KURABO

Environmental Report 2024

Top Message

Based on our management philosophy, "We, the Kurabo Group, contribute to the creation of a better future society through the creation of new value." we strive to practice "sustainable management" that contributes to solving social issues through each of our businesses.

Various environmental issues, including climate change, resource circulation, and biodiversity, are being discussed worldwide. By confronting each issue one by one and contributing to solving them, we hope to strengthen our business competitiveness and create corporate value.

This report clearly explains the measures and results that our group has taken to address environmental issues, as well as our outlook for the future.

As social conditions, technologies, and values change dramatically, the entire Group will continue to work together to solve problems and address environmental issues so as to leave a rich natural environment for future generations. We appreciate your continued support.

Kurabo Industries Ltd.
President Shinji Nishigaki

Editorial Policy

This report summarizes environmental conservation activities as part of our CSR activities. It describes environmental conservation activities for Kurabo Industries and group companies in Japan and overseas, hereinafter referred to as the Kurabo Group. In addition, we refer to the Ministry of the Environment's "Environmental Reporting Guidelines 2018 Edition" when creating it. For more detailed information about our products, businesses, etc., please visit our website. The calculation of CO_2 emissions is for Scope1 and Scope2.

[Report period] April 1,2023 to March 31, 2024 (For overseas affiliated companies, January 1 to December 31, 2021)
[Report scope] In addition to Kurabo Industries and its consolidated subsidiaries, Thai Textile Development and Finishing Co., Ltd and Foshan Kurashiki Textile Manufacturing Co., Ltd. are included. Data of Kurashiki Machinery includes up until the business transfer (April to December 2023).
(The section "Reduction of environmental load" is Kurabo Industries and its domestic consolidated subsidiaries)
("Chemical substance management" is for Kurabo Industries only)

Changes in main performance evaluation indicators

Changes in the Kurabo Group's main performance evaluation indicators are shown in the table below. As indicators for environmental issues, we have set the reduction of CO_2 emissions and the waste recycling rate (zero emissions).

Indicators	Unit	FY2019	FY2020	FY2021	FY2022	FY2023
Consolidated sales	billion yen	１４３	１２２	１３２	１５４	１５１
CO_2 emissions	1,000 t-CO_2	１８４	１６５	１８０	１７０	１６２
Recycling rate of waste	%	９２．７	９４．２	９４．７	９５．２	９６．０

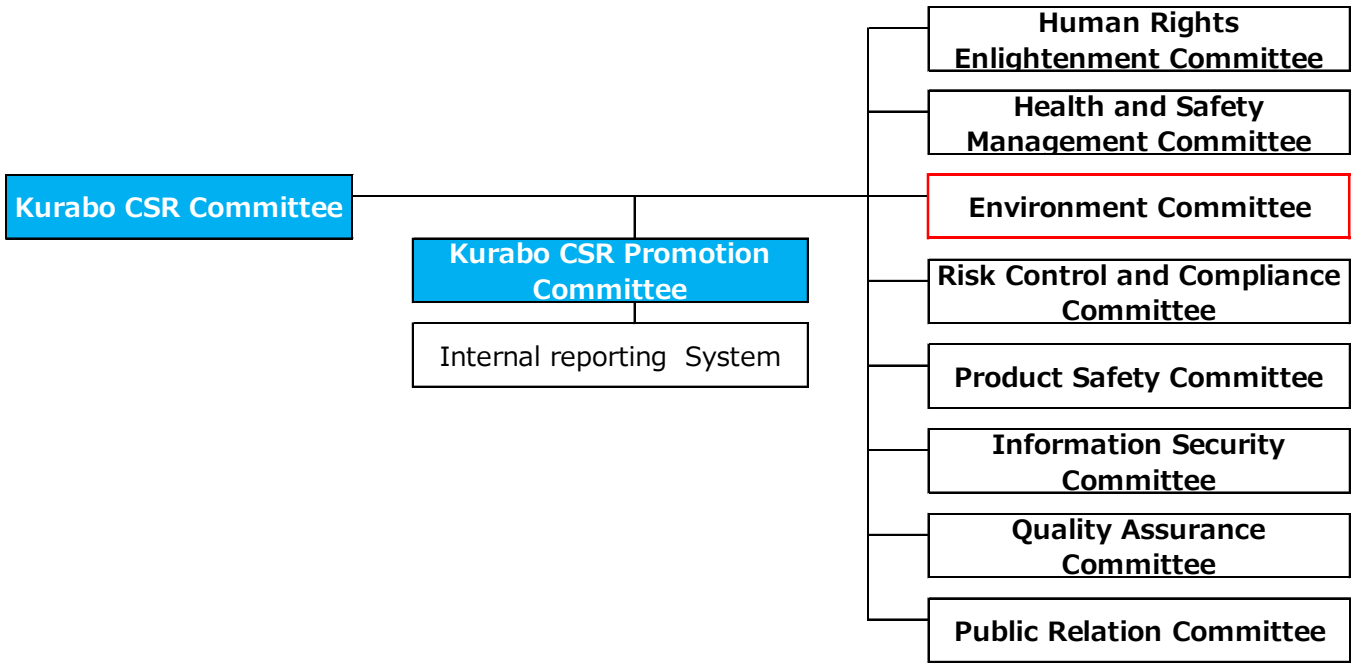
Corporate Governance

As part of building a company that is trusted by stakeholders such as shareholders, customers, business partners, employees, and local communities, we will promote management based on the "Kurabo Industries Corporate Governance Guidelines" to carry out fair and transparent business activities.

Strengthening and Promotion of CSR Activities

We have established a corporate governance system in order to fulfill our social responsibilities as a company and to carry out fair and highly transparent management. As a form of governance, we have an audit and supervisory committee, and has adopted an executive officer system to separate management decision-making and business execution. The Kurabo Industries Corporate Governance Guidelines have been established based on a resolution of the Board of Directors to establish the basic concept and framework of corporate governance.
In accordance with the "Kurabo Group Code of Ethics," each specialty Committee under the supervision of the Kurabo CSR Committee is engaged in activities to meet the expectations of all stakeholders, such as corporate ethics, compliance with laws and regulations, consideration for the environment and respect for human rights. We will further strengthen and promote its activities in response to the growing social importance of sustainability, such as the revision of the Corporate Governance Code.
In environmental conservation, technical executive officers promote activities as the chair of the environmental Committee.

Kurabo Industries CSR activity promotion system diagram



Basic Policy on Sustainability

The Kurabo Group believes that in order to contribute to the realization of a sustainable society, companies must aim for sustainable improvement of corporate value, and create high-value-added technologies, products and services. In addition to fostering and expanding highly profitable businesses, we will implement the following practices under the management philosophy of our group, "We, the Kurabo Group, will contribute to the creation of a better future society through the creation of new value."
① Contribution to solving social issues through business
② Promotion of business activities with an awareness of the conservation of the global environment
③ Respect for human rights and create a comfortable and rewarding work environment
④ Promotion of building a trusted company

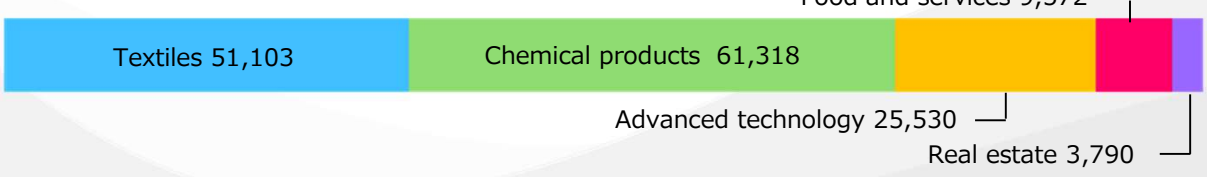
Strengthening Relationships with Stakeholders

We will try to build good relationships with shareholders, customers, business partners, employees, and local communities by implementing shareholder return measures centered on stable dividends, providing technologies, products, and services required by the market, and securing continuous employment.
In addition, we will further enhance the disclosure of non-financial information, strive for active dialogue with stakeholders, and focus on improving corporate awareness through IR briefings and public relations activities for institutional investors.

