

## Disclosure Based on TCFD Recommendations (Response to Climate Change)

### Support initiative for TCFD recommendations

In 2021, the Group announced its agreement with the Task Force on Climate-Related Financial Disclosures (TCFD) recommendations. In addition to switching to renewable energy and increasing the sales revenue ratio of SDG-contributing products, in the same year, we also formed a Company-wide cross-organizational TCFD Task Team under the Risk Management Committee and began promoting activities to disclose information based on the TCFD recommendations.

### Strategy (impact on the organization’s business, strategy, and finances)

With regards to TCFD, in FY2021 the “TCFD Task Team” led a “climate-related scenario analysis” project for the year 2040 (long-term), identifying potential risks and opportunities associated with climate change. We have identified the following risks and opportunities that we expect will have a relatively large financial impact.

In FY2024, we updated information about “plausible scenario components” of the “climate-related scenario analysis,” and verified that there were no changes to “our Group impact assessment.”

#### The 1.5/2°C scenario

##### [Risks]

The significant risks we have identified include increased operating and transportation costs due to higher carbon prices, higher electricity prices due to advances in low-carbon technologies, and higher prices for biomass feedstocks, and higher prices for various plastic feedstocks due to higher naphtha prices resulting from lower gasoline demand.

##### [Opportunities]

In the current social environment, the movement of people and goods is being replaced by digital means due to incentives to avoid physical contact and the increased burden of travel costs. We think this presents opportunities to expand sales of semiconductor-related products. In addition, we will pursue new business opportunities by developing new technologies, products, and services with an eye toward a low-carbon society and a recycling-oriented economy. These include 3R + Renewable products (sustainable resources), electric vehicle (EV)-related products such as battery materials and lightweight automotive materials, as well as packaging films for food with room-temperature storage and freshness preservation functionality.

#### 1.5/2°C Scenario Analysis

	Drivers	Possible elements of scenario (social trends)	Group impact assessment	Risk opportunity
Policies and regulations	Increase in carbon prices	<ul style="list-style-type: none"> <li>Rising carbon prices* [Carbon prices in line with the 1.5°C scenario (developed countries)]</li> <li>2030: 140 USD/t-CO<sub>2</sub></li> <li>2040: 205 USD/t-CO<sub>2</sub></li> <li>2050: 250 USD/t-CO<sub>2</sub></li> <li>(2024 IEA World Energy Outlook)</li> </ul>	<ul style="list-style-type: none"> <li>Increase in operating costs due to higher energy prices for manufacturing</li> </ul>	Risk
			<ul style="list-style-type: none"> <li>Higher transportation costs</li> </ul>	Risk
Markets	Advances in low-carbon technologies	<ul style="list-style-type: none"> <li>Higher electricity prices due to increased demand for electricity derived from renewable energy sources</li> <li>Higher raw materials prices due to increased demand for biomass-derived raw materials</li> </ul>	<ul style="list-style-type: none"> <li>Higher operating costs</li> </ul>	Risk
			<ul style="list-style-type: none"> <li>Rise in biomass raw material prices</li> </ul>	Risk
	Decline in gasoline demand in line with advances in low-carbon technologies	<ul style="list-style-type: none"> <li>Naphtha becomes a primary product, rather than a by-product</li> <li>Along with gasoline and diesel, naphtha supplies remain stable, but prices rise</li> </ul>	<ul style="list-style-type: none"> <li>Increase in procurement and acquisition costs due to higher naphtha prices</li> </ul>	Risk
	Digital alternatives to the physical movement of people and goods	<ul style="list-style-type: none"> <li>Due to factors including the impact of carbon taxes and GHG emissions regulations, the financial burden of physically moving people and goods increases</li> <li>Demand increases for semiconductors in digital devices</li> </ul>	<ul style="list-style-type: none"> <li>Increase in sales through the expansion of semiconductor-related product sales</li> </ul>	Opportunity
	Advances in low-carbon technologies	<ul style="list-style-type: none"> <li>Customers demand recycling of resources</li> <li>Switch to 3R + Renewable products (sustainable resources) accelerates</li> </ul>	<ul style="list-style-type: none"> <li>Increase in sales through the early launch of 3R + Renewable products</li> </ul>	Opportunity
	Increased demand for low-carbon technology products	<ul style="list-style-type: none"> <li>Shift to a low-carbon society</li> <li>Carbon taxes and GHG emission regulations tighten</li> <li>Development of economically viable CO<sub>2</sub> transport technologies and the establishment of their infrastructure progresses</li> </ul>	<ul style="list-style-type: none"> <li>Increase in sales through the expansion of low-carbon product and service sales</li> </ul>	Opportunity

