

Action Plan Based on the Act on Advancement of Measures to Support Raising Next-Generation Children

In the five-year plan for the period from April 2018 to March 2023, Kurita Water Industries has set the following four initiatives.

Initiative	Measures Taken
Ease workplace regulations	Increase the options for work styles by promoting use of satellite offices (rental offices outside the Company) and recognizing working at home for employees who have restrictions on their work.
Promote use of annual paid leave	Formulate and implement measures to promote use of annual paid leave.
Promote male participation in childcare	Remind employees that childcare leave can be taken in small increments, and aim to increase the number of men taking this leave.
Ensure time for spending on childcare	Subsidize costs of childcare services and ensure that employees have time for childcare.

Work Style Reforms

The Company is promoting work style reforms centered on reducing long working hours with a view to maintaining employees' physical and mental health and increasing their productivity.

To help employees ensure a healthy mind and body, to increase productivity, and to promote activity among diverse human resources, we are working to prevent long working hours based on the following policy.

Policy

1. Transform the mindset of workers

Increase individual employee awareness of time and train them to perform their work efficiently.

2. Reform work processes

Review work flow and operating procedures, reduce waste and promote standardization to make work more efficient.

3. Organize working environment and rules

Establish work rules that set out a balance between working and breaks and create an environment that supports flexible work styles.

Initiatives to Reduce Long Working Hours

The Company is taking the following initiatives to reduce long working hours.

Issue	Measures
Restrict working hours	- Establish no overtime day (Wednesday) - Set the hours that the Company's facilities can be used (until 8:00 p.m.)
Promote use of paid annual leave	- Encourage employees to take at least five days of continuous leave in the summer holiday period (June-October)
Changing employee awareness	- Provide Work Style Reform Seminars for engineers - Run e-learning programs for acquisition of time-management skills and efficient meeting operation
Reform and introduction of systems and schemes	- Introduction of satellite offices - Trial of interval system to break up work hours

Streamline Operations by Introducing IT Equipment

The Company has distributed mobile IT devices to employees in the Engineering Division to streamline design operations. Specifically, the confirmation of construction work that was previously done on paper, is now carried out using the screen of the IT device and photographs of the site. In addition, the confirmed items can be quickly shared inside and outside the Company, which has eliminated differences in understanding between relevant parties, and cut down reworking. The system also enables speedy communication with suppliers and reduces travel time to offices. By reducing the work time of engineers, they are able to shift their focus to creative operations.



Health and Safety

The Kurita Group recognizes that due to the nature of its business, its employees and those of subcontractors are often faced with various safety risks for manufacture and delivery of water treatment chemicals or assembly, delivery, and installation of water treatment facilities. We have therefore positioned “occupational health and safety as the top priority in operating business.” We are working to ensure the safety and support the health of Kurita Group directors and employees, as well as employees of suppliers to create working environments where they can work with confidence.

Basic Policy

The Kurita Group has established a common policy for the Group in an effort to ensure [the health and safety of directors and employees](#), create comfortable working environments, and improve on them. We continuously promote initiatives for health and safety based on this policy.

Policy

1. Compliance with laws

Kurita Group will observe laws and regulations related to occupational health and safety which apply in each country or region where it conducts business activities.

2. Investment of management resources

Kurita Group will strive to maintain and improve a safe, comfortable working environment by investing its management resources such as human resources, equipment, and funds.

3. Clarification of roles, authority, and responsibilities

Kurita Group will clarify the roles, authority, and responsibilities of occupational health and safety organizations and occupational health and safety managers of Group companies, so as to conduct voluntary, sustained occupational health and safety activities.

4. Setting targets, planning, and implementation for occupational health and safety

Kurita Group will have the occupational health and safety organizations of Group companies set targets for their occupational health and safety activities in accordance with business contents and regional characteristics of each company, as well as the laws and regulations which apply in each country, develop plans to achieve the targets, and implement the plans through the united efforts of operators and employees. In addition, Kurita Group will conduct appropriate reviews based on the results of implementation and make continuous improvements.

5. Elimination and reduction of risk factors and hazards

Kurita Group will conduct risk assessments, identify risk factors and hazards to make improvements, and eliminate or reduce the risks.

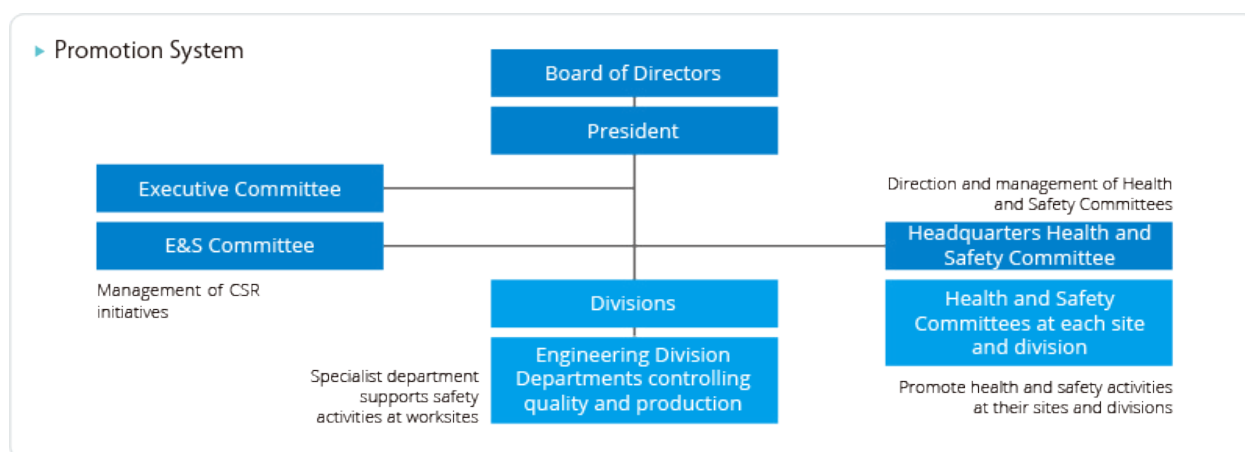
6. Education and training

Kurita Group will provide education and training on occupational health and safety to its directors, employees, and business partners and inform them thoroughly of the Occupational Health and Safety Policy and the objective, plans, and measures of its occupational health and safety activities.

