

# Environmental Management Initiatives

## Promoting Life Cycle Management for the Environment

In addressing global environmental issues, Toray Group has long believed it vital to focus not only on reducing greenhouse gas emissions as a result of the Company's manufacturing activities, but also considering the entire life cycle of products and services to reduce environmental impact, while also delivering improved economic and social value. With this in mind, Toray Group practices life cycle management (LCM), with a focus on reducing CO<sub>2</sub> emissions throughout a product or service's entire life cycle.

For Toray Group, LCM targets a reduction in greenhouse gas emissions (Avoided Emissions\*) throughout the global supply chain through an expansion in the environmentally-friendly products (GR products) business. The idea of LCM is being actively adopted by industry in Japan and chemical sector companies throughout the world.

\*Avoided Emissions refers to the amount of greenhouse gas emissions expected to be reduced as a result of an older product or service being replaced by a newer product or service developed by the Company.

## Toray announces its Support for the TCFD Recommendations and Joins the TCFD Consortium of Japan

Toray, in May 2019, announced its support for the Recommendations\*<sup>1</sup> of the Task Force on Climate-related Financial Disclosures (TCFD), as well as the company's participation in the TCFD Consortium of Japan\*<sup>2</sup> that was launched in the same month.

In regard to contributing to solutions to the issue of climate change, Toray believes achieving environmental impact reductions alongside sustainable growth requires a clear understanding, gained through LCM, of the CO<sub>2</sub> balance for a product or service throughout its entire lifecycle. With this in mind, the company has been working to reduce greenhouse gas emissions throughout the value chain, with one example being the use of carbon fiber to reduce the weight of aircrafts, Toray Group has also been promoting the expansion of its Green Innovation business through investment with a long-term perspective of management resources in research and development targeting the practical use of new non-fossil resources, including bio resources.

Toray Group will actively promote the disclosure of information in line with the TCFD Recommendations, communicating to the world its active commitment to contributing toward solutions to the issue of climate change before all others.

\*1 TCFD recommendations: Final report released by the TCFD in June 2017 for the purpose of supporting companies with the disclosure of information on climate-related risks and opportunities and stabilizing financial markets through a smooth transition to a low-carbon society.

\*2 TCFD Consortium of Japan: A group of companies and financial institutions that supports the TCFD recommendations, the consortium of Japan was established to discuss effective corporate information disclosure and initiatives to link disclosed information to appropriate investment decisions on the part of financial institutions and other organizations.

## Progress on the Fifth Medium-Term Environmental Plan

Toray Group is now implementing its Fifth Medium-Term Environmental Plan, which runs from fiscal 2016 to fiscal 2020. The plan aims to further reduce the Group's environmental impact.

Amid further projected increases in production volumes for high-performance films and carbon fiber, the Group will continue to pursue environmental initiatives in order to achieve the challenging targets of the new plan.

## Initiatives to Curb Global Warming

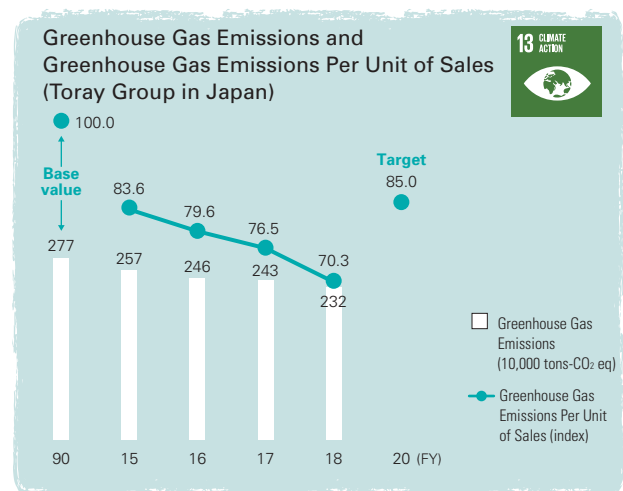
Toray has set its goal for the reduction of greenhouse gas emissions as "Reducing emissions more than 15% below the fiscal 1990 level and maintaining that level until fiscal 2020" and implements planned reduction measures. CO<sub>2</sub> emissions in fiscal 2018 decreased by 74,000 tons from the previous fiscal year's level due to higher production in line with business expansion. Greenhouse gas emissions rose 3.8%, to 1.95 million tons from the previous fiscal year, although this was a reduction of 23.2% from the fiscal 1990 level, continuing to meet its reduction target.

