Planet

Establishment of a new roadmap to reduce GHG emissions

			Benchmarks	Medium- to Long-Term Targets
Planet	GHG emissions	Scope 1 + 2	2021 emissions 3,020 thousand tons-CO_2e	- 2035: 63% reduction compared to 2021 - 2050: Carbon Net Zero
		Scope 3 (Category1)	2021 emissions 2,941 thousand tons-CO_2e	- 2035: 37.5% reduction compared to 2021

"PASSION 2026" Priority Issue Targets and Fiscal 2023 Results

			Benchmarks	FY2023		FY2024	FY2026
				Targets	Results	Targets	Medium-Term Plan
Planet	GHG emissions	Scope 1 + 2	2021 emissions 3,020 thousand tons-CO_2e	3,230 thousand tons-CO_2e or less*1	2,700 thousand tons-CO_2e	3,020 thousand tons-CO_2e or less	
		Scope 3	—	- Identify sources accounting for two-thirds or more of Group-wide emissions - Set numerical reduction targets for 2024-2026	- Under way to identify sources accounting for two-thirds or more of Group-wide emissions	- Identify sources accounting for two-thirds or more of Group-wide emissions - Set emission reduction targets	—

*1 Regardless of the new target setting, FY2023 target is based on the 2019 emissions, which were used as a benchmark at the formulation of "PASSION 2026"

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
- Grobal Warming Prevention / Response to TCFD Recommendations and Internal Carbon Pricing

Global Warming Prevention

Response to TCFD Recommendations

In November 2020, Kuraray Group endorsed the recommendations of the Task Force on Climate-Related Financial Disclosure (TCFD)* in recognition of the importance of the climate change control as one of our high-profile issues. The Sustainability Medium-Term Plan, which started from 2022, includes measures to mitigate climate change such as reducing greenhouse gas (GHG) emissions, pursuing energy savings, expanding the products that contribute to improve the natural environment and responding to the Circular Economy. In addition to implement these measures gradually, we will enhance the disclosures of strategy, based on governance and scenario-based analysis, risk-management, indicators and targets which are recommended by TCFD.

*TCFD stands for "Task Force on Climate-related Financial Disclosures" which has been established under Financial Stability Board (FSB) to review how to correspond to climate change disclosures and requirements from the financial sector.

Governance

In Kuraray Group, Sustainability Committee, chaired by the president, promotes sustainability

activities. Under the umbrella of this committee, we will establish several project teams to implement the global measures outlined in the Sustainability Medium-Term Plan and promote each project.

Topics discussed at Sustainability Committee are going to be reported to the Board of Directors and the feedback from them would be reflected in the future sustainability activities.

Strategy

In 2021, Kuraray Group selected the risks and opportunities for events occurring in the transition to a low-carbon society and for physical events caused by climate change as shown in Table 1 below.

Table1: Risks and Opportunities by Climate Change in Kuraray Group

Items		Social changes caused by climate change	Business risks	Business opportunities
Transition Risk to Low-carbon society	Policies and Legal	Carbon Taxes and Carbon Emissions Targets at each countries Rising carbon prices, Energy mix changeRenewable energy subsidy policy and energy-saving policy	- Decrease in revenue from the burden of carbon taxes on GHG emissions and energy procurement - Strengthening CO_2 Emissions Reductions and Installing Emissions Trading - Introduction of Carbon Border Adjustment Mechanism	- Expand business of energy-saving, energy-storage, and energy-creation products - Development of technologies related to CO_2 capture, utilization and storage (CCUS) - Reducing Carbon Costs through Local Production
	Technology /Market	Decarbonize technologies Replacement with low-carbon products and renewable materialsCreating a circular economy	- Increase in manufacturing costs and a decrease in the use of plastic products due to changes to environmentally friendly designs that premise resource recycling in order to comply with plastic regulations - Decrease in internal-combustion engine related products due to increase of electric mobility ratio	- Expand business of products made by bio-materials - Expand business of renewable (recyclable) products - Expand business of high-functionality products that lead to plastic usage reduction - Expand business of electric mobility-related products
	Reputation	Changes in customers and investors behavior Increasing demand for climate change control	- Decline in competitiveness due to avoidance of high GHG emissions products - Divestment from companies who do not put an effort to tackle decarbonization	- Expand business of Environmental Contributing Materials
Physical Risk by climate change	Acute	Catastrophic disasters of weather conditions Increase in typhoons, heavy rain, sand, and cold wave	- Increased damage to plant and production capacity reduction or shutdowns due to flooding in areas nearby the oceans and rivers - Shutdown or decrease in revenue due to supply chain disruption	- Expand business of disaster countermeasure-related materials
	Chronic	Average temperature Increase Increase in heat wave and heat stress	- Decline in production efficiency due to unfavorable working environment caused by temperature rising	
		Changes in weather and rainfall patterns Occurrence of drought	- Decline in production capacity or shutdown due to rising water costs caused by drought - Revenue decrease in the agricultural business due to a decline in agricultural production caused by poor crop yield	- Expand business that reduce scarce water supply and food losses - Expand business related to plant factories that are less affected by climate change
		Sea level rise Occurrence of storm surges and high waves	- Decline in production capacity or shutdown due to flooding - Cost increase by water exposure prevention measures (breakwaters, raising, relocation)	

In 2022, we have started scenario analysis based on the below 2-degree scenario (including a 1.5-degree scenario) in which the transition to a low-carbon society is progressing and the 4-degree scenario in which climate change is advancing, and in 2023 we completed a business impact assessment of the major risks and opportunities for the entire Kuraray Group. For this, we drew on insights from reports such as the World Energy Outlook published by the International Energy Agency (IEA). The results are shown in Table2.

