

Environmental

Environmental

Advancing Our Environmental Vision and Long-Term Environmental Targets

Environmental Governance

Achieving a Decarbonized Society

➤ **Efforts to Achieve a Decarbonized Society**

Contributing to a Decarbonized Society Through the Decarbonization Business

Contributing to a Decarbonized Society at Business Sites (Factories and Offices)

Climate-related Financial Information Disclosure (Based on TCFD Recommendations)

Achieving a Resource-Efficient Society

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Achieving a Decarbonized Society

Efforts to Achieve a Decarbonized Society

Approach

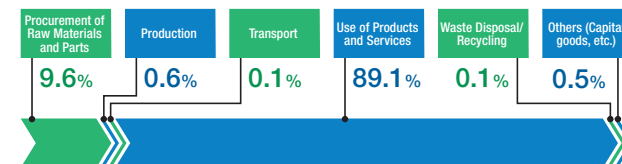
Materiality

GRI 2-13/2-24/3-3

As the response to climate change becomes more of a global trend, the roles required of governments and companies continues to change in dramatic ways. At the 27th Conference of the Parties (COP27) to the United Nations Framework Convention on Climate Change in Sharm el-Sheikh, Egypt, in November 2022, participants called for effective and equitable climate change action, along with further increases in greenhouse gas reduction targets by nation.

To help build a decarbonized society, Hitachi has set the target and strive to achieve carbon neutrality throughout the value chain by fiscal 2050 as part of the long-term environmental targets we call Hitachi Environmental Innovation 2050. Under GX for CORE, one of the two pillars of our green strategy, we accelerate measures to reduce our own CO₂ emissions to achieve carbon neutrality by fiscal 2030 at our business sites (factories and offices). Under GX for GROWTH, we reduce emissions related to the use of products and services sold, which account for a large portion of CO₂ emissions in Hitachi's value chain. Since improvement in this area is the key to reducing CO₂ emissions in the value chain, we contribute to customer decarbonization and that of society through products and services having with low environmental impact. Hitachi will continue to grow businesses that contribute to green policies and to the decarbonization of society as a whole through collaborative creation with stakeholders.

▶ Ratio of CO₂ Emissions at Each Stage of Hitachi Value Chain in Fiscal 2022



* Percentages may fluctuate due to changes in our business portfolios

Note: Hitachi normally refers to suppliers (including suppliers, vendors or providers) as *procurement partners* who build business together on an equal footing.

Environmental Strategy for Achieving a Decarbonized Society

Targets

Activities

Initiatives for Achieving a Decarbonized Society

(1) Achieve carbon neutrality at our own business sites and production activities (by fiscal 2030)

- Introduce energy-saving and renewable energy equipment.
- Procure 100% non-fossil electricity across all business sites.

(2) Achieve the world's highest level of energy conservation in products

- Achieve energy conservation by developing products that take the environment into consideration from the design stage.

(3) Work with procurement partners toward a decarbonized society

- Distributed Sustainable Procurement Guidelines and Green Procurement Guidelines, requesting all procurement partners to set greenhouse gas reduction targets
- Based on the results of a questionnaire survey on climate change-related initiatives among environmental focus partners in FY2021, we selected 21 new environmental advanced partners with whom to hold discussions in FY2022.

(4) Support businesses that contribute to the carbon neutrality of society as a whole

- Power grids business to support the expansion of renewable energy.
- Provision of energy-efficient high-speed trains and storage battery hybrid trains for the spread of carbon-free mobility.
- Provide Lumada solutions that support the realization of a decarbonized society through digitalization.

(5) Develop technologies to realize the transition to a decarbonized society

- Development of high-efficiency products, energy management systems and hydrogen-related technologies.

Green Strategy

- GX for CORE: Achieve carbon neutrality at business sites (factories and offices) by FY2030. Reduce CO₂ emissions by 50% compared with fiscal 2010 levels by fiscal 2030 and achieve carbon neutrality across the entire value chain by fiscal 2050
- GX for GROWTH: Contribute to the decarbonization of customers and society through products and services having with low environmental impact (CO₂ avoided emissions: 100 million metric tons in fiscal 2024)

■ P.029 Green Strategy

■ P.036 Expanding the Decarbonization Business

■ P.039 CO₂ Emission Reduction at Business Sites (Factories and Offices) and Hitachi Carbon Neutrality 2030

■ P.108 Responsible Procurement

■ Hitachi Integrated report 2023 / Green Strategy (P.024)

<https://www.hitachi.com/IR-e/library/integrated/>

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GRI 305-4/305-5

Expanding the Decarbonization Business

Approach

Activities

Hitachi provides value to customers and society, contributing to a decarbonized society through businesses that reduce CO₂ emissions and collaborative creation with customers. Hitachi operates under three business domains: Green Energy and Mobility, Digital Systems and Services, and Connective Industries. Among these domains, we are growing the following businesses, which contribute to decarbonization.

- Businesses that help to accelerate the energy shift aimed at realizing decarbonization, and that provide safe, comfortable, and clean mobility (Green Energy and Mobility)
- Businesses that help to reduce CO₂ emissions by using cutting-edge digital technologies to improve the efficiency of systems that underpin society (Digital Systems and Services)
- Businesses that help to decarbonize industries and cities by creating a resilient supply chain (Connective Industries)

Examples of Decarbonization Business: A Hitachi Focus

Green Energy & Mobility 	Power grid solutions	<ul style="list-style-type: none"> · Contribution to the mass adoption of renewable energy through HVDC*1 · Enhancing efficiency of transformers, high voltage products, and power transmission/distribution
	Grid automation	<ul style="list-style-type: none"> · Advancing smart grid control, etc.
	Power generation	<ul style="list-style-type: none"> · Widespread use of power generation systems that utilize non-fossil energy sources such as wind and nuclear power
	Railway business	<ul style="list-style-type: none"> · Enhancing energy-saving features of rolling stock · Developing smart operating systems · Enhancing maintenance service efficiency through rolling stock monitoring
Digital Systems & Services 	Finance and public oriented solutions	<ul style="list-style-type: none"> · Promoting digital solutions
	Data centers	<ul style="list-style-type: none"> · Developing smart data centers
	Servers/storage	<ul style="list-style-type: none"> · Enhancing energy-saving features of servers and storage
Connective Industries 	Smart logistics	<ul style="list-style-type: none"> · Improving energy-saving features through fully IT-enhanced logistics
	Factory automation	<ul style="list-style-type: none"> · Enhancing energy efficiency through shorter lead times
	Water business	<ul style="list-style-type: none"> · Enhancing efficiency of water and sewage systems
	Industrial products	<ul style="list-style-type: none"> · Enhancing efficiency of industrial products · Electrification of fossil-fuel equipment
	Smart cities	<ul style="list-style-type: none"> · Reducing CO₂ through comprehensive urban energy management solutions
	Home appliances	<ul style="list-style-type: none"> · Enhancing energy efficiency of home appliances · Promoting connected home appliances
	Smart therapies	<ul style="list-style-type: none"> · Enhancing energy-saving features of medical devices
Elevators	<ul style="list-style-type: none"> · Enhancing energy-saving features of elevators and escalators through replacement · Enhancing energy efficiency through total building solutions 	

*1 HVDC: High Voltage Direct Current

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CO₂ Emissions Reduction as Avoided Emissions

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Hitachi calculates the contribution to decarbonization through collaborative creation with customers as CO₂ avoided emissions. We convert the amount of the contribution to customer decarbonization via Hitachi products and services into CO₂ emissions. We expect an average 126.1 million metric tons of CO₂ avoided emissions per year during the Mid-term Management Plan 2024, compared to our original target of approximately 100 million metric tons per year in fiscal 2024.

