

Initiatives for Global Environmental Issues

Toward Achieving Carbon Neutrality by 2050

In addition to expanding businesses in the areas such as renewable energy, hydrogen, electrification-related materials, recycling of resins, and other areas in which it has conventionally been involved, Toray Group will create businesses related to CO₂ separation and recycling, and other new businesses as a means of bolstering the Sustainability Innovation (SI) Business. This effort is also intended to contribute to the achievement of carbon neutrality in 2050 by reducing greenhouse gas emissions throughout society. Moreover, the Group will develop and introduce sustainable energy (renewable power and hydrogen) and raw materials, innovative processes, and technologies that utilize CO₂ through the expansion of the SI Business, thereby reducing its greenhouse gas emissions (Scope 1 and Scope 2) in the aim of achieving carbon neutrality for the Group in 2050. The Group will also work to reduce Scope 3 greenhouse gas emissions for the purpose of decreasing emissions throughout the supply chain.

Toray Group believes that achieving carbon neutrality will require transformations based on new concepts together with leaps in technological innovation, and that

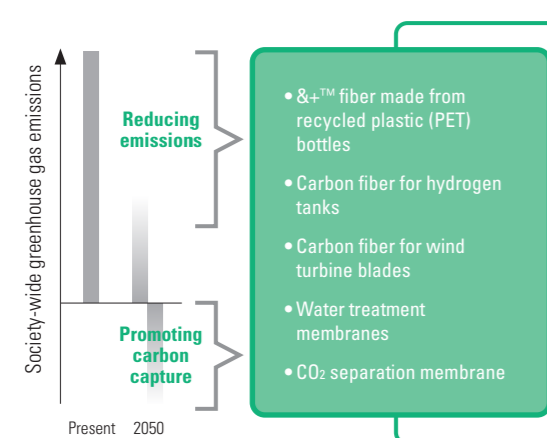
doing so will rely on initiatives undertaken by individual companies, as well as through joint efforts involving entire industries, nations, and society as a whole. The Group therefore engages in measure and policy proposals intended to achieve carbon neutrality in collaboration with economic organizations, industry associations, and initiatives.

Major organizations and their committees and subcommittees (examples) in which the Group holds membership

- Nippon Keidanren (Japan Business Federation): Subcommittee on Global Environment, Committee on Environment
- Japan Association of Corporate Executives: Environment and Energy Committee
- Japan Chemical Industry Association: Technical Affairs Committee
- Japan Chemical Fibers Association
- Japan Environmental Management Association for Industry
- GX League

Contributing to a carbon neutral world

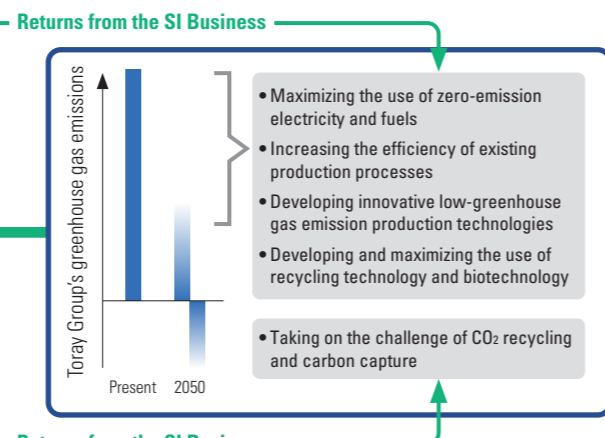
Increasing the Volume of Greenhouse Gas Emissions Avoided through the Sustainability Innovation (SI) Business



(Corresponding KPIs)	FY 2030 Target [Compared to FY 2013]
Supply of Sustainability Innovation products	4.5-fold
CO ₂ emissions avoided in value chain	25-fold

Achieving carbon neutrality for the Toray Group by 2050

Adopting greenhouse gas emissions reduction technology in business activities



(Corresponding KPIs)	FY 2030 Target [Compared to FY 2013]
GHG emissions in production activities	Over 50% reduction
GHG emissions per unit of revenue for the entire Toray Group	Over 40% reduction
GHG emissions of Toray Group in Japan	Over 40% reduction