Table2: Business Impact of the Kuraray Group's Major Risks and Opportunities in Climate Change Scenarios

Blue font; Profit, Red font; Loss

Large > 10 billion yen, 10 billion yen > Medium > 1 billion yen, 1 billion yen > Small

	Risks and opportunities	Business impact	Business impact in 2030 Scenario 4°C	Below 2°C
Transition Risk to low-carbon society	Decrease in revenue from the burden of carbon taxes on GHG emissions and energy-procurement	Costs due to carbon tax*	Medium	Large
		Change in purchase cost of fossile fuels/oil-derived raw materials	Small	Medium
		Changes in utility costs (electricity)	Small	Medium
	Impact of achieving GHG emission reduction initiative targets	Costs avoided by GHG emission reduction initiatives	Medium	Large
	Expand business of products made by bio-materials	Increase in operating income from biomass-derived products	Small	Medium
	Expand business of recycling-related products	Increase in operating income for recyclable plastic products	Small	Medium
	Expand business of food loss reduction products	Increased in operating income of food packaging materials	Medium	Medium
	Expand business in electric mobility related products due to increase in electric mobility ratio	Change in operating income for electric mobility-related products	Small	Small
	Decrease in internal-combustion engine related products due to increase electric mobility ratio	Change in operating income of automotive fuel and air intake related products	Small	Small
Physical Risk by climate change	Increased damage to plant and production capacity reduction or shutdowns due to flooding in areas nearby the oceans and rivers	Costs of damage caused by future increases in flooding	Small	Small
	Decline in production efficiency due to unfavorable working environment caused by tempearature rising	Increase in labor costs	Small	Small
	Expand business that reduce scarce water supply	Increase in operating income for activated carbon used in water purification	Medium	Small

*Below 2°C scenario (including 1.5°C scenario); $140 / ton-$CO_2$e for Advanced countries and $25 / ton-CO2e for Emerging countries in 2030. 4°C scenario; $90 / ton-CO2e for EU in 2030

The impact of carbon prices* on GHG emissions and energy procurement in the 2° C or below scenario was significant. After the implementation of measures to reduce GHG emissions in 2030, Kuraray Group was expected to bear a burden by carbon tax of approximately 32 billion Japanese yen, indicating the possibility of increased operating costs. As a countermeasure, we will steadily advance our GHG emission reduction program toward the goal of zero-carbon emissions by 2050, while at the same time reflecting the market value created by highly environmental contribution products in product and service prices.

*Calculated based on World Energy Outlook 2022 at $140 /ton-$CO_2$e for developed countries, $25 /ton-$CO_2$e for emerging countries [2030, 1.5° C scenario]

In the future, we will respond to the major impacts derived from scenario analysis, while at the same time reviewing and reflecting the calculation detail in a timely manner in response to changes in the environment.

Risk Management

Kuraray Group conducts risk management for both “Mitigation” and “Adaptation” to the risks listed in Table 2.

In order to "mitigate" the risk of transition to a low-carbon society, we are reducing GHG emissions and expanding sales of products that contribute to the natural environment. Progress is confirmed by the Sustainability Committee (chaired by the president).

Meanwhile, each organization conducts annual risk self-assessments of "adaptation" measures against climate change to strengthen disaster countermeasures and business continuity. The results of these assessments are discussed by the Risk Management and Compliance Committee (chaired by the director in charge of the Corporate Sustainability Division), and if countermeasures are necessary, the president identifies them as management risks and appoints a person in charge to proceed with countermeasures.

Metrics and Targets

In the Sustainability Medium-Term Plan, the Kuraray Group has set targets for reducing GHG emissions related to climate change and increasing sales of products that contribute to the natural environment, as shown in Table 3. The Kuraray Group has set a goal of achieving net zero carbon emissions by 2050. To further reduce GHG emissions, we have set new targets to reduce Scope 1, 2 emissions by 63% and Scope 3 (Category 1) emissions by 37.5% by 2035 compared to

2021 levels.

Table3: Measures and Targets Related to Climate Change in the Sustainability Medium-Term Plan

			Benchmarks	Medium- to Long-Term Targets
Planet	GHG emissions	Scope 1 + 2	2021 emissions 3,020 thousand tons-CO_2e	- 2035: 63% reduction compared to 2021 - 2050: Carbon Net Zero
		Scope 3 (Category1)	2021 emissions 2,941 thousand tons-CO_2e	- 2035: 37.5% reduction compared to 2021

		Benchmarks	FY2024 Targets	FY2026 Medium-Term Plan
Product	Revenue ratio of products that contribute to the natural and living environments	2020: 46%	57%	60%
	(Of which, Revenue ratio of natural environment contributing products)	(16%)	(25%)	(27%)

Internal Carbon Pricing(ICP)

The Kuraray Group uses ICP to incentivize energy saving, identify revenue opportunities and risks, and inform investment decision making, aiming to realize a low-carbon society.

The Kuraray Group's ICP

Internal carbon price	¥10,000/t-CO_2 (calculated using internal exchange rates overseas)
Starting Date	January, 2022
Scope	Capital investment entailing a change in CO_2 emissions
Method of application	The costs of changes in CO_2 emissions will be calculated using the internal carbon price and used as a criterion for investment decisions