Kurabo group's 5 businesses Domains

	Description	Business Fields
Textile	By making the most of its unique, advanced technologies in spinning, weaving, dyeing, and processing, Kurabo has come out with a string of highly functional and refined textile products based on natural fibers such as cotton, wool, and linen. Kurabo's high-value-added textiles, which combine function, aesthetics and touch, have in recent years become increasingly widespread in overseas markets. The company strives to offer new lifestyle choices through its textile products. We are also offering solution to social issues through IoT and through sustainable business centered on environmentally friendly fiber recycling.	● Casual clothing materials ● Uniform materials ● Lifestyle materials ● Yarn materials for towel/socks/underwear ● Work environment support tools
Chemical Products	For automotive interior, housing construction, and heat-insulating materials, Kurabo uses its original resin compounding and molding technology to gain an advantage over its competitors. In semiconductor-related products, Kurabo uses its proprietary processing technology to develop resin products. And when it comes to film materials, Kurabo has yields super engineering plastic film. Kurabo is thus contributing to the creation of high-value-added products.	● Polyurethane foam ● Housing construction materials ● High-performance plastic products ● Functional films ● Reinforcing fabrics ● Nonwoven fabric
Advanced Technology	Kurabo's electronics business contributes to the advancement of manufacturing by providing inspection and measuring devices centered on color sensing technology. While the engineering business has its foundations in environment plant technologies such as wastewater and waste gas treatment, it is also expanding into biomass power generation. The biomedical business offers reagents, equipment and services for drug discovery, cosmetics development, and preclinical studies. We contribute to safety, security, and comfort in people's lives through advanced manufacturing, research, and energy utilization.	● Color and image processing ● Product inspection/ measurement ● Environmental plant equipment ● Biomass power generation ● Regenerative medicine ● Gene analysis
Food and Services	In the food sector, Japan Jiffy Foods offers safe and reliable freeze-dried products. In the service sector, Kurabo's very first factory in Kurashiki has been refurbished-yet retains its classic shape and charm-to house a commercial/cultural complex called Kurashiki Ivy Square. Meanwhile, the Kurabo Driving School contributes to the safety of the local community.	● Freeze-dried food ● Driving school ● Hotel and cultural facilities
Real Estate	Kurabo owns numerous plants and related facilities across Japan. The company's real estate business makes effective use of idle land on such Kurabo-owned property, thereby contributing to local communities while managing assets effectively. Through such real estate projects, Kurabo is contributing to people's lives and wider community.	● Real estate development ● Real estate leasing ● Real estate management

■Net sales by business (FY ended March 2023)(million yen)



History of Environmental Conservation / Environment Charter

History of Environmental Conservation

Kurabo has been aware of and addressing environmental problems from 1970s. The company has been responding to global issues through comprehensive environmental management activities including measures to prevent pollution and efforts to save energy following the energy crises. Keenly aware of its corporate social responsibility (CSR) to be green, Kurabo is proactively pursuing environmental conservation.
As the pillars of our environmental management activities, we have conducted activities such as internal control based on environmental audits, creation of an environmental management system based on ISO 14001 standards, and efforts toward zero emissions. We have also been reporting on these environmental activities and their results. The scope of activity has also been extended outside the company through efforts including the development and promotion of environmentally friendly products

Organization

1973	Environmental Management Committee established (Prevention of environmental pollution)
1979	Energy Conservation Committee established (Pursuit of energy conservation)
1994	Environment Committee established (Comprehensive environmental management activities)
2006	Kurabo CSR Committee established (Overall control of CSR activities)

Environmental Management Activities

1996	Environmental Management Regulations established	2008	Environmental Household Account Book introduced (End of activity)
1997	Environmental audit started (Started in 2002 for affiliates)	2010	Participated in Challenge 25 campaign (End of activity)
1998	Environment Charter established	2015	Anjo Mill and Tokushima Plant made ISO 14001 self-declarations
1999	Tokushima Plant acquired ISO 14001 certification (First in the Kurabo group, thereafter other site and group company)	2020	Anjo Mill and Tokushima Plant require ISO 14001 Certification
2000	Environmental Report posted on the Internet	2022	Formulation of carbon neutral roadmap
2002	Environmental accounting introduced	2023	Disclosure of information based on TCFD in securities reports (Selected as a reference case by the Financial Services Agency)
2005	Joined Team Minus 6% project (End of activity) Began to participate in Eco Pro exhibition (End of activity)	2024	Disclosure of supply chain CO_2 emissions (Scope3)
2007	Pursuit of zero emissions		

Environmental Charter

In 1998, the Kurabo Environment Charter was established to define Kurabo's basic policies on environmental issues and behavioral guidelines for employees. Subsequently, as activities for environmental conservation spread throughout the group, the Kurabo Environment Charter evolved into the Kurabo Group Environment Charter in 2006, which the entire group abides by. In addition, taking the opportunity of formulating a carbon-neutral roadmap in 2022, we clarified that climate change countermeasures will be addressed as an important issue.

Kurabo Group Environment Charter

1.Basic Policies

We, Kurabo Industries Group, strive to reduce the environmental load systematically and continuously to always contribute to the conservation of the global environment. Especially we position climate change counter measures as one of the important issues and will work to reduce CO_2 emissions at all stages such as development, production, and sales.
To this end, we will aggressively improve the level of our environmental management in all fields of business activities and introduce products and services that are harmonious with the environment.

2.Behavioral Guidelines

(1)Compliance with applicable laws and regulations
Setting and practice of voluntary management standards
(2) Promotion of environmental sustainability
We will implement the following efforts with the aim of forming a carbon-free society and a resource-recycling society.
①Reduction of CO_2 emissions based on the carbon neutral roadmap
- Promotion of efficient use of energy
- Introduction of renewable energy and promotion of energy transformation

②Effective utilization of resources and promotion of recycling
③Development of technologies, products and services that contribute to reducing the environmental burden

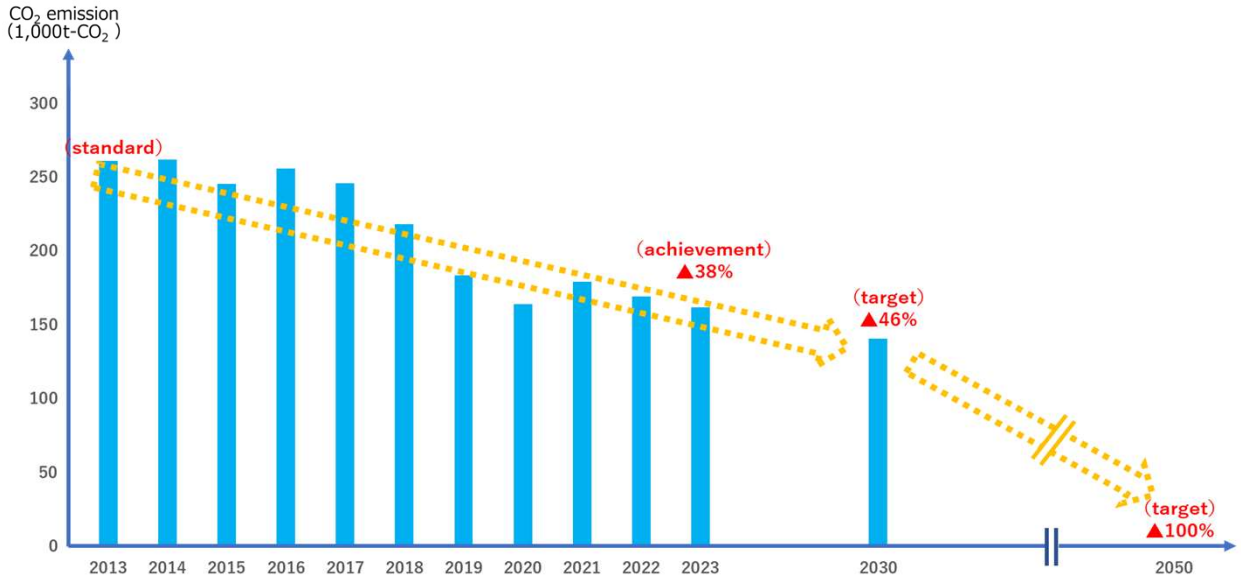
| Long-term Environmental Goals

The Kurabo Group's long-term environmental targets are to reduce CO_2 emissions by 46% (compared to 2013) in 2030, which is the government target, in order to achieve carbon neutrality in 2050. We will strengthen the system to promote the reduction of CO_2 emissions and take the following concrete measures.
・ Energy-saving measures by introducing energy-saving equipment and updating equipment
・Implementation of CO_2 emission reduction measures at production bases with a high fossil fuel usage ratio
・ Active utilization of Tokushima biomass power plant and renewable energy

