Planet

Planet priority measures in the Sustainability Medium-Term Plan

			Benchmarks	2024	2026
Planet	GHG emissions	Scope1＋2	Year 2019：3.2 million tons-CO_2e	No increase in emissions compared to 2019	
		Scope3	Year 2019：0.9 million tons-CO_2e (Japan)	•Target the entire Group and identify the category dominates for more than two-thirds of emission •In fiscal 2023, formulate numerical reduction targets for fiscal 2024 and fiscal 2026	

Result in 2022 and Target in 2023

			Result in 2022	Evaluation in 2022	Target in 2023
Planet	GHG emissions	Scope1＋2	2,896 thousand tons-CO_2e	target achieved (3,230thousand ton-CO_2e or less)	No increase in emissions compared to 2019
		Scope3	•Target the entire Group and identify the category dominates for more than two-thirds of emission •In fiscal 2023, formulate numerical reduction targets for fiscal 2024 and fiscal 2026		

Environmental Management
Global Warming Prevention
Reduction of Environmental Load
Environmental Accounting
Environmental Data
Sustainability Medium-term Plan for Planet

- Global Warming Prevention / GHG Emissions and Reduction Measures
- Grobal Warming Prevention / Response to TCFD Recommendations and Internal Carbon Pricing

Global Warming Prevention

GHG Emissions (Scope 1 and 2) and Initiatives of the Kuraray Group

Total GHG emissions of the Kuraray Group further decreased by 4.1% from 3,020 thousand tons-CO_2e in 2021 to 2,896 thousand tons-CO_2e in 2022 (down 10.4% compared to 2019*).
*Base year for GHG emission reductions in the Planet section of the Kuraray Group Sustainability Medium-Term Plan

GHG emissions of the Kuraray Group in Japan decreased from 1,340 thousand tons - CO_2e in 2021 to 1,236 thousand tons - CO_2e in 2022. Each Kuraray Group production site in Japan continued to work on GHG reduction measures, such as improving the yield of each product, recycling raw materials and utilities, upgrading to energy-saving equipment, and carrying out energy-saving activities (waste elimination activities). In 2022, we implemented measures to reduce 21 thousand tons - CO_2e. In addition, the Kurashiki Plant stopped using in-house power generation facilities in 2022 and switched to use electricity purchased from outside the company and steam from small once-through boilers. This reduced the GHG emissions significantly.
GHG emissions of the Kuraray Group overseas decreased slightly from 1,680 thousand tons - CO_2e in 2021 to 1,660 thousand tons - CO_2e in 2022. (In 2022, the Kuraray Group obtained

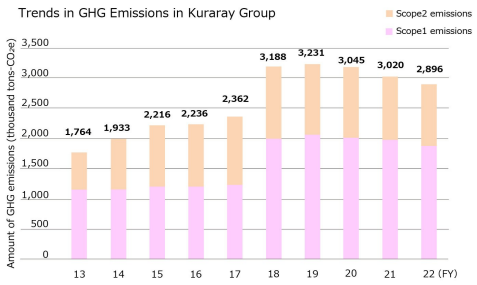
unbundled energy attribute certificates equivalent to 66 thousand tons - CO_2e. The GHG emissions in 2022 include the GHG emission reduction of these certificates.). Energy consumption at some production sites in overseas Kuraray Group increased due to higher production volumes. On the other hand, the activities such as energy saving and yield improvement were implemented at each production site of overseas Kuraray Group. In addition, some production sites were forced to suspend production temporarily because of equipment issues. This resulted in overall GHG emissions on the same level as the previous year.
The sales intensity of energy consumption in Kuraray Group, which was set as the targets for reduction of environmental load in the Sustainability Medium-Term Plan for Planet reduced by 17.2% (improvement) compared to 2019, far exceeding our target of the reduction (improvement) of 5% or more in 2026. Going forward, we will continue to work on further improvement of sales intensity through energy-saving activities that will lead to reduce GHG emissions.

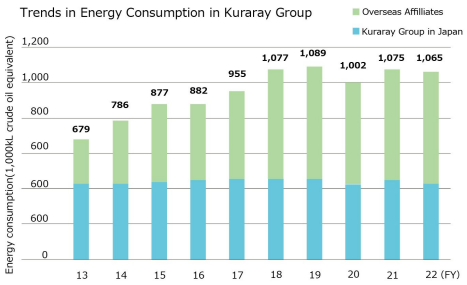
The Kuraray Group's total GHG emissions increased in the period from fiscal 2014 to fiscal 2019 due to the incorporation of businesses through M&A, such as the acquisition of the vinyl acetate business and the activated carbon business (Calgon Carbon Corporation). In particular, the acquisition of Calgon Carbon Corporation in 2018 resulted in a significant rise in the Kuraray Group's GHG emissions. The GHGs emitted by Calgon Carbon Corporation consist largely of the CO_2 generated as a byproduct in the process of producing activated carbon products. (Activated carbon is produced by burning a part of coal used in the process to form micropores on its surface. At this stage of the process, the carbon removed from the surface of the coal to form the micropores is released into the atmosphere as CO_2. In this way, activated carbon emits a large amount of CO_2 during production.) On the other hand, activated carbon is widely used as an indispensable product for the adsorption and removal of hazardous chemical substances contained in factory exhaust gas and for the purification of industrial effluents and raw water for drinking. Activated carbon thus contributes greatly to improving the global environment and reducing environmental impact.