Hitachi calculates CO₂ avoided emissions based on a comparison of customer CO₂ emissions from the use of Hitachi products and services during the fiscal year in question with emissions from Hitachi products and services during the base year. In principle, the base year for this calculation is fiscal 2013*1.

*1 In accordance with the base year of Japan's national CO₂ reduction target. For the consolidated energy-related company, we set fiscal 2020 as the base year based on the year the company joined the Hitachi Group.

Hitachi contributes to the reduction of customer CO₂ emissions mainly in the following three areas:

(1) Contribution via conversion to non-fossil energy

Contribution by providing key components for the introduction of non-fossil energy including renewable energy, such as HVDC

(2) Contribution via energy conservation

Contribution by providing energy-saving features through the optimization of highly efficient products and controls, such as high-efficiency industrial equipment

(3) Contribution via electrification

Contribution through the electrification of products currently using fossil energy, including the electrification of industrial equipment

The World Business Council for Sustainable Development issued guidance in March 2023 on avoided emissions. In Japan, the GX League*2 is considering the use of avoided emissions in relation to disclosures and the assessment of climate-related opportunities. A unified guide on specific calculation methods for products and services is under discussion, and Hitachi is participating in these discussions.

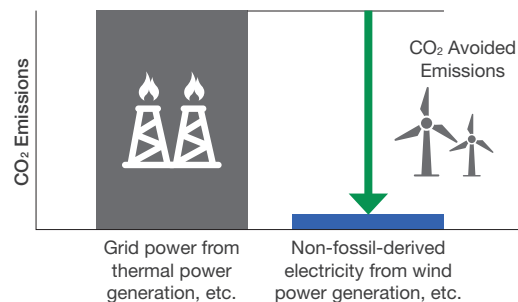
*2 A place where companies aiming to achieve sustainable growth with a view to becoming carbon neutral by 2050 and coming social changes collaborate with companies engaged in similar initiatives, as well as entities from across industry, government, and academia.

Calculating CO₂ Emissions Reduction as Avoided Emissions

① Conversion to Non-Fossil Energy

- We calculate the amount of CO₂ emissions reduced by using non-fossil energy sources compared to electricity supplied from the grid

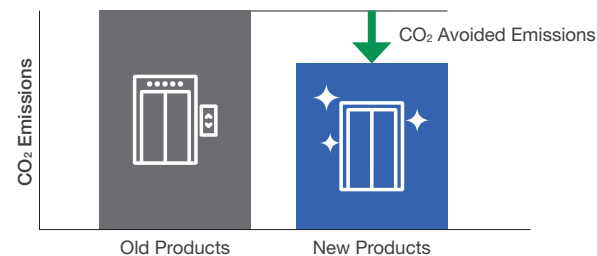
Examples: HVDC, wind turbines, etc.



② Energy savings

- We calculate the amount of CO₂ emissions reduced by improving energy efficiency compared to products and services with equivalent functions

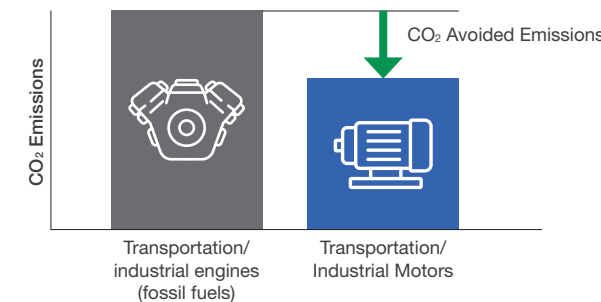
Examples: Compressors, elevators, etc.



③ Electrification

- We calculate the amount of CO₂ emission reductions compared to products and services before electrification

Example: Electrification of industrial equipment



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Improving the Environmental Performance of Products and Services Through Eco-Design

System	Activities	Materiality
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For all products and services involving a design process, Hitachi promotes eco-designs by applying our Environmentally Conscious Design Assessments to steadily improve environmental performance throughout the Group. This assessment identifies a total of 30 environmental impact categories that affect climate change, resource depletion, and ecosystem degradation at each stage of the life cycle of products and services. In this way, we assess the reduction of environmental impact from business activities across multiple perspectives.

Initiatives for Improving Environmental Performance of Products and Services

- Promoting environmentally conscious processes: In accordance with the IEC 62430*1 criteria, promote environmentally conscious processes in designing and developing products and services, including by meeting environmental regulatory requirements and ascertaining the environment-related needs of our stakeholders within our existing management system.
- Implementing Life Cycle Assessments (LCAs): For our main, priority products, quantitatively evaluate their global environmental burden in such areas as the consumption of mineral resources, fossil fuels, and water resources, as well as their impact on climate change and air pollution, disclose the results to our stakeholders, and utilize them in improving the design of next-generation products.

*1 IEC62430: The standard developed by the International Electrotechnical Commission (IEC) concerning environmentally conscious design for electrical and electronic products.

 P.051 Approach to Transitioning to a Circular Economy/ Innovation in Product Design

Reduction of Product and Service CO₂ Emissions During Use

Approach	Activities
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CO₂ emissions related to the use of products and services account for the largest proportion of emissions in our value chain. To reduce these emissions, Hitachi sets reduction rate targets per unit based on fiscal 2010 levels for each product or service targeted. We use functional size*1 as the denominator and CO₂ emissions as the numerator in our target equation.

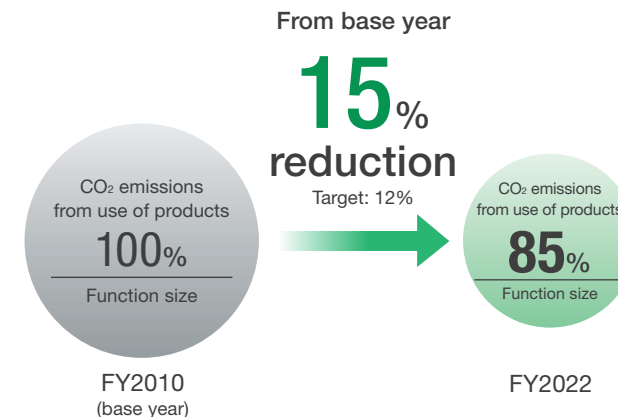
In fiscal 2022, we achieved our target with a reduction rate of 15% against a target of 12%. The achievement of this target was driven by the introduction of new models of high energy-saving equipment used in industrial equipment and social infrastructure.