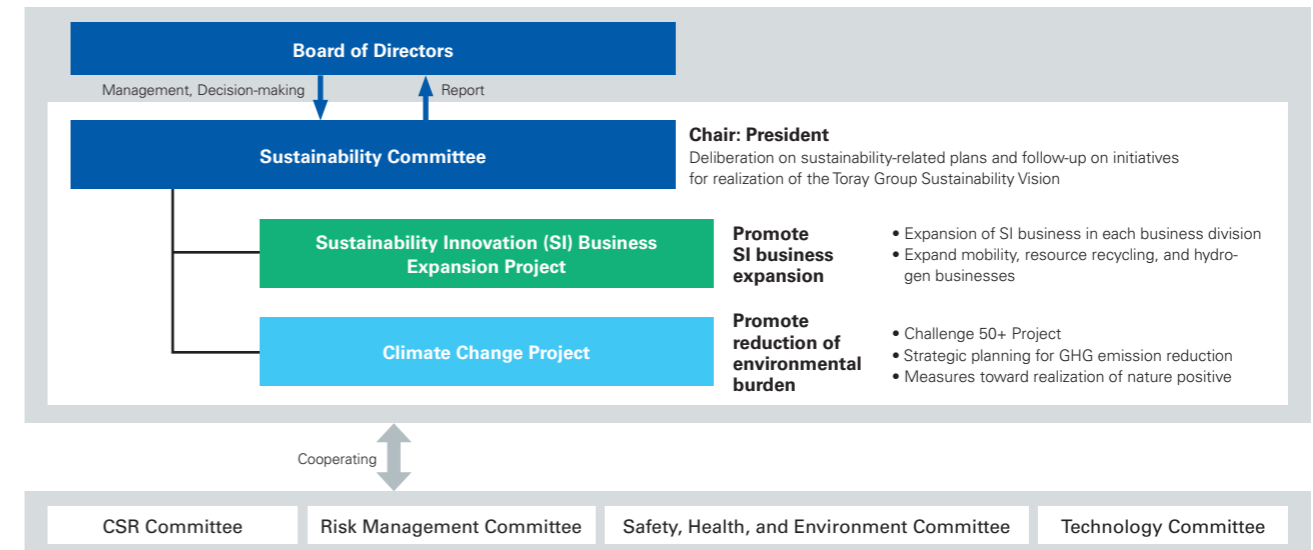
TCFD Initiatives

Governance System Related to Climate Change

Toray Group has positioned the Sustainability Committee chaired by the President as the body in charge of overseeing efforts to combat climate change. The Committee defines policies, medium- and long-term roadmaps, and targets for achieving the Toray Sustainability Vision, including carbon neutrality in 2050, and manages the progress of these efforts.

At least once a year, the Board of Directors receives a report

summarizing the matters discussed by each group-wide committee, including the Sustainability Committee, and appropriately monitors the measures to counter climate change. When making management decisions, the Board considers climate change-related issues as an important element for engaging in oversight and comprehensive decision-making.



Risk Management

As part of its periodic risk identification and assessment efforts, the Risk Management Committee considers climate change-related risks to be one of relatively high importance. The Committee therefore conducts detailed risk analyses and assessments based on the TCFD framework under the supervision and management of the Sustainability Committee as

the body with sole responsibility for climate change-related issues. Based on the results of its assessments, the Risk Management Committee reconsiders risks and promotes measures to address climate change-related risks in a group-wide yet agile manner.

Strategy

Toray Group has identified climate change-related risks and opportunities, and performed quantitative scenario analyses to grasp their financial impacts based on the qualitative scenario analyses regarding the potential influence of each on the Group from the Toray Group TCFD Report 2021. After the analysis was conducted, Toray Group reconfirmed the resilience of the long-term strategy (outlined in the Long-Term Corporate Vision, TORAY VISION 2030) that will drive its achievement of the Toray Group Sustainability Vision.

The Paris Agreement target is to limit global warming to well below 2°C, preferably to 1.5°C, compared to pre-industrial levels. Looking to help achieve this target and achieve carbon neutrality in 2050, Toray Group primarily analyzed the 1.5°C increase scenario, but also considered the 2°C increase

scenario. The Group also looked at the 4°C increase scenario assuming insufficient progress on efforts to ameliorate global climate change.

