

Disclosure of financial information related to climate change (based on the TCFD recommendations)

In January 2020, Toyobo Group endorsed the Task Force on Climate-related Financial Disclosures (TCFD) recommendations and has been advancing the disclosure of our initiatives in line with these recommendations. For details, please refer to the Annual Securities Report.  Annual Securities Reports

Governance

We have established the Sustainability Committee, chaired by the President and Chief Executive Officer, who has the highest seniority regarding issues related to climate change. The committee deliberates on setting high-level policies and targets for addressing these issues. The Board of Directors regularly receives reports from the committee, approves important items such as high-level policies and targets, and monitors the progress of related activities.

Strategy

In Sustainable Vision 2030, Toyobo Group has designated the achievement of a decarbonized and circular society as a key sustainability goal. Consistent with the TCFD recommendations, we have analyzed and organized future risks and business opportunities based on climate change scenarios aligned with the Paris Agreement. By identifying the financial impacts of these risks and opportunities, we aim to strengthen the resilience of our business strategy through the establishment of relevant goals and indicators and the implementation of targeted countermeasures.

Scenario analysis

Considering the range of possible scenarios arising from the severity of climate change impacts and progress in countermeasures, we referred to the following scenarios as typical examples. For the time horizon, “short term” is defined as approximately three years, “medium term” up to 2030, and “long term” up to 2050.

- Decarbonized society transition (1.5° C) scenario: NZE (IEA WEO 2024) and others
- Severe climate change (4° C) scenario: SSP5-8.5 (IPCC AR6) and others

Risk management

Based on the results of a Company-wide risk assessment, we manage natural disaster risks, including those exacerbated by climate change such as severe flooding and storm surges, as key risks for Toyobo Group.

Risks, opportunities, and mitigation measures by scenario

Social changes and their impact	Risks and opportunities		Measures taken by Toyobo Group
	Category	Details	
Impacts of transitioning to a decarbonized society Changes in policies, regulations, technology, and markets on a broad scale, etc.	Transition risks	Short term Introduction of carbon pricing	- Promotion of GHG emission-reduction plans (including energy conservation, production efficiency enhancements, fuel conversion, and adoption of renewable energy) - Use of internal carbon pricing systems
		Medium to long term Increases in raw material and fuel prices (e.g., carbon price pass-through)	- Shift to non-petroleum-based resources - Engagement and collaboration with suppliers (e.g., development of low-carbon raw materials) - Diversification of raw material procurement methods (expanding multiple sourcing and local procurement)
		Medium to long term Increased costs associated with energy efficiency initiatives and introduction of high-efficiency equipment, etc.	- Innovation and pursuit of ultra-high efficiency in production processes - Utilization of sustainable finance and transition finance - Enhancement of production efficiency across the value chain (e.g., integration and collaboration with affiliates, M&A)
		Medium to long term Increased costs due to low-carbon/decarbonization requirements in product manufacturing	- Expansion of renewable energy adoption and procurement - Enhancement of production process efficiency and promotion of energy conservation - Cost pass-through to product prices
	Transition opportunities	Increasing calls for reduction or substitution of petroleum-based resources	- Acceleration of the shift to recycled and biomass-derived raw materials - Review of general-purpose material businesses reliant on petroleum-based resources
		Increasing demand for low-carbon and decarbonized materials and products	- Acceleration of the shift to recycled and biomass-derived raw materials - Innovation in production processes for biotechnology businesses using microorganisms such as yeast for bio-manufacturing - Addressing procurement challenges related to raw materials (recycled and biomass-derived) due to material scarcity - Promotion of product development and planning with low-carbon and decarbonized materials - Acceleration of the development of innovative low-carbon and decarbonized materials - Strengthening of production and quality management systems for low-carbon and decarbonized products
