

# Climate Change

## Our Approach

Toward the realization of carbon neutrality by 2050, NEC is expected to fulfill an increasingly large number of roles and responsibilities. In response, NEC has positioned climate change (decarbonization) as a core response to environmental issues and one of the Company's priority management themes from an ESG perspective—materiality. Based on the NEC Environmental Policy and the Course of Action for Climate Change Toward 2050, our climate change countermeasures are providing value both in terms of mitigation and adaptation. In 2021, NEC drafted NEC Environmental Targets 2030 and declared an objective to achieve net zero emissions of CO<sub>2</sub> (Scope 1, Scope 2, and Scope 3) in its supply chain by 2050. In 2022, NEC formulated a climate transition plan and expanded its strategic activities through business and initiatives to reduce its environmental burden by setting more targets toward a decarbonized society.

NEC also reports on its CO<sub>2</sub> emission reduction activities based on Japan's Act on the Rational Use of Energy and Act on Promotion of Global Warming Countermeasures.

## Disclosure in Line with the TCFD\*

In 2018, NEC announced its endorsement of the TCFD. Pursuant with the TCFD's recommendations, we are disclosing climate-related risks and opportunities while projecting and managing their financial effect on our businesses going forward.

\* Task Force on Climate-related Financial Disclosures



## Outline of Initiatives Based on TCFD Recommendations

Item	Description	Related pages
Governance	<ul style="list-style-type: none"> <li>Report to the Board of Directors important issues related to the environment, including climate change</li> <li>Based on environmental management rules, clarify roles, responsibilities, and authorities of organizations related to promoting environmental management</li> </ul>	<ul style="list-style-type: none"> <li>&gt; Framework (page 36)</li> <li>&gt; Environment-related reports for main committees (page 41)</li> </ul>
Strategy	<ul style="list-style-type: none"> <li>Set key material issues for management of climate change</li> <li>Examine countermeasures and identify risks and opportunities over the short, medium, and long term caused by climate change, based on multiple scenarios</li> <li>Mitigation (decarbonization) leads to business opportunities/Develop appropriate solutions and expand provision</li> <li>Implement measures toward decarbonization, manage outcomes</li> </ul>	<ul style="list-style-type: none"> <li>&gt; Climate transition plan (page 16)</li> <li>&gt; Scenario analysis (pages 34–35)</li> <li>&gt; Risks and opportunities (page 44)</li> <li>&gt; Introduction of internal carbon pricing (page 44)</li> </ul>
Risk management	<ul style="list-style-type: none"> <li>Assess risks under Environment-oriented Management Implementation Framework and with Risk Control &amp; Compliance Committee</li> <li>Advance activities to address potential and materialized risks, understand results and issues, and examine future plans to reduce and prevent risks</li> </ul>	<ul style="list-style-type: none"> <li>&gt; Climate transition plan (page 16)</li> <li>&gt; Systems (page 36)</li> <li>&gt; Environmental risk (page 37)</li> <li>&gt; Risks and opportunities (page 44)</li> <li>&gt; Compliance and risk management (pages 81–83)</li> </ul>
Indicators and results	<p>2050 targets</p> <ul style="list-style-type: none"> <li>Net zero CO<sub>2</sub> emissions (Scope 1, 2, and 3)</li> <li>100% renewable energy</li> </ul> <p>2030 targets</p> <ul style="list-style-type: none"> <li>Setting of SBT 1.5°C Scope 1 and 2: 55% reduction (compared with fiscal 2018); Scope 3 (Categories 1, 3, and 11): 33% reduction (compared with fiscal 2018)</li> </ul>	<ul style="list-style-type: none"> <li>&gt; Targets (pages 29–30)</li> <li>&gt; Greenhouse gas emissions (page 31)</li> <li>&gt; Planning and introduction of renewable energy (page 31)</li> <li>&gt; Targets and results (page 45)</li> <li>&gt; Data compilation (page 94)</li> </ul>

## Environment-related Reports for Main Committees

Since climate change is an important materiality, committees attended by managers deliberate, supervise and report on initiatives and risks related to the environment, including climate change. In fiscal 2022, in addition to engaging in dialogue with stakeholders, NEC set up the Sustainability Advisory Committee to broaden discussions between management and outside experts.