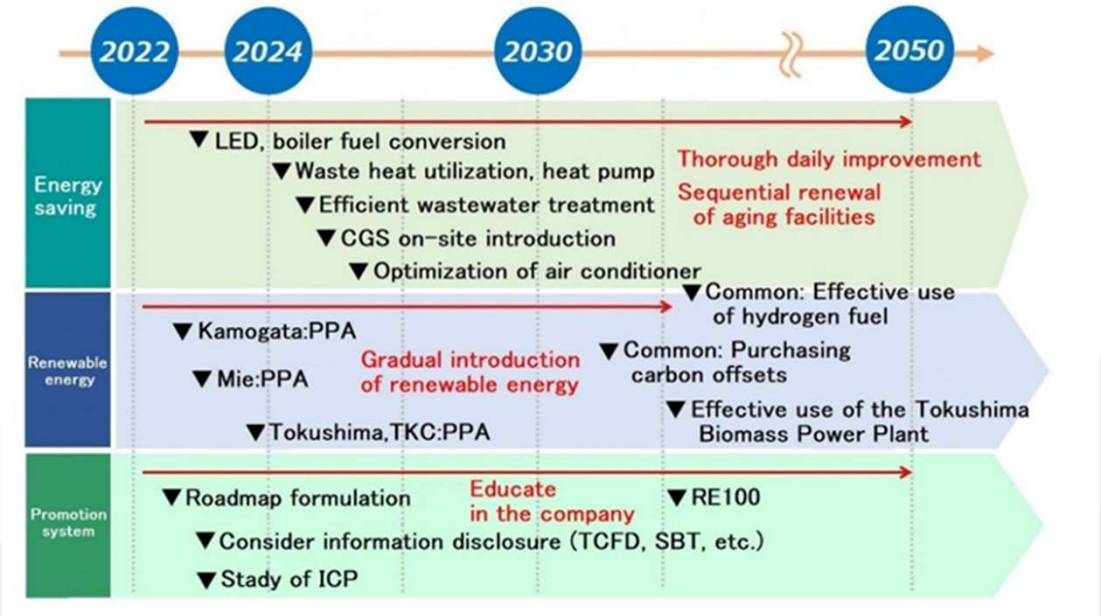
The environmental target of the new medium-term corporate business plan “Progress’24”, which started in April 2022, is to reduce emissions by 40% compared to FY2013 by FY2024. Regarding our response to the climate change issue, as we proceed with the new medium-term corporate business plan “Progress 24”, we will decide on specific responses, including our approach and disclosure regarding TCFD, etc., and implement them systematically.

| Carbon Neutral Roadmap

In 2022, we formulated a carbon-neutral roadmap to achieve our long-term environmental goals. In the future, we will promote efforts to reduce CO_2 emissions in line with this roadmap.
Achieving carbon neutrality in 2050 is a goal not only for Kurabo Industries but also for the entire Group, including affiliated companies in Japan and overseas.



As specific measures, we will promote energy conservation measures and the introduction and utilization of renewable energy throughout the Group companies. If the reduction target is not reached, we will consider offsetting the emissions by purchasing carbon offset credits. In addition, we will strengthen the promotion system for the entire group in carrying out the roadmap.



| Performance Evaluation and Setting of Environmental Targets

The Kurabo Industries Group has set medium-term targets (numerical targets for three years) to systematically promote environmental conservation and is working to response climate change and make effective use of resources.
CO_2 emissions in FY2023 was reduced by 38.0% compared to FY2013, falling short of the target of 39% reduction.
However, as a result of promoting energy-saving measures such as Highly efficient equipment introduced and switching to LED lighting, in addition, promoting the use of renewable energy (solar power generation), CO_2 emissions have decreased compared to the actual figures for fiscal 2022.
Regarding the promotion of zero emissions, the recycling rate improved from 95.2% in FY2022 to 96.0%, we reached the target of 96%. Activities toward realizing a resource-circulating society are progressing steadily.

Target item		Result of FY2022	Target of FY2023	Result of FY2023
Reduction of CO_2 emissions	Absolute reduction (compared to FY2013)	35.2% reduction	39% reduction	38.0% reduction
Efforts toward zero emissions	Improvement in recycling rate of waste	95.2%	96%	96.0%

The Kurabo Group has set a long-term environmental goal of reducing CO_2 emissions by 46% from FY2013 by 2030 and aiming for carbon neutrality by 2050. In response to this, the environmental target of the new medium-term corporate business plan "Progress '24" (2022-2024) is to reduce CO_2 emissions by 40% in FY2024 compared to FY2013. In 2024, the last year of the new medium-term corporate business plan "Progress '24," we aim to reduce the amount by 40% compared to 2013 as planed.
In addition, to further promote zero emissions, we have set a recycling rate target of 97%.

Target item	Target of FY2024	
Reduction of CO_2 emissions	Absolute reduction (compared to FY2013)	40% reduction
Efforts toward zero emissions	Improvements in recycling rate of waste	Recycling rate 97%

| Relationship with SDGs

The Kurabo Industries Group believes that environmental conservation efforts are one of the important measures to achieve the SDGs (Sustainable Development Goals).
We have been actively working on this, but with the formulation of the carbon-neutral roadmap and information disclosure based on TCFD Recommendations, we would like to further promote climate change countermeasures including reduction of CO_2 emissions and contribute to the formation of a carbon-free society.

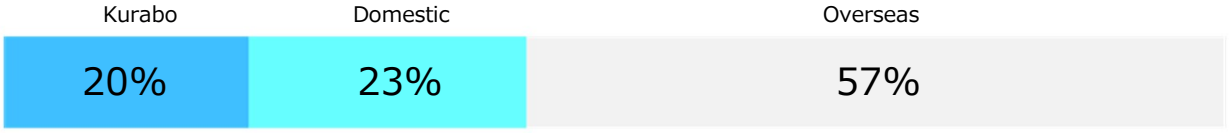
Rerated SDGs	Related environmental conservation activities
	・Climate change measures (mainly reduction of CO_2 emissions) Promotion of energy saving activities Introduction of renewable energy ・Promotion of zero emissions (recycling of waste) ・Reduction of environmental load Air, water and soil pollution prevention

| Climate Change Measures

Current Status of CO_2 Emissions

The table below shows the CO_2 emissions of the Kurabo Industries Group. Since the emission ratio of overseas affiliated companies is high, we will promote efforts to reduce CO_2 emissions throughout the Group, including overseas.
In addition, the breakdown of CO_2 emissions includes the use of fossil fuels as well as electricity. We will promote the reduction of CO_2 emissions by promoting energy conservation and fuel conversion.

CO_2 emission ratio of Kurabo Industries only, domestic affiliate and overseas affiliate (FY2023)

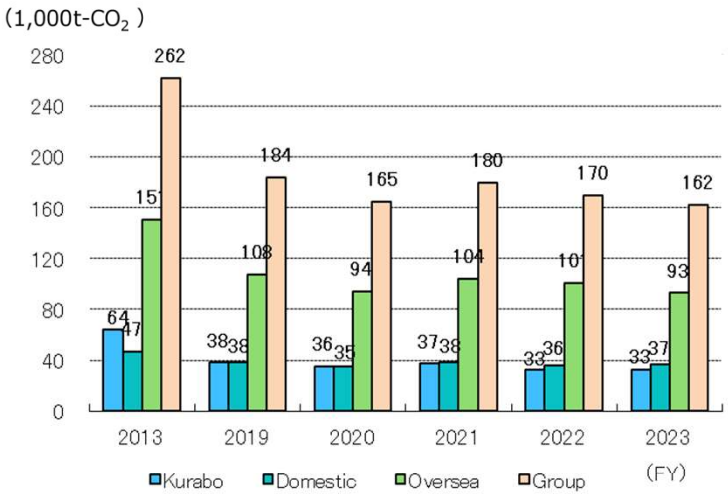


Total CO_2 emissions 162,000t- CO_2

Reduction of CO_2 Emissions

In addition to promoting energy-saving activities, we are working to reduce CO_2 emissions by using renewable energy and converting fuel (heavy oil → gas), and we are also actively implementing greening activities on the premises of factories and other facilities. In addition, with the complete liberalization of electricity retailing, when selecting an electric power company, we also evaluate the environmental aspect (CO_2 emission factor, etc.).
In fiscal 2023, energy-saving measures and the introduction of renewable energy contributed to 4.3% reduction in Group-wide CO_2 emissions compared to the previous fiscal year, and 38.0% reduction compared to fiscal 2013. Over the five years since 2019, we have reduced emissions by an average of 3.1% annually.

