



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. 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. Through these efforts, we have been working to commercialize businesses focused on “green” and pursue avenues that will lead to sustainable business growth. 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 Long-term Plan to hypothesize comprehensive scenarios. Upon doing so, we were able to identify climate-related opportunities and risks by analyzing the differences between our Long-term Plan and these scenarios.

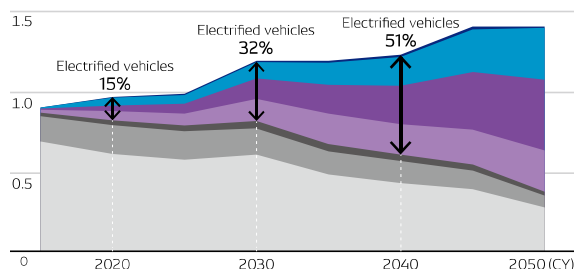
Hypothesizing Scenarios

To correspond to the two axes of transition risks and physical risks, we established three classifications for scenarios: “stagnant,” “promotional,” and “ambitious.” Transition risks in this table are based on the Current Policies Scenario (CPS), the Stated Policies Scenario (STEPS), and the Sustainable Development Scenario (SDS), hypothesized by the IEA (referencing *World Energy Outlook 2019*). The physical risks are based

on the RCP8.5, RCP6.0, and RCP2.6 scenarios put forth by the IPCC (referencing *IPCC Fifth Assessment Report*).

Scenario for the Commercialization of Electrification as Stated by the IEA (under the assumption of an average temperature increase of 2°C)

Projected sales volume of passenger vehicles (millions of vehicles)



Source: Documents from the 1st Strategic Commission for the New Automotive Era, Ministry of Economy, Trade and Industry

		Stagnant (decelerating global warming countermeasures)	Promotional (promoting global warming countermeasures at a steady pace)	Ambitious (accelerating global warming countermeasures)
Transition risks	Hypothesized scenarios	CPS	STEPS	SDS
	Status of hypothesized global warming progression	Uninterrupted trend of rising CO ₂ Temperature increase of over 2°C	Current CO ₂ levels maintained Temperature increase of over 2°C	CO ₂ increases curtailed Temperature increase of less than 1.5°C
	Quantitative business-related indicators	CO ₂ emissions 47 Gt (by 2050)	CO ₂ emissions 36 Gt (by 2050)	CO ₂ emissions 25 Gt (by 2030) → 10 Gt (by 2050)
		EU carbon tax US\$38/t-CO ₂ (by 2040)	EU carbon tax US\$43/t-CO ₂ (by 2040)	EU carbon tax US\$140/t-CO ₂ (by 2040)
		Crude oil US\$134 per barrel (by 2040)	Crude oil US\$103 per barrel (by 2040)	Crude oil US\$59 per barrel (by 2040)
		No progress with the introduction of renewable energy	Ratio of renewable energy 23% (2030) → 29% (2050)	Ratio of renewable energy 30% (2030) → 61% (2050)
Physical risks	Slight increase in ratio of BEVs among new vehicles from the 2018 level of 2%	BEVs comprising 15% of new vehicles (2030) → 27% (2050)	BEVs comprising 47% of new vehicles (2030) → 72% (2050)	
	Hypothesized scenarios	RCP8.5	RCP6.0	RCP2.6
	Qualitative business-related indicators	Damage from meteorological disasters	Damage not as significant as RCP8.5 but expected to be more significant than its current level	Damage remains at its current level but potential for significant impact during transition period
		Damage from rising sea levels		
		Damage due to deteriorating ecosystems		
		Damage from food and water shortages		



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 the Long-term Plan, and the circumstances under the scenarios on the left. Items expected to have a significant impact on our businesses were identified as key items. As a result, for key items related to transition risks, we identified the inability to respond to fuel efficiency regulations and increasing electrification with our current products as a risk, and innovative technologies as an area where we can create opportunities. For physical risks, the risk of revenue declines due to suspended plant operations following meteorological disasters was identified as a key item.

