Value Creation through Environmental and Social Contributions

Initiatives for Addressing Material Issues

Reduction of Environmental Impact

Reducing CO2 emissions and otherwise lowering environmental impacts is recognized as an important issue needing to be addressed internationally in order to create a sustainable society. NTT Group is pursuing sustainable business development over the medium to long term. For this reason, NTT Group considers it absolutely essential to reduce its environmental impact in order to grow further.

Overview of NTT Group’s Environmental Impact

To reduce the environmental impact of its business activities by the greatest extent possible, NTT Group is taking steps to track and analyze what types of resources and energy it is using and what types of environmental impacts are occurring throughout its business activities. In the fiscal year ended March 31, 2018, we achieved year-on-year reductions of 0.13 billion kWh in purchased electricity and 2.000 kL in gas consumption.

The NTT Group’s Material Balance* (Fiscal Year Ended March 31, 2018)

<table>
<thead>
<tr>
<th>INPUT</th>
<th>OUTPUT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Purchased electricity:</td>
<td>8.23 billion kWh</td>
</tr>
<tr>
<td>Fuel consumption:</td>
<td>23 thousand kL</td>
</tr>
<tr>
<td>Sea consumption:</td>
<td>48.42 million m³</td>
</tr>
<tr>
<td>Water consumption (total of tap and wastewater):</td>
<td>12.59 million m³</td>
</tr>
<tr>
<td>Virgin pulp consumption:</td>
<td>17 thousand tons</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>NTT Group</td>
<td></td>
</tr>
<tr>
<td>Regional Communications Business</td>
<td></td>
</tr>
<tr>
<td>Long Distance and International Communications Business</td>
<td></td>
</tr>
<tr>
<td>Cloud services (OGV)</td>
<td></td>
</tr>
<tr>
<td>Mobile Communications Business</td>
<td></td>
</tr>
<tr>
<td>Smartphones / Feature phones</td>
<td></td>
</tr>
<tr>
<td>Data Communications Business</td>
<td></td>
</tr>
<tr>
<td>System integration</td>
<td></td>
</tr>
<tr>
<td>Other Businesses</td>
<td></td>
</tr>
<tr>
<td>Real Estate businesses / Finance businesses</td>
<td></td>
</tr>
<tr>
<td>Enterprises</td>
<td></td>
</tr>
<tr>
<td>Individuals</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Scope 3: Total 17.10 million tons</td>
<td></td>
</tr>
</tbody>
</table>

NTT Group Environmental Statement and 2030 Environmental Targets

The NTT Group Environmental Statement compiles our vision for the future of the global environment we aim to build with our stakeholders, our environmental initiatives for building that future, and the company we aim to become through these efforts. The declaration begins with the words “People & Planet in Harmony.” These words symbolize our goal of creating a future housing a sustainable society in which everyone and everything around the world is interconnected. To help realize such a future, we at NTT Group will push forward with our daily environmental activities to fully exercise our capabilities as forerunners in environmental contribution.

We have defined three characteristics of the vision for the future encapsulated in the words “People & Planet in Harmony.” NTT Group will contribute to ending the future with these characteristics through the provision of ICT services and cutting-edge technologies.

Through our environmental materiality analyses, we have identified NTT Group’s key environmental issues to be climate change, energy (electricity), resources, and ecosystems. Based on these issues, the Group has established the 2030 Environmental Targets, a set of environmental targets pertaining to these issues to be accomplished by the fiscal year ending March 31, 2031, that is meant to guide us in realizing the future described in the NTT Group Environmental Statement.

Overview of NTT Group’s Material Balance* (Fiscal Year Ended March 31, 2018)

The NTT Group Material Balance* (Fiscal Year Ended March 31, 2018)

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Initiatives for Accomplishing the 2030 Environmental Targets 1: Contributions to Reducing Society’s CO₂ Emissions

- NTT Group’s Contributions to Reducing Society’s CO₂ Emissions
- Targets and Results
  - ICT contributes to the reduction of the environmental impacts of our lives and society in various ways, including making our lives and work more efficient and providing alternatives for moving goods and people. For example, the digital distribution of books, music, movies, and other content cuts back on the energy consumed in transporting the books, CDs, DVDs, and other physical media that are normally used to distribute such content. For the fiscal year ending March 31, 2021, NTT Group has established the target of contributing to a reduction in the CO₂ emissions of society, through the provision of its services and technologies that is at least 10 times greater than NTT Group’s own emissions. In the fiscal year ended March 31, 2018, the reduction in CO₂ emissions from society achieved in this manner was 10.1 times the amount of emissions of NTT Group. However, information transmission volumes are growing with each coming year in conjunction with the spread of smartphones and the development of high-speed, large-capacity networks through the HiKari Collaboration Model, and these transmissions require energy. NTT Group will therefore continue initiatives to achieve its targets going forward.

- Reduction of NTT Group’s CO₂ Emissions
  - In the ICT field, a primary area of business for NTT Group, the advancement of technologies brings concerns for the risks in electricity consumption that accompany the need for processing larger volumes of data and cooling massive servers. For this reason, ICT companies are increasingly being expected to make their operations more energy efficient. NTT Group provides data center services and various other ICT services, and the use of electricity purchased to supply such services accounts for over 95% of the Group’s CO₂ emissions. We are therefore implementing energy-saving initiatives, realizing that these initiatives will also contribute to reductions in CO₂ emissions.
  - NTT Group uses large amounts of electricity, with purchased electricity amounting to more than 8.2 billion kWh a year. Due to the rise in the price of electricity as a result of the start of the rise in the price of electricity as a result of the increase in the price of electricity, NTT Group is advancing the introduction of energy-saving equipment in accordance with the NTT Group Energy Efficiency Guidelines and improving network structure efficiency.
  - NTT Group is introducing various sensors in server rooms, which are used to measure the temperature fluctuations measured by these sensors. These innovations are contributing to reductions in CO₂ emissions.