We added the emissions of a consolidated energy-related company to the calculation of Hitachi Group emissions, resulting in a significant increase in emissions throughout the value chain. This increase is due to higher emissions from the use of transformers and other key products provided by the company that are used widely in the global power infrastructure. Hitachi will continue to bring energy-efficient products to the market.

*1 Function size: Major functions of products correlated with CO₂ emissions, such as their output and volume

Environmental Action Plan for 2024 Management Values

Reduction in CO₂ Emissions per Unit (Hitachi Group)



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Contributing to a Decarbonized Society at Business Sites (Factories and Offices)

CO₂ Emission Reductions at Business Sites (Factories and Offices) and Hitachi Carbon Neutrality 2030

Policy Activities **Materiality**

In working toward realizing a decarbonized society, Hitachi has set the goal of realizing carbon neutrality by fiscal 2030 at all business sites (factories and offices) as part of its long-term environmental targets called Hitachi Environmental Innovation 2050.

Our roadmap to achieving this goal sets targets of reducing CO₂ emissions by 50%, compared to the base year, by fiscal 2024 and 80% by fiscal 2027 toward realizing carbon neutrality by fiscal 2030.

CO₂ emissions reduction measures at Hitachi include installing energy-saving and renewable energy equipment, engaging in corporate PPA*¹ to procure renewable energy with additionality*², and procuring renewable energy and renewable energy certificates*³. Among these, installing energy-saving and renewable energy equipment is expected to incur high costs relative to the amounts of reduction. However, it will also lead to reduced risks associated with factors including anticipated sharp rises in energy pricing and increased costs from carbon taxes and the expansion of carbon tax transactions. It also aligns with our Corporate Mission—“To contribute to society through the development of superior, original technology and products”—and for this reason as well, we are placing a priority focus on this approach. Currently, we have set the target at a 33% reduction to be made by fiscal 2030, however we are working to increase that level to 50%.

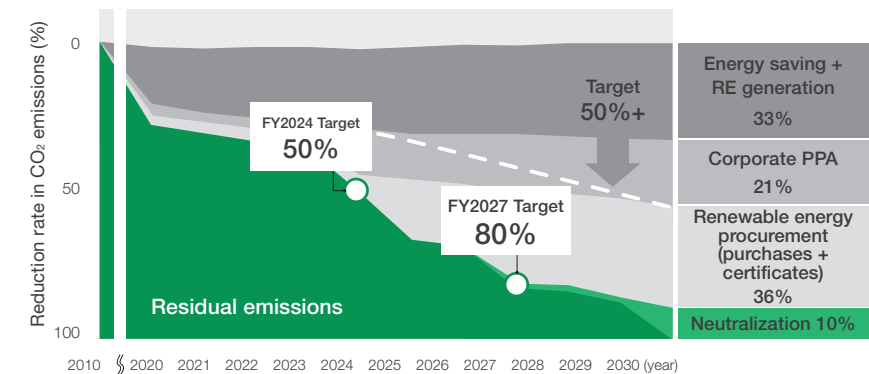
*1 Corporate PPA: A contract whereby a corporation, municipality, or other legal entity purchases electricity generated by renewable energy from a power producer on a long-term basis (usually 10 to 25 years). PPA stands for power purchase agreement.

*2 Additionality: An increase in effect of installing new renewable energy equipment.

*3 Renewable energy certificate: Accredits the environmental value associated with electricity generation from renewable energy sources. Unlike the purchase of renewable electricity, acquisition of this environmental value, which is separate from the electricity itself, is regarded as equivalent to using energy sources that do not emit CO₂.

GRI 302-1/305-4/305-5

CO₂ reduction roadmap (as of Mar. 2023)



Concrete efforts to achieve carbon neutrality at business sites, categorized by location type (factories, offices), can be outlined as shown below.

Major Initiatives for Reducing CO₂ Emissions at Business Sites (Factories and Offices)

Factories	<ul style="list-style-type: none"> Improve equipment efficiency by introducing and upgrading to high-efficiency equipment (Determine priority measures and manage introduction and upgrade rates) Improve production efficiency and energy use efficiency during production through use of the Lumada platform and production technologies cultivated from our long years of experience Optimize equipment operations and reduce wasted energy by installing smart meters Review product designs and processes Optimize control of equipment operations in response to production conditions
Offices	<ul style="list-style-type: none"> Build/move to new facilities with high energy efficiency Combine and integrate existing facilities Install energy-saving equipment and optimize equipment operations in collaboration with building owners
Factories and offices	<ul style="list-style-type: none"> Install renewable energy systems Procure electricity from renewable sources Utilize renewable energy certificates Utilize renewable energy through corporate PPA Engage in capital investment to reduce CO₂ through the use of Hitachi Internal Carbon Pricing (HICP)

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The Hitachi Internal Carbon Pricing Framework

System

To promote CO₂ reduction at its business sites (factories and offices), in fiscal 2019 Hitachi introduced the Hitachi Internal Carbon Pricing*¹ (HICP) framework. Referencing emissions trading and carbon taxes globally, we establish internal carbon prices, convert into monetary value as the effect of CO₂ reductions due to investment in equipment that contributes to decarbonization. We add this price to the value of energy reduction effects, and use the result to evaluate the impact of our investment. By applying incentives like these, we aim to further expand our investment in equipment that contributes to decarbonization.

Increased burdens from carbon taxes and new emission regulations can be anticipated in the future. Taking such risk factors into account from the stage of equipment investment considerations and making investments that contribute to decarbonization a higher priority will help minimize the impacts of future climate change risks and make our company more resilient. The introduction of the HICP framework is instrumental in this process.

Initially, we set the HICP rate at 5,000 yen/t-CO₂ in consideration of 2025 carbon taxes and carbon trading prices (ETS*²). Subsequently, looking ahead to 2030, we increased the rate to 14,000 yen/t-CO₂ in August 2021 in consideration of anticipated carbon taxes and carbon trading prices. We will leverage this framework to provide early responses to future risks such as carbon taxes as well as to actively promote the installation of energy-saving and renewable energy equipment, our highest priority initiative aimed at achieving carbon neutrality.

*1 Internal carbon pricing: An in-house tool for assessing in monetary terms the amount of carbon generated or reduced in order to voluntarily make investment decisions and conduct risk management.

