

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, the 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 Toray Group aims to reduce its own greenhouse gas emissions (Scope 1 and 2) and become carbon neutral by 2050. It will do so by expanding the SI Business, which in turn will provide Toray Group with sustainable energy (renewable power and hydrogen) and raw materials, as well as by developing and introducing innovative processes and CO₂ recycling technology that utilize CO₂ as a resource. The Group will also work to reduce Scope 3 greenhouse gas emissions for the purpose of decreasing emissions of the entire supply chain.

Further, in order to achieve carbon neutrality, Toray Group recognizes the need to make changes and take a leap in technological innovation based on non-conventional ideas, as well as the need for efforts that are not limited to single corporations, but involve industry, government, and broader society working together to achieve this goal. The Group holds discussions and pursues dialogue with affiliated economic organizations, industry associations, and government, working with these entities to achieve the goals of carbon neutrality and the Paris Agreement by 2050.

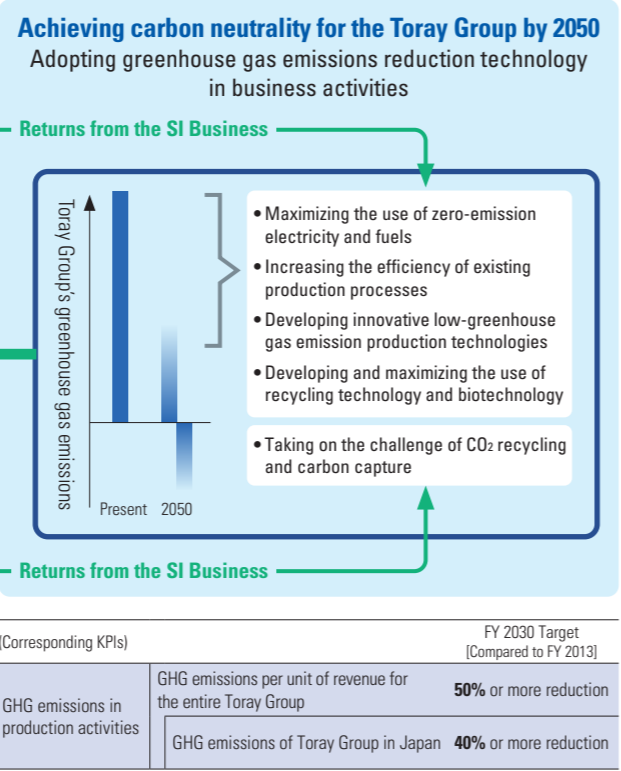
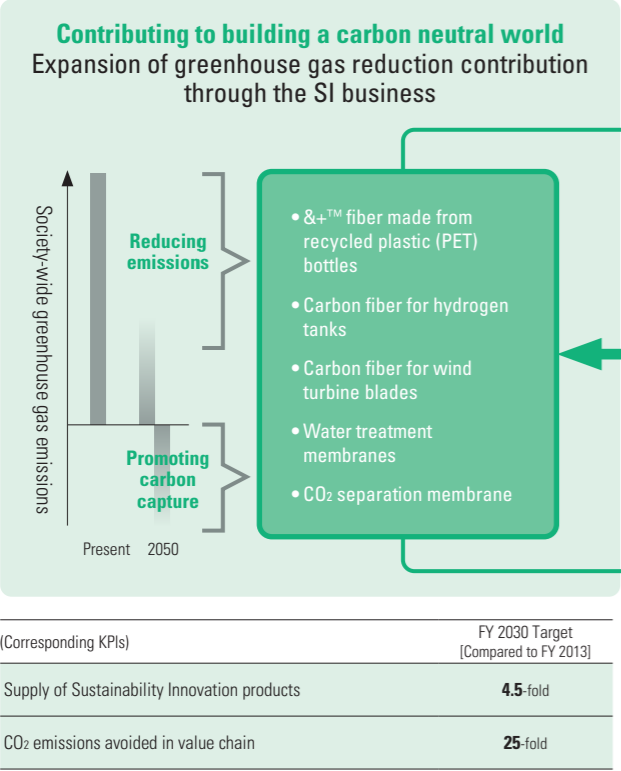
Through this dialogue, the Group collects information released by the government, and conducts interviews with the relevant ministries. Toray shares its opinions and make recommendations as part of efforts to understand, confirm, and apply the relevant information to its internal policies.

