

Planet

Corporate Statements

The Kuraray Group
Code of Conduct

TOP STATEMENT

Sustainability Long-term
Vision and Sustainability
Medium-term Plan

Materiality of Kuraray
Group

Planet

Environmental
Management

Global Warming
Prevention

Reduction of
Environmental Load

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Kuraray Report
(integrated report) /
Sustainability website

Initiatives, etc.

Planet priority measures in the Sustainability Medium-Term Plan

Planet			Benchmarks	2024	2026
	GHG emissions	Scope1+2	Year 2019:3.2 million tons	No increase in emissions compared to 2019	
		Scope3	Year 2019:0.9 million tons (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			

Targets for 2022

		2022	
Planet	GHG emissions	Scope1+2	No increase in emissions compared to 2019
		Scope3	Identify the category dominates for more than two-thirds of emission

Environmental Management

Global Warming Prevention

Updated

Reduction of Environmental Load

Environmental Accounting

Environmental Data

Sustainability Medium-term Plan for Planet

- [Global Warming Prevention / GHG Emissions and Reduction Measures](#)
- [Global 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 decreased significantly in fiscal 2020 due to the impact of the COVID-19 pandemic. The GHG emissions further decreased by 0.8% in fiscal 2021 to 3,020 thousand tons-CO₂e (down 6.5% compared to fiscal 2019*).

* Base year for GHG emission reductions in the Planet section of the Kuraray Group Sustainability Medium-Term Plan

The Kuraray Group in Japan continued to work on reducing GHG emissions at each of our production sites in fiscal 2021. In fiscal 2020, production activities were restricted due to a decrease in global demand caused by the impact of the COVID-19 pandemic. In line with recovery of production in fiscal 2021, GHG emissions increased by 111 thousand tons-CO₂e year on year to 1,340 thousand tons-CO₂e. As GHG emission reduction measures, we are working to improve the yield of each product, recover and use raw materials and utilities, upgrade to energy-saving equipment, and implement energy-saving activities (waste elimination activities). This enabled us to exceed the target reduction of 30 thousand tons-CO₂e/year (a cumulative total reduction of 100 thousand tons-CO₂e since fiscal 2016). In addition, the GHG emission intensity index improved by 7.7 percentage points compared to fiscal 2020. This is due to the increased energy-efficient operation of many processes in line with recovery in the production of key products.

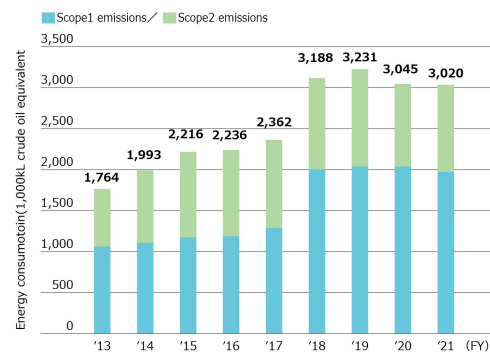
In the Kuraray Group outside Japan, in addition to our efforts to save energy and improve yields at each production site, power outages caused by a cold wave in the United States forced some sites to temporarily suspend production. As a result, GHG emissions totaled 1,680 thousand tons-CO₂e, a decrease of 136 thousand tons-CO₂e from fiscal 2020 (The decrease includes equivalent to 33 thousand tons-CO₂e of reducing GHG emissions by Unbundled Energy Attribute Certification). Since most of the electric power and steam at our production sites outside Japan are purchased from external suppliers, we have set an annual target (a year-on-year improvement of 1.0 percentage point or more) based on the intensity index using energy consumption rather than GHG emissions as an index to properly evaluate the results of environmental improvement activities. However, the energy intensity index in fiscal 2021 worsened by 0.3 percentage points compared to fiscal 2020. This was due to the forced suspension of production caused by the cold wave in the United States, which resulted in operations with poor energy efficiency.

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 CO₂ 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 CO₂. In this way, activated carbon emits a large amount of CO₂ 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. Going forward, we plan to establish a carbon dioxide capture, utilization, and storage (CCUS) system for CO₂ generated as a byproduct in the production process.

< GHG emissions (Scope1 + Scope2) >

			2017	2018	2019	2020	2021
Kuraray Group (in Japan + outside Japan)	GHG emissions (Scope1+Scope2)	1,000 t-CO ₂ e	2,362	3,188	3,231	3,045	3,020
	Scope1 emissions	1,000 t-CO ₂ e	1,240	2,000	2,060	2,045	1,973
	Scope2 emissions	1,000 t-CO ₂ e	1,122	1,188	1,170	1,000	1,047

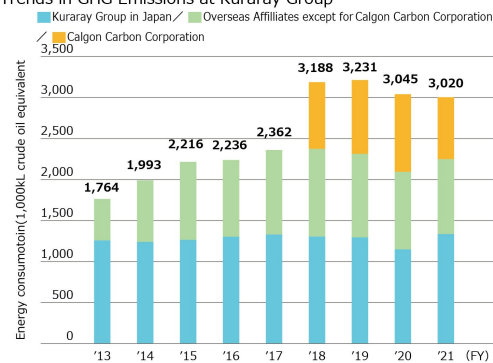
Trends in GHG Emissions at Kuraray Group