Promotion System

The Company and its domestic Group companies have established a health and safety system based on labor safety laws and regulations such as the Industrial Safety and Health Act. Under the Headquarters Health and Safety Committee, a joint labor-management committee which is chaired by the executive senior managing director and representative director of the Company, each office and division of the Company has established a Health and Safety Committee (chaired by the office manager or persons designated by the chairperson of the Headquarters Health and Safety Committee), and domestic Group companies have also established Health and Safety Committees. These work to maintain and enhance the workplace environment. Furthermore, a special department has been established to promote safety within the worksite, and it supports on-site safety initiatives as well as planning and taking measures to prevent work-related accidents. The department also follows up on the activities of the Health and Safety Committee. The activity policy of the Headquarters Health and Safety Committee and the activity results of each Health and Safety Committee are reported to the Board of Directors of the Company once a year. Among 19 Health and Safety Committees of domestic Group companies, 16 are joint labor-management committees (as of March 2019). In addition, the percentage of employees who participate in the Health and Safety Committee is 2%* at the Company and 9% at domestic Group companies.

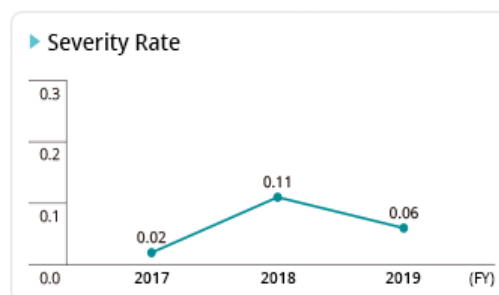
* The percentage of the members of the Health and Safety Committee among employees working at the Head Office



Targets and Achievements

The Kurita Group's target for the theme in fiscal 2023 and its achievement in fiscal 2019 are as shown below.

	Target for FY2023	Achievement in FY2019
Severity rate	0.005	0.06



The severity rate is calculated as the number of lost work days / total number of labor hours × 1,000.

The severity rate for fiscal 2019 is the actual result for the construction sites of Kurita Water Industries.

Main Initiatives

In fiscal 2019, the Health and Safety Committee stated the direction for its initiatives as "every one of us must have a sense of danger and establish the behavior of thinking for ourselves to remove any potential risks." The main themes for our priority measures have been 1) disaster response, 2) prevent work-related accidents, 3) prevent traffic accidents, and 4) health management. Our main initiatives in fiscal 2019 were as follows.

Disaster Response

The Company and its Group companies in Japan follow the Kurita Group BCM (Business Continuity Management) Policy to carry out countermeasures for earthquake risks, safety inspections and disaster preparations, and confirm the status of drills at all 153 business sites in Japan, and implement improvements.

Safety Patrols for Preventing Work-Related Accidents

Taking into consideration previous work injuries, we set preventing chemical-related injuries and falls as priority issues. In fiscal 2019, outside experts and the Company's responsible departments conducted 122 safety patrols at sites on new and existing businesses and projects with a high risk of work-related accidents, and efforts were made to discover and eliminate risks at worksites and raise the safety awareness of employees and subcontractors. In safety patrols, worksite safety measures and other aspects were evaluated by points, then the results were reported back to employees and subcontractors and improvements and remedies of the indicated items were carried out. Since fiscal 2018, we have conducted safety patrols overseas. Recently, we have also been enforcing safety education prior to the start of construction in response to an increase in subcontractors due to an increase in onsite construction

Number of Safety Patrols (Kurita Water Industries)

	FY2018	FY2019
Japan	507	449
Overseas	8	22
Total	515	471

Number of Participants in Safety Education (Kurita Water Industries)

Training name	FY2018	FY2019
Training on handling fires	42	95
Training on handling chemicals	74	86
Safety training for new employees	142	209
Safety training for overseas national staff employees	32	32
Special training on full-harness type fall prevention devices	-	288
Others	303	263
Total	593	973

Work-Related Accident Cause Identification and Recurrence Prevention

The types of injuries that occurred during work at the Company and domestic Group companies in fiscal 2019 are listed below. For the accidents that occurred, the Company's dedicated department for promoting onsite safety investigated the cause and established measures to prevent recurrences, which are promoted through the Company and domestic Group companies.

Types of Injuries

Falls, chemical-related injuries, being caught, traffic accidents, overturning, being crushed, bone fracture, lower back pain, bug bites

Traffic Accident Prevention

The Company and its domestic Group companies provide practical training for safe driving, and efforts are made to prevent traffic accidents because cars are often used when visiting the plants and offices of customers. Drive recorder records are used to educate drivers on the number of dangerous driving maneuvers that had been performed and employees with little driving experience are given safe driving education to increase their skills.

Regular Health Examination

The Company conducts regular health examinations for employees. We ensure that all eligible employees receive their examinations.

	FY2017	FY2018	FY2019
Rate of Employees Receiving Regular Health Examinations	100%	100%	100%

Response to Hazardous Operations

The Company's employees may handle organic solvents, designated chemical substances, and other materials when performing analysis and experiments. To deal with hazardous operations by its employees, the Company has devised exposure prevention measures, such as installation of onsite ventilation equipment and protective equipment. We also conduct special health examinations based on surveys of employee's substance usage records.

	FY2017	FY2018	FY2019
Rate of Employees Receiving Special Health Examinations	100%	100%	100%

Health Promotion Initiatives

The Company conducts measures to improve employee health, such as seminars on how to improve diet, measuring physical age, and holding health events such as walking rallies.

	FY2017	FY2018	FY2019
Number of Health Seminars	4	2	10
Number of Health Events	12	13	40



Initiatives to Prevent Mental Health Issues

In our initiatives to prevent mental health issues, each Health and Safety Committee holds seminars on mental health. In addition, we conduct a Stress Check, which is a survey given to all employees for promoting self-awareness, carried out under the guidance of the stress check systems designed by the Ministry of Health, Labour and Welfare according to the Industrial Safety and Health Act.

	FY2017	FY2018	FY2019
Number of Mental Health Seminars	12	15	16
Ratio of Employees Receiving Stress Checks (%)	99.2	99.6	98.4

CSR Requirements of Suppliers

The Kurita Group considers it vital to obtain cooperation from suppliers in order to conduct safe business across the entire supply chain. We have established [the Kurita Group CSR Procurement Guidelines](#), and we have asked suppliers to ensure the safety of their employees in accordance with laws and regulations, ensure healthy working environments, and conduct labor safety education for workers, and to provide appropriate information. In particular, we ask major suppliers to conduct a self-evaluation based on the guideline and to implement improvement measures.

