corruption, illegal political contributions and antisocial forces, and also requested further improvements where necessary.

### Compliance with Anti-Monopoly Laws

The NTT Group has adhered to the Anti-Monopoly Act to ensure its business activities align with a fair and competitive business environment. These initiatives have been effective, as evidenced by the fact that continuing from the previous fiscal year, we were not fined for violation of anti-monopoly regulations in fiscal 2020.

### Initiatives to Promote Awareness of the NTT Group Corporate Ethics Policy

At NTT, top management demonstrates that compliance requires the NTT Group to comply with laws and conduct business with everyone having strong ethics. Also, the presidents of each NTT Group company have declared their commitment to identify risks related to illegal or illicit activities and never tolerate any form of impropriety. To ensure the effectiveness of the NTT Group Corporate Ethics Policy, we offer training sessions on corporate ethics to employees and, through a website for employees, we explain the declaration in detail and give examples of corporate ethics issues. Employees are reminded of the importance of ethics in June and December each year in an effort to raise their level of understanding. Furthermore, NTT conducts annual surveys of employees to measure their awareness, and the results are then used for awareness enhancement initiatives.

#### Corporate Ethics and Compliance Training

Corporate ethics training is conducted as part of continuous educational activities for all officers and employees. This training is tailored to meet the specific compliance and corruption risks of each company throughout the NTT Group. Furthermore, training for officers is also conducted every year.

#### Anti-Bribery Handbook

As a tool to help employees prevent corruption, we created the new Anti-Bribery Handbook in fiscal 2014, which is made known to all employees at NTT Group companies inside and outside of Japan through emails and other means. Along with a message from the president, the Anti-Bribery Handbook provides examples regarding the basics of bribery and facilitation payments to instill correct knowledge and understanding in all employees.

#### Competition Law Handbook

The NTT Group created a Competition Law Handbook Sustainability Report 2021

in fiscal 2019 as a tool for ensuring compliance with competition law among employees and it has been made known to all employees at NTT Group companies inside and outside of Japan. The handbook contains the basics regarding compliance with competition law within a Q&A format, as well as specific examples that might be found within the Company's business activities, in order to instill correct knowledge and understanding of competition law compliance in employees.

#### Check System for Penetration of Corporate Ethics

NTT conducts an annual survey that includes NTT Group companies in order to ascertain the extent to which employees are aware of compliance. At each NTT Group company, monitoring is performed under four different functions, comprising the departments in charge of business operations, compliance and internal auditing, as well as the Audit and Supervisory Board members, to ensure neutral and multifaceted checks are being performed.

NTT checks the status of compliance audit implementation at NTT Group companies with an internal auditing department and directly confirms the status of compliance initiatives inside NTT and at NTT Group companies without an internal auditing department.

### Establishment of Corporate Ethics Help Line Contact Point

To prevent illegal conduct or a scandal, each Group company has set up an internal consulting center to handle reports of improper activities. In addition, NTT has established the Corporate Ethics Help Line as an external contact point for NTT Group companies and outsources its operation to a law firm. The help line also handles consultations and reports related to human rights issues. The NTT Group Corporate Ethical Standards clearly state that people who file reports with these help lines will be protected from any disadvantage arising from the fact that they filed a report. The content of the consultations and reports are investigated and

handled by the staff member in charge, and a report is submitted to the Corporate Ethics Committee of each Group company. All reports are collected at least once a year by NTT, where the response status is ascertained and reported to the Board of Directors.

In addition, since the contact point is independent from management, there is an independent reporting route to Audit & Supervisory Board members. Reports made through our Corporate Ethics Help Line (external contact point) are in principle sent directly to Audit & Supervisory Board members at the same time; reporting only to Audit & Supervisory Board members is also possible.

Corporate ethics helpline  
<https://group.ntt.jp/corporate/compliance.html>

### Number of Reports Received by the Corporate Ethics Help Line (External Contact Point)

We monitor the number of reports received by the Corporate Ethics Help Line, and publish this number in our Sustainability Report and on the NTT Group's Sustainability website. The Whistleblowing Mechanism Guidelines, revised in December 2016 by the Consumer Affairs Agency, recommend that neutral and fair third-party assessments be carried out. We had such

an assessment carried out in May 2017 and received the comment that overall, a whistleblowing mechanism is in place and is being administered appropriately.

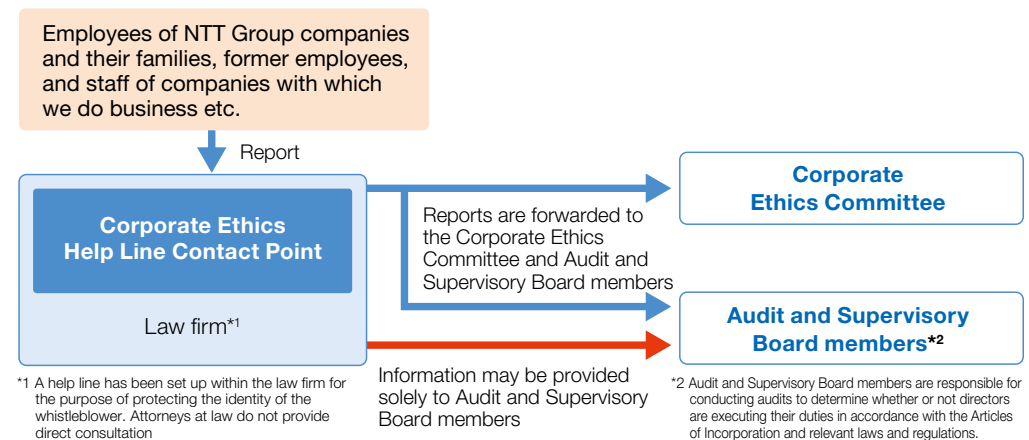
Reports to the corporate ethics help line by type of violation  
<https://group.ntt/en/csr/governance/compliance.html>

### Details of assessment

- Investigation of the mechanism and operational status of the help line in order to verify its effectiveness in terms of utilization and reliability.
- Sample survey on the establishment of regulations and responses to whistleblowers, etc.
- Confirmation of compliance with the Whistleblowing Mechanism Guidelines.
- Interviews with administrators and discussion about operational issues.

### Disciplinary Actions against Confirmed Violations

A compliance violation or breach of the NTT Group Corporate Ethical Standards is dealt with using the disciplinary measures taken in accordance with the disciplinary code established at each Group company. This includes pay cuts and work suspension, and may also be reflected in assessments (evaluations) and personnel transfers.



\*1 A help line has been set up within the law firm for the purpose of protecting the identity of the whistleblower. Attorneys at law do not provide direct consultation

\*2 Audit and Supervisory Board members are responsible for conducting audits to determine whether or not directors are executing their duties in accordance with the Articles of Incorporation and relevant laws and regulations.

### Business Risk Management

The NTT Group faces a rapidly changing business environment, including intensified competition in the information and telecommunications sector. In this context, NTT Group companies are exposed to an increasing amount of business risk. The NTT Group strives to minimize the impact of losses that could result from the materialization of risk by anticipating and preventing the occurrence of potential risks. As part of these efforts, NTT has formulated the NTT Group Business Risk Management Manual and has distributed it to all Group companies so that the entire Group can work together to conduct risk management. This manual contains policies for addressing various forms of risk facing the NTT Group’s business operations and approaches to coordination among NTT Group companies.

In addition, each Group company has formulated its own manuals and other guidelines, which

reflect its specific business operations, business environment, and other factors, and is using these materials to control business risks.

### Organization for Implementation

At NTT, Risk Management Regulations are in place, which define fundamental policies concerning in-house risk management for effective and efficient business operations. Risk management is carried out based on a continuous PDCA cycle under the leadership of the Business Risk Management Committee, chaired by the representative director and senior executive vice president, and comprised of heads of departments and offices as committee members. At the NTT Group, the representative director and senior executive vice president of NTT is assigned ultimate responsibility for risk management, while each executive officer serves as the risk officer for the business area they are placed in charge of.

### Identifying Material Risks

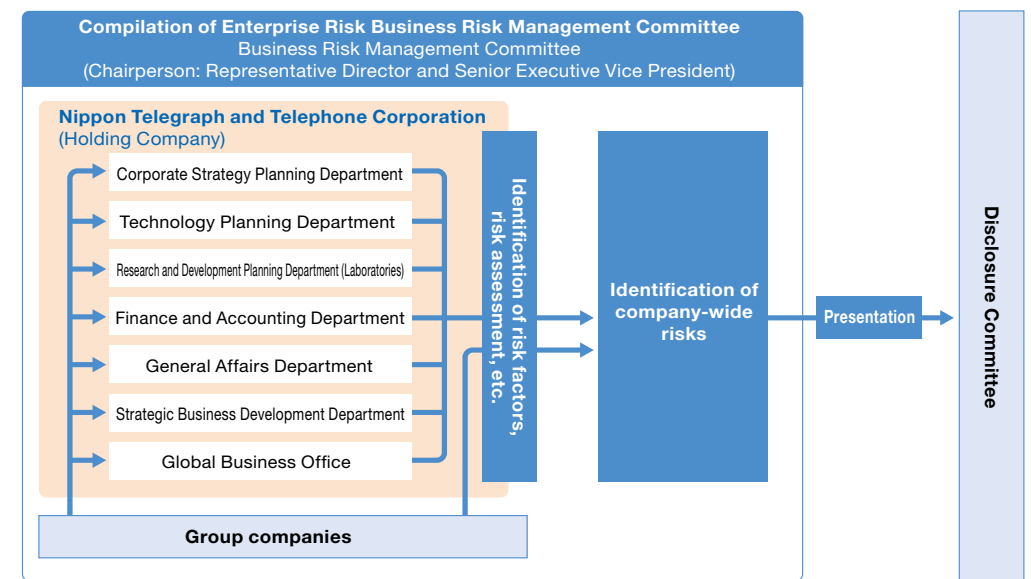
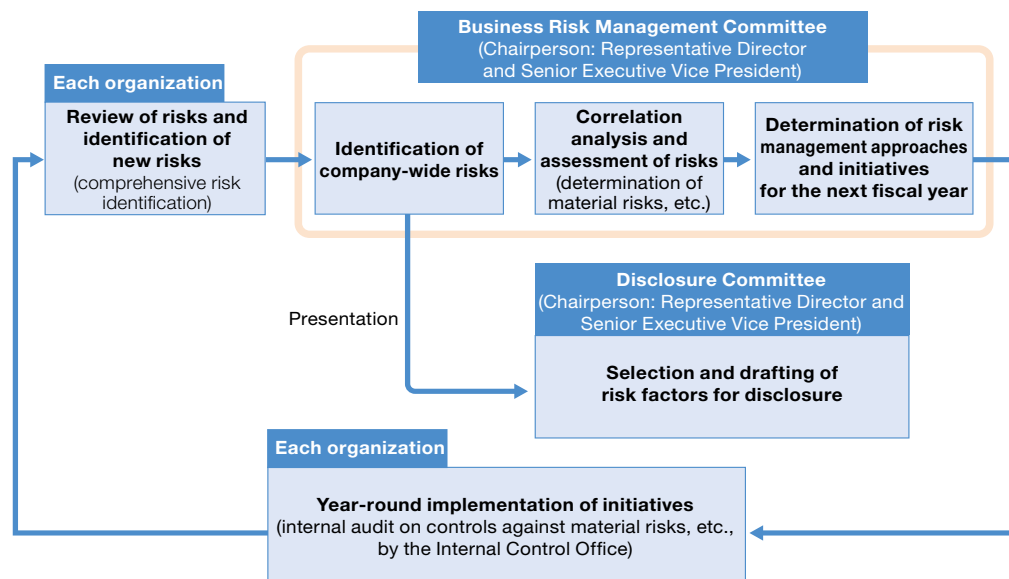
From time to time, NTT reviews assumed risks and management policies based on changes in the social environment.

In the identification of Companywide risks, the Business Risk Management Committee leads analysis processes for the risks faced by the NTT Group are formulated and periodically implements risk analyses in accordance with these processes. In addition, after a correlation analyses on these risks, it specifies those risks with the potential to have the greatest impact as material risks, and we decide on countermeasures.

Matters pertaining to risk management are discussed at meetings of the Business Risk Management Committee. As part of risk monitoring, each department in charge reports on the status of monitoring and risk mitigation effects to the Business Risk Management Committee, while the Internal Control Office conducts individual audits on the status of ini-

tiatives to address material risks and reports results to the Board of Directors in the subsequent fiscal year.

Among other things, risks are also identified by focusing on the perspective of conduct risk—where customers and other stakeholders suffer negative consequences as a result of actions taken by the NTT Group—by ensuring better planning and implementation of appropriate measures.



## Business Activity 14

# Thoroughly reinforcing corporate governance and compliance

### Our commitment

We set high ethical standards for ourselves and share them with our business partners

### Our objective

0

Cases of legal actions for anti-competitive behavior, bribery

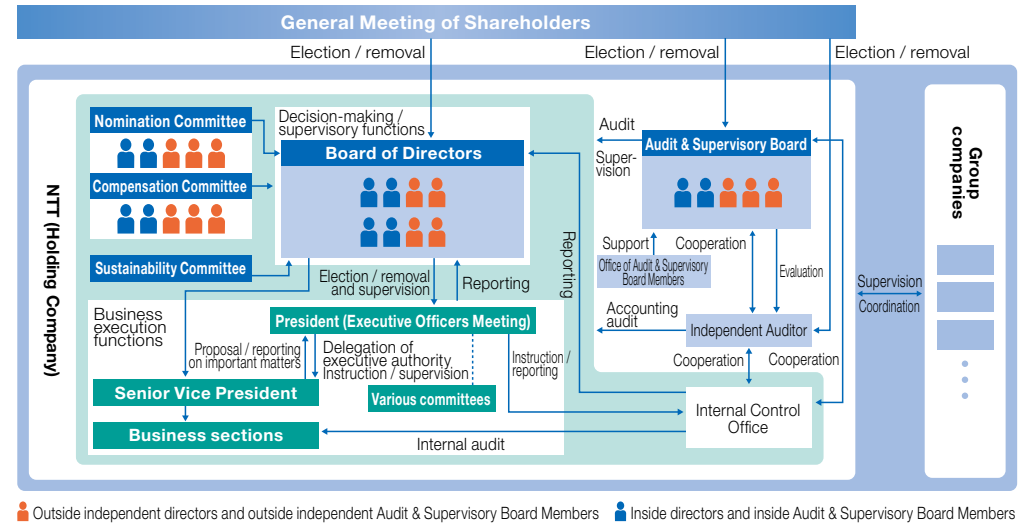
### Basic Policy

As the holding company of the NTT Group, NTT believes that raising the effectiveness of corporate governance is an important management issue for meeting the expectations of various stakeholders, including shareholders and other investors, as well as customers, business partners, and employees, and for maximizing corporate value. Accordingly, NTT is working to strengthen corporate governance based on the purpose of the principles of the Corporate Governance Code promulgated. Based on NTT's "Your Value Partner 2025" Medium-Term Management Strategy, which was formulated and announced, in order to work together with all its partners to promote initiatives to resolve social issues in its role as "Your Value Partner," NTT will work toward ensuring sound management, executing appropriate decision-making and business activities, clarifying accountability, and maintaining thorough compliance as basic policies.

NTT is implementing all the principles of the Corporate Governance Code it revised in June 2021.

### Corporate Governance System

NTT, in order to strengthen functions for appropriately supervising and auditing business execution, seeks to strengthen its auditing system by appointing several outside independent Members of the Board, and by establishing an Audit & Supervisory Board, of which outside independent Audit & Supervisory Board Members make up a majority. With our adoption of an executive officer system, we are also configured to clearly separate the functions of managerial decision-making / supervision and business execution, and we are working to improve our business mobility. Additionally, NTT has voluntarily established the Nomination Committee and Compensation Committee, which consist of five members, including three outside independent Members of the Board, to further increase the objectivity and transparency of decisions related to appointments and compensation for directors, and it has determined that the governance functions of the Audit & Supervisory Board structure are thoroughly effective. In addition, NTT has established various meetings and committees as has been deemed necessary on important business execution, in order to ensure that appropriate decisions are made for facilitating Group management.



Committee name	Overview
<b>Board of Directors</b>	The Board of Directors is sized according to the content of our business portfolio and is structured in consideration of balance and diversity of fields of specialization. The Board consists of eight directors, including four independent outside directors, who have been appointed in order to enhance the supervision of business execution. In addition, in principle, a regular Board meeting is held once a month, with extraordinary Board meetings held as necessary. The Board determines matters stipulated by the "Board of Directors Regulations," which include matters stipulated by law and important matters pertaining to Company and Group management. It also supervises the execution of duties by directors and executive officers by regularly receiving reports on the status of duty execution from those directors and executive officers.
<b>Audit &amp; Supervisory Board</b>	From an independent perspective that differs from that of individuals responsible for business execution, the Audit & Supervisory Board implements operational audits and accounting audits and audits the status of the execution of duties by members of the board.
<b>Appointment and Compensation Committee</b>	For the purpose of improving objectivity and transparency, NTT has established the Appointment and Compensation Committee, which consists of four members of the board, including two outside independent members of the board, as a preliminary review institution of the Board of Directors, and is increasing the effectiveness of governance.
<b>Executive Officers Meeting</b>	Important corporate matters to be decided are, in principle and in advance, discussed at the Executive Officers Meeting, which is made up of senior vice presidents and others. The Executive Officers Meeting is held about once a week. To improve the transparency of management decision-making, one Audit & Supervisory Board member participates in the Executive Officers Meeting.
<b>Various Committees</b>	A number of committees have been established below the Executive Officers Meeting to discuss specific important business execution-related matters. Major committees include the Technology Strategy Committee, which deliberates on the Group's R&D vision and technology development strategy; the Investment Strategy Committee, which examines investment projects that are larger than a certain scale; and the Finance Strategy Committee, which discusses basic financial strategies and issues. These committees, which are held as necessary throughout the year, are in principle chaired by the president or a senior executive vice president and are attended by relevant senior vice presidents and other designated members.

## A History of Strengthening Corporate Governance

2020–	<b>Separation of the functions of managerial decision-making / supervision and business execution</b>	2021	<ul style="list-style-type: none"> <li>Expanded ratio of performance-linked compensation: 30% → 50%</li> <li>Increased number of outside directors on Nomination Committee and Compensation Committee: 2 → 3</li> <li>Transfer the existing Appointment and Compensation Committee into the separate Nomination Committee and Compensation Committee based on their application functions</li> <li>Disclosed skill matrix for Members of the Board and Audit &amp; Supervisory Board members</li> </ul>
		2020	<ul style="list-style-type: none"> <li>Optimizing the size of the Board of Directors: 15 → 8</li> <li>Ratio of outside directors: 27% → 50%</li> <li>Adoption of executive officers system Separation of the functions of managerial decision-making / supervision and business execution</li> <li>Disclosure of specific KPIs for officers' earnings-linked remuneration</li> </ul>
2018–	<b>Further reinforcement of oversight function by enhancing diversity, advancement of disclosure</b>	2019	<ul style="list-style-type: none"> <li>Establishment of NTT, Inc. (strengthening of the governance of the global business), appointment of three foreign-national directors</li> <li>Conducting of evaluation questionnaire on the effectiveness of the Board of Directors</li> <li>Commencement of ESG information disclosure in notices of convocation</li> </ul>
		2018	<ul style="list-style-type: none"> <li>Appointment of two female directors (one inside and one outside), a Company first</li> <li>Increase in the number of outside Members of the Board: 2 → 4</li> <li>Strengthening of the reflection of KPIs in performance-linked compensation</li> <li>Expansion and improvement of statements regarding the compensation of directors, strategic shareholdings, succession plans, and evaluations of the effectiveness of the Board of Directors</li> </ul>
2011–	<b>Strengthening of information disclosure with an awareness of dialogue with stakeholders</b>	2017	<ul style="list-style-type: none"> <li>Introduction of notices of convocation that are viewable via smartphones</li> </ul>
		2015	<ul style="list-style-type: none"> <li>Response to Corporate Governance Code</li> <li>Establishment of independence standards for independent Members of the Board and independent Audit &amp; Supervisory Board Members</li> <li>Commencement of issuance of sustainability reports</li> <li>Commencement of disclosure of the notices of convocation before they are sent (henceforth, 42–45 days before the date of the convening of the Ordinary General Meeting of Shareholders, in Japanese and English on the same date)</li> </ul>
		2011	<ul style="list-style-type: none"> <li>Appointment of first female corporate officer (1 outside Audit &amp; Supervisory Board Member)</li> </ul>
2006–	<b>Strengthening of supervisory function and improvement of corporate governance transparency</b>	2006	<ul style="list-style-type: none"> <li>Increase in number of outside Audit &amp; Supervisory Board Members: 2 → 3</li> <li>Appointment of financial expert as Audit &amp; Supervisory Board Member</li> <li>Commencement of disclosure of Corporate Governance Report</li> </ul>
		2005	<ul style="list-style-type: none"> <li>Establishment of Disclosure Committee</li> <li>Establishment of Nomination Committee and Compensation Committee</li> <li>Commencement of issuance of CSR reports</li> </ul>
		2003	<ul style="list-style-type: none"> <li>Increase in number of Audit &amp; Supervisory Board Members: 4 members (2 inside members, 2 outside members) → 5 members (3 inside members, 2 outside members)</li> </ul>
	<b>Establishment of a foundation for corporate governance</b>	1985	<ul style="list-style-type: none"> <li>Appointment of multiple outside Members of the Board</li> </ul>

## Tax Policy

### Basic Policy

All directors and employees of NTT Group have declared their commitment to complying with all laws and regulations (including their spirits), social standards, and internal company rules, whether in Japan or overseas, and acting in accordance with the highest ethical standards in both private and public activities. In tax-related operations, we also strive to maintain and enhance tax compliance by setting up guidelines and educating our employees.

#### 1. NTT

NTT establishes the basic policy and guidelines of tax-related operations and promotes appropriate measures in cooperation with its consolidated subsidiaries. NTT strives to gather information regarding regulations, notifies subsidiaries of any changes to regulations, and supervises subsidiaries.

#### 2. NTT's Consolidated Subsidiaries

NTT's consolidated subsidiaries fulfill their tax duties including preparing and filing tax returns, making tax payments, and dealing with tax audits appropriately in accordance with the basic policy and guidelines. NTT's consolidated subsidiaries report information and submit relevant documents to NTT as necessary.

## Governance Structure

NTT has established a basic policy of internal control systems for NTT Group to deal with various risks including tax risks which has been approved by NTT's board. We define each company's roles in tax-related operations as shown below, to the left.

## Optimizing Tax costs

NTT and its consolidated subsidiaries should strive to utilize appropriately and effectively the tax relief measures with a view to maximizing shareholder value of NTT Group. NTT and its consolidated subsidiaries shall not implement any measures which may be considered or interpreted as tax evasion by regulators.

## Tax Risks

When undertaking international transactions, NTT and its consolidated subsidiaries should ensure such transactions are given due consideration in advance of execution. NTT and its consolidated subsidiaries should consult with tax advisors and seek advice as necessary. Furthermore, we have laid out the follow-

### Transfer Pricing Taxation

- Prices that are applied to NTT Group's international transactions will be calculated in accordance with the laws and regulations of each country or region and the Transfer Pricing Guidelines published by the OECD and also in accordance with the "arm's length principle."
- In cases where the documentation of the price calculation method is obligatory, or where such documentation is necessary due to factors such as transaction size and potential taxation risks, we will generate the documents in an appropriate manner.

### Controlled Foreign Companies Rules

- NTT and its consolidated subsidiaries shall not use a low-tax country for tax avoidance. When investing in a low-tax country for business reasons, we will make appropriate tax payments in accordance with the laws and regulations of the relevant country or region.

ing measures regarding transfer pricing taxation and controlled foreign companies rules.

## Relationship with Tax Authorities

NTT Group aims to maintain good relationships with tax authorities through communication with them. All explanations given to tax authorities should be based on facts. NTT and its consolidated subsidiaries should work with them in a sincere and appropriate manner. If tax authorities were to notify NTT and its consolidated subsidiaries of tax adjustments, NTT and its consolidated subsidiaries should determine the cause of such issue(s) immediately, and take appropriate measures to prevent similar recurrences, unless NTT and its consolidated subsidiaries file a petition of objection or tax lawsuit.

### Revenues (FY2019)

	Approx. 12,735.5	
Revenues (billions of yen)	Japan Approx.	10,536.7
	U.S.A. Approx.	704.5
	Germany Approx.	218.9
	Australia Approx.	134.8
	Others Approx.	1140.6

### Profit before Income Tax (FY2019)

	Approx. 2,295.8	
Profit before Income Tax (billions of yen)	Japan Approx.	2,265.1
	Overseas Approx.	30.6

### Taxes Incurred (FY2019)

	Approx. 436.4	
Income Taxes Paid (billions of yen)	Japan Approx.	419.0
	Overseas Approx.	17.4

### Income Taxes Paid (FY2019)

	Approx. 438.1	
Income Taxes Paid (billions of yen)	Japan Approx.	400.2
	Overseas Approx.	37.9

The above amounts are based on "Country-by-Country Report" submitted to Japanese Tax Authorities, and not directly related to the Consolidated Financial Statements.

## Business Activity 15

# Sharing high ethical standards with business partners

### Our commitment

We set high ethical standards for ourselves and share them with our business partners

### Our objective

0

Cases of legal actions for anti-competitive behavior, bribery

### Prevention of Bribery

Understanding that it is essential to comply with laws and regulations and to operate its business with high ethical standards, NTT Group prohibits all forms of corruption, including bribery, improper benefits and facilitation payments\*1. In particular, with respect to the prevention of bribery, NTT Group has created a “Anti-Bribery Handbook” and distributed it to employees of Group companies, including its overseas subsidiaries, and has also posted the handbook on its internal website to ensure thorough awareness.

Furthermore, for NTT, NTT East, and NTT West, bribery is prohibited pursuant to the NTT Act, and any violations are subject to legal penalties.

### NTT Group CSR Conferences\*2

In order to share superior CSR initiatives horizontally across the NTT Group, we have held the NTT Group CSR Conference every year since fiscal 2013. This initiative involves having each operating company implement various measures in line with the CSR Priority Activities and announce their results in a conference setting. In addition to the best measures being commended as “superior CSR measures” at the conference, the single best measure is also awarded a President’s CSR Award by the NTT Group Presidents’ Meeting.

With COVID-19 infections continuing to spread around the world, CSR Conferences for fiscal 2020 were held in an online format. There were 69 submissions by group companies in Japan and overseas, with the Grand Prize going to three of those measures.

A People’s Choice Award was created specifically for this online conference, where employees could offer

their direct support of measures submitted by each company. The People’s Choice Award was eventually given to two measures as a result of voting. The voting system was particularly valuable in increasing employee awareness as it allowed them to better understand each particular measure before submitting their vote.

In addition to holding the conference in the next fiscal year and beyond, we also aim to further spread CSR awareness among employees by improving the content of initiatives and enhancing measures that involve employee participation.

Details of successful examples are also released outside the company so that they can be viewed by business partners.

NTT Group CSR Conferences  
[https://group.ntt/en/csr/management/management\\_system/conferences\\_7th.html](https://group.ntt/en/csr/management/management_system/conferences_7th.html)  
 NTT Group activities around the world  
[https://group.ntt/en/csr/sustainability\\_action/](https://group.ntt/en/csr/sustainability_action/)



NTT DATA Romania and NTT Ltd. Australia won the Grand Prize in the social contribution section



NTT EAST won the Grand Prize in the CSR section

\*1 Facilitation payments: Small payments used only for the purpose of ensuring ordinary administrative services are processed smoothly

\*2 The name is planned to be changed to NTT Group Sustainability Conferences in the future

Social Challenge 5

# Prepare for a new future with the power of technology

Business Activity

- 16. Promoting the B2B2X Model
- 17. Protection and Respect for Intellectual Property
- 18. Contribution to the Revitalization of Local Communities and Economies



## Why it matters

In recent years, various social issues have come to the fore: rapid increase in the global population, growing severity of natural disasters, worsening of food supply and environmental problems, and in Japan, low birthrates and an aging population are leading to a rapid shrinking of the working-age population and shortage of labor. To solve these problems, significant social and economic transformations are being demanded in every society and economy, and the advancement of digital transformation utilizing ICT (Information and Communications Technology) is required in every situation.

## What can be accomplished

As a leader in digital transformation, we will act and contribute to helping resolve the social challenges unique to each country. For example, the aging population, proper education, equitable healthcare, regional economic development, and long-term value through technology for the next generations.

## Future vision

The NTT Group is committed to contributing to the development of society by acknowledging diverse cultures, and thus we will contribute to solving social issues by connecting people, goods, and cultures, including communities, nations, and society, while promoting high ethical standards, diversity, and inclusion in fair and equitable ways, and work towards creating a better workplace through powerful and new digital technologies.



## Business Activity 16

# Promoting the B2B2X Model

### Our commitment

As a leader in digital transformation, we will act and contribute to helping resolve the social challenges unique to each country. For example, the aging population, proper education, equitable healthcare, regional economic development, and long-term value through technology for the next generations.

### Our objective

Generate ¥600 billion in B2B2X revenue by 2023  
(Number of B2B2X projects: 119 (current as of end of September 2021))

### Policies and Concepts

In recent years, various social issues have come to the fore: rapid increase in the global population, growing severity of natural disasters, worsening of food supply and environmental problems, and in Japan, low birthrates and an aging population are leading to a rapid shrinking of the working-age population and shortage of labor. To solve these problems, significant social and economic transformations are being demanded in every society and economy, and the advancement of digital transformation utilizing ICT (Information and Communications Technology) is required in every situation.

Collaborating with companies in different industries and local governments as Your Value Partner, the NTT Group has been applying its management resources and capabilities, including human resources, research and development, and the ICT base to promote digital transformation and resolve social issues.

Going forward, we will seek to make a greater contribution to society based on our awareness that

promoting the B2B2X business model that constitutes one of the pillars of our medium-term management strategy will be particularly effective.

### Organization for Implementation

The NTT Group has made promotion of the B2B2X business model one of the pillars of our medium-term management strategy and has been taking action by establishing a B2B2X Strategy Committee with the president as chairman to facilitate Group collaboration while expanding projects.

We are also deepening discussion about future deployment of the B2B2X business model at regularly held Board of Directors meetings and reporting on progress at general meetings of shareholders.

### What is the B2B2X model?

B2B2X is a business model aimed at resolving social issues by creating new value through collaboration with various partners.

This business model aims to provide our part-

ner's customers (users) with new value by combining the industry expertise and customer platforms of our partners with the NTT Group's "data services" and "data management technology."

### Development of B2B2X business

The model is being developed as an All NTT Group initiative in areas like (1) Advancing industry value chains (2) Providing better customer service (3) Utilization of mobile data (4) Community-based service and urban development.

### Examples of value created with the B2B2X model

#### (1) Advancing industry value chains in sectors like agriculture, forestry and fisheries, manufacturing and construction, and logistics

- Example 1 Digitalization of agricultural growth and cultivation process management
- Example 2 Digitalization of manufacturing processes and machine tool management

#### (2) Providing better customer service in logistics, services, and financial sectors

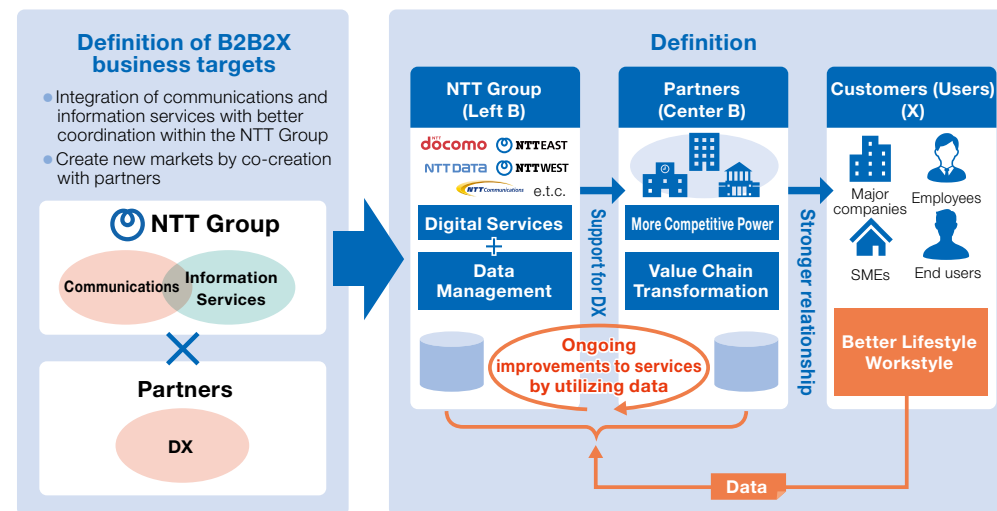
- Example 3 Digital integration into a unified channel for bank customer contacts
- Example 4 Logistics branch reform utilizing digital payment and purchasing data

#### (3) Utilization of mobile data x company owned data (mobile cross data)

- Example 5 Support for financial services credit
- Example 6 Attracting more customers by harnessing data from sports teams
- Example 7 On-demand type ride sharing services

#### (4) Community-based service and urban development

- Example 8 Increasing business opportunities for local businesses by analyzing tourist patterns
- Example 9 More efficient budgeting, transportation and logistics in communities with digitalization of snow removal work
- Example 10 Using sensor data to quickly detect accidents or other incidents and minimize damage



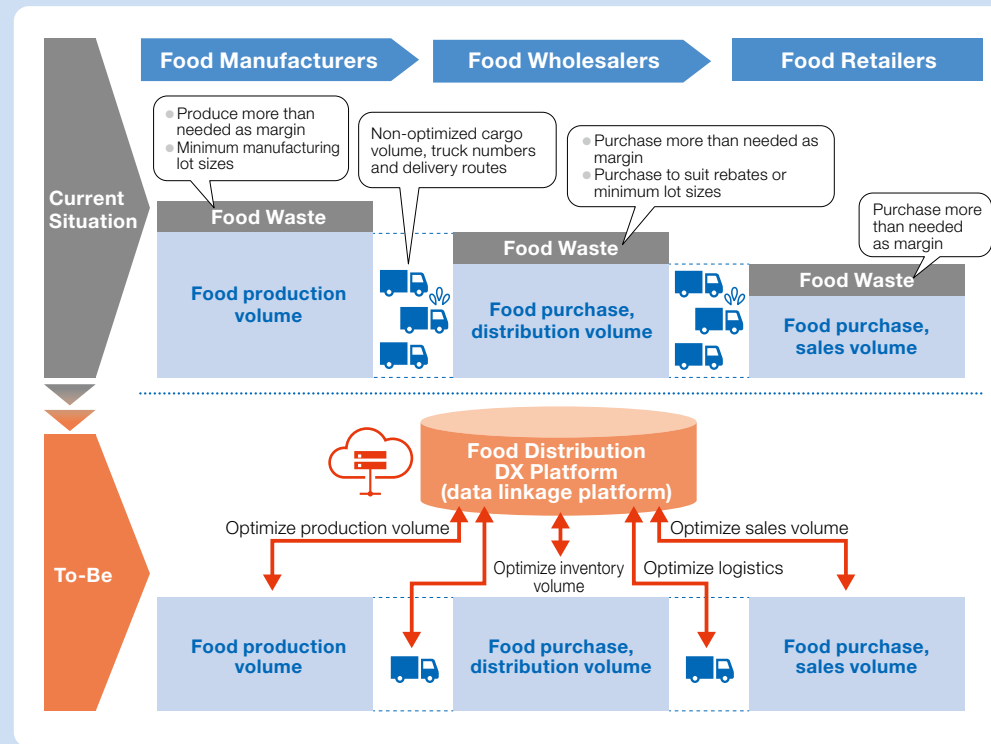
### Facilitating collaboration with partners

- Entered into a business alliance with Mitsubishi Corporation in December 2019 to transform industrial value chains and to generate new value through digital transformation (DX), and in July 2021 established the joint venture company "Industry One" for providing DX services.
- Agreed to form a multi-year strategic alliance with Microsoft Corporation in December 2019 to promote the creation of a Global Digital Fabric, development of digital enterprise solutions, and co-innovation of next-generation technologies to deliver secure, reliable solutions that help enterprise customers accelerate their digital transformation.
- Entered into a business and capital alliance with Toyota Motor Corporation in March 2020 to establish a long-term, ongoing cooperative relationship that enables the commercialization of businesses to realize smart cities that continue to evolve in accordance with resident needs.
- The entire NTT Group is implementing initiatives aimed at achieving regional growth and developing smart cities by working with municipalities around Japan, with examples including a Community Development Partnership Agreement, concluded with Sapporo City (2015), a Comprehensive Partnership Agreement related to joint regional initiatives concluded with Fukuoka City (2015), an Agreement for Comprehensive Collaboration for developing a super-smart society by utilizing public and private data concluded with Yokohama City and Yokohama City University (2018), and a Comprehensive Partnership Agreement for future urban development concluded with Chiba City (2019).