*2 ETS: Emission Trading Scheme

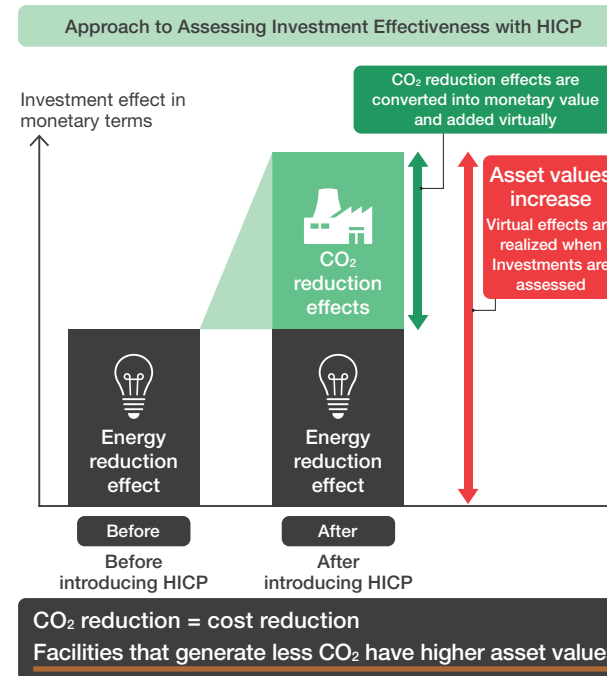
Achievements in Fiscal 2022

Hitachi uses the HICP system to reduce CO₂ emissions by converting CO₂ reduction benefits of projects to a monetary value to encourage additional investment, where such projects may not have received investment under the previous measurement standard.

In fiscal 2022, monetary investments decreased due to the deconsolidation of materials and construction machinery companies. However, we raised the carbon price from 5,000 yen/t-CO₂ to 14,000 yen/t-CO₂, resulting in 94 adopted projects and 2,519 t-CO₂ in CO₂ reductions, nearly twice as much as in fiscal 2021.

We will continue to use HICP, raising the carbon price as necessary to reduce CO₂ emissions.

Hitachi Internal Carbon Pricing (HICP) Framework



HICP Implementation Results

Category	FY2019	FY2020* ¹	FY2021* ¹	FY2022* ¹
Number of HICP Projects	35	22	59	94
Investment (Million (JPY))	260	250	1,464	1,185
CO ₂ Emissions Reduction (t-CO ₂)	1,356	447	1,230	2,519

The HICP rate: ¥5,000/t-CO₂ | ¥14,000/t-CO₂
 August 2021

*¹ Excluding an energy-related company which became a consolidated subsidiary in fiscal 2020

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Activities and Achievements

Activities

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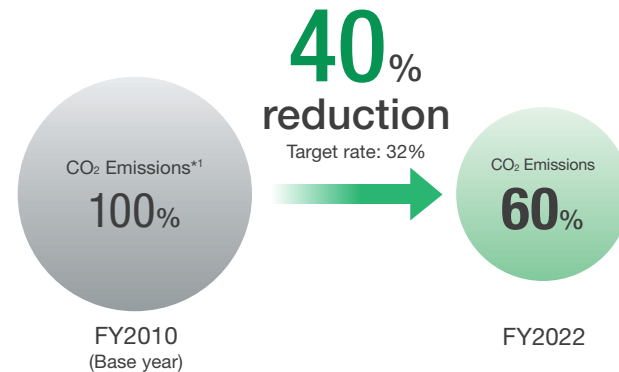
The Hitachi Environmental Action Plan for 2024 describes a target of the total CO₂ reduction rate at business sites (factories and offices).

In fiscal 2022, which was the first year of the Environmental Action Plan for 2024 (fiscal 2022–2024), we achieved a 40% reduction in total CO₂ emissions compared to a target of 32% reduction (compared to a base year of fiscal 2010). To reduce emissions, we improved facility efficiency through new and upgraded high-efficiency equipment, installed renewable energy equipment, and procured electricity from renewable sources.

Environmental Action Plan for 2024 Management Values

Reduction Rate of Total CO₂ (Hitachi Group)

Compared With Base Year



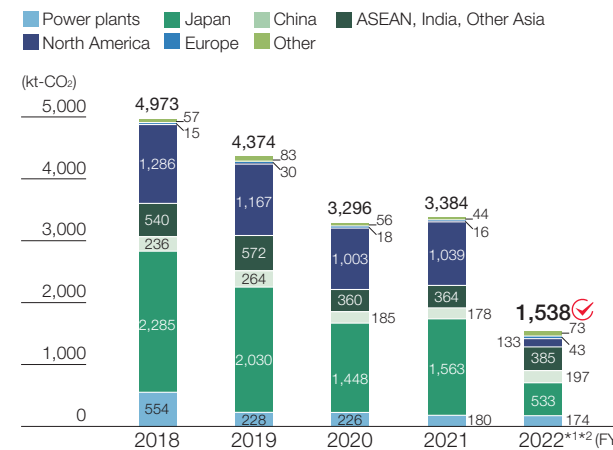
Note: Regarding CO₂ electrical power conversion factors: We used adjusted conversion factors for individual power businesses based on the Act on Promotion of Global Warming Countermeasures in Japan. In China, we used the average emissions factor published by the government for the national power grid. For other countries, we used the latest values for each fiscal year supplied by the International Energy Agency (IEA) for individual countries and by power supply companies.

Note: The Environmental Action Plan's management values do not include amounts for our power plants in fiscal 2010 (base year) or fiscal 2022.

Note: Only for Environmental Action Plan for 2024 management values, emissions of 11.6 kt-CO₂ from the cancellation of credits for neutralization were deducted from Scope 1. For the figures that underwent independent assurance, emissions from the cancellation of credits for neutralization were not deducted.

*1 CO₂ emitted from the organization (Scope 1 and 2).

CO₂ Emissions (Hitachi Group's factories, offices, and power plants)



*1 Energy-derived CO₂ emissions in fiscal 2022 amounted 459 kt-CO₂ (Scope 1) and 1,079 kt-CO₂ (Scope 2, market basis)

*2 Fiscal 2022 CO₂ emissions of an energy-related company and auto parts-related companies, which became consolidated subsidiaries in fiscal 2020, are included in the figures above. The materials and construction machinery companies were deconsolidated, and the amount of CO₂ emitted by those companies in fiscal 2022 was not included. This resulted in a significant decrease in the total CO₂ emissions.

■ P.061 GHG Emissions Throughout the Value Chain
 ■ P.063 Environmental Load from Operations

Introduce Renewable Energy

Activities

To reduce CO₂ emissions, Hitachi installs renewable energy power generation equipment on our property. We also procure electricity produced through new renewable energy equipment located off-premises. We are expanding the use of corporate PPA to accelerate the replacement of fossil fuel-derived electricity with electricity derived from renewable energy sources.