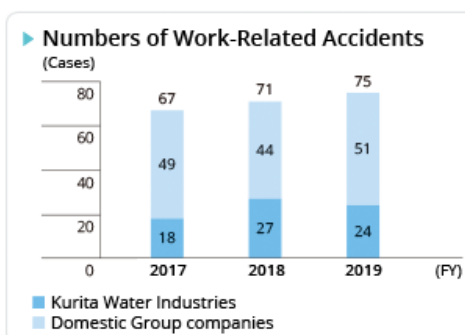
Acquisition of OHSAS 18001 Certification

Scope of data aggregation	Item	FY2018	FY2019
Kurita Water Industries and its domestic Group companies	Number of certified companies	0	0
	Certification rate (% by number of companies)	0.0	0.0
	Certification rate (% by number of employees)	0.0	0.0
Overseas Group companies	Number of certified companies	4	4
	Certification rate (% by number of companies)	16.7	14.8
	Certification rate (% by number of employees)	21.7	17.3
Kurita Group	Number of certified companies	4	4
	Certification rate (% by number of companies)	8.7	8.5
	Certification rate (% by number of employees)	8.2	7.8
Kurita Water Industries and its domestic Group companies	Number of certified bases	0	0
Number of certified bases		14	14

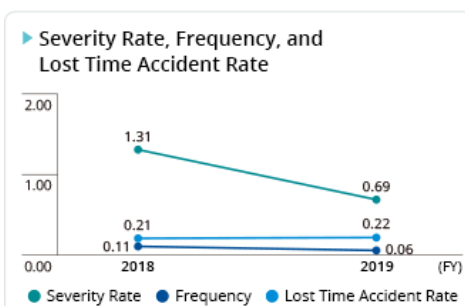
Status of Work-Related Accidents

Numbers of Work-Related Accidents at Kurita Water Industries and Domestic Group Companies

The number of work-related fatalities at Kurita Water Industries and domestic Group companies for fiscal 2018 and fiscal 2019 was 0.



Severity Rate, Frequency, and Lost Time Accident Rate at Kurita Water Industries



Priority Themes: Themes for Growth Opportunities (Environmental Improvement Activities)

The Kurita Group defines its environmental improvement activities as follows:

- 1) activities to comply with the environment-related laws and regulations of each country and region that are applicable in conducting business activities;
- 2) initiatives to solve international issues related to the sustainability of water and the environment through business activities; and
- 3) disclosure of information related to 1) and 2), and engagement with customers, business partners, employees, shareholders and investors, and local communities related to such activities.

The Kurita Group's environmental improvement activities include initiatives to reduce internal water and energy use and waste emissions. They also include activities to reduce the environmental impact of customers using the products and services related to water and the environment that the Kurita Group has developed over many years. These are linked with the themes for growth opportunities in our CSR Policy. We will create shared value by achieving solutions to social issues through the reduction of customers' environmental impact and the Kurita Group's own environmental impact, while simultaneously achieving business growth.

Basic Policy

The Kurita Group has established [the Kurita Group Environmental Policy](#) as a common policy for the Group regarding environmental issues, which are a common challenge for society. We continuously promote initiatives for environmental improvements based on this policy.

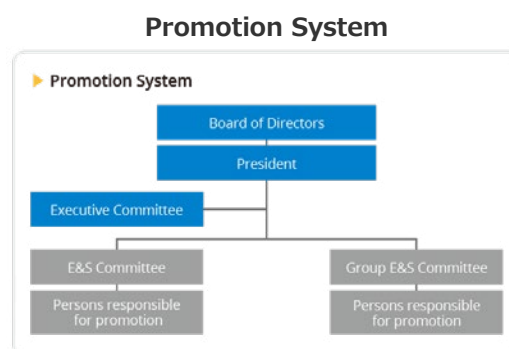
General Provisions

- The Kurita Group will engage in the environmental improvement activities to achieve the four themes: "finding solutions to the water resource issues"; "realizing sustainable use of energy"; "reducing waste"; and "enhancing industrial production technology" of the "CSR Policy" (hereinafter referred to as the "Growth Opportunity Themes"), based on the corporate philosophy, "Study the properties of water, master them, and we will create an environment in which nature and man are in harmony".
- The Kurita Group will support the "SDGs (Sustainable Development Goals) adopted by the UN in 2015 and contribute to achieving relevant goals through the environmental improvement activities.
- The Kurita Group will establish systems and rules, etc. necessary for the performance of the environmental improvement activities.
- Officers and employees of the Kurita Group must actively engage in the environmental improvement activities in their respective capacities.
- The Kurita Group will develop its unified medium-term goals and activity plans by fiscal year related to the environmental improvement activities and manage its activity goals.
- If any actual or alleged breach of the local laws and regulations arises, the officers and employees of the Kurita Group will immediately report the same in accordance with the Kurita Group's Emergency Communication Procedures.
- The Kurita Group will check that business activities are being carried out appropriately in accordance with local laws and regulations.
- The Kurita Group will verify the effect of the environmental improvement activities on a regular basis, and utilize this for continual improvement.
- The Kurita Group will carry out education and training activities for the promotion of the environmental improvement activities for its officers and employees.
- The Kurita Group will disclose, in an active and fair manner, information which helps its stakeholders to understand the environmental improvement activities.
- The Kurita Group will check expectations and concerns of the stakeholders with regards to the Group, and utilize the results to continually improve the environmental improvement activities.

Promotion System

The Kurita Group has established the E&S Committee, which is chaired by an executive senior managing director and representative director of the Company, and the Group E&S (Environmental & Social) Committee, chaired by the same director and composed of representatives of domestic Group companies. These committees oversee environmental improvement initiatives in the Kurita Group. The committees formulate unified medium-term goals for the Kurita Group's environmental improvement initiatives and action plans for each fiscal year. Personnel responsible for promotion (the committee members or designated representative of each company) are to promote activities for achieving the targets of the environmental improvement initiatives at their assigned company or organization. They report the status and results of the activities to the E&S Committee.

The E&S Committee confirms stakeholder expectations and concerns, and reports these to the Company's Board of Directors along with the results for the Kurita Group's CSR activities once a year.



Environmental Improvement of Customers' Operations

The Kurita Group is taking steps to solve social issues outlined in the SDGs by providing customers with solutions on the themes of “[water-saving](#),” “[CO₂ emissions reduction](#),” and “[waste reduction](#).”

Promotion of CSV Business

The Kurita Group has defined products, technologies, and business models that contribute significantly to water-saving, CO₂ emissions reduction and waste reduction compared to previous levels as the “CSV business,” and has expressed these advantages as respective coefficients. The reduction of environmental impact from customers' operations is calculated based on these CSV business coefficients and application results. The CSV business is also constantly reviewed in light of the development status of more competitive products, technologies, and business models.