\*1 Industry One, Inc.: Company providing cross-industry DX solutions, established as joint venture with Mitsubishi Corporation

<https://industry-one.com/>

### Business Alliance with Mitsubishi Corporation "Initiatives to Support DX in the Food Distribution Industry to Reduce Food Waste (inventory-optimization using demand forecast AI engine)"



Food waste is one of the most significant problems in today's food distribution industry, and is on the scale of a trillion yen annually. Industry One, Inc.\*1 was established with Mitsubishi Corporation with the aim of reducing food waste caused by excess inventory, and will play a key role as part of an inventory optimization system that is being developed with partner companies.

Together with NTT DATA Corporation, a platform is being jointly developed that uses digital technologies to seamlessly and securely link data in various locations within and among companies, including information on retail, wholesale, and manufacturers' inventories, order receipts, demand forecasts and weather forecasts. A proprietary AI engine developed by Mitsubishi Corporation and MC Digital, Inc. was used in a proof-of-concept trial covering some 10,000 products resulted in a reduction in inventory of up to 40% at some distribution centers, while also successfully cutting down product shortages that tend to be the trade off when minimizing inventories.

More services are being planned to expand DX throughout Japanese industry as a way of contributing to sustainable development in food distribution while also achieving the UN's Sustainable Development Goals (SDGs).

### Research and Development to Promote the B2B2X Model

Promoting the B2B2X business model is a central pillar of the NTT Group's initiatives contributing to the realization of a smart society. In the B2B2X model, instead of providing services to customers directly, the NTT Group supports service providers by offering ICT tools such as AI and IoT, to which various values are added before being delivered to customers. In addition, the NTT Group has been working to create B2B2X models with many partner companies and local governments. We will further develop them and advance a model that uses digital services and data management.



### Initiatives

- We have been working together with Mitsubishi Heavy Industries, Ltd. to promote the transformation of manufacturing technology in the social infrastructure industry. By applying communication-grade optical fiber technology with laser processing, we have succeeded in transmitting high-power single-mode laser light, whereas, conventionally, such transmissions have been possible only up to several meters. This research success opens the door to higher efficiency and precision in laser processing while expanding applications into new fields. The technology is expected to spark innovation in manufacturing.
- Signed a multi-year partnership with Major League Baseball (MLB) in the United States as a smart sports initiative aimed at promoting NTT's latest technologies to deliver next-generation baseball viewing experience. A Proof of Concept using NTT's Ultra Reality Viewing technology (URV) was conducted in October 2019 during the post-season games of the MLB, providing the world's first successful demonstration of an immersive live-viewing experience by combining and transmitting 12K super-wide-screen video images.



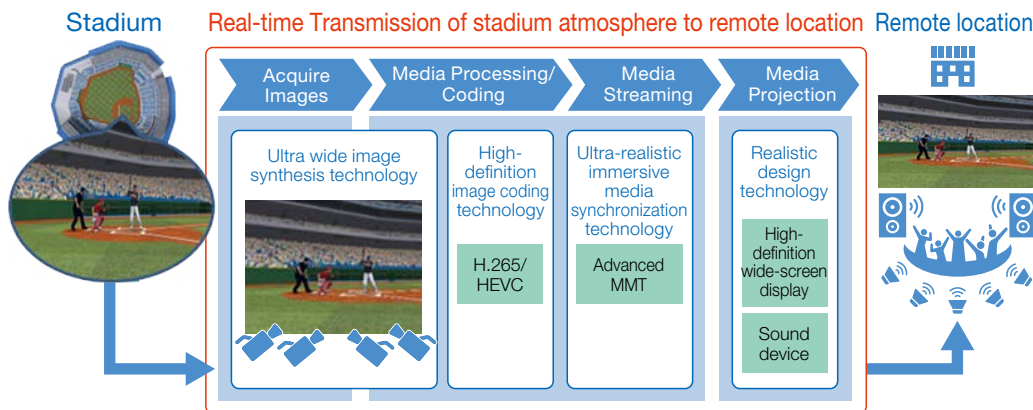
### Research and Development Aimed at Achieving Immersive and Natural Worlds

NTT has further evolved its Kirari!® processing technology, which aims to create worlds that provide “just like being there,” ultra-high immersion experiences in real time that can be accessed anywhere. The newly developed techniques not only enable the acquisition and transmission of the images of subjects from video broadcasts, along with 3D positioning information, but also allow them to be reproduced at the destination in a pseudo-3D display that generates the sensation that the subjects also move toward and away from the viewer. This results in the achievement of an audience experience in which the subjects appear to move in three dimensions at the destination.

For example, in a sports match, the technology

can project a pseudo-3D display of an athlete onto a stage and give a real sense of the projected athlete moving nearer or further away through synchronization with the movements of the athlete in the actual event being broadcast.

- In the ongoing migration from Public Switched Telephone Networks (PSTN), we have developed fundamental technologies that enable the use of metal cables of conventional telephone networks to connect with the IP networks operated by NTT East and NTT West (next-generation networks, NGNs) through transfer switches, which connect with other carriers through IP and migrate tandem/signal switches to IP. We will continue to pursue the initiative toward its scheduled completion.



As a Gold Partner for the Olympic and Paralympic Games Tokyo 2020, the NTT Group implemented B2B2X model using a broad range of technologies, and rolled out technology with the potential for future B2B2X.

**(1) Real-time Remote Cheering Project: Delivering real-time cheers**



Providing direct support to athletes despite COVID-19. The NTT Group organized the “Tokyo 2020 Real-time Remote Cheering Project,” which delivered real-time cheers from the people of Tokyo to the marathoners in Sapporo, successfully sharing space beyond distance in which even the athletes in the event venue themselves could feel the excitement, emotion, and sense of unity.

**(2) Sailing: “Bring the excitement of competing on the wind and waves closer”**



Until now, only binoculars or small monitors could be used to view sailing events. The sailing competition at the Olympic and Paralympic Games Tokyo 2020 was transmitted live to a massive offshore wide screen floating near the spectators' seats using Kirari!, the ultra-realistic communication technology that was used to synthesize video feeds from multiple cameras close to the competition and transmit them using 5G communications services. This provided a new way to experience spectator events with ultra-realistic, ultra-wide videos.

**(3) Brand new sports viewing experience for golf with 5G x multi-live broadcasts**



Harnessing the high-speed, high-capacity and low-latency capabilities of 5G communications means users can use their own device to select which video to watch from multiple live feeds of events located far away. Fans of golf have different preferences when it comes to watching events at the course, like watching from a fixed spot or follow their favorite players around the course. This project used 5G communications to transmit multiple video feeds of matches from all holes on the course as well as player score cards and other high-capacity event data, so that users could select which video to watch in real-time directly on their own device.

**(4) “Supporting the Tokyo 2020 Games with science fiction-like technology”**

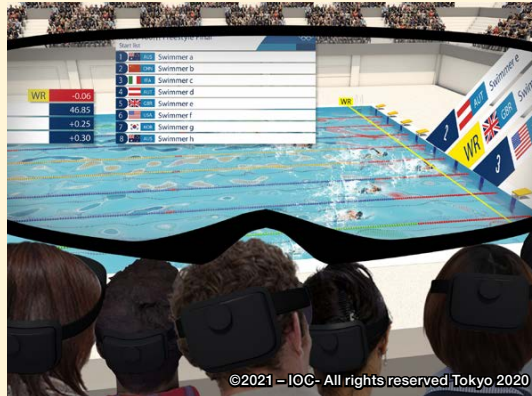


The NTT Group provided “CUzo” communication technology for AR guidance to support the management of the Tokyo 2020 Olympic and Paralympic Games, demonstrating how technology can be used for more natural and exciting multi-language communications. This technology assisted event staff during the games and helped to handle any issues or concerns athletes or tournament staff had in a smooth manner.

NTT was a Gold communications service partner of the Tokyo 2020 Olympic and Paralympic Games.



(5) 5G x AR for a brand new swimming viewing experience



Event data was streamed in real-time to users' AR devices by utilizing the low-latency capabilities of 5G technology. Event spectators wearing AR devices at venues will be able to view athlete details or times and other race information superimposed over the race playing out in front of them. Event data on sports that are decided at the one hundredth of a second level could not be transmitted with past communication technology due to issues with latency. The use of 5G communications allowed this data to be displayed in real-time, which meant spectators not only experienced the thrills directly at the venue directly, but also could also view detailed race information in a brand new type of viewing style.

(6) A new way to enjoy sports: "Badminton x Kirari!®"



NTT's Kirari® ultra-realistic communication technology was used during badminton events at the Olympic and Paralympic Games Tokyo 2020, with networks to link up remote locations and the tournament venue in real-time. Players and shuttles were extracted from images captured at the venue, and transmitted to be displayed holographically to demonstrate this brand new way of watching badminton tournaments.



NTT was a Gold communications service partner of the Tokyo 2020 Olympic and Paralympic Games.

Technology to be hot conditions



NTT played a key role during global sporting events held throughout 2021 as it provided reliable communications environments protected by tough IT security measures. To achieve these goals, some 2,000 engineers worked as a team installing network infrastructure throughout sporting venues in August 2020. Yet there was the risk of workers suffering from heatstroke given that installation work had to be conducted in the midday sun. NTT's communication technology was utilized to provide a safe working environment for those performing installation work.

"Japan Walk Guide" accessibility and transportation guidance web app for people with limited mobility like wheelchair users



In cooperation with the Eco-Mo Foundation, the NTT Group developed the "Japan Walk Guide" accessibility and transportation guidance web app for sports venues using the barrier-free information collected by the All Japan Business Committee and the Ministry of Land, Infrastructure, Transport and Tourism (MLIT). This web app was launched by the All Japan Business Committee as a service for spectators watching sporting events and officials on July 13, 2021, with the service limited to some venues and officials. (currently not available)

## Creating New Lines of Business

### Initiatives in the Location Business

There is growing expectation that the connection of all things and people via the Internet will advance intellectual productivity and enhance the quality of offices and daily lives, leading to a broader use of location technologies that make this possible.

### Investment in HERE Technologies

NTT will strengthen location information services as a core function of the Industrial DX Platform that is being established in collaboration with Mitsubishi Corporation. As a concrete example, we will seek to develop a service that identifies optimal distribution routes by utilizing the world's largest and most accurate location information database owned by HERE Technologies to visualize vehicle locations and operational status. We are studying alliances with logistics partners involved in home delivery (last-mile delivery) and trunk line transportation (mid-mile delivery), where demand is expected to increase, toward launching several Proof of Concept projects by the end of fiscal 2020.

### Capital and business tie-up with ZENRIN

NTT entered into a capital and business tie-up with ZENRIN Co., Ltd. to expand its respective businesses in the fields of infrastructure management, MaaS and autonomous vehicles as well as smart cities and contribute to the "4D digital platform<sup>®</sup>" envisioned by NTT. Beginning in fiscal 2020, we will jointly construct a high-precision Advanced Geospatial Information Database with an abundance of location information. In doing so, we will draw on the know-how of the NTT Group in high-accuracy positioning and mapping technology as well as infrastructural maintenance and management and ZENRIN expertise in the production of maps incorporating a broad range of collected information.

## Providing Services that Support Healthcare Management

In April 2020, NTT Life Science launched the "Genovision<sup>®</sup>" corporate wellness support service to help companies promote healthcare management and boost employee health. In Japan, low birthrates and the aging population have led to rising medical costs, with expenses for treating lifestyle diseases accounting for a major proportion.

Meanwhile, companies are being required to consider maintaining and improving employee health from a management standpoint and conduct healthcare management as part of their corporate management strategy. To address these needs, Genovision will help improve lifestyles optimized for each individual employee by harnessing the NTT Group's accumulated technologies in ICT and security to conduct big data analysis based on healthcare data and genomic information.

## Business Activity 17

# Protection and respect for intellectual property

### Our commitment

As a leader in digital transformation, we will act and contribute to helping resolve the social challenges unique to each country

For example, the aging population, proper education, equitable healthcare, regional economic development, and long-term value through technology for the next generations

### Our objective

## More than in the previous fiscal year

Number of patent applications per employee

### Intellectual Property Management Our Approach to Intellectual Property

The business activities of the NTT Group are sustained by products and services derived from the results of our aggressive R&D. For this reason, we believe that appropriate protection and utilization of intellectual property generated by R&D is vital for the NTT Group to achieve continuous growth, which in turn will enable us to continue contributing to our customers and society at large. We strive to protect the intellectual property of the NTT Group and promote activities that respect the intellectual property of others in every aspect of our business activities.

### System of Intellectual Property Management

NTT protects the results of its R&D to maintain its competitive edge but at the same time makes its intellectual property available to a wider audience by licensing technologies that would contribute to the development of industries and businesses as well as standardized technologies that are already used in society.

Under the leadership of the NTT Intellectual Property Center, NTT has established policies for intellectual property activities involving the entire NTT Group and also provides support and coordination for the use and management of intellectual properties, aggregates the opinions within the Group on the intellectual property system and disseminates information outside the Group.

### Protection of Third Party Intellectual Property

In order to prevent the infringement of domestic and overseas third party rights, NTT examines the third party rights of technologies used in our business at every step from the early stage of research and development up to the provision of the developed technologies to Group companies. NTT also strives to enhance the Group's compliance with intellectual property laws and regulations in Japan and abroad and mitigate potential business risks by sharing among the Group companies information on system amendments, and trends concerning intellectual property including disputes and court cases.

NTT Intellectual Property Center  
<https://www.rd.ntt/e/chizai/>

### External Utilization of R&D Outcomes

Since its founding, NTT has promoted cutting edge technological development as a leading company in the information communication industry. For this reason, we own a vast number of patents.

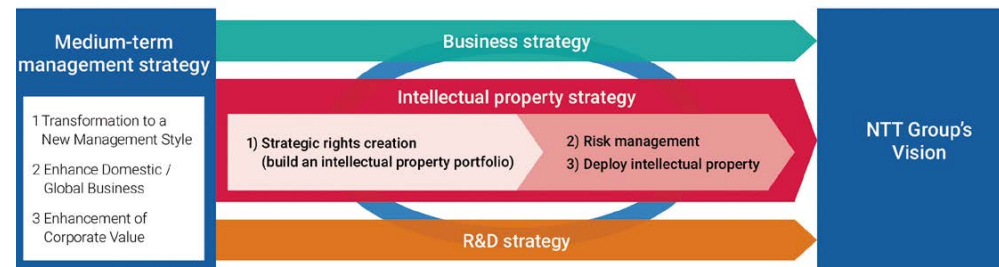
NTT licenses its proprietary technologies so that they can be used broadly by all for the benefit of the telecommunications market as well as other markets. For example, as part of our initiatives for standardization, we efficiently promote the spread of technology by licensing patents on standardizations to many companies through various patent pools.



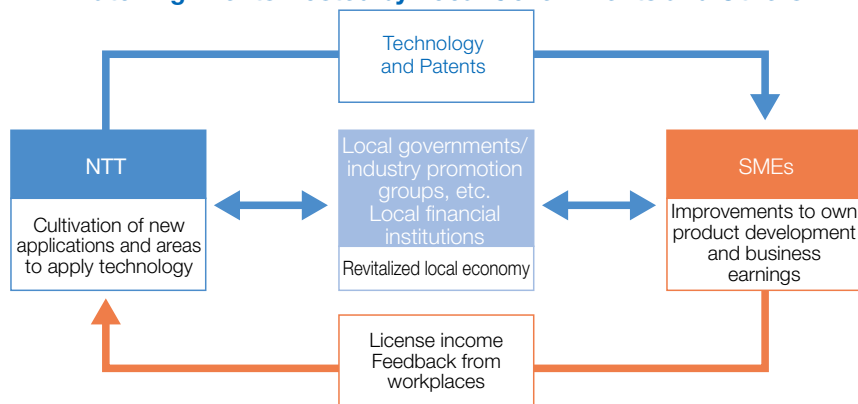
### IP Open Access Declaration Against COVID-19

Recognizing the need to contain the spread of COVID-19, the NTT Group expressed its consistent support for the IP Open Access Declaration Against COVID-19 in May 2020 and declared that it will "not assert any patent, utility model, design or copyright (hereinafter referred to as the "Intellectual Property Rights") against any individual or other entity during the period starting with the date of this declaration and ending on the date on which the World Health Organization declares that the COVID-19 outbreak no longer constitutes a Public Health Emergency of International Concern, with respect to activities whose sole purpose is stopping the spread of COVID-19, such as diagnosis, prevention, containment, and treatment of COVID-19." NTT discloses its licensing policy and procedures along with detailed information on its R&D activities and technological licenses.

R&D Activity  
<https://www.rd.ntt/e/>  
NTT Technology Licensing Site  
<https://www.rd.ntt/e/ntt-tec/>  
Licensing policies and procedure  
<https://www.rd.ntt/e/ntt-tec/procedure/index.html>  
Participation in the "IP Open Access Declaration Against COVID-19"  
<https://group.ntt.jp/topics/2020/05/29/oacvd19/>



### Model for Regional Revitalization through Intellectual Property Matching Events Hosted by Local Governments and Others

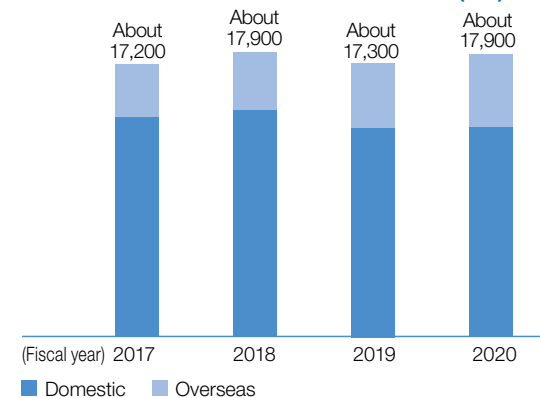


### Participation in Intellectual Property Matching Events Organized by Local Governments and Organizations

In an effort to help vitalize regional business structures, we actively participate in intellectual property (IP) matching events sponsored by local governments to offer licensing agreements that enable local companies to use NTT's proprietary technologies in developing their own products. In the case of a company based in Kawasaki City, Kanagawa Prefecture, we signed a licensing agreement through a matching event organized by Kawasaki City and the Kawasaki Institute of Industrial Promotion that has enabled the company to use NTT's patented technology to provide a new service starting in 2019. We are committed to continue contributing to the vitalization of regional economies through this initiative.



### Number of Patents Owned (No.)



### Selected as "Clarivate Top 100 Global Innovator" for 10 consecutive years

The results of R&D, which plays a major role in the creation of intellectual property for NTT Group, has translated into ownership of approximately 17,900 patents around the world in a wide range of technological fields. NTT Intellectual Property Center is putting more effort into filing patent application in foreign countries with the intention of reinforcing the global operations of NTT Group.

Clarivate Analytics, which analyzes trends in intellectual property based on patent filings, has selected the NTT Group as a Clarivate Top 100 Global Innovator, which names the world's most innovative companies and institutions, for ten consecutive years, in recognition of NTT Group's activities and track record on this front.

## Reinforce and Globalize Research and Development

### Policies and Concepts

As ICT companies leading the world, the NTT Group recognizes R&D as a material issue that gives Group companies their competitive edge. R&D supports the digital transformation of our customers and lifestyle transformations tailored to individuals, and the R&D department works with operating companies to develop new technologies that provide the wellspring for new value creation in a variety of domains to enhance the NTT Group's R&D, a pillar of our medium-term management strategy.

The NTT Group seeks to overcome numerous problems involving safety, disaster readiness, and the improvement of productivity through R&D and, as a result, strengthen industrial competitiveness and resolve social issues. Since ICT is applied in a variety of fields, we are forging partnerships with counterparts in wide-ranging industries as we pursue our R&D initiatives.

## Organization for Implementation

With respect to R&D undertaken by the NTT Group, NTT's three laboratory groups are responsible for conducting basic research that serves as the backbone of telecommunications, such as basic and component technologies related to services and networks, while each operating company conducts applied research that is more closely related to its business. Also, we promote general producer activities, in which we formulate marketing and business plans and forge alliances so that the results of research by NTT laboratories can be transformed into Group businesses.

In these general producer activities, we seek to develop business in a timely manner by combining the wide-ranging basic technologies of NTT laboratories with external technologies in collaboration with Group companies and with various other companies to create new services. In order for innovation to continually be an important driver of the NTT Group well into the future, we will aim to contribute to the realization of a sustainable society by promoting innovations for social issues. These efforts will include patent applications and the publication of scientific papers.

## Laboratories

<b>NTT IOWN Integrated Innovation Center</b>	<b>Achieving a sustainable society by mapping the world with photoelectric merging technology</b>
	NTT Network Innovation Center
	NTT Software Innovation Center
<b>Service Innovation Laboratory Group</b>	<b>Shaping of a world in which everyone can be happy, healthy, safe, and secure</b>
	NTT Human Informatics Laboratories
	NTT Social Informatics Laboratories
<b>Information Network Laboratory Group</b>	<b>Creation of innovative network technologies with an eye to 2030</b>
	NTT Network Service Systems Laboratories
	NTT Access Network Service Systems Laboratories
<b>Science and Core Technology Laboratory Group</b>	<b>Research on world-first and world-best innovations that will surprise society</b>
	NTT Network Innovation Laboratories
	NTT Device Technology Laboratories
	NTT Communication Science Laboratories
	NTT Basic Research Laboratories

## Research Centers in Specific Fields

NTT Machine Learning and Data Science Center	NTT Bio-Medical Informatics Research Center
NTT Research Center for Theoretical Quantum Physics	NTT Institute for Fundamental Mathematics
NTT Digital Twin Computing Research Center	NTT Nanophotonics Center
NTT Innovative Photonic Network Center	NTT Smart Data Science Center

<b>NTT Group's Overall R&amp;D Organization</b>	Number of Researchers	Approx. 5,000*1
	R&D Expenses	¥360 billion*2

\*1 As of March 31, 2020), \*2 R&D expenses and total equipment investment and expenses related to system development

## Enhance and Globalize R&D

The NTT Group is advancing innovative research and development that drives change worldwide while stepping up basic research at overseas centers.

Specifically, we will use the research centers established overseas to strengthen joint research with a varied range of research bodies, actively utilize the latest external technologies, and increase investment in research on new growth fields.

We will also promote the global rollout of R&D results and globalization of research targets.

More specifically, in July 2019 we opened NTT Research, Inc., which operates three research laboratories, in Silicon Valley in the United States for the purpose of reinforcing fundamental research. We have launched a collaboration with universities and research institutes in the United States and Europe in the fields of quantum computational science, medical/health/healthcare, and basic cryptography/blockchain. We will further globalize our research and development by opening research centers in areas around the world, starting with Silicon Valley.

To concentrate efforts on IOWN research and development, we established IOWN Global Forum, Inc., a new industry forum based in the United States, together with Intel Corporation and Sony Corporation in January 2020, which expanded to include 79 member organizations as of October 31, 2021.

The creation and utilization of photonics-electronics convergence technology that combines optical and electric signals will be key to the development of IOWN. The "NTT IOWN Integrated Innovation Center" was established on July 1, 2021 in order to advance development and accelerate the creation and utilization of these technologies.

NTT also assembled researchers who are known authorities in their respective fields to

form the NTT R&D Authority Team. These researchers take part in R&D activities at NTT to contribute to the development of IOWN and help shape our vision after making this concept a reality. Specifically, they are responsible for driving research in their fields of expertise by directing, providing guidance, and advising activities regarding research themes. As one facet of our efforts to accelerate R&D from a long-term perspective, NTT established the new Institute for Fundamental Mathematics, headed by Dr. Masato Wakayama, a member of the NTT R&D Authority Team who serves as the Fundamental Mathematics Research Principal. It will work on establishing a basic theoretical framework for modern mathematics and will accelerate research towards innovation in quantum technology by challenging to uncover the basic principles behind the superior power of quantum computing. It will also seek to contribute to NTT's R&D aimed at achieving IOWN by proposing the use of modern mathematics in groundbreaking new approaches to addressing various research problems, including the elucidation of unknown diseases and the discovery of new drugs.



## Promoting Other Cutting-Edge Research

- In collaboration with the Tokyo Institute of Technology, we achieved an all-optical switch that operates at ultra-high speeds while using the lowest energy consumption in the world. By combining a technology called plasmonics for guiding light into a nano-sized optical pathway with graphene, which has excellent optical properties, we achieved ultra-high-speed switching operation with low energy consumption that exceeds the potential of electronic control. We plan to utilize this technology for ultra-high-speed control of future optical integrated circuits for information processing.

- We successfully developed a method of rebuilding microscopic nerve cell fibers at a micrometer to millimeter scale by forcing graphene, a sheet of carbon material, to spontaneously adapt to a three-dimensional cylindrical structure and culturing nerve cells inside it over a long period of time. This is expected to lead to new bio-device applications such as a fundamental technology for reconstructive surgery using stem cells, a manufacturing technology for the flexible stimulation of electrodes implanted in damaged tissues, and a technology to create tissues for pharmaceutical screening.

- With large capacity optical networks expected to evolve further to facilitate the widespread use of IoT and 5G services, we are newly developing our own digital signal processing and ultra-broadband optical device technologies, and we have become the first in the world to successfully test the long-distance transmission of a wavelength division multiplexed optical signal. We also successfully used two technologies for large-volume wireless transmission, as mentioned in Business Activity 2 Increasing the Capacity of Optical Fiber Communication Networks.

- In cooperation with Hokkaido University and the City of Iwamizawa, toward achieving unmanned, fully automated operation in agricultural equipment using remote monitoring, we have started testing an optimal positioning and positional information transmission method, optimal network technology, collection of IoT device data, and AI analysis.

- NTT concluded an agreement with the Japan Aerospace Exploration Agency (JAXA) for implementing an ultra-high-speed, high-capacity, secure optical/wireless network infrastructure to seamlessly connect land and space. In preparation for merging the technologies of both entities to create social infrastructure, the two parties are undertaking joint research in areas such as optical wireless communications in space, next-generation Earth observation, and communication between ground stations and low Earth orbit satellites.

- As part of our efforts to enable communications beneath the surface of the sea where radio waves cannot easily penetrate, we achieved subsurface communication speeds of 1 Mbit/s, a double-digit improvement over current levels by using ultrasound MIMO multiplexing technology to overcome variations in the subsurface propagation path.

NTT Research and Development  
<https://www.rd.ntt/e/>

## Business Activity 18

# Contribution to the revitalization of local communities and economies

### Our commitment

As a leader in digital transformation, we will act and contribute to helping resolve the social challenges unique to each country. For example, the aging population, proper education, equitable healthcare, regional economic development, and long-term value through technology for the next generations.

### Our objective

**97%**

Development rate of 5G infrastructure maintenance (by FY2023)

### Contributing to the Vitalization of Regional Societies and Economies

- NTT ArtTechnology Corporation was established in December 2020 to protect various tangible and intangible cultural and artistic assets, and to promote the appeal of regions both domestically and abroad by broadly spreading new online-based styles of cultural and artistic appreciation.
- Provided a simple and secure online storage service for SMEs. "Cowork Storage" was released in March 2021 to provide a more flexible and extensive service with file sharing functions to build secure computing environments, and used in a similar way to NAS or file servers.
- Established Co-Designing Institute for Polyphonic Society in July 2021 to promote regional vitalization by providing consulting services aimed at supporting the activities of municipalities, companies, organizations and other associated groups (local communities, public private partnerships) that are facing issues achieving revitalization at a local level.
- Established NTT EDX in October 2021, for improving higher education with the aim of developing an educational ICT platform and other electronic textbook and online learning services.

### Advancing Personalization by Supporting the Transformation of Lifestyles

We support customers as they transform ever-diversifying lifestyles by providing personal solutions centered on DOCOMO that closely align with individual needs. Subscribers\*\*1 to Gigaho and Gigalight, which are simplified and reasonable billing plans introduced in June 2019, totaled 17.87 million as of the end of June 2020.

In terms of service, we are enhancing electronic payment and contents while utilizing AI and big data to improve communication with every customer.

### Promoting Digital Transformation

We are raising operational efficiency by introducing robotic process automation (RPA)\*\*2. The operational process has been adopted in approximately 2,900 cases within the NTT Group as of the end of June 2020. We are also recommending the use of RPA among our customers, and more than around 5,200 of them have adopted the process as of the end of June 2020. We also sought to advance our Group management by actively introducing a unified enterprise resource planning (ERP)\*\*3 system for our personnel, finance, and procurement operations.



### Initiatives for the Realization and Deployment of 5G

We launched our commercial 5G services in March 2020, and we will provide billing plans such as 5G Gigaho and 5G Gigalight, seven types of 5G devices, services in the gaming, music and sports genres, and solutions that contribute to advancing industry and driving digital transformation.

Furthermore, we are promoting initiatives that will increase convenience and enrich people's lives by creating new value and offering solutions for social issues toward our goal of introducing 5G services in more than around 500 cities by the end of fiscal 2021.

\*1 The number of subscribers is the combined total for the Gigaho, Gigalight, 5G Gigaho, 5G Gigalight, Keitai Plan, Kids Keitai Plan, Data Plus and 5G Data Plus billing plans.

\*2 Solution for automating operations previously handled by humans by establishing procedural rules to replace humans with robots.

\*3 Management method for implementing centralized management of corporate resources to achieve optimization across the entire company.

### Initiatives for Universal Design\*<sup>1</sup>

The NTT Group actively encourages the broader adoption of universal design, which ensures that products and services are easy for all customers to use, regardless of age, gender or physical abilities.

#### Examples of Universal Design Products and Services in Fiscal 2020

- Oshaberi Annaiban, an AI-based information board capable of engaging in natural conversation
- Smart Room Mimamori, a system for monitoring elderly citizens
- Home Currency Anywhere, which allows consumers to use their own country's currencies anytime, anywhere
- Face Sharing, a technology that reproduces the mouth movements and facial expressions of someone else onto the user's own face
- Small self-driving mobility technology and free rental service for next-generation electric wheelchairs

\*<sup>1</sup> Products and services that can be used by senior citizens, children, persons with disabilities, and foreign visitors facing language barriers (includes expanded functions)

### Establishment of the NTT Group Web Accessibility Policy

The NTT Group is working to ensure and improve the accessibility of its websites for a wide spectrum of customers, including senior citizens and persons with disabilities. Specifically, the Group established the NTT Group Web Accessibility Policy. The policy for official websites of the Group companies with head office functions in Japan is set according to JIS X 8341-3:2016\*1 and each works to comply\*2 with Level AA.

NTT Group "Web Accessibility" Initiatives  
<https://group.ntt.jp/accessibility/>

### User-Friendly Service Lineup

We offer a broad range of discount services for various users, including senior citizens and persons with special needs, to facilitate access to ICT services.

#### Special discounts on dedicated lines for educational facilities (NTT East and NTT West)

Since January 2001, NTT East and NTT West have offered special fees for schools on FLET'S services suitable for using the Internet at a fixed sum in an effort to promote educational use of the Internet.

NTT EAST  
<https://business.ntt-east.co.jp/service/schoolplan/>  
 NTT West  
<https://flets-w.com/limited/school/>

#### Discounts on mobile phone use for persons with special needs (NTT DOCOMO)

NTT DOCOMO offers the Hearty Discount programs for encouraging more social participation by persons with disabilities.

#### Examples of Hearty Discount Programs

- DOCOMO's GIGA plans → **1,370 yen discount** (rate plan for subscribers after October 1, 2019. includes discount for sp-mode usage)
- Voice options → **700 yen discount**
- Monthly fees on various services such as voice mail → **60% discount**
- Video phone call charges → **Set at same level as voice call charges**
- Charges for some subscription options → **No charge**
- Support for setup of smartphones etc. → **No charge**
- Dialing and obtaining information via 104 directory assistance → **No charge**

<https://www.nttdocomo.co.jp/charge/discount/hearty/about/index.htm>

\*1 JIS X 8341-3:2016: "Guidelines for older persons and persons with disabilities—information and telecommunications equipment, software and services— Part 3: Web content" of Japanese Industrial Standards

\*2 Refers to compliance with the description defined in the "Compliance Performance Announcement Guidelines for JIS X 8341-3:2016. March 2016 Edition (published on March 22, 2016)" of the Web Accessibility Infrastructure Committee, Info-communication Access Council. This means that we have established and disclosed an accessibility policy and confirmed that the pages fulfilled all the requirements through the tests implemented and based on JIS X 8341-3:2016.



