

TCFD Recommendation–based Disclosure

Amidst the increasing number of large-scale natural disasters caused by abnormal weather conditions around the world, the Kureha Group views climate change as a material issue and aims to reduce environmental impact through the advancement of production technologies and achieve carbon neutrality by fiscal 2050

Since endorsing the Task Force on Climate-related Financial Disclosure (hereafter, TCFD) recommendations* in April 2022, we have been promoting information disclosure in line with the TCFD framework in order to strengthen the Group's engagement with shareholders, investors, and other stakeholders on climate change.

* TCFD recommendations: At the request of G20 countries, the Financial Stability Board (FSB) established the Task Force on Climate-related Financial Disclosures (TCFD) to examine how climate-related disclosure should be conducted and how financial institutions should respond. Having released its final report in June 2017, the TCFD recommends that corporations and other entities disclose information on governance, strategy, risk management, and metrics and targets related to the risks entailed in and opportunities provided by climate change.

Governance

To ensure the implementation of sustainability initiatives such as responses to climate change, the Kureha Group has established a governance structure centered on the Sustainability Committee and the Sustainability Coordination Committee, and has oversight by its Board of Directors. The roles of each of the committees are as follows.

(1) Board of Directors

The Board of Directors is responsible for making decisions on important sustainability matters for the Group. The Board of Directors determines material issues based on the recommendations of the Sustainability Committee. Furthermore, the Board of Directors formulates and agrees on mid- to long-term management plans that reflect the initiatives for the material issues and disseminates the plan to each department. At least once a year, the Board of Directors receives reports from the Sustainability Committee on activities related to material issues, including reduction of environmental impact, and supervises them.

(2) Sustainability Committee

The Sustainability Committee principally meets twice a year as an advisory committee to the Board of Directors. The Committee monitors changes in the business environment surrounding the Group with regard to sustainability and makes recommendations to the Board of Directors about basic

management policies and strategies related to sustainability, such as identifying material issues that require special focus for the Group's sustainable growth and enhancement of corporate value over the medium to long term. The Committee also monitors material issues through reports from the Sustainability Coordination Committee and other means.

(3) Sustainability Coordination Committee

The Sustainability Coordination Committee identifies risks and opportunities that affect the sustainability of the Group and society as "sustainability issues," and works together with stakeholders to minimize risks and maximize opportunities. The Committee formulates specific plans for resolving sustainability issues, including material issues, in collaboration with its six subcommittees (Responsible Care Subcommittee, Compliance Subcommittee, Information Security Subcommittee, Information Disclosure Subcommittee, Human Rights Subcommittee, and Risk Management Subcommittee) and the departments in charge of each issue, and manages the progress of these activities. These results are shared with the Sustainability Committee. One of the material issues, reduction of environmental impact, is addressed by the Responsible Care Subcommittee, and the results are shared with the Sustainability Committee. The Sustainability Coordination Committee reports at least once a year to the Board of Directors on activities related to material issues such as climate change.

(4) Carbon Neutrality Project

The Carbon Neutrality Project was established in October 2021 as a company-wide project under the direct control of the President, and is working to study new measures and develop technologies to achieve carbon neutrality by 2050.

Table 1. Climate Change Response-related Governance System

Committee name	Chairman	Constituents	Frequency of discussion of climate change
Sustainability Committee	President & Chief Executive Officer Yutaka Kobayashi	All directors and the chair of the Sustainability Coordination Committee	Two times per year
Sustainability Coordination Committee	Executive Vice President Michihiro Sato	Nominated by Chair	Two times per year

Strategy

The Group regards contribution toward reduced environmental impact and contribution toward resolving social issues (including environmental issues) as material issues, and under the Kureha Group New Mid- to Long-term Management Plan “Toward Creating a New Future,” we are working to mitigate climate change both by reducing CO₂ emissions from the Group and through our products, aiming to achieve carbon neutrality by fiscal 2050.

To reduce the Group's CO₂ emissions, the Iwaki Factory will make use of CO₂-free fuel at its coal-fired power plant, conserve energy through production technology innovation, expand the use of CO₂-free electricity at each business site and Group company, and increase the efficiency of large-scale facilities and equipment when they are upgraded, in line with the Management Plan. In addition, to contribute to the reduction of CO₂ emissions through our products and technologies, we are improving the performance and developing technologies aimed at reducing the environmental impact of advanced materials such as polyvinylidene fluoride (PVDF) and polyphenylene sulfide (PPS), and conducting R&D aimed at bringing even more highly advanced materials to market.

Investment Plan

In our Mid- to Long-term Management Plan, we plan to invest a total of approximately ¥10 billion by fiscal 2030 in measures to reduce CO₂ emissions in production and waste reduction, etc. We will continue to make decisions on investments to reduce CO₂ emissions based on future risks and opportunities.