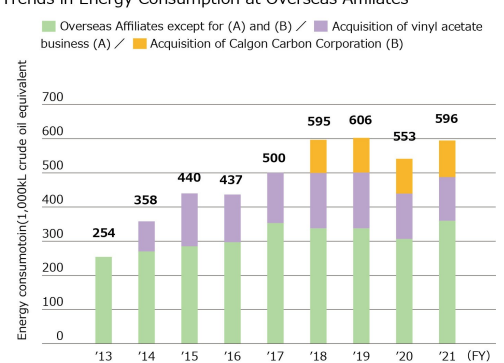
< GHG emissions · Energy consumption (in Japan + outside Japan) >

			2017	2018	2019	2020	2021
Kuraray Group in Japan	GHG emissions (Scope1+Scope2)	1,000 t-CO ₂ e	1,330	1,320	1,310	1,229	1,340
	Scope1 emissions	1,000 t-CO ₂ e	1,147	1,138	1,121	1,067	1,163
	Scope2 emissions	1,000 t-CO ₂ e	183	182	189	162	177
	GHG emission intensity index	Target	Improve by 1% or more from the previous fiscal year				
		Result	2.9%	-3.5%	-1.7%	-10.9%	7.7%
	Reduction (1,000 t-CO ₂ e)	Target	Implement measures to reduce GHG emissions by 13,000 tons-CO ₂ e or more from the previous fiscal year				
		Result	9	13	21	14	30
Kuraray Group outside Japan	GHG emissions (Scope1+Scope2)	1,000 t-CO ₂ e	1,032	1,868	1,921	1,816	1,680
	Scope1 emissions	1,000 t-CO ₂ e	93	862	939	978	810
	Scope2 emissions	1,000 t-CO ₂ e	939	1,006	981	838	870
	Energy consumption	crude oil equivalent, 1,000 kl	500	595	606	553	596
	Energy consumption intensity index	Target	Improve by 1% or more from the previous fiscal year				
		Result	-7.5%	9.1%	-5.9%	0.2%	-0.3%

Trends in GHG Emissions at Kuraray Group



Trends in Energy Consumption at Overseas Affiliates



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

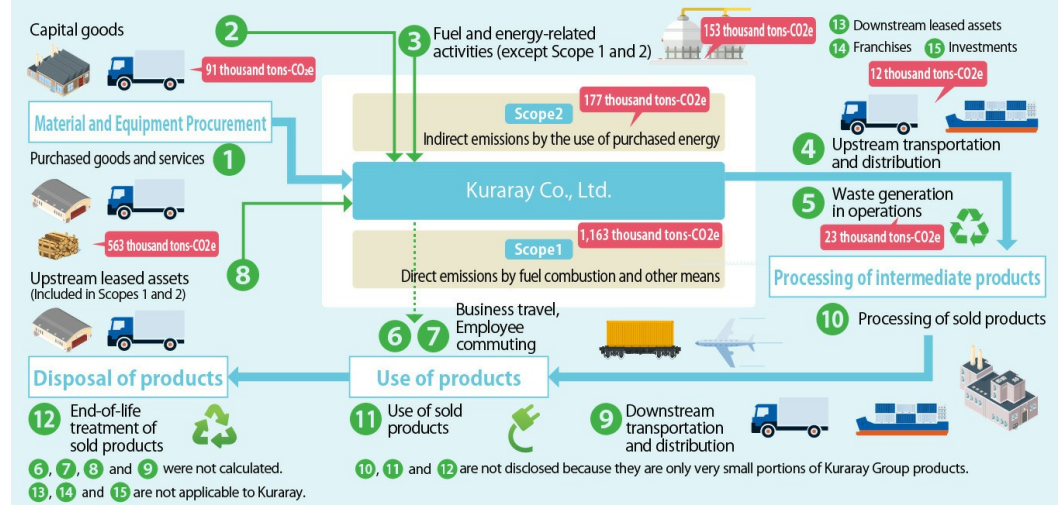
The other indirect emissions. GHG emissions along the entire supply chain (from procurement of raw materials to product disposal.)

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.

Among the 15 categories in the total of Scope 3, we calculated actual values for fiscal 2021 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:1,000 t-CO₂e)

		2017	2018	2019	2020	2021
Upstream	Purchased goods and services*2	628	684	598	388	563
	Capital goods	92	121	170	108	91
	Fuel and energy related activities not included in Scope1,2	126	130	140	130	153
	Transportation and distribution	12	12	12	10	12
	Waste generation in operations	25	24	27	26	23
	Business travel	Not calculated				
	Employee commuting					
	Leased assets*3					
Downstream	Transportation and delivery	The Data is not disclosed because the scope of the calculation covers very limited Kuraray products.				
	Processing of sold 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		883	971	946	662	842

*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.

*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

*8 Boundary of calculation was reviewed and related data was revised, including for past years.

<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.

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