- Energy Saving at Data Centers
  - NTT Group’s data centers are among the largest in the world, meaning that energy savings at data centers can greatly help improve energy efficiency. NTT Communications operates data centers with power usage effectiveness (PUE) of less than 1.2, and NTT COMWARE CORPORATION operates data centers with PUE of less than 1.1, which are at the world’s highest level for energy efficiency. We are striving to enhance PUE for our other data centers as well by introducing six-star equipment with the highest level of energy efficiency in accordance with the NTT Group Energy Efficiency Guidelines. In addition, NTT FACILITIES has engaged in R&D activities aimed at reducing the electricity consumption of data centers. For example, this company has been developing higher-efficiency technologies for electrical power units and air-conditioning systems as well as central data center air-conditioning control systems for data centers. These innovations are contributing to energy savings at data centers.
  - We are also operating certain data centers using renewable energy. We have installed a 5 kW solar power generation system at NTT East’s Kornagome Data Center, and solar power systems have also been set up at seven other NTT Group data centers, contributing to reductions in CO₂ emissions.

- Overview of SmartDASH® System
  - NTT Group is advancing the use of SmartDASH® at its communications buildings and data centers. This system is designed to realize optimal cooling of the ICT equipment used for providing services. By installing various sensors in server rooms, SmartDASH® tracks heat distribution throughout the room to achieve optimal control of air-conditioning systems based on the temperature measurements made by these sensors. SmartDASH® is anticipated to contribute to reductions in energy consumption of up to 30%.

Electricity Efficiency of Telecommunications Operations

<table>
<thead>
<tr>
<th>Year</th>
<th>Target more than</th>
<th>Actual 2014</th>
<th>Actual 2015</th>
<th>Actual 2016</th>
<th>Actual 2017</th>
<th>Actual 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>PUE (lower)</td>
<td>1.30 (target)</td>
<td>1.31</td>
<td>1.29</td>
<td>1.27</td>
<td>1.26</td>
<td>1.25</td>
</tr>
<tr>
<td>PUE (higher)</td>
<td>1.40 (target)</td>
<td>1.45</td>
<td>1.40</td>
<td>1.39</td>
<td>1.36</td>
<td>1.35</td>
</tr>
</tbody>
</table>

* PUE usage effectiveness: PUE is calculated by dividing the total electricity consumption of a data center by the electricity consumption of the servers and other equipment housed in the data center, multiplied by the rate of energy consumption. A lower PUE indicates a more efficient use of energy.

- Overview of SmartDASH® System
  - NTT Group’s Contributions to Reducing Society’s CO₂ Emissions
    - Targets and Results
      - Over the 10 years to the fiscal year ending March 31, 2014, CO₂ emissions from business activities were reduced by 49% from the fiscal year ending March 31, 2004.
      - In the fiscal year ended March 31, 2018, CO₂ emissions from business activities were reduced by 54% from the fiscal year ending March 31, 2004.

- Electricity Efficiency of Telecommunications Operations
  - NTT Group has set the environmental target for the fiscal year ending March 31, 2031, of increasing electricity efficiency at data centers and other facilities in telecommunications operations* to at least 10 times higher than the levels seen in the fiscal year ended March 31, 2014. Realizing more efficient use of electricity in telecommunications operations is both a means of mitigating business continuity risks and of curtailing climate change.
  - In the fiscal year ended March 31, 2018, electricity efficiency in telecommunications operations was 3.6 times higher than in the fiscal year ended March 31, 2014. This feat was accomplished by introducing energy-saving equipment in accordance with the NTT Group Energy Efficiency Guidelines and improving network structure efficiency.

- Measurement of CO₂ Emissions
  - The reduction in CO₂ emissions from society is calculated by converting the energy consumption benefits of supplied ICT services into CO₂. In converting energy consumption benefits into CO₂, the Company referenced the calculation method included in the Telecommunication Technology Committee’s Methodology for the Assessment of the Environmental Impact of Information and Communication Technology Goods, Networks, and Services (TT-C103) and Jicable’s Assessment Society of Japan’s Guidelines for Information and Communication Technology (ICT) Eco-Efficiency Evaluation.

- CO₂ Emissions from Business Activities
  - The following table shows CO₂ emissions from business activities.