The Kuraray Group plans call for executing CAPEX of 80 billion JPY by 2030, and will continue to consider establishing the technologies to implement Carbon dioxide Capture, Utilization and Storage (CCUS) system, which the CO_2 is a by-product of the production process. We will also work on energy-saving investments and convert electricity to renewable energy. In addition, in our efforts to convert our own power generation facilities, which a large source of our Company's GHG emissions, we aim to achieve Carbon Net Zero by 2050 by identifying and using the effective future technologies such as green hydrogen, green ammonia, and other technologies.

＜GHG emissions（Scope1 + Scope2）, Energy consumption (Entire Kuraray Group)＞

			2018	2019	2020	2021	2022
Kuraray Group in Japan	GHG emissions（Scope1+Scope2）	thousand tons-CO_2e	1,320	1,310	1,229	1,340	1,236
	Scope1 emissions	thousand tons-CO_2e	1,138	1,121	1,067	1,163	1,047
	Scope2 emissions	thousand tons-CO_2e	182	189	162	177	189
	Energy consumption	crude oil equivalent, 1,000 kl	455	452	422	452	430
Kuraray Group outside Japan	GHG emissions（Scope1+Scope2）	thousand tons-CO_2e	1,868	1,921	1,816	1,680	1,660
	Scope1 emissions	thousand tons-CO_2e	862	939	978	810	830
	Scope2 emissions	thousand tons-CO_2e	1,006	981	838	870	830
	Energy consumption	crude oil equivalent, 1,000 kl	622	637	580	623	635





＜GHG emissions・Energy consumption（Separate in Japan and outside Japan）＞

			2018	2019	2020	2021	2022
Kuraray Group in Japan	GHG emissions (Scope1+Scope2)	thousand tons-CO_2e	1,320	1,310	1,229	1,340	1,236
	Scope1 emissions	thousand tons-CO_2e	1,138	1,121	1,067	1,163	1,047
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【Notes】As a result of the change in months in each fiscal year, the environmental data and information contained in this report including graphs are as follows.
・Before fiscal 2013: Actuals in 12 months from April to March of the following year
・Fiscal 2014: Actuals for 9 months from April to December + Actuals for January to March 2014 (or estimated value) [Partially overlaps with fiscal 2013]
・After fiscal 2015 : Actuals for 12 months from January to December

GHG Emissions(Scope 3)

The GHG Protocol* classifies GHG emissions into three categories: Scope 1, 2 and 3.

Scope 1: Direct emissions
GHG emissions generated by fuel combustion at the plants and other facilities of one's own company

Scope 2: Indirect emissions
GHG emissions generated by the use of purchased energy such as electricity, heat, and steam supplied by other companies

Scope 3: Other indirect emissions

The other indirect emissions. GHG emissions along the entire supply chain (from procurement of raw materials to product disposal.)

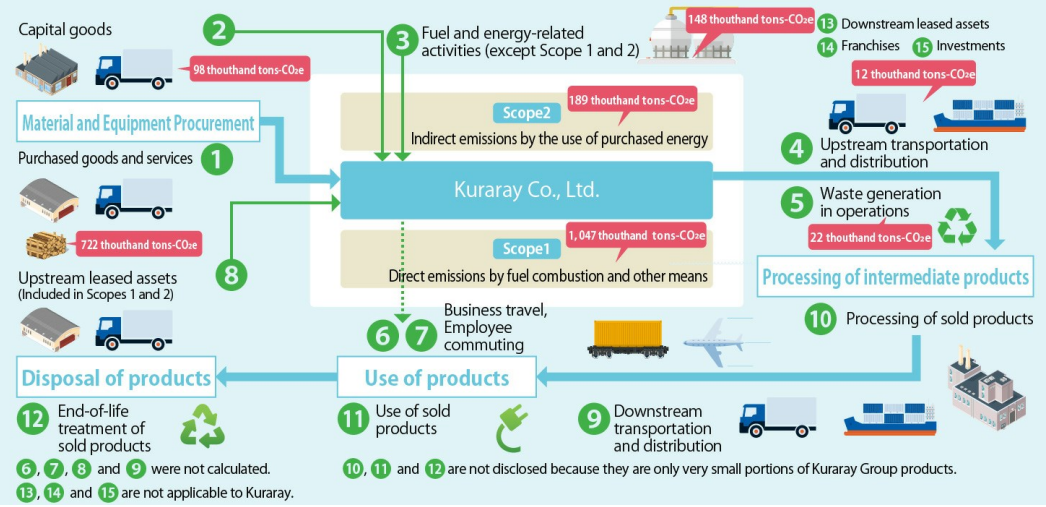
Mandated under the law by which businesses calculate and report Scope 1 and Scope 2 to the government, we report these figures for the whole Kuraray Group to the government and publish the results mainly in the Kuraray Report and on the Kuraray Group's website.