### Key Discussions, Audits, and Reports

Forum		Fiscal year	Frequency	Key discussions, audits, and reports
Board of Directors		FY2020	One time	May: Sustainability promotion policy
		FY2021	Four times	June: Report on sustainability promotion activities December: Environmental perspectives in next mid-term management plan February: Report on sustainability promotion activities March: NEC Eco Action Plan 2025 (including investment and spending plans)
		FY2022	Four times	May: Report on sustainability promotion activities December: Participation in BA1.5°C, report on ESG briefings January: NEC's initiatives to become carbon neutrality February: Environmental risks (part of Companywide risk countermeasure evaluations)
Dialogue between management and outside experts	Dialogue with stakeholders	FY2020	One time	Response to environmental issues centered on climate change
		FY2021	One time	What initiatives should NEC take now to create environmentally beneficial businesses
	Sustainability Advisory Committee	FY2022	One time	Understanding global trends related to climate change and NEC's risks and opportunities

## Scenario Analysis

### NEC's Vision for 2030/2050: Our Future Lifestyles and Local Governments

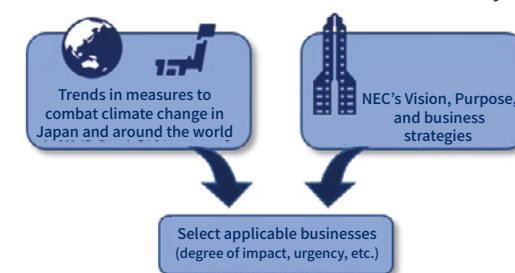
NEC believes that a company cannot continue to exist and grow without analyzing scenarios for climate change. Among recent global risks, climate change risks are numerous and could have an extremely large impact on not only corporate business activities and earnings but also our livelihoods. No matter what future is in store for us, based on multiple scenarios, NEC will examine steps that should be taken to realize a safe and secure society while surviving and growing itself. In 2019, we conducted a Companywide scenario analysis, and in two different scenarios, we analyzed potential changes in risks and opportunities for NEC.

### Our Future Lifestyles and Local Governments—A focal point in 2021

The NEC Group engages in a variety of businesses globally, from the floor of the ocean to the far reaches of outer space. The risks and opportunities related to climate change differ by business field, so talking about future risks and opportunities related to climate change for NEC as a whole is not necessarily the best approach. In fiscal 2022, NEC conducted a scenario analysis to shine the light on how our lifestyles and local governments will change in the future, as they pertain to the businesses of NEC and the state of measures to combat climate change in Japan and around the world.

In light of the Paris Agreement, governments around the world have drawn up policies that target the 1.5°C scenario. Japan has declared a goal of reducing GHG emissions by 46% by 2030 compared with the level in fiscal 2014, on the path to becoming carbon neutrality by 2050, and this has encouraged the national and local governments to move more quickly toward decarbonization. For a long time, NEC has been involved in many projects to build core systems for government agencies and government services, and NEC can lend its strengths in digital technologies in this field because it also has experience in smart city projects. Under the NEC 2030VISION, we described a future society in terms of the environment, local communities and livelihoods, all of which are close to people's lifestyles. In fiscal 2022, our scenario analysis focused on the state of regions, including the private sector, while concentrating our analysis on local governments.

