

Disclosure Based on TCFD Recommendations

Recognizing the scale of the impact of climate change on our group and stakeholders, we have identified a “decarbonized and circular society” as one of our materialities. In January 2020, we announced our support for the recommendations made by the Task Force on Climate-related Financial Disclosures (TCFD), and have been working on initiatives and disclosures that follow them.

Governance

The entire Toyobo group is working together to formulate a strategy to achieve carbon neutrality by 2050, and to contribute to realizing a carbon neutrality in society as a whole. Under the Sustainability Committee, which is chaired by the President, we established a subcommittee called the Carbon Neutral Strategies

Council in April 2021 as a platform to accelerate our initiatives. The Carbon Neutral Strategies Cross-functional Team, made up of members from across the company to formulate strategies and milestones for carbon neutrality, has been placed under the Council to work on concrete measures.

Strategy

Scenario analysis

First, we analyzed how climate change would impact our business based on two scenarios for our core film business, which is expected to be relatively largely impacted.

In the scenario limiting temperature rise to 2°C, societal changes associated with the shift to a decarbonized society could affect our business. In response, we will begin to examine rationalization of the manufacturing process, study the introduction of renewable energy and carbon-free fuel (hydrogen, ammonia, etc.).

If the temperature rise is around 4°C, our business may be affected by damage to production facilities and suspended supplies of raw materials due to extreme wind and flood damage. We will work to prevent this by periodically reviewing and updating our BCP, reviewing raw material inventory levels, and considering multiple purchases. On the other hand, our analysis shows that we may be able to capture new business growth opportunities as our technologies and products meet the growing expectation and demand of customers for products that contribute to low carbon emissions.

Scenarios	2°C	4°C
Vision of society	Bold policies and technological innovations will be promoted to limit the average temperature increase to 1.5°C by the end of the century and to achieve the development of a sustainable society. The societal changes brought by the transition to a decarbonized society will likely affect businesses. <Examples> <ul style="list-style-type: none"> Introducing a carbon tax and higher carbon prices Shifting to automobile electrification and expanding renewable energy 	Although Intended Nationally Determined Contributions (INDCs) and other national policies have been implemented in line with the Paris Agreement, the average global temperature will rise by about 4°C by the end of this century. Climate change, with rising temperatures, will likely affect businesses. <Examples> <ul style="list-style-type: none"> Increasing flood damage due to heavy rain
Reference	<ul style="list-style-type: none"> SDS (IEA WEO2020/ETP2020, 2°C scenario) NZE (IEA Net Zero by 2050: A Roadmap for the Global Energy Sector, 1.5°C scenario) RCP2.6 (IPCC AR5, 2°C scenario) 	<ul style="list-style-type: none"> RCP8.5 (IPCC AR5, 4°C scenario) STEPS (IEA WEO2020/ETP2020, 4°C scenario)
Risks and opportunities	Transitional risks and opportunities are likely to materialize	Physical risks and opportunities are likely to materialize

Climate change-related risks and opportunities

Based on the 2°C and the 4°C scenarios, we identified risks and opportunities for the film business. We extracted and consolidated highly important risk and opportunity items, then summarized them from the perspective of societal change and discussed proposed measures for each.

Toyobo group has set the goal of achieving carbon neutrality by reducing greenhouse gas(GHG) emissions

at least 46% (Scope 1 and 2, compared to fiscal 2014) by fiscal 2031, and achieving net zero emissions by fiscal 2051 (▶p.047 Climate Change). From April, 2022, we introduced an internal carbon pricing system, and will utilize this system as one of the criteria for future investment decisions. We are accelerating investments such as in low-carbon and decarbonization facilities, energy efficiency, and development facilities aiming to increase avoided emissions.

Societal change and its impact	Risks/Opportunities			Our measures
	Risk/Opportunity	Term	Description	
(1) Introduction and rise of carbon pricing	Risk	Medium-term	Increasing raw material prices (carbon price pass-through, etc.)	<ul style="list-style-type: none"> Approaching and collaborating with suppliers (low-carbon raw material development, production technology support) Diversifying raw material procurement methods (expansion of multiple purchases and local procurement)
		Medium- to long-term	Introduction and rise of carbon pricing	<ul style="list-style-type: none"> Expanding introduction and procurement of renewable energy Promoting higher efficiency and energy conservation in production processes Switching from fuels such as coal to those with fewer GHG emissions for in-house electricity generating equipment Examining use of carbon-free fuels (such as hydrogen and ammonia) Examining introduction of innovative technologies, including CCU and CCS
(2) Cost impact of decarbonization	Risk/Opportunity	Medium- to long-term	Fluctuating costs due to the promotion of energy conservation, the introduction of high-efficiency equipment, and other factors	<ul style="list-style-type: none"> Pursuing innovation and ultra-high efficiency in production processes Increasing efficiency of production in the entire value chain (integration and strengthening of cooperation with affiliate companies, M&As)
		Medium-term	Fluctuating costs due to the introduction of renewable energy	<ul style="list-style-type: none"> Selecting renewable energy procurement methods
(3) Growing demand for low-carbon products	Opportunity	Medium- to long-term	Increasing need and demand for low-carbon and decarbonization-related products	<ul style="list-style-type: none"> Expanding production and sales of eco-conscious products (products that contribute to GHG emissions reduction) Developing and expanding sales of materials related to renewable energy and carbon-free fuels Promoting research and development of low-carbon and decarbonization-related products and technologies
			Expanded sales of eco-conscious products using various certifications	
	Risk	Medium-term	Decreasing demand for products derived from petrochemical raw materials, and tighter plastics regulations	<ul style="list-style-type: none"> Utilizing recycled raw materials and biomass materials Developing recycling-oriented materials and products and establishing recycling scheme
			Demand for decreased carbon content during product manufacturing	<ul style="list-style-type: none"> Expanding introduction and procurement of renewable energy Promoting higher efficiency and energy conservation in production processes Switching from fuels such as coal to those with fewer GHG emissions for in-house electricity generating equipment Examining use of carbon-free fuels (such as hydrogen and ammonia) Examining introduction of innovative technologies, including CCU and CCS
(4) Intensifying wind and flood damage due to rising temperatures	Risk	Medium-term	Disrupted raw material supplies due to frequent disasters	<ul style="list-style-type: none"> Reviewing inventory levels, and expanding multiple purchases
		Medium- to long-term	Damaged equipment and suspended operations due to extreme weather conditions	<ul style="list-style-type: none"> Conducting BCP training and enhancing measures for production sites in coastal areas Decentralizing production sites, and introducing highly durable equipment
(5) Product demand fluctuations due to rising temperatures	Opportunity	Medium-term	Increasing demand for measures to prevent infectious diseases (prevention/treatment) due to rising temperatures	<ul style="list-style-type: none"> Expanding demand for food packaging-related products Promoting research and development of products and technologies to prevent infectious diseases

Future direction of scenario analysis

In the future, we plan to conduct scenario analyses for company-wide and individual businesses and other factors that will take CO₂ emissions and financial impacts into account.