### Mieru Denwa Speech-Text Cheering Service

We provided a new way for fans to send their support to athletes, by converting audio of their "cheers" to text.

NTT DOCOMO's "Mieru Denwa" service, which converts speech of the person on the phone to text in real time, was utilized to convert messages of support sent from all around Japan with the speech recognition function and shown on the display in the Olympic village plaza (in 8 languages).

This service was initially developed to assist with communications of users with hearing impairments, and was applied during the games to send messages of support to athletes staying in the Olympic village. This project maximized the feature of communications technology that allows people in remote locations to communicate with others in a non-contact manner, and has even been proposed as a new way of supporting athletes during events after COVID-19 subsides.



NTT was a Gold communications service partner of the Tokyo 2020 Olympic and Paralympic Games.

Tokyo 2020 Gold Partner (Telecommunications Services)

## Policies and Concepts to Pursue Customer Satisfaction

The NTT Group serves various customers, from general consumers to corporate customers, providing a broad range of products and services.

Its main business fields, the telecommunications and ICT industries, continue to innovate, producing new products and services. Mobile devices such as smartphones and tablets continue to evolve almost daily, giving rise to a number of new services utilizing the NTT Group's network. At the same time, with the evolution of technology and services, the amount of information needed to use them has increased, and this has also increased opportunities for us to receive various confirmations, inquiries, feedback and requests from customers with regard to device malfunctions and questions about various fees and services.

The NTT Group believes that resolving customers' concerns or questions about the services they use and maintaining a high level of satisfaction for all customers will foster a relationships of trust with customers and lead to the acquisition of new customers.

## Organization for Implementation

The NTT Group companies have built a system for making operational improvements that will lead to reductions in the time taken to respond to customers, enhancing products and services, and influencing development based on the voice of customers received through surveys, the Customer Services Center, and other departments. In turn, we work toward developing and providing services closely in tune with the voice of our customers. Specifically, we work continuously to improve our year-over-year results for the KPIs of the reduction in waiting and customer service times at DOCOMO shops, the number of improvements made based on suggestions from customers, and the response rate of our call centers, which will give rise to a positive cycle of improvement.

The NTT Group will keep on making efforts to raise the level of customer satisfaction, including service quality and on-site responsiveness required by customers, in conjunction with the business operations of individual NTT Group companies.

## Main Initiatives

### Customer Contact Points

Each Group company has set up a call center that responds to customer inquiries on products and services, requests for repairs, and complaints. Major call centers of the NTT Group receive over 180,000 calls each day and endeavor to respond promptly to customers. Each call center has set its own targets aimed at improving response rates and enhancing the quality of responses and support. They also engage in various efforts including telephone response competitions and training to enhance skills for providing better responses.

### COVID-19 Outbreak and Support for Customers

In March 2020, NTT Group companies announced their policy of extending payment dates upon request from customers facing difficulties in paying for services on time, and this policy was extended through to the end of November 2021.

Recognizing that the government's stay home request created an environment that made it difficult for customers to use their d POINTS, NTT DOCOMO decided to reactivate d POINTS that

expired between March and May 2020 and award them to customers, effectively extending their expiration dates.

In light of schools implementing remote classes and online education, a partial waiver of data communication fees was announced to support the use of smartphones for online learning. NTT Group companies have also been supporting telework, education, and health by setting up customer contact points and providing some services free of charge as initiatives. At the same time, the NTT Group has been using the way cell phones connect to analyze demographic changes caused by government policies addressing the spread of COVID-19 and providing information to central and local governments and the media.

### Reflecting the Voice of Customers

The NTT Group listens to the voice of its customers, including their opinions and requests, through its call centers. Each Group company has constructed a system for reflecting the voice of customers in making operational upgrades and improving and developing products and services, and they are making an active effort in related activities as well.

For example, NTT Communications collects the voice of customers through various contact points in an effort to reinforce initiatives for enhancing services and improving operational processes. This includes not only annual surveys, but also soliciting customer feedback at the time of application and during various support processes.

For more information on these initiatives, please refer to each company's website, Sustainability Report, and other materials.

NTT East "Service with a Smile" activities  
<http://www.ntt-east.co.jp/smile/>

NTT West "Customers First" activities  
<https://www.ntt-west.co.jp/withc/>

NTT Communications "For Increased Customer Satisfaction"  
<https://www.ntt.com/about-us/cs>

NTT DOCOMO "Initiatives That Utilize Feedback from Customers"  
<https://www.nttdocomo.co.jp/support/cs/case/index.html>



### "Mobile Spatial Statistics®"

A new approach to population statistics capable of monitoring Japan's entire population 24-hours a day, all year round, based on service data of around 82 million\*1 DOCOMO subscribers. As society moves toward a new type of lifestyle aimed at avoiding crowded places due to the increase in COVID-19 infections, DOCOMO InsightMarketing, Inc. released the Mobile Spatial Statistics Population Map from May 2020, which showed the nationwide distribution of people in real-time. This technology was used by countless people and helped to prevent the spread of COVID-19 infections.

\*1 As of the end of March 2021, excludes corporate and other contracts.

## Social Challenge 6

# Moving towards a safe, secure, and resilient society

## Business Activity

19. Ensuring the stability and reliability of services
20. Strengthening information security and personal information protection
21. Contribution to the revitalization of local communities and economies



## Why it matters

As a company that supports the vital infrastructure of a digitalized society, the NTT Group believes one of its responsibilities is to make use of technology to keep people safe and secure from the major threats of this century: epidemics, natural disasters, and digital disasters like cyber-attacks.

## Future vision

The NTT Group is committed to contributing to the development of society by acknowledging diverse cultures, and thus we will contribute to solving social issues by connecting people, goods, and cultures, including high ethical standards, diversity, and inclusion in fair and equitable ways, and work towards creating a better workplace through powerful and new digital technologies.

## What can be accomplished

As a company that supports the vital infrastructure of a digitalized society, we will make full use of technology to keep people safe and secure from epidemics, natural disasters, digital disasters like cyber-attacks, and achieve a more resilient society.



## Business Activity 19

# Ensuring the stability and reliability of services

### Our commitment

As a company that supports the vital infrastructure of a digitalized society, we will make full use of technology to keep people safe and secure from epidemics, natural disasters, digital disasters like cyber-attacks, and achieve a more resilient society

### Our objectives

0

Number of major accidents

99.99%

Stable service provision rate

### Policies and Concepts

As a corporate group with the mission of serving society by sustaining telecommunications infrastructure in normal times, the NTT Group is committed to building highly reliable telecommunications networks that connect people anytime, anywhere. Since telecommunications takes on a greater importance in the event of a disaster, we endeavor to secure the means of communication necessary for maintaining public order and for rescue and restoration operations at times of disasters, and for emergency communications, such as 110, 118, and 119. Japan is a country particularly prone to natural disasters such as earthquakes and typhoons. The importance of telecommunications networks was reaffirmed by the devastating Great East Japan Earthquake. Facing the possibility of an earthquake directly underneath Tokyo or the Nankai Trough off Japan's southern coastline, there is a pressing need for society to prepare for such potential disasters while ensuring the stability and reliability of its telecommunications infrastructure.

The NTT Group has defined three key themes for disaster countermeasures: securing critical communications, prompt restoration of telecommunications services, and improving network reliability. We have been strengthening efforts based on these themes since the Great East Japan Earthquake. We have also included Disaster Countermeasure Initiatives in our medium-term management strategy and are making a focused effort to further reinforce the communications infrastructure, seek proactive disaster response, and adequately provide information to the affected people.

### Organization for Implementation

Five Group companies—NTT, NTT East, NTT West, NTT Communications, and NTT DOCOMO—are designated public institutions under the Basic Act on Disaster Control Measures. Accordingly, based on this Act, in preparation for a disaster, the NTT Group has formulated the Disaster Management Operation Plan for the purpose of smooth, appropriate implementation of measures to prevent damage. Each company has prepared their respective Disaster Management Operation Plan by organizing response efforts that are mobilized at the time of a disaster in a manner proportionate to the scope and circumstances of the situation. At the same time, we will maintain close contact with the relevant government institutions to ensure a smooth and appropriate recovery from the disaster and secure critical communications.

We are also taking measures in normal times

to improve the reliability of our telecommunications infrastructure. To ensure that our telecommunications services operate without interruption at all times, we employ transmission trunk line multi-routing, have enacted blackout countermeasures for telecommunications buildings and base stations, and are making telecommunications buildings more quake-proof. In addition, we are expanding the assortment of power supply vehicles and other disaster response equipment that we have positioned throughout Japan and are repeatedly conducting training to prepare for major natural disasters. We are making a daily effort to secure the necessary emergency and critical communications.

NTT Group Disaster Management Operation Plan  
<https://group.ntt.jp/disaster/plan/>



## Main Initiatives

### Securing Critical Communications

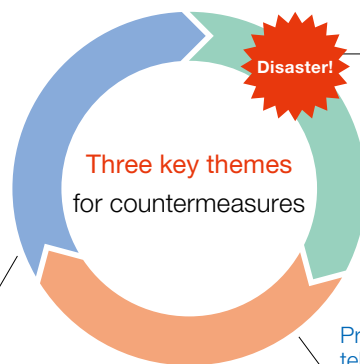
To secure necessary communications in the event of a disaster, the NTT Group is implementing various response measures, including the installation of emergency-use public phones, a mobile phone lending service in affected areas, and providing means to confirm the safety of people in affected areas. We simultaneously install multiple lines to secure connections to the headquarters of the police department, fire department, and coast guard to prepare against the possibility that the 110, 119, and 118 emergency call services may be damaged.

A major disaster could also lead to social disorder, such as the disruption of transport systems.

In such an event, we would consider the overall situation, including whether other telecommunications carriers have put restrictions on mobile and fixed line phones and, if necessary, offer the use of public phones for free.\* We will not charge carriers for which we have set call fees and will not settle payments between carriers for which we have set connection fees. For the specific names of carriers, please refer to the following websites. (Japanese only)

Free charge public phone policy for areas covered by NTT East  
<https://www.ntt-east.co.jp/info-st/saigai/>

Free charge public phone policy for areas covered by NTT West  
<https://www.ntt-west.co.jp/ptd/basis/disaster.html>



### Securing Critical Communications

Securing 110, 119, and other emergency services and critical communications  
 Installing emergency-use public phones and providing safety status checking services when disasters strike, etc.

#### Countermeasures strengthened since the Great East Japan Earthquake

- Measures for securing critical communications
- Early resolution of communications blackouts
- Enhancements of disaster message services
- Further Information Station implementation

### Prompt restoration of telecommunications services

Early restoration of services by utilizing disaster countermeasure equipment, procurement of materials, equipment, and manpower for restoration purposes, etc.

#### Countermeasures strengthened since the Great East Japan Earthquake

- Building up stock of disaster response equipment
- Enhancement of organization for disaster countermeasure operations
- Exercises and practice for a major earthquake
- Training of crisis management personnel and utilization of knowledge and skills

### Improving communications network reliability

Building disaster-resistant facilities and transmission trunk line multi-routing  
 24/7 network monitoring and control, etc.

#### Countermeasures strengthened since the Great East Japan Earthquake

- Enhanced disaster resistance (damage prediction, hazard map utilization)
- Stable provision of telecommunications services (improving trunk line reliability, etc.)



### Providing Services for Easy Safety Status Checking and Information Gathering When Disaster Strikes

The NTT Group launches and provides the following services to enable people to confirm the safety of relatives and friends in areas hit by a major disaster that has disrupted phone connections.

When we launch these emergency services in the event of a disaster or other contingency, we promptly inform our customers through the mass media, website, and other means.

By integrating the Web 171 Disaster Message Board with the Disaster Message Board Service for mobile and PHS phones (i-mode/sp-mode), we have also made it possible to conduct one-stop searches spanning both services from the companies providing those services. There are additional functions for notifying designated contacts by e-mail or voice when safety status information is posted.

We are continuing to make improvements, such as by offering support in English, Chinese, and Korean for the Web 171 Disaster Message Board, and in English for the Disaster Message Board Service (i-mode/sp-mode), increasing the number of messages that can be posted and extending message storage time.

With regard to the Web 171 Disaster Message Board, NTT East, and NTT West agreed to collaborate with the disaster message boards operated by NTT DOCOMO, KDDI, and SoftBank to allow users to check each other's messages left with these carriers since August 2019.

#### Main Services

- 171 Disaster Emergency Message Dial  
We store recorded voice messages left by users to confirm the safety of those in affected areas
- Web 171 Disaster Message Board  
We store text messages left by users via the Internet
- Disaster Voice Messaging Service (i-mode/sp-mode/mopera U)  
We deliver voice messages reporting the status of personal safety via mobile phone
- Disaster Message Board Service (i-mode/sp-mode)  
We store text messages left by users via mobile phone

### Securing the Stability and Reliability of Telecommunications Services

The NTT Group is devoted to early restoration of telecommunications services by deploying and enhancing the functions of mobile power supply vehicles, portable satellite equipment, and other mobile equipment as well as participating in disaster drills held in the respective regions. The NTT Group endeavors to build disaster-resistant communications infrastructure and maintain and operate it in a way that ensures its proper functioning at all times by conducting regular safety patrols, replacing devices as a preventive maintenance measure, and other such means, in an effort to develop disaster-resilient communication networks and equipment.

### Ensuring the Disaster Resistance of Telecommunications Equipment

We also strive to enable telecommunications equipment housings, pylons, and other facilities to withstand contingencies such as earthquakes, storms, flooding, fire, and power outages in accordance with predetermined design standards.

#### Main Measures

- NTT's telecommunications buildings and pylons are designed to withstand earthquakes of a seismic intensity of 7 on Japan's intensity scale and 60 m/sec winds experienced during the strongest typhoons
- Our facilities are equipped with flood doors and other defenses according to location to prevent inundation of telecommunications equipment by tsunamis or floods
- We equip our telecommunications equipment rooms with fire doors or shutters
- Our telecommunications buildings and wireless base stations are fitted with backup power sources to keep them running for extended periods in the event of sudden power outages
- As a further fallback, power supply vehicles can be hooked up to them to supply power
- We use trunk line multi-routing to ensure that our telecommunications services operate without interruption at all times
- We deploy large-zone base stations capable of covering wide areas during disasters and other emergency situations
- We install emergency power supply fuel tanks



## Increasing the Resilience of Equipment and Speeding Up Our Response

In recent years, disasters of greater magnitude have had significant impact. To address the increased impact on telecommunications equipment and services, as well as the longer time required to resume operations, we are also promoting additional initiatives toward such goals as increasing the resilience of our equipment and speeding up recovery.



### Main Initiatives for Increasing the Resilience of Telecommunications Equipment

- Expansion in medium-zone base stations equipped to deal with disasters, such as blackout countermeasures
- Blackout countermeasures that use electric vehicles at base stations
- Centralized management and mobilization of approximately 400 power supply vehicles owned by the NTT Group
- Consideration of underground installation of power transmission cables and use of fixed line phones to deal with the impact of disasters

### Initiatives for Maintaining Stable Telecommunications Services

- Operational system for monitoring and controlling the status of network operations on a real-time basis, 24-hours a day, 365 days a year
- Collection and analysis of performance data for telecommunications equipment under ordinary circumstances to identify and deal with signs of failure
- Application of lessons learned from past accidents to similar cases and thorough reinforcement of standard procedures based on an analysis of cases that may result in serious accidents
- Implementation of training and drills and development of related mechanisms for fostering personnel handling network maintenance and operations

### Main Initiatives for Speeding Up Service Recovery

- Advanced launch of recovery framework (national wide-area support system and other frameworks) based on damage prediction using AI
- Reinforcement of the recovery framework and recruitment of personnel, including the use of retired NTT employees

### Initiatives for Bolstering Support for Disaster Victims

- Delivery of realistic and concise information, including status of damage to communications, status of recovery, location of charging stations, public phones in operation during disasters, information for visitors and foreign residents, and more to support evacuation and other activities
- Response to consultations on problems related to communications through emergency 113 call centers dispatched to affected areas

- Collaboration with local governments and other public offices for installing Wi-Fi and charging stations inside public phone booths to secure telecommunications during a disaster

### Providing Stable Telecommunications Services in Normal Times

To consistently provide secure telecommunications services to our users, the NTT Group operates a system for monitoring its telecommunications networks, implements measures for preventing accidents and failures, and works to enhance the skills of personnel responsible for network maintenance and operations.

### Providing Stable Telecommunications Services to Address a Large Spike in Demand Due to the COVID-19 Pandemic

NTT and its major subsidiaries in the telecommunications business have formulated operation plans to execute their responsibilities as designated public institutions and contribute to preventing infections from the standpoint of respecting human life. The spread of infections has been accompanied by an increased demand for Internet use and telework, significantly increasing data traffic, particularly between stationary communication terminals during daytime weekdays. The NTT Group companies have designed their existing networks to meet peak nighttime traffic and are currently capable of providing network capacity for daytime traffic. We will continue to bolster our equipment to deliver stable telecommunications services.

### Operation of mobile phone base stations and terminals (NTT DOCOMO)

For more than 60 years, research has been conducted worldwide on the impact of radio waves on the human body. As a result, standards and systems have been put in place for the safe use of radio waves not only in Japan, but around the world, too.

In 1990, Japan's Ministry of Posts and Telecommunications (presently the Ministry of Internal Affairs and Communications) established its own Radio Radiation Protection Guidelines for Human Exposure to Electromagnetic Fields (RRPG) as a set of reference values for the safety of radio waves on the human body based on the results of research conducted over the preceding 40 years both inside and outside Japan. The reference values of these guidelines are the same as those recommended by the World Health Organization (WHO). Radio waves below these reference values are recognized internationally as having no adverse effects on health.

Mobile base stations and terminals of NTT DOCOMO are operated at levels lower than the reference values of the RRP. Services are provided in compliance with related laws and ordinances incorporating the RRP, which ensures DOCOMO mobile phones can be safely used.

NTT DOCOMO Radio Wave Safety  
<https://www.nttdocomo.co.jp/corporate/csr/network/radio/safe.html>



### Social Contribution Coordination Agreement with KDDI

On September 11, 2020, NTT formed a social contribution coordination agreement with KDDI to begin mutual cooperation for the joint utilization of ships transporting necessary supplies in the event of large-scale disasters, as well as joint disaster preparedness drills and awareness-raising activities.

Building resilient social infrastructure through these initiatives has the goal of developing a sustainable society. In addition to disaster countermeasures and job assistance, NTT and KDDI will coordinate efforts to identify areas that can benefit from the mutual use of assets of both companies, such as the sound use of smartphones and addressing climate change.



### Cooperation with mutual utilization of ships owned by both companies for faster restoration

**KDDI cable laying ship KDDI OCEAN LINK**



**NTT cable laying ship KIZUNA**



### Stable and Reliable Telecommunications Services in Preparation for Large-Scale Disasters

NTT Group has defined three key themes for disaster countermeasures—improving the reliability of communications networks, securing critical communications systems, and promptly restoring telecommunications services. We have been strengthening efforts based on these themes since the Great East Japan Earthquake.

Specifically, we are taking measures to improve the reliability of our telecommunications infrastructure. To ensure that our telecommunications services operate without interruption at all times, we employ transmission trunk line multi-routing, have enacted blackout countermeasures for communications buildings and base stations, and are making communications buildings more disaster resistant. In addition, we are expanding the assortment of power supply vehicles and other disaster response equipment that we have positioned throughout Japan and are continuously conducting training to prepare for major natural disasters. Furthermore, we are making a daily effort to guarantee that, in the event of a disaster, we are able to immediately set up a Disaster Countermeasures Office, implement other emergency preparations, and make the necessary emergency and critical communications as a public institution as designated by the Basic Act on Disaster Control Measures.

In recent years, natural disasters have been becoming more frequent and causing wider, bigger, and more lasting damage. Recognizing the potential for natural disasters to have greater impacts on telecommunications facilities and services and for recovery efforts to be prolonged, NTT is increasing the resilience of its facilities and taking steps to expedite recovery efforts.

### Disaster-Resilient Networks and Equipment

Damage from natural disasters is becoming increasingly common in recent years as climate change causes more frequent instances of heavy rains, frequent typhoons, and other natural disasters. As a result, there is a growing risk of water and lightning damage and power outages, which now threaten to cause extensive damage should they occur. NTT is committed to building disaster-resilient networks and equipment to ensure that it is able to provide reliable communications services even in the event of a large-scale natural disaster.

### Flooding Countermeasures at Communications Buildings

NTT implements countermeasures to prevent flooding at communications buildings as a result of tsunamis, floods, or other natural disasters. These measures include replacing doors with more durable, water-resistant doors, sealing windows and other gaps, and reinforcing walls with concrete to ensure they can withstand the force of tsunamis.

## Past Initiatives

### 1 Improve Communications Network Reliability

- Employ transmission trunk line multi-routing
- Install large-zone base stations
- Build disaster-resistant facilities

### 2 Secure Critical Communications Systems

- Secure 110, 119, and other emergency services
- Provide tools to check safety status (171)



### 3 Promptly Restore Services

- Deploy disaster countermeasure equipment (power supply vehicles, portable satellite equipment, etc.)
- Procure and convey materials and equipment for restoration purposes
- Use drones

**Lessons from the Great Hanshin-Awaji Earthquake and the Great East Japan Earthquake**

## Further Efforts

### Major Facility Resilience Initiatives

- Expansion in medium-zone base stations equipped to deal with disasters, such as blackout countermeasures
- Blackout countermeasures that use electric vehicles at base stations
- Centralized management and mobilization of approximately 400 power supply vehicles owned by the NTT Group
- Consideration of underground installation of power transmission cables and use of fixed line phones to deal with the impact of disasters

### Main Initiatives for Speeding Up Service Recovery

- Advanced launch of recovery framework (national wide-area support system and other frameworks) based on damage prediction using AI
- Reinforcement of the recovery framework and recruitment of personnel, including the use of retired NTT employees

### Initiatives for Bolstering Support for Disaster Victims

- Delivery of realistic and concise information to support evacuation and other activities (status of damage to communications, status of recovery, location of charging stations, public phones in operation during disasters, information for visitors and foreign residents, etc.)
- Response to consultations on problems related to communications through emergency 113 call centers dispatched to affected areas
- Collaboration with local governments and other public offices for installing Wi-Fi and charging stations inside public phone booths to secure telecommunications during a disaster

**Disasters causing wider, bigger, and more lasting damage**

### Blackout Countermeasures at Communications Buildings and Base Stations

Communications buildings and wireless communications base stations are equipped with batteries, engines, and other auxiliary power supplies that can be used as a prolonged source of electricity in the event of a blackout. Moreover, we are enacting the lessons learned from the Great East Japan Earthquake by implementing blackout countermeasures for engine generators and having batteries available for use around the clock at its roughly 1,900 base stations in important areas, such as those where municipal disaster response headquarters or city offices are located.

### Transmission Trunk Line Multi-Routing and Distributed Location of Important Communications Buildings

Our nationwide network of trunk lines has been designed to secure communications and prevent disruption of services over the network as a whole by automatically diverting transmission through other routes when a certain route is damaged.

Meanwhile, if communications buildings (important communications buildings) fitted with transit switches suffer disaster damage, communications via such buildings may be severed. Distributing important communications buildings in different locations helps avoid the risk of multiple buildings suffering disaster damage at the same time.

### Prompt restoration of telecommunications services

Should a disaster strike, swift action will be taken to restore service via the utilization of mobile disaster response equipment and the use of drones to confirm the situation.

### Disaster Response Equipment

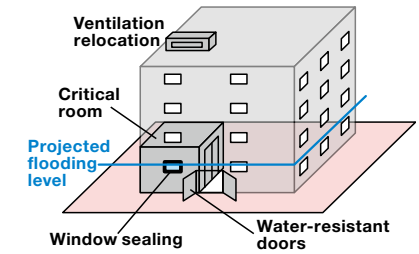
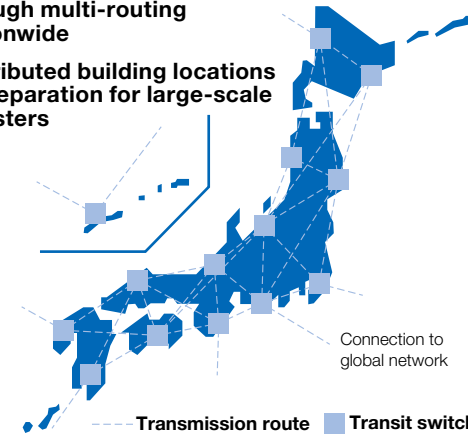
NTT has positioned mobile base stations and power supply vehicles across Japan that can be quickly deployed to disaster sites should a wireless communications base station be damaged by a disaster. Moreover, we have adopted off-shore base stations comprised of mobile communications base stations mounted on ships. Should a tsunami or other disaster knock out service over a wide spread of coastal area, we can provide service by using entrance satellite lines to transmit signals to the coastal areas from anchored ships.

### Disaster Site Confirmation with Drones

When damage to roads or other conditions prevent us from reaching base stations, drones will be deployed to confirm the status of the site and facilitate the quick restoration of service thereafter.

### Improvement of reliability through multi-routing nationwide

### Distributed building locations in preparation for large-scale disasters



### Large-scale power supply vehicle for powering communications buildings



## Business Activity 20

# Strengthening information security and personal information protection

### Our commitment

As a company that supports the vital infrastructure of a digitalized society, we will make full use of technology to keep people safe and secure from epidemics, natural disasters, digital disasters like cyber-attacks, and achieve a more resilient society

### Our objective

0

Number of service suspensions due to cyber attacks (annual)

## Reinforce information security

### Policies and Concepts

With the progressing digitalization of society and the economy and changes in international circumstances, security threats are becoming more serious and sophisticated, particularly cyber-attacks. Within this environment, the NTT Group has a responsibility to protect ICT service infrastructure and customers' basic rights, freedoms, and information assets, as well as to provide a sound foundation for the growth of the digital economy.

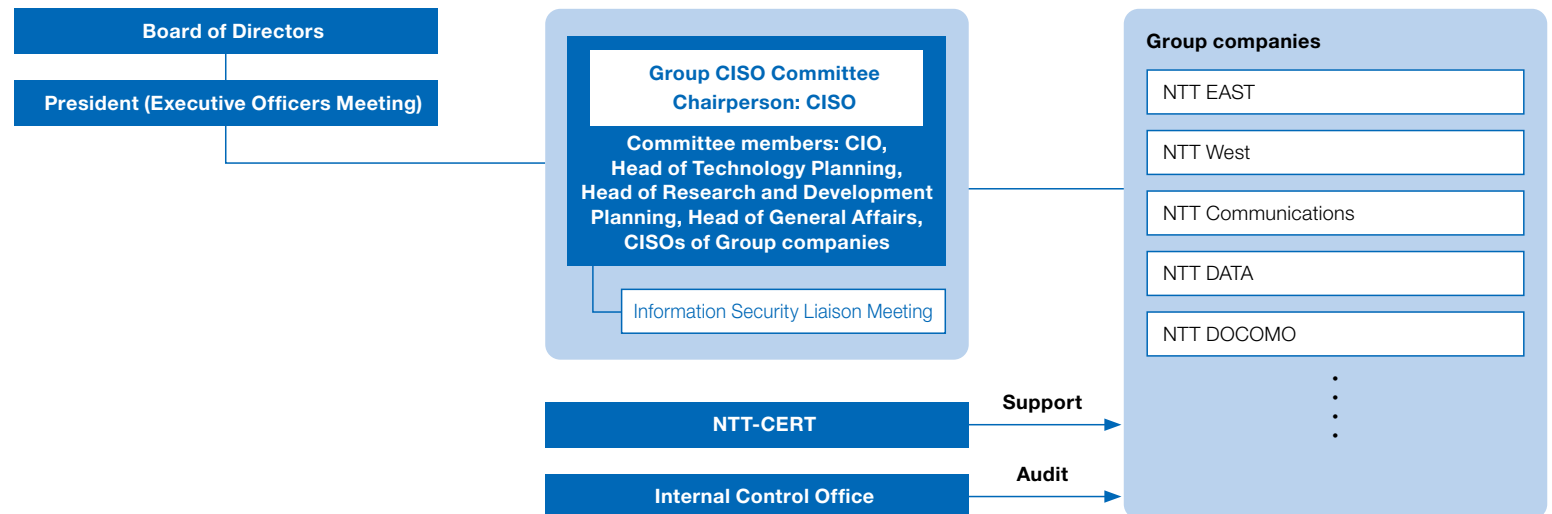
When formulating our medium-term management strategies in 2018, we made it our mission in terms of security to contribute to the building and development of a free, open, and safe ICT platform for supporting the infrastructure of the digital economy.

We also made it our vision to realize the digital transformation of both customers and NTT itself, and for that reason, we will be chosen by customers. In order to realize these, we will strive to engage in research and development that leverages the scale of the Group, realize superior abilities for early detection and rapid response, cultivate human resources who share the values of sincerity and advanced skill, and transcend profit-focused principles to transmit pioneering knowledge to society.

Furthermore, to achieve the transformation to a New Management Style outlined in the medium-term management strategy refined in October 2021, the NTT Group is implementing security measures capable of facilitating the shift to remote work styles. As a member of the global community building the digital society, the NTT Group will contribute to solving social issues through our security business.

## Organization for Implementation

The NTT Group enforces information security management under the charge of the Chief Information Security Officer (CISO), and is thorough in its information security management. We have also established a Group CISO Committee, and formulate Group information security management strategies, plan and implement related measures, undertake human resources training, and otherwise engage in activities in collaboration with companies across the Group.



## Security Initiatives Supporting the Medium-Term Management Strategy

Security is one of the three pillars defined in the re-defined medium-term management strategy that is a particularly important for supporting “Transformation to a New Management Style.”

### Transformation to a New Management Style

#### Introduction of zero-trust systems

Development of IT infrastructure with security measures prefaced on cloud and mobile usage for accommodating the shift to remote work styles.

#### Systematizing Information Security

Completely revised with zero-trust security measures. Regulations that are less ambiguous and more easily understood will be developed to ensure compliance, in order to increase the security awareness of all employees, not just information security staff.

## Main Initiatives

### Systematizing Information Security

The NTT Group will be completely revising information security regulations to implement zero-trust security measures based on flexible working styles that are not constrained by working location. The goal is to develop regulations that are less ambiguous and more easily understood, and ensure compliance in order to increase the security awareness of all employees, not just information security staff.

### Strengthen Service Security

Information communication services are an important social infrastructure and a foundation for the digitalization of society and the economy, so to provide these services in a safe and secure manner, we are working to strengthen the security of telecommunications equipment, IT service environments, and all services provided by smart cities, smart buildings, and the like.

### Global Cooperation within the NTT Group

We are advancing global partnerships in the security field in order to enhance competitiveness in global business under One NTT. This NTT Group cooperation includes many businesses and regions and incorporates an approach to risk-based management, the introduction of a framework that acts as a shared language, and the setting of standards that should be met by all Group members in regard to identification, defenses, detection, response, and recovery.

### Engaging with and Contributing to the Global Community

We are engaging with the cybersecurity initiatives of governments and industries around the world, particularly in North America and Europe, by sharing information and best practices in regard to security threats and building a community of companies and organizations based on mutual trust.

## NTT Group Information Security Policy

As “Your Value Partner,” NTT Group will aim to resolve social issues together with our partners through our business activities. As a trusted global provider of safe and secure ICT services, NTT Group will strive to ensure the security of the information entrusted to us and contribute to the sound development of the digital economy and the Remote World in accordance with the following policies.

1. NTT Group will (a) be fully aware of the importance of information security in the digital economy and the Remote World, (b) strive to establish a safe, secure and convenient ICT-related service environment and (c) strive the security of information entrusted to us.
2. Under the supervision of the Chief Information Security Officer (CISO), NTT Group will establish a unified information security management framework. Furthermore, NTT Group will continuously enhance its strict security measures (including Baseline Security Standards), employee security education, and audits, in order to prevent and minimize damage from unauthorized access, and information loss/falsification/leakage. NTT Group also require contractors and suppliers who handle confidential information to ensure appropriate information security, in order to strive to protect information throughout the entire supply chain.
3. All board members, executive officers, supervisors, managers and employees of NTT Group fully recognize that (a) information is a valuable asset for business and economic activities, and that (b) the protection of information is the basis of NTT Group’s business activities and a corporate social responsibility. Upon these recognition, NTT Group shall comply with relevant laws and regulations (country and jurisdiction), including those relating to the protection of personal information as well as the secrecy of telecommunications, and shall establish the information security management rules. If any violation of these rules is found, NTT Group will take strict action in accordance with its disciplinary rules.

NTT Group Information Security Policy [https://group.ntt.jp/g\\_policy/](https://group.ntt.jp/g_policy/)

## Information Security Training

Each Group company seeks to raise information security literacy by organizing training for all employees as well as the employees of partner companies. Training is offered through e-learning, and all employees are obliged to participate in the course once a year. Looking ahead, we are considering unifying training content throughout the Group to provide employees with a standard level of knowledge on information security required in their business operations. By doing so, we will seek to enhance the security capabilities of the NTT Group and reinforce its human resources to deliver safe, secure services for our customers and society at large.

## Research and Development Initiatives

In addition to advancing the technological development of service security, we are focusing on developing elemental security technologies. In 2019, we established a global research center for research into cybersecurity and encryption technology centered around some of the world's leading researchers.