CSV Business Selection Standard

CSV businesses demonstrate the following standards with regard to water-saving, CO₂ emissions reduction, and waste reduction:

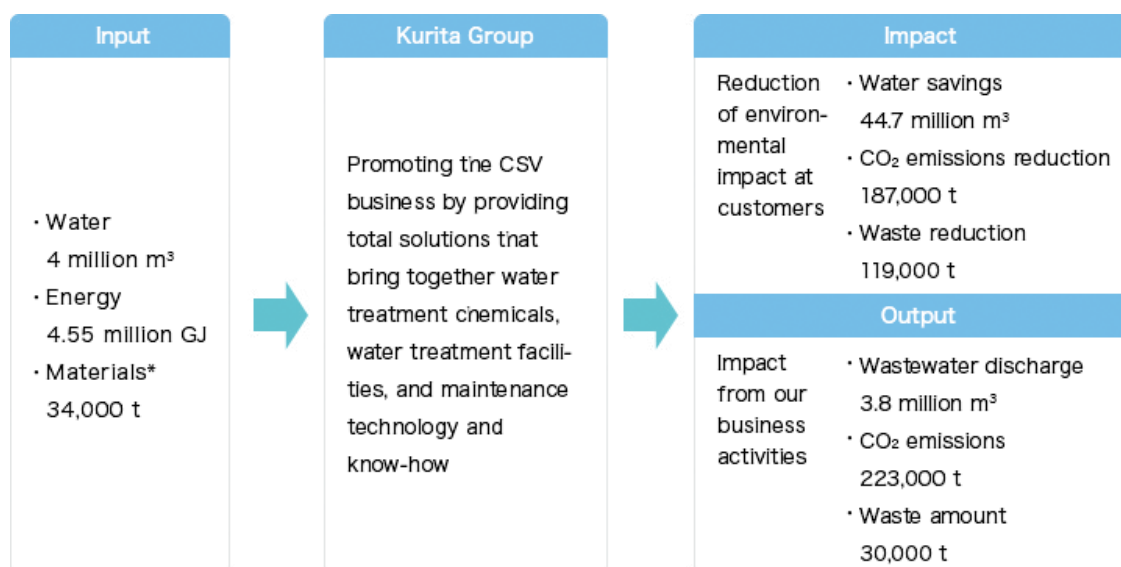
- 1) Are significantly more effective than previous or competing technologies.
- 2) Are new technologies or applications of existing technologies in new markets.
- 3) Contribute to the action plans presented in the SDGs.

Internal Environmental Improvement Activities

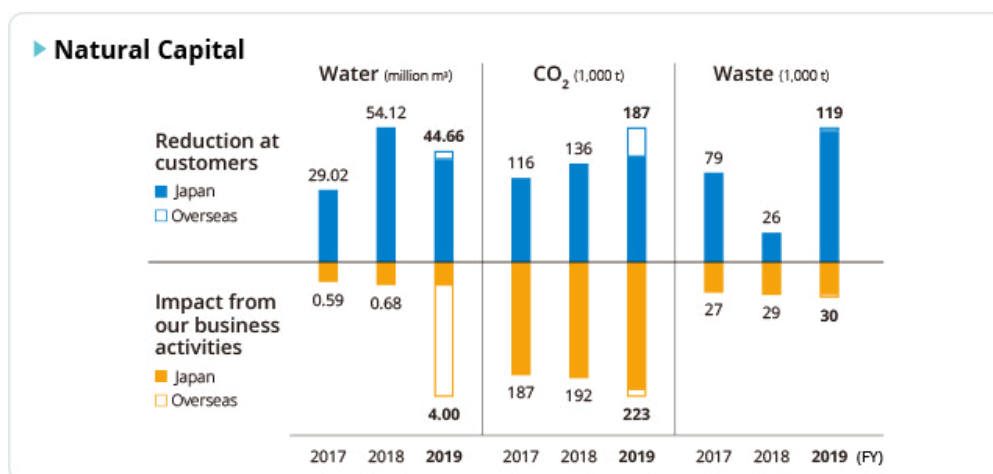
The Kurita Group works to reduce [water usage](#), [energy usage](#), and [waste](#), while adhering to the environmental laws and ordinances of each country and region that apply to the Group's business activities.

Status of Compliance with Environmental Laws and Regulations

		FY2018	FY2019
Infringements of environmental laws and regulations	Number of infringements	0	0
	Fines (Thousand yen)	0	0
Emissions having a serious impact on the environment		None	None



*Materials are raw materials for water treatment chemicals in Japan.



ISO 14001 Certified Bases

The Kurita Group acquires ISO 14001 certification, mainly at business sites that have a heavy environmental impact. As of September 2019, the status of acquisition in the Group is as shown below.

Company	Office
Kurita Water Industries Ltd.	Shizuoka, Yamaguchi, Toyoura, Tsuruga plants
	Sakai Sub-branch
Kurita Chemical Manufacturing Ltd.	Head Office, Ako plant
Kurita Buil-Tech Co., Ltd.	
Kuritaz Co., Ltd.	
Kuritec Service Co. Ltd.	
Kurita-GK Chemical Co., Ltd	
Kurita (Taiwan) Co., Ltd.	
Kurita Water Industries (Dalian) Co., Ltd.	
Kurita Water Industries (Jiangyin) Co., Ltd.	
Hansu Co., Ltd.	
Kurita Europe GmbH	Ludwigshafen
	Viersen
Kurita Turkey Kimya A.S	
Kurita do Brasil LTDA.	
Hansu Technical Service Ltd.	
Kurita (Singapore) Pte. Ltd.	
P.T. Kurita Indonesia	

Communication with Stakeholders

Environmental Education of Employees

The Kurita Group holds an employee-participation event called Kurita Environment Month to foster awareness of the environment among employees. The event calls for all Kurita Group officers, employees, temporary workers, and their families to submit experiences and ideas relating to environmental improvement. In fiscal 2019, 833 people participated, with 641 submissions. The submissions were collated into a collection and published on the intranet to be shared and utilized throughout the Group.

Bolstering Information Dissemination through the Website

The Kurita Group disseminated information about its approach, initiatives, and achievements on environmental improvement through its website, sustainability reports, exhibitions, and dialogue with shareholders and investors. In particular, we are working to bolster information dissemination through our website, where we enhance our disclosure based on the Group's initiatives and achievements, making reference to the GRI standards.