<table>
<thead>
<tr>
<th>Year</th>
<th>CO₂ from electricity (Millions of t-CO₂)</th>
<th>CO₂ from gas and fuel (Millions of t-CO₂)</th>
<th>CO₂ from company vehicles (Millions of t-CO₂)</th>
<th>Total CO₂ emissions (Millions of t-CO₂)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>2015</td>
<td>2016</td>
<td>2017</td>
<td>2018</td>
</tr>
<tr>
<td></td>
<td>4.67</td>
<td>0.139</td>
<td>0.134</td>
<td>4.94</td>
</tr>
<tr>
<td></td>
<td>4.38</td>
<td>0.134</td>
<td>0.135</td>
<td>4.67</td>
</tr>
<tr>
<td></td>
<td>4.18</td>
<td>0.135</td>
<td>0.136</td>
<td>4.47</td>
</tr>
<tr>
<td></td>
<td>3.98</td>
<td>0.136</td>
<td>0.137</td>
<td>4.38</td>
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<tr>
<td></td>
<td>3.80</td>
<td>0.137</td>
<td>0.142</td>
<td>4.21</td>
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<td></td>
<td>3.61</td>
<td>0.138</td>
<td>0.143</td>
<td>4.11</td>
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<tr>
<td></td>
<td>3.42</td>
<td>0.139</td>
<td>0.144</td>
<td>4.02</td>
</tr>
<tr>
<td></td>
<td>3.23</td>
<td>0.140</td>
<td>0.145</td>
<td>3.98</td>
</tr>
</tbody>
</table>

* Telecommunications operations included with the scope of calculation for energy efficiency include the domestic operations of NTT East, NTT West, NTT Communications, NTT DOCOMO, and NTT DATA.
Promotion of e-Mobility

With regard to its fleet of company vehicles, NTT Group is promoting e-mobility while also downsizing its overall fleet. We have thus set the goal of converting 50% of general company-use vehicles to electric vehicles (EVs) by 2025, with 100% conversion targeted by 2030. The installation of EV charging stations at the premises of communications buildings and other Group facilities will be advanced alongside this conversion.

Participation in EP100 and EV100

NTT Group is preparing to announce specific targets for energy efficiency and e-mobility and to participate in the EP100*1 and EV100*2 international initiatives organized by the Climate Group to promote improvements in energy efficiency. Through participation in such international initiatives, NTT Group will declare its commitment to the environment and its stance toward addressing international environmental issues to external stakeholders.

Value Creation through Environmental and Social Contributions

Participants in both EP100 and EV100*3 will make public commitments to achieve energy productivity improvements and to promote the introduction of EVs, respectively. NTT Group acknowledges the necessity of contributing to environmental issues in Japan and to developing solutions of environmental issues in Japan and to developing solutions of environmental issues to external stakeholders.

*1  EP100 is an international initiative that encourages companies to double the energy productivity of their businesses. A condition for joining the initiative is to declare a target for doubling energy productivity with a set completion date.
*2  EV100 is an international initiative that promotes the introduction of EVs. Companies seeking to participate in the initiative are required to make a public commitment to one or more of the following areas.
1. Placing requirements in service contracts (taxis, rental vehicles, etc.) for EV use
2. Purchasing EVs for company use
3. Supporting staff in using EVs by installing charging infrastructure at their premises
4. Supporting EV uptake by customers by installing charging infrastructure at all premises

Sources: EP100 website (https://www.theclimategroup.org/project/ep100)
EV100 website (https://www.theclimategroup.org/project/ev100)

Ratio of EVs to General Company-Use Vehicles

![Graph showing the ratio of EVs to general company-use vehicles over time from 2016/3 to 2030/12.]
The expectations of customers and society for information security are rising in light of occurrences of large-scale personal information leaks and changes to the regulatory environment, such as the introduction of personal information protection regulations by the European Union. Were a leak of personal information to occur, NTT Groups operations would suffer from a decrease in corporate value, the loss of customers, and other negative impacts. It is therefore crucial that we enhance stringent information management. Information security is an important issue for the businesses of customers and for society as a whole. We are committed to utilizing the security measure implementation and R&D expertise we have cultivated through our information transmission operations to assist customers in reinforcing their security measures. We thereby aim to help resolve security issues across society in order to contribute to the healthy development and transformation of society.

Overview of NTT Groups Information Security and Personal Information Protection Initiatives

Reinforcement of Information Security and Personal Information Protection

The evolution of Internet of Things (IoT) technologies is driving a rapid increase in the number of devices needing to be protected from threats to information security, while threats themselves are becoming more sophisticated and divers. Meanwhile, there is concern for the severe lack of information security engineers at both Japanese and overseas companies. NTT Group is working to cultivate information security human resources within the Group. At the same time, the Group is contributing to the training of security personnel across Japan through cooperation with the government, other companies, and educational institutions.

Application of Talent, Technologies, and Expertise

The CCSCS (Cross-Industry Committee on Cybersecurity Personnel Development) was established in 2010 with the aim of reinforcing the number and proficiency of its staff of security experts in Japan and otherwise address information security issues through coordination between Group companies.

Group CCSCS Committee has been established to formulate Group-wide information security management strategies, plan and implement related measures, cultivate human resources, and otherwise address information security issues through coordination between Group companies.

In addition, NTT Group participates in the cross-industry seminars held by the National center of Incident Readiness and Strategy for Cybersecurity (MISC) to share expertise and gather information. NTT-CERT also plays a role in promoting the coordination with external organizations.

Other CSIRTs

Cultivation of Information Security Human Resources

The evolution of Internet of Things (IoT) technologies is driving a rapid increase in the number of devices needing to be protected from threats to information security, while threats themselves are becoming more sophisticated and divers. Meanwhile, there is concern for the severe lack of information security engineers at both Japanese and overseas companies. NTT Group is working to cultivate information security human resources within the Group. At the same time, the Group is contributing to the training of security personnel across Japan through cooperation with the government, other companies, and educational institutions.

Overview of NTT Group’s Information Security and Personal Information Protection Initiatives

Initiatives for Addressing Material Issues

Establishment and Implementation of Policies Regarding Information Security and Personal Information Protection

NTT Group has established policies and rules concerning customer, shareholder, employees, and other information in accordance with the NTT Group Information Security Policy.