Toray and its Group companies in Japan work to curb global warming with the goal of reducing greenhouse gas emissions by 15% on a per-unit-of-sales basis by fiscal 2020, compared to the fiscal 1990 level. Toray and its Group companies' emissions of greenhouse gas were down 4.3% in fiscal 2018 compared to the previous fiscal year. Greenhouse gas emissions per unit of sales improved 6.2 points compared to the previous fiscal year and were 29.7% below the base year.

Fiscal 2018 greenhouse gas emissions for Toray Group worldwide were 5.63 million tons-CO<sub>2</sub> equivalent, a decline of 2.9% compared to the previous fiscal year. All Toray Group manufacturing companies and plants will work to achieve the Group's goal of reducing the per-unit energy consumption rate by 2% each fiscal year and strive to reduce greenhouse gas emissions throughout the Group.

## Energy Conservation Measures

Toray Group is actively engaged in energy conservation activities in line with its goal of reducing the per-unit energy consumption rate\* by 2% annually. In fiscal 2018, energy consumption declined by 4.7% compared to the previous fiscal year, largely due to a decline in production. However, the per-unit energy consumption rate deteriorated 2.1% compared to the previous fiscal year. Nevertheless, per-unit energy



consumption was still 16.8% lower than in the base year.

\* Energy consumption per converted unit of production volume

### Voluntary Initiatives to Reduce Atmospheric Emissions of Chemical Substances

As a corporate group that does business in the chemicals sector, Toray Group places the highest priority on reducing emissions of chemicals into the atmosphere in order to reduce its environmental impact.

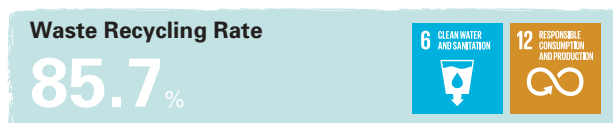
In fiscal 2018, Toray Group's atmospheric emissions of PRTR Law-specified substances were 886 tons, which represented a 66% reduction compared to the base year of fiscal 2000. VOC atmospheric emissions amounted to 1,129 tons, a 72% reduction compared to fiscal 2000. The Group has reached its target in terms of VOC atmospheric emissions.

### Initiatives for Managing Water Resources

Toray Group has always been working through its water treatment business to provide solutions to water resource problems around the world. Toray Group practices the 3Rs (reduce, reuse, recycle) in consuming water resources, and monitors the quality of water that is released into public waters, additionally, at overseas-based Group companies located in drought-stricken regions in particular, we conduct recycling of cooling and effluent water and also work to reduce the volume of water used for industrial purposes.

In fiscal 2018, Toray Group used 230 million tons of water, an increase of 1% over the previous fiscal year. Compared to the amount used per unit of sales in fiscal 2001, set to an index value of 100, usage in fiscal 2018 stood at 51.0 points, an improvement of 3.0 points from the previous fiscal year.

### Initiatives to Reduce Waste



Toray Group is carrying out zero emission initiatives as it

works toward the realization of a sustainable, recycling-based world. Under the Fifth Medium-Term Environmental Plan, the Group worked to achieve its fiscal 2020 targets for rates of simply disposed waste\*<sup>1</sup>, landfill waste\*<sup>2</sup> and recycled waste\*<sup>3</sup>, which have been set as indicators for measuring progress toward attaining zero emissions.

\*<sup>1</sup> Simply disposed waste rate = (incineration + landfill) / total waste

\*<sup>2</sup> Landfill waste rate = landfill waste / total waste

\*<sup>3</sup> Recycling rate = (recycled resources + resources with monetary worth) / (total waste + resources with monetary worth)

### Initiatives to Prevent Air and Water Pollution

Toray Group implements ongoing initiatives at plants to reduce sulfur oxide (SOx) emissions by installing desulfurization equipment and switching to cleaner fuels, and reduce chemical oxygen demand (COD) by expanding wastewater treatment facilities.

### Biodiversity Initiatives

Toray Group has positioned biodiversity, along with reducing greenhouse gas emissions, as an important theme regarding global environmental problems, and pursues biodiversity initiatives in accordance with a three-year action road map and sets its priorities based on the Group's Biodiversity Initiatives. Plants at Toray and Group companies in Japan operate greenery policies and plans through around 2020, guided by Toray Group Basic Policy for Increasing Green Areas\*<sup>1</sup>. The plans encompass initiatives to conserve green areas as much as possible, including healthy natural forests\*<sup>2</sup>, that have been protected since the plants began operating. These sustainable greenery conservation initiatives also help to conserve the environment for communities.

\*<sup>1</sup> Natural groves or forestation by species based on potential native vegetation

\*<sup>2</sup> Toray Group Basic Policy on Increasing Green Areas was established in 2012, evolving out of greenery policies that were first established in 1973.