Renewable electricity used will be based on the standards set by the GHG Protocol.

Achievements in Fiscal 2022

Renewable electricity generation across the Hitachi Group in fiscal 2022 amounted to 706 GWh, an increase of 3.7 times compared to fiscal 2021. The amount of renewable electricity used by the Hitachi Group in fiscal 2022 increased significantly from 4% in the previous fiscal year to 24%.

At 57 sites the United States, Europe, China, Japan and some other countries in Asia, all electricity used came from renewable sources. Eleven of these sites achieved carbon neutrality through enhanced energy-savings and purchases of credits for neutralization.

In addition, Hitachi Energy is working actively to decarbonize operations through the use of non-fossil fuel electricity for all of its in-house electricity usage.

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Locations operating on non-fossil energy

Country/Region	Sites Using 100% Renewable-Derived Electricity	Carbon Neutrality
Europe	24 sites	3 sites (Hitachi Energy Group) 1 site (Hitachi Astemo Group)
North America	9 sites	1 site (Hitachi Industrial Equipment Systems Group)
China	6 sites	1 site (Hitachi Industrial Equipment Systems Group)
Japan	3 sites	3 sites (Hitachi High-Tech Group)
Asia (Excluding China and Japan)	7 sites	2 sites (Hitachi Energy Group)
Other	8 sites	—

Case studies of Energy Savings in Eco-Factories & Offices
<https://www.hitachi.com/environment/casestudy/index.html#case02>

Reducing Transportation Energy Consumption

Activities

In addition to reducing energy used at our business sites (factories and offices), Hitachi strives to reduce energy usage during transportation. Each business unit (BU) and Group company incorporates the rate of reduction in transportation energy use per unit in Japan, with voluntary targets established in other countries.

Our business sites pursue modal shifts to highly efficient transportation methods by improving truck loading ratios, taking other measures to reduce transportation energy consumption and switching to the use of eco-cars for in-house operations.

Achievements in Fiscal 2022

Fiscal 2022 reduction measures focused on improving loading efficiency for product transportation, utilizing joint transportation, and optimizing transportation vehicles. With the deconsolidation of the materials and construction machinery divisions, CO₂ emissions from transportation in Japan totaled 26.9 kt-CO₂ , a decrease of 47.4 kt-CO₂, or 64%, compared with fiscal 2021.

Hitachi Fleet Management Reduces CO₂ Emissions From Business Vehicles

Approach

Hitachi is preparing to electrify our fleet of commercial vehicles as part of efforts to achieve carbon neutrality by fiscal 2050. However, we must address a variety of issues that companies face when introducing electric vehicles, including the limited choice of electric vehicles and the lack of charging infrastructure.

To this end, we created our own fleet management plan to prepare for fleet electrification at each BU and Group company. Specifically, we intend to use BPO*¹ and AI drive recorders*² to visualize vehicle operating conditions, followed by an analysis of collected driving data and CO₂ emissions monitoring. We will use the results of this analysis and monitoring to act to reduce CO₂ emissions from existing vehicles and advance the gradual replacement of existing vehicles with electric vehicles to reduce CO₂ emissions from business-use vehicles.

*1 BPO: Abbreviation of business process outsourcing. BPO outsources the entirety of a business process to a contractor specializing in said activity.

*2 AI drive recorder: A service that uses AI to analyze recorded driving video and visualize signs of dangerous driving and driver tendencies.

Hitachi Fleet Management

Vehicle Visualization	Centralized fleet management via BPO
	AI drive recorders to monitor vehicle operation status
Vehicle Data Analysis	Analysis of vehicle operation status and travel routes
	Analysis of driver tendencies
	Continuous monitoring of electrification rates and CO ₂ emissions
Actions to Reduce CO ₂ Emissions	Optimize the number of vehicles in the fleet based on vehicle utilization status
	Encourage eco-driving by controlling sudden acceleration and braking
	Fostering awareness of CO ₂ reductions via visualizations of emissions
	Phased-in vehicle electrification in consideration of impact on operations

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Climate-related Financial Information Disclosure (Based on TCFD Recommendations) GRI 3-3

In June 2018, Hitachi announced its endorsement of the recommendations by the Financial Stability Board's (FSB) Task Force on Climate-related Financial Disclosures (TCFD). The following contains key climate-related financial information in line with the TCFD's recommendations.

Seven institutions rated the Hitachi TCFD disclosures highly in the Excellent TCFD Disclosure, announced in March 2023, as selected by the Government Pension Investment Fund of Japan (GPIF) domestic equity investment management institutions.

Governance

Structure

Hitachi sees climate change and other environmental issues as important management issues.

Important matters concerning the Group's sustainability strategy, including climate change measures, are discussed, and decided on by the Senior Executive Committee and are presented to the Board of Directors according to necessity. Hitachi reviewed long-term environmental targets, termed Hitachi Environmental Innovation 2050, which include reducing CO₂ emissions. Our Board of Directors receives a report regarding these targets when formulated or revised. In addition, the Audit Committee of independent directors conducts an audit of sustainability-related operations once a year, and Hitachi executive officers report on climate-related issues to the committee during the audit.

As for TCFD initiatives we conduct outside the company, Hitachi has participated in the TCFD Study Group on Green Finance and Corporate Disclosures arranged by Japan's Ministry of Economy, Trade and Industry (METI) since 2019. In addition, we have participated in the TCFD Consortium, which holds discussions on efforts to link effective corporate

information disclosure and disclosed information with appropriate investment decisions by financial institutions and others. We participated in the consortium as a Steering Committee member and contributed to the formulation of TCFD Guidance 3.0, published in October 2022.

P.015 Framework for Promoting Sustainability Strategy

P.031 Framework for Promoting Environmental Governance

Strategy

Approach

GRI 201-2

In fiscal 2016, under our Environmental Vision and considering the Paris Agreement, the RCP2.6 Scenario*¹, and RCP8.5 Scenario*² of the Fifth Assessment Report of the IPCC, Hitachi created Hitachi Environmental Innovation 2050, long-term environmental targets and a transition plan toward a decarbonized society. In this way, we intend to meet the contributions required of a global company toward the creation of a decarbonized society. Moreover, to help limit the global temperature rise to 1.5°C as recommended in the IPCC 1.5°C special report, in fiscal 2020, we revised our target to achieve carbon neutrality at Hitachi factories and offices by fiscal 2030. In fiscal 2021, we revised our target once more to achieve carbon neutrality in our value chain by fiscal 2050. This goal is in line with the SSP1-1.9 scenario*³ of the Sixth Assessment Report of the IPCC. Hitachi is committed to contributing to the creation of a decarbonized society on a global scale by declaring and pursuing higher goals.

*1 A Representative Concentration Pathway (RCP) scenario under which, at the end of the 21st century, the increase in global temperatures from preindustrial levels is kept below 2°C.