### Selection of Business Domains for Scenario Analysis



### Examination Steps



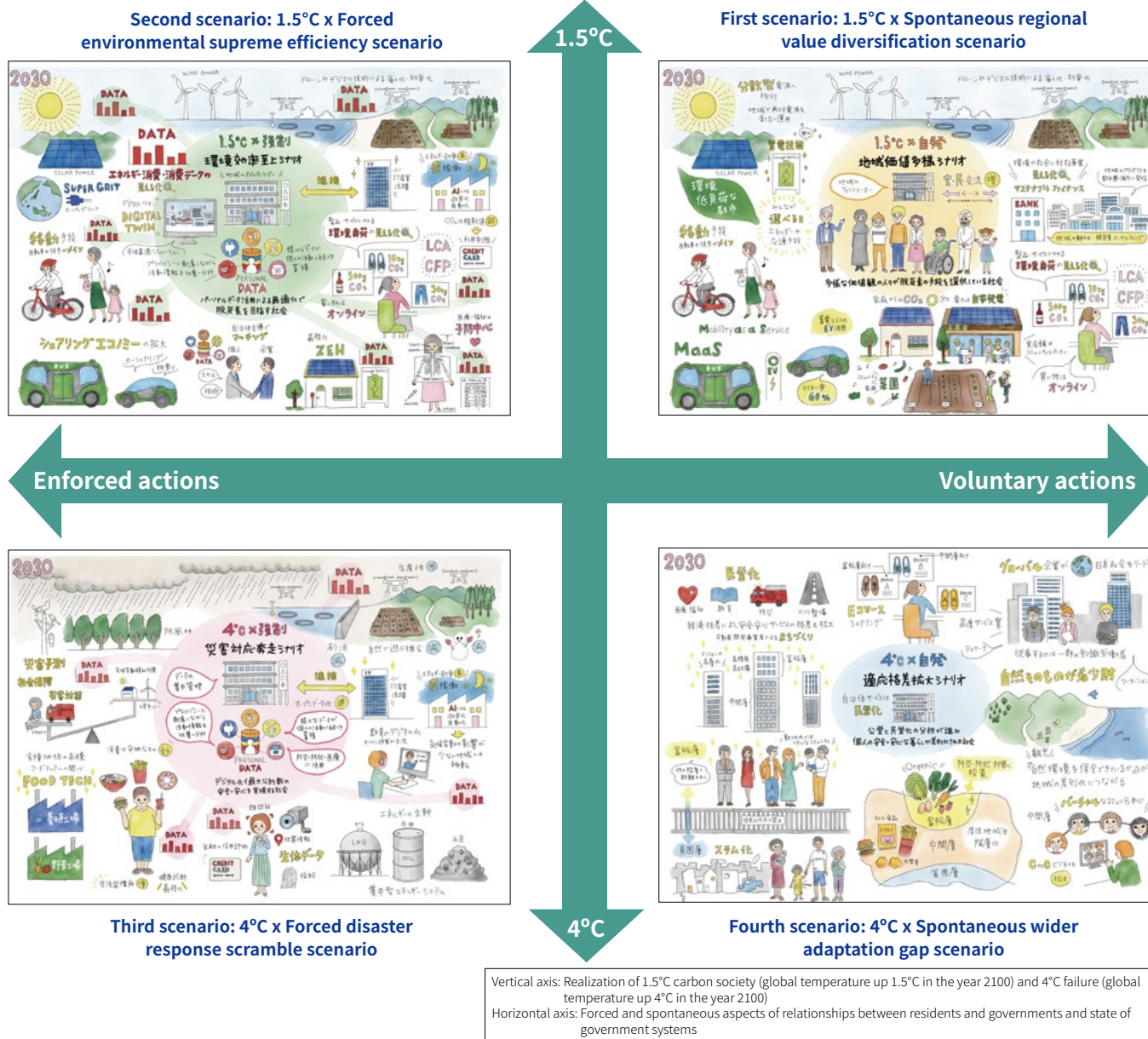
## Results of Scenario Analysis (2030): World Envisioned by NEC in 2030 and 2050

### Our Future Lifestyles and Local Governments

NEC created scenarios for 2030 and 2050 to envision the impact of climate change on the future of regions and local governments (core cities and small-scale cities). We evaluated four scenarios, with the 1.5°C and 4°C scenarios in the transition to a carbon-free society on the vertical axis, and the relationship of citizens with their governments and the state of government systems, separated by enforced actions and voluntary actions, on the horizontal axis. In each scenario, we used some items related to climate change and decarbonization, with assumptions for 2050 in the following scenarios.