Based on these scenario analyses, Toray Group is bolstering the Sustainability Innovation (SI) Business, which contributes to the achievement of the Toray Group Sustainability Vision. Similarly, the Group promotes the production of green hydrogen, its use in industrial and transportation applications, and the development of products that help utilize CO₂, thereby contributing to the reduction of greenhouse gas emissions in working to achieve carbon neutrality for society as a whole. Moreover, the Group seeks to reduce its greenhouse gas emissions and aims to achieve carbon neutrality through the development and introduction of sustainable

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energy and raw materials returned through the expansion of the SI Business, as well as through innovative processes and technologies that use CO₂.

In addition, Toray Group aims to achieve a circular economy by recycling plastic products and switching to bio-based materials, as well as through the use of Toray technologies that support a circular economy, in areas such as water treatment, hydrogen, and renewable energy-sourced electric

power. Specifically, the Group will promote material recycling for reusing plastic products and chemical recycling for converting these back into their basic chemicals. And it will promote technological developments that use bio-ethylene glycol (EG) derived from non-edible sugar cane molasses. Moreover, the Group is engaged in the development of CO₂ separation membranes as a key technology for separating and recovering CO₂ for use.

Main Opportunities/Risks and Responses Related to Climate Change (excerpt)

Social Change	Main Opportunities / Risks	Main Response by Toray Group	Magnitude of Opportunity			
			1.5°C	2°C	4°C	
Increase in ratio of renewable energy	Opportunities	<ul style="list-style-type: none"> Growth of renewable energy-related business Growth of storage battery-related business 	Carbon fiber for wind turbine blades	L	↘	↘
	Risks	<ul style="list-style-type: none"> Soaring energy costs Delay in energy conversion to secure suppliers 	Energy conservation efforts	¥60.0 billion (Cost)	↘	↘
Establishment and raising of carbon taxes and GHG emissions reduction targets	Opportunities	<ul style="list-style-type: none"> Growth of energy conservation-related business 	<ul style="list-style-type: none"> Lightweight materials (carbon fiber, resin) Insulating and heat shielding products (insulation, heat shielding fibers, films, etc.) Functional garments (cooling materials) 	L	→	→
	Risks	<ul style="list-style-type: none"> Increased procurement costs of fossil resource-derived raw materials and fuels Criticism for fossil resource use Loss of competitiveness due to carbon tax disparity Decrease in existing users due to changes in the supply chain 	GHG emission reduction	¥85.0 billion (Cost)	↘	↘
Change in social systems for realization of hydrogen society	Opportunities	<ul style="list-style-type: none"> Growth of business related to hydrogen manufacturing, transport, storage, and use 	<ul style="list-style-type: none"> Gas separation membrane (porous carbon fiber) High-strength carbon fiber for hydrogen tanks Components and materials used in fuel cells 	L	↘	↘
	Risks	<ul style="list-style-type: none"> Decline in material prices due to increased competition Securing suppliers due to delay in conversion to hydrogen 	Strengthening competitiveness	L	↘	↘
Electrification of mobility	Opportunities	<ul style="list-style-type: none"> Growth of materials business for electric mobility 	<ul style="list-style-type: none"> Lightweight materials (carbon fiber, resin) Battery materials Materials for motors and hydrogen tanks 	L	↘	↘
	Risks	<ul style="list-style-type: none"> Decrease in demand for products related to internal combustion engines Decline in material prices due to increased competition 	<ul style="list-style-type: none"> Responding to demand for electrification Strengthening competitiveness 	¥230.0 billion (Revenue)	↘	↘
Adoption of CCUS	Opportunities	<ul style="list-style-type: none"> Growth of businesses related to CO₂ separation and recovery 	Gas separation membrane (porous carbon fiber)	M	↘	S
	Risks	<ul style="list-style-type: none"> Thermal power generation electricity cost increase 	Energy conservation efforts	L	M	S
Changes to the economic system toward the realization of a circular society	Opportunities	<ul style="list-style-type: none"> Growth of biomaterials business Growth of recycled materials business Growth of businesses contributing to waste reduction (emissions reduction, durability) 	<ul style="list-style-type: none"> Biopolymers Membrane bioprocess, biodegradable materials Recycled materials (Ecouse™, &+™, etc.) High-performance packaging materials VOC free waterless printing system for flexible packaging 	L	↘	↘
	Risks	<ul style="list-style-type: none"> Increased waste disposal costs Shrinking materials market due to the shift away from mass production and mass consumption Opportunity loss due to delay in responding to a recycling-oriented society 	<ul style="list-style-type: none"> Strengthen waste management and promote recycling Responding to demand for bio-based materials and recycling, etc. 	L	↘	↘