On the other hand, Scope 3, which means the GHG emissions based on the entire supply chain related to us other than Scope 1 and Scope 2, is indirect GHG emissions generated from the viewpoint of a life cycle such as raw material procurement, product distribution, product use and disposal as well as the direct emissions related to our business activities. Since fiscal 2013, we have made and are publishing Scope 3 calculations for some categories in the Kuraray Group in Japan. In Sustainability Medium-term Plan for Planet, the scope of calculation will be expanded not only to Japan but also to the entire Kuraray Group, while the accuracy of calculation will be improved, seeking to identify categories that account for two-thirds of all Scope 3 emissions.

In 2022, among the 15 categories in the total of Scope 3, we calculated actual values for 5 categories [(1) to (5)] with a relatively large emission amount, excluding those not applicable to us and those having a limited calculation coverage in the products of the Kuraray Group. We will also continue to quantify our environmental contribution based on evaluations on the life cycle of our products.

* GHG Protocol (Greenhouse Gas Protocol) is an initiative to develop international standards and related tools on greenhouse gases and climate change led by the World Resources Institute (WRI) and World Business Council for Sustainable Development (WBCSD) and participated in by corporations, NGOs, government institutions and other organizations throughout the world.

Conceptual Image of Control on Emissions of Greenhouse Gases in Entire Scope 3 Supply Chain ((1) to (15) show categories of Scope 3) (Scope covered: Kuraray Co., Ltd.)



＜GHG emissions（Scope3）*1＞

(Unit:thousand tons-CO_2e)

		2018	2019	2020	2021	2022
	Purchased goods and services*2	684	598	388	563	722
	Capital goods	121	170	108	91	98
	Fuel and energy related activities not included in Scope1,2	130	140	130	153	148

		2018	2019	2020	2021	2022
Upstream	Transportation and distribution	12	12	10	12	12
	Waste generation in operations	24	27	26	23	22
	Business travel	Not calculated				
	Employee commuting					
	Leased assets*3					
Downstream	Transportation and delivery					
	Processing of sold products	The Data is not disclosed because the scope of the calculation covers very limited Kuraray products.				
	Use of sold products					
	End-of-life treatment of sold products					
	Leased assets*4	*4,5,6 Not Applicable				
	Franchises*5					
	Investments*6					
Others *7		Not calculated				
Total*8		971	946	662	842	1,002

*1 Boundary is Kuraray Group in Japan. (Coverage：40%)
*2 Calculation method: Purchased amounts of major sixty-two raw materials were multiplied by emission index (purchasing price and amount basis) of each raw material.
In 2022, emissions have increased in terms of calculation on purchasing price and amount basis due to the increase in raw material prices.
*3 Offices, electric appliances and company cars are leased. These are included in Scope 1, 2.
*4 No assets are leased to other company.
*5 Franchise system is not applied.
*6 Other company's stock was not held for investment purpose as reported in the security report.
*7 Optional category indirectly related to corporate activity except for Category 1 to Category 15

<Example of Scope 3 GHG Emission Reduction Efforts (Reduction of Environmental Load during Product Transportation)>

We are working to reduce GHG emissions at the logistics stage, when transporting products to users. For example, to improve the efficiency of transportation by truck, we are consolidating the storage locations of products (warehouses) to ship products previously shipped from multiple locations from a single location. Through such large-lot transportation hubs, we are working so that products previously transported using multiple trucks can be loaded onto a single trailer. We also continue to pursue a modal shift, switching from trucks and other motor vehicles to modes of transportation with less environmental impact, such as freight trains and ships. In addition, in 2019 we submitted a declaration of voluntary activities in support of the White Logistics Movement being promoted by the Japanese government.

Corporate Overview
Message from the President
Corporate Statements
Executives
Organization Chart
History
Awards and Accolades
Main Group Locations
Corporate Profile Video
covid19

Search by Business
Search by Product Name
Search by Key Word

Basic Policy
Technologies and Products
Organization
Progress
Highlights

Corporate Statements
Kuraray Group Code of Conduct
Kuraray Group Human Rights Policy
TOP STATEMENT
Sustainability Long-term Vision and Sustainability Medium-term Plan
Materiality of Kuraray Group
Planet
Product
People
Governance
GRI Standards Content Index
Kuraray Report (integrated report) / Sustainability website
Initiatives, etc.

Management Policies
IR News
Learn about Kuraray
Results and Financial Information
IR Library
Stock Data
IR Calendar
FAQ

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