Toray Group also participates in relevant industry organizations, which make recommendations to the government based on the consensus regarding initiatives needed to promote carbon neutrality.

Toray also participates in the GX League, a collaborative industry-government initiative to promote carbon neutrality. Accordingly, the Group discloses information related to its carbon neutrality activities, which includes the setting of GHG emission reduction targets and follow-up on the results achieved.

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

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



Disclosures based on the TCFD Recommendations

Governance System Regarding Climate Change Issues

Aiming to realize the Toray Group Sustainability Vision, the Toray Group formulates and promotes medium- to long-term roadmaps and action plans for climate change countermeasures and resource recycling issues in the Sustainability Innovation (SI) Business Expansion Project and the Climate Change Project, and are managing progress toward achieving numerical targets for 2030.

In FY 2024, the Sustainability Committee, which had overseen the implementation of climate change countermeasures, was constructively dissolved. In light of ever-changing business environment, the committee was replaced with a system in which the Executive Committee, a consultative body of the Board of

Directors, deliberates on an ad hoc basis about the basic strategies for activities of the SI Business Expansion Project and the Climate Change Project, as well as important issues such as capital investments and loans. In addition, the Toray Group is working on group-wide sustainability issues in collaboration with the teams responsible for CSR, risk management, health & safety, environment, and research & technical development.

The Board of Directors receives reports at least once a year on deliberations by each of the above teams as it undertakes monitoring and decision-making. When formulating business strategies and making management decisions, it considers issues related to sustainability as one of the important factors and engages in deliberations and makes decisions in a comprehensive manner.



Strategies

The Toray Group conducted both qualitative and quantitative scenario analysis in line with the TCFD recommendations to identify opportunities and risks related to climate change, which is unpredictable, and to ascertain the impact of this. This analysis has confirmed the resilience of the long-term corporate vision TORAY VISION 2030 which helps realize 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, the 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 this scenario analysis, the Toray Group will work to achieve carbon neutrality, by expanding the SI business that helps realize the Sustainability Vision, including renewable energy, electrification, and materials related to hydrogen and fuel cells. It will also contribute to the reduction of greenhouse

gas emissions throughout society by engaging in production of green hydrogen through water electrolysis, promoting its use in industrial and transportation applications, and pursuing development of products that help utilize CO₂. In addition, the Toray Group will reduce its own greenhouse gas emissions by expanding the SI Business, which in turn will provide the Group with sustainable energy and raw materials, as well as by developing and introducing innovative processes and technologies that utilize CO₂ as a resource.

To realize a recycling-oriented society, the Group will focus on creating carbon recycling technologies for recycled, bio-based plastic products, as well as various other technologies that include the technology for reusable water generated in manufacturing processes.

The FT Project aims to create and expand businesses and will focus on themes like hydrogen and fuel cell-related materials, biomass-based products and process technologies, and environmentally-friendly printing solutions. This project will also promote the development of applications for porous carbon fiber that can be used as support layers for gas separation membrane structures that separate mainly CO₂, biogas, and hydrogen.