Scenario Analysis

We have taken the following steps to conduct a scenario analysis of the impact of climate change on our Group. We examined the impact on our profit-and-loss projection and financial plan, and have categorized risks, opportunities, and countermeasures into short, medium, and long term.

1. Create a list of risks and opportunities from climate change that could have a long-term impact on its advanced materials, specialty chemicals, specialty plastics, and construction businesses and environmental services, which comprise the majority of the Group's businesses, and related responses in line with business planning and the R&D Policy.
2. Set three scenarios—growth scenario (1.5°C), standard scenario (2°C), and stagnation scenario (4°C).
3. Score the importance of risks and opportunities for each scenario by dividing the period up to 2050 into short, medium, and long term.
4. Estimate the impact of highly important risks and opportunities on profit-and-loss projection and financial planning
5. Based on the estimated amount of impact, identify risks and opportunities of high importance and formulate countermeasures (Table 2)

Table 2. Highly Important Climate Change–Related Risks and Opportunities and Responses

Type	Cause	Risks		Opportunities	Responses
		Short and medium term	Long term	Short, medium, and long term	
Transition risks	Policies and regulations	<ul style="list-style-type: none"> ● Increase in tax burden due to introduction of carbon price, such as carbon tax (Assuming that the total emissions of the Group in FY2030 are approximately 430,000 tCO₂/year (Scope 1 + 2), the same level as in FY2021, and estimating the carbon tax* at each production site based on IEA forecasts (developed countries: approximately ¥18,000/tCO₂), the burden will increase by approximately ¥7.3 billion per year.) 		<ul style="list-style-type: none"> ● Business opportunities through differentiation based on early decarbonization ● Greater business opportunities through introduction of low carbon technology 	<ul style="list-style-type: none"> • Utilizing CO₂-free fuels at our in-house coal-fired power plants • Expanding the use of CO₂-free electricity • Develop and introduce CCU/CCS-related technology
		<ul style="list-style-type: none"> ● Increase in transition costs related to switching from electricity generated by in-house coal-fired power plant 			
		<ul style="list-style-type: none"> ● Increase in cost of reducing waste plastics due to the Plastic Resource Circulation Act coming into effect 		<ul style="list-style-type: none"> ● Greater demand for environment-related businesses 	<ul style="list-style-type: none"> • Promote new environment-related businesses • Promote reuse of waste plastic • Develop and introduce new recycling technology
		<ul style="list-style-type: none"> ● Increase in the price of raw materials and fuel ● Increase in transportation costs 			<ul style="list-style-type: none"> • Switch raw materials and reduce fuel use • Create high value added products
	Technology	<ul style="list-style-type: none"> ● Increase in low carbon technology and product R&D costs ● Increase in R&D costs to improve efficiency of existing process, etc. 		<ul style="list-style-type: none"> ● New business opportunities based on development of low carbon technology 	<ul style="list-style-type: none"> • Develop and introduce energy creation and low carbon technology • Developing high-performance materials and installing technologies
	Market	<ul style="list-style-type: none"> ● Decline in market competitiveness due to delay in introducing low carbon versions of existing products 		<ul style="list-style-type: none"> ● Greater demand for environmentally friendly products and materials 	<ul style="list-style-type: none"> • Develop environmentally friendly products (cars, electronic/electric devices, etc.) • Develop energy-efficient processes
	Reputation	<ul style="list-style-type: none"> ● Criticism from consumers and demand for response from investors regarding GHG emissions 		<ul style="list-style-type: none"> ● Stable funding sources by indicating response to decarbonization and recycling 	<ul style="list-style-type: none"> • Improve disclosure and communication to respond to the interests of consumers and investors
Physical risks	Acute risk	<ul style="list-style-type: none"> ● Delay or suspension in production due to supply chain disruptions caused by natural disasters ● Delay or suspension in production due to direct damage to production factories and infrastructure caused by natural disasters 		<ul style="list-style-type: none"> ● Increase in disaster response and reconstruction (construction business) 	<ul style="list-style-type: none"> • Reinforce supply chain • Regularly identify and reduce risks
	Chronic risk	<ul style="list-style-type: none"> ● Increase in the number of employee health problems (heat stroke, infections, etc.) ● Increase in need for temperature and humidity control for storage and transportation of raw materials and products 		<ul style="list-style-type: none"> ● Greater demand for agricultural products 	<ul style="list-style-type: none"> • Strengthen quality controls • Develop new agricultural products

● Impact: large ● Impact: medium

*Carbon taxes are independently estimated and set based on the unit cost projections for the NZE scenario in the IEA's World Energy Outlook 2021.