Changes in CO_2 Emissions



FY	CO_2 emissions	Reduction rate against FY 2013	Reduction rate against the previous year
2013	262	-	-
2019	184	-29.7%	-15.9%
2020	165	-37.0%	-10.4%
2021	180	-31.3%	9.2%
2022	170	-35.2%	-5.7%
2023	162	-38.0%	-4.3%

Measures to reduce CO_2 emissions

In order to reduce CO_2 emissions throughout the entire group, including overseas, we are working to promote energy conservation and introduce renewable energy. Below are some examples of initiatives we have implemented in recent years that have been particularly effective.

Introduction of solar power generation

From 2022 onwards we installed solar panels on the roofs of factories to generate electricity. In Japan, we installed at Kurabo's Kamogata Factory, Mie Factory, Tokushima Factory, and Sheedom Kamigori Factory, in that order. Overseas we introduced at Thai Kurabo. We plan to continue introducing this technology at Kurashiki Textile Manufacturing Shizuoka Factory and Seiki to promote the introduction of renewable energy.
Note: The right photo shows the example of Thai Kurabo.

Gasification of boiler fuel

Since 2010, we have been promoting the conversion of boiler fuel from heavy oil to gas. As a recent example, in 2023, the boiler fuel at Japan Jiffy Foods' Mito factory was switched from heavy oil A to LNG. Fuel conversion at major domestic factories has been almost completed, with some exceptions.

Purchase of CO_2-free electricity

The Kurabo Head Office Building and Annex Building use electricity plans that utilize electricity derived from renewable energy sources such as solar power, achieving virtually zero CO_2 emissions.

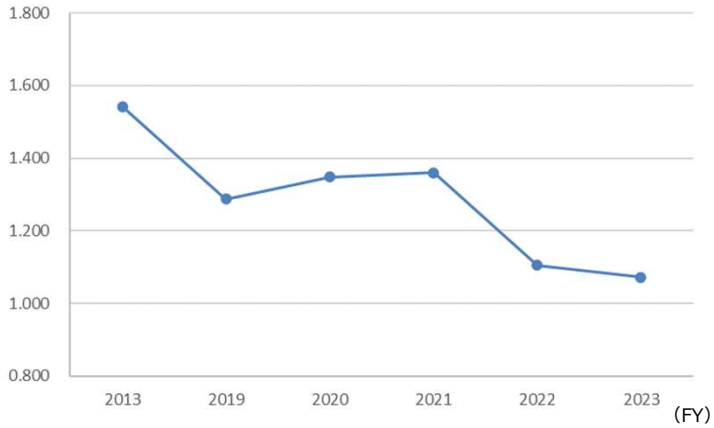
Non-fluorocarbon freezers

In order to reduce emissions of fluorocarbons, which are used as refrigerants in our freezers, we are gradually updating them to non-fluorocarbon types. In particular, Japan Jiffy Foods, which carries out freeze-drying processing and owns a large number of freezers, is systematically updating its freezers starting from fiscal 2022.
Note: As over 98% of the greenhouse gases emitted by our Group are CO_2 , this report does not include information on fluorocarbon emissions.

Reduction of CO_2 emissions (per unit of sales)

CO_2 emissions associated with energy use increase or decrease depending on changes in production volume. In order to reduce CO_2 emissions from a long-term perspective, rather than being affected by temporary fluctuations due to economic fluctuations, the Group evaluates CO_2 emissions in units of emissions divided by consolidated sales. By evaluating on a per unit basis, we aim to develop a production system with high energy efficiency and build a highly profitable business model.

Changes in CO_2 Emissions (per unit of sales)



FY	CO_2emission (1,000t-CO_2)	Consolidated sales (billion yen)	Per unit
2013	262	170	1.541
2019	184	143	1.287
2020	165	122	1.348
2021	180	132	1.360
2022	170	154	1.105
2023	162	151	1.073

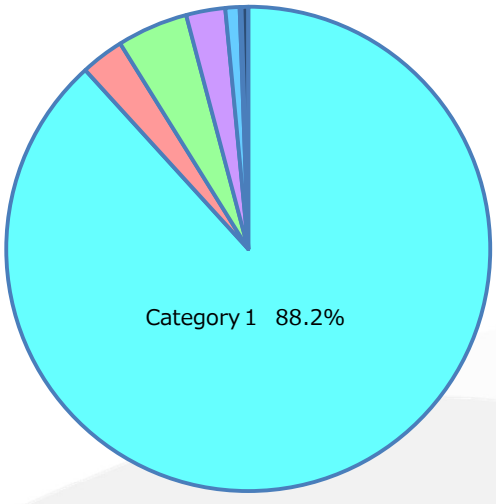
Supply chain CO_2 emissions (Scope3)

Regarding CO_2 supply chain emissions (Scope3), we used the Ministry of the Environment's "Emissions Unit Database for Calculating Organizations' Greenhouse Gas Emissions Throughout the Supply Chain" and the inventory database "IDEA" to determine emissions from Categories 1 to 8 based on consolidated accounting data. Going forward, we will proceed with calculations for categories 9 to 15, which are downstream processes, and will also promote reduction efforts focusing on category 1, which has a high emission ratio.

FY2023 Scope3 emissions (upstream only)

Category	Overview	CO_2emission (1,000t-CO_2)	ratio
Scope3 Total	Upstream	619.6	–
1	Raw materials	546.7	88.2%
2	Capital Goods	17.9	2.9%
3	Energy relation	29.3	4.7%
4	Transportation and Delivery	16.3	2.6%
5	Wastes	5.9	0.9%
6	Business trip	0.7	0.1%
7	Commute	2.8	0.4%
8	Lease	0.0	0.0%

Ratio of Scope3 emissions (upstream only)

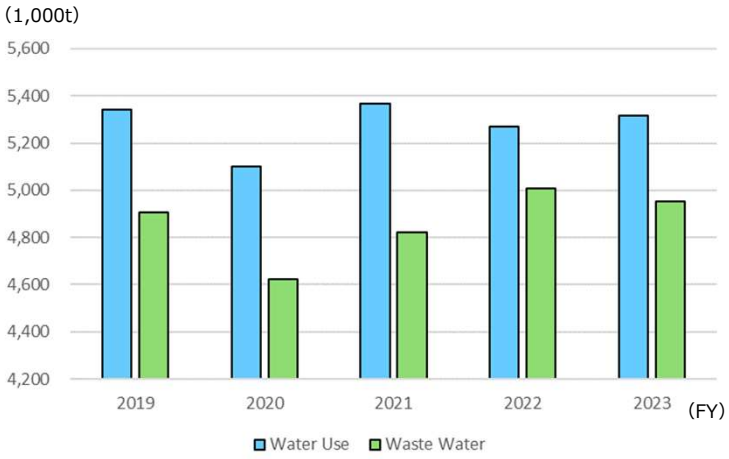


| Water Resource Conservation

Reducing water usage

We at the Kurabo Group use a lot of industrial water, mainly for the dyeing process of textile products and as cooling water. We consider the conservation of water resources to be an important environmental theme in continuing our business activities, and we are working to conserve water resources through measures such as the effective use of water resources and water quality management through wastewater treatment.

Changes in water usage/wastewater volume

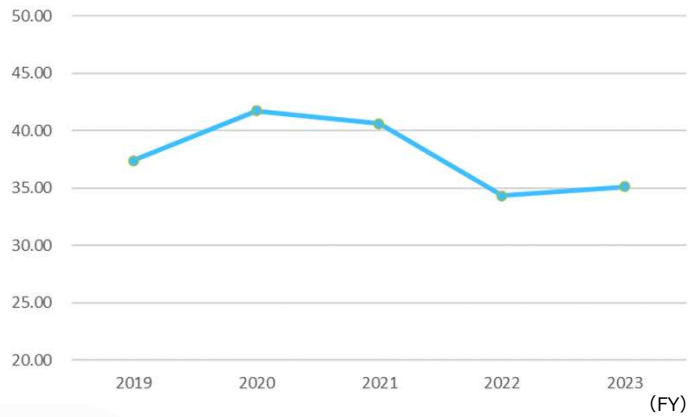


FY	Water usage (1,000t)	Wastewater (1,000t)
2019	5,342	4,906
2020	5,099	4,623
2021	5,369	4,822
2022	5,270	5,009
2023	5,316	4,954

Reduction of water usage (per unit of sales)

Water usage is also managed per unit of consolidated sales. By evaluating on a per unit basis in the same way as CO_2 emissions, we aim to establish a production system that uses water efficiently.