### Basic Level Information Security Training

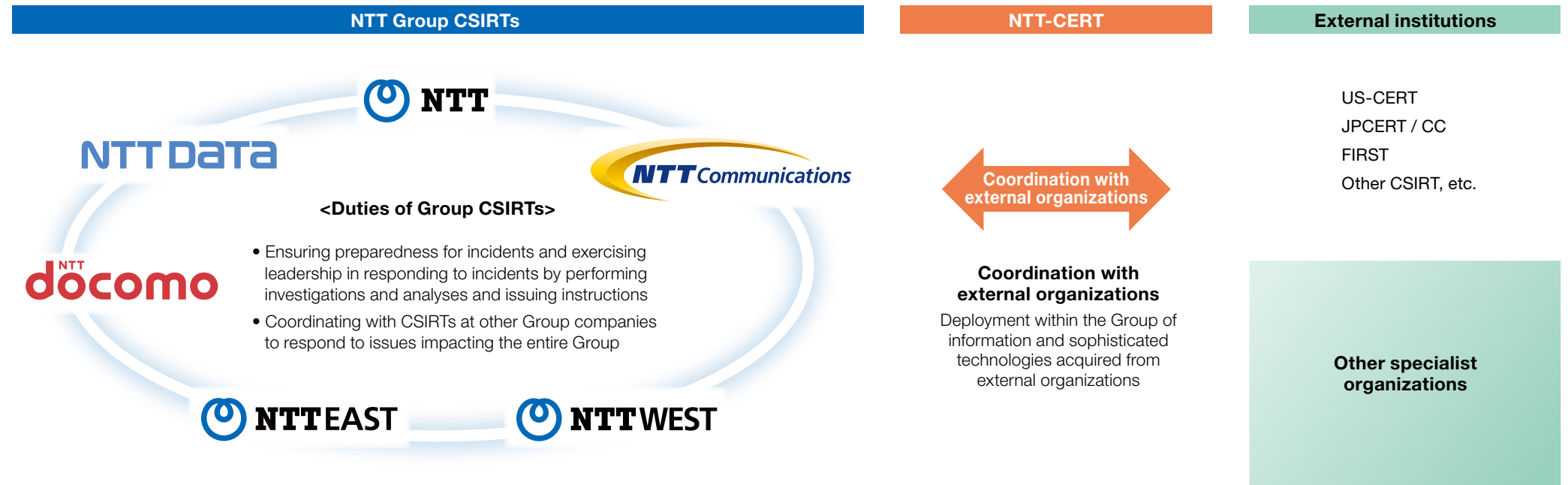
NTT Group launched a security expert certification system in 2015 with the aim of increasing the quality and number of its security personnel. This system defines three levels based on human resource type and skill level.

We must be constantly vigilant in our effort to remain abreast of the recent changes in security technologies and circumstances (zero trust, cloud native, DX, teleworking, etc.). As such, the effective and consistent training of security experts is a matter of utmost importance.

NTT used to offer basic level certification, but the rising number of certification holders coupled with the increase in awareness regarding the importance of security prompted us to develop security training programs targeting all employees worldwide.

People tend to shy away from security training due to its level of difficulty or by being turned off with the limited applicability of the subjects covered. To address this issue, we positioned raising employee interest in these subjects as our top priority, which we went about doing with animated videos and other endearing content, including a humorous introductory message by the CISO structured like a dramatic performance. Through these programs, we hope to make all employees recognize the necessity of security awareness and instill in them the basic practice of reporting any suspicious activities in their daily work. We thereby aim to motivate employees to participate in and contribute to our organization-wide drive to quickly detect and address security issues.

## NTT Group CSIRT Activities



### Management of CSIRT

The NTT Group established NTT-CERT in 2004 to function as a computer security incident response team (CSIRT). This team collects information regarding security incidents associated with the Group. It then offers support for addressing these incidents, formulates measures to prevent recurrence, develops training programs, and provides security-related information.

As a central element of the NTT Group's security initiatives, NTT-CERT provides a reliable venue for consultations regarding information security. The team also collaborates with organizations and specialists inside and outside the NTT Group to offer support for detecting and resolving security incidents,

minimizing damages, and preventing occurrence. NTT-CERT is thereby contributing to better security for both the NTT Group and societies that are permeated by information networks.

Moreover, NTT-CERT coordinates with the United States Computer Emergency Readiness Team (US-CERT<sup>\*1</sup>) and the Japan Computer Emergency Response Team Coordination Center (JPCERT/CC<sup>\*2</sup>) and is also a member of the Forum of Incident Response and Security Teams (FIRST) and the Nippon CSIRT Association<sup>\*3</sup>, which enables it to coordinate with domestic and overseas CSIRT organizations. This coordination makes it possible for NTT-CERT to share information on relevant trends

and response measures. In addition, NTT-CERT participates in the cross-industry drills held by the National Center of Incident Readiness and Strategy for Cybersecurity (NISC) to share expertise and gather information. NTT-CERT also plays a role in promoting the establishment of CSIRTs at Group companies and helping improve their response capabilities.

NTT-CERT will expand its collection of information on vulnerabilities and attacks to cover areas including the dark web and will strengthen its information analysis platform and further automate and enhance its response to cyber threats in order to continually respond to threats as they change.

<sup>\*1</sup> US-CERT: An information security preparedness organization under the Department of Homeland Security (DHS)

<sup>\*2</sup> JPCERT Coordination Center: An organization that collects reports inside Japan, supports responses, monitors situations, analyzes entry points, and reviews and provides advice on measures for preventing reoccurrences from a technical standpoint with regard to computer security incidents such as intrusions through the Internet or service interruptions

<sup>\*3</sup> NTT-CERT founded the Nippon CSIRT Association

NTT-CERT  
<https://www.ntt-cert.org/>  
 Nippon CSIRT Association  
<https://www.nca.gr.jp/>  
 FIRST Forum of Incident Response and Security Teams  
<https://www.first.org/>

## Personal Information Protection

### Policies and Concepts

Every year, the importance of ensuring the protection of personal information and the comprehensive management of information around the world continues to grow. The NTT Group has been entrusted with a considerable quantity of personal information, ranging from data on individual customers to that of corporate customers, and as such ensure that personal information is handled appropriately in accordance with the laws and regulations of each country, such as Japan's Act on the Protection of Personal Information and the EU's General Data Protection Regulation (GDPR).

Under these circumstances, personal information leakage could have various repercussions for the NTT Group in the operations of its businesses, including damage to its corporate value and loss of customers, which makes it essential to rigorously manage personal information as the NTT Group's top priority.

### Organization for Implementation

Under the NTT Group Information Security Policy, we disclose on our website specific policies for protecting the personal information of customers and shareholders and policies for protecting personally identifiable information required by Japan's Social Security and Tax Number System. In this policy, we also define how we respond to requests for disclosure, correction, and suspension of use related to the personal information retained by the NTT Group.

We have also put in place a security management system that ensures thorough and rigorous security practices, with the Chief Information Officer (CISO) placed in charge (see page 054).

#### Policy on Protecting Personal Information

About personal information protection  
<https://group.ntt.jp/protection/>

Policy on Protecting Personal Information of Customers  
<https://group.ntt.jp/protection/customers.html>

Policy on Protecting Personal Information of Shareholders  
<https://group.ntt.jp/protection/shareholders.html>

Policy on Protecting Specific Personal Information of Business Partners  
<https://group.ntt.jp/protection/partners.html>

Policy on Protecting Specific Personal Information of Shareholders  
[https://group.ntt.jp/protection/specific\\_personal\\_information.html](https://group.ntt.jp/protection/specific_personal_information.html)

## Main Initiatives

NTT has systematic security control measures, human security control measures, physical security control measures, and technical security control measures in place for handling our customers' personal information.

### (1) Systematic security control measures

We have created a statement outlining the building of management systems such as placing a person responsible for management of the committee and each organization, the establishment of internal regulations, management ledgers and process management charts, and other matters. Furthermore, we are also building management systems for handling ongoing improvements and the like.

### (2) Human security control measures

All employees who handle customers' personal information are informed and made aware of the importance of protecting this information, regardless of whether they are officers, regular employees, or temporary employees. We ensure employees conclude non-disclosure agreements and provide necessary auditing and supervision to ensure their effectiveness.

### (3) Physical security control measures

We enact various measures including controlling access to physical equipment which handles customers' personal information and the floors where these are kept, measures to prevent theft, measures to prevent damage to customers' personal information during incidents such as fires and lightning strikes, and the use of locks when taking out, moving, or storing systems and documents.

### (4) Technical security control measures

We have put in place various technical security control measures such as access management when accessing personal data including authentication, authority administration, control, and recording, countermeasures against viruses and malware in systems, measures for use when sending and receiving information including encryption and clarification of responsibility, and the monitoring of information systems.

Each domestic company in the Group has established a personal information protection system in line with its business and based on the Protection of Personal Information. We are consistently pursuing initiatives to protect information, including stringent measures on the physical and systems aspects of security and appropriate supervision of outsourcing contractors. Management of information is being further enhanced, as personal information acquired by group companies in Japan via individual or household services like cell phones and internet access will be retained and accessed from within Japan after May 2021.

### Main Initiatives of Domestic Group Companies

- Establishment of internal rules and regulations
- Employee training to ensure appropriate implementation of the above rules and regulations
- Establishment of an organization to promote information security management
- Establishment of a security management system for preventing illegal access to information or the loss, alteration, or information leakage as well as managing antivirus measures and the physical transfer of information

## Establishment of Contact Points on Personal Information

NTT has set up the Customer Contact Point on Personal Information, and similar contact points for services related to personal information have been set up at each NTT Group company. Since NTT is a holding company that does not directly provide telecommunications services, inquiries regarding personal information related to services are redirected to the contact points of the operating companies concerned.

Additionally, inquiries regarding the handling of personal information under laws and regulations are redirected to the person responsible for information security at the operating companies concerned.

Nippon Telegraph and Telephone Corporation Customer Contact Point on Personal Information  
 Email: [ntt\\_kojin@ntt.com](mailto:ntt_kojin@ntt.com)  
<https://group.ntt.jp/protection/customers.html>





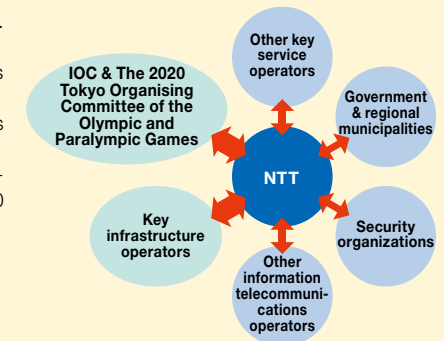
### NTT's Contribution to Olympic and Paralympic Games Tokyo 2020 (Cyber Security)

While the cyber security of the Tokyo 2020 Games was considered to be more threatening than in the past, NTT implemented network security measures for communication services and various cyber security measures during the Games. The total number of security events detected during the Games was 450 million, but NTT responded by appropriately handling and blocking the communications, there were no security incidents that had an impact on the operation of the games or events.

#### Reference

- (1) Staff working at the Games venues: approx. 650
- (2) Staff working at the Technology Operations Center: approx. 350
- (3) Staff working at the Security Operations Center: approx. 90
- (4) Total NTT staff supporting the Games (including NTT's partner companies): 10,000 (including (1) - (3) staff)

#### Complex Stakeholder Management



Responding to the complexity of the ICT environment at the Tokyo 2020 Games, NTT maintained a "Cyber Hygiene" environment by adopting a whitelist (enumerating only possible communication protocols) format.

- ID (personal authentication: including multifactor authentication)
- Handling changes in communications traffic over time, carefully verifying venues in a short time before opening facilities
- Protection using multi-vendor products (for Defense in Depth)
- Handling of both officially provided devices and BYOD
- Application of R&D results (such as "Authenticity and Integrity Monitoring Technology" to detect tampering)

### NTT's Contribution to Olympic and Paralympic Games Tokyo 2020

NTT provided critical communication services for operating the Games. It provided a broadcasting network to connect Games venues with the Tokyo Big Sight that served as an International Broadcast Centre (IBC), as well as various systems for running the event and data network services for the system to release game results to the media, supporting steady operation of the event. NTT built the LAN for the venues, including the 43 Games venues, IBC, the Main Press Centre and the Olympic Village, providing various communication services including distributing videos and land lines to associates.

All Games venues were turned to 5G mobile networks, whose commercial services had started in 2020 in Japan, to offer mobile phone services.



NTT was a Gold communications service partner of the Tokyo 2020 Olympic and Paralympic Games.

## Business Activity 21

# Promoting a decentralized society based on remote work

### Our commitment

Shifting toward new work styles centered on remote work, by upgrading IT environments and reviewing systems, in addition to advancing DX projects and work reforms with an eye on the post-pandemic world

### Our objective

0

Major personal data leaks (annual)

### Policies and Concepts

NTT Group intends to shift toward new work styles centered on remote work, by upgrading IT environments and reviewing various systems, in addition to advancing DX projects and work reforms with an eye on the post-pandemic world.

Remote work will be the standard work style for employees going forward. By allowing employees freedom in choosing their work location, we will transition from a centralized organization to a decentralized and autonomous network-style organization.

An extremely high rate, 70% to 80%, of staff in departments like management and planning are already used to working remotely, and the concept of “working from anywhere” is becoming firmly entrenched. We will be making even more improvements to these working styles and working environments as we look further into how we can enable staff to work from anywhere.

In other areas, we will continue revising business processes with DX to increase the scope of work that can be performed remotely, while also systemizing information security systems suitable for remote work.

As we move our focus to remote work, we will look to developing a working environment that allows employees to choose where they want to live, instead of being constrained by specific working areas.

And as remote work becomes the norm, offices will become a space for the creation and co-creation of ideas with one-on-one interaction.

Specific ways to make offices even easier to work in for those working remotely as well as those commuting to the office include increasing the efficiency of office space by reducing seating arrangements to suit the number of staff actually coming into the office, ensuring social distancing with ample space for each person, as well as flexible seat selection with desks available for use by anyone and better spaces for holding remote conferences.

Office space will be reduced by 30% by systematizing information security suitable for remote work and revising the office environment from FY2022.



[Reference] Expansion of Satellite Offices  
<Fiscal 2021>

- 62 company offices (of which 52 are new offices added in FY2021)
- Around 200 external offices

# Maximizing well-being for all

Based on the concept of moving from the “Self as We” - moving from a standalone individual toward a community and cultures, the NTT Group is committed to maximizing well-being for all people.



# message

Message from Management  
(Senior Vice President, Head of General Affairs)



**Ryota Kitamura**

Senior Vice President,  
Head of General Affairs

## Raising awareness of global human rights

In recent years, there has been a growing awareness of various issues related to human rights both in Japan and overseas, and the responsibility of companies to respect human rights has become more important than ever. Regulations regarding business and human rights are being developed overseas, especially in Europe. And in Japan, the Business and Human Rights national action plan (NAP) through to 2025 was formulated in October last year by the government to promote respect for human rights as part of business activities.

Based on these developments, the NTT Group revised its existing Human Rights Charter and established the new NTT Group Human Rights Policy in November 2021 applying business activities internally and externally for addressing international norms.

## Overview of the NTT Group Human Rights Policy

The policy covers three key areas. The first is “Responding to International Norms.” The policy was developed in support of the Universal Declaration of Human Rights as well as other international conventions and treaties discussed and adopted from a global perspective, and the NTT Group will pursue ways to respect international human rights principles when there is a conflict between internationally recognized human rights and the laws and regulations of individual countries and regions.

The second area is developing a system for “Addressing particularly important human rights issues.” Based on growing awareness of issues concerning human rights, the NTT Group will continue to identify important human rights that it needs to focus on and act while respecting the following:

- (1) Promotion of “Diversity & Inclusion,” a concept that recognizes diverse cultures and values
- (2) Promotion of “Technology that is based on high ethical

standards,” which balances both high ethical standards and technology

- (3) Promotion of “Healthy work daily life (health management),” which aims to develop a lively employee-friendly work environment
- (4) Promotion of “Appropriate expression, speech, and display” in consideration of human rights

While this policy naturally applies to all employees and executives of the NTT Group, the third area of focus is that we also ask our all members of the value chain and business partners to comply with respect for human rights.

We use processes based on the UN Guiding Principles on Business and Human Rights for our human rights due diligence throughout the entire value chain, and engage in direct dialogue particularly with important suppliers.

## Maximizing well-being for all

Creating a society that recognizes diverse cultures, understands different values and coexists together is vital for maximizing well-being. This means understanding and accepting differences, and being inclusive without casting them aside. The key to this approach is taking an altruistic stance. In essence, it is respecting human rights based on the concept of altruistic coexistence (people seek to increase their happiness along with the happiness of others). Adopting this approach will lead to maximizing the well-being of everyone.

With these in mind, we aim to ensure that each and every one of our 320,000 employees can perform to the best of their abilities and there are no human rights violations throughout the entire value chain. The management team will take the lead in respecting the human rights of all stakeholders, and reviewing and improving our operations whenever necessary, and reflecting them to business activities with the goal of creating a corporate culture that respects human rights.

# Feature 3: Establishment of NTT Global Human Rights Policy

## For the inclusion of diverse values

### Establishment of the NTT Group Global Human Rights Policy

In its goal of achieving a sustainable world, the NTT Group is shining a spotlight on various human rights themes that exist in various countries and regions, and is highlighting its attitude toward human rights issues in value chains. To this end, we included parts of NTT Group's existing Human Rights Charter in the new NTT Group Sustainability Charter, and established the NTT Group Global Human Rights Policy in November 2021, based on principles like the International Bill of Human Rights (Universal Declaration of Human Rights and International Covenants on Human Rights), Declaration of Fundamental Principles and Rights at Work, and UN Guiding Principles of Business and Human Rights.

Accordingly, an internal due diligence manual was established to ensure that effective due diligence can be conducted as part of efforts to promote the respect for human rights.

This human rights policy applies to all people involved in the NTT Group's value chain. The NTT Group is committed to respecting human rights throughout its business operations by proactively working with and engaging in constant dialogue with all of its partners and stakeholders, including customers, shareholders, investors, employees, local communities, business partners, other companies and industry organizations, national and local government agencies, and NGOs, NPOs, and experts. We will comply with respect for human rights through our business activities while making the most of the voices of society. To ensure that the NTT Group is not complicit in infringing human rights moving forward, we hold dialogue with stakeholders and staff in charge of human rights overseas every year, and we are always revising the human rights policy so that we can respond in the appropriate manner.

<https://group.ntt.jp/newsrelease/2021/11/10/pdf/211110ca.pdf>

### Responding to International Norms

As a company that operates globally, the NTT Group supports the Universal Declaration of Human Rights, adopted as a common standard for all people and countries to achieve. International covenants and conventions are discussed and adopted from a global perspective. The NTT Group will also pursue ways to respect international human rights principles when there is a conflict between internationally recognized human rights and the laws and regulations of individual countries and regions.

Universal Declaration of Human Rights

International Covenant on Economic, Social and Cultural Rights

International Covenant on Civil and Political Rights

Declaration of Fundamental Principles and Rights at Work

Eight core principles of the International Labour Organization:

“Forced Labor,” “Freedom of Association and Protection of the Right to Organize”

“Right to Organize and Collective Bargaining”

“Equal Remuneration”

“Abolition of Forced Labour”

“Discrimination (Employment and Occupation)”

“Minimum Age Convention”

“Elimination of the Worst Forms of Child Labour”



# Feature 3: Establishment of NTT Global Human Rights Policy

## For the inclusion of diverse values

### Respect for human rights throughout the entire value chain

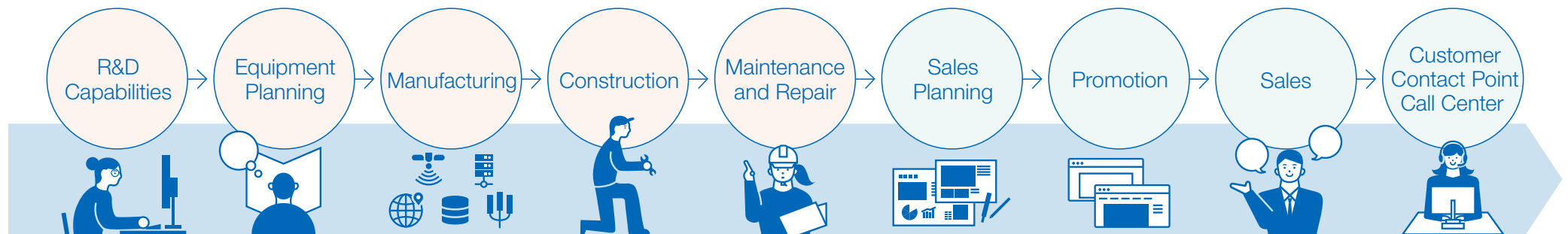
We will strive to build relationships of trust and cooperation with our stakeholders to better understand and respond appropriately from the perspective of those affected by our business.

As the NTT Group handles a wide variety of network and digital services worldwide, ensuring a sustainable value chain has become one of the most critical issues.

Various problems have arisen in the supply chain in recent years, such as long working hours, child labor, illegal dumping of chemical substances, and bribery. Therefore, companies are required to comply with social norms and laws in their procurement activities and fulfill their social responsibilities.

In response to this situation, NTT Group will ask all members of the value chain to comply with respect for human rights in the six areas of human rights and labor, health and safety, environment, fair trade and ethics, quality and safety, and information security, in order to fulfill our social responsibility in our procurement activities.

In the value chain, the NTT Group will identify the existence and risks of human rights violations, such as forced labor, inhumane treatment, child labor, discrimination, and wages below the minimum wage, and work toward eradicating human rights violations.



Social Challenge 7

# Respect for human rights

## Business Activity

- 22. Compliance with the NTT Group Global Human Rights Policy
- 23. Encouraging society as a whole to respect human rights



## Why it matters

Respecting human rights is an important foundation for creating a safe, secure, prosperous and sustainable society, and striving to correctly understand and recognize each country and region's laws, cultures, religions, and values is the social responsibility of companies.

## Future vision

The NTT Group is making every effort for implementing internal training to ensure that there are no violations of human rights. Based on the Guiding Principles on Business and Human Rights, we will use the human rights due diligence process to identify, prevent, mitigate, and correct human rights issues on a global scale, and strive to raise awareness of human rights and improve human rights management throughout the Group.

Human rights due diligence will be conducted throughout the entire value chain, including business partners, to ensure that the NTT Group is not indirectly involved in human rights violations.

## What can be accomplished

We will respect the Universal Declaration of Human Rights and other internationally recognized human rights in all our corporate activities. We will strive to ensure that we are not directly or indirectly involved in discrimination or other human rights violations.



## Business Activity 22

# Compliance with the NTT Group Global Human Rights Policy

## Business Activity 23

# Encouraging society as a whole to respect human rights

### Our commitment

The NTT Group will work toward eradicating human rights violations, while also developing a lively employee-friendly work environment for a diverse range of personnel

### Our objectives

100%

Human rights training and attendance

0

Number of confirmed cases of human rights violations

100%

Ratio of direct dialogue with important suppliers

### Policies and Concepts

NTT is committed to respecting global human rights and believes it is an important corporate social responsibility. The NTT Group will strive to correctly understand and recognize each country and region's laws, cultures, religions, and values. We aim to create a safe, secure, prosperous and sustainable society by fulfilling this responsibility.

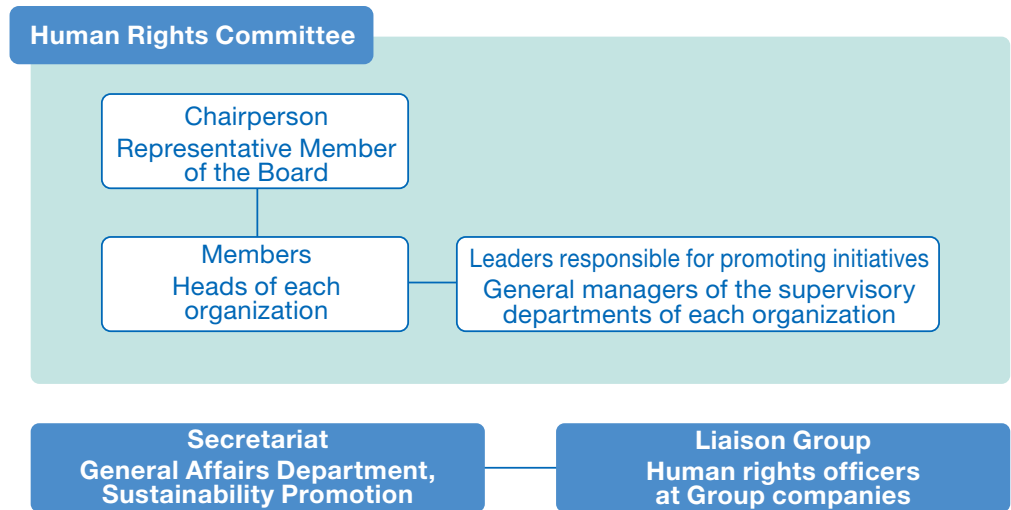
We included parts of NTT Group's existing Human Rights Charter in the NTT Group Global Sustainability Charter, and established the NTT Group Human Rights Policy in November 2021.

The NTT Group discloses its global human rights policies both internally and externally, in addition to meeting the requirements of international laws and evaluation organizations. This policy applies to all employees and officers of the NTT Group. We also ask our suppliers and business partners to support this policy and strive to respect human rights.

### Organization for Implementation

NTT is committed to supporting its Group companies in their efforts to raise awareness on human rights issues. We believe it is important for the entire NTT Group around the world to instill an understanding of respect for human rights and undertake business activities with a full awareness of human rights. Accordingly, NTT has established the Human Rights Committee, headed by a senior executive vice president, under the Executive Officers Meeting.

Through this framework, we are working to heighten human rights awareness across the NTT Group and reinforce human rights management, including conducting human rights due diligence, training on human rights issues (training for officers including those at Group companies, training for all employees, etc.), and establishing and operating contact points for human rights.



### NTT Group Global Human Rights Policy Preamble

NTT is committed to respecting global human rights and believes it is an important corporate social responsibility. The NTT Group will strive to correctly understand and recognize each country and region's laws, cultures, religions, and values. We aim to create a safe, secure, prosperous and sustainable society by fulfilling this responsibility.

To this end, we will respect the Universal Declaration of Human Rights and other internationally recognized human rights in all our corporate activities. We will strive to ensure that we are not directly or indirectly involved in discrimination or other human rights violations. We respond appropriately when negative impacts on human rights occur.

When negative impacts on human rights are done by a business partner and are linked to a product or service of the NTT Group, we also expect them to respect human rights and not to infringe on them.

To fulfill this responsibility, senior management will take the initiative to respect all stakeholders' human rights. We will review and improve business operations and other aspects as necessary from the perspective of respecting human rights and reflect this in our business activities to establish a corporate structure that respects human rights.

### Group-wide Human Rights Training and Education Programs

To disseminate the concept of respecting human rights and basic human rights, and to instill an awareness of global standards on human rights, at key points in employees' careers (joining the Company, receiving promotions, etc.), we provide training on human rights issues connected to business activities. In addition, for those in top management of Group companies or in other management positions, we offer programs that include lectures by outside experts on global trends in human rights. To foster awareness of human rights in employees, we issue invitations to employees and their families to submit human rights slogans, while the board member responsible for human rights issues delivers a message to mark Global Human Rights Day.

Since fiscal 2014, the NTT Group has worked to disseminate its Human Rights Policy by sharing the content of e-learning with Group companies in Japan and continuously carrying out educational activities during training for all employees as well as on other occasions. In the training, we communicate the importance of respect for human rights and the significance of addressing the issue throughout the NTT Group.

### Reviewing Our Initiatives with Human Rights Experts Stakeholder Dialogue

#### Outline

In October 2019, we invited four human rights specialists and experts from three overseas organizations and one Japanese organization to share their views on the NTT Group's human rights initiatives. We received advice on the Group's overall initiatives on human rights, human rights in the ICT industry, related challenges, information disclosure, and Group-wide promotion of initiatives.

During the dialogue, the participants exchanged views on a broad range of topics, including the need to address privacy and human rights issues, development of a grievance mechanism and incorporation into the management system, establishment of a human rights management system linked with overseas Group companies, and the need to disclose

information on these initiatives. This was our first dialogue with experts on human rights. We renewed our awareness of the importance of promoting human rights initiatives by considering measures in response to this review and by continuously engaging in dialogue with stakeholders as we pursue these issues in the future.

#### Human Rights Specialists and Experts

Verisk Maplecroft	Mr. Gus MacFarlane
World Benchmarking Alliance	Ms. Pauliina Murphy
Corporate Human Rights Benchmark	Ms. Camille Le Pors
Japan Research Institute	Mr. Mitsuo Wakameda



# Addressing critically important human rights issues

## Risk identification and assessment

At the NTT Group, human rights managers from domestic and overseas companies discuss and select human rights issues to be addressed by NTT and determine priority issues to be addressed each year.

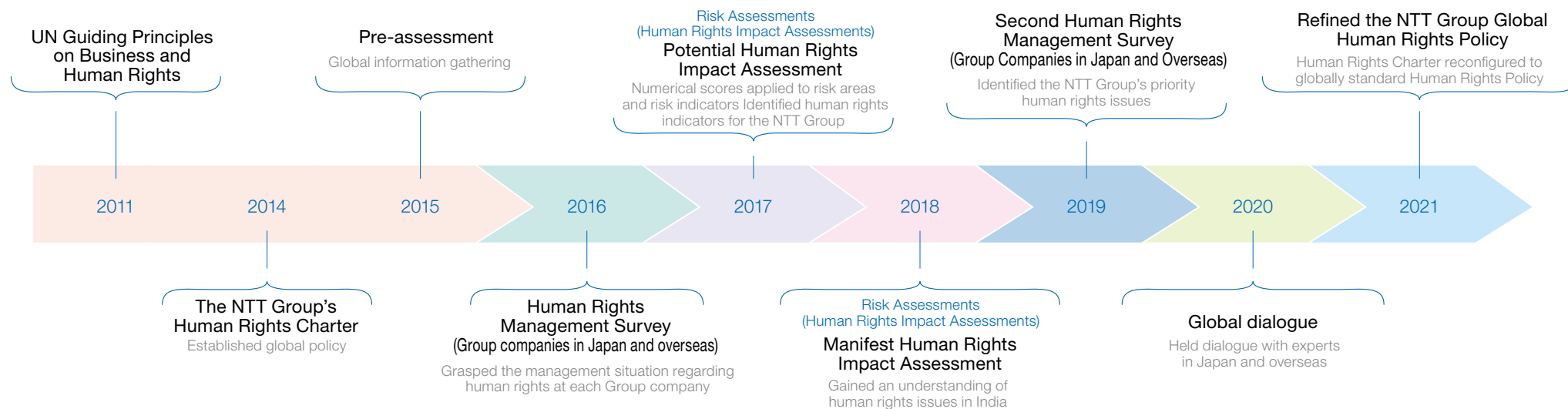
We will also hold dialogue with experts to obtain advice regarding our initiatives.

In our human rights management survey in fiscal 2016 covering all Group companies in Japan and overseas, and based on the Guiding Principles on Business and Human Rights, we checked up on their human rights policy, management systems and priority human rights issues. The results identified priority human rights issues for 250 of the 258 companies surveyed and indicated that 248 companies are working on specific initiatives to raise awareness about these human rights issues.

Since fiscal 2017, we have brought in external specialized institutions to implement risk assessments based on results obtained from in-house surveys. In fiscal 2017, a potential human rights impact assessment was carried out which assigned an evaluative score to the degree of negative impact of the NTT Group's businesses on the human rights of stakeholders from the perspective of "the likelihood of future human rights risks in each country" and "severity of human rights risks arising in each business." The results of this led to us identifying Asia as a priority area for tackling human rights issues and establishing 21 human rights indicators for ICT business.

In fiscal 2018, a manifest human rights impact assessment was carried out to verify the initiatives implemented in the previous fiscal year. After considering factors such as country risk for each country in Asia and impact on business, India was selected as the country to be assessed. Interviews were conducted with our local subsidiary and a local NGO that deals with human rights risk associated with specific business activities. The results of this confirmed there are currently no serious human rights issues that present a major risk to business operations. Meanwhile we identified priority issues out of the 21 human rights indicators mapped to be addressed in India in the future.

In fiscal 2019, we conducted a second human rights management survey following the first one in fiscal 2016 to confirm the management status of human rights contact points at each company and to set the NTT Group's human rights priorities. The survey was conducted targeting the NTT Group and our supply chain regarding the following items.



As a result, we identified “women’s rights,” “privacy rights,” “working hours,” “occupational health and safety” and “the right to organize and collective bargaining” as our top five issues and became aware of the urgent need to reconfigure management to address global human rights issues. We also held a stakeholder dialogue involving five experts from three overseas organizations (Verisk Maplecroft, World Benchmarking Alliance and Corporate Human Rights Benchmark) and one Japanese organization (Japan Research Institute) with the head of the Human Rights Office. And we received advice on the NTT Group’s overall human rights initiatives, human rights in the ICT industry, related challenges, information disclosure and Group-wide promotion of initiatives.

In fiscal 2020, we held an in-house lecture for each issue with external experts from the organization, BSR. We held these lectures with the aim of fostering an understanding of the priority human rights issues we face as a united NTT Group company, including our global operations, and we also considered the reporting efforts of each company within the group. This dialog was conducted several times. We also researched the human rights management content required of us as a global ICT company, and worked with staff in charge of human rights including at global group companies to focus on particularly important issues and select four themes.

In fiscal 2021, we will continued to hold dialogues with each company in Japan and overseas to determine specific courses of action, and also established a globally standard human rights policy.



Theme 1

Promotion of “Diversity & Inclusion,” a concept that recognizes diverse cultures and values (Prohibition of discrimination, respect for freedom and rights, fairness in the workplace, economic disparities and poverty)  
Aiming to create new value, NTT Group believes it is essential to respect the diverse values and individuality of its employees in order to address the diversifying needs of its customers.



Theme 2

Promotion of “Technology that is based on high ethical standards,” which balances both high ethical standards and technology (Technology, data bias, privacy, personal data protection, and security)  
New technology will be necessary to strike a balance between people and nature. We believe it will therefore be necessary to pursue R&D and the social implementation of technologies while maintaining a high level of ethics.



Theme 3

Promotion of “Healthy work in daily life” (Diverse work styles, prohibition of forced labor and child labor, workplace safety, freedom of association and the right to organize, living wage, enhanced benefits)  
We believe it is important to create safe and secure work environments and promote diverse work styles so that employees can work in physical and mental health with enthusiasm and motivation.



Theme 4

Promotion of “Appropriate expression, speech, and display” in consideration of human rights (Freedom of expression and respect for human rights in advertising and other presentations)  
As the Internet becomes more and more widespread, companies are required to be more appropriate in their communications than ever before. The NTT Group will take actions that absolutely refrain from discriminatory expressions, speech, and displays.

## Promotion of “Diversity & Inclusion”

### “D&I Statement”

The NTT Group has established the D&I Statement as a means of promoting Diversity Equity & Inclusion.

We will be promoting D&I in line with this statement.

[Details ▶ P114](#)



### Our Diversity & Inclusion

We aim to achieve sustainable growth by recognizing our differences as valuable strengths for our business.

Our society is constantly changing. We will continue to have events occur globally that will have an impact on our employees and the clients and communities we serve. NTT will continue to evolve our focus and programs to sustain our commitment to diversity and an inclusive culture at NTT.