	Expanding EV-related demand (materials for batteries, lightweight automotive materials)	<ul style="list-style-type: none"> <li>Steady increase in EVs as a percentage of total vehicles sold</li> </ul>	<ul style="list-style-type: none"> <li>Increase in sales due to the expansion of EV-related product and service sales</li> <li>Increase in sales of lightweight automotive materials</li> </ul>	Opportunity
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\* Increased operating costs due to rising carbon prices:  
 Assuming our Group's total CO<sub>2</sub> emissions for FY2040 remain at the same level as FY2024, approximately 135,000 (forecasted) tons per year (Scope 1 + 2), with a carbon price of ¥31,259 per t-CO<sub>2</sub> (at ¥152.5/USD), the estimated increase in burden would be approximately ¥4.2 billion per year (provisional). (Last year: approx. ¥4.6 billion/year)

### The 4°C scenario

#### [Risks]

Assuming that the introduction of electricity derived from renewable energy sources will be systematically promoted toward the 2050 goal of taking on the carbon neutrality challenge, we can foresee that the impact of transition risks, such as fluctuations in fossil fuel prices (especially crude oil and natural gas) and higher operating costs due to soaring electricity prices caused by stricter GHG emission regulations, would be greater than under the 1.5/2°C scenario. We have also identified significant physical risks associated with rising atmospheric temperatures. These include reduced sales due to supply disruptions of key raw materials and the shutdown of operations at our own manufacturing sites that could be caused by the occurrence or increased frequency of extreme weather events, such as cyclones and floods.

#### [Opportunities]

Sales of various sheeting products for building materials and waterproof sheeting products and services are expected to increase amid the promotion of efforts to build resilient cities that can withstand extreme weather conditions and major disasters. These include building materials and waterproof roofing sheet products that are lightweight, highly durable, impact resistant, highly insulating/heat shielding, fire-resistant, and have other functions. Due to severe environmental changes, including rising atmospheric temperatures, demand for packaging materials for long-term preservation of foods and processed products is expected to increase as the numbers of livestock used for meat decreases, and as demand for packaging materials for fruits and vegetables is expected to increase with declines in crop yields, leading to higher sales of various packaging film products.

### The 4°C Scenario Analysis

	Drivers	Possible elements of scenario (social trends)	Group impact assessment	Risk opportunity
Markets	Fossil fuel price fluctuations	<ul style="list-style-type: none"> <li>Higher crude oil and natural gas prices</li> <li>2019 crude oil: 63 USD/barrel → 2030: 79 USD/barrel → 2050: 75 USD/barrel</li> <li>2019 natural gas (Japan): 10.1 USD/MBtu* → 2030: 8.3 USD/MBtu* → 2050: 8.7 USD/MBtu*</li> <li>Decline in Japan rise in other regions (IEA 2020 and 2024 World Energy Outlook)</li> <li>* MBtu: million British thermal units</li> </ul>	<ul style="list-style-type: none"> <li>Higher raw material costs due to fluctuations in procurement and acquisition prices</li> <li>Increase in operating costs due to higher energy prices for manufacturing</li> </ul>	Risk
Physical risk: Acute	Increased severity and frequency of extreme weather events like cyclones and floods	<ul style="list-style-type: none"> <li>Increased severity and frequency of cyclones, heavy rains, floods, droughts, etc.</li> <li>Suspended operations at major raw material suppliers</li> <li>Suspended operations at our manufacturing bases (Japan and abroad)</li> </ul>	<ul style="list-style-type: none"> <li>Lower sales due to temporary suspension of operations</li> </ul>	Risk
		<ul style="list-style-type: none"> <li>Promotion of resilient city development → Greater demand for disaster-resistant building and industrial materials (Examples of functionality required: lightweight, highly durable, impact resistant, highly insulating and heat-shielding, fireproof, etc.)</li> </ul>	<ul style="list-style-type: none"> <li>Increase in sales of various sheet products for building materials, waterproof sheet products/services</li> </ul>	Opportunity
	<ul style="list-style-type: none"> <li>Decrease in livestock for meat → Higher demand for packaging materials for long-term storage of food/processed products</li> <li>Falling agricultural yields → Increased demand for packaging materials for fresh produce</li> </ul>	<ul style="list-style-type: none"> <li>Increase in sales of various packaging film products</li> </ul>	Opportunity	
	Infectious and other diseases and movement restrictions associated with rising temperatures	<ul style="list-style-type: none"> <li>Growing need for local hospital, home, and remote diagnosis</li> <li>Increase in healthcare-related opportunities (diagnosis and treatment) regarding young children and the elderly who are sensitive to environmental changes → POCT: Point of Care Testing / Increased demand for medical equipment</li> </ul>	<ul style="list-style-type: none"> <li>Increase in sales from the expansion of healthcare-related product sales</li> <li>Greater demand for pharmaceutical packaging</li> </ul>	Opportunity