*2 An RCP scenario that assumes that emissions will continue to rise resulting in an approximately 4°C rise in global temperatures compared to preindustrial levels.

*3 SSP1-1.9 scenario: Presented in the Sixth Assessment Report of the IPCC. A scenario that limits temperature increase to less than 1.5°C under sustainable development.

P.027 "Environmental Vision" and "Hitachi Environmental Innovation 2050"

P.035 Environmental Strategy for Achieving a Decarbonized Society

P.039 Contributing to a Decarbonized Society at Business Sites (Factories and Offices)

Identification and Assessment of Climate-related Risks and Opportunities

The Hitachi Group operates a broad array of businesses around the world with each business having its own set of risks and opportunities. We are responding to the impact of climate change by assessing climate-related risks and opportunities in accordance with TCFD classifications. We make sector-specific assessments of risks and opportunities for important business sectors that have a relatively high likelihood of being affected by climate change. Our assessments are also categorized according to time span, namely short term, medium term, and long-term as defined below.

Time Spans for Assessing Climate-related Risks and Opportunities

	Time span	Reason for adoption
Short term	Over the next three years, from fiscal 2022 to 2024	Corresponds to the three-year management period covered by the Environmental Action Plan for 2024 established in line with the 2024 Mid-term Management Plan
Medium term	Through fiscal 2030	Time span of our fiscal 2030 long-term environmental targets
Long term	Up to fiscal 2050	Time span of our fiscal 2050 long-term environmental targets

Degrees of Impact

Impact	Definition
Major	Has an impact sufficient to disrupt business or cause it to substantially decrease or increase
Medium	Part of the business is impacted
Minor	There is little impact

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Responding to Climate Scenario Risks and Opportunities for Each Business

Hitachi operates a broad array of businesses with each business having its own set of risks and opportunities. We therefore selected businesses that have a relatively high likelihood of being affected by climate change and conducted scenario analyses. In selecting businesses, we considered the factors of, high sales volume within the Group, and relatively high need for fossil fuels when products and services are used, as well as high CO₂ emissions.

The businesses we selected using these criteria were railway systems, power generation and power grids, IT systems, and industrial equipment. For each of these businesses, we considered the business environment under the 1.5°C and 4°C scenarios and how we would respond.

- 1.5°C scenario As projected by the IPCC's RCP 2.6 climate model, the IEA 450 Scenario, and other scenarios, we are anticipating a world where stringent measures and regulations will be implemented to help realize a decarbonized society. Therefore, we investigated risks and opportunities on the premise of carbon neutrality by fiscal 2050.
- 4°C scenario We focused on there being increased climate-induced natural disasters as a result of lax regulations as projected by the IPCC's RCP8.5 scenario and other scenarios. Our assessment of the major risks and opportunities for the selected businesses are outlined in the following table.

The Business Environment, Major Risks and Opportunities, and Strategies under the 1.5°C and 4°C Scenarios

Target businesses	Railway systems	Power generation and power grids	IT systems	Industrial equipment
The business environment and major risks and opportunities under the 1.5°C scenario	Business environment Global demand will continue to grow for railway transport systems that emit relatively less CO ₂ per distance covered will grow with tighter CO ₂ emission regulations in each country and region.	Business environment Global demand will continue to grow for electricity from non-fossil sources, such as renewable energy and nuclear power, with tighter CO ₂ emission regulations in each country and region. Power networks will increasingly accommodate renewable energy produced through distributed power generation.	Business environment Demand for energy-saving, high-efficiency IT solutions will grow with tighter CO ₂ emission regulations in each country and region. There will also be increased demand for data centers and data analysis systems to accommodate the expansion of financial services such as investments and loans for decarbonization businesses, green bond issues, and data utilization businesses.	Business environment Global demand for energy-saving industrial equipment will grow with tighter CO ₂ emission regulations in each country and region.
	Risks A decline in competitiveness in the railroad sector if there are delays in the development of innovative technologies of the type expected to contribute to the reduction of CO ₂ emissions. Specifically, delays in the development of new technologies such as dynamic headways (flexible operations based on passenger demand) and support for new mobility services (e.g., MaaS). Also, a decline in competitiveness due to delays in the timely marketing of effective and sustainable products that comply with increasingly stringent laws and regulations for decarbonization.	Risks A decline in competitiveness due to delays in the development of technologies for the transmission of more renewable energy without compromising the stability of the transmission grid or the quality of electricity. A lack of international and regional cooperation to maintain a balance between supply and demand in the power grid for renewable energy generation having large output fluctuations, resulting in delays in renewable energy utilization.	Risks Competitiveness will decline if there is a lack of technological and human resource development to provide energy-saving and highly efficient IT solutions and if decarbonized measures for energy-intensive data centers are delayed.	Risks Competitiveness will decline if there are delays in the development of high-efficiency, low-loss products.
	Opportunities A transition of most long-distance public transportation to the railway sector under the 1.5°C scenario, since rail is a mode of transportation that contributes to decarbonization with low CO ₂ emissions per unit of transportation. Expanded business opportunities by developing and delivering railroad cars that are more energy efficient than existing models, by converting to bi-mode railroad cars, and by increasing the efficiency of rail services with digital technology.	Opportunities Expanded business opportunities in conjunction with rising demand for renewable energy—the key to a decarbonized future—and with the development of grid solutions, digital service solutions, and energy platforms that can accommodate the diversification of energy suppliers.	Opportunities Demand will grow for energy saving and high-efficiency information systems that contribute to zero-emissions. There will also be increased demand for environment-related financial services as investments and loans for decarbonization businesses and green bond issues.	Opportunities Utilization of IoT, digitalization, and connected systems to develop innovative products and solutions that contribute to CO ₂ emission reductions without relying on the energy-saving features of individual products.