### Referenced Published Scenarios

1.5°C Scenario	4°C Scenario
<ul style="list-style-type: none"> <li>• IPCC AR6 WGI SSP1-1.9</li> <li>• IPCC 1.5°C Special Report</li> <li>• IPCC AR5 RCP2.6</li> <li>• IEA World Energy Outlook 2021 Net Zero Emissions by 2050 Scenario (NZE)</li> <li>• National Institute for Environmental Studies, Japan, Version SSP SSP1: Sustainable, SSP5: Reliance on Fossil Fuels</li> </ul>	<ul style="list-style-type: none"> <li>• IPCC AR6 WGI SSP1-8.5</li> <li>• IPCC AR5 RCP8.5</li> <li>• IEA World Energy Outlook 2021 Stated Policies Scenario (STEPS)</li> <li>• National Institute for Environmental Studies, Japan, Version SSP SSP3: Regional Divisions, SSP4: Disparities</li> </ul>





## Risks and Opportunities Based on Scenario Analysis

Section	Summary	Key words	Risks	Opportunities	2030 NEC Business Examples
<b>First scenario: 1.5°C x Spontaneous</b>	In this scenario, unique local government services and ordinances are decided based on regional resources and cultures, with companies and communities leading regional revitalization and efforts to decarbonize. Residents and social populations increase in regions that successfully create cities with low environmental loads, and the revitalization of industry leads to sounder government finances. However, local governments that do not take these initiatives will see an outflow of population and industry, creating regional disparities.	Inter-regional competition, regional recycling economy, decentralization, diversity, zero emissions from households, spontaneous actions to reduce emissions	<ul style="list-style-type: none"> <li>• Emergence of and increase in rivals and new entrants</li> <li>• Market monopolies and oligopolies</li> <li>• Increase in information security risks</li> </ul>	<ul style="list-style-type: none"> <li>• Stronger needs for regional energy management systems (local production for local consumption)</li> <li>• Increase in regions promoting smart cities/greater needs to use urban OS</li> <li>• Increase in needs for differentiation of each region</li> <li>• Increase in sustainable incentive usage</li> </ul>	<ul style="list-style-type: none"> <li>• Energy x MaaS business</li> <li>• Service for discovering attractive qualities of regions</li> <li>• Sustainable incentives that promote changes in behavior</li> </ul>
<b>Second scenario: 1.5°C x Forced</b>	In this scenario, there is unified awareness of climate change, and powerful government policies to counter climate change are acceptable. Governments are allowed to gather and use the necessary data, and take a lead in decision-making to optimize resources in each region. It becomes common to share things and restrict consumption, and policies are put into place for more economical living and mobility. Government agencies use private-sector resources and begin to develop comprehensive data-driven services.	Uniformity, government-led reengineering of society, wide area collaboration, data usage, restrictions on emissions of individuals, zero emissions from households	<ul style="list-style-type: none"> <li>• Decline in number of local government entities</li> <li>• Market oligopolization</li> <li>• Emergence of and increase in new entrants</li> <li>• Increase in information security risks</li> <li>• Emergence and increase in ethical and human rights problems</li> </ul>	<ul style="list-style-type: none"> <li>• Increase in regions promoting smart cities/greater needs to use urban OS</li> <li>• Increase in needs to manage and use personal data</li> <li>• Increase in needs to visualize and utilize CO<sub>2</sub> data</li> </ul>	<ul style="list-style-type: none"> <li>• Resource aggregation</li> <li>• Automated environmental load data collection and analysis system</li> <li>• Comprehensive data-sharing platform</li> </ul>
<b>Third scenario: 4°C x Forced</b>	In this scenario, governments increase measures to prevent disasters as the transition to a carbon-free society is derailed. Government control strengthens; cities, towns, and villages merge together; and administrative districts become more rigid in rezoning. Communities begin to realign, and unseen discrimination among citizens and surveillance becomes more prevalent. Primary industry and tourism are impacted by climate change, industrial competitiveness declines, and unemployment rates increase. Digitalization progresses for healthcare, disaster forecasting, and education.	Organize districts prone to natural disasters, investment in reconnaissance measures, streamlining of local governments, fiscal troubles at local governments, decline in tourism industry, surveillance society	<ul style="list-style-type: none"> <li>• Decline in number of local government entities</li> <li>• Emergence of and increase in rivals and new entrants</li> <li>• Privacy ignorance and resistance to forced collection of personal data</li> <li>• Dysfunction of business bases due to natural disasters</li> </ul>	<ul style="list-style-type: none"> <li>• Increase in government measures to prevent disasters</li> <li>• Increase in needs for wide-area collaboration and review of administrative districts</li> <li>• Increase in government needs to diagnose aging infrastructure</li> <li>• Increase in needs for standardized platform services in wide-area collaboration</li> </ul>	<ul style="list-style-type: none"> <li>• Urban planning with digital twins/simulations</li> <li>• Infrastructure monitoring and diagnosis services</li> <li>• Remote management and control services for disaster prevention</li> <li>• Biometric identification services (verify survivors in emergency situations, purchase essential items)</li> </ul>
<b>Fourth scenario: 4°C x Spontaneous</b>	In this scenario, temperatures increase and disasters occur, but governments have trouble responding, and selective concentration begins for much of infrastructure and services, while privatization progresses. Disparities and stratification increase between people who have and people who cannot maintain current comforts, such as spending, education, healthcare/welfare, and living environments. People and companies relocate to areas with lower risks of natural disasters. Regions that failed to privatize and entice private-sector companies experience an outflow of population and a worsening tax base, threatening their existence.	Privatization of government services, widening disparities in incomes and regions, hierarchical communities, digital and virtual spaces, insolvency in social infrastructure	<ul style="list-style-type: none"> <li>• Decline in number of local government entities</li> <li>• Emergence of and increase in rivals and new entrants</li> <li>• Dysfunction of business bases due to natural disasters</li> </ul>	<ul style="list-style-type: none"> <li>• Privatization of infrastructure and public services</li> <li>• Increase in needs to rebuild urban infrastructure</li> <li>• Increase in needs from private sector for disaster prevention and disaster prediction</li> <li>• Increase in heatstroke countermeasures, acceleration in digital healthcare</li> </ul>	<ul style="list-style-type: none"> <li>• Customizable weather forecast systems and apps</li> <li>• Resilient communications infrastructure services</li> <li>• Health management services for heatstroke</li> </ul>