*1 Excerpt from Toray Group TCFD Report VER.2 (Japanese version) <https://www.toray.co.jp/sustainability/tcfd/>

*2 Items that are difficult to estimate quantitatively with a certain degree of accuracy are classified into the following three levels (large, medium and small) according to the magnitude of their impact on sales revenue or business profit.

Large (L): Sales revenue of 50 billion yen or more or business profit of 5 billion yen or more
 Medium (M): Sales revenue of 10 billion yen or more but less than 50 billion yen, or business profit of 1 billion yen or more but less than 5 billion yen
 Small (S): Sales revenue less than 10 billion yen or business profit less than 1 billion yen

The impact on revenue was analyzed for the sales aspect, and the impact on business profit was analyzed for the cost aspect. In cases where the same size classification for each climate scenario was considered to have varying degrees of impact within that classification, a gradient was used, with darker colors used for those deemed to have a greater impact. The gradient represents changes within the same category of "social change" and does not represent differences in the magnitude of impact between different categories.

KPIs and Targets

Toray Group has set forth its quantitative targets for FY 2030 in the Toray Group Sustainability Vision. In addition, as the milestone for the Vision, it has disclosed the results for FY

2022, as well as targets for FY 2025 as the interim target in the Medium-Term Management Program, Project AP-G 2025 (See P.23 and P.27).

Status of Environmental Management Initiatives

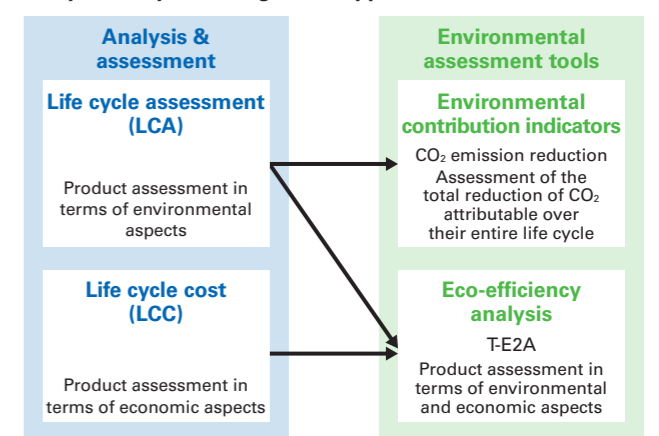
Promoting Life Cycle Management

In addressing global environmental issues, it is vital to consider the entire life cycle of products and services to reduce environmental impact while also delivering improved economic and social value. In this respect, Toray Group practices life cycle management (LCM).

LCM is the basis for Sustainability Innovation (SI) products, and the Group has adopted life cycle assessment*¹ and the Toray Eco-Efficiency Analysis (T-E2A)*² tool and is working to establish LCM as a tool to measure CO₂ reduction in the entire life cycle of products and services. Products are certified as SI products through a two-stage screening process by the divisional committees and the Sustainability Innovation Certification Committee (provisional name) as the successor to the Green Innovation Certification Committee. Only those products determined to be effective solutions for global environmental issues through this process as based on objective evidence are certified.

*1 Life cycle assessment (LCA) is a method for quantitatively assessing the resources that have gone into a product and the impact the product will have on the environment and ecosystems over its life cycle.

Toray's Life Cycle Management Approach



*2 T-E2A is an environmental analysis tool developed by Toray Industries, Inc. It produces a map of multiple products plotted along the axes of environmental impact and economic performance, enabling users to select the most environmentally friendly and economical products.

Environmental Accounting

Toray has been practicing environmental accounting since 1999, to track investments and gauge their cost effectiveness. The value of environmental facility investments in FY 2022

amounted to ¥1.49 billion, a decline of ¥330 million over the previous fiscal year, while environmental preservation costs amounted to ¥9.26 billion, an increase of ¥2.51 billion.