Impacts of climate change progression Direct damage to assets, indirect effects from supply chain disruptions, and changes in technology and markets, etc.	Physical risks	Medium term Expansion of demand for products contributing to greenhouse gas (GHG) emission reduction	- Collaboration within the supply chain, including customers, from the perspective of contributing to emission reduction - Acceleration of product development and planning* that contributes to emission reduction through replacement of conventional technologies * Examples include energy-efficient seawater desalination membranes, VOC recovery equipment that enables reuse by avoiding solvent combustion treatment, water-developed flexo plates that contribute to reducing GHG emissions from wastewater treatment, materials for fuel cells, and coating replacement films that substitute for high-GHG-emission coating processes.
		Medium term Growth in renewable energy and battery storage markets	- Strengthening of product development and planning for renewable energy and storage battery-related businesses* - Enhancement of capabilities in anticipating mega-trends, expanding overseas, and providing solutions through the establishment of the joint venture TOYOBO MC Corporation by Toyobo and Mitsubishi Corporation * Examples include osmotic power generation membranes, super fibers and films for floating offshore wind power, VOC recovery equipment for lithium-ion secondary battery factories, membranes and systems for concentrating valuable substances such as lithium, materials related to hydrogen generation systems, materials related to hydrogen carriers, and donor materials for organic photovoltaic (OPV) cells.
		Present to medium term Decline in productivity due to extreme heat	- Clarification of basic policy on heatstroke prevention - Work environment and proper management of operations (such as installing additional sunshades, air conditioning, and ventilation systems, and shortening continuous working hours in hot and humid workplaces) - Expansion of factory automation - Heatstroke management for on-site workers using IoT devices and other technologies
	Physical opportunities	Present to medium term Disruption of raw material supply due to natural disasters	- Review of inventory levels and expansion of bulk purchases - Diversification of logistics routes - Exploration of alternative raw materials less affected by climate change
		Present to medium term Instability in raw material procurement	
		Medium term Damage to equipment and operational shutdowns caused by flooding and storm surges	- Clarification of the basic policy on flood countermeasures - Enhancement of durability for production and power facilities, relocation, and raising of equipment - Diversification and relocation of production bases - BCP training
	Physical opportunities	Medium term Increased demand for civil engineering projects	Expansion of products used in disaster mitigation and restoration work* * Examples include sand-proofing sheets, concrete delamination prevention sheets, and soft roadbed improvement materials.
		Medium term Increased need for desalination due to water shortages and droughts Rising demand for zero liquid discharge (ZLD) solutions due to freshwater scarcity	- Expansion of sales for seawater desalination membranes such as RO/FO membranes*1 - Development of energy-efficient and durable RO/FO membranes, etc. - System development for high-efficiency concentration membranes (BC membranes)*2 - Strengthening of production and quality control systems for RO/FO/BC membranes, etc. - Enhancement of sales capabilities through TOYOBO MC Corporation leveraging Mitsubishi Corporation's overseas network *1 RO/FO: Reverse Osmosis/Forward Osmosis *2 BC: Brine Concentration
	Physical opportunities	Long term Increased demand for infection control measures (prevention and treatment) due to rising temperatures	- Expansion of sales of food packaging-related products in response to increasing demand for food hygiene - Promotion of research and development for infectious disease-related products and technologies