Initiatives for Global Environmental Issues

Main Opportunities/Risks and Responses Related to Climate Change (excerpt*1)						
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	<ul style="list-style-type: none">• Carbon fiber for wind turbine blades	L	↘	↘
	Risks	<ul style="list-style-type: none">• Soaring energy costs• Delay in energy conversion to secure suppliers	<ul style="list-style-type: none">• 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	<ul style="list-style-type: none">• 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	<ul style="list-style-type: none">• 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	¥400.0 billion (Revenue)	↘	↘
	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	<ul style="list-style-type: none">• Gas separation membrane (porous carbon fiber)	M	↘	S
	Risks	<ul style="list-style-type: none">• Thermal power generation electricity cost increase	<ul style="list-style-type: none">• 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	¥800.0 billion (Revenue)	↘	↘
	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.	¥300.0 billion (Revenue)	↘	↘
Increased demands from customers and investors to address climate change and disclose information	Opportunities	<ul style="list-style-type: none">• Growth of customer base and increased investment due to climate change response• Growth in need for products with small carbon footprints	<ul style="list-style-type: none">• Growth of businesses contributing to efforts to address climate change and reduction of GHG emissions	L	↘	↘
	Risks	<ul style="list-style-type: none">• Increased demands to reduce GHG emissions• Lost opportunities due to delays in reducing GHG emissions and carbon footprint	<ul style="list-style-type: none">• Reducing GHG emissions	L	↘	↘
Rise in temperatures	Opportunities	<ul style="list-style-type: none">• Growth of businesses related to dealing with heat• Growth of businesses related to infectious disease measures	<ul style="list-style-type: none">• Functional garments (cooling materials)• Insulating and heat shielding products (insulation, heat shielding fibers, films, etc.)• Components and materials for health status monitoring devices• Infectious disease protective wear and masks• Materials for air purification products	S	↗	↗
	Risks	<ul style="list-style-type: none">• Less demand for warming materials and winter sports applications	<ul style="list-style-type: none">• Meet demand for functional garments (cooling materials)	S	M	↗
Destabilization of water and food supply	Opportunities	<ul style="list-style-type: none">• Growth of businesses related to water and food supply	<ul style="list-style-type: none">• Water treatment• Fertilizer and agricultural chemical ingredients	L	↗	↗
	Risks	<ul style="list-style-type: none">• Water usage restrictions	<ul style="list-style-type: none">• Reduce water usage	M	↗	↗
Increased severity of disasters	Opportunities	<ul style="list-style-type: none">• Growth of businesses related to disaster mitigation	<ul style="list-style-type: none">• Reinforcement materials and protection netting• Water treatment	L	↗	↗
	Risks	<ul style="list-style-type: none">• Impact on raw materials procurement, plant operations, etc.	<ul style="list-style-type: none">• Business continuity plan• Strengthen supply chains	L	↗	↗

*1 Excerpt from Toray Group TCFD Report VER.2.1 https://www.toray.com/global/sustainability/tcfd/pdf/tcfd_report_v2.pdf

*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 revenue or core operating income.

Large (L): Revenue of 50 billion yen or more or core operating income of 5 billion yen or more

Medium (M): Revenue of 10 billion yen or more but less than 50 billion yen, or core operating income of 1 billion yen or more but less than 5 billion yen

Small (S): Revenue less than 10 billion yen or core operating income less than 1 billion yen

The impact on revenue was analyzed for the sales aspect, and the impact on core operating income 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.

*3 The risk due to introduction of carbon taxes, since it is currently difficult to forecast Toray Group's GHG emissions in 2040, it was calculated by multiplying FY 2022 GHG emissions (5.12 million tons-CO₂, based on a calculation method that uses the degree of management control Toray Industries has over the individual subsidiary) by forecast carbon taxes in 2040 under the 1.5°C increase scenario (developed countries: USD 110/ton-CO₂). Toray Group will continue working to reduce GHG emissions ahead of 2040.

Against this backdrop, the opportunities for the SI business and others that can mitigate climate change are significant, and the more progress is made in combating climate change, the greater the business opportunities may become. In particular, a new market with a scope of ¥800 billion is expected for bio- and recycled materials as economic systems change with the transition to a recycling-oriented society. In addition, a market of ¥400 billion is expected to develop amid the growing need for lightweight materials like carbon fiber and resin as mobility electrification accelerates. Meanwhile, there are also significant business opportunities for adapting to climate change led by water treatment, and these opportunities are expected not only under the 4°C increase scenario, but also under the 1.5°C and 2°C increase scenarios.