	Key items	Major potential financial impact	Timeframe / Level of impact	Response
Major risks	New controls and regulations placed on our existing products and services	Declines in revenue due to the impact of regulations on fuel efficiency and exhaust gas We expect to see even tighter regulations on fuel efficiency (lower CO ₂ emissions [upper limit] to roughly 1/3 between 2018 to 2030) as well as acceleration in the transition to electric vehicles (going from comprising 2% of all vehicles in 2018 to 47% of all vehicles in 2030). Inability to respond to these changes would result in downward pressure on revenue totaling approximately ¥200.0 billion by 2025.	Medium-term / High	Increase driving distance through development of energy-saving technologies for products powered by electricity, etc.
	Increase in negative feedback from our stakeholders	Refusal to invest and share price declines due to insufficient response to the need for environmental information disclosure Our management may be impacted by a refusal of stakeholders to invest in the Company, and declines in the share price may result from a perceived lack of information disclosure and reluctance to respond to the increasing level of information disclosure requirements of stakeholders, especially investors.	Long-term / Relatively high	<ul style="list-style-type: none"> Establish a structure for gathering and managing information through collaboration between the Sustainable Environment Strategy Department of the Safety, Health & Environment Division and other relevant divisions. Enhance the content of disclosed information and strengthen communication with stakeholders Prepare for the acquisition of third-party certification in order to enhance the reliability of our information
	Increased severity and occurrence of abnormal weather such as typhoons and floods	Decline in revenue due to suspended plant operations and supply chain disruptions We anticipate downward pressure on revenue totaling approximately ¥90.0 billion in the event our plant operations are suspended in Japan and Asia (where we conduct 66% of our overall production), where the possibility of floods occurring is high.	Long-term / Relatively high	<ul style="list-style-type: none"> Construct plants equipped with measures to mitigate weather disasters Ensure multiple suppliers for components and other materials Develop platforms that connect our plants across the globe and establish a global production structure that can immediately respond to changing production needs
Major opportunities	Utilization of more effective production and logistics processes	Reduced energy costs at plants If we 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 1.73 million tons per year. This, combined with our energy-saving activities, would likely reduce energy costs by approximately ¥60.0 billion.	Medium-term / Relatively high	Continue to engage in energy-saving activities and promote the development of energy-saving production technologies with the aim of further enhancing production efficiency
	Development of new products and services through R&D and technological innovation	Increase in revenue due to higher demand for xEVs <ul style="list-style-type: none"> Increase in number of xEVs in each country against the backdrop of the trend toward carbon neutrality. Rising demand for technologies such as heat pumps that improve the heat efficiency of xEVs Forecast of a positive boost to revenue totaling nearly ¥500.0 billion in 2025 resulting from the response to electrification, thermal products related to electrification Further creation of opportunities through the development of engine control systems and other technologies to respond to alternative fuel (e-fuel, hydrogen fuel, etc.) 	Medium-term / High	<ul style="list-style-type: none"> Accelerate the development of driving, power supply, and control technologies for electrification as well as technologies for heat pump systems and thermal systems Develop engine control systems and other technologies that respond to alternative fuel
	Diversification of business activities	Increase in revenue following higher demand for decarbonization technologies <ul style="list-style-type: none"> Creation of opportunities using technologies that contribute to carbon neutrality, which were cultivated in the automotive domain, including agricultural, logistics, FA, and CO₂ adsorption businesses Forecast of ¥300.0 billion in revenue in the agricultural, logistics, and FA domains in 2030 	Long-term / Medium	Accelerate the development of sensor, control, robot, and bio-related technologies to create agricultural production technologies and technologies for adsorbing CO ₂ , among others. Also, develop new businesses and create sales channels for such technologies through proactive business alliances

Impact on Management Strategy

Through the aforementioned analysis, we gained an understanding regarding the trend of carbon neutrality's impact on our product development and production activities. Based on this understanding and guided by the DENSO Revolution Plan "Reborn21," we defined "aiming to achieve carbon neutrality in the manufacturing industry" as the Great Cause of our environmental activities and expanded our business domains to include "society," alongside *Monozukuri* (manufacturing) and Mobility. Furthermore, we aim to achieve carbon-neutral electricity by 2025 and carbon-neutral gas by 2035. In the Safety, Health & Environment Division, we have already launched an expert team to promote carbon neutrality. We also established the new Environment Neutral Systems Development Division and the FC System Business Development Division. Through these organizations, we will aim to realize carbon-neutral manufacturing, encompassing carbon neutrality not only in the products we provide but also in the production activities at our plants.

