



Efforts to Maximize the Value of "Green" (TCFD)

Amid the pressing crisis of climate change, DENSO is exploring the ideal vision for a sustainable mobility society and is accelerating its sustainability management with a view to maximizing the value of "green," which is a target adopted under its Long-term Policy for 2030. In 2019, we pledged our support for the Task Force on Climate-related Financial Disclosures (TCFD). Since doing so, we have been carrying out a scenario analysis regarding the impact of climate change on our businesses and the opportunities and risks related to this impact. We have also been examining ways to reflect the results of this analysis in our business strategies. In this section, we introduce the status of the initiatives we are promoting in accordance with the TCFD.

Scenario Analysis of Business Opportunities and Risks

To understand the impact of climate change on our businesses and to identify climate-related opportunities and risks, we referenced the external scenarios of the International Energy Agency (IEA) and the Intergovernmental Panel on Climate Change (IPCC) and used them as benchmarks for our scenario analysis. Also, while confirming the scenario analysis for the automotive industry, we compared and contrasted this analysis with our awareness of the business environment existing under the Company's medium- to long-term strategies to hypothesize comprehensive scenarios. Upon doing so, we were able to identify climate-related opportunities and risks by analyzing the differences between our medium- to long-term strategies and these scenarios.

Hypothesizing Scenarios

In terms of transition risk, we have defined the Beyond 2 Degrees Scenario (B2DS) as a "promotional" scenario, and the Sustainable Development Scenario (SDS) and the Net Zero Emissions by 2050 Scenario (NZE) of the IEA's World Energy Outlook as "ambitious" scenarios. For the scope of these scenarios, we quantified Group CO₂ emissions, the carbon tax, crude oil prices, the renewable energy rate, and the rate of new electric vehicle (xEV) introduction by 2040, and analyzed opportunities and risks based on the differences between these scenarios and Group strategies. Also, with regard to physical risks, we have defined the RCP8.5 and RCP6.0 scenarios of the Fifth Report of the IPCC as "stagnant" and "promotional" scenarios, respectively. We visualized aspects such as weather disasters, rising sea levels, deteriorating eco systems, and water and food shortages in a qualitative manner and analyzed opportunities and risks based on the differences between these scenarios and Group strategies.

Analysis of Climate-related Opportunities and Risks

We performed an analysis on the differences between our awareness of the business environment, which forms the basis of our medium- to long-term strategies, and the circumstances under the scenarios above. Items expected to have an impact on our businesses of over ¥10.0 billion were identified as key items and categorized into opportunities and risks. In our business strategies and financial strategies, we will incorporate measures that address these opportunities and risks, thereby simultaneously tackling social issues and enhancing our corporate value. Major opportunities and risks identified through the aforementioned analysis are as follows.

Major Opportunities

Key items	Timeframe / Impact	Major potential financial impact	Financial impact (fiscal 2026)	Response measures	Response cost (fiscal 2024)
Development of new products and services through R&D and technological innovation	Medium-term / High	Increase in revenue due to higher demand for xEVs Rise in demand for inverters and thermal products related to electrification and for technologies such as heat pumps that improve the heat efficiency of xEVs	¥300.0 billion	<ul style="list-style-type: none"> Accelerate the development of technologies related to electrification—including power-saving technologies and compact high-output technologies—as well as the development of heat management technologies Promote the development of engine control systems and other technologies that respond to alternative fuel (e-fuel, hydrogen, etc.) 	¥90.0 billion
Diversification of business activities	Long-term / Medium	Increase in revenue following higher demand for decarbonization technologies Creation of business opportunities in such non-automotive fields as food and agriculture (AgTech), factory automation (FA), and hydrogen (SOEC*1 and SOFC*2) by applying environmental technologies fostered in the automotive field	Food and agriculture (AgTech), FA, and hydrogen, etc. ¥300.0 billion (FY2031)	<ul style="list-style-type: none"> Create technologies such as AgTech that leverage sensor, control, and robot technologies and create energy utilization technologies, such as those that leverage exhaust gas purification and heat management technologies Actively use business alliances 	¥17.0 billion
Utilization of more effective production and logistics processes	Medium-term / Relatively high	Reduced energy costs through the promotion of energy conservation at plants worldwide If we promote enhanced energy efficiency and are able to achieve our target under Eco Vision 2025 of reducing the amount of energy used per unit by half compared with fiscal 2013, we could achieve a CO ₂ emissions reduction of approximately 1.65 million tons per year and reduce energy costs.	¥102.0 billion	Continue rigorous energy-saving activities; adopt low-carbon materials, equipment, and production processes; enhance production process efficiency through the introduction of Factory-IoT (F-IoT); and promote the development of energy-saving production technologies	¥10.0 billion