#### Our commitments:

- We will create work environments:
  - where all of us have equal opportunities
  - where all of us feel encouraged to take on challenges without fear of failure
  - where all of us feel included and engaged

Regardless of ethnicity, race, nationality, origin, class, religion, belief, language, culture, gender, sexual orientation, gender identity, age, disability, disease/health status, appearance, values, family status, lifestyle, or any other social or personal characteristics.

- With social responsibility in mind, we contribute to create a more diverse, inclusive and sustainable society through connecting precious resources such as people, the environment, and culture to the future.

## Promotion of “Technology that is based on high ethical standards,” which balances both high ethical standards and technology

The NTT Group views the appropriate use of technology as a valuable way to support the future development of life, society, and the universe as a whole.

The development of technology increases the diversity and closeness of communications, making the movement of people and things more efficient, and creating a safer, more comfortable lifestyle—all for a better future.

Until now, NTT has rolled out communications services and communications infrastructure on a global scale as a universal service based on its mission from both a public utility and a corporate viewpoint.

In addition to employing high ethical standards for advancing the use of technology, the norms of

countries, regions and communities need to be respected for fair and appropriate implementation as well as to ensure the technology can continue to be provided for future generations.

We believe that human autonomy should be applied when seeking ways to adopt AI. The operational results of AI systems may contain bias depending on the characteristics of the data and algorithms being used. Efforts are being made to better understand those characteristics so that there are no undesirable consequences like prejudices held by people making use of AI, and we are advancing research and development to increase transparency when AI is being used.

We will continue to promote technology based on constant dialogue with all members of society and high ethical standards to ensure the development of trusted technology into the future.



itelligence AG

itelligence AG develops and supplies AI tools to assist with conversations between children and counselors, when Danish child protection organization “Children’s Welfare” provides counseling to children in need. This tool draws on various functions to assist the counselor based on the topics of conversations, including guidance, advice while talking, and providing useful reference information. After the conversation, the tool can also be used to provide a statistical insight of the topics covered.

### Healthy work in daily life (health management)

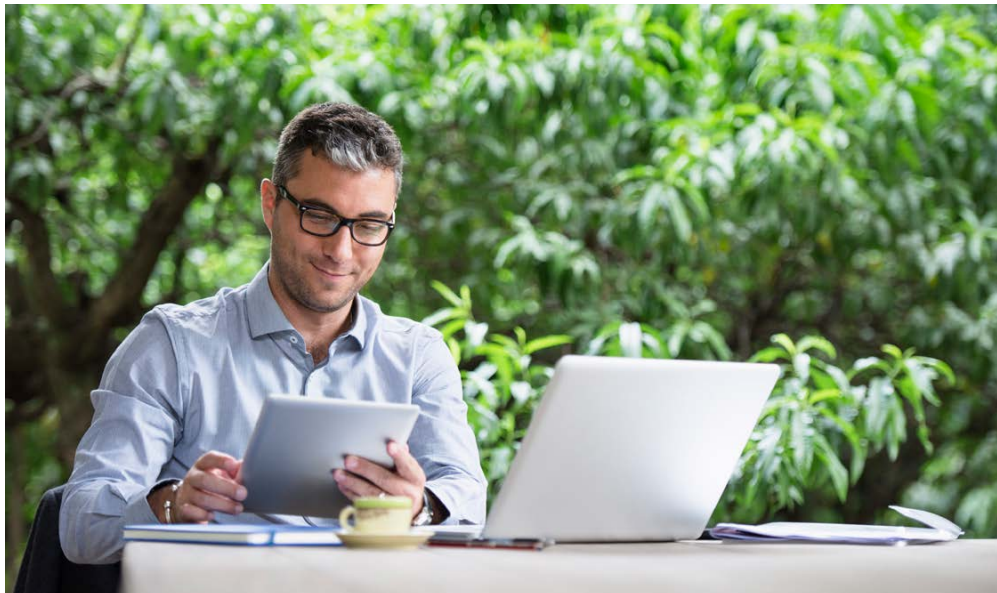
The NTT Group is promoting “Healthy work in daily life” for working close to home. Instead of trying to strike a balance between the two opposing concepts of “work” and “life,” “Work in Life” is a “paraconsistent” concept that achieves both simultaneously for a mutually beneficial result.

A diverse range of working styles is vital to ensure that a diverse range of personnel are able to harness their full potential. The NTT Group is home to diversity that cannot be defined by any single characteristic alone. As employees are drawn from an increasingly diverse pool, being accepting of others, building a relationship of trust and working together to achieve a common goal is vital in order to maintain ongoing growth of the company. Transforming work styles helps to boost each individual employee’s capabilities and provides for greater opportunities. To

achieve this, we believe it is important to create a safe and secure workplace, and promote a variety of work styles suited to a diverse range of lifestyles and life events.

In September 2021, NTT announced “Transformation to a New Management Style.” This policy was established based on remote work as employee’s work style, where we give employees the freedom to choose their work location. As we work toward maximizing well-being for all, the NTT Group will be implementing Healthy work in daily life by creating workplaces where employees can work energetically in good health.

Details ▶ P123



### Promotion of “Appropriate expression, speech, and display” in consideration of human rights

As the Internet becomes more and more widespread, the negative impact of harmful websites and slanderous content on social media on young people is becoming a social problem. One aspect of communications technology like social media is that it leads to platforms created solely by individual preferences or sense of values. In this context, companies are required to be more appropriate in their communications than ever before.

The General Manager of the Sustainability Promotion Office concurrently serves as the Chief Privacy Officer (CPO) and acts as a contact point for complaints of privacy violations in the company.

### Specific Initiatives

DOCOMO gives careful consideration to protecting the freedom of expression and privacy rights of people communicating via the Internet, social media and digital communication devices, which are ICT industry specific issues that have been gaining more recognition by most telecommunications carriers in Europe and the U.S. With reference to the Principles of Freedom of Expression and Privacy established in 2013 by the Global Network Initiative, a global network of telecommunications companies, we take a stance to fulfill our own responsibility to respect and protect the freedom of expression and privacy of our users. This includes protecting the globally recognized rights of our users, even in situations where we need to provide customer information under special circumstances, such as a matter of national security requested by the government.



### NTT Communications

Beat COVID-19! “Manabi Pocket” so that children can continue learning whenever and wherever

In February 2020, Japanese prime minister requested all schools around Japan to temporarily shut down as a way of curbing the spread of the novel coronavirus. In light of this, NTT Communications partnered with the company that developed the “Manabi Pocket” cloud-based educational platform to offer Manabi Pocket content in 11 fields of study free of charge, as its unique way of helping children in Japan to continue learning. Creating a platform that can be used by children and students during school closures provides them with learning opportunities and helps to develop a digital approach to education in the future.



### Penetration into the business

We make improvements aimed at stopping, preventing or reducing any negative effects related to human rights. We also establish common global targets for human rights issues to be addressed and promote their penetration into the NTT Group's business operations.

We continued to hold dialogue with group companies in Japan through fiscal 2021, and after reassessing the situation, established globally standard targets for the way our management needs to be enhanced. We also created internal guidelines for human rights due diligence, which serve to foster a common understanding as well as outline the appropriate procedures to take.

### Confirmation of viability and effectiveness

To confirm the viability and effectiveness of the measures and check progress, performance targets (KPI) have been set and will be followed up. This process will be held regularly, with sustainability liaison meetings held to check progress of viability and effectiveness.

### Disclosure and evaluation

The Sustainability Committee and global conferences are held once a year to share progress and results around the world.

The details of due diligence are disclosed in "Human Rights Reports" together with reports of activities.

The NTT Group also endeavors to broadly communicate its "Business and Human Rights" initiatives. In fiscal 2019, we shared an overview of the business and human rights activities of the NTT Group at an international conference hosted by the Caux Round Table Japan. We also reported on the results of human rights due diligence and risk assessment conducted from 2017 to 2018 as well as on how these processes are being applied across Group companies. Moreover, we expressed our intention to continue assessing risks, bolster educational programs on business and human rights, and establish an effective management system. The conference was attended by 97 people from 54 companies and 8 organizations, including companies, NGOs, NPOs, and universities.

### Dialogue with third parties

In each process, when risks are discovered, we will hold dialogues with experts and other third parties and work with everyone in the value chain to make improvements toward a broad and fair solution.

Even now we seek advice from outside experts and other specialists to discuss our Human Rights Policy and measures related to human rights.

### Suspension of transactions

As a result of due diligence, if forced labor, inhumane treatment, child labor, discrimination, or wages below the minimum wage are recognized, we will consider suspending transactions as a viable option, after first making improvements together with everyone in the value chain. The entire NTT Group is working toward creating a better future by cooperating with partners to resolve issues related to human rights. In addition to the Human Rights Policy, we will also require third parties to comply with the "NTT Group Supply Chain

Promotion Guidelines" provided separately.

### Accusation and Remedy

In an effort to ensure awareness and prevent recurrence, we have set up a Corporate Ethics Action Q&A section on our employee-oriented corporate website to explain nine representative examples of ethics violations. Each example action is described and laws and regulations that are the basis of reasoning are explained. When the NTT Group has taken disciplinary action related to human rights, we publish excerpts of the cases and expound the cases on the site to raise employee awareness and prevent recurrence by calling for their attention and organizing training and other educational opportunities.

### Contact Point for Human Rights Issues

The NTT Group provides internal and external contact points that employees can consult on various concerns related to human rights.

One of these, the Corporate Ethics Help Line, is an external consultation desk outsourced to a law firm that responds to consultation by third parties or by employees, on a confidential basis, for situations that cannot be reported internally. Consultations are accepted in various forms, including email, telephone and letter. All consultations are thoroughly kept confidential to protect the privacy of the person and ensure they are not subjected to disadvantageous treatment.

The contact point also handles consultations on compliance issues. Please see page 64 for details.

## Value Chain Management

### Policies and Concepts

In recent years, companies find themselves required to monitor the ESG risks and impact on sustainability, including consideration of human rights and mitigation of environmental impacts, of not only their own group companies but also throughout the entire value chain, from raw materials and supplies procurement to disposal and recycling. Also, we are seeking to expand the B2B2X model and global businesses under the medium-term management strategy “Your Value Partner 2025” that we established in 2018. We expect our value chain to expand further globally, requiring us to enhance our value chain management initiatives.

The NTT Group’s value chain management focuses on requiring suppliers to adhere to the various guidelines under the “Procurement Policies” established by NTT. For this reason, it is important for us to build partnerships of trust with all of our suppliers.

In 2013, we formulated the NTT Group Supply Chain Sustainability Promotion Guidelines to further promote sustainable procurement, and we carry out risk assessments of suppliers following these guidelines. Additionally, we have formulated the “NTT Guidelines for Green Procurement” and the “NTT Group Energy Efficiency Guidelines” as specific guidelines on the environment and we require all suppliers to comply with the provisions therein.

### Organization for Implementation

NTT’s Technology Planning Department has formulated the NTT Group Supply Chain Sustainability Promotion Guidelines as a guide for promoting sustainability in the supply chain throughout the Group. In coordination with procurement divisions at each NTT Group company, we ensure that a supplier’s compliance with key items within the guidelines is a basic condition of procurement and we regularly check that this condition is being met and follow-up with suppliers.

## NTT Group Supply Chain Sustainability Promotion Guidelines

A number of supply chain issues have recently come to light, including serious human rights violations such as forced labor and child labor, unlawful disposal of waste, response to stricter regulations on controlling chemical substances, bribery, and other examples of malpractice.

In light of this, we formulated the NTT Group Supply Chain Sustainability Promotion Guidelines in 2013 that contain detailed requirements for suppliers in the six areas of human rights/labor, health/safety, the environment, fair trade/ethics, quality/safety, and information security to guide our efforts as we work together with suppliers in order to conduct procurement activities in a socially responsible manner.

We have published these Guidelines in Japanese and English, seeking to communicate to a broad range of the NTT Group’s suppliers both in Japan and overseas. We expect suppliers to adhere to these guidelines along with our Procurement Policies and the NTT Group Guidelines for Green Procurement, which contain our basic approach to green procurement at the NTT Group.

Procurement  
<https://group.ntt/en/procurement/>  
 NTT Group Supply Chain Sustainability Promotion Guidelines  
[https://group.ntt/en/procurement/policy/supplier/pdf/supply\\_chainE2.pdf](https://group.ntt/en/procurement/policy/supplier/pdf/supply_chainE2.pdf)

## Procurement Policies

1. NTT will strive to provide competitive opportunities with fairness to both domestic and foreign suppliers, and to build mutual trust and understanding.
2. NTT will conduct economically rational procurement of competitive goods and services that meet its business needs, deciding on suppliers based on quality, price, delivery times, and stable supply in a comprehensive manner.
3. NTT will conduct procurement in a manner that follows laws and regulations as well as social norms, and takes the environment, human rights, and other issues into account to contribute to society.

### Request to Business Partners for Compliance and Risk Assessment

The NTT Group Supply Chain Sustainability Promotion Guidelines, the operational guidelines we issue to our suppliers, clearly outlines fair trade practices and business ethics (nine articles). With respect to critical suppliers, we conducted a survey on the status of sustainability procurement. We checked activities concerning compliance in general, including their response to preventing corruption, illegal political contributions and antisocial forces, and also requested further improvements where necessary.

### ESG Education for Procurement Department Staff

The NTT Group implements training on ESG for staff in procurement departments to reduce the burden of procurement activities on the environment and ensure they persistently comply with the laws, regulations, and norms of society.

### VA Proposal System and Supplier Awards System

NTT East and NTT West engage in value analysis activities in which we invite our suppliers to submit proposals for enhancing quality, safety and workability, and for contributing to environmental protection, and then we incorporate their ideas in product specifications. We award suppliers that offer particularly outstanding proposals. In addition, we participate in improvement presentations held by suppliers and work with them to make improvements based on dialogue and cooperation.

Since fiscal 2006, we consolidated contact points for a simpler proposal system and established an environment for further developing improvement activities, including adding a new scheme for VE (Value Engineering) & VA (Value Analysis) proposals from telecommunications construction companies and suppliers. We will remain active on improving our products and services.

### Assessment of Social and Environmental Risks

We assess social and environmental risks by conducting the Supply Chain Sustainability Survey using the Supply Chain Sustainability Promotion Check Sheet to confirm the status of compliance with various guidelines and technical requirements.

The survey targets all of the NTT Group's critical suppliers that account for at least 90% of total procurement value, supplier of non-substitutable products and supplier of important products. The survey includes 140 items covering the seven areas of human rights and labor, health and safety, the environment, fair trade and ethics, quality and safety, information security, and social contributions. For example, in the area of human rights, we also conduct monitoring of child labor and forced labor as well as compliance with the freedom of association and collective bargaining rights. We assess the responses from suppliers, and designate those with a certain percentage of low-rated responses, or those with a low rating for specific items, as high sustainability risk suppliers.

We visit these designated suppliers to perform additional checks, and when corrective action is necessary, we have them prepare an improvement plan and monitor its implementation. While the survey covers critical suppliers, we seek to assess risks that exist further upstream by also including items that check whether the supplier is making efforts to educate secondary suppliers about social responsibility. The goal of the survey is to request and receive responses from all critical suppliers.

#### Check points for the Supply Chain Sustainability Survey (161 items)

- (1) Sustainability promotion in general (4 items)
- (2) Human rights and labor (33 items)
- (3) Safety and hygiene (25 items)
- (4) Environment (35 items)
- (5) Fair trade and ethics (27 items)
- (6) Quality and safety (10 items)
- (7) Information security (15 items)
- (8) Business continuity plan (6 items)
- (9) Others (Conflict Minerals, Code of Conduct, Due Diligence, Complaint Processing Mechanism, etc.) (16 items)

### Requests to Suppliers on Environmental and Social Concerns

We have established the following guidelines as requirements under the NTT Group Supply Chain Sustainability Promotion Guidelines and seek compliance from suppliers. We also ask all suppliers that participate in procurement, whether they are a new supplier or not, to comply with our Notes Regarding Participation in the Procurement Process, including not having any past involvement with organized crime groups or demonstration of improper conduct related to procurement.

We revised the NTT Group Guidelines for Green Procurement in April 2021, and added environmental-related requirements that suppliers should comply with.

As part of environmental activities announced by the NTT Group such as the Environment and Energy Vision, this revision includes a declaration of environmentally friendly procurement (green procurement), and stipulates that all suppliers are requested to cooperate with the NTT Group's environmental activities aimed at conservation of the global environment. In the past these guidelines applied to products procured by the NTT Group, however following this revision, these guidelines have been expanded to apply to products and services sourced by the NTT Group. It also specifies the requirements of initiatives for suppliers for reducing their environmental impact, such as reducing greenhouse gas emissions, their commitment to resource recycling, and the conservation of biodiversity. The NTT Group will continue to implement initiatives for reducing its environmental impact throughout the entire supply chain.

### Conducting Risk Assessment for the Supply Chain

We assess the sustainability activities of suppliers through surveys referencing various guidelines, and conduct risk assessments from various angles, including society, quality and the environment. We will continue to scrutinize the survey method, survey content, and analysis method and use the findings of these questionnaires to provide feedback and continue discussions with suppliers in order to reduce risks across the value chain of the NTT Group.

### Communicating with Suppliers

The NTT Group strives to build better partnerships with each of its suppliers by mutually exchanging views and proposals through various modes of communication.

In July 2018, we started introducing a system that enables faster assessment of damage to suppliers following a major earthquake or other disaster. By exchanging information more quickly and accurately, we will continue to work with suppliers on the prompt restoration of telecommunications equipment. The NTT Group companies also engage in various forms of communication with their suppliers.

Specifically, these companies inform their suppliers of their business environment and exchange views on how they can continually work together to provide a stable supply of high quality, competitive products.

NTT Group Guidelines for Green Procurement	Reducing greenhouse gas emissions, commitment to resource recycling, conservation of biodiversity, requirements of initiatives for suppliers for reducing their environmental impact Uniformity/selection of plastic materials, restricted use of harmful materials, display of information on plastic materials, energy conservation, specific requirements for assessing suppliers
NTT Group Energy Efficiency Guidelines	Basic policy for developing and procuring ICT equipment such as routers and servers used by the Company, and target values for each type of equipment
Technical Requirements	Specific technical requirements, including the reduction of environmental loads, for procuring products that pay due consideration to quality, safety, the environment and other aspects
NTT Group's Approach to Conflict Minerals	Basic policy on initiatives for preventing the use of designated conflict minerals due to concerns that part of the minerals originating in the Democratic Republic of the Congo and nine neighboring countries are providing a source of funding for violent armed groups engaging in serious human rights abuses

## Other Human Rights Initiatives

### Introduction of B-BBEE

South Africa, where Dimension Data, a subsidiary of NTT, is headquartered, adopts the Broad-Based Black Economic Empowerment (B-BBEE) policy to enhance the status of people who had been disadvantaged by discriminatory treatment during the apartheid era. Under B-BBEE, which the Government of South Africa uses as an assessment standard, companies are rated on a scorecard for their level of contribution to ownership, management, employment equity, skills development, preferential procurement, enterprise development, and socio-economic development. As a result of its efforts in the areas of ownership, employment equity and skills development, Dimension Data was recognized as a Level 2 contributor in March 2020, the second highest recognition in the eight level B-BBEE system, two ranks higher than the previous year.

### Assessment of Risks Associated with Conflict Minerals

In accordance with the NTT Group's Approach to Conflict Minerals, we conducted written surveys and inspected the offices and factories of suppliers to determine whether or not these minerals are used in their products.

## Initiatives to Address Gender Pay Gap

NTT Security (UK) Limited, which serves customers around the world by providing total solutions incorporating advanced technologies and services related to security, has been publishing a gender pay gap report since 2017. NTT Security discloses the gender gap in its hourly wages and bonus payments to employees in response to the Equality Act 2010 (Gender Pay Gap Information) Regulations 2017 enacted by the British government in 2017.

Embracing Gender Pay Gap Reporting  
[https://group.ntt.jp/csr/communication/team\\_ntt/pdf/gender\\_pay\\_gap\\_report\\_2018\\_uea\\_v1.pdf](https://group.ntt.jp/csr/communication/team_ntt/pdf/gender_pay_gap_report_2018_uea_v1.pdf)

## Modern Slavery Act Statement

NTT Group companies have published their statements in accordance with Article 54, Item 1 of the Modern Slavery Act 2015 enacted in the United Kingdom. With the "Modern Slavery Statement," companies set out their actions to ensure that slavery and human trafficking are not taking place in their business operations or in their supply chain.

Social Challenge 8

# Diversity & Inclusion

## Business Activity

- 24. Promoting recruitment, training, and education of diverse human resources and women's advancement in the workplace
- 25. Encouraging of understanding of LGBTQ and promoting the advancement of disabled people
- 26. Support for balancing work and life such as childcare and nursing care



## Why it matters

The NTT Group is promoting diversity, equity and inclusion with the aim of achieving ongoing growth and developing a sustainable society. To be able to respond to changes in external factors in a flexible manner and continue creating innovation, it is vital that differences and diversity are considered as value, and to transform that value into a viable force.

## What can be accomplished

To improve well-being, achieve healthy workstyle and develop a sustainable society, we will be creating workplaces where a diverse range of employees can work energetically in good health while staying true to themselves. We will be focusing even more on hiring, training and appointing diverse human resources, building up a better understanding of working with LGBTQ people and those with disabilities, those undergoing treatment or suffering from diseases, developing an inclusive corporate culture, and creating a flexible and work style.

## Future vision

The NTT Group will continue promoting diversity, equity and inclusion, not just toward customers but throughout the entire value chain, and encouraging local communities to do the same will help create a society that is accepting of even more diverse values where everyone can work while staying true to themselves.



## Business Activity 24

# Promoting recruitment, training, and education of diverse human resources and women's advancement in the workplace

### Our commitment

We will create workplaces where a diverse range of employees can achieve their full potential. Increasing opportunities for people from diverse backgrounds leads to greater personal growth and better well-being of each individual.

### Our objectives

- 30%**  
Greater ratio of new female graduate hires
- 30%**  
Ratio of women newly promoted to management positions
- 15%**  
Ratio of women in management roles by 2025
- 25–30%**  
Ratio of female directors by 2025 (directors + audit and supervisory board members + senior vice presidents)
- 30%**  
Ratio of outside personnel by 2023
- 9%**  
Turnover rate

### The Fundamental Principle

As a global ICT group company, the NTT Group must create innovation to breed new value and address the needs of various users around the world.

To respond to dramatic changes in the markets and meet diversifying customer needs, as well as to become a consistently selected "Your Value Partner", we believe that respecting and making use of the individuality of employees and their differing values is essential.

A diverse range of work styles will lead to diversity in human resources, and that expand opportunities for diverse human resources leads to personal growth and the realization of well-being of each individual.

### Organization for Implementation

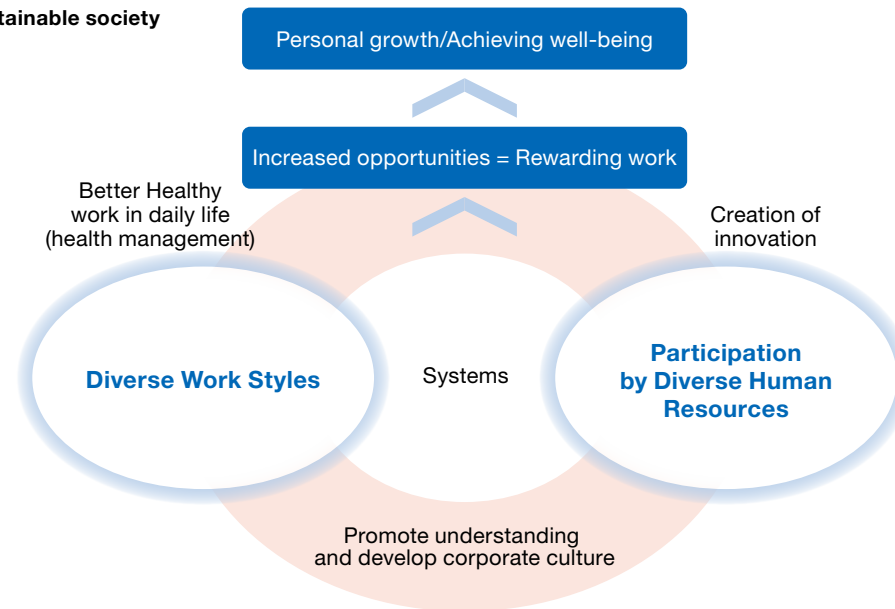
The NTT Group has positioned diversity and inclusion as an important management strategy and the president himself is communicating inside and outside the Group the importance of accepting a diverse range of values. We are working to implement initiatives aiming for diversity and inclusion companywide.

In 2007, NTT established the Diversity Management Office to bolster efforts to create an environment which enables participation by diverse human resources across the whole Group, and by April 2008, diversity promotion supervisors were in place in Group companies. The Diversity Management Office and diversity promotion supervisors continue to cooperate to promote diversity, equity and inclu-

sion, to achieve Healthy work in daily life (health management) and career development, and to conduct educational activities aimed at reforming corporate culture and ingrained practices.

We regularly hold diversity promotion meetings with each Group company to share their activities and discuss future diversity promotion measures for the Group based on female employee ratios by position, the status of hiring people with disabilities, and other diversity management parameters. Also, management meetings attended by directors are held when necessary to report on and discuss diversity-related initiatives, which are then promoted companywide.

### NTT's D&I for achieving a sustainable society



### New Targets for Empowering Women

The NTT Group provides appropriate compensation to all employees, regardless of gender, adopting equal payment as stipulated in the Equal Employment Opportunity Law, and works Group-wide to promote women's active participation at the workplace.

In 2021, we set a new target of 25–30% for the ratio of women in director positions by fiscal 2025, in order to incorporate diverse opinions in decision-making settings. We also see the need for expanding the pipeline of female candidates in order to continue reflecting diverse opinions in decision-making, and thus set a target of 30% for the ratio of new female managers appointed. In light of this, we raised our target for the percentage of women in manager and director positions from the existing 10% to 15% by fiscal 2025.

Ever since fiscal 2013 when we set a target of 30% or higher for the percentage of women in new hires straight out of college, we have achieved at least 30% every year.

### Empowerment of Women in the Workforce

The NTT Group is stepping up initiatives to groom more female employees for decision-making management positions and positions for providing guidance.

#### All female employees

The NTT Group provides a human networking program for strengthening vertical and horizontal connections for women within the Group. On top of management levels (such as executives, senior managers and managers), training is provided across all positions and ranks.

In addition to off-the-job training, we provide on-the-job training, including putting employees in tough assignments, with the intention of training women with the skills, mindsets and experiences necessary for promotions.

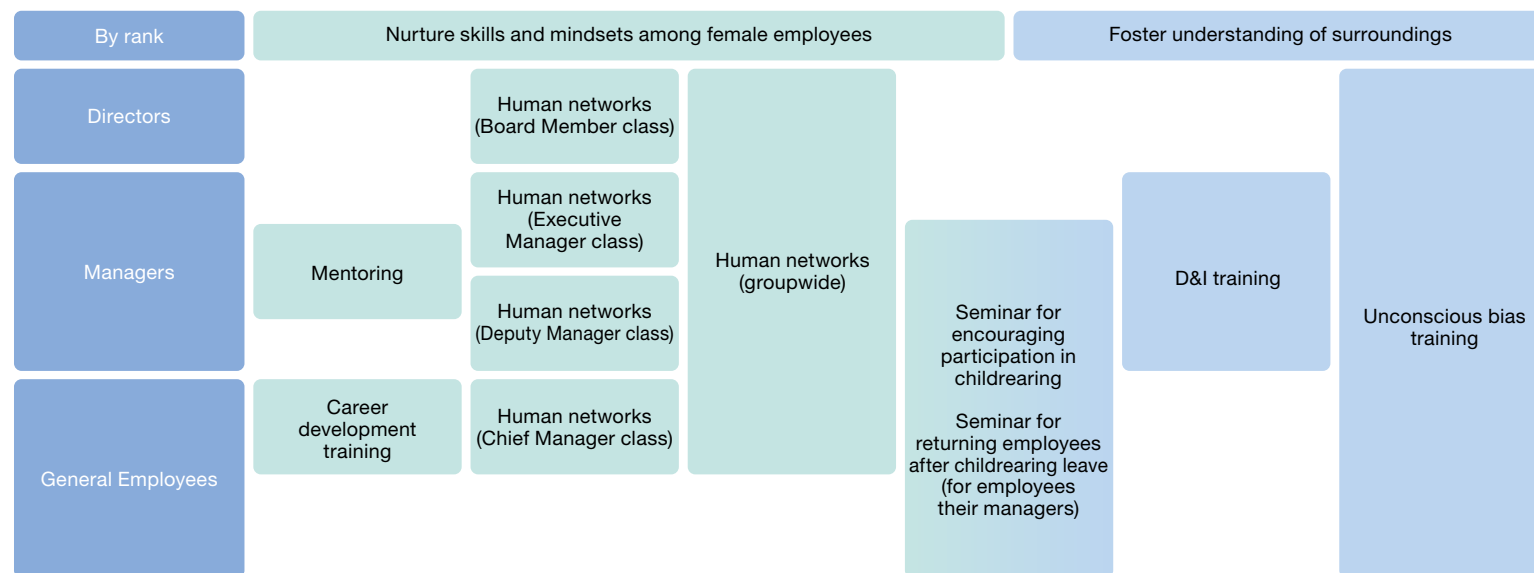
NTT University has been established for the purpose of grooming candidates for upper management positions within NTT Group, and it aims to have at least 30% women in the program.

#### Female employees interested in management positions

Women career development training programs are provided throughout the NTT Group, and we also run programs for building up necessary leadership skills and awareness through dialogues with upper management and exchanges with other companies. Employees are also encouraged to take part in external training programs where they can interact with members from outside the NTT Group.

#### Managers

The NTT Group has set a 20% or higher target for women participating in internal and external training programs as part of efforts to expand training opportunities. A new program offering mentoring by female directors has also been developed for female managers.



### Initiatives for International Women's Day

To celebrate International Women's Day on March 8, we created a mosaic poster made from photos sent in by NTT Group employees in Japan and overseas who wanted to participate in the project.

### Mosaic poster featuring employees



### Active Promotion of Outside Personnel

The NTT Group hires outside personnel (mid-career hires) in order to incorporate diverse opinions in business operations, with the ratio at the six major domestic Group companies at 28% in fiscal 2020. We will continue to hire outside personnel in order to have diverse personnel on staff, and aim for a 30% ratio of mid-career hires by fiscal 2023.

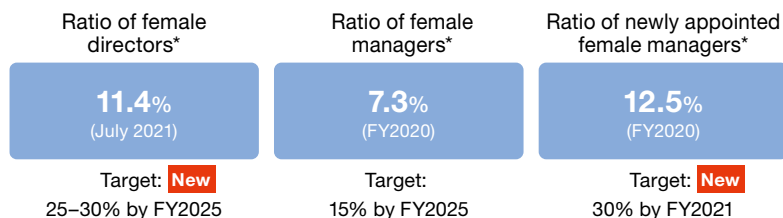
### Continuous Employment of Employees at Retirement Age

In 1999, the NTT Group introduced a continuous employment program for employees who have reached the retirement age of 60 in response to employee needs and public expectations regarding elderly employment. Furthermore, from the standpoint of making maximum use of limited human resources in managing the NTT Group's businesses in the future, we introduced a new program in October 2013 that will enable applicants to continue working in a way that fits their lifestyles up to the age of 65 and demonstrate their abilities by putting their experience to work.

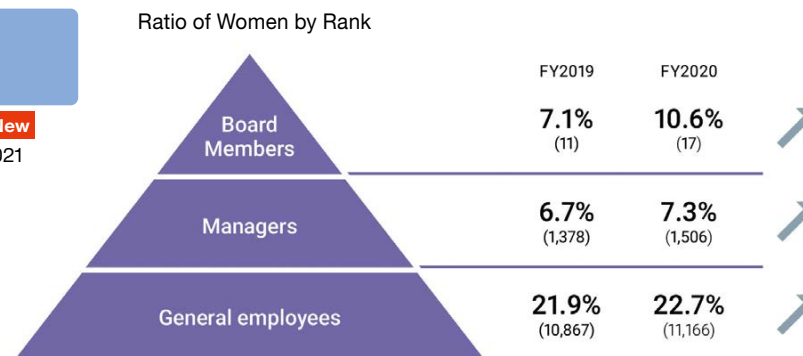
### Rehiring Program for Employees Who Resigned

A significant number of employees who left the Company for reasons such as childcare, care for parents or the relocation of their spouse aspire to resume work at the NTT Group in the future. To respond to their requests and to effectively use the experience and skills they had acquired during their previous period of employment, NTT has established a rehiring program.

The program applies to employees who worked more than three years and were forced to leave due to their need to care for children under the age of the third grade of elementary school or elderly family members, or due to their inability to continue commuting because of the change of address necessitated by the relocation or career change of their partner, or by marriage. A request for reinstatement is followed by interviews and a health checkup, and the Company decides whether or not to reemploy them.



\* Six major domestic companies (NTT, NTT DOCOMO, NTT East, NTT West, NTT Communications, NTT DATA)



## Business Activity 25

# Encouraging of understanding of LGBTQ and promoting the advancement of disabled people

### Our commitment

Diverse values and individualities are part of NTT's strengths, and we are creating workplaces that are welcoming of each and every person as they are, allowing them to share equal opportunities, take on challenges without being afraid of mistakes, and achieve mutual growth

### Our objective

2.3%

Ratio of employees with disabilities

### Promotion of Global Diversity

Each year, we conduct Group training for senior managers of NTT Group in Japan and overseas, called Global Leadership Development Program Leadership Excellence and Accelerating Diversity (GLDP LEAD). This training is designed to foster leadership among managers aiming to move to higher positions. This training, in which more than half of the participants are female, emphasizes diversity and innovative culture as organizational capabilities of topmost importance. In fiscal 2021, 42 employees from nine countries underwent this training in an online format.

Scenes from GLDP LEAD



### Outside Interaction and External Certifications

The NTT Group took part in TOKYO RAINBOW PRIDE, and also became a sponsor of Pride House Tokyo, the first permanent center for LGBTQ in Japan.

A total of 21 NTT Group companies were recognized at the highest-level Gold status in PRIDE Index 2021, established by a volunteer organization called "work with Pride" to evaluate corporate activities for sexual minorities and the LGBT community. NTT has received the Gold ranking for six consecutive years since 2016.

### Initiatives for LGBTQ

#### Enhanced Systems and Welfare

To realize an organization and a society in which everyone can be themselves and work freely regardless of sexual orientation or gender identity, in 2016 we began applying programs related to important life events, such as marriage leaves, bereavement leaves, congratulatory/condolence money, and the sending of congratulatory/condolence telegrams, to same sex partnerships. In 2018, we extended all allowances, benefit programs, and other programs involving spouses and families to same-sex partners as well.