Risk Management

The Toray Group has established the Risk Management Committee as a deliberative, consultative, and information-sharing body to promote 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. Based on such importance, the Committee conducts detailed risk analysis, assessment and management in line with the TCFD framework as part of the Climate Change Project. Based on the results of such risk analysis and assessment, the Risk Management Committee reconsiders risks and promotes measures to address climate change-related risks in a group-wide yet agile manner.

KPIs and Targets

The 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 2023, as well as targets for FY 2025 as the interim target in the Medium-Term Management Program, Project AP-G 2025 (See P.25).

Fighting Climate Change in Production Activities

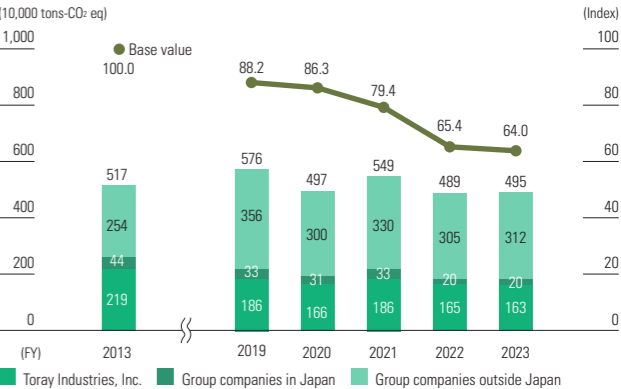
Measures to reduce Scope 1, 2 emissions

As a milestone toward realizing the Sustainability Vision, we have set a goal of reducing greenhouse gas emissions (Scope 1 and Scope 2) per unit of revenue by 50% by 2030, compared to the FY 2013 level, and we are promoting the Challenge 50+ Project, a company-wide project to reduce water consumption. In addition to promoting energy conservation by improving processes, Toray has worked to reduce greenhouse gas emissions by expanding renewable energy facilities and introducing carbon-free electricity at its domestic and overseas plants, and by suspending coal-fired power generation at its overseas plants. As a result, in FY 2023, the Group reduced greenhouse gas emissions by 36% on a per unit of revenue basis and by 26% in Japan, both compared with FY 2013.

The internal carbon pricing not only for energy conservation investments and greenhouse gas reduction activity incentives, but also as a reference value for determining investment profitability and analyzing potential risks in the construction of new or additional production facilities, thereby accelerating investments to increase energy use efficiency and transition toward decarbonization. The in-house carbon price for FY 2024 was set at ¥10,000/ton-CO₂, the same as in FY 2023, referencing the market price of emission credits in the EU-ETS in Europe. The internal carbon price is reviewed annually by the GHG Reduction Subcommittee using market trends as a reference.

Upstream Scope 1, 2 (FY 2023) (10,000 tons-CO ₂)				
	Toray Industries, Inc.	Group companies in Japan	Group companies outside Japan	Toray Group Total
Scope 1	136.7	3.2	109.3	249.1
Scope 2	25.9	16.9	203.2	246.0
Scope 1 + 2	162.6	20.1	312.4	495.1

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



*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.

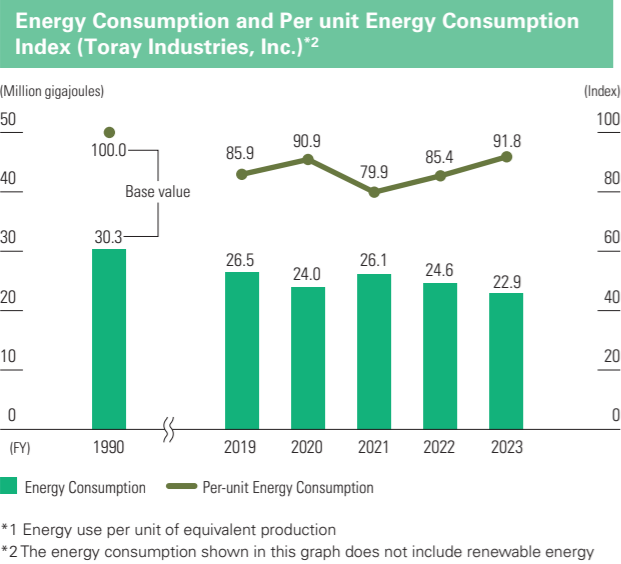
In addition, for the base years, FY 2013 and FY 2023, the calculation method was changed to multiply the management control by the GHG protocol, which is an international calculation rule. GHG emissions for FY2019 through FY 2022 are calculated based on the conventional method of multiplying by the investment ratio.