Changes in water usage (per unit of sales)



FY	Water usage (1,000t)	Consolidated sales (billion yen)	Per unit
2019	5,342	143	37.37
2020	5,099	122	41.73
2021	5,369	132	40.61
2022	5,270	154	34.33
2023	5,316	151	35.13

| Environmental Audit

With an aim to ensure proper environmental management at business sites in Japan and overseas of the Kurabo Group, the head office staff conducts environmental audits by visiting each site on a regular basis. To improve the environmental management level, the audit not only checks observance of environment-related laws but also introduces recommended management methods.
As a result of environmental audits carried out on a continual basis, compliance with applicable laws and regulations has greatly improved. Since fiscal 2014, environmental audits have been conducted by shifting their focus from reviewing legal compliance to checking the operation of environmental management.
In fiscal 2023, we conducted audits of nine domestic group and three oversea establishments. As a result of the audit, we appropriately instructed the points to be improved and all of them were promptly improved. The entire group will continue to work to maintain and improve a good environmental management system.
In addition, as a new role of environmental audit, we will check the CO_2 emission status and check reduction measures, and the entire Kurabo Industries Group will strive to achieve carbon neutrality. In the process, we would like to promote equipment management and operational efficiency, which will lead to improved productivity, reduced raw material costs, and eventually improved profitability.

Sites where Environmental Audits have been Conducted in

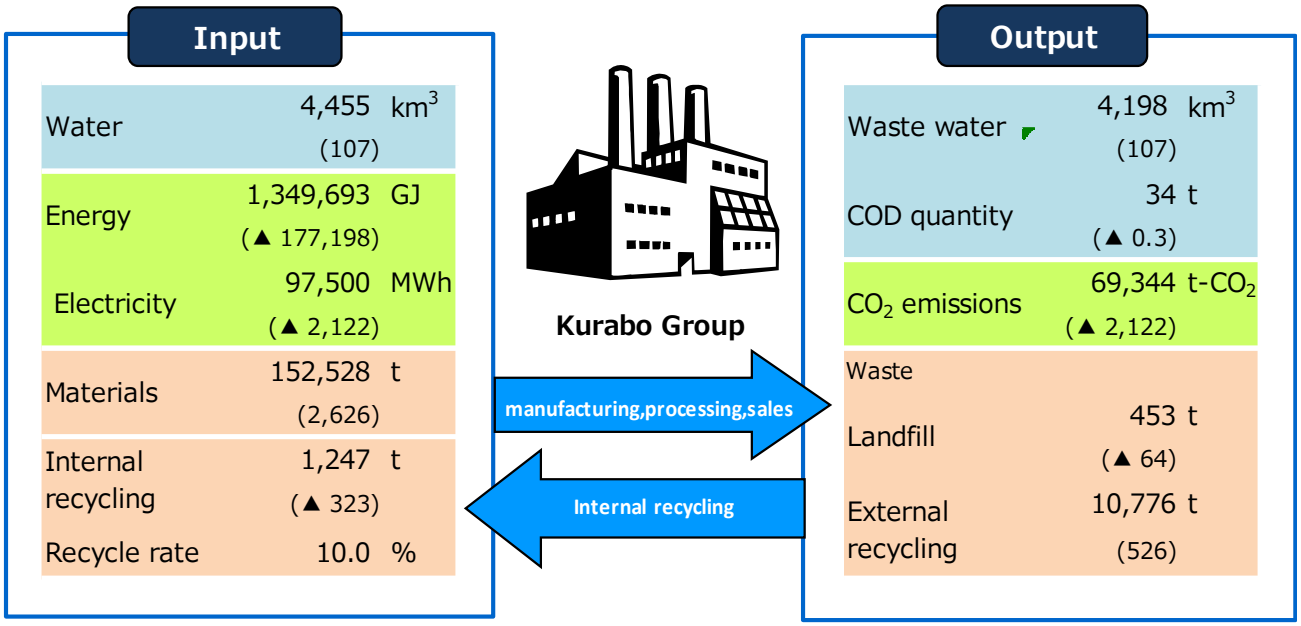
Company	Site / Location	Business description and main products
Kurabo Industries Ltd.	Susono Plant	Plastic product manufacturing industry
	Kamogata Plant	Plastic product manufacturing industry
	Engineering department	Office
	Biomedical department	Office
Kurashiki Textile Manufacturing Co., Ltd.	Hayashima Plant	Non-woven fabric manufacturing industry
Tomei Kasei Co., Ltd.	Mie Plant	Urethane processing industry
Sheedom Co., Ltd.	Kamigori Plant	Plastic product manufacturing industry
Echo Giken Co., Ltd.	Ome City, Tokyo	Industrial Equipment Manufacturing industry
Seiki Co., Ltd.	Uozu City, Toyama	Industrial Equipment Manufacturing industry
Guangzhou Kurabo Chemicals Co., Ltd.	Guangdong, China	Plastic product manufacturing industry
Guangzhou KCF Plastics Co., Ltd.	Guangdong, China	Plastic product manufacturing industry
Foshan Kurashiki Textile Manufacturing Co., Ltd.	Guangdong, China	Plastic product manufacturing industry

| Reduction of Environmental Load

The Kurabo Group has always striven to supply high-quality products and services to the market in efforts to contribute to a better future. We also work to accurately understand the impact business activities have on the environment so that we can reduce it.
Since climate change countermeasures are a global issue, we will work with overseas affiliated companies as well, but other environmental loads (air pollution, water pollution, etc.) will be dealt with in consideration of regional characteristics.
As for the status of environmental load, some data has not been aggregated at overseas establishments, we aggregated the load data of Kurabo Industries and domestic affiliated companies.

Overview

The Kurabo Group's material flow in fiscal 2023 is shown below.

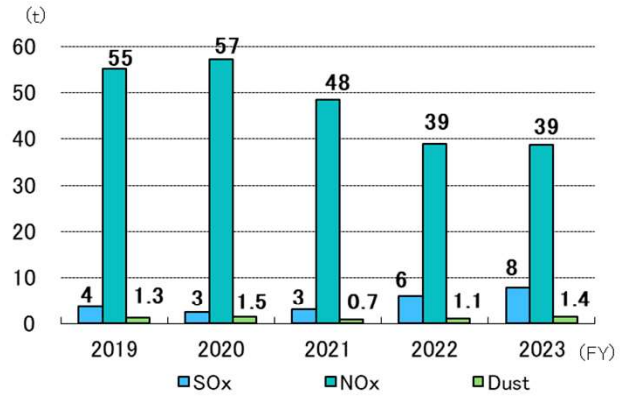


increased or decreased quantities against the previous year ara shown in parentheses

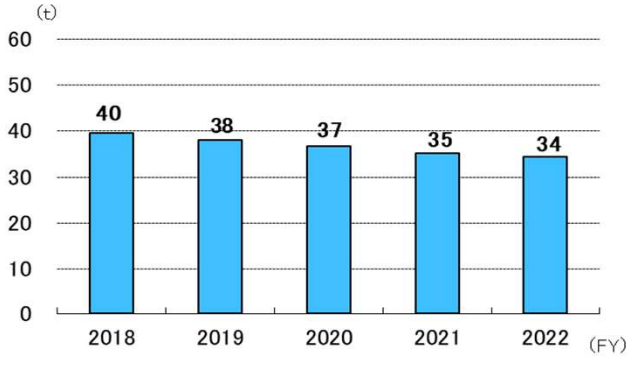
Prevention of Air Pollution and Water Pollution

We strive to reduce our environmental burden in order to prevent air pollution and water pollution. Regarding the discharge of air and water pollutants, we set and manage voluntary control standards that are stricter than the law, and the annual discharge amount is also stable.

Amount of Air Pollutants



COD Emissions (Dye Processing Plants)

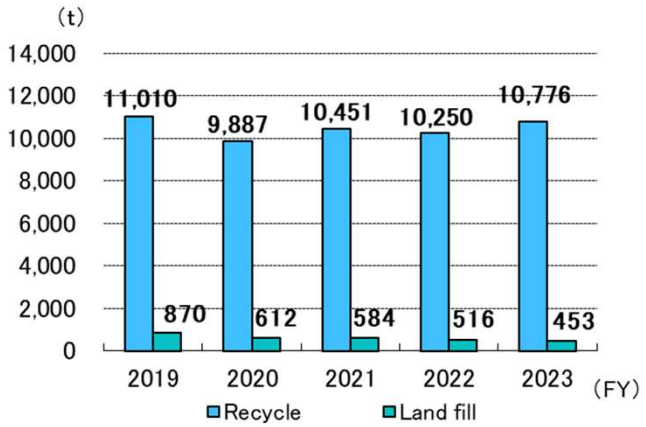


*1: SOx, NOx: Generic terms for sulfur oxides and nitrogen oxides. Typical air pollutants generated by combustion of fossil fuel.
*2: COD: Chemical oxygen demand. Amount of oxygen required to purify wastewater. An indicator of water contamination.