## Risks and Opportunities for All of NEC

NEC identifies and classifies impacts arising from climate change as short-term, medium-term, and long-term risks and opportunities. Under the examination process, NEC evaluates the future impact of climate change based on scenarios after existing businesses are reorganized from a climate change perspective. At the same time, we confirm assets for addressing risks and taking advantage of opportunities. Major risks and opportunities are reflected in mid-term management plans.

Risks	Description	Countermeasures
Transition risk	Risks from carbon pricing <ul style="list-style-type: none"> <li>Assuming all of NEC's Scope 1 and Scope 2 emissions (about 210,000 tons) when SBTs are achieved in fiscal 2031 are subject to carbon pricing (\$100/t-CO<sub>2</sub>), costs will increase by ¥2.3 billion (assuming ¥110/\$)</li> <li>Assuming impact from higher costs in upstream and downstream supply chains</li> </ul>	Increase use of renewable energy and achieve thorough gains in efficiency to realize each target for SBTs (2030 and zero CO <sub>2</sub> emissions [2050]) (ongoing efforts in supplier engagement and to improve energy conservation performance of products)
Physical risk	Possible disruption of the supply chain due to weather-related disasters (floods, landslides, water shortages, etc.), long-term outages of lifelines such as electricity, gas, and water	Risk assessment of the entire supply chain, BCP measures (installing flood gates and moving power supply equipment) with provisions for weather-related disasters, such as river flooding, and strengthening of power generation in data centers