#### Initiatives for Encouraging Understanding

We run training every year by LGBTQ people, to deepen understanding and provide the correct knowledge of LGBTQ issues for staff newly promoted to management positions.

We also hold ALLY meetings regularly in a show of support for LGBTQ. In fiscal 2021, ALLY meetings were held two times and included talks by LGBTQ people and group discussions, with around 130 employees from the NTT Group taking part.



### Expanding Employment Opportunities for People with Disabilities

In addition to direct hires, the NTT Group provides more employment opportunities for people who have disabilities. The NTT Group currently employs around 3,700 people with disabilities, with 980 of them working at a special-purpose subsidiary.

Four special-purpose subsidiaries have been established by the NTT Group to provide workplaces that are easy to work at for people with disabilities, as part of measures that enable employees with disabilities to harness their skills and perform at their maximum level.

Some 900 employees work at these special-purpose subsidiaries, and are engaged in activities that leverage the unique characteristics of employees with disabilities.

They assess problem areas in website accessibility, perform web accessibility diagnostics that offer reports with suggestions for improvements, and conduct training taught by people with disabilities to foster understanding of disabilities (barrier-free mind-set seminars).

**NTT Group's special-purpose subsidiaries (4 companies)**

- NTT Claruty  
<https://www.ntt-claruty.co.jp/>
- NTT West Lucent  
<https://nttwest-lucent.co.jp/>
- NTT DATA DAICHI  
<https://www.nttdata-daichi.co.jp/>
- Docomo PlusHearty  
<http://www.docomo-plushearty.com/>

### Business Partnership with OryLab Inc.

In July 2020, NTT began providing reception desk duties using OriHime-D, a robot that can be controlled remotely by people with disabilities.

NTT entered into a capital and business tie-up with OryLab Inc. in October 2020, for the purpose of strengthening its business responsiveness in remote environments while advancing the interests of people with disabilities.

Through this partnership, NTT Group's R&D capabilities are combined with the advanced product development capability of OryLab, such as OriHime, a robot that can be controlled remotely by people who have disabilities. We aim to provide employment opportunities and broader access to people with physical disabilities or find it difficult to go outdoors through this effort to connect remotely to the world.

OriHime-D, a robot that can be controlled remotely, is being used by people with physical disabilities to offer employment opportunities and broaden their range of activity while maintaining physical distancing during the pandemic. In recognition of this achievement, OriHime-D was awarded the Special Prize in the Environment Creation Category of the 2020 ACE Awards, sponsored by the Accessibility Consortium of Enterprises (ACE).

### Use of OriHime Remote-Controlled Robot

The NTT Group is using OriHime in a variety of scenarios.

**Sports**

Joint experiment with E Cheer Up!, a project for ICT x sports x regional co-creation

**Culture**

Collaborative agreement with a Kyogen troupe about making DX a reality (Nomura Mansai II (Mansaku no Kai))

**Education**

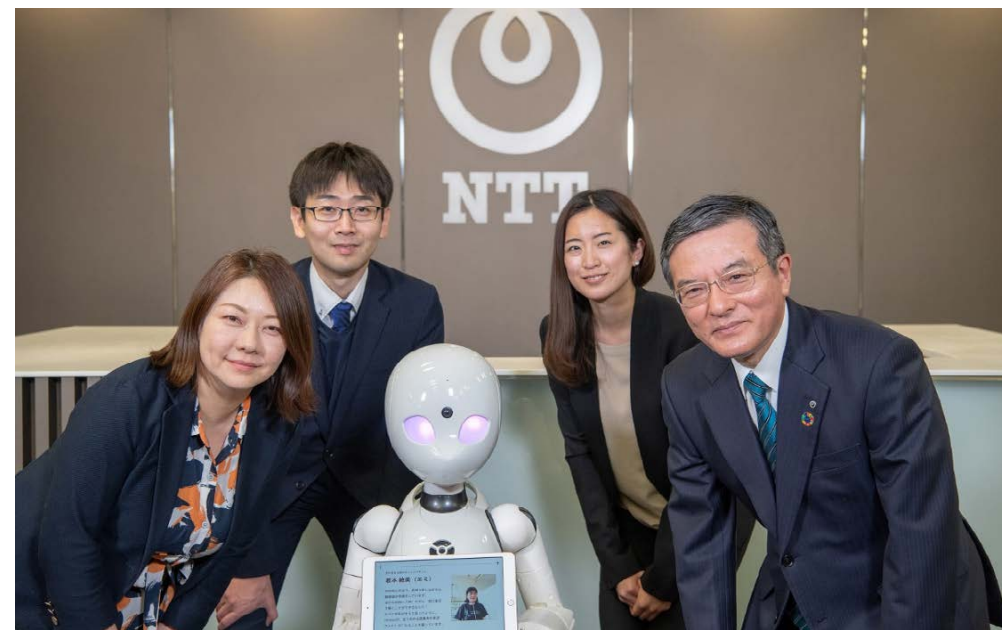
OriHime and NTT R&D offer well-being classes at elementary schools

**Research**

At robot café DAWN, conduct experiments with remote robot control based on based on IOWN

### Global Commitment

In December 2019 we joined The Valuable 500, an international initiative to promote the participation of people with disabilities in business. In December 2020, applicable regions were expanded to a global scale.

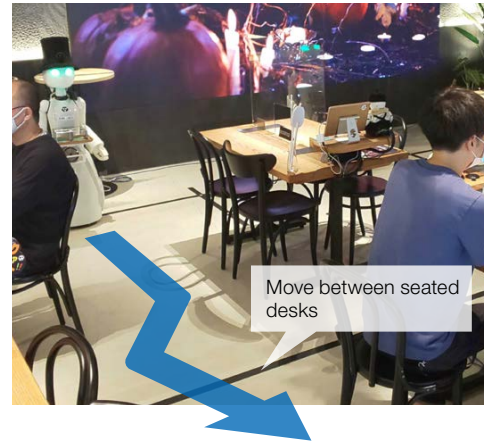


### Demonstration experiment using IOWN technology

We built a network for demonstration experiments between the Musashino R&D Center and the Avatar Robot Cafe DAWN ver.β. With the cooperation of NTT Claruty, we conducted experiments in which people with disabilities operated the avatar robot OriHime-D, and performed service work at the cafe.

OriHime-D used a demonstration experiment network (demonstration experiment OriHime-D) to allow the operator to control the robot in real time, enabling it to move forward and change direction continuously and very smoothly.

Route traveled

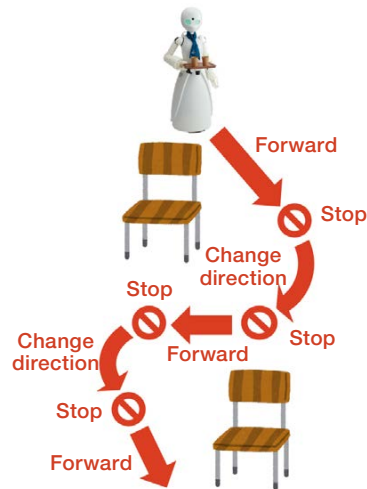


### Art Contest

We held the “NTT Art Contest Depicting our ‘Connections’” (August 24 to October 20) for people with disabilities, which had some 200 works of art submitted from Japan and overseas. The contest was held as part of initiatives aimed at promoting activities for people with disabilities based on the concept of “Showcasing individuality with the power of art—Disability or not, everyone can make the world brighter.” An award ceremony was held at the Avatar Robot Cafe DAWN ver.β on December 3, which is International Day of Disabled Persons.

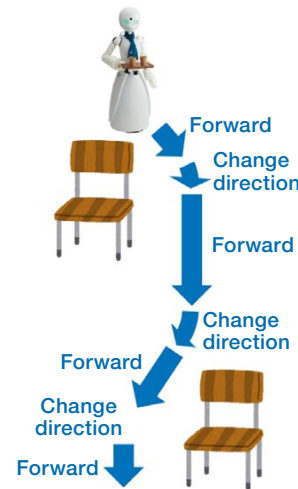


Image of OriHime-D movement using internet



Robot needs to stop and check conditions during operation

Image of OriHime-D movement using demonstration network



Continuous operation is possible because the robot can identify its current conditions

With well-being classes being taught at elementary schools and the ongoing lifestyles changes from the shift to remote learning, there is a particular need to focus on the well-being of children.

NTT combined OriHime and well-being related research knowledge, and ran courses for elementary school children looking to boost their sensitivity to well-being, as part of efforts to have children discover that ICT can be used as a tool to enhance well-being.

(Picture) Well-being journey drawn by students (Cooperation: Nitobebunka Elementary School)

## Business Activity 26

# Support for balancing work and life such as childcare and nursing care

### Our commitment

As a leader in digital transformation, we will act and contribute to helping resolve the social challenges unique to each country. For example, the aging population, proper education, equitable healthcare, regional economic development, and long-term value through technology for the next generations.

### Our objective

100%

Ratio of male employees taking time off for childrearing

### Childcare and Nursing Care Support Systems

Amid ongoing changes in employees' needs concerning health, childcare, and nursing care, in 2018 we conducted a major review of our benefit program menu to prepare environments even more conducive to work, and enhanced our childcare and nursing care support menu as the NTT Benefit Package. Specifically, we introduced a Childcare Concierge to support childcare placement in employees' areas of residence, and greatly enhanced services such as childcare subsidies. For nursing care, we also established a Nursing Care Concierge for consultations on nursing care, including matching of care managers.

We use Tomonin a symbol created by the Ministry of Health, Labour and Welfare to promote the establishment of working environments that allow the balancing of work and nursing care. NTT uses the symbol to publicize its initiatives and develop a workplace environment that enables employees to balance work and nursing care.

### Initiatives for Balancing Work with Nursing Care

Looking ahead to the coming age of major nursing care needs, our Group companies organize nursing care study sessions and other events aimed at creating an environment that enables their employees to balance work with nursing care commitments. With many interested employees participating in these events, we plan to continue providing such opportunities.

### Encouraging Employees to Take Various Types of Leave

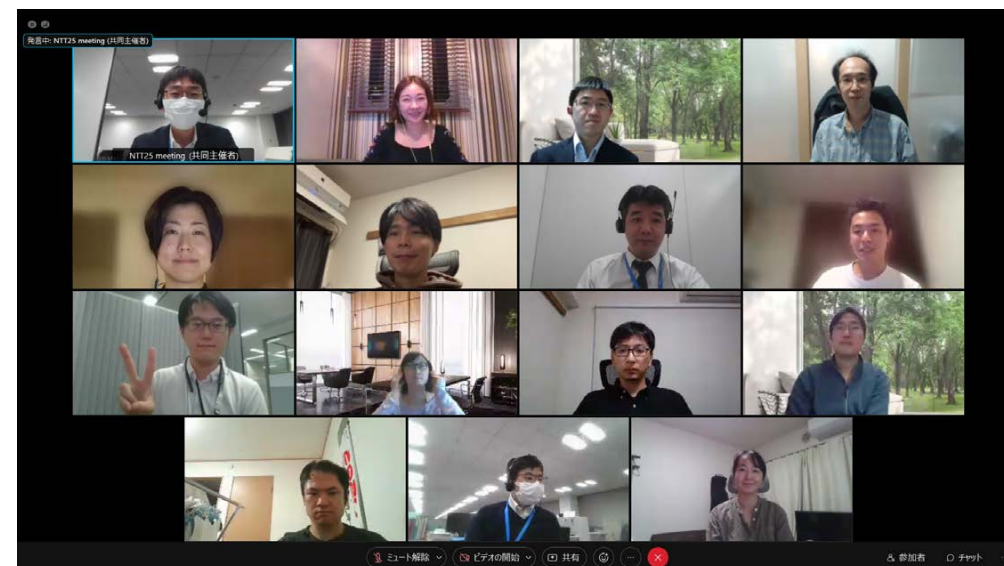
In an effort to achieve an even better work-life balance for each and every employee, the NTT Group is creating an encouraging environment conducive to taking various forms of paid leave, by encourage employees to take long vacations by combining paid leave with long major holidays such as Golden Week holidays, end-of year and New Year holidays, and summer vacation.

### Initiatives for Balancing Work with Childcare

The NTT Group has established a childcare and nursing care web site with information about the programs and how to use them, and also the experiences of employees who balance childcare and nursing care. In addition, we hold seminars for childcare leave and for people returning to work, hold talks with employees before childbirth and after parental leave, and establish nurseries in workplaces.

NTT has set a target for having 100% of male employees take paid leave for childrearing by fiscal 2022, and starting from fiscal 2021, NTT has been holding seminars to encourage employees to participate in childrearing, with panel discussions featuring explanations of the system and talks by employees who took time off, to create a workplace culture that encourages childrearing.

We are committed to creating systems and work environments where employees feel free to take time off for childrearing.

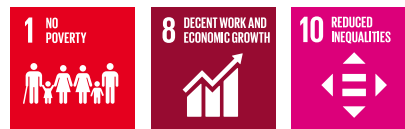
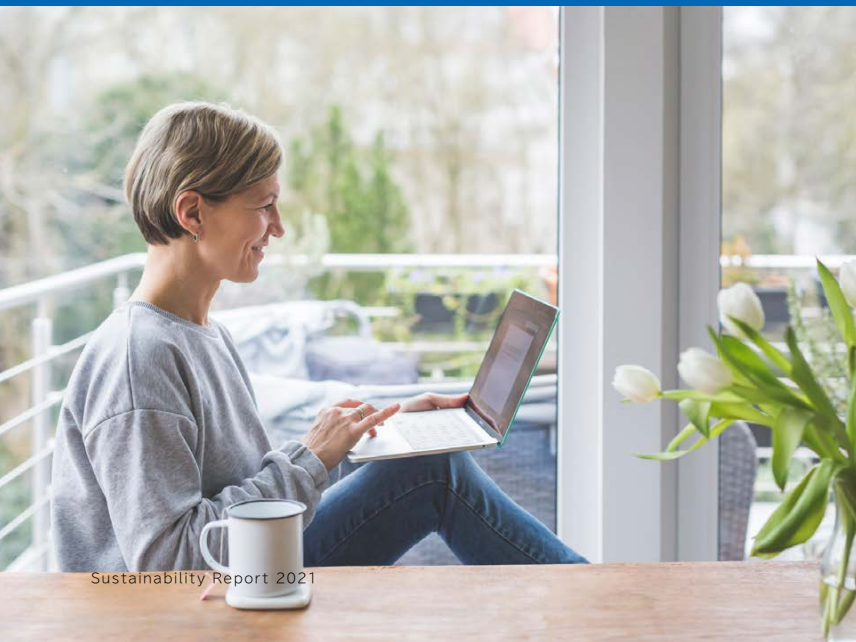


Social Challenge 9

# Creating new work style models

## Business Activity

- 27. Promote remote work
- 28. Achieving zero fatal accidents as well as maintaining and promoting employee health
- 29. Supporting autonomous capacity development
- 30. Promoting paperless operations



## Why it matters

We believe that creating a safe and secure workplace, developing employment conditions, and respecting a variety of work styles that suit life events means a workplace where employees can work energetically in good health, both physically and mentally, can be created, and so we are implementing initiatives to achieve this.

We also believe that giving due consideration for the health of our employees as well as their families and partners will motivate and invigorate each of them and lead to the growth of the NTT Group as a whole.

## What can be accomplished

We will be promoting diverse work styles with the use of remote work and “Super flex-time system”. In addition to increasing productivity and efficiency, these initiatives allow employees to make more effective use of their time than before, and will result in a better balance between work and life.

We will also strive to provide even better employment conditions, such as fair evaluation, equal opportunity, opportunities for growth, and benefit programs.

## Future vision

We will encourage Diversity & Inclusion toward customers as well as the entire value chain, and accept diverse values as we aim to create a society where everyone is able to work in a lively manner.



## Business Activity 28

# Achieving zero fatal accidents as well as maintaining and promoting employee health

### Our commitment

Health management is pursued as a key corporate strategy with the understanding that initiatives for maintaining and improving employee health also enhance motivation and productivity and ultimately lead to higher corporate earnings. We also believe that giving due consideration for the health of our employees as well as their families will motivate and invigorate each of them and lead to the growth and development of the Group as a whole

### Our objectives

#### Under 1,800 hours

Working hours by fiscal 2022

#### Zero

Number of industrial accidents

#### Zero

Number of accidents causing injury or death during construction work

#### 3%

Reduction in number of employees taking leave for mental health compared to previous year

### Policies and Concepts

Health management is pursued as a key corporate strategy with the understanding that initiatives for maintaining and improving employee health also enhance motivation and productivity and ultimately lead to higher corporate earnings. The NTT Group has developed a personnel system that responds to diverse work styles and provides generous benefit programs for employees and their families.

We also believe that giving due consideration for the health of our employees as well as their families will motivate and invigorate each of them and lead to the growth and development of the Group as a whole.

We believe that ensuring employee safety should be the top priority of business management. To ensure occupational safety and health, the NTT Group has established its own Safety Management Rules and Health Management Rules to facilitate safety and health management in addition to observing relevant laws and regulations such as Japan's Labor Standards Act and Industrial Safety and Health Act. The NTT Group's businesses include telecommunications-related construction and maintenance involving high risk operations such as aerial work. Therefore, we continually implement measures to prevent accidents and enhance safety awareness across the NTT Group, including subcontractors and other corporate partners.

### Organization for Implementation

In addition to establishing and maintaining safety measures and safety management systems based on relevant laws and internal rules, we have set up a health and safety committee for preventing industrial accidents across the NTT Group. Also, we are working to prevent accidents during telecommunications-related construction and maintenance that serve as the foundation of the NTT Group's businesses and create a safe working environment.

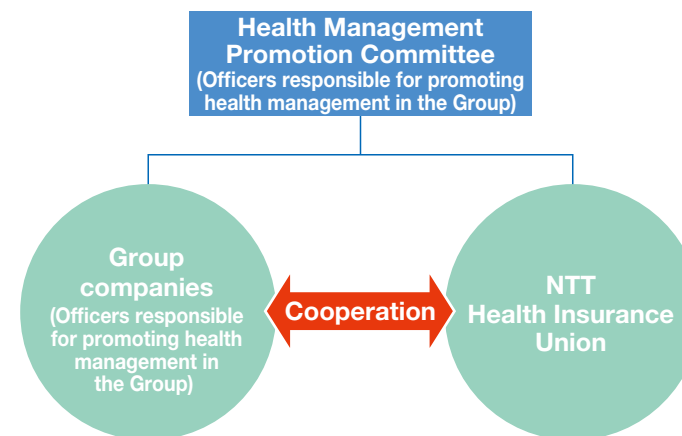
The NTT Group also established the Health Management Promotion Committee to promote health management through a collaborative effort between Group companies and the NTT Health Insurance Union. General managers of human resources department who are responsible for personnel at each Group company and directors of the NTT Health Insurance Union are appointed as officers in charge of promoting health management. The effectiveness of the initiatives is ensured by implementing PDCA cycles (formulate health management plans + set health targets → formulate and implement health-focused actions → identify and confirm health results → verify the effectiveness of health-focused actions).

We have also designated KPIs for wellbeing using health data, and we endeavor to achieve them by planning and implementing initiatives for raising awareness and promoting health-focused activities.

### Promoting Work-Life Management Work and Leave Style Reforms

The NTT Group seeks to create new value through innovation. In order to accomplish this goal, there is a strong need for all NTT Group employees to break away from traditional work styles to adopt more efficient practices not bound by time and place, and thereby exercise greater levels of independence and creativity. We are also aware of the great importance of supporting this shift by cultivating a deeper understanding of work-life management throughout workplaces and fostering a corporate culture that accepts the diverse work styles of each individual employee.

NTT has set a goal of shortening total hours worked by achieving under 1,800 total hours actually worked by the end of fiscal 2022.



**Systems Promoting Work-Life Balance**

	System	Description	
Description	Paid vacation days	Paid leave that can be taken regardless of reason. Employees who have worked continuously for the company for one year or more are entitled to 20 days per year. * Employees who have worked for the company less than one year are entitled to 13 days	
	Special leave	Leave that can only be taken due to specified reasons <Reasons> Marriage, bereavement, summer leave, childbirth, childcare time, menstrual leave, transport restrictions, loss of home due to a natural disaster, etc.	
	Life planning vacation	Up to three days of unused paid vacation days, which become invalid at the end of each fiscal year, can be accumulated for use as a life planning vacation.	
	Sick leave	Leave that can be taken if an employee is injured or falls ill.	
Childbirth and Childcare	Mitigation of commuting during pregnancy	Paid program that exempts pregnant employees from working at the start or end of the workday for up to 60 minutes per day	
	Measure related to health examinations, etc., during and after pregnancy	Paid program that exempts employees from working to attend health guidance or a health examination during pregnancy or within a year after pregnancy	
	Maternity leave (Special leave)	Six-week paid leave before childbirth (14 weeks for multiple pregnancies) and eight-week paid leave after childbirth	
	Reengagement of former employees who left for childcare	Program for rehiring former employees who left to care for a child, within a certain period of time since leaving the Company	
	Childcare leave	Program that enables employees with a child under three years old to take non-paid leave for childcare	
	Shortened working hours for childcare	Program that offers shortened working hours for employees with a child below the third grade of elementary school (options: four-hour, five-hour and six-hour workdays)	
	Shifted working hours for childcare	Program that offers individualized shifts (moving up or moving down the starting/ending hours of the workday) to secure time for dropping off and picking up children from daycare centers up to the end of elementary school	
	Limits on overtime or overnight work	Program that limits overtime, etc., for employees who need to care for a child below the third grade of elementary school	
Nursing Care	Nursing care leave	Program that enables employees to take non-paid leave to look after a family member in need of nursing care	
	Shortened working hours for nursing care	Program that offers shortened working hours for employees with a family member in need of nursing care (options: four-hour, five-hour and six-hour workdays)	
	Shifted working hours for nursing care	Program that offers individualized shifts (moving up or moving down the starting/ending hours of the workday) to secure time for nursing family members	
	Limits on overtime or overnight work	Program that limits overtime, etc., for employees who need to care for a family member	
Systems related to working	Shifted working hours	Program that enables an individual to change the starting or ending hours of the workday to secure time for child or nursing care	
	Flex time	Flextime system	Employees work during standard core times (10:00–15:00, specific times can be set by each organization) and flexibly outside of these times (7:00–22:00)
		Super Flextime system	Employees work flexibly between 7:00–22:00 (minimum unit: 3 hours)
	Remote work	Program that allows an employee to temporarily work at a location other than their regular worksite as a means of supporting work-life balance, encouraging independence and creativity, or increasing productivity	
Rehiring program	Program that enables employees who quit due to childcare, nursing care, or the relocation of their partner to apply to be rehired after they quit		

**Extensive Benefit Programs**

The NTT Group operates a comprehensive optional benefit program (cafeteria plan). Employees are given points that can be used to freely choose from a wide range of benefit items, including health maintenance, such as scheduling comprehensive physical checkups or acquiring health and fitness technology devices as well as personal wealth building. Several core menu items do not require the use of points, such as comprehensive physical checkups aimed at the early discovery of lifestyle-related diseases and cancer, which tend to occur more frequently with age. We also offer items such as subsidies for fitness club memberships and health improvement activities using smartphones (d healthcare), which can be used by employees at their convenience.

**Life Plan Study Sessions**

In light of increasing diversity in employee life plans, the NTT Group provides website-based life plan design support for employees reaching age or career milestones to help them consider how they wish to spend the rest of their lives, including their working lives. We have also established in-house system contact points to promote greater understanding of matters including support and in-house systems for maintaining and improving physical and mental health, personal wealth building, specialist advice for tackling lifestyle-related troubles and issues, life plan creation, and support for balancing work with child or nursing care.

**Major Items on The Cafeteria Plan Menu**

Health improvement	Comprehensive physical checkups (including subsidies for optional items), introduction to the best doctors, multiple opinion service, purchase of health and fitness technology such as wearable devices
Asset accumulation	Various incentives such as asset accumulation savings, Employee Shareholding Association
Housing	Renting company housing and dormitory space, support for home ownership, etc.

**Core Menu Items for All Employees (Points Not Required)**

Health improvement	Comprehensive physical checkups (offered every five years between the ages of 30 and 60), d healthcare
Support for daily life	NTT Benefit Package (subsidy for fitness club membership, support for childcare and nursing care, use of recreation facilities)
Asset accumulation	General asset accumulation savings
Housing	Affiliated housing loan
Other	Insurance, mutual aid

## Physical Healthcare

The NTT Group also takes steps to help employees fortify their physical health by using ICT. Specifically, we focus on the two measures below.

### (1) Encourage healthy activities with smartphone app (d health care)

Information about how to refresh oneself and eat and sleep better, as well as information about NTT Group's symbolic sports teams (Exercise Videos), are pushed to the smartphone app to get employees more engaged in healthy activities

### (2) Guidance for specific health guidance via smartphones

Introduce ICT-based specific health guidance so that employees can conveniently receive specific guidance anytime and anywhere on their smartphone apps

To augment periodic health checkups, employees are eligible for an extensive health checkup every five years, from age 30 to age 60 (younger and older people can also receive these checkups if they wish). We also support employees who wish to join sports gyms.

## Mental Healthcare

The NTT Group has established contact points for handling mental health inside and outside the Company and has been implementing mental health initiatives such as stress testing, counseling on overwork-related issues, and line care training for line managers. As part of our initiative to promote remote work styles, we address mental health issues by periodically conducting simplified interviews to monitor changes in an employee's condition and their self-care efforts. Employees are also encouraged to communicate with superiors (line care) by conducting pulse surveys that provides fixed point observations of employee awareness on a real-time basis.

## Activities to Eliminate Accidents

In fiscal 2020 two\*<sup>1</sup> serious accidents resulting in casualties\*\*<sup>2</sup> occurred during construction and repair work ordered by NTT Group companies and performed by those companies or by subcontractors for the construction and maintenance of telecommunications equipment and building facilities. The incidents involved making contact with falling trees while cutting down trees.

To prevent accidents involving human casualties, NTT Group companies will continue to work in concert to reaffirm standard procedures, reinforce adherence, and improve the safety awareness of all workers. For example, on Safety Day, observed across the NTT Group, we confirm safety points using videos that reenact past accidents and send email messages to all employees to raise awareness of safety.

Also, during the NTT Group Safety Measure Reinforcement Period held from June 1 to July 7 and from December 1 to January 15, we work to further instill safety rules, including reaffirming previously established rules to prevent accidents, displaying safety posters unified across the NTT Group, and reinforcing safety patrols. Furthermore, we continue to engage in activities for achieving a safe labor environment and ensuring zero industrial accidents across the Group, such as exploring means to prevent passing vehicles from entering restricted areas as well as the use of advanced technologies including sensing, AI, and vital data.



### NTT COMWARE

#### Use of DX Solution "SmartMainTech®" (field trial)

NTT COMWARE is improve the safety of telecommunications facility construction with the use of multi-AI that can detect certain dangerous tasks and dangerous situations by using DX solution SmartMainTech®<sup>3</sup>, which was developed to contribute to more sustainable social infrastructure.

Work that uses stepladders requires special safety measures, and instead of simply relying on on-site supervisors to caution the construction workers, safety checkers are tasked to watch videos recorded at construction sites and provide guidance afterward if they notice dangerous work.

The use of multi-AI significantly reduces work that requires visual inspections, and also aims to shift the work of safety checkers to more detailed task analysis and appropriate safety guidance, thereby achieving safety measures that are both more sophisticated and more efficient.

\*1 Serious accidents resulting in casualties: Accidents that led to fatalities or disabling injuries that would prevent the employee from working again.

\*\*2 Breakdown of accidents: 0 by NTT Group companies and 1 by subcontractors (in Japan)

\*\*3 "SmartMainTech®" is a registered trademark of NTT COMWARE CORPORATION.

## Actions in Response to COVID-19

As society embraces social distancing as part of daily life in response to the COVID-19 pandemic, we have been creating safe workplace environments, which because of technology do not require close human interaction, extending the use of ICT, and promoting digital transformation in operational processes. In operations that require being present on-site, such as customer support, our employees have been applying safe practices. We are also conducting thorough measures to prevent our customers from being infected.

To combat the spread of COVID-19, the NTT Group is monitoring the number of employees who have tested positive, preventing the spread of infections, and implementing measures to prevent infections. We follow the basic principles of avoiding the “Three Cs” (closed spaces, crowds and close contact) by rigorously implementing such measures as social distancing, remote work, and staggered commuting. We are thoroughly committed to preventing infections by promoting telework in addition to encouraging the use of masks, disinfecting hands, installing hands-free door openers, employing appropriate seating arrangements, and installing acrylic-glass dividing screens.

## Maintaining and Improving the Health of Employees

The NTT Group helps employees maintain and improve their health by providing a full range of regular health checks and offering health guidance based on the results of these checks. Furthermore, as a measure for preventing lifestyle related diseases, we provide more extensive physical checkups for employees who request them and we require all employees to receive a comprehensive physical checkup every five years from ages 30 to 60. We also provide support to help employees use sports gyms.

Together with the NTT Health Insurance Union, we are supporting employees' health-related activities by providing a portal site through which they can use a wearable device to record and check vital data such as the number of steps taken each day, as well as an app that uses health check data to predict and simulate potential future health risks related to metabolism and high blood pressure.

Additionally, business sites with a cafeteria prepare lunch menus with the help of a nutritionist, and certain business sites offer massage services that employees can use freely.

## Prevention of Overwork

The NTT Group is striving to prevent overwork through actions that include recording and managing the times employees log in and off their computers to appropriately oversee the work hours of each individual employee, regardless of whether they work in the office or from a remote location. Health management staff also conduct interviews with employees working extended hours and offer appropriate advice and guidance on personal health care.

We are establishing a sound workplace environment for employees by introducing flex-time system, a discretionary work system, and a remote work system to offer a variety of flexible work styles.

## Favorable Labor-Management Relationship

With the exception of managers, most NTT employees in Japan belong to the NTT Labor Union, a member of the Japan Labor Union Confederation, and labor-management relations have remained stable (79.4% membership as of March 2020). There have been no labor union strikes for more than 10 years.

The Company adheres to the minimum notice period of 10 days before an official announcement, as designated by the Agreement on Employee Relocation under the collective agreement with the NTT Labor Union.

## Layoffs

Organizational changes are implemented after discussion and negotiation with all labor unions. As in the previous year, no layoffs occurred in fiscal 2019.



NTT DATA United

NTT Live

With lockdown measures having an impact on employees around the world, NTT DATA developed an online video streaming platform that helped to link up with those working from home.

Based on Microsoft Azure, “NTT Live” was designed to run for a low cost with the latest technology by using NTT’s internal IP addresses. Available videos covered topics like Go-To-Market and NTT value propositions, as well as topics related to individual lifestyles like health, fitness and well-being.

## Business Activity 29

# Supporting autonomous capacity development

### Our commitment

We are actively support employee career development. Increasing the specialization of each employee helps make them into professionals capable of deciding their own careers. We also strive to understand the issues at hand in order to improve the working environment and corporate mechanisms toward creating companies that are acceptable for workers

### Our objective

Improvement in employee satisfaction compared to previous year (engagement rate)

### Policies and Concepts

Retaining a diverse array of human resources serves as a powerful management foundation for any organization. This requires the development of employment conditions, such as fair evaluation, equal opportunity, opportunities for growth and benefit programs. We are also currently constructing a personnel database for registering past career experience and expert knowledge of employees engaged in our international businesses to accelerate the pace of visualizing and nurturing global human resources toward ensuring an optimal allocation of personnel.

### Helping Employees Develop their Abilities

In addition to Group training and on-the-job training to enable employees to gain necessary skills in various fields of business, we provide many other opportunities for employees who are eager to get ahead, including e-learning, distance learning, in-house certification of skill levels, and support for earning qualifications. We have also introduced a Group-wide talent manage-

ment system to create an environment that enables employees to play a more active role in developing their careers, and we recommend training courses that would be effective in achieving their career goals.

We actively support employee career development in various ways, including having superiors hold personal talks with their subordinates at the start, the middle and the end of the fiscal year to review performance and career plans, and holding management training for employees tapped for promotion. In particular, we have created a curriculum for nurturing experts in the security field given the heightening security risks of recent years, and we offer leadership development and a personal network building training curriculums to around 400 carefully selected general managers and section managers. With an eye on the further globalization of our operations, and to nurture personnel capable of performing in global markets, we also send employees to study at overseas graduate schools or participate in our overseas work experience programs.

### Improving Human Resource Management and Payment Systems

The NTT Group implements policies aimed at enabling each and every employee to make the most of their abilities as members of Team NTT and to grow steadily as competent professionals and take the initiative in developing their careers. We reconstructed our human resources management and pay systems in 2013 as part of our efforts to create an environment in which employees of all ages can realize their full potential in a way that grows our business. We also hire the right mix of both people possessing frontline skills and specializations, and people eager to take on new challenges, based on our perception of the period from start of employment up to the age of 65 as a single block. The new systems are designed to better reward employees who perform the roles and produce the results expected of them through introducing evaluation-based compensation and expanding results-based awards.



### NTT DATA

#### NTT DATA Academia

The IT training program “NTT DATA Academia” was launched in fiscal 2020 for elementary school students as part of efforts to promote IT education. NTT DATA and group companies in Japan coordinated efforts to develop activities that teach how programming and IT systems work. This program will be used to assist with education by supporting children in regional communities, creating inquisitive minds toward IT and society amongst children, and nurturing children’s capacity to act independently through experiences with IT.

### Enhancing Employee Satisfaction

The NTT Group strives to understand the issues at hand in order to improve its working environment and corporate mechanisms toward creating companies that are acceptable for workers. As part of this effort, we regularly conduct a survey of employees at Group companies and use the results to improve the working environment.

### Fair Evaluation and Compensation

In our employee qualification system, the NTT Group puts priority on performance and sets behavior and performance targets tailored to each qualification rank. By steadily and accurately carrying out a series of evaluation processes that feedback evaluations based on these targets, our personnel system promotes autonomous and independent work by employees.

### Personnel Evaluation System that Employees Find Very Fair

Rather than having each company operate its own mechanisms for human resources management and development, we operate an all-inclusive system for managing employees' placement, capacity building, evaluation, rating and payment, centered on an employee qualification system that indicates our expectations in terms of behavior and performance according to employee level.

Proper evaluation requires appropriate execution of a series of processes that span target setting, everyday communication, evaluation implementation, and interviews to provide feedback. Toward this end, we adhere to the following cycle (evaluation system applies to 60% of the NTT Group).