CSR Requirements of Suppliers

The Kurita Group considers it vital to reduce environmental impacts across the entire supply chain with the cooperation of suppliers. To this end, we have established [the Kurita Group CSR Procurement Guidelines](#), and we have asked suppliers to comply with environmental laws and regulations, take steps to reduce their environmental impact by setting voluntary standards to reduce water and energy usage, and to provide appropriate information. In particular, we ask major suppliers to conduct a self-evaluation based on the guidelines and to implement improvement measures.

Solve Issues Related to Water Resources

The world is facing various issues related to water, including water shortages due to uneven distribution, water pollution associated with industrial development, and depletion of ground water. These rank among the most serious social issues alongside climate change. The Kurita Group will strive to reduce the amount of water intake for use in its business activities while using its water saving, purification, and reuse technologies to provide the optimal quality and volume of water required for people's lives and industrial development.

Targets and Achievements

The Kurita Group aims to achieve a reduction of environmental impact through its business that offsets and even exceeds the environmental impact generated by its business. To this end, we have set targets for the "amount of the reduction in environmental impact of customers - the amount of the Kurita Group's own environmental impact." We will continue to measure these actual values going forward values.

	Target for FY2023	Achievement in FY2019
Water savings at customers – Amount of water intake used in our business activities	50 million m ³	41 million m ³

Contribution to SDGs

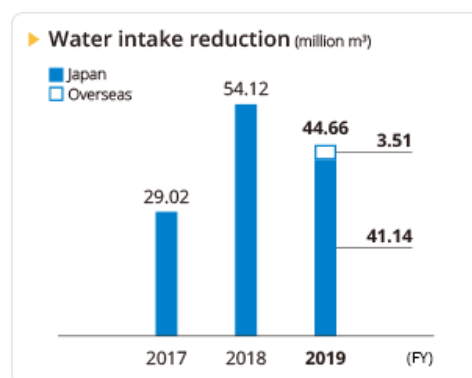


With Customers

Saving Water at Customers' Plants and Business Sites

The graph shows the performance of water reduction at customers' plants and business sites through proposals of the Kurita Group. These mainly represent reduction in the feed water volume by optimizing and managing water quality in boilers and recirculating water in cooling water systems, as well as recovery and reuse of wastewater. In fiscal 2019, we revised the scope and method of data aggregation.

Environmental Improvement of Customers' Operations (million m³)



* The reduction of impacts at overseas Group companies have been ascertained since fiscal 2019.

Customer Example

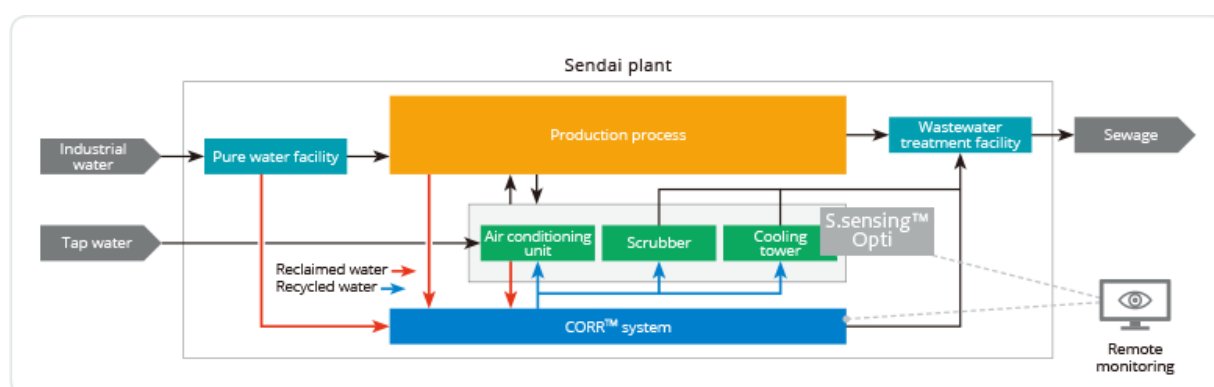
Kurita's Recycled Water Supply Service to Reduces Water Usage at the Sendai Plant of Kanazawa Murata Manufacturing

Reductions of **40%** in Tap Water Usage and **30%** in Sewage

At the electronic components manufacturer Kanazawa Murata Manufacturing Co., Ltd., an environmental initiative based on the Murata Manufacturing group's environmental action plan is under way. The Group has set a target for reducing water usage per production volume, and has set about reducing the volume of water used at its Sendai plant. Kurita Water Industries proposed a recycled water supply service that reclaims and recycles wastewater to help this customer achieve its goals. The service is a contract with the customer to supply recycled water, including operation and management of the CORR™ wastewater reclamation system. In applying this service, we cooperated with the customer to investigate the volume and quality of the reclaimable wastewater at each outlet, and to select areas for use of the recycled water depending on its quality. In this case, since the recycled water is used as make-up water for a cooling water system, we also provided cooling water quality management using the S.sensing™ Opti remote monitoring system.

Using the service has enabled the customer to use water in the plant more efficiently, and the customer expects to achieve reductions of 40% for tap water and 30% for sewage compared to fiscal 2018.

Conceptual Diagram of Recycled Water Supply Service



Voice of the Customer

Since introducing this service, we are delighted to have achieved the reductive effect on water usage as initially planned, as well as reducing labor for facility management. Furthermore, when we were at the stage of considering applications, various departments of Kurita Water Industries helped us to maximize the benefits of water usage reduction, demonstrating Kurita's powerful capabilities. We are now looking forward to receiving proposals for further reducing our environmental impact by expanding the scope of application and looking at management of water facilities throughout our entire plant.



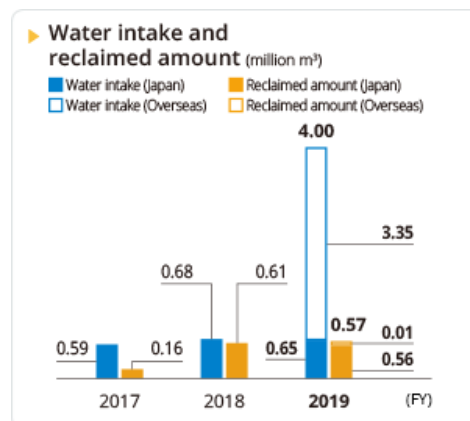
Mr. Etsuhiro Saito
Administration SEC
Sendai Plant

Internal Environmental Improvement Activities

Reducing Water Intake within the Kurita Group

Based on the characteristics of each company and business site, the Kurita Group selects the items that are strongly correlated with water usage, such as production volume, net sales, or site area, as the denominators for a per-unit measurement, then set about reducing water usage per unit. Since fiscal 2019, we have been aggregating results for overseas Group companies as well.