Green strategy

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 Climate Change
  ESG Performance Data (Environment)

Materiality indicators Indicators and fiscal 2025 results for a decarbonized and circular society > p.16

Indicators and goals

Toyobo Group has set goals for climate change and is advancing various initiatives to achieve them.

Key risks and opportunities	Financial impact			Category	Indicator	Target	Main initiatives	Fiscal 2025 performance
	Summary	Impact amount	Mitigation costs					
Key risk 1 Risk of damage to buildings and equipment due to water-related disasters (e.g., floods, storm surges)	Our main facilities (Tsuruga, Iwakuni, and Inuyama) are exposed to water-related risks, which are expected to increase due to climate change. An estimate has been made of the potential loss of assets at these facilities due to water damage.	Time frame: 2030s Estimated asset loss: Up to approx. ¥65 billion* * Estimated based on the book value of the facility and the damage ratio from water-related disasters (as published by the Ministry of Land, Infrastructure, Transport and Tourism)	FY2023–2026 cumulative total: A portion of the ¥17 billion investment in safety, disaster prevention, and environmental measures is applicable.	GHG	GHG emissions	FY2031: 27% reduction (SBT) (base year: FY2021) Note: Equivalent to a 46% reduction compared with FY2014	● Improved energy conservation, enhanced production efficiency, fuel conversion, and adoption of renewable energy, among others	13% reduction compared with FY2021 (784 thousand t-CO ₂)
Key risk 2 Introduction of carbon pricing	Assuming a carbon price of ¥15,000 per ton of CO ₂ for fiscal 2031, we compare the carbon tax burden under two scenarios: one without additional GHG emission-reduction measures (BAU* scenario) and one with implemented measures (transition scenario). * BAU: Business As Usual	Time frame: FY2031 Cost reduction: approx. ¥10 billion* * Difference in the carbon tax burden between the BAU scenario and the transition scenario ● BAU scenario: ¥20 billion (carbon price for approximately 1.3 million tons of CO ₂ emissions) ● Transition scenario: ¥10 billion (carbon price for approximately 655,000 tons of CO ₂ emissions)				FY2051: Net zero	● Adoption of carbon-free fuels, renewable energy procurement, and production process innovation, among others	Electricity generated from renewable energy in fiscal 2025 was 1,487 MWh
Key risk 3 Increasing calls for reduction or substitution of petroleum-based resources Key opportunity 1 Growing demand for low-carbon and decarbonized materials and products	In anticipation of increasing societal demands, including from customers, for the reduction and substitution of petroleum-based resources as part of future decarbonization efforts, we estimate the revenue from low-carbon and decarbonized materials and products in the film business for fiscal 2031.	Time frame: FY2031 Films segment revenue from opportunities: approx. ¥130 billion* * Estimated as 60% of the target revenue for FY2031 (¥220 billion) from low-carbon and decarbonized materials and products				FY2031: 12.5% reduction (SBT) (Base year: FY2021) * Category 1*: Acceleration in the shift to recycled and biomass-derived raw materials * Emissions from activities related to purchased raw materials and services such as manufacturing * Category 11*: Energy conservation with VOC recovery equipment, among others * Emissions from the use of products sold		44% increase (3.34 million t-CO ₂)
Key opportunity 2 Rising demand for advanced water treatment due to the scarcity of water resources	Given advancing climate change and societal shifts toward decarbonization, we anticipate increased demand for products and services* that contribute to GHG reduction for customers and water treatment membranes. We estimate revenue for fiscal 2031 in the Environmental and Functional Materials segment, which encompasses many of these materials and products. * Examples include energy-efficient seawater desalination membranes, VOC recovery equipment that enables reuse by avoiding solvent combustion treatment, and water-processed flexo plates that contribute to reducing GHG emissions from wastewater treatment.	Time frame: FY2031 Revenue for the Environmental and Functional Materials segment: approx. ¥250 billion* * Includes not only water treatment membranes and VOC recovery equipment but also mooring lines for floating offshore wind power, engineering plastics for EVs, storage battery-related materials, hydrogen carrier-related materials, and donor materials for organic photovoltaic (OPV) cells.	Part of the ¥4.4 billion R&D expenditure for the Films segment in fiscal 2025	Environmental investment	Internal carbon pricing	● Plan: ¥17 billion cumulative for FY2023–2026 (total investment in safety, disaster prevention, and environmental measures) ● Initiatives: Low carbonization of in-house power generation facilities, introduction of renewable energy equipment, and water damage countermeasures for production and power equipment (such as relocation and raising of facilities) ● Fiscal 2025 performance: Full-scale operation of the LNG-fired power plant at the Iwakuni Production Center (coal phase-out), additional solar power installations at the Inuyama Plant, and new solar power installations at overseas subsidiaries		
Key opportunity 3 Expansion of demand for products contributing to greenhouse gas (GHG) emission reduction			Part of the ¥3.8 billion R&D expenditure for the Environmental and Functional Materials segment in fiscal 2025			● The internal carbon pricing system was introduced in fiscal 2023 and is still in operation: ¥10,000 per ton of CO ₂ ● Expansion of decision-making on capital investment and investment in development facilities, considering variations in CO ₂ emissions		
						It was decided to add GHG emission reduction as a climate-related indicator to the sustainability metrics reflected in executive compensation incentives. This applies to compensation paid from July 2025 onward, based on fiscal 2025 results.		
				Climate-related opportunities	Greening ratio of films (Set as a measure to also address transition risks)	FY2031: 60%	● Promotion of material and chemical recycling, development and increased adoption of biomass raw materials, and reduction of film thickness volume, among others	14%
					Seawater desalination with membranes	FY2031: Equivalent to tap water volume for 10 million people	● Expansion of sales of membranes for seawater desalination such as RO/FO membranes ● Development of energy-efficient and high-durability RO/FO membranes, among others ● Strengthening of production and quality control systems for RO/FO membranes, among others ● Start of sales of RO membranes in India	Tap water volume for 5.2 million people
					Air volume treated by VOC recovery equipment for lithium-ion battery separator factories* * Air volume treated by devices that have been sold and are currently in operation	FY2031: 7 billion Nm ³ per year	● Strengthening of sales activities focused on GHG reduction contributions from customers (replacement of combustion-based methods) ● Enhancement of the sales structure through TOYOBOMC Corporation ● Expansion of sales beyond the storage battery sector, targeting processing industries such as printing, films, and seals	5.4 billion Nm ³ per year