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Target businesses	Railway systems	Power generation and power grids	IT systems	Industrial equipment
The business environment and major risks and Opportunities under the 4°C scenario	<p>Business environment</p> <p>Demand for electric-powered transport will gradually increase even without tighter energy regulations. Damage from typhoons, floods, and other natural disasters caused by climate change will rise sharply.</p>	<p>Business environment</p> <p>The cost competitiveness of non-fossil energy will increase as fuel prices gradually increase due to increased fossil energy consumption, and demand for renewable energy and nuclear power will increase moderately. Natural disasters caused by climate change will rise sharply. Needs will increase for climate adaptation to protect electric energy systems from extreme weather events.</p>	<p>Business environment</p> <p>Demand for new, high-efficiency technology will expand as multiplex IT systems in response to natural disaster BCPs will result in increased energy consumption. Demand will also grow for social and public systems to reduce damage from natural disasters.</p>	<p>Business environment</p> <p>Typhoons, floods, and other natural disasters caused by climate change will rise sharply.</p>
	<p>Risks</p> <p>The high frequency of natural disasters will exacerbate damage to production facilities, worsen working environments, and disrupt supply chains leading to delays in deliveries and the procurement of parts.</p>	<p>Risks</p> <p>The high frequency of natural disasters will increase damage to power generation and transmission/distribution facilities, hamper efforts to restore power transmission/distribution, and disrupt supply chains leading to delays in deliveries and the procurement of parts. Increased delays in the development and provision of power generation, transmission, and distribution equipment, facilities, and services capable of withstanding frequent natural disasters.</p>	<p>Risks</p> <p>Natural disasters will exacerbate damage to production facilities, worsen working environments, and disrupt supply chains leading to delays in deliveries and the procurement of parts.</p>	<p>Risks</p> <p>Natural disasters will exacerbate damage to production facilities, worsen working environments, and disrupt supply chains leading to delays in deliveries and the procurement of parts.</p>
	<p>Opportunities</p> <p>Transport systems more resilient to natural disasters can be developed. Competitiveness can be enhanced by providing added value in such forms as energy-saving railcars and adaptability to new technologies.</p>	<p>Opportunities</p> <p>Energy demand will grow as warmer weather leads to increased use of air conditioning. Demand will increase for disaster-resilient power generation and transmission/distribution technologies. Increase the competitiveness of existing power transmission and distribution systems by making these systems more resilient to extreme weather conditions.</p>	<p>Opportunities</p> <p>Demand will increase for social and public systems that help reduce damage from natural disasters and for IT systems required as part of BCP.</p>	<p>Opportunities</p> <p>Efforts to accommodate IoT products will lead to higher demand for remote control and remote maintenance during natural disasters.</p>
Non-environmental market factors (neither the 1.5°C nor 4°C scenario)	<ul style="list-style-type: none"> Economic growth will lead to urbanization and population growth around the world which will drive the railway business globally as an efficient form of public transport for large numbers of passengers regardless of climate conditions. Market size in Japan and Europe will remain flat, but the Asian market overall will see substantial growth. Long-distance transport will decline going forward as the global pandemic restricts travel and encourages remote work. Although the decline in demand will not be as severe as that for air transport. Competition will grow as major railway manufacturers in various countries will expand their businesses to meet global demand. 	<ul style="list-style-type: none"> Economic growth, urbanization, and population growth will push up demand for energy, especially electricity, mainly in developing countries. Political trends in each country and region related to climate change and energy issues, and changes in public awareness. Energy supply and demand will diversify due to various factors, such as CO₂ emissions, the environmental burden, economic performance, safety, and supply stability. Digital technology will develop further to enhance the stability and efficiency of the power supply. 	<ul style="list-style-type: none"> Further digitization globally will exponentially increase the volume of data circulated, accumulated, and analyzed. Experience with the global pandemic will prompt a shift to remote, noncontact, and online formats, both in our life and work and will boost demand for digital solutions that facilitate such a shift. New services and businesses utilizing big data, IoT, AI, and other digital technology will expand. 	<ul style="list-style-type: none"> Digitalization, infrastructure renewal, population decline, and worker shortages will expand the automation market in industrial countries. As the global pandemic forces people to stay at or work from home, demand will grow for factory automation enabling a handful of workers to operate a factory. The industrial market in emerging economies will grow due to a rise in production plants.

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Target businesses	Railway systems	Power generation and power grids	IT systems	Industrial equipment
Response to future business risks (business opportunities)	<p>Response to business risks under 1.5°C or 4°C scenarios</p> <ul style="list-style-type: none"> Continue to strengthen the railway business as global demand for railways will increase under either scenario. Specifically, develop and market more energy-saving railcars and battery powered railcars for non-electrified sections. Strengthen railway services through digital utilization such as dynamic headway (flexible operations in response to passenger demand) and new mobility services like MaaS. Increase competitiveness by strengthening sustainable activities while adhering to international standards, etc. Given the increasing frequency of natural disasters, take risk aversion into account when deciding the location and equipment layout of a new plant. Keep an eye on the supply chain in strengthening our ability to respond to business disruption risks in accordance with our BCPs. Evaluate and analyze organizational structures and physical locations and reflect the results of this work in response measures. 	<p>Response to business risks under 1.5°C or 4°C scenarios</p> <ul style="list-style-type: none"> Continue to enhance the response to relevant markets in view of expected higher demand for non-fossil energy under either scenario. Strengthen the provision of grid solutions, digital service solutions, and energy platforms that can accommodate the increased use of renewable energy and diversification of energy supply and demand management. Given the increasing frequency of natural disasters, develop technologies for disaster-resilient renewable energy systems and disruption-resistant power transmission/distribution systems. Take risk aversion into account when deciding the location and equipment layout of a new production plant. Keep an eye on the supply chain in strengthening our ability to respond to business disruption risks in accordance with our BCPs. 	<p>Response to business risks under 1.5°C or 4°C scenarios</p> <ul style="list-style-type: none"> Continue to develop innovative digital technologies, nurture necessary human capital, and enhance digital service solutions that generate new value in view of the expected growth in demand for digital services and the subsequent market expansion under either scenario. Specifically, enhance competitiveness by providing energy-saving and high efficiency IT solutions that contribute to the following: zero-emissions; environment-related financial services for decarbonization businesses; social and public systems to prevent natural disasters, reduce damage, and enhance resilience; and IT systems for BCPs. Given the increasing frequency of natural disasters, strengthen our ability to respond to business disruption risks in accordance with our BCPs. Ensure competitiveness by decarbonizing data centers actively. 	<p>Response to business risks under 1.5°C or 4°C scenarios</p> <ul style="list-style-type: none"> Under either scenario, continue developing energy-saving, high efficiency products that use IoT technology. Focus particularly on connected products with communication features. Miniaturized, high-efficiency, low-loss products can also help reduce CO₂ emissions. Given the increasing frequency of natural disasters, take risk aversion into account when deciding the location and equipment layout of a new plant. Keep an eye on the supply chain in strengthening our ability to respond to business disruption risks in accordance with our BCPs.
Financial information (sales volume of each target sector)	Partial impact on the revenue of the Railway Systems Business, which accounted for approximately 6.8% of Hitachi's revenue at 736.0 billion yen in fiscal 2022	Partial impact on the revenue of the Energy Sector, which accounted for approximately 16.4% of Hitachi's revenue at 1,787.6 billion yen in fiscal 2022	Partial impact on the revenue of the Digital Systems & Services Segment, which accounted for approximately 22.0% of Hitachi's revenue at 2,389.0 billion yen in fiscal 2022	Partial impact on the revenue of the Industrial Products Business, which accounted for approximately 4.1% of Hitachi's revenue at 451.1 billion yen in fiscal 2022

Note: The above scenario analyses are not future projections but attempts to examine our resilience to climate change. How the future unfolds may be quite different from any of these scenarios.