Risk Management

The Kureha Group identifies risks that could have a material impact on the Group's management, and works to prevent such risks from materializing and to minimize their impact if they do materialize. And for this purpose, the Risk Management Subcommittee, a subcommittee of the Sustainability Coordination Committee, identifies risks that could have a material impact on the Group's management. Depending on the classification of the identified risks, each subcommittee and/or related department takes the lead in considering and implementing a response. The status of risk management is monitored and evaluated by the Risk Management Subcommittee, which reports to the Sustainability Coordination Committee and the Executive Committee, which in turn reports to the Board of Directors.

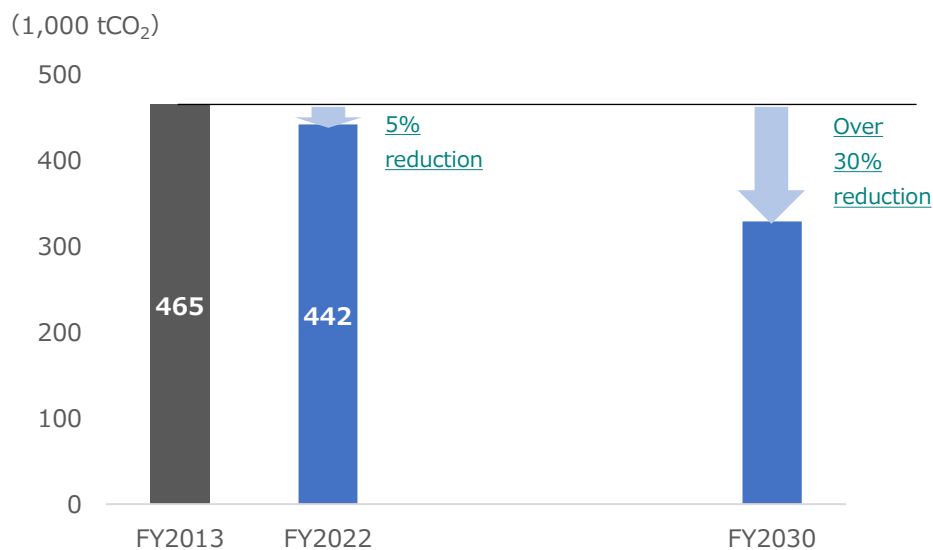
The Group recognizes climate change as one of the major risks that could have a significant impact on the Group's management. The Responsible Care Subcommittee, a subcommittee of the Sustainability Coordination Committee, takes the lead in reducing environmental impact such as climate change in cooperation with the Risk Management Subcommittee.

Metrics and Targets

The Kureha Group aims to achieve carbon neutrality by fiscal 2050 and to reduce its environmental impact through the advancement of production technology, and has set an interim target of reducing energy-related CO₂ emissions by 30% or more from the fiscal 2013 level by fiscal 2030. (Figure 1). The Company calculates both the overall Group's direct greenhouse gas (GHG) emissions from use of fuel and energy, etc., (Scope 1) and its indirect greenhouse gas (GHG) emissions from the use of energy purchased from other companies, including electricity, heat, and steam, (Scope 2) and discloses these as indicators of progress toward its goals (Table 3). As a chemical company, Kureha recognizes that it is also important to manage emissions throughout the supply chain (Scope 3), from raw material purchases to waste disposal, and has begun to calculate those (Table 4).

In addition, we are developing environmentally friendly products and technologies to contribute to the reduction of global GHG emissions, including new grades of existing products.

Figure 1. Kureha Group Energy-related CO₂ Emission Reduction Targets



FY2013 represents the base year for the CO₂ emission reduction target for FY2030 in the Kureha Group's New Mid- to Long-term Management Plan "Toward Creating a New Future."

Table 3. GHG emissions (Scope 1, 2) (Kureha Group; Unit: 1,000 tCO₂)

		FY2018	FY2019	FY2020	FY2021	FY2022
Kureha Corporation	Scope1	337	356	340	359	355
	Scope2	42	30	31	31	38
	Total	380	386	371	390	393
Group Companies in Japan	Scope1	162	166	154	160	103
	Scope2	6	6	6	5	20
	Total	168	171	159	165	123
Overseas Group Companies	Scope1	5	4	4	4	3
	Scope2	25	24	24	26	23
	Total	30	28	28	30	26
Total		578	586	559	585	542

- Calculated GHG is CO₂ emissions related to energy and those non-energy not related to energy.
- For Scope 1, the calculation method was revised in FY2022.

Table 4. GHG Emissions by Scope (Kureha; Unit: 1,000 tCO₂)

		FY2022
Scope 1		355
Scope 2		38
Scope 3	Category 1: Purchased goods and services	303
	Category 2: Capital goods	17
	Category 3: Fuel- and energy-related activities	37
	Category 4: Upstream transportation and distribution	75
	Category 5: Waste generated in operations	1
	Category 6: Business travel	0.2
	Category 7: Employee commuting	0.7
	Category 12: End-of-life treatment of sold products	55
Total		883