Furthermore, each Group company has developed a personal information protection structure that matches its particular business characteristics and has formulated its own information protection policies. Group companies are also advancing various other initiatives, including establishing organizations for promoting information security management and introducing security systems. Examples of such measures at Group companies are the introduction of security systems and the implementation of strict hardware and software security measures to prevent unauthorized access to and loss of information and infection of systems by computer viruses and to manage removal of information from Company premises. At the same time, we are conducting other ongoing information security measures, including thoroughly educating employees and appropriately supervising outsourcing contractors.

Information Security Management Structure

NTT Group maintains an information security management structure in which the chief information security officer serves as the highest-ranking authority. Rigorous information security management is practiced under this system. In addition, the

NTT CERT

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, and utilizes measures to prevent recurrence, develops training programs, and provides security-related information. As a central element of NTTs security initiatives, NTT-CERT provides services for consultations regarding information security. The team also collaborates with organizations and specialists inside NTT Group and outside NTT Group to offer support for detecting and resolving security incidents, minimizing damages, and preventing recurrence. NTT-CERT is thereby contributing to better security for both NTT Group and societies that are permeated by information networks.

Moreover, NTT-CERT coordinates with the United States Computer Emergency Readiness Team (US CERT) and the Japan Computer Emergency Response Team Coordination Center (JPCERT/CC) and is also a member of the Forum of Incident Response and Security Teams (FIRST) and the

Duties of Group CSIRTs

- Ensuring preparedness for incidents and responding proactively in response to incidents by performing investigations and analyzing incidents
- Coordinating with CSIRTs at other Group companies to respond to issues impacting the entire Group
- Contributing to the training of security personnel across Japan through cooperation with the government, other companies, and educational institutions.

Specialized CSIRTs

Duties of Group CSIRTs

- Ensuring preparedness for incidents and responding proactively in response to incidents by performing investigations and analyzing incidents
- Coordinating with CSIRTs at other Group companies to respond to issues impacting the entire Group
- Contributing to the training of security personnel across Japan through cooperation with the government, other companies, and educational institutions.

Lack of information security engineers

More sophisticated and diverse threats

Rising security needs

Increase in devices

and levels of security personnel needed. As a result, the number of security personnel holding internal certifications reached approximately 39,000 on April 30, 2018. We will continue to enhance our range of ever more practical development programs to increase the number of personnel capable of functioning as the core of our security field operations.

Personnel Development, which operates and performs cross-industry collaborative ventures with companies in important industry fields, was transformed into an organization with corporate status. This move was taken to allow it to better address cyberthreats on an industry-wide basis by stepping up initiatives for cultivating security management personnel, fostering understanding among management, and sharing its expertise.

External Institutions

US-CERT

JPCERT/ CC

FIRST

Other CSIRTs

http://www.cyber-risk.or.jp/index.html

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Initiatives for Supporting Customers in Reinforcing Information Security

Development of Security Services Operations through NTT Security Corporation

NTT Security functions as NTT Group’s center of excellence for cybersecurity by coordinating with Group companies and other information security support for customers. Our information security support involves digital transformations through consulting and other services. The information gathered through daily security operations around the world and the information collected through so-called honeypot decoy systems is integrated and utilized via our proprietary threat information database. In addition, NTT Security is able to provide sophisticated cybersecurity threat detection and response services 24 hours a day, 365 days a year by taking advantage of its advanced, proprietary Security Information & Event Management (SIEM) analysis engine, which incorporates the technologies developed at research facilities, and its highly skilled security analysis teams. Furthermore, our sophisticated managed security services are supplied around the world and operated efficiently through an integrated global service platform. With 10 security operation centers staffed by security analysts in locations across the globe, NTT Security provides services that are flexibly adjusted to the characteristics of each region.

Digital Threats – Multifaceted Threat Analysis Platform

Network threats, such as ransomware, linked in emails, phishing, and other threats, continue to pose a threat to customer operations and intellectual property, and our security services have been detecting and blocking malicious attacks, especially in response to the rising threats to cybersecurity. In the face of such threats, NTT Security has begun providing cutting-edge security solutions spanning from security assessments to managed security services as we seek to address customers’ security issues. With 10 security operation centers staffed by security analysts, NTT Security operates efficiently through an integrated global service platform. Managed security services are supplied around the world and operated by skilled security analysts. Furthermore, our sophisticated managed security services are supplied around the world and operated efficiently through an integrated global service platform. With 10 security operation centers staffed by security analysts, NTT Security provides services that are flexibly adjusted to the characteristics of each region.

Cutting-Edge Solution Case Study: Industrial Control System Security Solutions

NTT Group has begun providing cutting-edge security solutions that are compatible with industrial control systems and IoT technologies, in response to the rising threats to cybersecurity pertaining to important infrastructure, factories, plants, and buildings automation systems spurred by the spread of the IoT. Looking ahead, we will assemble dedicated teams for supplying industrial control system security solutions around the world and operate efficiently through an integrated global service platform. Through our cutting-edge services, we supply services whose advanced capabilities ensure that the integrated provision of offerings spanning from security assessments to managed security services as we seek to address customers’ security issues.