*1 SOEC: Solid oxide electrolysis cell *2 SOFC: Solid oxide fuel cell

Major Risks

Key items	Timeframe / Impact	Major potential financial impact	Financial impact (fiscal 2026)	Response measures	Response cost (fiscal 2024)
New controls and regulations placed on our existing products and services	Long-term / Relatively high	Decline in revenue against the backdrop of increasingly strict regulations on fuel efficiency and exhaust gas We expect even tighter regulations on fuel efficiency as well as acceleration in the transition to xEVs, including HEVs (comprising 47% of all vehicles in 2030). Non-compliance with regulations resulting from an inability to adapt to changes could cause a decline in unit sales.	¥300.0 billion	<ul style="list-style-type: none"> Accelerate the development of energy-saving technologies for products powered by electricity with a view to extending driving distance Accelerate development aimed at enhancing fuel efficiency of internal combustion engines in HEVs and other vehicles to respond to new regulations on fuel efficiency 	¥80.0 billion
Increased severity and occurrence of abnormal weather such as typhoons and floods	Long-term / Relatively high	Decline in revenue due to suspended plant operations and supply chain disruptions Revenue could decline due to damage to in-house plants or supply chain interruptions that result in a suspension of plant operations in Japan and greater Asia, where we conduct 65% of our overall production and where the possibility of abnormal weather occurring is high.	¥120.0 billion	<ul style="list-style-type: none"> Implement measures to mitigate the impact of disasters on buildings, etc., and strengthen risk management in the supply chain through such measures as ensuring multiple suppliers for components Connect our plants across the globe by using IT and IoT and establish a global production structure that can immediately respond to changing production needs 	¥9.3 billion
Carbon pricing mechanism	Medium-term / High	Decline in cost competitiveness due to the accelerated introduction of carbon pricing Carbon costs could be added to all in-vehicle products due to the expansion and increasing strictness of international regulations, such as carbon taxes and emissions trading systems.	¥12.0 billion	<ul style="list-style-type: none"> Strategically and incrementally transition to renewable energy in manufacturing activities Continue to promote activities to conserve energy and enhance energy efficiency in the production process 	¥3.0 billion



Impact on Management Strategy

As mentioned previously, based on the results of our analysis, we have come to understand the significant impact that the climate change-related opportunities and risks expected to occur by 2030 will have on our product development and production activities, particularly the trend toward carbon neutrality.

Based on this understanding, we have set ourselves the ambitious target of becoming carbon neutral and have reflected this target in our management strategies.

Specifically, we have added the perspective of carbon neutrality to our CO₂ reduction plans under Eco Vision 2025, the Company's environmental management policy formulated in 2016. For our *Monozukuri* activities, we have adopted the target of realizing carbon-neutral electricity by fiscal 2026 (carbon credits to be used with respect to gas) and becoming completely carbon neutral, including gas, by fiscal 2036. To achieve this target, we will continue to promote energy-saving activities, an area in which we excel as a company. At the same time, we will introduce electricity derived from high-quality renewable energy that is optimally economic and utilize carbon credits, among other initiatives. To accelerate investments toward these kinds of efforts to reduce CO₂ emissions, including energy conservation and renewable energy, we have introduced internal carbon pricing (ICP) within our investment decision-making approach.