Internal Promotion of Environmental Improvements (million m³)

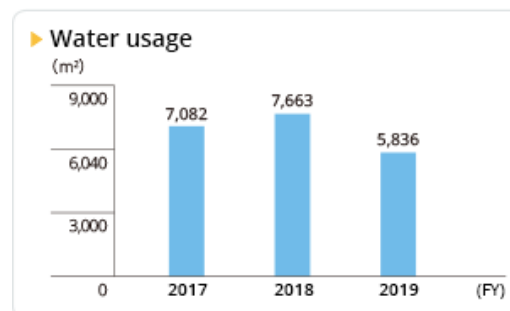


* The reduction of impacts at overseas Group companies have been ascertained since fiscal 2019.

Example of Water Saving at Kurita Analysis Service

Kurita Analysis Service Co., Ltd. is responsible for all kinds of analysis services that support the Kurita Group's business in Japan, such as quality testing of ultrapure water and cooling water and environmental testing of waste water and soil. At its headquarters facilities, sample containers send from various areas are washed after sample analysis, then the washing water is collected in a wastewater tank and treated at a wastewater treatment facility. The company noticed leakages were occurring in the facility due to changes in the water level of the wastewater treatment facility, and by implementing measures to identify the source of leaks and stop them, it has reduced its water usage.

Kurita Analysis Service/
Water usage at headquarters (m³)



Evaluation of Water Risk at Internal Facilities

Kurita Water Industries assesses and confirms the water risk of the areas where Group production bases are located once a year using the Aqueduct Water Risk Atlas provided by the World Resources Institute. In fiscal 2019, we surveyed all of the Group's production sites and found that there were four sites located in areas ranked "High risk" or above. The total amount of water intake for these sites was confirmed to be 0.2% of the intake volume for all production sites.

Participation in the Ministry of the Environment's Water Project

Kurita Water Industries is participating in the Water Project of the Ministry of the Environment, which provides an opportunity to disseminate information about its technologies and business activities related to efficient use of water resources and preservation of the water environment.

Realize Sustainable Energy Use

The Kurita Group recognizes abnormal weather and natural disasters due to global warming and other climate change issues as a major social challenge to be addressed globally. One of the ways we are responding to climate change is taking steps to reduce our CO₂ emissions by reducing our in-house per-unit energy consumption. At the same time, we are working to optimize energy use at our customers' plants and business sites, and to promote the spread of energy-creating technologies.

Targets and Achievements

The Kurita Group aims to achieve a reduction of environmental impact through its business that offsets and even exceeds the environmental impact generated by its business. To this end, we have set targets for the "amount of the reduction in environmental impact of customers - the amount of the Kurita Group's own environmental impact." We will continue to measure these actual values going forward values.

	Target for FY2023	Achievement in FY2019
CO ₂ emissions reduction at customer – CO ₂ emissions from our business activities	0 t	–36,000 t

Contribution to SDGs

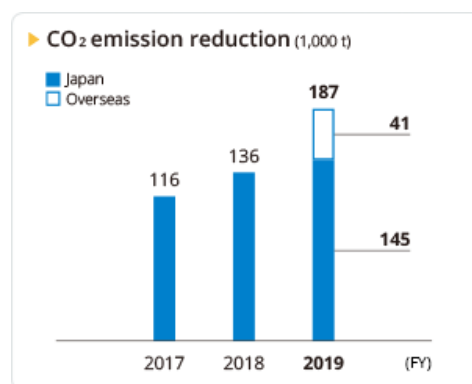


With Customers

Reducing CO₂ Emissions at Customers' Plants and Business Sites

The graph shows the performance of CO₂ emissions reduction at customers' plants and business sites through proposals of the Kurita Group. These mainly represent reduction in fuel use by maintaining or improving heat efficiency in boiler and cooling water facilities. It also represents the impact of adopting inverters for rotating equipment in water treatment facilities. In fiscal 2019, we revised the scope and method of data aggregation.

Environmental Improvement of Customers' Operations (1,000 t)



* The reduction of impacts at overseas Group companies have been ascertained since fiscal 2019.

Customer Example

Energy Creation at Fuji Clean

Reducing annual CO₂ emissions by **10,000 t**

Fuji Clean Co., Ltd.'s businesses range from collection and transportation of waste to intermediate treatment* and final disposal in landfill. It contributes to society through safe treatment of waste. Fuji Clean developed a concept of creating renewable energy by methane fermentation of waste, and contributing to the local community that provides the waste by supplying electric power and heat during disasters. Since the areas surrounding the company's facilities and the area downstream are prospering agricultural areas, the company needed a treatment that did not produce wastewater, and was seeking for a partner with suitable technologies. Kurita Water Industries proposed production of biogas from waste using the dry methane fermentation technology that it has developed over many years. This methane fermentation technology is able to treat waste such as paper waste, which has a high organic matter content and low water content, and does not produce wastewater. Since it met Fuji Clean's requirements, the proposal was accepted. Moreover, through this proposal, Fuji Clean's project was selected as the Demonstration Project for Regional Autonomous Biomass Energy System by the New Energy and Industrial Technology Development Organization (NEDO), and is currently being trialed. Furthermore, the biogas generated by the dry methane fermentation reactor is used as fuel for an onsite boiler and power generator, reducing the use of electricity and fossil fuels, and attendant CO₂ emissions.

* Intermediate treatment: Minimizing the volume of waste for landfill by separating it and then crushing or incinerating it.

Dry methane fermentation reactor



Voice of the Customer

We decided to adopt Kurita Water Industries' dry methane fermentation technology because it was suitable not only for our vision, but also for the condition of the waste that we receive. Since the types and volume of waste change day by day, we encountered some difficulty in setting up a dry methane fermentation reactor, but we were glad have Kurita alongside us as we strove to establish a method for operation and management. We hope to receive further input from Kurita on biogas generation, as well as cooperation on our social contribution activities.