Disaster Countermeasures

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

NTT Group has defined three key themes for disaster countermeasures – improving cybersecurity and network reliability, 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 black-out countermeasures for communications buildings and base stations, and are making communications buildings more disaster resistant. In addition, we are expanding the power supply arrangement of major telecommunications 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 and other emergency preparations and make the necessary emergency and critical communications as a public institution as designated by the Basic Act on Disaster Countermeasures.

In the fiscal year ended March 31, 2018, no serious telecommunications disruptions occurred at four telecommunications business companies (NTT East, NTT West, NTT Communications, and NTT DOCOMO), while service stability was maintained at 100.01%[3], under normal circumstances.

1) Number of disruptions that led to a stop of or below the quality of telecommunications services and that fulfill the following conditions.
2) Value services not reusable for emergency reports: Service impacted for more than two hours with more than 10,000 people affected.
3) Voice services not usable for emergency reports: Service impacted for more than one hour with more than 1,000,000 people affected.
4) Internet-related services (free): Service impacted for more than 12 hours with more than 1,000,000 people affected or service impacted for more than two hours with more than 100,000 people affected.
5) Other services: Service impacted for more than two hours with more than 10,000 people affected or service impacted by more than one hour with more than 1,000,000 people affected.

NTT Group’s Basic Policy on Disaster Countermeasures

Security of Critical Communications Systems

Cutting-edge security technologies such as honeypot decoy systems is integrated and utilized via our proprietary threat information databases. In addition, our sophisticated managed security services are supplied around the world and operated efficiently through an integrated global service platform. With 10 security operation centers staffed by security analysts in locations across the globe, NTT Security provides services that are flexibly adjusted to the characteristics of each region.

Support for Customers’ Post-Disaster Restoration of Operations and Business Continuity

NTT Group has continued to provide telecommunications services in Japan, which cannot be allowed to be interrupted in the event of a disaster, for over 100 years. We are leveraging our experience of reliability and the associated expertise accumulated over our history to develop a solution business for supporting customers in maintaining business continuity. We anticipate significant business opportunities to arise in this regard going forward.

Damage from natural disasters, such as heavy rains and more frequent typhoons, is becoming increasingly common due to recent climate change. 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. Many companies need to take measures to ensure that, if emergency situations such as disasters occur in the future, the organizations are able to continue important operations and restore order quickly. These measures are necessary to provide support to disaster victims and facilitate swift recovery.

For this reason, NTT Group strives to provide support to help customers restore operations and maintain business continuity after disasters. To this end, we are developing business continuity solution operations across a wide range of fields, including data center services and cloud services, an area where service is provided by NTT Communications and NTT DATA, and building and electricity technologies, an area where service is provided by NTT FACILITIES.

Support for Customers’ Post-Disaster Restoration of Operations and Business Continuity

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Disaster Countermeasures

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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 black-out countermeasures for communications buildings and base stations, and are making communications buildings more disaster resistant. In addition, we are expanding the power supply arrangement of major telecommunications 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 and other emergency preparations and make the necessary emergency and critical communications as a public institution as designated by the Basic Act on Disaster Countermeasures.

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1) Number of disruptions that led to a stop of or below the quality of telecommunications services and that fulfill the following conditions.
2) Value services not reusable for emergency reports: Service impacted for more than two hours with more than 30,000 people affected or service impacted for more than one hour with more than 100,000 people affected.
3) Voice services not usable for emergency reports: Service impacted for more than one hour with more than 1,000,000 people affected.
4) Internet-related services (free): Service impacted for more than 12 hours with more than 1,000,000 people affected or service impacted for more than two hours with more than 100,000 people affected.
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Damage from natural disasters, such as heavy rains and more frequent typhoons, is becoming increasingly common due to recent climate change. 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. Many companies need to take measures to ensure that, if emergency situations such as disasters occur in the future, the organizations are able to continue important operations and restore order quickly. These measures are necessary to provide support to disaster victims and facilitate swift recovery.

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NTT Group has continued to provide telecommunications services in Japan, which cannot be allowed to be interrupted in the event of a disaster, for over 100 years. We are leveraging our experience of reliability and the associated expertise accumulated over our history to develop a solution business for supporting customers in maintaining business continuity. We anticipate significant business opportunities to arise in this regard going forward.

Damage from natural disasters, such as heavy rains and more frequent typhoons, is becoming increasingly common due to recent climate change. 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. Many companies need to take measures to ensure that, if emergency situations such as disasters occur in the future, the organizations are able to continue important operations and restore order quickly. These measures are necessary to provide support to disaster victims and facilitate swift recovery.

For this reason, NTT Group strives to provide support to help customers restore operations and maintain business continuity after disasters. To this end, we are developing business continuity solution operations across a wide range of fields, including data center services and cloud services, an area where service is provided by NTT Communications and NTT DATA, and building and electricity technologies, an area where service is provided by NTT FACILITIES.
**NTT Group recognizes that respecting the diverse values and characteristics of its employees and enabling them to realize their full potential are crucial if the Group is to become “Your Value Partner” that customers continue to select by responding to rapidly changing markets and diversifying customer needs. We believe diversity has the power to give rise to revolutionary innovations. For this reason, we have positioned diversity and inclusion as important parts of our management strategies, and we are developing frameworks to encourage participation by diverse human resources accordingly. We also realize that, together with system reforms, ICT services are an effective means of facilitating diverse work styles. NTT Group has declared social issues by undertaking its own digital transformation and supporting the digital transformations and work style reforms of customers.**

To this end, we are endeavoring to establish workplaces at which a diverse range of people can actively participate, regardless of gender, age, race, nationality, ability, sexual orientation, or gender identity. In October 2007, the Diversity Management Office was established at NTT, the holding company, and by April 2008 diversity promotion supervisors were in place at Group companies. Shortly after the establishment of the Diversity Management Office and diversity promotion supervisors have worked together to assist employees’ workplace management efforts, provide career development support for our diversifying employees base, and conduct educational activities aimed at redefining the corporate culture. In addition, discussions on diversity within the Group are included in the training curriculum for senior management.