Opportunities	Description	Creation and expansion of opportunities
Value toward transition risk countermeasures (mitigation)	Development of low-emission transport infrastructure	Logistics visualization and route optimization driven by AI and IoT; EV/PHV charging cloud
	Support for expanding renewable energy use	Virtual power plants, management of power supply and demand, commercialized resource aggregation (RA) for the supply and demand adjustment market, xEMS, etc.
	Support for reducing energy use	Process reforms using DX initiatives (work automation, smart factories, supply and demand optimization), products, and technologies that help save data center energy (phase change cooling, new refrigerants, etc.)
Value toward physical risk countermeasures (adaptation)	Preparation for increase in weather-related disasters	Pre-disaster detection using AI, IoT, image analysis, flood simulation, evacuation support, etc.
	Preparation for increase in forest fires	Forest fire monitoring and quick response systems, disaster monitoring by satellite, etc.
	Preparation for changes in areas suitable for agricultural production	Simulations that forecast effects and changes in agriculture, agriculture-oriented ICT solutions, etc.
	Preparation for the spread of infection	Infectious disease countermeasure solutions, preparation of a logistics information management platform in the event of a global infectious disease, remote work, telemedicine support, education clouds, etc.

## Introduction of Internal Carbon Pricing

With the aim of improving energy efficiency and promoting the introduction of low-carbon facilities and equipment, we have set an internal carbon price. This price allows us to convert the CO<sub>2</sub> emission reductions that would result from a given capital investment into a monetary value, which we can then use as a reference when making investment decisions.

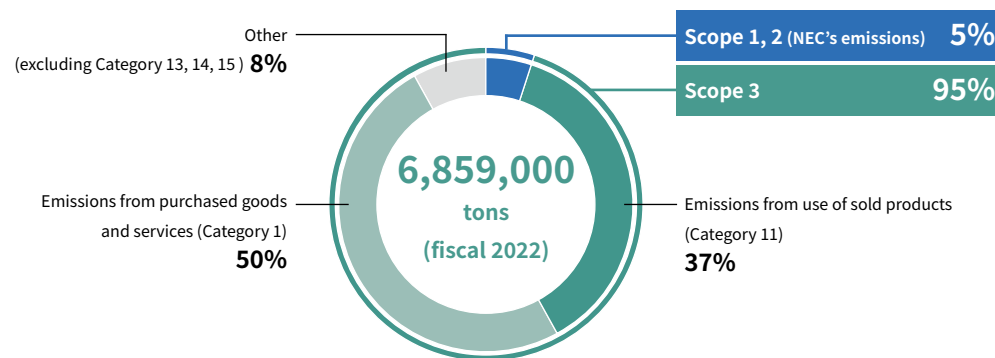
Furthermore, the aforementioned carbon pricing mechanism will drive our decarbonization activities going forward and reduce the risk associated with potential increases in carbon taxes and emissions trading in a carbon-free society of the future.

## Greenhouse Gas Emissions: Targets and Results

Emissions in fiscal 2022 were as follows. All figures have been certified by third parties.

Item	Target	Results
Scope 1 and 2	16.8% reduction (compared with fiscal 2018)	31.1% reduction (compared with fiscal 2018)
Scope 3	—	26.6% reduction (compared with fiscal 2018)

### Greenhouse Gas Emissions, Scope 1 to 3



Coverage: NEC Group

### Breakdown of Scope 1, 2, and 3 Greenhouse Gas Emissions

Unit: Kilotons  
Emissions

Scope 1	22
Scope 2	302
Scope 3	6,535
Category 1 Purchased goods and services	3,439
Category 2 Capital goods	152
Category 3 Fuel- and energy-related activities not included in Scope 1 or Scope 2	56
Category 4 Upstream transportation and distribution	353
Category 5 Waste generated in operations	9
Category 6 Business travel	15
Category 7 Employee commuting	4
Category 8 Upstream leased assets	2
Category 9 Downstream transportation and distribution	0.01
Category 10 Processing of sold products	0.2
Category 11 Use of sold products	2,504
Category 12 End-of-life treatment of sold products	0.3
Category 13 Downstream leased assets	—
Category 14 Franchises	—
Category 15 Investments	—

> Third-party assurance (page 101)

> List of companies covered (page 95)