Greenhouse Gas Emission Reduction Initiatives

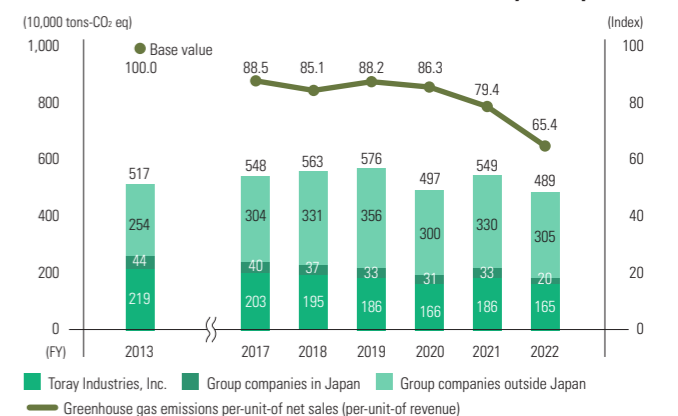
As its greenhouse gas emissions reduction target for CSR Roadmap 2022, Toray Group presented the goal of reducing greenhouse gas emissions per unit of revenue by 20%*¹ compared with FY 2013 levels for the entire Toray Group on a continuous basis through FY 2022, and implemented systematic reduction measures.

Greenhouse gas emissions for the entire Toray Group during FY 2022 decreased 10.9% over the previous fiscal year to 4.89 million tons-CO₂.

Toray Group minimized greenhouse gas emissions per unit of revenue by increasing group-wide revenue and by implementing initiatives intended to reduce greenhouse gas emissions (promotion of energy savings through process improvements, use of renewable energy, reduction of coal use at overseas plants, etc.), and thereby decreased emissions 34.6%*² compared with FY 2013 levels.

In FY 2022, Toray and its group companies in Japan reduced greenhouse gas emissions 16.1% over the previous fiscal year by bolstering the efficiency of energy consumption and by reducing waste and loss. Greenhouse gas emissions per unit of revenue improved 9.2% over the previous fiscal year thanks to higher revenue and initiatives to reduce greenhouse gas emissions. These efforts resulted in a 33.2% decline compared with FY 2013.

Greenhouse Gas Emissions and Greenhouse Gas Emissions Per-Unit-of Net Sales (Per-Unit-of Revenue) (Toray Group)*³



*1 For Scope 1 and 2

*2 Until FY 2022, this was calculated by multiplying the GHG emissions and revenue of individual subsidiaries worldwide by the applicable Toray Industries' equity share. Starting in FY 2023 however, the calculation method will change, and the degree of financial control Toray Industries has over the individual subsidiary (not the equity share) will be used, in accordance with the GHG Protocol, the international standard.

*3 Until FY 2019, emissions per unit of sales were used due to the adoption of Japanese accounting standards. Since FY 2020, however, emissions per unit of revenue have been used due to the adoption of International Financial Reporting Standards (IFRS). Moreover, values for FY 2013 as the baseline year are calculated by including emissions and revenues from companies that joined Toray Group during or after FY 2014.

Installing Renewable Energy Systems

Toray Group is systematically installing renewable energy systems. The Group installed a solar power generation system at Toray Plastics Precision (Zhongshan) Ltd., in FY 2020, as well

as at Seta Plant 3 and Toray Precision Co., Ltd., in FY 2021, and respectively started operation. In addition, Tokai Plant began co-combusting sludge fuel as boiler fuel from FY 2017.

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In addition, the Group also switched all power consumed by Toray's headquarters to 100% renewable energy starting in

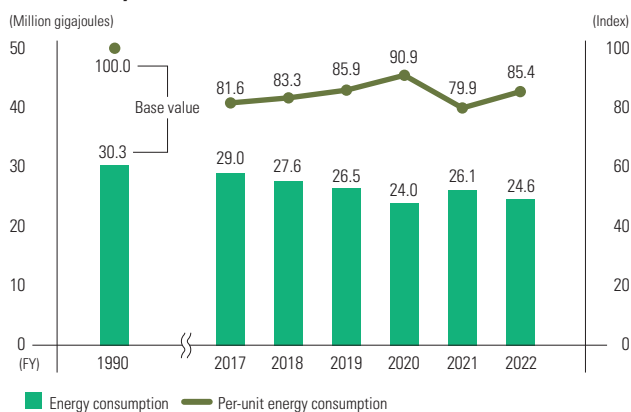
April 2022. This move has reduced greenhouse gas emissions by an estimated 1,500 tons-CO₂ annually on a global basis.