**Promotion of Diversity**

Aiming to become “Your Value Partner” that customers continue to select, NTT Group has positioned diversity and inclusion as important elements of its management strategies. We thereby aim to enhance our powers of innovation and corporate strengths by being receptive toward and utilizing diverse human resources.

**NTT Group endeavors to develop its organization and realize a society in which everyone can live and work based on who they are, regardless of their sexual orientation or gender identity. To this end, we are adopting various systems and cultivating workplace awareness. In April 2018, we further expanded the applicability of our systems and made all systems pertaining to same-sex partners applicable to all same-sex partners in relationships with employees that are similar to spousal relationships.**

In addition, we have held LGBT sensitivity seminars targeting CEOs, senior managers, and all managers of the holding company. The approximately 1,000 all managers of the holding company, and we hold annual diversity promotion conferences to create workplaces where diverse human resources can realize their full potential, irrespective of race or nationality, and to cultivating global leaders.

**We apply the same conditions to the hiring and promotion of non-Japanese employees as we do when hiring and promoting our Japanese employees, and we allow non-Japanese candidates to conduct their interviews or give presentations in English.**

If the 1,694 people hired by major NTT Group companies in Japan in the fiscal year ended March 31, 2018, 57 (3.4%) were non-Japanese. In addition, we implement the Global Leadership Development Program. Leadership Excellence and Accelerating Diversity (GLDP LEAD) to provide opportunities for senior managers in Japan and overseas to acquire leadership skills in higher-level positions.

**In Japan in the fiscal year ended March 31, 2018, 30 individuals participated, 10 of whom were Japanese and 20 of whom were non-Japanese.**

**Diversity Initiatives 1: Empowerment of Women in the Workforce**

To help empower women in the workforce, NTT Group is taking steps to nurture female leaders, support the balancing of work with child-rearing, and conduct other measures based on the circumstances at each Group company. As one initiative for guiding these efforts, we formulated and announced a plan to double the ratio of our female managers at the level of section manager or above to 6.0% by the fiscal year ending March 31, 2021. We have since introduced efforts to train and promote female employees to management positions in 38 NTT Group companies. In the fiscal year ended March 31, 2018, women occupied 5.1% of management positions and comprised 34.1% of new graduates joining NTT Group, representing smooth progress toward the accomplishment of this plan. Furthermore, NTT East, NTT West, NTT Communications, NTT DATA, and some Group companies have received the highest rating (Rank 3) in the “Eruboshi” certification mark program for recognizing excellent companies under the Act to Promote the Active Participation of Women in the Workplace, which took effect in April 2016.

NTT Group companies also provide career development training for female employees, which includes curricula entailing exchanges with other companies, and hold joint forums and training sessions with the aim of cultivating female managers. In 2018, 30 individuals participated, 10 of whom were Japanese and 20 of whom were non-Japanese.

**In Japan in the fiscal year ended March 31, 2018, 57 (3.4%) were non-Japanese. In addition, we implement the Global Leadership Development Program. Leadership Excellence and Accelerating Diversity (GLDP LEAD) to provide opportunities for senior managers in Japan and overseas to acquire leadership skills in higher-level positions.**

**This index is compiled with work by Pride to recognize initiatives by companies for supporting the LGBT community and other sexual minorities.**

**Diversity Initiatives 2: Employment of Non-Japanese Individuals and Cultivation of Global Leaders**

NTT Group develops a global business. We are therefore committed to creating workplaces where diverse human resources can realize their full potential, irrespective of race or nationality, and to cultivating global leaders.

We apply the same conditions to the hiring and promotion of non-Japanese employees as we do when hiring and promoting our Japanese employees, and we allow non-Japanese candidates to conduct their interviews or give presentations in English. The 1,694 people hired by major NTT Group companies in Japan in the fiscal year ended March 31, 2018, 57 (3.4%) were non-Japanese. In addition, we implement the Global Leadership Development Program. Leadership Excellence and Accelerating Diversity (GLDP LEAD) to provide opportunities for senior managers in Japan and overseas to acquire leadership skills in higher-level positions.

**In Japan in the fiscal year ended March 31, 2018, 30 individuals participated, 10 of whom were Japanese and 20 of whom were non-Japanese.**

**Diversity Initiatives 3: Consideration for Members of the LGBT Community and Other Sexual Minorities**

NTT Group endeavors to develop its organization and realize a society in which everyone can live and work based on who they are, regardless of their sexual orientation or gender identity. To this end, we are adopting various systems and cultivating workplace awareness. In April 2018, we further expanded the applicability of our systems and made all systems pertaining to spouses applicable to all same-sex partners in relationships with employees that are similar to spousal relationships.