In FY2025 which is the second year of the Medium-term Business Plan 2024–2026, the Sustainability Promotion Committee and Risk Management Committee will continue to play a central role (by backcasting from the results of this scenario analysis) to materialize short-term measures, which will be deployed to relevant internal departments and implemented and promoted. In the medium- to long- term, we will update our scenarios and financial impact estimates as appropriate in light of changes in the macro environment, and work to enhance corporate value through the development of new technologies and products that contribute to a low-carbon society and a recycling-oriented economy. We will also work to enhance the sophistication of our management strategy by reforming our foundational organizational culture and strengthening our human resources.

## Governance

The Group has positioned the Sustainability Promotion Committee (chaired by the President) as a high-level committee that formulates, deliberates, and decides on measures that contribute to the realization of a sustainable society, including the SDGs. The committee is responsible for achieving GHG reduction targets on climate change issues, risk management, and achieving sales ratio targets for SDG-contributing products and technologies (including contributions to climate change issues). The committee is responsible for the execution of measures related to climate change response, and its supervision is the responsibility of the Board of Directors. Regular reports on climate change issues and important decisions made by the Sustainability Promotion Committee are reported to the Board of Directors by the President.

A TCFD Task Team was established under the Risk Management Committee, which is the subcommittee of the Sustainability Promotion Committee for ongoing TCFD (information disclosure) and more comprehensive disclosure details.

● TCFD Organization Chart



## Risk Management

Identification, assessment, and management of TCFD-related risks and opportunities are conducted in accordance with our Group risk management processes. For details, see the [“Risk Management”](#) page.

## Metrics and Targets

In response to the risks identified in the 1.5/2°C or 4°C scenarios, such as carbon price increases, stricter GHG emission regulations, and fluctuations in fossil fuel prices, we adopted a new 2030 GHG emissions reduction target (Scope 1 + Scope 2) in May 2024 commensurate with the 1.5°C scenario standard based on the Environmental Vision 2050 that we formulated in March 2020, and we continue working to reduce emissions. For details, see the [“Reduction of GHG”](#) page.

With regard to the development of new technologies and products that contribute to a low-carbon society and a recycling-oriented economy included in these opportunities, the Group decided in FY2018 to incorporate the SDGs as one of its corporate policies and started a certification system for SDG-contributing products, technologies, and activities in FY2019. Contributing to the response to climate change (measures to counter global warming, reduce environmental impact, etc.) is part of the opportunity to achieve the SDGs, and we hope to contribute to a sustainable society through our business.

We have investigated research and development, sales strategies, etc. such as through our Corporate Planning and R&D departments with the aim of providing SDG-contributing products and technologies, and are performing progress management based on specific targets and plans. The Sustainability Promotion Committee has decided on a target ratio of sales revenue from SDG-contributing products to sales of 70% or more for FY2030 and 63% or more for FY2024 and is implementing the required activities. The actual results were 66.4% for FY2024, achieving the target for FY2024.

For details, see the [“Initiatives for SDGs”](#) page.

Moving forward, we will undertake a series of initiatives that will contribute to the sustainable enhancement of corporate value. We will periodically confirm and update the risks and opportunities identified in our climate-related scenario analysis with an eye to changes in the external environment and market conditions, and will fulfill our responsibility for accountability by disclosing information to stakeholders as appropriate upon quantifying the financial and other impacts, and specifying and enhancing metrics and targets.