### Regular Personal Interviews with Superiors and Human Resources Managers

NTT Group employees meet regularly with their superiors and human resource managers for personal interviews to ensure that they share the same perception as their superiors regarding performance targets and the processes required to achieve them, to share thoughts on areas that can be improved, and to discuss career paths and personal growth.

Employees are given six opportunities each year to talk personally with their superiors, once each at the start, middle, and end of each fiscal year, plus one overall evaluation feedback interview and two performance evaluation feedback interviews (April and

October). The first interview of the year is for employees and their superiors to align their views on targets for the year and for the superiors to provide advice. The mid-year, year-end and feedback interviews are for managers and their subordinates to review results, performance, and the processes for achieving targets, and for managers to provide advice and motivation for making further improvements and growth. The implementation of these interviews is managed so they are held without fail, except when vacations or leave prevent them from being held in the allotted time.

## Programs for Cultivating Management Leaders and Globally Capable Employees

Goal	Program	Details
CULTIVATION OF LEADERS TO FILL FUTURE MANAGEMENT POSITIONS	Mentoring program	This mentoring program entails assigning a mentor, usually a senior executive vice president or corporate officer from within the Group to teach the frame of mind required of a manager.
	Group leader development program	This program is designed to help the young managers who will be responsible for promoting collaboration between NTT Group companies gain experience, broaden their perspective, and develop a mind-set focused on advancing cross-Group businesses. This is accomplished through periodic relocations to other Group companies and exchanges of opinion with managers.
	MAC Management Workshop	The purpose of this program is to cultivate managers with broad perspectives that are not restricted to the Company, to foster a sense of solidarity within the NTT Group, and to enhance personal networks. The curriculum consists of four management workshop courses conducted by external lecturers over a period of seven months.
Fostering of globally capable human resources	GLDP (Global Leadership Development Program)	The Global Leadership Development Program (GLDP) aims to broaden the horizons of the next generation of managers who will be responsible for developing global businesses, cultivate a sense of leadership within them, and help them form personal networks. The program includes a one-week curriculum of study at an overseas business school.
	GLDP LEAD (Leadership Excellence and Accelerating Diversity)	This extension of the GLDP is targeted at senior managers in Japan and overseas, aiming to help them acquire leadership skills and otherwise cultivate global leaders within the NTT Group. Participants are sent to a curriculum of study at an overseas business school, where they take part in discussions on leadership and diversity, among other curriculum items.

### New Personnel System for Self-Guided Career Formation and Assigning Right Person to Right Job

In October 2021, NTT Group introduced a job-based system for all management positions, where people are assigned to jobs regardless of their seniority, age or years of experience. For general employees, we are encouraging self-guided career formation, instead of company-guided career formation. By increasing the specialization of each employee, we aim to nurture professionals who decide their own careers by themselves.

#### Job-Based Personnel Compensation System

In July 2020, NTT introduced a job-based personnel compensation system for high-ranked managers at the main operating companies, where compensation varies according to the weight of the work at their assigned posts. NTT expanded this system to all management positions in October 2021. The job-based system defines the work for each post based on business plans and business operation policies of each company, and assigns the best-suited personnel to posts regardless of age. The ultimate aim is to increase corporate value over the longer term and sustain growth as a company, while ratcheting up the motivation of individuals to take on challenges and change perceptions of one's own post and the company's earnings.

#### Self-Guided Career Formation

The system seeks to assign the best-suited person to the work and post, regardless of age, and stimulate growth by improving the motivation of individuals to take on challenges and acquire specialized knowledge and skills. We believe this system will lead to stronger earnings for the company. To realize this, it is important to clarify the types of specializations, skills and skill levels required to perform the work in various fields. We will create a framework where employees can enhance their careers by improving their specializations on their own.

### In-house Recruitment System

At the NTT Group, in addition to offering the NTT Group Job Challenge which provides opportunities for regular employees with ambition to take on the challenge of shaping their own careers, we also operate NTT Group Job Offerings, a program for the management staff who will advance the transformation of the NTT Group. The program enables a variety of individuals who offer fresh ways of thinking to apply for important positions in each business area.

We are actively promoting the usage of these internal job posting systems as part of efforts to build a group-wide culture that supports employees taking on new challenges.

### Skill Mapping and Encouraging and Supporting Acquisition of Qualifications

Each Group company sets up a unique program of skill mapping based on the characteristics of their respective business operations and conducts human resources training according to those categories. Companies measure the level of each employee according to the mapping, identify the number of employees who are qualified for each level, and measure the status of implementation. Specifically, the process is operated as follows:

- (1) Designate areas of expertise according to the expert skills required by each operation;**
- (2) Define and certify levels according to the skill set for each area of expertise; and**
- (3) Develop a PDCA cycle based on the employee's own career plan, supported by supervisors and the organization.**

The NTT Group also encourages employees to acquire qualifications related to their respective duties, including major qualifications that are in broad demand in the ICT industry such as Professional Engineer, Information Technology Engineer and Certified Information Systems Security Technology Professional qualifications, and we intend to boost the number of qualified employees.

### Placing the Right People in the Right Jobs

The NTT Group engages in businesses across a broad range of fields. The development of each business requires placing the right people in the right jobs so that each employee can fully demonstrate their potential.

Therefore, we periodically rotate personnel on the basis of each employee's overall skill development and career plan decisions.

### Evaluator Meetings

Evaluator meetings have been held twice annually—once in the spring and once in the autumn—since fiscal 2001. We endeavor to enhance the fairness and objectivity of our evaluation process and prevent subjective and arbitrary evaluations by having all of the evaluators in the same business unit hold evaluator meetings to align their evaluation criteria and perspectives.

### Evaluator Training

We provide employees in evaluator positions with evaluator training (e-learning) and new manager training as well as our Human Resources Evaluation Manual as part of our efforts to further improve the fairness of evaluations and employee satisfaction. We also provide employees subject to evaluations with training for the evaluations, training for setting targets, and other training, a handbook explaining evaluation, target setting, online educational tools for promoting understanding of our human resources management and pay systems, and a collection of high performance model examples.



#### NTT Ltd.

### Educational program to protect girls' rights to learn

For the poor of India, education is a low priority and 66% of girls are unable to receive appropriate education. With this in mind, NTT Ltd. started the "Right to Learn" initiative in 2017 that focuses on overall development and preparation for future employment, which included building a computer room and science lab at a public school for girls of the poorest families in Mumbai, as well as inviting them to the company offices to give them an opportunity to experience the latest technologies. Other initiatives included the installation of water coolers to provide clean drinking water, provision of mid-day meals, health initiatives such as dental check-ups, as well as holding various training programs on a regular basis. Since starting this program, attendance, graduation rate and the percent of students that has gone on to college have increased significantly. Thanks to this initiative, the girls have started to dream about an educated and empowered future and, by extension, contributing to India's economic growth.

## Business Activity 30

# Promoting paperless operations

### Our commitment

Proactively promoting business transformation and DX to increase work efficiency

### Our objective

**Zero**

Amount of paper used by 2025

### Promotion of business transformation and DX

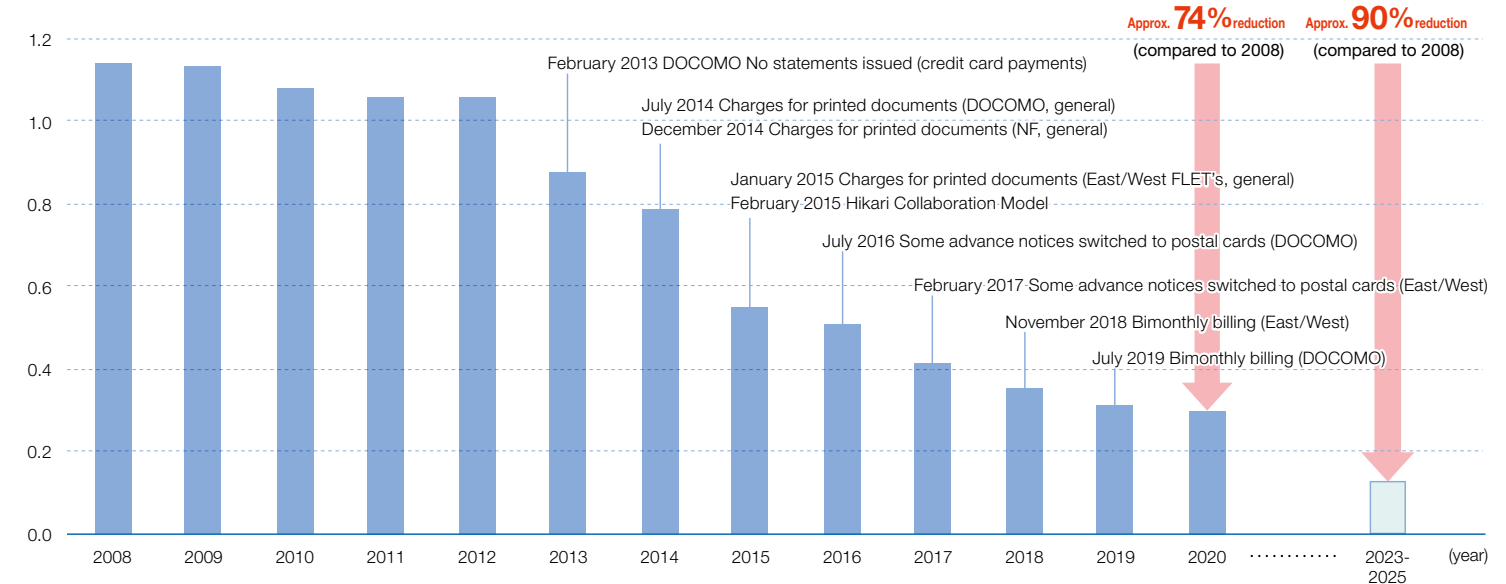
Promoting DX for business operations aims to increase work efficiency as well as implement initiatives for addressing environmental issues. The NTT Group is ramping up measures aimed at reducing the use of paper, such as charging for printed documents and changing invoices from envelopes to postal cards. In fiscal 2020, paper usage has been reduced by around 74% compared to fiscal 2008 levels. Coupled with the shift to common group IT (billing) resources, the goal is to reduce paper usage approximately 90% by fiscal 2023, compared to fiscal 2008 levels. We also aim to completely phase out paper, including that used for bills and order processing documents, by fiscal 2025 together.

### Paper Management and Recycling

Paper consumption of the NTT Group in fiscal 2020 was 18 thousand tons. As for telephone directories, which account for more than 60% of our paper consumption, we established a closed loop recycling system in 1999 to collect old directories and recycle them to produce new ones.

We undertake numerical management for our use of virgin pulp. We are also working to reduce paper consumption of society through the use of ICT, which includes measures such as our Web billing service\*1. In addition to an 80% reduction year-on-year, abolishing the Hello Page telephone directory by fiscal 2024 will achieve around an 800 ton reduction (zero consumption) by fiscal 2025.

### Initiatives for reducing paper for NTT bills



\*1 A service enabling customers to check their charges and usage at any time online.

## Social Contribution

### Policies and Concepts

The NTT Group has operating bases located not only in Japan but also around the world, from which it provides telecommunications networks, an important lifeline, and develops business that works to realize a smart world and Society 5.0 by leveraging ICT and data to solve social issues.

Thus, it is essential that we not only aid the various organizations aiming to develop ICT but also pursue harmonious relationships and strive to resolve local issues in collaboration with local residents, central and local governments, NGOs, NPOs, and educational institutions.

The NTT Group looks to address the various issues faced by local communities in which we operate, including those related to environmental issues, aging populations, declining birthrates, and the education of children. NTT believes it is important to contribute to the development of flourishing and vibrant local communities through the actions of each member of Team NTT comprising NTT Group employees, their families, and retired employees.

We seek to have each employee of the 300,000-strong NTT Group interact with members of their local community, identify local needs, and contribute in even small ways to addressing issues through our business activities. We believe that these efforts will eventually come back to us in the form of business opportunities and avoidance of risk, and thus we view activities that invest in local communities as our most important area of activity. Herein lies the strength of the NTT Group, a global enterprise that engages in businesses deeply rooted in local communities.

### Organization for Implementation

The NTT Group Sustainability Charter calls on the NTT Group to work together to help achieve a sustainable society. In accordance with this policy, six key social contribution activities of “Environmental conservation,” “Social welfare,” “Education and cultural promotion,” “Local community development and dialogue,” “International exchange activities,” and “Sports promotion” have been defined, and each NTT Group company engages in citizenship activities following the policies and detailed action plan set by NTT’s Sustainability Promotion Office.

### Main Initiatives Citizenship Activity Categories

#### Community Investments

Corporate citizenship activities carried out over the medium- to long-term to address social issues that concern both the NTT Group and local communities

#### Charitable Donations

Corporate citizenship activities that are carried out on a one-time basis or are expected to be completed within a short period

#### Commercial initiatives

Corporate citizenship activities that generate profit for the NTT Group

### Measures to Support Citizenship Activities

Programs	Description
Volunteer Gift Program	This program provides goods from the volunteer’s company to facilities and other places where the volunteer has been active over a long period.
Matching Gift Program	Under this program, the NTT Group companies support employees’ fundraising and charity activities by matching donations made by employees.
Volunteer Leave Program	This program enables employees to take extended leave for volunteer activities or other purposes in line with life design plans.
NTT Group Volunteer Portal Site	This portal site introduces and supports a range of volunteer activities across the NTT Group, with a focus on sports volunteers.

### Promoting volunteer activities through the NTT Group Volunteer Portal Site

The NTT Group Volunteer Site was established in 2017 to introduce and support a diverse range of volunteer activities for NTT Group employees. Under the motto “Smiles for all,” we promote group-wide social contribution activities that can bring smiles to everyone involved in these activities. Events were held 227 times during the three years to March 2020, with a total of 5,224 group employees taking part in a wide range of activities. Going forward, we will expand activities that use the NTT Group’s workforce strength to develop the site as a “third place” venue for creative interaction, with the aim of enhancing the well-being of employees and local communities.

### Support for Citizenship Activities by Employees

With the belief that participation in citizenship activities can help to broaden the mind, the NTT Group is implementing an increasing range of policies to support employee citizenship activities, informing employees of support programs, and commending citizenship activities carried out under such programs. Other programs include a Matching Gift Program under which Group companies match donations collected independently by employees, and a Volunteer Gift Program under which Group companies donate goods to facilities and other places where employees are engaged in voluntary citizenship activities.



### Volunteer activities during the Tokyo 2020 Olympic and Paralympic Games

Some 250 employees assisted with volunteer activities during the Tokyo 2020 Olympic and Paralympic Games, taking part as Field Cast members providing a range of support at competition venues and the Olympic village, or as City Cast volunteers organized by the Tokyo Metropolitan Government.

Kick-off events and training sessions were organized before the actual activities were held, to give volunteers the required knowledge to ensure the events were a success. Employees who participated as volunteers had plenty of positive feedback, including “It was great to meet so many other Field Cast members, and the experience broadened my horizons” and “I felt that I matured as a person by taking part in these volunteer activities.”



NTT was a Gold communications service partner of the Tokyo 2020 Olympic and Paralympic Games.

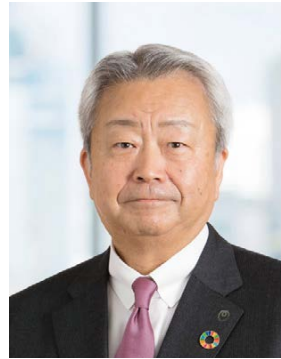
## Members of the Board As of June 30, 2021



### Hiromichi Shinohara

#### Chairman of the Board Chairman of the Board

Years Served as Member of the Board..... 12  
Shares Owned ..... 49,300  
1978 Joined Nippon Telegraph and Telephone  
Public Corporation  
2018 Chairman of the Board of the Company  
2021 Member of the Board of Yamaha Corporation



### Jun Sawada

#### President and Chief Executive Officer, Member of the Board

Years Served as Member of the Board..... 7  
Shares Owned ..... 38,300  
1978 Joined Nippon Telegraph and Telephone  
Public Corporation  
2018 President and Chief Executive Officer  
Member of the Board of the Company



### Akira Shimada

#### Representative Member of the Board

Years Served as Member of the Board..... 9  
Shares Owned ..... 24,508  
1981 Joined Nippon Telegraph and Telephone  
Public Corporation  
2018 Senior Executive Vice President  
Member of the Board of the Company



### Naoki Shibutani

#### Representative Member of the Board

Years Served as Member of the Board..... 1  
Shares Owned ..... 11,600  
1985 Joined the Company  
2020 Senior Executive Vice President  
Member of the Board of the Company



### Katsuhiko Shirai

#### Outside Independent Member of the Board

Years Served as Member of the Board..... 9  
Shares Owned ..... 10,800  
2012 Member of the Board of the Company  
2016 Honorary Advisor of Waseda University



### Sadayuki Sakakibara

#### Outside Independent Member of the Board

Years Served as Member of the Board..... 9  
Shares Owned ..... 21,900  
2012 Member of the Board of the Company  
2018 Honorary Chairman of the Japan Business  
Federation  
2019 Director of SHIMANO INC.  
2019 Director of Nitori Holdings Co., Ltd.  
2019 Director and Chairperson of the Board of  
Japan Investment Corporation  
2020 Chairman of the Board of the Kansai Electric  
Power Co., Inc.



### Ken Sakamura

#### Outside Independent Member of the Board

Years Served as Member of the Board..... 2  
Shares Owned ..... 1,300  
2002 Director of YRP Ubiquitous Networking  
Laboratory  
2014 President of Vitalizing Local Economy  
Organization by Open Data & Big Data  
2017 Professor and Dean of Faculty of Information  
Networking for Innovation and Design of  
Toyo University  
2017 Emeritus Professor of the University of Tokyo  
2019 Member of the Board of the Company  
2019 President of Association for IoT Services  
Coordination



### Keiko Takegawa

#### Outside Independent Member of the Board

Years Served as Member of the Board..... 2  
Shares Owned ..... 1,500  
2019 Member of the Board of the Company  
2019 Audit & Supervisory Board Member of  
MITSUI MINING & SMELTING CO., LTD.  
2021 Specially Appointed Professor and Dean of  
Faculty of Global Business and Director of  
the Institute of Women's Culture of Showa  
Women's University  
2021 Director of Sekisui House, Ltd.  
2021 Director of MITSUI MINING & SMELTING  
CO., LTD

## Audit & Supervisory Board Members As of June 30, 2021



### Takao Maezawa

#### Audit & Supervisory Board Member

Years Served as Member of the Board..... 5  
Shares Owned ..... 20,508

1978 Joined Nippon Telegraph and Telephone  
Public Corporation  
2016 Full-Time Audit & Supervisory Board Member  
of the Company



### Kanae Takahashi

#### Audit & Supervisory Board Member

Years Served as Member of the Board..... 1  
Shares Owned ..... 5,600

1987 Joined the Company  
2020 Full-Time Audit & Supervisory Board Member  
of the Company



### Takashi Iida

#### Independent Audit & Supervisory Board Member

Years Served as Member of the Board..... 7  
Shares Owned ..... 7,300

1974 Registered as Attorney-at-Law (Daini Tokyo  
Bar Association)  
2012 Established Kowa Law Office  
2013 Outside Director of Alps Electric Co., Ltd.  
(current Alps Alpine Co., Ltd.)  
2014 Outside Audit & Supervisory Board Member  
of the Company



### Hideki Kanda

#### Independent Audit & Supervisory Board Member

Years Served as Member of the Board..... 2  
Shares Owned ..... 0

2016 Professor of the Professional School of Law  
(Law School) of Gakushuin University  
2016 Emeritus Professor of the University of Tokyo  
2017 Director of Sumitomo Mitsui Trust Bank, Limited  
2019 Outside Audit & Supervisory Board Member  
of the Company



### Kaoru Kashima

#### Independent Audit & Supervisory Board Member

Years Served as Member of the Board..... 2  
Shares Owned ..... 0

1985 Registered as a Certified Public Accountant  
2019 Outside Audit & Supervisory Board Member  
of the Company  
2020 Audit & Supervisory Board Member of Kirin  
Holdings Company, Limited  
2021 Director of Sumitomo Mitsui Trust Holdings,  
Inc.

## Number of Board Members and Audit & Supervisory Board Members

As of March 31, 2021

		Scope of Disclosure	Unit	FY2017	FY2018	FY2019	FY2020		
Number of Board Members		NTT	People	12	12	15	8		
Inside	Male			10	10	10	4		
	Female			0	0	1	0		
	Total			10	10	11	4		
Outside independent	Male			2	2	3	3		
	Female			0	0	1	1		
	Total			2	2	4	4		
Ratio of female Board Members				NTT	%	0	0	13.3	12.5
Number of Audit & Supervisory Board Members				NTT	People	5	5	5	5
Inside	Male	1	1			1	1		
	Female	1	1			1	1		
	Total	2	2			2	2		
Outside independent	Male	2	2			2	2		
	Female	1	1			1	1		
	Total	3	3			3	3		
Ratio of female Audit & Supervisory Board Members		NTT	%			40	40	40	40

## Compensation of Board of Directors, Audit & Supervisory Board, Outside independent Audit & Supervisory Board Members, Members of the Board and Audit & Supervisory Board Members

As of March 31, 2021

		Scope of Disclosure	Unit	FY2017	FY2018	FY2019	FY2020
Board of Directors	Number of meetings	NTT	—	12	13	11	13
	Attendance		%	97.2	99.1	100	99.3
	Outside independent board member attendance		%	87.5	100	100	100
Audit & Supervisory Board	Number of meetings	NTT	—	22	24	23	20
	Attendance		%	95.2	99.2	98.6	100
	Outside independent Audit & Supervisory Board member attendance		%	93.7	96.6	97.6	100
Appointment and Compensation Committee		NTT	—	1	1	5	5
Total compensation of members of the board and Audit & Supervisory Board members	Members of the board	NTT	Million yen	519 (10)	547 (13)	545 (11)	387 (12)
(Number of people) *1-4	Audit & Supervisory Board members		People	74 (2)	74 (2)	74 (2)	74 (3)
	Board and Outside Audit		People	75 (5)	75 (5)	97 (9)	105 (7)
	Total		People	668 (17)	696 (20)	719 (22)	566 (22)
Compensation of NTT's Independent auditors	Compensation for audit services	Consolidated	Million yen	6,036	4,433	5,106	4,891
	Compensation for non-audit services		Million yen	398	299	267	344
	Total		Million yen	6,434	4,732	5,373	5,235
The ratio of the compensation per director to the compensation per employee		NTT	—	5.1 : 1	5.3 : 1	4.3 : 1	4.7 : 1

## Reports to the corporate ethics help line by type of violation

		2018			2019			2020		
		Number of Reports			Number of Reports			Number of Reports		
		Disciplinary actions	Warnings		Disciplinary actions	Warnings		Disciplinary actions	Warnings	
Overall	Number of Reports	334	18 (1)	77	342	35 (3)	81	346	16 (1)	33
	Compliance Violations	95	18 (1)	77	116	35 (3)	81	49	16 (1)	33
	Violation of Internal Rules	95	18 (1)	77	116	35 (3)	81	49	16 (1)	33
	Violation of Laws and Regulations	0	0	0	0	0	0	0	0	0
	No Violation	239	—	—	226	—	—	297	—	—
Harassment	Number of Reports	184	10 (1)	34	210	19	48	203	11 (1)	11
	Compliance Violations	44	10 (1)	34	67	19	48	22	11 (1)	11
	Violation of Internal Rules	44	10 (1)	34	67	19	48	22	11 (1)	11
	Violation of Laws and Regulations	0	0	0	0	0	0	0	0	0
	No Violation	140	—	—	143	—	—	181	—	—
Misconduct	Number of Reports	44	2	10	45	7 (1)	14	60	2	11
	Compliance Violations	12	2	10	21	7 (1)	14	13	2	11
	Violation of Internal Rules	12	2	10	21	7 (1)	14	13	2	11
	Violation of Laws and Regulations	0	0	0	0	0	0	0	0	0
	No Violations (Bribery, Accounting Fraud, Disguised Contracting, etc.)	32	—	—	24	—	—	47	—	—
violation of the rules of employment	Number of Reports	39	1	16	23	2	9	21	1	6
	Compliance Violations	17	1	16	11	2	9	7	1	6
	Violation of Internal Rules	17	1	16	11	2	9	7	1	6
	Violation of Laws and Regulations	0	0	0	0	0	0	0	0	0
	No Violation	22	—	—	12	—	—	14	—	—
Fraud (personal use of company funds)	Number of Reports	28	3	5	39	6 (2)	6	19	2	2
	Compliance Violations	8	3	5	12	6 (2)	6	4	2	2
	Violation of Internal Rules	8	3	5	12	6 (2)	6	4	2	2
	Violation of Laws and Regulations	0	0	0	0	0	0	0	0	0
	No Violation	20	—	—	27	—	—	15	—	—
Other	Number of Reports	39	2	12	25	1	4	43	0	3
	Compliance Violations	14	2	12	5	1	4	3	0	3
	Violation of Internal Rules	14	2	12	5	1	4	3	0	3
	Violation of Laws and Regulations	0	0	0	0	0	0	0	0	0
	No Violation	25	—	—	20	—	—	40	—	—

\* Numbers in parentheses indicate dismissals

The Whistleblowing Mechanism Guidelines, revised in December 2016 by the Consumer Affairs Agency, recommend that neutral and fair third-party assessments be carried out. We had such an assessment carried out in May 2017 and received the comment that overall, a whistleblowing mechanism is in place and is being administered appropriately.

**Details of assessment** ● Investigation of the mechanism and operational status of the help line in order to verify its effectiveness in terms of utilization and reliability. ● Sample survey on the establishment of regulations and responses to whistleblowers, etc. ● Confirmation of compliance with the Whistleblowing Mechanism Guidelines. ● Interviews with administrators and discussion about operational issues.

**Disciplinary Actions against Confirmed Violations** A compliance violation or breach of the NTT Group Corporate Ethics Charter is dealt with using the disciplinary measures taken in accordance with the disciplinary code established at each Group company. This includes pay cuts and work suspension, and may also be reflected in assessments (evaluations) and personnel transfers.

## Employment in the NTT Group

			Scope of Disclosure	Unit	FY2017	FY2018	FY2019	FY2020
Total number of employees			C	People	284,544	307,894	319,039	324,667
Employees by region	Domestic	166,173			179,902	183,824	186,228	
	Overseas	118,371			127,992	135,215	138,439	
	Percentage of overseas employees	41.6			41.6	42.4	42.6	
Number of employees by gender			E	People	109,200	106,997	110,207	104,281
	Male	92,000			88,756	88,724	84,169	
	Female	17,200			18,241	21,483	20,112	
	Percentage of female employees	15.8			17	19.5	19.3	
NTT			NTT	People	2,644	2,562	2,494	2,496
	Male	2,371			2,273	2,200	2,180	
	Female	273			289	294	316	
	Number of temporary employees included in the above	55			68	65	62	
	Total managers*1				E	People	26,110	25,736
	Male	24,770	24,268	23,991			23,730	
	Female	1,340	1,468	1,625			1,790	
	Percentage of female managers	5.1	5.7	6.3			7.0	
Average age			NTT	Years	41.3	41.3	41.1	41.8
	Male	41.7			41.7	41.7	42.4	
	Female	37.4			37.6	37.1	37.7	
Average years of employment			NTT	Years	16.8	16.8	16.7	16.7
	Male	17.2			17.2	17.1	17.3	
	Female	13.4			13.5	13.3	12.9	
Average annual compensation			NTT	Yen	5,846,977	5,913,532	5,954,975	6,022,537
			A		6,390,108	6,449,078	6,520,047	6,544,513
Ratio of basic salary per employee and remuneration of women to men*2	Managers	Basic salary	D	—	—	—	1:1.02	1:1.02
		Remuneration			—	—	1:1.03	1:1.03
	Non-managerial employees	Basic salary			—	—	1:1.17	1:1.15
		Remuneration			—	—	1:1.17	1:1.15
Number of new graduate hires			A	People	1,550	1,721	1,877	2,025
	Male	1,022			1,170	1,270	1,361	
	Female	528			551	607	664	
	Percentage of female employees	34.1			32	32.3	32.8	
Number of foreign national hires			D	People	58	75	55	42
	Male	35			44	31	22	
	Female	23			31	24	20	
Ratio of employees with disabilities*3			NTT	%	2.6	2.7	2.7	2.7
			A		2.5	2.6	2.6	2.7
			B		2.3	2.4	2.4	2.5
Number of re-employed members			D	People	18	16	14	16
	Male	1			0	2	0	
	Female	17			13	12	16	
Turnover rate (including mandatory retirement)	Turnover rate among all employees	D	%	6.4	6.1	9.9	7.1	
	Turnover rate due to personal reasons	3		3.7	3.7	2.8		
Continuous Employment of Employees at Retirement Age			D	People	18,000	14,000	10,000	11,000
Percentage of NWJ membership			B	%	86	84.8	79.4	79.6
Enhancing employee satisfaction			B	Points	3.79	3.8	3.79	3.9

\*1 Section manager level or higher \*2 We have a single pay scale for men and women. Differences are due to age and job grade. \*3 As of June 1 of the following year

## Number of Employees Using Company Systems, Working Hours, etc.

	Scope of Disclosure	Unit	FY2017	FY2018	FY2019	FY2020	
Special leave (childbirth)	D	People	1,147	1,081	1,164	1,169	
Number of employees taking childcare leave	D	People	2,199	2,370	2,394	2,568	
Male			120	169	257	372	
Female			2,079	2,201	2,137	2,196	
Ratio that returned to work		%	97.1	98.1	99.2	99.2	
Number of employees taking shortened working hours for childcare	D	People	2,418	2,530	2,042	2,687	
Male			27	39	36	40	
Female			2,391	2,491	2,006	2,647	
Number of employees taking nursing care leave	D	People	116	94	58	83	
Male			65	42	28	37	
Female			51	52	30	46	
Number of employees taking shortened working hours for nursing care	D	People	54	86	67	77	
Male			25	36	31	34	
Female			29	50	36	43	
Leave programs	D	Days	19.7	19.3	17.7	16.6	
Paid vacation		%	Male	—	97	89.3	84.1
			Female	—	93.8	85.8	78.9
			Percentage of total entitled leave	98.4	96.4	88.7	83
Working hours	NTT	Hours	1,911	1,933	1,906	1,950	
		Average annual overtime hours	23	22.2	23	24.7	
	D	Hours	—	—	17.5	18	
	D	Yen	—	—	48,180	57,096	
Number of employees taking leave for mental health	B	People	1,648	1,550	1,815	1,738	
Male			1,293	1,202	1,323	1,227	
Female			355	348	492	511	
Number of industrial accidents	A	—	44	36	71	28	
Operational accidents			9	8	7	2	
			Commuting accidents	35	28	64	26
			Frequency rate	0.1	0.09	0.11	0.02
Number of accidents causing injury or death during construction work*		—	3	3	2	1	
Implementation rate of specified health guidance	B	%	—	21.90	20.60	21.9	
Completion rate of specified health guidance	B	%	22.9	33.30	40.20	32.8	

\* Construction by partner companies and directly managed construction

## Status of Human Rights Initiatives

	Scope of Disclosure	Unit	FY2017	FY2018	FY2019	FY2020
Number of confirmed cases of human rights violations	B	—	27	24	29	33
Human rights training and attendance	B	%	93.6	96.6	97.3	97.2

## Status of Human Resources Development

		Scope of Disclosure	Unit	FY2017	FY2018	FY2019	FY2020
Average annual training	Hours per employee	B	Hours	34.0	28.0	26.0	24.0
	Cost per employee		Ten thousand yen	10.4	10.9	8.6	4.9
Job challenge	Use	B	People	477	297	296	199
Job offering	Transfer			188	113	107	86
Number of qualified employees (cumulative total)		B	People	26,963	38,437	48,564	—

## Status of Supply Chain Initiatives

		Unit	FY2017	FY2018	FY2019	FY2020
Percentage of critical suppliers that we sent CSR surveys (SAQ) to, and percentage that were responded to	Sent	%	100	100	100	100
	Responded	%	99	98	100	100
Number of recognized high-risk suppliers		—	0	0	0	0
Percentage of issues recognized as actual risks that were corrected at suppliers		%	100	100	100	100
Percentage of employees in procurement trained on ESG	Sent	%	100	100	100	100

## Safe, Secure, and Resilient Society Related Indicators

			Results		
			FY2018	FY2019	FY2020
Reinforce information security	Suspension of telecommunications services due to cyber attacks from the outside*1	Number of service suspensions	—	0	0
	Number of incidents of personal information leaks due to cyber attacks from the outside*1	Number of incidents of personal information leaks	—	1	1
Personal information protection	Zero incidents of personal information leaks	Number of incidents of personal information leaks	1	1	0
Ensure Stability and Reliability of Communications Services*4	Provide stable telecommunications services free of major communications problems	Stable service provision rate*2	100%	100%	99.99%
		Number of major accidents*3	0	0	2

\*1 Newly established in fiscal 2020

\*2  $[1 - \text{total hours under the impact of major accidents (number of affected users} \times \text{hours of major accidents)} / \text{total hours of major service provision (number of users} \times 24 \text{ hours} \times 365 \text{ days)}] \times 100\%$

\*3 Number of accidents that led to a suspension of telecommunications services or a decline in communications quality that meet the following criteria regarding duration and number of people affected:

- Emergency call services (110, 119, etc.): at least 1 hour affecting at least 30,000 users
- Voice services other than emergency calls: at least 2 hours affecting at least 30,000 users, or at least 1 hour affecting at least 100,000 users
- Internet-related services (free of charge): at least 12 hours affecting at least 1 million users, or at least 24 hours affecting at least 100,000 users
- Other services: more than 2 hours affecting 30,000 users, or more than one hour affecting 1 million users

\*4 Targets of statistics: Four telecommunications business companies (NTT East, NTT West, NTT Communications, and NTT DOCOMO)

## Employee Volunteering

		Scope of Disclosure	Unit	FY2017	FY2018	FY2019	FY2020
Employee participation rate		B	%	70.7	69	54.9	18
Results of Citizenship Activities*	Number of activities	B	—	4,204	3,977	3,713	2,307
	Number of participants		People	117,491	123,734	100,834	33,545
	Expenditures		Million yen	6,414	8,030	6,632	13,359
Environmental conservation	Number of activities	B	—	1,106	1,106	894	351
	Number of participants		People	75,706	76,889	60,714	17,669
	Expenditures		Million yen	875	796	1,408	377
Social welfare	Number of activities	B	—	497	513	534	502
	Number of participants		People	6,399	9,559	7,516	5,631
	Expenditures		Million yen	1,079	1,860	439	652
Education and cultural promotion	Number of activities	B	—	423	388	341	292
	Number of participants		People	2,940	2,845	2,544	1,263
	Expenditures		Million yen	1,841	2,423	2,656	10,375
Local community development and dialogue	Number of activities	B	—	1,740	1,507	1,609	669
	Number of participants		People	23,068	26,868	25,396	5,391
	Expenditures		Million yen	937	1,126	1,606	1,210
International exchange activities	Number of activities	B	—	43	55	13	11
	Number of participants		People	445	320	411	6
	Expenditures		Million yen	69	72	202	205
Sports promotion	Number of activities	B	—	268	224	161	72
	Number of participants		People	5,853	3,752	234	51
	Expenditures		Million yen	1,499	1,579	118	68
Other (e.g., activities that combine multiple categories)	Number of activities	B	—	127	184	161	410
	Number of participants		People	3,080	3,502	4,019	3,534
	Expenditures		Million yen	113	174	203	471
Breakdown of activities by type	Community Investments	B	%	65.8	60	67.1	22.6
	Charitable Donations			8.2	15.6	13.7	66.3
	Commercial initiatives			26	24.5	19.2	11.1

\* Expenses related to corporate citizenship include monetary donations, donation of goods, effective costs of opening facilities to the public, personnel costs of employee participation, and costs for implementing corporate citizenship programs (work outsourcing fees, transportation costs, etc.).