For mobility products, we are working to reduce CO₂ emissions to the greatest extent possible by promoting the development of electrification technologies. Furthermore, we are working to achieve negative CO₂ emissions through technologies that create green energy using hydrogen. Through these efforts, we will aim to achieve carbon neutrality across all of society. Moreover, to balance contributions to the environment with business growth, we are holding regular discussions on reshuffling our business portfolio based not only on profitability and growth potential but also on CO₂ emissions and the reduction of these emissions and are promoting reshuffling efforts accordingly. (Message from the Chief Financial Officer [□□ P.43-49](#))

We launched an expert team within the Safety, Health & Environment Division to serve as a structure for steadily promoting our carbon neutral strategy. At the same time, we have established the Environment Neutral Systems Development Division and the Hydrogen Business Promotion Division in a Companywide effort to realize carbon-neutral manufacturing, encompassing carbon neutrality throughout all processes through to the production activities at our plants.

Meanwhile, to respond to physical risks such as floods, which are increasing in frequency due to climate change, we are carrying out disaster mitigation measures at plants (including buildings and structures) and ensuring multiple suppliers for components and other materials so that we can minimize the risk of suspended operations due to damage at plants or disruptions in the supply chain. For additional support, we are introducing Factory-IoT (F-IoT) platforms. Through such efforts, we will build a global production and supply structure that can immediately respond to production fluctuations caused by weather disasters or other adverse events.

Impact on Financial Planning

Given the trend toward carbon neutrality, we must further accelerate the development of electrification technologies and transition to components compatible with such alternative fuels as hydrogen fuel and biofuel. Furthermore, in order to realize carbon-neutral *Monozukuri*, we need to allocate funds to procure electricity derived from renewable energy sources and purchase CO₂ offset certificates and carbon credits. To that end, in our financial planning, we have reflected an increase in R&D costs related to electrification and efforts to respond to alternative fuel needs. We have also reflected costs related to the introduction of renewable energy.

In addition, we have incorporated costs related to measures to address climate change risks (reinforcing buildings and structures), such as tornadoes, floods, and other abnormal weather events that are becoming ever more frequent and more severe.

Governance

DENSO has established the Companywide Safety, Health, and Environment Committee, which shares short-, medium-, and long-term targets set with the aim of realizing Eco Vision 2025. The committee also shares the issues and progress of activities related to the environment in general, including the results of scenario analysis, and issues instructions on measures to be taken. Chaired by an executive vice president, the committee convenes twice a year. Matters deemed to significantly affect businesses, such as medium-term management strategies and major investments, are discussed at meetings of the Management Deliberation Meeting or the Board of Directors.

In particular, with respect to carbon neutrality initiatives, the Board of Directors determines the Company's targets. Based on these targets, the Strategy Deliberation Meeting and the Executive Workshop deliberate on medium- and long-term policies and strategies, while the Annual Plan Meeting deliberates on short-term policies, targets, and plans. Progress toward achieving the aforementioned targets is monitored at the Management Deliberation Meeting and meetings of the Board of Directors in which all officers participate.

Risk Management

In a volatile business environment, DENSO always strives to actively identify diversifying risks and conduct risk management from the perspectives of minimizing damage and ensuring business continuity. Climate change-related risks are reported to the Companywide Safety, Health, and Environment Committee, which identifies key items and clarifies the Company's response.

Also, we have designated climate change-related risks (physical risks) as one of the major risks toward which the Risk Management Meeting should particularly invest resources and promote initiatives. Based on this designation, we are strengthening our response to these risks on a Groupwide basis from the perspective of overall risk management. (Risk Management [□□ P.110-111](#))



Please see the following URL for more information on DENSO's Eco Vision 2025.

<https://www.denso.com/global/en/csr/environment-report/management/ecovision/ecovision/>





Metrics and Targets

In light of society's expectations and the progress of our activities based on Eco Vision 2025, in fiscal 2022 we set ourselves the more ambitious goal of becoming carbon neutral. Since then, we have been advancing activities with our sights set on this goal.