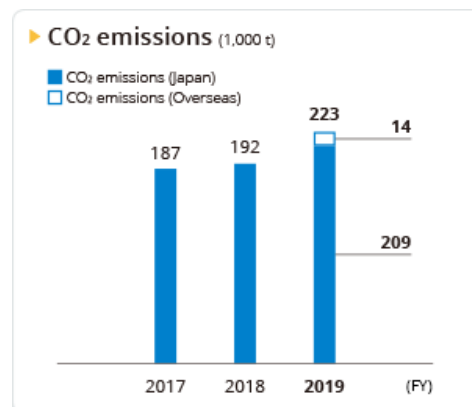
Mr. Hisato Kinjo
General Manager, Renewable Energy Department
Dry Methane Fermentation Plant

Internal Environmental Improvement Activities

Reducing Energy Usage within the Kurita Group

Based on the characteristics of each company and business site, the Kurita Group selects the items that are strongly correlated energy usage, such as production volume, net sales, or site area, as the denominators for a per-unit measurement, then set about reducing energy usage per unit. Since fiscal 2019, we have been aggregating results for overseas Group companies as well.

Internal Promotion of Environmental Improvements (1,000 t)

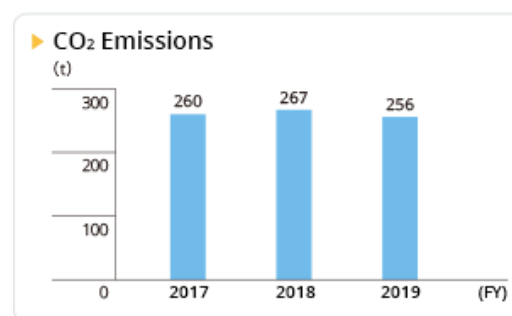


* The reduction of impacts at overseas Group companies have been ascertained since fiscal 2019.

Example of Reducing Electricity Usage at the Yamaguchi Plant of Kurita Water Industries

The Yamaguchi Plant of Kurita Water Industries carries out manufacturing of water treatment facilities and regeneration of RO membranes and ion exchange resins that perform vital functions in pure water manufacturing. It has a relatively high environmental impact among the Kurita Group's business sites in Japan. For this reason, we have taken steps to reduce electricity usage and water intake through measures such as converting to LED lighting and revising the regeneration process for ion exchange resin. In fiscal 2019, we reduced our electricity usage, mainly by renewing the pumps in our water treatment facility. In renewing the pumps, we focused particularly on the pumps that are used heavily, selecting models with the minimum electricity usage to suit the flow volume. We also swapped out our steel piping for PVC pipe, which prevents obstruction of water flow due to rust inside the pipes. This enabled us to reduce the operation time of the pumps, thereby reducing the electricity usage for the business site overall.

CO₂ Emissions of Yamaguchi Plant (t)



Participation in the Japan Society of Industrial Machinery Manufacturers' Basic Environmental Action Plan

Kurita Water Industries participates in the basic environmental action plan of the Japan Society of Industrial Machinery Manufacturers, which is working on countermeasures for global warming. We report regularly on the status of our response to climate change.

Reduce Waste

The Kurita Group needs to make effective use of limited resources in order to conduct its business activities sustainably. Therefore, the Group is working to reduce the amount of waste generated by its business activities, while making efforts to convert it into valuable material and to recycle it. For our customers, we propose technologies for making use of waste as a resource and for reducing the amount of waste generated. Through these activities, we aim to reduce waste for society in general.

Targets and Achievements

The Kurita Group aims to achieve a reduction of environmental impact through its business that offsets and even exceeds the environmental impact generated by its business. To this end, we have set targets for the “amount of the reduction in environmental impact of customers - the amount of the Kurita Group’s own environmental impact.” We will continue to measure these actual values going forward values.

	Target for FY2023	Achievement in FY2019
Waste reduction at customers – Waste generated from our business activities	100,000 t	89,000 t

Contribution to SDGs

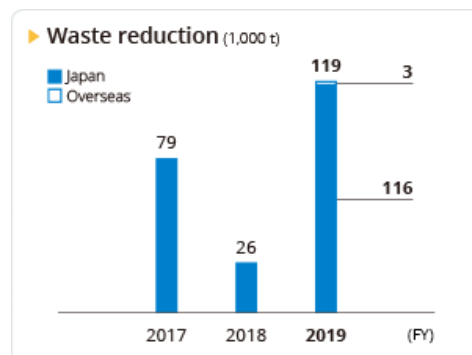


With Customers

Waste Reduction at Customers’ Plants and Business Sites

The graph shows the waste reduction performance of proposals for customers’ plants and business sites made by the Kurita Group. These results are mainly due to conversion to wastewater treatment facilities that generate little excess sludge and reduction of waste volume by dehydrating agents and dehydrators. . In fiscal 2019, we revised the scope and method of data aggregation.

Environmental Improvement of Customers’ Operations (1,000 tons)



* The reduction of impacts at overseas Group companies have been ascertained since fiscal 2019.

Customer Example

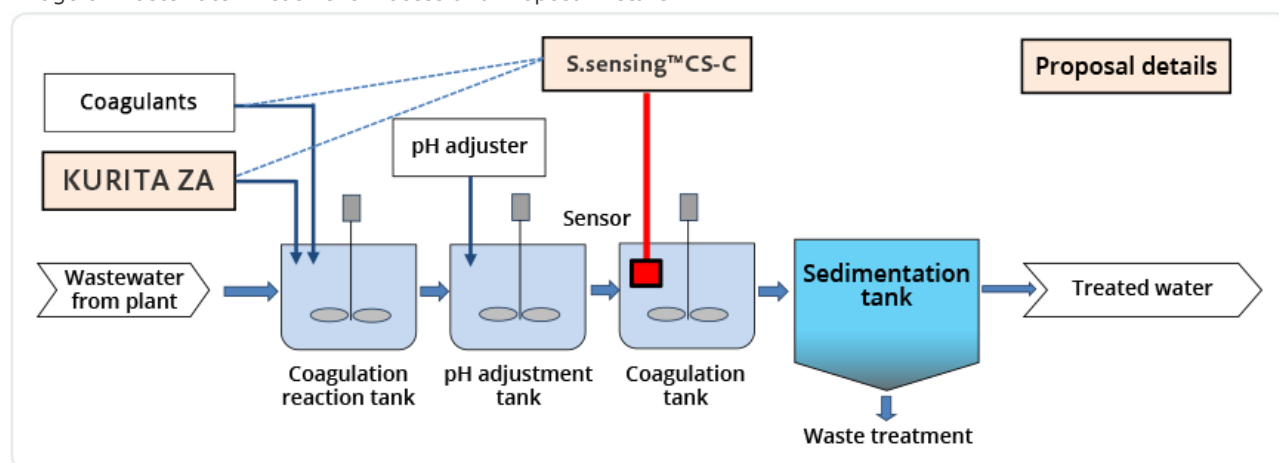
Reducing Waste at a Precision Equipment Manufacturing Plant

Reducing Waste Arising from Chemicals

At the plant of a customer who manufactures precision equipment in Thailand, wastewater from the manufacturing process is purified by coagulating suspended solids from the dicing process and so forth in a wastewater treatment facility. The coagulation process separates out matter suspended in the water by solidifying it into a mass using chemicals. The chemicals used are formed into a solid mass along with the suspended solids, and emitted as final waste product. Reducing the waste product at the plant was therefore a matter of reducing the amount of chemicals used.