## Independent Assurance Statement



Sustainability Accounting Co., Ltd.

### Independent Assurance Statement

December 21, 2021

Mr. Jun Sawada

President and Chief Executive Officer, Representative Member of the Board  
NIPPON TELEGRAPH AND TELEPHONE CORPORATION

#### 1. Purpose

We, Sustainability Accounting Co., Ltd., have been engaged by NIPPON TELEGRAPH AND TELEPHONE CORPORATION ("the Company") to provide limited assurance on the Company's Performance Indicators during the fiscal year 2020 (April 1, 2020 to March 31, 2021) reported on NTT Group Sustainability Report 2021 which indicate the results of each indicator for "Improving prosperity for all people and cultures" and "Maximizing wellbeing for all" under Sustainability Priority Activities, CO<sub>2</sub> emissions: 0.24 million t-CO<sub>2e</sub> for Scope1, 3.75 million t-CO<sub>2</sub> for Scope2 and 22.23 million t-CO<sub>2e</sub> for Scope3, 469 thousand tons of total waste in domestic, and 5.14 million m<sup>3</sup> of water withdrawal in domestic. The purpose of this process is to express our conclusion on whether the Performance Indicators were calculated in accordance with the Company's standards. The Company's management is responsible for calculating the Performance Indicators. Our responsibility is to independently carry out a limited assurance engagement and to express our assurance conclusion.

#### 2. Procedures Performed

We conducted our assurance engagement in accordance with International Standard on Assurance Engagement 3000 (ISAE 3000) and International Standard on Assurance Engagement 3410 (ISAE 3410). The key procedures we carried out included:

- Interviewing the Company's responsible personnel to understand the Company's standards
- Reviewing the Company's standards
- Performing cross-checks on a sample basis and performing a recalculation to determine whether the Performance Indicators were calculated in accordance with the Company's standards.

#### 3. Conclusion

Based on the procedures performed, nothing has come to our attention that causes us to believe that the Performance Indicators have not been calculated in all material respects in accordance with the Company's standards.

We have no conflict of interest relationships with the Company.

A handwritten signature in black ink, appearing to read "Takashi Fukushima", is written over a horizontal line.

Takashi Fukushima  
Representative Director  
Sustainability Accounting Co., Ltd.

# GRI content index

The NTT Group Sustainability Report 2021 has been prepared in accordance with the GRI Reporting Standards 2016/2018/2019: Core option.

## GRI 102: General Disclosures 2016

Information Disclosure	Description	Report Page	
<b>Organizational profile</b>			
● 102-1	Name of the organization a. Name of the organization.	P002	Scope of Disclosure
● 102-2	Activities, brands, products, and services a. A description of the organization's activities. b. Primary brands, products, and services, including an explanation of any products or services that are banned in certain markets.	P014-015 (A)	NTT at a Glance
● 102-3	Location of headquarters a. Location of the organization's headquarters.	P002	Inquiries
● 102-4	Location of operations a. Number of countries where the organization operates, and the names of countries where it has significant operations and/or that are relevant to the topics covered in the report.	P002	Scope of Disclosure (Reference) NTT Group companies <a href="https://group.ntt.jp/group/gnavi/">https://group.ntt.jp/group/gnavi/</a>
● 102-5	Ownership and legal form a. Nature of ownership and legal form.	P002	Scope of Disclosure
● 102-6	Markets served a. Markets served, including: i. geographic locations where products and services are offered; ii. sectors served; and iii. types of customers and beneficiaries.	P014-015 (A)	NTT at a Glance
● 102-7	Scale of the organization a. Scale of the organization, including: i. total number of employees; ii. total number of operations; iii. net sales (for private sector organizations) or net revenues (for public sector organizations); iv. total capitalization (for private sector organizations) broken down in terms of debt and equity; and v. quantity of products or services provided.	P002	Inquiries
● 102-8	Information on employees and other workers a. Total number of employees by employment contract (permanent and temporary), by gender. b. Total number of employees by employment contract (permanent and temporary), by region. c. Total number of employees by employment type (full-time and part-time), by gender. d. Whether a significant portion of the organization's activities are performed by workers who are not employees. If applicable, a description of the nature and scale of work performed by workers who are not employees. e. Any significant variations in the numbers reported in Disclosures 102- 8-a, 102-8-b, and 102-8-c (such as seasonal variations in the tourism or agricultural industries). f. An explanation of how the data have been compiled, including any assumptions made.	P139	Data List
● 102-9	Supply chain a. A description of the organization's supply chain, including its main elements as they relate to the organization's activities, primary brands, products, and services.	P102 P106-113	Reinforce Value Chain Management
● 102-10	Significant changes to the organization and its supply chain a. Significant changes to the organization's size, structure, ownership, or supply chain, including: i. Changes in the location of, or changes in, operations, including facility openings, closings, and expansions; ii. Changes in the share capital structure and other capital formation, maintenance, and alteration operations (for private sector organizations); and iii. Changes in the location of suppliers, the structure of the supply chain, or relationships with suppliers, including selection and termination.	Not applicable	
● 102-11	Precautionary Principle or approach a. Whether and how the organization applies the Precautionary Principle	P041-054 P062-065	<ul style="list-style-type: none"> <li>● NTT Group Disclosures in Line with TCFD Recommendations</li> <li>● Business Risk Management</li> </ul>
● 102-12	External initiatives a. A list of externally-developed economic, environmental and social charters, principles, or other initiatives to which the organization subscribes, or which it endorses.	P025 P095	<ul style="list-style-type: none"> <li>● Pursuing Initiatives across the Industry for Energy-Efficient ICT Devices</li> <li>● Management of CSIRT, contribution to security personnel development</li> </ul>
● 102-13	Membership of associations a. A list of the main memberships of industry or other associations, and national or international advocacy organizations.	P003	List of Memberships

Information Disclosure	Description	Report Page	
<b>Strategy</b>			
● 102-14	Statement from senior decision-maker a. A statement from the most senior decision-maker of the organization (such as CEO, chair, or equivalent senior position) about the relevance of sustainability to the organization and its strategy for addressing sustainability.	P006-007	(Reference) Message from the President <a href="https://group.ntt.jp/csr/message/">https://group.ntt.jp/csr/message/</a>
102-15	Key impacts, risks, and opportunities a. A description of key impacts, risks, and opportunities.	P041-054 P062-065	<ul style="list-style-type: none"> <li>• NTT Group Disclosures in Line with TCFD Recommendations</li> <li>• Business Risk Management</li> </ul>
<b>Ethics and integrity</b>			
● 102-16	Values, principles, standards, and norms of behavior a. A description of the organization's values, principles, standards, and norms of behavior.	P009-012 P019-022 P101-110 P062-065	<ul style="list-style-type: none"> <li>• NTT Group Global Sustainability Charter</li> <li>• NTT Group Environment and Energy Vision</li> <li>• NTT Group Global Human Rights Policy</li> <li>• NTT Group Corporate Ethical Standards</li> </ul>
102-17	Mechanisms for advice and concerns about ethics a. A description of internal and external mechanisms for: i. seeking advice about ethical and lawful behavior, and organizational integrity; and ii. reporting concerns about unethical or unlawful behavior, and organizational integrity.	P062-065	Establishment of Corporate Ethics Help Line Contact Point
<b>Governance</b>			
● 102-18	Governance structure a. Governance structure of the organization, including committees of the highest governance body. b. Committees responsible for decision-making on economic, environmental, and social topics.	P012 P042 P066-067 P062-065	<ul style="list-style-type: none"> <li>• Sustainability Promotion System</li> <li>• Environmental Management</li> <li>• Corporate Governance</li> <li>• Governance System</li> <li>• Business Risk Management Committee System</li> </ul>
102-19	Delegating authority a. Process for delegating authority for economic, environmental, and social topics from the highest governance body to senior executives and other employees.	P012	Sustainability Promotion System
102-20	Executive-level responsibility for economic, environmental, and social topics a. Whether the organization has appointed an executive-level position or positions with responsibility for economic, environmental, and social topics. b. Whether post holders report directly to the highest governance body.	P012	Sustainability Promotion System
102-21	Consulting stakeholders on economic, environmental, and social topics a. Processes for consultation between stakeholders and the highest governance body on economic, environmental, and social topics. b. If consultation is delegated, describe to whom it is delegated and how the resulting feedback is provided to the highest governance body.	P013-015	Stakeholder Engagement
102-22	Composition of the highest governance body and its committees a. Composition of the highest governance body and its committees by: i. executive or non-executive; ii. independence; iii. tenure on the governance body; iv. number of each individual's other significant positions and commitments, and the nature of the commitments; v. gender; vi. membership of under-represented social groups; vii. competencies relating to economic, environmental, and social topics; and viii. stakeholder representation.	P066-067 P134-136	<ul style="list-style-type: none"> <li>• Thoroughly reinforcing corporate governance and compliance</li> <li>• Data</li> </ul>
102-23	Chair of the highest governance body a. Whether the chair of the highest governance body is also an executive officer in the organization. b. If the chair is also an executive officer, describe his or her function within the organization's management and the reasons for this arrangement.	P066-067	Thoroughly reinforcing corporate governance and compliance
102-24	Nominating and selecting the highest governance body a. Nomination and selection processes for the highest governance body and its committees. b. Criteria used for nominating and selecting highest governance body members, including whether and how: i. stakeholders (including shareholders) are involved; ii. diversity is considered; iii. independence is considered; and iv. expertise and experience relating to economic, environmental, and social topics are considered.	P066-067	Thoroughly reinforcing corporate governance and compliance

Information Disclosure	Description	Report Page	
102-25	Conflicts of interest a. Processes for the highest governance body to ensure conflicts of interest are avoided and managed. b. Whether conflicts of interest are disclosed to stakeholders, including, as a minimum: i. Cross-board membership; ii. Cross-shareholding with suppliers and other stakeholders; iii. Existence of controlling shareholder; and iv. Related party disclosures.	P066-067	Thoroughly reinforcing corporate governance and compliance
102-26	Role of highest governance body in setting purpose, values, and strategy a. Highest governance body's and senior executives' roles in the development, approval, and updating of the organization's purpose, value or mission statements, strategies, policies, and goals related to economic, environmental, and social topics.	P012 P066-067	<ul style="list-style-type: none"> <li>• Sustainability Promotion System</li> <li>• Thoroughly reinforcing corporate governance and compliance</li> </ul>
102-27	Collective knowledge of highest governance body a. Measures taken to develop and enhance the highest governance body's collective knowledge of economic, environmental, and social topics.	P066-067	Thoroughly reinforcing corporate governance and compliance
102-28	Evaluating the highest governance body's performance a. Processes for evaluating the highest governance body's performance with respect to governance of economic, environmental, and social topics. b. Whether such evaluation is independent or not, and its frequency. c. Whether such evaluation is a self-assessment. d. Actions taken in response to evaluation of the highest governance body's performance with respect to governance of economic, environmental, and social topics, including, as a minimum, changes in membership and organizational practice.	Not applicable	
102-29	Identifying and managing economic, environmental, and social impacts a. Highest governance body's role in identifying and managing economic, environmental, and social topics and their impacts, risks, and opportunities— including its role in the implementation of due diligence processes. b. Whether stakeholder consultation is used to support the highest governance body's identification and management of economic, environmental, and social topics and their impacts, risks, and opportunities.	P012 P041-054 P062-065	<ul style="list-style-type: none"> <li>• Sustainability Promotion System</li> <li>• NTT Group Disclosures in Line with TCFD Recommendations</li> <li>• Business Risk Management</li> </ul>
102-30	Effectiveness of risk management processes a. Highest governance body's role in reviewing the effectiveness of the organization's risk management processes for economic, environmental, and social topics.	P012 P062-065	<ul style="list-style-type: none"> <li>• Sustainability Promotion System</li> <li>• Business Risk Management</li> </ul>
102-31	Review of economic, environmental, and social topics a. Frequency of the highest governance body's review of economic, environmental, and social topics and their impacts, risks, and opportunities.	P012 P062-065	<ul style="list-style-type: none"> <li>• Sustainability Promotion System</li> <li>• Business Risk Management</li> </ul>
102-32	Highest governance body's role in sustainability reporting a. The highest committee or position that formally reviews and approves the organization's sustainability report and ensures that all material topics are covered.	P012	<ul style="list-style-type: none"> <li>• Sustainability Promotion System</li> </ul>
102-33	Communicating critical concerns a. Process for communicating critical concerns to the highest governance body.	P013-015 P062-065	<ul style="list-style-type: none"> <li>• Stakeholder Engagement</li> <li>• Establishment of Corporate Ethics Help Line Contact Point</li> </ul>
102-34	Nature and total number of critical concerns a. Total number and nature of critical concerns that were communicated to the highest governance body. b. Mechanism(s) used to address and resolve critical concerns.	P062-065	Establishment of Corporate Ethics Help Line Contact Point
102-35	Remuneration policies a. Remuneration policies for the highest governance body and senior executives for the following types of remuneration: i. Fixed pay and variable pay, including performance-based pay, equity-based pay, bonuses, and deferred or vested shares; ii. Sign-on bonuses or recruitment incentive payments; iii. Termination payments; and iv. Clawbacks. b. Retirement benefits, including the difference between benefit schemes and contribution rates for the highest governance body, senior executives, and all other employees.	P066-067	Thoroughly reinforcing corporate governance and compliance
102-36	Process for determining remuneration. a. Process for determining remuneration. b. Whether remuneration consultants are involved in determining remuneration and whether they are independent of management. c. Any other relationships that the remuneration consultants have with the organization.	P066-067	Thoroughly reinforcing corporate governance and compliance
102-37	Stakeholders' involvement in remuneration a. How stakeholders' views are sought and taken into account regarding remuneration. b. If applicable, the results of votes on remuneration policies and proposals.	Not applicable	

Information Disclosure	Description	Report Page	
102-38	Annual total compensation ratio a. Ratio of the annual total compensation for the organization's highest-paid individual in each country of significant operations to the median annual total compensation for all employees (excluding the highest-paid individual) in the same country.	P138	Data List
102-39	Percentage increase in annual total compensation ratio. Ratio of the percentage increase in annual total compensation for the organization's highest-paid individual in each country of significant operations to the median percentage increase in annual total compensation for all employees (excluding the highest-paid individual) in the same country.	—	
<b>Stakeholder Engagement</b>			
● 102-40	List of stakeholder groups. A list of stakeholder groups engaged by the organization.	P013-015	Stakeholder Engagement
● 102-41	Collective bargaining agreements a. Percentage of total employees covered by collective bargaining	P138	Data List
● 102-42	Identifying and selecting stakeholders a. The basis for identifying and selecting stakeholders with whom to engage.	P013-015	Stakeholder Engagement
● 102-43	Approach to stakeholder engagement a. The organization's approach to stakeholder engagement, including frequency of engagement by type and by stakeholder group, and an indication of whether any of the engagement was undertaken specifically as part of the report preparation process.	P013-015	Stakeholder Engagement
● 102-44	Key topics and concerns raised a. Key topics and concerns that have been raised through stakeholder engagement, including: i. how the organization has responded to those key topics and concerns, including through its reporting; and ii. the stakeholder groups that raised each of the key topics and concerns.	P013-015 P062-065	<ul style="list-style-type: none"> <li>Stakeholder Engagement</li> <li>Establishment of Corporate Ethics Help Line Contact Point</li> </ul>
<b>Reporting Practice</b>			
● 102-45	Entities included in the consolidated financial statements a. A list of all entities included in the organization's consolidated financial statements or equivalent documents. b. Whether any entity included in the organization's consolidated financial statements or equivalent documents is not covered by the report.	P002	Scope of Disclosure Basic Information (Reference) Group companies <a href="https://group.ntt.jp/group/gnavi/">https://group.ntt.jp/group/gnavi/</a>
● 102-46	Defining report content and topic Boundaries a. An explanation of the process for defining the report content and the topic Boundaries. b. An explanation of how the organization has implemented the Reporting Principles for defining report content.	P011	Process for Selecting Material Issues
● 102-47	List of material topics a. list of the material topics identified in the process for defining report P011 Process for Selecting Material Issues	P011	Process for Selecting Material Issues
● 102-48	Restatements of information a. The effect of any restatements of information given in previous reports, and the reasons for such restatements.	Not applicable	
● 102-49	Changes in reporting a. Significant changes from previous reporting periods in the list of material topics and topic Boundaries.	Not applicable	
● 102-50	Reporting period a. Reporting period for the information provided.	P002	Reporting Period
● 102-51	Date of most recent report a. If applicable, the date of the most recent previous report.	P002	Reporting Period
● 102-52	Reporting cycle a. Reporting cycle.	P002	Reporting Period
● 102-53	Contact point for questions regarding the report a. The contact point for questions regarding the report or its contents.	P002	Inquiries
● 102-54	Claims of reporting in accordance with the GRI Standards a. The claim made by the organization, if it has prepared a report in accordance with the GRI Standards, either: i. this report has been prepared in accordance with the GRI Standards: Core option; or ii. this report has been prepared in accordance with the GRI Standards: Comprehensive option.	GRI Content Index (refer to this table)	

● Required contents disclosures in accordance with the Core option / (A): Annual Report 2021

Information Disclosure	Description	Report Page	
● 102-55	GRI Content Index a. The GRI content index, which specifies each of the GRI Standards used and lists all disclosures included in the report. b. For each disclosure, the content index shall include: i. the number of the disclosure (for disclosures covered by the GRI Standards); ii. the page number(s) or URL(s) where the information can be found, either within the report or in other published materials; and iii. if applicable, and where permitted, the reason(s) for omission when a required disclosure cannot be made.	GRI content index (refer to this table)	
● 102-56	External assurance. a. description of the organization's policy and current practice with regard to seeking external assurance for the report. b. If the report has been externally assured: i. A reference to the external assurance report, statements, or opinions. If not included in the assurance report accompanying the sustainability report, a description of what has and what has not been assured and on what basis, including the assurance standards used, the level of assurance obtained, and any limitations of the assurance process. ii. The relationship between the organization and the assurance provider; and iii. Whether and how the highest governance body or senior executives are involved in seeking external assurance for the organization's sustainability report.	P143	Independent Assurance Statement

**GRI 103: Management Approach 2016**

Information Disclosure	Description	Report Page	
103-1	Explanation of the material topic and its Boundary a. An explanation of why the topic is material. b. The Boundary for the material topic, which includes a description of: i. where the impacts occur; and ii. the organization's involvement with the impacts. For example, whether the organization has caused or contributed to the impacts, or is directly linked to the impacts through its business relationships. iii. Any specific limitation regarding the topic Boundary.	P011	Process for Selecting Material Issues
103-2	The management approach and its components For each material topic, the reporting organization shall report the following information: a. An explanation of how the organization manages the topic. b. A statement of the purpose of the management approach. c. A description of the following, if the management approach includes that component: i. Policies ii. Commitments iii. Goals and targets iv. Responsibilities v. Resources vi. Grievance mechanisms vii. Specific actions, such as processes, projects, programs and initiatives	P016-054 P055-098 P103-P131	<ul style="list-style-type: none"> <li>• Promoting energy conservation</li> <li>• Reducing power consumption by introducing IOWN technologies</li> <li>• Developing and expanding the use of renewable energy</li> <li>• Providing new services that contribute to carbon neutrality</li> <li>• Creating innovative environmental and energy technologies</li> <li>• Increasing the reuse and recycling of communications equipment, mobile devices, and other technologies</li> <li>• Reduction in plastics use and promotion of recycling</li> <li>• Proper treatment, storage, and management of hazardous waste</li> <li>• Appropriate and efficient management of water resources</li> <li>• Thoroughly implementing environmental assessment</li> <li>• Contributing to natural ecosystem conservation</li> <li>• Establishing and thoroughly complying with ethical standards</li> <li>• Appropriately managing conduct risk</li> <li>• Thoroughly reinforcing corporate governance and compliance</li> <li>• Sharing high ethical standards with business partners</li> <li>• Promoting the B2B2X model</li> <li>• Protection and respect for intellectual property</li> <li>• Contribution to the revitalization of local communities and economies</li> <li>• Securing the Stability and Reliability of Telecommunications Services</li> <li>• Strengthening information security and personal information protection</li> <li>• Promoting a decentralized society based on remote work</li> <li>• Compliance with the NTT Group Global Human Rights Policy</li> <li>• Encouraging society as a whole to respect human rights</li> <li>• Promoting recruitment, training, and education of diverse human resources and women's advancement in the workplace</li> <li>• Encouraging of understanding of LGBTQ and promoting the advancement of disabled people</li> <li>• Support for balancing work and life such as childcare and nursing care</li> <li>• Promoting remote work and other workplace models</li> <li>• Achieving zero fatal accidents as well as maintaining and promoting employee health</li> <li>• Supporting autonomous capacity development</li> <li>• Promoting paperless operations</li> </ul>
103-3	Evaluation of the management approach a. An explanation of how the organization evaluates the management approach, including: i. the mechanisms for evaluating the effectiveness of the management approach; ii. the results of the evaluation of the management approach; and iii. any related adjustments to the management approach.	P012	Sustainability Promotion System

**200: Economic topics**

Information Disclosure	Description	Report Page	
<b>GRI 201: Economic Performance 2016</b>			
201-1	Direct economic value generated and distributed	P003 P141	<ul style="list-style-type: none"> <li>• Basic Information</li> <li>• Data List</li> </ul>
201-2	Financial implications and other risks and opportunities due to climate change	P041-054	<ul style="list-style-type: none"> <li>• NTT Group Disclosures in Line with TCFD Recommendations</li> </ul>
201-3	Defined benefit plan obligations and other retirement plans	(Reference) Annual Securities Report (36th Business Term): Employee Benefits (pages 150-156)	
201-4	Financial assistance received from government	(Reference) Annual Securities Report (36th Business Term): Major Shareholders (pages 54) <a href="https://group.ntt.jp/ir/library/yuho/2020/pdf/36yuho.pdf">https://group.ntt.jp/ir/library/yuho/2020/pdf/36yuho.pdf</a>	
<b>GRI 202: Market Presence 2016</b>			
202-1	Ratios of standard entry level wage by gender compared to local minimum wage	—	
202-2	Proportion of senior management hired from the local community	—	
<b>GRI 203: Indirect Economic Impacts 2016</b>			
203-1	Infrastructure investments and services supported	P069-097	<ul style="list-style-type: none"> <li>• Promoting the B2B2X model</li> <li>• Protection and respect for intellectual property</li> <li>• Contribution to the revitalization of local communities and economies</li> <li>• Ensuring the stability and reliability of services</li> </ul>
203-2	Significant indirect economic impacts	P069-097	<ul style="list-style-type: none"> <li>• Promoting the B2B2X model</li> <li>• Protection and respect for intellectual property</li> <li>• Contribution to the revitalization of local communities and economies</li> <li>• Promotion of CSIRT</li> </ul>
<b>GRI 204: Procurement Practices 2016</b>			
204-1	Proportion of spending on local suppliers	—	
<b>GRI 205: Anti-corruption 2016</b>			
205-1	Operations assessed for risks related to corruption	—	
205-2	Communication and training about anti-corruption policies and procedures	P062-065	<ul style="list-style-type: none"> <li>• Establishing and thoroughly complying with ethical standards</li> </ul>
205-3	Confirmed incidents of corruption and actions taken	P062-065 P068	<ul style="list-style-type: none"> <li>• Establishing and thoroughly complying with ethical standards</li> <li>• Sharing high ethical standards with business partners</li> </ul>
<b>GRI 206: Anti-competitive Behavior 2016</b>			
206-1	Legal actions for anti-competitive behavior, anti-trust, and monopoly practices	P066-067	<ul style="list-style-type: none"> <li>• Establishing and thoroughly complying with ethical standards</li> </ul>
<b>GRI 207: Tax 2019</b>			
207-1	Approach to tax	P067	Thoroughly reinforcing corporate governance and compliance
207-2	Tax governance, control, and risk management	P067	Thoroughly reinforcing corporate governance and compliance
207-3	Stakeholder engagement and management of concerns related to tax	P067	Thoroughly reinforcing corporate governance and compliance
207-4	Country-by-country reporting	P067	Profit before Income Tax (FY2019) Income Taxes Paid (FY2019)

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**GRI 300: Environmental topics**

Information Disclosure	Description	Report Page	
<b>GRI 301: Materials 2016</b>			
301-1	Materials used by weight or volume	P052 P131	Material Balance of the NTT Group
		P131 P051	<ul style="list-style-type: none"> <li>Promoting paperless operations</li> <li>Environmental Performance Data</li> </ul>
301-2	Recycled input materials used	P131	Promoting paperless operations
301-3	Reclaimed products and their packaging materials	P131	Promoting paperless operations
<b>GRI 302: Energy 2016</b>			
302-1	Energy consumption within the organization	P050-052	<ul style="list-style-type: none"> <li>Environmental Performance Data</li> <li>Material Balance of the NTT Group</li> </ul>
302-2	Energy consumption outside of the organization	—	
302-3	Energy intensity	—	
302-4	Reduction of energy consumption	P047-054	Metrics and Targets
302-5	Reductions in energy requirements of products and services	P050-051	<ul style="list-style-type: none"> <li>Environmental Performance Data</li> </ul>
<b>GRI 303: Water and Effluents 2018</b>			
303-1	Water withdrawal by source	P037	Appropriate and efficient management of water resources
303-2	Water sources significantly affected by withdrawal of water	P037	Appropriate and efficient management of water resources
303-3	Water recycled and reused	P037 P050-052	<ul style="list-style-type: none"> <li>Material Balance of the NTT Group</li> <li>Appropriate and efficient management of water resources</li> <li>Environmental Performance Data</li> </ul>
<b>GRI 304: Biodiversity 2016 304-1</b>			
304-1	Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas	—	
304-2	Significant impacts of activities, products, and services on biodiversity	P040	Contributing to natural ecosystem conservation
304-3	Habitats protected or restored	(Reference) Preservation of the ecosystem <a href="https://group.ntt.jp/environment/whatdoing/nature01.html">https://group.ntt.jp/environment/whatdoing/nature01.html</a>	
304-4	IUCN Red List species and national conservation list species with habitats in areas affected by operations	—	
<b>GRI 305: Emissions 2016</b>			
305-1	Direct GHG emissions (Scope 1)	P041-054	<ul style="list-style-type: none"> <li>Material Balance of the NTT Group</li> <li>NTT Group Disclosures in Line with TCFD Recommendations</li> <li>Environmental Performance Data</li> </ul>
305-2	Energy indirect GHG emissions (Scope 2)	P041-054	<ul style="list-style-type: none"> <li>Material Balance of the NTT Group</li> <li>NTT Group Disclosures in Line with TCFD Recommendations</li> <li>Environmental Performance Data</li> </ul>
305-3	Other indirect GHG emissions (Scope 3)	P050-052	<ul style="list-style-type: none"> <li>Material Balance of the NTT Group</li> <li>Environmental Performance Data</li> </ul>
305-4	GHG emissions intensity	—	
305-5	Reduction of GHG emissions	P041-054	<ul style="list-style-type: none"> <li>NTT Group Disclosures in Line with TCFD Recommendations</li> </ul>

Information Disclosure	Description	Report Page	
305-6	Emissions of ozone-depleting substances (ODS)	—	
305-7	Nitrogen oxides (NOx), sulfur oxides (SOx), and other significant air emissions	—	
<b>GRI 306: Effluents and Waste 2016</b>			
306-1	Water discharge by quality and destination	P052	Material Balance of the NTT Group
306-2	Waste by type and disposal method	P050-052	<ul style="list-style-type: none"> <li>Material Balance of the NTT Group</li> <li>Environmental Performance Data</li> </ul>
306-3	Significant spills	P037	<ul style="list-style-type: none"> <li>Appropriate and efficient management of water resources</li> </ul>
306-4	Transport of hazardous waste	P036	Proper treatment, storage, and management of hazardous waste
306-5	Water bodies affected by water discharges and/or runoff	—	
<b>GRI 307: Environmental Compliance 2016</b>			
307-1	Non-compliance with environmental laws and regulations	P054	Environmental Guidelines, Compliance with Environmental Laws and Regulations
<b>GRI 308: Supplier Environmental Assessment 2016</b>			
308-1	New suppliers that were screened using environmental criteria	—	
308-2	Negative environmental impacts in the supply chain and actions taken	P113-114 P140	Value Chain Management Data List

**GRI 400: Social topics**

Information Disclosure	Description	Report Page	
<b>GRI 401: Employment 2016</b>			
401-1	New employee hires and employee turnover	P138	Data List
401-2	Benefits provided to full-time employees that are not provided to temporary or part-time employees	P118 P121 P125	Promoting recruitment, training, and education of diverse human resources and women's advancement in the workplace Support for balancing work and life such as childcare and nursing care
401-3	Parental leave	P121 P139	Support for balancing work and life such as childcare and nursing care Data List
<b>GRI 402: Labor/Management Relations 2016</b>			
402-1	Minimum notice periods regarding operational changes	P124-127	Favorable Labor-Management Relationship
<b>GRI 403: Occupational Health and Safety 2018</b>			
403-1	Occupational health and safety management system	P124-P127	Achieving zero fatal accidents as well as maintaining and promoting employee health
403-2	Hazard identification, risk assessment, and incident investigation	—	
403-3	Occupational health services	P124-127	Achieving zero fatal accidents as well as maintaining and promoting employee health
403-4	Worker participation, consultation, and communication on occupational health and safety	—	
403-5	Worker training on occupational health and safety	—	
403-6	Promotion of worker health	P124-127	Achieving zero fatal accidents as well as maintaining and promoting employee health
403-7	Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	P124-127	Achieving zero fatal accidents as well as maintaining and promoting employee health
403-8	Workers covered by an occupational health and safety management system	—	

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Information Disclosure	Description	Report Page	
403-9	Work-related injuries	—	
403-10	Work-related ill health	—	
<b>GRI 404: Training and Education 2016</b>			
404-1	Average hours of training per year per employee	P140	Data List
404-2	Programs for upgrading employee skills and transition assistance programs	P128-130	Supporting autonomous capacity development
404-3	Percentage of employees receiving regular performance and career development reviews	P128-130	Supporting autonomous capacity development
<b>GRI 405: Diversity and Equal Opportunity 2016</b>			
405-1	Diversity of governance bodies and employees	P139	Data List
405-2	Ratio of basic salary and remuneration of women to men	—	
<b>GRI 406: Non-discrimination 2016</b>			
406-1	Incidents of discrimination and corrective actions taken	P139	Data List
<b>GRI 407: Freedom of Association and Collective Bargaining 2016</b>			
407-1	Operations and suppliers in which the right to freedom of association and collective bargaining may be at risk	P140	Data List
<b>GRI 408: Child Labor 2016</b>			
408-1	Operations and suppliers at significant risk for incidents of child labor	P140	Data List
<b>GRI 409: Forced or Compulsory Labor 2016</b>			
409-1	Operations and suppliers at significant risk for incidents of forced or compulsory labor	P140	Data List
<b>GRI 410: Security Practices 2016</b>			
410-1	Security personnel trained in human rights policies or procedures	—	
<b>GRI 411: Rights of Indigenous Peoples 2016</b>			
411-1	Incidents of violations involving rights of indigenous peoples	—	
<b>GRI 412: Human Rights Assessment 2016</b>			
412-1	Operations that have been subject to human rights reviews or impact assessments	P101-113	Compliance with the NTT Group Global Human Rights Policy
412-2	Employee training on human rights policies or procedures	P101-113	Data List
412-3	Significant investment agreements and contracts that include human rights clauses or that underwent human rights screening	P102 P111-113	Value Chain Management
<b>GRI 413: Local Communities 2016</b>			
413-1	Operations with local community engagement, impact assessments, and development programs	P085-091 P141	<ul style="list-style-type: none"> <li>Ensuring the stability and reliability of services</li> <li>Data List</li> </ul>
413-2	Operations with significant actual and potential negative impacts on local communities	Not applicable	

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Information Disclosure	Description	Report Page	
<b>GRI 414: Supplier Social Assessment 2016</b>			
414-1	New suppliers that were screened using social criteria	—	
414-2	Negative social impacts in the supply chain and actions taken	P101-113 P140	Compliance with the NTT Group Global Human Rights Policy Data List
<b>GRI 415: Public Policy 2016</b>			
415-1	Political Contributions	P062-065	Establishing and thoroughly complying with ethical standards
<b>GRI 416: Customer Health and Safety 2016</b>			
416-1	Assessment of the health and safety impacts of product and service categories	—	
416-2	Incidents of non-compliance concerning the health and safety impacts of products and services	Not applicable	
<b>GRI 417: Marketing and Labeling 2016</b>			
417-1	Requirements for product and service information and labeling	—	
417-2	Incidents of non-compliance concerning product and service information and labeling	Not applicable	
417-3	Incidents of non-compliance concerning marketing communications	Not applicable	
<b>GRI 418: Customer Privacy 2016</b>			
418-1	Substantiated complaints concerning breaches of customer privacy and losses of customer data	Not applicable	
<b>GRI 419: Socioeconomic Compliance 2016</b>			
419-1	419-1 Non-compliance with laws and regulations in the social and economic area	Not applicable	

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