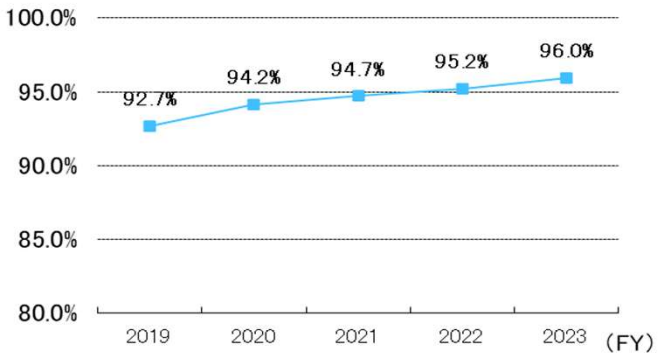
Waste Reduction and Pursuit of Zero Emissions

We have been setting zero emissions as an environmental target and working to recycle waste in efforts to contribute to the realization of a recycling-oriented society. We have achieved significant results thanks to long-term efforts, and the recycling rate for the entire group in fiscal 2023 was 96.0%.

Amount of Waste



Recycling Rate



Sites Achieving Zero Emissions

Company	Site / Location
Kurabo Industries Ltd.	Anjo Mill, Tokushima Plant, Neyagawa Plant, Susono Plant, Gunma Plant, Kamogata Plant, Mie Plant, Kumamoto Office, engineering department, R&D Center, Osaka Head Office (Including the headquarters of Kurabo International, Kurashiki Textile Manufacturing, Sheedom, and Japan Jiffy Foods) and Tokyo Branch
Taishoboseki Industries, Ltd.	Hannan City, Osaka
Kurabo International Co., Ltd.	Murakami Plant, Takeda Plant
Kurashiki Textile Manufacturing Co., Ltd.	Kurashiki Plant, Hayashima Plant, Shizuoka Plant
Tomei Kasei Co., Ltd.	Nisshin Plant, Gunma Plant, Mie Plant, Toyota Plant, Handa Plant, Saitama Plant
Kurabo Chemical Works Co., Ltd	Kurose Plant, Kamogata Plant, Neyagawa Plant
Sheedom Co., Ltd	Kamigori Plant
Kurabo Plant System Co., Ltd.	Neyagawa City, Osaka
Kurabo Techno System Ltd.	Neyagawa City, Osaka
Yamabun Electronics Co., Ltd.	Higashiosaka city, Osaka
Japan Jiffy Foods, Inc.	Uji Plant
Kurashiki Ivy Square, Ltd.	Kurashiki City, Okayama

*Zero emissions: The Kurabo Group defines zero emissions as having 98% or more of the waste generated by our business sites recycled by other companies. In FY2023, 31 of our 41 business sites achieved zero emissions.

Reduction of Environmental Load

Resource Saving

To reduce raw material waste generated from plants of the Kurabo Industries, we practice resource conservation and develop applications where the waste can be used.

Specific Resource Saving Implementation Status (Case of Kurabo)

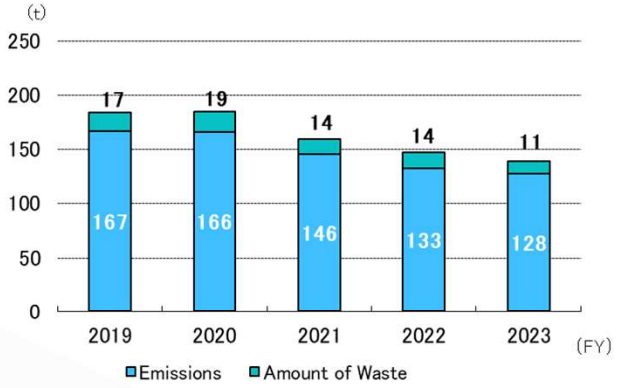
Site	Item	Implementation content
Anjo Mill	fiber waste	Waste cotton or lint generated from the spinning and weaving process are recycled as textile materials. And the Textile Business Division collects off-cuts from the sewing process of other companies and reuses them as raw material, such as in textile products, at the Anjo Mill.
Tokushima Plant	caustic soda ammonia	Most of the caustic soda is recovered, concentrated, and recycled from the discharged washing water. Ammonia used for ammonia mercerization is also recovered and recycled in the same way as caustic soda.
Neyagawa and Gunma Plant	molding waste	All of the molding waste generated in the production process of extrusion-molded products for housing materials is reused for molding materials.
Susono and Kamogata Plant	Urethane scraps	The off-cuts of flexible urethane foam are crushed, molded, and reused as tip foam.
Mie Plant	film scraps	The off-cuts from plastic film manufacture are recycled and reused as material when and where possible.

Management of Chemical Substances

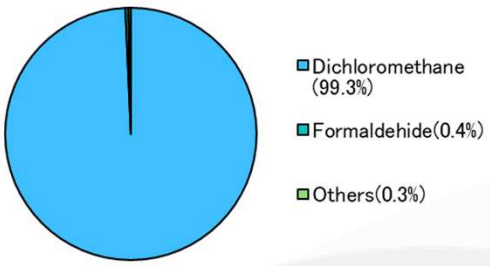
| Management of Chemical Substances

Chemical substances used at each site are accurately recorded and put under appropriate control in accordance with their properties and relevant laws. In particular, at sites that handle designated chemical substances under the PRTR Law*, we have established management standards and work standards, and implement operational management that takes into account the health of our employees. Since chemical substances are used as raw materials, emissions tend to increase along with the expansion of business. However, we are working to reduce environmental burden by reviewing formulations and by collecting and reusing chemical substances

Trends in Substances Subject to the PRTR Law (Kurabo only)



Emission Rate of PRTR-designated Substances



* PRTR Law: Law requiring companies to accurately record the amount of specified chemicals discharged into the environment, and report these amounts to the government. For Kurabo, dichloromethane, which is used as a foaming agent of urethane, accounts for the largest portion of total PRTR substances discharged. The annual usage of PRTR substances is 3,672 tons, and the maximum storage amount is 258 tons.

| Initiatives for biodiversity

Kurabo strives to minimize the impact of its business activities on biodiversity with the aim of preserving biodiversity. As part of these efforts, each business site is engaged in local cleanup activities, especially in the ocean and river coasts, which are rich in biological resources.

The Kurabo Mie Plant faces Ise Bay and the Shitomo River, and located in area with abundant water resources. In commemoration of World Oceans Day on June 8, we conduct cleanup activities at least once a year to collect litter that causes marine pollution, contributing to the conservation of biodiversity in the region.

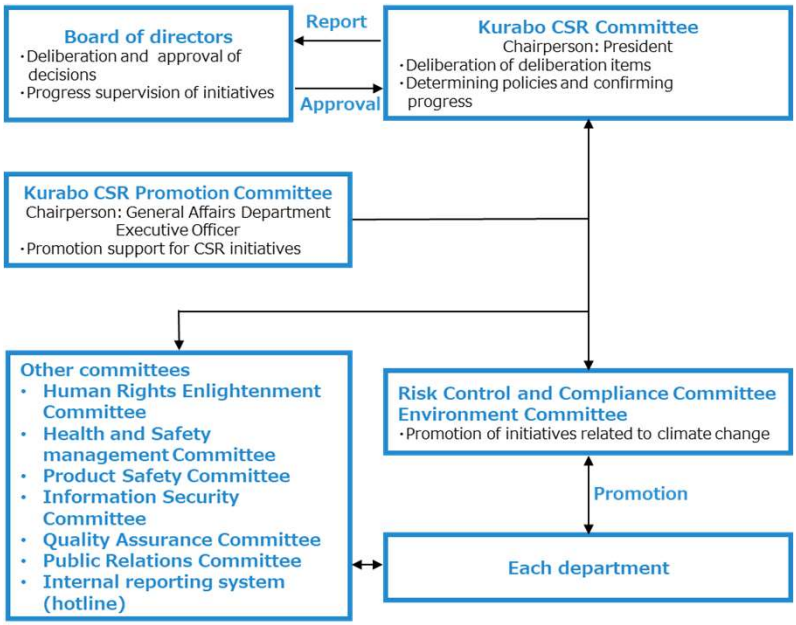
| Social contribution activities

Since 2014, the Kurabo Group has engaged in cleanup activities around its business sites under the name "10-100 (Ten Hundred) Project" as its own social contribution activities, in order to beautify the local environment. In this project, 100 towel handkerchiefs using our antibacterial and antiviral functional fiber processing technology “CLEANSE” are made for every 10 participants in the cleanup activity and donated to kindergartens and facilities for the elderly as Christmas gifts in December.