Energy Conservation Measures

Toray is vigorously working on energy conservation activities with the goal of reducing its per-unit energy consumption*1 by 2% annually. Although energy consumption declined 5.9% in FY 2022 as a result of promoting greater energy consumption efficiency and reducing waste and loss, per-unit energy consumption worsened 6.9% due to a decline of 12.0% in production volumes. Meanwhile, compared with FY 1990, the baseline year for reductions in per-unit energy consumption, this is an improvement of 14.6%.

Toray Group organizes energy conservation teams to help carry out annual energy conservation diagnostics at plants in Toray and its group companies around the world. In FY 2022, the Group conducted these activities at five of Toray's plants, three group company plants in Japan, and four group company plants around the world. The energy savings thereof effectively reduced greenhouse gas emissions by more than approximately 10,000 tons-CO₂ per year.

Energy Consumption and Per-unit Energy Consumption Index (Toray Industries, Inc.)*2



*1 Energy consumption per converted production volume

*2 The energy consumption shown in this graph does not include renewable energy.

Biodiversity Initiatives

Next to the issue of climate change, the issue of biodiversity preservation has been a major focus of the international community in recent years. Biodiversity forms the basis of natural capital such as water, air, plants, animals, and minerals that are indispensable to human society. Climate change caused by human activities, depletion of natural resources, ecosystem destruction, and species extinction are causing biodiversity loss to occur at an alarming rate, making it a serious problem facing humankind. This has sparked an international discussion about the importance of taking a nature positive approach to stopping and reversing biodiversity loss.

Toray Group views conservation of biodiversity as a critical global environmental issue which is as just important as reducing greenhouse gas emissions. Toray is contributing to the biodiversity conservation and nature positive approach through its business activities. This includes water treatment technology

to produce reliably safe drinking water, water conservation through the reuse of treated wastewater, and air purification using filter-related materials.

The Group also uses environmental assessment checklists to conduct safety reviews for all products and to carry out environmental risk investigations before making capital investment. The checklists enable the Group to ensure that it is not exceeding legal limits on regulated substances contained in exhaust gas, wastewater, and waste from manufacturing. When assessing new land use, the checklists cover items related to biodiversity, including regulations at production bases, the necessity for surveys on rare species, and any requests from citizen groups, among other considerations. Through these efforts, Toray strives to assess its impact on biodiversity and help build a sustainable world.

Newly establishing the Environmental Solutions Department within the Corporate Marketing Planning Division



Yuriko Teshigawara
General Manager,
Environmental Solutions
Department

Under the Toray Group Sustainability Vision, Toray Group is engaged in group-wide initiatives geared toward combating climate change and promoting a circular economy. In June 2022, the Group established the Environmental Solutions Department within the Corporate Marketing Planning Division to serve as the headquarters for using the strengths of the Group's businesses to their fullest through an approach to marketing and supply chain management that cuts across its businesses. In working toward the realization of a circular economy, the Group must tackle issues in its Fibers & Textiles, Resins, Films, and other business divisions, while at the same time charting the optimization of group-wide policies for polyester, nylon, and other polymers on an individual basis. The primary mission of the Environmental Solutions Department is to build a value chain that straddles each department regarding issues involved in securing resources for recycling, developing technologies, and commercialization, and to realize systems that connect the value chain to revenue and profits. At the same time, the Group launched the Circular Economy Subcommittee led by the Executive Vice President in charge of Marketing & Sales to debate policies involving Toray initiatives for a circular economy. The subcommittee has been working to achieve the targets raised by the Group for 2030, namely a revenue target of ¥400 billion for products that facilitate sustainable, recycling-based use of resources and production, and a target of 20% for the percentage of raw materials sourced from recycling used in Toray core polymers*1.

*1 The ratio of PET and nylon polymer raw materials sourced from recycling, derived from biomass, or produced with CO₂ recycling.