The GHG emissions for FY 2022 will be 5.12 million tons under the same calculation method multiplied by the management control as in FY 2023.

Initiatives for Global Environmental Issues

• 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 6.9% in FY 2023 as a result of promoting greater energy consumption efficiency and reducing waste and loss, per-unit energy consumption worsened 7.5% due to a decline of 13.0% in production volumes. Meanwhile, compared with FY 1990, the baseline year for reductions in per-unit energy consumption, this is an improvement of 8.2%. The 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 2023, the Group conducted these activities at one of Toray’s plants, two Group company plants in Japan. The energy savings thereof effectively reduced greenhouse gas emissions by more than approximately 5,000 tons-CO₂ per year.



• Installation of Renewable Energy Facilities

The Toray Group has set the rate of increase in solar power generation capacity as a KPI and is working to install renewable energy facilities. In FY 2023, the rate of increase was 101% after installing solar power generation facilities at Toray Industries’ Shiga Plant and group companies’ plants in China and Hungary. Since FY 2017, Tokai Plant has been co-firing carbon-neutral sludge to fuel its boilers. In addition, the Group also switched all power consumed by Toray’s headquarters to 100% renewable energy starting in April 2022. This is expected to reduce greenhouse gas emissions by an estimated 1,500 tons-CO₂ annually based on global standards. Toray’s Nagoya Branch from April 2023 and Osaka Head Office from April 2024 have been substantially procuring electricity from renewable energy sources.

Measures to Reduce Scope 3 Emissions

In FY 2023, the Toray Group’s Scope 3 emissions totaled approximately 17.56 million tons-CO₂, including upstream categories 1-8 and downstream categories 9, 11, 12, and 13. By category, Category 1 (products and services purchased) accounted for the largest percentage totaling 49%. This is followed by category 12 (disposal of products sold), which accounted for 25% of the total, and these two categories together accounted for 74% of Scope 3 emissions total. As for Category 1, through engagement with major raw material suppliers, Toray is building a cooperative framework to promote the reduction of carbon footprint (CFP) of raw materials for Toray, as well as actively promoting conversion to bio-materials and recycled raw materials. As for Category 12, Toray will work to reduce greenhouse gas emissions throughout the supply chain by using recycled materials in and improving the durability of Toray products.

Upstream Scope 3 Emissions by Category (FY 2023) (10,000 tons-CO ₂)		
Category	GHG Emissions	Percentage of Emissions
1 Purchased goods and services	860	49%
2 Capital goods	52	3%
3 Fuel-and energy-related activities not included in Scope 1 or Scope 2	96	5%
4 Upstream transportation and distribution	18	1%
5 Waste generated in operations	1	0%
6 Business travel	1	0%
7 Employee commuting	2	0%
8 Upstream leased assets	0	0%
9 Downstream transportation and distribution	3	0%
10 Processing of sold products	—	—
11 Use of sold products	275	16%
12 End-of-life treatment of sold products	447	25%
13 Downstream leased assets	1	0%
14 Franchises	0	0%
15 Investments	—	—
Total	1,756	100%

Environmental Accounting

Toray introduced environmental accounting* in FY 1999 and has been calculating the effects of investments and costs. Investment in FY 2023 was ¥1.8 billion, an increase of ¥310 million year on year due to increasing in investment mainly in energy conservation. Expenses totaled ¥9.7 billion, up ¥440 million year on year due to soaring fuel prices.
*Environmental accounting is applicable to not only climate change measures, but also other environmental measures mainly for emissions, wastewater, and waste.