In addition, we have held LGBT sensitivity seminars targeting all managers of the holding company. The approximately 1,000 participants in these seminars listened to lectures by members of the LGBT community and took part in role-playing, which has contributed to improving workplace awareness. As a result of these efforts, 13 NTT Group companies were recognized in PRIDE INDEX 2017, receiving the highest rating of gold.

ntt
Promotion of Work Style Reform Initiatives

Nippon Telegraph and Telephone Corporation seeks to create new value through innovation. In order to accomplish this goal, there is a strong need for all employees to break away from traditional work styles to exercise greater levels of independence and creativity. We are also aware of the importance of cultivating a deeper understanding of work-life management throughout workplaces and fostering a corporate culture that is accepting of diverse work styles. From this standpoint, in June 2017 NTT Group made a work style reform declaration, which represented the shared sentiments of all NTT Group managers and employees. We are currently pursuing improvements in overall work processes together with business partners while implementing work style and life habit reforms and advancing initiatives for helping employees maintain good physical and mental health and for encouraging self-transformation among individuals.

Work Style Reform Initiatives 1: Promotion of Use of Working-from-Home System

We are reforming the work styles of all NTT Group employees and actively promoting the use of the working-from-home system and other teleworking systems as well as flextime systems as an ICT provider. We thereby aim to realize more efficient and flexible work styles. NTT Group participated in the Telework Days event that took place in July 2018. During this event, more than 15 thousand employees from across various group companies utilized teleworking and other systems to experience flexible work styles. To reduce security risks pertaining to teleworking, we integrated NTT Group’s security platforms to provide a teleworking environment through a private cloud service.

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<th>Use of Working-from-Home System</th>
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<tr>
<td>Total</td>
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Work Style Reform Initiatives 2: Encouragement of Employees to Take Leave

We encourage employees to take extended periods of leave in conjunction with holidays, such as Golden Week, end-of-year and New Year holidays, and summer vacation. Other measures to facilitate leave acquisition include implementing more lenient guidelines for counting paid leave consumption in order to make it easier for employees to take so-called life plan leave for purposes such as childcare, long-term care of family members, or volunteer activities. As one facet of our efforts to promote proactive leave acquisition by managers and all other NTT Group employees, managers are implementing the Value-Up Friday campaign, which recommends that employees acquire at least a half-day of leave on one or more Fridays each month. In the fiscal year ended March 31, 2018, the average number of paid leave days taken at major NTT Group companies in Japan was 19.0 days, and the utilization ratio for paid leave was 85.0%.

Work Style Reform Initiatives 3: Promotion of Childcare and Family Care Support Systems

NTT Group supports its employees in raising children or providing long-term care to family members by offering a wide range of systems that can be used by both men and women. Ongoing improvements are implemented to these systems from the perspective of promoting the contributions of diverse human resources and based on employee needs and social expectations. In 2018, we have greatly expanded our lineup of welfare systems to create the NTT Benefit Package, a comprehensive lineup of childcare and family care support systems. For childcare support, we launched Childcare Concierge, a program that offers aid in searching for day care services based on employees’ addresses, while also bolstering our lineup of financial assistance and other support services.

Our efforts are not limited to enhancing the systems available within NTT Group. Seeking to help people struggling to balance their work with raising children across society, NTT Urban Development Group established Warna Kids, a company-operated day care facility. Through this facility, we aim companies looking to utilize diverse employees while supporting parents seeking to achieve a balance between work and child rearing.

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<th>Work Style Reform Declaration</th>
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<td>Improvements in Overall Work Processes</td>
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<td>Work from Home System</td>
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<td>Use of Working-from-Home System</td>
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<td>Male</td>
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<td>Female</td>
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* Data collected for NTT (non-consolidated)
Improvement of Procedures for Developing, Evaluating, and Assigning Human Resources

NTT Group coordinates procedures for developing, evaluating, and assigning human resources to create a workplace environment in which all employees can find motivation.

Human Resource Development

NTT Group is committed to establishing human resource development systems that enable all of its employees to make the most of their abilities through their work and deliver high value. Employees formulate their own career plans based on the special skills necessary for each job. Skills are then improved through the implementation of the plan-do-check-act (PDCA) cycle. At Group companies, we have taken steps to establish a variety of systems related to human resource development, such as instituting a framework for defining specialized fields in line with business characteristics and work details and certifying skills.

Support for Training to Improve Capabilities

In addition to group training and on-the-job training for enabling employees to gain necessary skills in their respective fields of business, we provide many other opportunities for employees who are eager to get ahead, including distance learning, e-learning, in-house certification of skill levels to evaluate the results of educational programs, and support for acquiring qualifications.

Furthermore, we actively support employee career development in various ways, including having superiors meet with their subordinates at the start of the year, mid-year, and year-end to discuss career plans and review performance, and providing management training to employees tapped for promotion. We also offer a training curriculum for cultivating experts in the security field in order to respond to the recent rise in security risks. To develop future management leaders, we have selected approximately 350 individuals from the executive manager and section manager levels to take part in a training curriculum meant to help participants develop leadership skills and engage in interpersonal exchanges. With an eye to the globalization of the Group’s business, we also send employees to study at overseas graduate schools or participate in overseas work experience programs in order to nurture personnel capable of performing in the global market.

Employee Evaluations

NTT Group operates an in-house qualification system that puts priority on performance and sets behavior and performance targets tailored to each qualification rank. Our human resource management systems are designed to encourage employees to think and act for themselves in the execution of their work duties through the steady and effective implementation of an evaluation process that incorporates everything from the setting of targets to the provision of feedback to employees.