The Kurabo Group has set "consideration for the global environment and contribution to a circular economy" as one of its material issues. Recognizing that climate change-related risks and opportunities will have a significant impact on our business strategies, we have positioned "achieving carbon neutrality" as a key issue and are striving to realize a sustainable society.

1.Governance

One of the Kurabo Group's basic policy on sustainability is to "promote business activities that are conscious of the preservation of the global environment." Under the supervision of the Kurabo CSR Committee, which is chaired by the president, we are promoting initiatives centered on the Risk Control and Compliance Committee and Environmental Committee. Regarding responses to climate change-related risks and opportunities, the CSR Committee approves the action policies of the Risk Control and Compliance Committee and Environment Committee, receives activity results reports, and reports the activity policies and results to the Board of Directors once a year.
The Board of Directors deliberates and supervises the goals and plans of these initiatives, as well as the progress of each measure. The Board of Directors also decides on strategies related to sustainability, such as the Basic Policy on Sustainability and the Kurabo Group Environmental Charter.



<Major items to be discussed and approved by the Board of Directors (FY2023)>
・Preparation of environmental reports
・Support for the TCFD recommendations and information disclosure based on it.

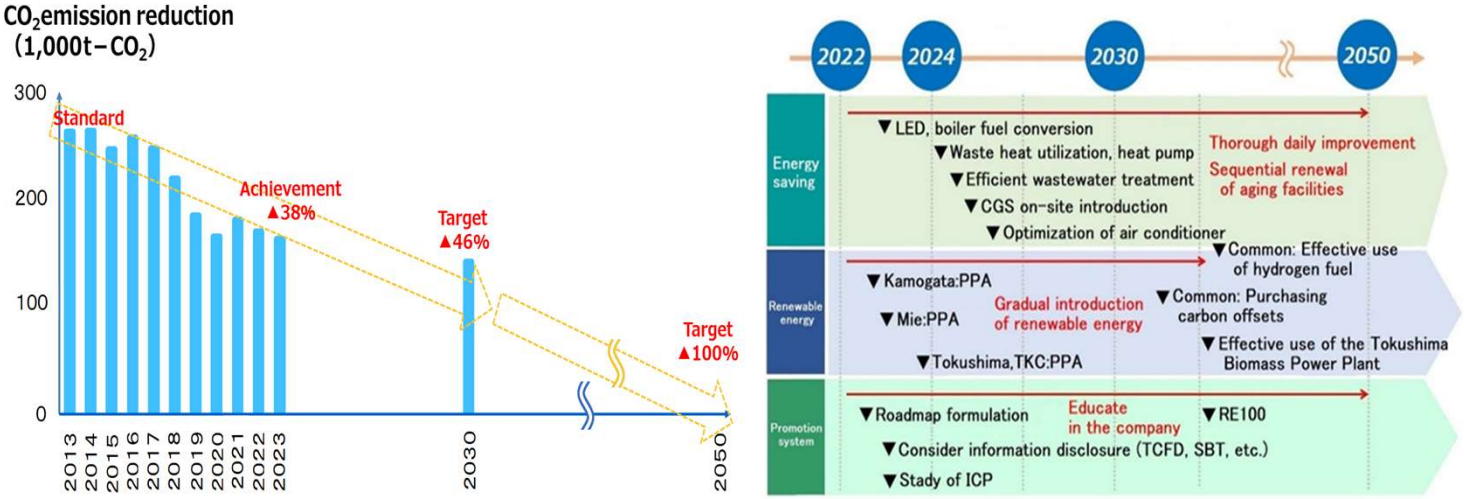
2.Strategy

The Kurabo Group has established a CO_2 emissions reduction transition plan (Carbon Neutral Roadmap) in 2022 toward the government's goal of carbon neutrality in 2050, and the entire group is promoting activities to reduce CO_2 emissions. In addition, we have compiled a list of risks and opportunities in order to comprehensively understand the impact of climate change on our business in 2030 and to promote initiatives to address issues caused by climate change.
As part of the process of identifying risks and opportunities, we first interviewed each department about climate change-related risks and opportunities and created a comprehensive list. Furthermore, we organized and narrowed down from the perspective of the magnitude of the impact on business, and we identified important climate change-related risks and opportunities for the Group's business based on the evaluation results of scenario analysis. Going forward, we will proceed with a detailed examination of contents and strive to reduce risks that have a large impact and to operate our business by accurately seizing opportunities.

■ Overview of scenario analysis

Scenario analysis is based on "STEPS", "SDS", "NZE 2050" assumed in the International Energy Agency (IEA) "World Energy Outlook", and "SSP1 -1.9" ,"SSP5-8.5" in the Sixth Report of Intergovernmental Panel on Climate Change (IPCC) . And we analyzed transition risks and opportunities in the "1.5°C scenario" and physical risks and opportunities in the "4°C scenario".
For analysis, the definitions of the degree of impact and the time axis are as follows.
[Degree of impact] Large: Significant long-term impact, or expected impact amount of 500 million yen or more
Medium: Temporarily significant impact, or expected impact amount of 100 million yen or more
[Time axis] Short-term: ~3 years, Medium-term: 3-10 years, Long-term: 10 years ~

■Transition Plan for CO_2 Emissions Reduction (Carbon Neutral Roadmap)



■List of risks

Pattern		Minor classification	Risk impact	Counter-measure	Impact	Time axis
Transition risk	Policy and legislation	GHG emission pricing progress (carbon pricing)	Increase in energy costs due to the introduction of a carbon tax	・Promotion of energy conservation measures such as boiler fuel conversion and heat pump ・Introduction of renewable energy such as solar power PPA	Large	Medium Long
			Price pass-through occurs due to the introduction of carbon pricing into the supply chain	・Encourage and cooperate with suppliers to develop low-carbon materials, etc. ・Diversify raw material procurement methods	Large	Medium Long
		Regulations on existing products and services	Rise in raw material prices due to stricter environmental regulations on products handled	・Diversification of suppliers in consideration of environmental impact ・Efforts to reduce the amount of raw materials and components used	Medium	Short Medium Long
	Technology/ market	Changes in customer's action	Increase in costs due to promotion of energy conservation and introduction of high-efficiency equipment, etc.	・Improve the efficiency of our own production processes ・Improve the efficiency of production processes throughout the value chain	Large	Short Medium Long
		Soaring costs for decarbonization	Increase in costs associated with introduction of renewable energy and purchase of clean energy	・Introduction of renewable energy such as solar power PPA ・Effective use of existing large-scale power sources (mega solar, biomass)	Medium	Medium Long
	Reputation	Increased anxiety among stakeholders	Impact on securing R&D personnel and hiring of new graduates	・Promotion and sophistication of human resource management	Medium	Short Medium Long
Physical risk	Acute risk	Intensification of extreme weather events such as cyclones or floods	Equipment damage due to typhoons, floods, etc., decreased production due to suspension of activities, increased recovery costs	・Strengthen business continuity plan (BCP) ・Confirm hazard maps and assess risks at company sites and major business partners	Large	Short Medium Long
			Suspension of production due to damage to suppliers by typhoons, floods, etc., and disruption of transportation routes	・Diversification of production and procurement methods, such as diversification of suppliers and reconstruction of supply networks ・Deployment of procurement BCP at suppliers, implementation of BCP assessment	Medium	Medium Long
	Chronic risk	Rise of average temperature	Increased air conditioning costs	・Introduction of energy-saving equipment and enhancement of power saving in factories and offices ・Introduction of renewable energy such as solar power PPA	Medium	Short Medium Long