Biodiversity Initiatives

The Toray Group Biodiversity Basic Policy
Established December 2010

Basic Approach
The Toray Group appreciates the gifts of nature that biodiversity provides and strives to realize the conservation and sustainable use of biodiversity. The Group contributes to society through the development and dissemination of products and technologies which advance conservation of biodiversity.

- Action Guidelines**
- 1. We take into consideration the impact of our business activities on biodiversity and strive to realize the conservation and sustainable use of biodiversity.
 - 2. We endeavor to develop environmentally friendly technologies and products and contribute to the conservation of biodiversity by making them available for use.
 - 3. We practice fair use of genetic resources on the basis of relevant international agreements.
 - 4. We recognize the influence of biodiversity within the supply chain and pursue coexistence with nature.
 - 5. We strive to raise employee awareness on biodiversity and contribute to the building of a society that nurtures biodiversity through our communication with stakeholders.

Climate change caused by human activities, depletion of natural resources, ecosystem destruction, and species extinction are causing natural and biodiversity loss to occur at an alarming rate. This has sparked an international discussion about the importance of taking a nature positive approach to stopping and reversing biodiversity loss. The 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 reliable and safe drinking water, water conservation through the reuse of treated wastewater, and air purification using filter-related materials. The Group also conducts safety reviews for all products and carries out environmental risk investigations before making capital investment.



The greenbelt formed in cooperation with 12 companies, including Toray's Tokai Plant, has been certified as a "Chita Peninsula Green Belt" site for symbiosis with nature (by the Ministry of the Environment) (October 2023).

This enables 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, Toray confirms regulations applicable to production bases, the necessity for surveys on rare species, and any requests from citizen groups, among other considerations.

In January 2024, Toray expressed its support for the disclosure recommendations published by the Taskforce on Nature-related Financial Disclosures (TNFD) in September 2023 and registered itself as a TNFD Early Adopter. Toray also participates in the TNFD Forum, an organization that supports TNFD discussions.

Opportunities & Risks Related to Biodiversity

The Company analyzed opportunities and risks related to biodiversity upstream in the supply chain within the Toray Group’s business activities. As a result, opportunities include contributing to lower CO₂ emissions by providing products to reduce the weight of aircraft and other components, and forest and habitat conservation by providing products that help preserve green spaces and water resources. As for risks, the Company sees various impacts on biodiversity that include reduction of natural capital from using water and energy resources, and climate change and environmental impacts due to emissions into the atmosphere and water bodies.

Governance System

Initiatives related to biodiversity and natural capital are inter-related with climate change and resource recycling initiatives. To this end, Toray established the Nature Positive (NP) Subcommittee under the umbrella of the Climate Change Project to identify and assess biodiversity and natural capital dependence and impact, opportunities and risks, as well as prioritize and promote initiatives in collaboration with the subcommittees on climate change and resource recycling. Important issues in the NP Subcommittee activities are discussed as needed by the Executive Committee and are reported along with the progress thereof at least once a year to the Board of Directors. The Board of Directors appropriately monitors the NP Subcommittee activities and considers issues related to biodiversity and natural capital when making management decisions, while providing oversight and comprehensive decision-making.

Surveys & Analysis based on LEAP Approach

Toray conducted a survey using ENCORE, one of the recommended analysis tools, to determine business areas, activities, value chains, and regions that are assumed to be highly relevant to Toray Group’s biodiversity and natural capital-related dependence, impact, opportunities, and risks as priority areas. The results showed that the Toray Group’s operations are heavily dependent on groundwater and surface water, which may have a significant impact on water use, air pollutants, and solid waste. The Company is currently conducting additional surveys and analysis.