We clarified specific targets for this goal in the Mid-term Policy for 2025. At the same time, we incorporated a sustainability target pertaining to our material issues into part of our management targets. As previously mentioned, the status of progress and follow-up regarding these targets are shared not only with the Companywide Safety, Health, and Environment Committee but also with the Management Deliberation Meeting and the Board of Directors.

Please see the Green Strategy section for our road map for achieving each metric and target (Green Strategy [P.39]).

Climate Change-related Targets (CO₂ Emissions Reduction) (Benchmark year: Fiscal 2021)

Component procurement	FY2031	Reduction of 25% (equivalent to well below 2°C*)
	Scope 3 (Upstream)	FY2051 Carbon neutral
Monozukuri	FY2026	Carbon neutral
	Scope 1 and 2	FY2036 Carbon neutral (without carbon credits)
Product use	FY2031	Reduction of 25% (equivalent to well below 2°C*)
	Scope 3 (Downstream)	

* The target of keeping temperature increases well below 2°C, which is a Scope 3 target under the 1.5°C standard

Scope 3 (Upstream) Reduction of CO₂ Emissions in the Supply Chain

Aim Realize Carbon Neutrality through Collaboration between DENSO and Suppliers

Through dialogue and based on a mutual understanding, we are promoting activities together with our suppliers aimed at achieving carbon neutrality.

Specifically, after visualizing our emissions within the supply chain, we have been sharing with suppliers our medium-term goal of reducing CO₂ emissions by 25% by fiscal 2031, compared with levels in fiscal 2021 (equivalent to an annual reduction of 2.5%), and our long-term target of achieving carbon neutrality by fiscal 2051. We also request that our suppliers promote activities toward achieving these targets. In October 2021, we established a permanent showroom displaying examples of how to promote energy conservation. To date, a total of 1,500 people have visited the showroom, including customers, suppliers, and members of national and local government agencies. By providing support in such ways as lending energy-saving diagnostic and energy measurement equipment to suppliers, we help them promote energy conservation activities. Also, we provide support for the introduction of renewable energy and actively make use of materials with low CO₂ emissions (aluminum and resins, etc.).

Furthermore, through such activities we gather information on the issues and requests of suppliers based on which we make suggestions to industrial organizations and other groups. With these efforts, we are helping to create environments that facilitate sustainable activities across the entire supply chain.



Permanent showroom (Agui Plant)

TOPIC

At the Partnership Building Symposium, held by the Ministry of Economy, Trade and Industry, DENSO's procurement business group was awarded the Partnership Building Grand Prize, "Special Theme Award (GX Award)," in recognition of its efforts to help small to medium-sized suppliers become carbon neutral. This marked the first time this award was won by an organization in the automotive industry.

MESSAGE



Striving to Become Carbon Neutral Together with Our Suppliers

Kazutoshi Ohyama
Supply Chain Purchasing Planning Division

We believe we must realize carbon neutrality not only at DENSO but also across the entire supply chain. To achieve this, it is essential that we gain the understanding of and collaborate with our suppliers. Through efforts such as holding study sessions on carbon neutrality, providing support for energy conservation, and

offering briefings on DENSO's policies, we have gradually enhanced the understanding of our suppliers and have encouraged them to actively engage in carbon-neutral initiatives. Thanks to these efforts, we have received a great deal of positive feedback from suppliers, including comments such as "energy conservation has helped us significantly reduce energy costs" and "our employees have gained an opportunity to consider their connection with society."

By continuing to collaborate with suppliers, we will aim to realize carbon neutrality across the entire supply chain. At the same time, we will take steps to ensure that society recognizes the added value that carbon neutrality provides to the supply chain.