■ List of opportunities

Pattern		Minor classification	Opportunity impact	Counter-measure	Impact	Time axis
Opportunity	Resource efficiency	Use of recycling	Growing demand for materials compatible with the circular economy against the backdrop of the transition to a circular economy	・Promote and expand recycling-oriented business by such as "L∞PLUS", recycling clothing cutting waste ・Expansion of recycled polyester such as "AIR FLAKE" and biodegradable fiber products ・Expansion of recycled wood powder resin products such as "KURATTICE ECO"	Large	Short Medium Long
	Energy source	Use of lower emission energy sources	Reduction of carbon tax burden by reducing GHG emissions through decarbonization measures	・Promotion of energy conservation measures such as boiler fuel conversion and heat pump ・Introduction of renewable energy such as solar power PPA	Large	Medium Long
			Reduction of energy costs through energy-saving activities and procurement of low-cost, high-quality renewable energy and hydrogen	・Promotion of energy conservation measures such as boiler fuel conversion and heat pump ・Introduction of renewable energy such as solar power PPA	Medium	Short Medium Long
	products and services	Development and expansion of low-emission products and services	Growing demand and expansion of needs for low-carbon and decarbonized products	・Promote decarbonization and strengthen product competitiveness by understanding the carbon footprint ・Expansion of eco-friendly high-performance material products such as "NaTech" ・Expansion of eco-friendly functional films such as "Clan Seal Series" ・Acquisition of tenants by obtaining environmental certification for real estate rental buildings	Large	Short Medium Long
	Market	Access to new markets	Growing demand for parts due to the rapid spread of EVs	・Respond to growing demand for semiconductors through high-performance resin processed products ・Expansion of demand for mainstay products and newly developed products in each segment, including the environmental mechatronics business	Large	Short Medium Long
	Resilience (elasticity)	Continuity of business activities	Strengthen competitiveness backed by a strong ability to respond to disasters due to the geographical dispersion of production bases	・Practice sustainable business activities by strengthening the business continuity plan (BCP)	Large	Short Medium Long

3.Risk management

Climate change-related risks are appropriately managed under the leadership of the Risk Control and Compliance Committee and Environment Committee in accordance with the following assessment and management process. In addition, climate change-related risks are managed by the entire Kurabo Group as one of the risks that have a significant impact on the business of the Kurabo Group.

Identifying risks	Risk analysis /evaluation	Examination of countermeasures	Incorporation into strategies/ implementation	Monitoring
Identifying climate change-related risks at the Environmental Committee Secretariat and each department	Comprehensive assessment of risk levels by the Environmental Committee Secretariat and each division	The Environment Committee Secretariat and each department examine countermeasures against each risk and report to the CSR Committee.	Incorporate countermeasures into strategies and implement countermeasures in each department	The board of directors will monitor the progress of the measures.

4.Metrics and goals

The Kurabo Group aims to achieve carbon neutrality in 2050 as a long-term goal for reducing CO_2 emissions. Especially for the period up to 2030, we have formulated a roadmap to achieve the government target of a 46% reduction compared to FY2013. The entire Kurabo Group will work to reduce our CO_2 emissions (Scope1, Scope2) on absolute quantity basis. We believe that advancing these initiatives will further enhance the existence value of the corporate group, improve production efficiency, strengthen our foundation as a manufacturing industry, and ultimately improve profitability. We are also preparing to calculate CO_2 supply chain emissions (Scope3). After the calculations are complete, we will consider formulating CO_2 emissions reduction targets (Scope3).

■CO_2 emission reduction target

Target item	FY2024	FY2030	FY2050
Reduction of CO2 emissions (Scope1,2)	40% reduction (against FY2013)	46% reduction (against FY2013)	Carbon neutral

■CO_2 emissions results

Category	Fiscal 2023 results
Scope1	33,538 t-CO_2/year
Scope2	128,756 t-CO_2/year
Total	162,294 t-CO_2/year

■Environmental targets and results

In order to systematically promote environmental conservation, the Kurabo Group has set medium-term targets (three-year numerical targets) for "reduction of CO_2 emissions" and "recycling rate as promotion of zero emissions". We are striving to combat climate change and effectively utilize resources.

For fiscal 2023, we set a target of reducing CO_2 emissions by 39% compared to fiscal 2013 and engaged to reduce energy consumption through energy-saving measures. The result was 38.0% reduction, not reach the target, but is improvement from the 35.2% reduction achieved in FY2022.

Regarding the promotion of zero emissions, the recycling rate was 96.0%, reached to our target of 96%.

Target item		Result of FY2022	Target of FY2023	Result of FY2023
Reduction of CO_2 emissions	Absolute reduction (against FY2013)	35.2% reduction	39% reduction	38.0% reduction
Efforts toward zero emissions	Improvement in recycling rate of waste	95.2%	96%	96.0%

The Kurabo Group has set a long-term environmental goal of reducing CO_2 emissions by 46% from FY2013 levels in 2030 and aiming to become carbon neutral in 2050. The environmental target of the medium-term corporate business plan "Progress 24" (2022-2024) is to reduce CO_2 emissions by 40% compared to FY2013 by FY2024. compared to fiscal 2013. In addition, our target of recycling rate is 97% in order to further advance zero emissions.

Target item	Target of FY2024	
Reduction of CO_2 emissions	Absolute reduction (against FY2013)	40% reduction
Efforts toward zero emissions	Improvement in recycling rate of waste	Recycling rate 97%

■Items for future consideration

As part of efforts to strengthen the system for promoting carbon neutrality, we will consider introducing internal carbon pricing, participation in RE100 and obtaining SBT certification. In addition to climate change, we will also promote initiatives that take into consideration natural capital such as water resources and biodiversity.

Environmentally Friendly Products

We are changing to an era in which environmental conservation and reduction of environmental impact are strongly required at the life stages of products including production, distribution, use, disposal, and recycling, from conventional product development with an emphasis on economic efficiency and mass production in mind.
Kurabo considers a healthy environment for people and the earth, and aims to reduce environmental impact throughout the life stages of its products.

Textile Business

NaTech

It is a unique technology material that can give functionality to natural fibers.
It can add functions such as warmth, deodorant, and moisture absorption and desorption, and has excellent washing durability.

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

15 LIFE ON LAND

LooPLUS

We aim to build a circular business that utilizes our unique upcycling technology to recycle scraps from and unnecessary products.

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

17 PARTNERSHIPS FOR THE GOALS

AIR FLAKE

SUSTAINABLE INSULATION

An inner material that is made from 100% recycled materials and features lightness, heat retention, softness, and ease of drying at the level of natural feathers.

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

15 LIFE ON LAND

Chemical Products Business

KURATTICE ECO

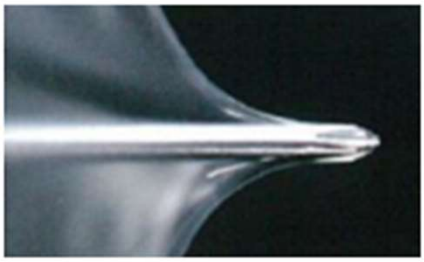
It is a synthetic wood made by coating a core material such as aluminum with a resin containing wood powder. It is a building material / industrial material that has both the design of natural wood and the strength of metal.

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

15 LIFE ON LAND

KuranSeal series

A film made of an elastomer material that has both elasticity like rubber and excellent workability of plastic.
It contributes to the environment, safety and comfort in applications such as solar cells and interlayer films for building material glass.



7 AFFORDABLE AND CLEAN ENERGY

11 SUSTAINABLE CITIES AND COMMUNITIES

Biodegradable film sheet

An environment-friendly film sheet that utilizes biodegradable plastics that are decomposed into water and carbon dioxide by microorganisms and biomass plastics that use plant-derived materials.

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

15 LIFE ON LAND

Sheedom Co., Ltd

Advanced Technology Business

Road surface inspection compact unit PG-4

Measuring system of road surface damage in a short time while driving at 100km / h, equipped with 3D camera, rangefinder and GPS.
You can improve the efficiency of infrastructure deterioration diagnosis.

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

11 SUSTAINABLE CITIES AND COMMUNITIES

FUNTO

It has a strong sterilizing and drying ability, and repeatedly regenerates used bedding containing livestock manure in a smooth and clean state.

7 AFFORDABLE AND CLEAN ENERGY

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

Biomass power plant

We have been operating a biomass power plant that uses thinned wood as fuel, and generate electricity equivalent to the annual power consumption of approximately 11,000 ordinary households.

7 AFFORDABLE AND CLEAN ENERGY

15 LIFE ON LAND

Real Estate Business

Kurabo Annex Building

Kurabo Annex Building is a tenant building that aims to "contribute to the local community and revitalize it." It uses electricity derived from renewable energy sources and is environmentally friendly, having been certified with the Comprehensive Assessment System for Built Environment Efficiency (CASBEE) - Real Estate S Rank and the Building Energy Efficiency Performance Labeling System (BELS) 4-star rating.

Environment & Construction Department
2-4-31 Kyutaromachi, Chuo-ku, Osaka
URL https://www.kurabo.co.jp/sustainability/