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Climate-related Risks (Hitachi Group)

Based on a business-by-business review, Hitachi did not find any significant climate change-related risks that were difficult to respond to risks that present difficulties in response.

When considering whether existing businesses will be viable when a decarbonized society is realized, many businesses that use electricity as their energy must be able to adapt to a decarbonized society by replacing the electricity they use with electricity derived from non-fossil energy sources. On the other hand, businesses that currently use fossil fuels will need to adapt to a decarbonized society by adopting new technologies such as hydrogen and biomass, as well as various measures to offset CO₂ emissions. Since many of Hitachi's businesses use electricity, it is clear that there is little significant risk arising from the unavailability of fossil fuels.

The following is a summary of Hitachi's overall risks under the 1.5°C scenario and the 4°C scenario. Given Hitachi's business format, we have determined that these risks related to climate change can be addressed.

① Risks related to the transition to a decarbonized economy (applying mostly to the 1.5°C scenario)

Category	Major risks	Time span	Impact	Main initiatives
Policy and legal	Increased business costs from the introduction of carbon taxes, fuel/energy consumption taxes, emissions trading systems, and other measures	Short to long term	Medium	<ul style="list-style-type: none"> Shift from fossil fuel-using to non-fossil fuel-using businesses. Promote activities aimed at achieving carbon neutrality. Avoid increases in business costs by further enhancing production and transport efficiency and promoting the use of non-fossil fuel-based energy. Promote energy-saving equipment by introducing Hitachi Internal Carbon Pricing (HICP)
Technology	Loss of sales opportunities due to delays in technology development for products and services for a decarbonized society	Short to long term	Medium	<ul style="list-style-type: none"> Contribute to reducing CO₂ emissions by developing and marketing innovative products and services that lead to the achievement of long-term environmental targets and expanding the decarbonization business Promote the development of energy-saving and low-carbon products by implementing Environmentally Conscious Design Assessments when designing products and services
Market and reputation	Impact on sales due to changes in market values or assessment of our approach to climate issues	Medium to long term	Minor	<ul style="list-style-type: none"> Established goals of carbon neutrality in the Hitachi Environmental Innovation 2050 long-term environmental targets; participated in COP26 and communicated to the world advanced technologies and initiatives that support the realization of a decarbonized society

② Risks related to the physical impacts of climate change (4°C scenario)

Category	Major risks	Time span	Impact	Main initiatives
Acute and chronic physical risks	Climate-related risks to business continuity including increased severity of typhoons, floods, and droughts (acute risks), as well as rising sea levels and chronic heat waves (chronic risks)	Short to long term	Medium	<ul style="list-style-type: none"> Considering the possibility of flood damage when deciding on the location or equipment layout of a new plant; measures tailored to the water risks of each manufacturing site will be strengthened in the future based on the results of a water risk assessment now being conducted

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Climate-related Opportunities (Hitachi Group)

To achieve the CO₂ reduction targets set forth in our long-term environmental targets and 2024 Mid-term Management Plan, it is important not only to decarbonize our business sites (factories and offices), but also to reduce CO₂ emissions from the use of products and services sold, which account for a large portion of emissions in our value chain. Developing and providing products and services that emit zero or very little CO₂ during their use will not only satisfy customer needs, but also help meet society's demands for reduced emissions. This represents a business opportunity for us in the short, medium, and long terms, and constitutes a major pillar of the Social Innovation Business that we are promoting as a management strategy.

Category	Major Opportunities	Impact	Main initiatives
Services and Markets for Products	Increased corporate value and revenue from expanded sales of products and services with innovative technology that can contribute to the mitigation and adaptation of climate change	Major	<ul style="list-style-type: none"> Expand business areas that contribute to decarbonization. Promote decarbonized solutions and services through collaborative initiatives with customers. Focusing on the fields of energy, mobility, and connective industries we pursue the greater utilization of digital technology (Green by Digital) and develop products that offer world-class efficiency.
Resilience	Provision of solutions to address climate-related natural disasters	Medium	<ul style="list-style-type: none"> Providing flood simulators and evacuation/emergency operation support systems Providing disaster prevention solutions such as high-performance firefighting command systems

P.036 Expanding the Decarbonization Business
 P.054 Products and Services that Contribute to Resolving Water Issues
 P.056 Addressing Risks Related to Water and Biodiversity



The results of these studies indicate that Hitachi has not uncovered any significant or difficult-to-address climate change-related risks at this stage. We believe we can view our contributions to climate change action as opportunities. Hitachi believes that we have high resilience in the transition to a decarbonized society in the medium to long term, as we closely monitor market trends and develop business flexibly and strategically under both the 1.5°C and 4°C scenarios.

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Risk Management

Structure

Hitachi identifies, evaluates, and manages climate change-related risks by business unit and Group company to determine environmental impacts and other factors. The results are tabulated by the Sustainability Promotion Division of Hitachi, Ltd., and those risks and opportunities perceived as being particularly important for the Group as a whole are deliberated and decided by the Senior Executive Committee and, if necessary, by the Board of Directors as well.

Metrics and Target

Targets

Hitachi defines medium- to long-term metrics and targets in the Hitachi Environmental Innovation 2050 long-term environmental targets. We also establish and manage short-term metrics and targets in detail every three years through the Environmental Action Plan.

Metrics for climate change mitigation and adaptation use total CO₂ emissions and the reduction rate in CO₂ emissions per unit. Total CO₂ emissions from the use of sold products in Scope 3, which account for most of our emissions given the nature of Hitachi's business, fluctuate greatly due to changes in sales volumes and our business portfolio. This has the disadvantage of making it difficult to see the results of energy saving and efficiency improvements. Therefore, we have established CO₂ emissions per unit as a metric for providing customers and society with products and services that offer equivalent value while emitting less CO₂. We also set and manage a metric for avoided emissions that contribute to the realization of a decarbonized society as a whole.

We continue to reduce CO₂ emissions generated at our own business sites (factories and offices) by utilizing the Hitachi Internal Carbon Pricing (HICP) system, which provides incentives for capital investments that contribute to CO₂ reductions. The carbon price for HICP is set at 14,000 yen per ton-CO₂.

In addition, in April 2021, Hitachi, Ltd. introduced evaluations that take environmental value into account in the executive compensation system with a view to accelerating the creation of environmental value toward achievement of long-term environmental targets.

- P.013 Reflecting Sustainability Targets in Executive Compensation Evaluation
- P.027 "Environmental Vision" and "Hitachi Environmental Innovation 2050"
- P.030 Environmental Action Plan
- P.035 Achieving a Decarbonized Society
- P.036 Expanding the Decarbonization Business
- P.039 Contributing to a Decarbonized Society at Business Sites (Factories and Offices)
- P.061 Calculating GHG Emissions Throughout the Value Chain (Fiscal 2022)