Scope 1 and 2 **Carbon-Neutral Monozukuri**

Aim **Achieve Complete Carbon Neutrality in Monozukuri**

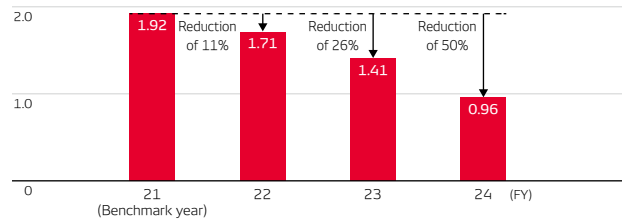
We aim to achieve carbon neutrality in *Monozukuri* by lowering CO₂ emissions through a reduction in energy consumption based on more-efficient manufacturing processes; by using such renewable energy sources as sunlight; and by reducing CO₂ emitted in production processes through the utilization of green hydrogen created through the use of renewable energy.

Achievements to Date

We have reduced CO₂ emissions by 50% compared with fiscal 2021, achieving our fiscal 2024 target for a 50% reduction, by thoroughly implementing energy-saving activities, which are one of our long-standing strengths; by introducing renewable energy; and by utilizing carbon credits.

In addition, as of fiscal 2023, we achieved carbon neutrality at the Anjo, Nishio, and Hirose plants, DENSO FUKUSHIMA CORPORATION, and all DENSO plants in Europe. As of fiscal 2024, we also achieved carbon neutrality at the Takatana, Daian, Kota, Zenmyo, and Kosai plants.

CO₂ Emissions
(Millions of t-CO₂e)



Notes: 1. The results figures reflect the use of carbon credits.
2. The targets are production bases in Japan and overseas (including the Group's manufacturing companies).
3. Fiscal 2021 results have been adjusted for the effect of the reduced production that accompanied the COVID-19 pandemic.

Scope 3 (Downstream) **Carbon Neutrality for Electric Vehicle Components**

Aim **Contribute to the Electrification of Cars to Reduce CO₂ Emissions to the Greatest Extent Possible**

We will help reduce CO₂ emissions from vehicle use by developing products and systems that support the popularization of HEVs, BEVs, FCEVs, and other xEVs. In addition, we will apply the electrification technologies cultivated in the automotive industry to the field of air mobility in an effort to significantly reduce CO₂ emissions.

Contribution to the Reduction of CO₂ Emissions from Energy Use

Aim **Realize an Energy-Recycling Society through the Development and Popularization of Technologies That Make Effective Use of Renewable Energy**

We will establish technologies that use energy in a highly efficient manner, regardless of location or time, and work to popularize them on a global basis. By doing so, we will help realize an energy-recycling society.

For example, we have commenced verification tests for SOFCs, which create electricity from hydrogen, and SOECs, which produce hydrogen from electricity, by utilizing the heat management and material technologies that we have cultivated in the automotive field. Through these kinds of verification tests, we will pursue the efficiency of fully utilizing green hydrogen energy and the durability of being able to safely use energy systems over long periods of time. By doing so, we will take on the challenges of development aimed at balancing environmental sustainability and economic viability.

International Certification of Reduction Targets

We have established targets for the reduction of greenhouse gas emissions by fiscal 2031. These targets are based on scientific evidence and consistent with the goal of limiting the global average temperature increase to 1.5°C above pre-industrial levels, which is set forth by the Paris Agreement. As a result, our targets have obtained Science Based Targets (SBT) certification from the internationally recognized Science Based Targets initiative (SBTi).*

* The SBTi is a joint initiative established by World Wide Fund for Nature, the CDP, the World Resources Institute, and the United Nations Global Compact. The SBTi formulates guidance that enables companies to set specific targets for the volumes and timeframes of greenhouse gas emission reductions. SBT certification is granted to companies whose targets are recognized to be in conformity with scientific findings (Science Based Targets).



SCIENCE
BASED
TARGETS

DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

We will continue conducting extensive studies and analyze in even greater detail the quantitative financial effects of key items as well as the specific business opportunities and risks that accompany them. We will then reflect our findings in business strategies and action plans.