Impact on Financial Planning

Against the backdrop of the carbon neutrality trend, it is crucial that we further strengthen the development of products powered by electricity and transition to products such as hydrogen fuel and biofuel that respond to alternative fuel needs and further strengthen our products powered by electricity. To that end, we have reflected an increase in R&D costs within our financial planning in response to costs related to electrification, which will follow the expansion of products powered by electricity, and products that respond to alternative fuel needs. Furthermore, we have reflected purchasing costs of CO₂ offsets and renewable energy with a view to realizing carbon-neutral *Monozukuri* (manufacturing). These purchasing costs have been secured within the budget for fiscal 2022, and we have already begun to undertake the purchasing process.



Governance

DENSO views environmental issues, including climate change, as one of the highest priority issues (Materiality) in the promotion of its sustainability management. Accordingly, DENSO has established KPIs for these issues and is working to achieve them through its business activities. DENSO has established the Companywide Safety, Health, and Environment Committee as an organization for deliberating and determining important items related to climate change. This committee is chaired by a representative director, who also serves as a senior executive officer, and meets twice a year. At these meetings, members discuss and decide upon important items in the promotion of environmental management, such as formulating medium- to long-term targets and executing investment related to energy conservation. Items that the Companywide Safety, Health, and Environment Committee deems to have a significant impact on the Company's businesses (environmental vision, medium-term management strategies, large-scale investments, etc.) are then deliberated on by the Board of Directors. Serving under the Companywide Safety, Health, and Environment Committee are environment committees in each business group and at each Group company in Japan, as well as environment committees in each region of operation overseas. These committees are chaired respectively by a managing officer. Furthermore, DENSO has established energy, logistics, green products, and production environment subcommittees. By clarifying the scope of responsibility for each subcommittee, the Company is promoting activities related to safety, health, and the environment in an efficient and highly focused manner.

Also, the Companywide Safety, Health, and Environment Committee will examine and implement the necessary procedures for sharing environmental issues such as those identified based on the results of scenario analysis. Upon doing so, these issues will be reflected in DENSO's Companywide business plans, which will be executed accordingly.

Risk Management

Amid the rapidly occurring changes in the business environment, DENSO is striving to ascertain the constantly diversifying risks and implementing risk management from the perspectives of minimizing damage and ensuring business continuity. Climate-related risks are reported to the Companywide Safety, Health, and Environment Committee, which identifies key items and clarifies the Company's response. We recognize climate-related risks (physical risks) as one of the major risks facing DENSO. Based on this awareness, we are strengthening our response to these risks on a Groupwide basis.

Strengthening Our Risk Prevention and Initial-Response Measures and Formulating BCPs: □ P.99

Indicators and Targets

To realize its eco visions, DENSO formulates environmental action plans every five years, which lay out specific targets and plans, and takes action accordingly. At the same time, we take steps to confirm the level of achievement for each target.

Main KPIs (2025) of the Current Environmental Action Plan (Seventh Phase)

- CO₂ emissions per unit* following production activities: 50% reduction (non-consolidated/each Group company) (compared with fiscal 2013)
- Waste per unit: Maintain at 50% (non-consolidated) (compared with fiscal 2004)
- Instances of legal nonconformance in terms of environmentally hazardous substances: Zero, etc.

* Limited to CO₂ from energy sources

In addition to the above plans, for reducing CO₂ emissions from our production activities, we are promoting activities related to carbon-neutral *Monozukuri* (manufacturing) that aim to achieve carbon-neutral electricity by 2025 and carbon-neutral gas by 2035, guided by our carbon-neutral strategy based on the DENSO Revolution Plan "Reborn21." Additionally, for mobility products, we are working to reduce CO₂ emissions to the greatest extent possible by promoting the development of electrification technologies for all aspects of mobility. We are also working to achieve negative CO₂ emissions through the establishment of technologies to capture, recycle, and reuse CO₂. Through these efforts, we will aim to achieve carbon neutrality.

Going forward, we will make efforts to thoroughly examine and conduct more precise analysis regarding the quantitative financial impact of key risk items on our businesses as well as specific risks and opportunities facing our businesses. We will then work to reflect the results of these efforts within our business strategies and action plans.



For details on Eco Vision
<https://www.denso.com/global/en/csr/environment-report/management/ecovision/ecovision/#/MOVIE/>



For details on Environmental Action Plan
<https://www.denso.com/global/en/about-us/sustainability/environment/action-plan/>



For details on DENSO's environmental performance data
<https://www.denso.com/global/en/about-us/sustainability/library/environment-data/>