Fair Personnel Evaluation System

Rather than having each company implement their own mechanisms for human resource management and development, we institute an all-inclusive system for managing employee assignment, skills development, evaluation, rating, and compensation, centered on a qualification system that indicates our expectations in terms of behavior and performance of each employee. Proper evaluation requires a sound understanding of the principles and content of our human resource management systems and appropriate execution of the subsequent processes of target setting, daily communication, evaluation, and performance reviews. To achieve these types of evaluations, we adhere to the following cycle. The evaluation system applies to 60% of NTT Group companies, including companies outside of Japan.

Human Resource Management and Salary Systems

In October 2014, we reconstructed our human resource management and salary systems. The new systems, which reflect the distinctive business characteristics of NTT Group, are designed to better reward employees who perform the roles and produce the results expected of them by introducing evaluation-based compensation and expanding results-based awards.

Employee Satisfaction

NTT Group regularly conducts surveys of employees and uses the results to improve working environments. Results of the survey conducted in the fiscal year ended March 31, 2018, showed the level of overall employee satisfaction at 5.00 points.

Turnover Rate

We collect data on the turnover rate at major NTT Group companies in Japan (including their affiliated companies). In the fiscal year ended March 31, 2018, the turnover rate was 6.4%. The average length of service was 19.18 years for male employees and 12.80 years for female employees.

* including employees retiring at the mandatory retirement age
Contributing to the Resolution of Environmental and Social Issues

Sustainable Growth Together with Stakeholders

NTT Group’s Basic Policy for Stakeholder Engagement

**Basic Policy**
With its ever-more global and complex value chain, NTT Group provides products and services to a diverse range of stakeholders across the globe. These stakeholders have a wide variety of needs and expectations regarding our operations. Stakeholder engagement serves as a means of understanding and taking into consideration the needs and expectations of our stakeholders in the way we conduct our business. With regard to environmental and social issues, in particular, incorporating stakeholder input to the greatest degree possible is a way of earning social trust, increasing competitiveness, and exercising accountability. Through appropriate stakeholder engagement, NTT Group strives to achieve sustainable growth together with its stakeholders. Of course, all engagement activities are conducted in accordance with relevant laws, regulations, and legal requirements.

**Shareholders and Investors**
Individual and institutional investors, including the shareholders and creditors of NTT Group

- **Examples of Engagement**
  - General Meetings of Shareholders, financial results announcements
  - Explanatory presentations for institutional investors
  - Explanatory presentations for individual investors
  - Publication of yearly reports (Annual Reports, etc.)

- **Reasons for Engagement**
  - By communicating with shareholders and other investors, we provide information necessary for investment decisions and help ensure that the Group is properly evaluated. We also utilize input received through interactions in Group management.

**Employees (Employees, Their Families, and Retired Employees)**
Employees who work at NTT Group, their families, and retired employees who support NTT Group’s CSR ideals

- **Examples of Engagement**
  - Conducting of employee satisfaction surveys
  - Communication between management and employees
  - Group-wide Corporate Ethics Help Line
  - CSR conferences

- **Reasons for Engagement**
  - By creating safe and healthy workplaces and providing career support for employees, we hope to enable them to realize their full potential and to go about their work while remaining highly aware of CSR.

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

- **Examples of Engagement**
  - Support and collaboration through social contribution activities
  - Collaboration with local community residents when constructing or installing equipment
  - Donations, sponsorship, and other support

- **Reasons for Engagement**
  - Through engagement, we strive to contribute to the development of local communities and also to understand the issues faced by communities in order to make social contributions and implement disaster countermeasures.

**Business Partners**
Business partners who provide a range of cooperation in the provision of NTT Group services

- **Examples of Engagement**
  - Creation of inquiry forms
  - Disclosures of procurement policies and guidelines, etc.
  - Surveys for suppliers
  - Explanatory presentations for suppliers

- **Reasons for Engagement**
  - Engagement with business partners helps us procure products that take into account the environment, human rights, and other issues and build fair partnerships to execute CSR and continue growing together with our business partners.

**ICT Companies and Industry Associations**
Other ICT companies and people in industry associations who are striving to develop information and telecommunications

- **Examples of Engagement**
  - Entry into industry associations
  - Participation in committees, etc.

- **Reasons for Engagement**
  - Through discussions on the direction and initiatives for the information and telecommunications industry, we will integrate the entire industry and contribute to society through telecommunications development and advancement.

**Central Government and Administrative Agencies**
Central and local governments that make policy decisions on information and telecommunications, employment and the economy, the environment, and other issues

- **Examples of Engagement**
  - Compliance with laws and regulations
  - Suggestions for government policy

- **Reasons for Engagement**
  - We aim to conduct appropriate business activities while adhering to the policies of the central government and local governments and to help resolve the social issues faced by the central government and local governments.

**NTT Group’s Primary Approach to Major Stakeholders**
NTT Group conducts business in Japan and overseas. To increase business sustainability, NTT Group operates its business in an integrated, Groupwide manner while focusing on the expectations and needs of its various stakeholders.

**Customers (Enterprises and Individuals)**
All customers, both enterprise and individual, who use services provided by NTT Group

- **Examples of Engagement**
  - Venues for customer inquiries
  - Conducting of customer satisfaction surveys
  - Utilization of websites and social media
  - Publication of yearly reports (Annual Reports, etc.)

- **Reasons for Engagement**
  - NTT Group endeavors to understand customer needs and perspectives in order to provide customers with higher-quality products and services and thereby increase customer satisfaction while at the same time striving to become a “Value Partner” to customers.