Kurita-GK Chemical Co., Ltd. proposed using the water treatment chemical KURITA ZA to promote the coagulation effect of the chemicals used at the plant, and the introduction of the S.sensing™ CS-C sensor to confirm the coagulation status in real-time, allowing optimization of the amount of chemicals used. After implementing this proposal, the customer achieved a reduction of more than 80% in the amount of chemical usage, which led to an attendant reduction in the amount of chemical originated waste. Furthermore, since the coagulation status is now able to be grasped using the sensor, the customer is also able to reduce the amount of labor used in management.

Image of Wastewater Treatment Process and Proposal Details



Internal Environmental Improvement Activities

Based on the characteristics of each company and business site, the Kurita Group selects the items that are strongly correlated with waste emission volume, such as production volume, net sales, or site area, as the denominators for a per-unit measurement of waste emission volume, then set about reducing this. Since fiscal 2019, we have been aggregating results for overseas Group companies as well.

Internal Promotion of Environmental Improvements (1,000 t)



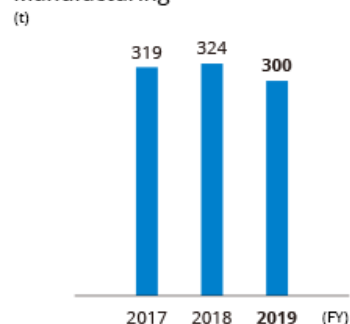
* The reduction of impacts at overseas Group companies have been ascertained since fiscal 2019.

Reducing Waste at Kurita Chemical Manufacturing

Kurita Chemical Manufacturing Ltd. is a manufacturing base for water treatment chemicals in the Kurita Group. The company's Egawa Plant manufactures over 3,000 types of water treatment chemicals. In addition to fluctuations in the raw wastewater quality arising from day-to-day changes in the products being manufactured, aging of the water treatment facility itself in the past few years caused the sedimentation process to become unstable. This led to lower concentrations of sludge in the sedimentation tanks, which caused an issue that the sludge could not undergo dehydration when it was removed and had to be discarded untreated.

Kurita Chemical Manufacturing utilized the onsite inspection service of Kuritaz Co., Ltd., which conducts water treatment facility operation, maintenance, and management services. At the same time, we took measures to strengthen the operation management approach according to changes in the raw wastewater quality. This enabled the amount of waste to be reduced by stabilizing the sedimentation process, and realized a reduction in work hours spent on operation management for stabilizing the quality of treated wastewater.

Waste Amount at the head office of Kurita Chemical Manufacturing



Newly installed dissolved air floatation tank (front)

Advance Industrial Production Technologies

The Kurita Group considers it necessary to achieve both industrial development and preservation of the global environment if humanity is to enjoy a prosperous lifestyle in perpetuity. The Group will introduce water treatment into the manufacturing processes for various products, helping to improve productivity and product quality. We will also contribute to solutions for environmental issues associated with industry development.

Targets and Achievements

The Kurita Group conducts basic research on water treatment in the form of analysis and fluid and process analysis, which form the foundation of its products and services. We are also working to develop products and technologies that contribute to solving issues such as water saving and energy saving for customers and society.

	Target for FY2023	Achievement in FY2019
Proportion of themes falling into “Contribution to improvement of production process” to product development themes	35%	33%

*FY2019 figures are actual results for Kurita Water Industries

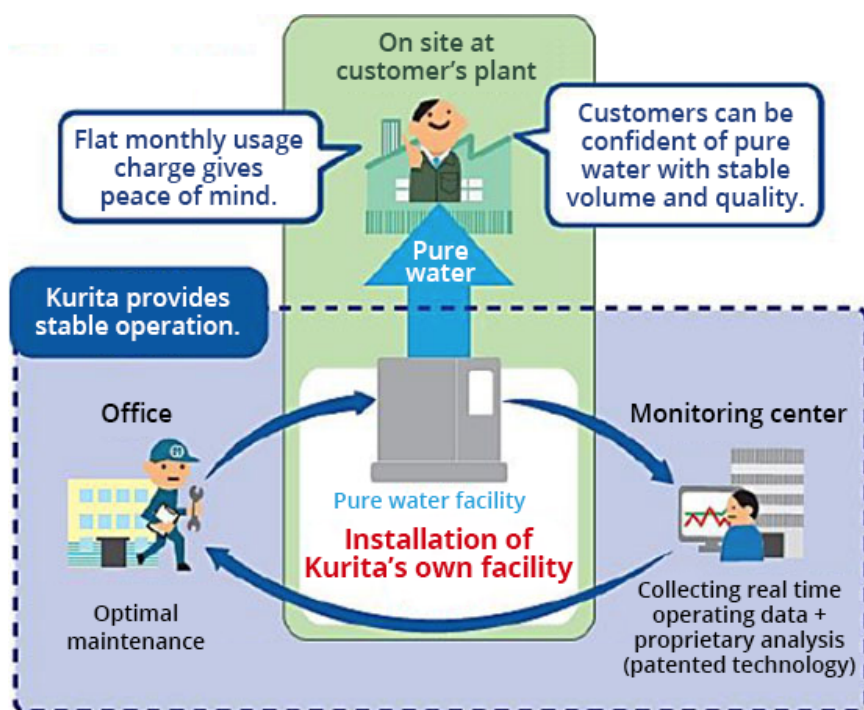
Contribution to SDGs



Expanded Application of the Pure Water Supply Service, “Kurita Water Supply Service (KWSS)”

For customers who use pure water in their manufacturing processes and peripheral facilities, a supply of water with stable volume and quality is essential to improving product quality and production yields. Proper management of their pure water manufacturing equipment is therefore necessary, and this creates a challenge for reducing labor used in operation and management of the equipment in order to improve productivity.

The Kurita Group’s answer to this issue is KWSS, a pure water supply service that reduces customers’ labor and costs by having Kurita install its own pure water facilities on the customer’s site to perform remote monitoring of facility operation status and treated water quality in real time. The service was initially provided for customers whose raw water was of low turbidity, but with the development of pre-treatment technology using water treatment membranes, the service can now be provided to a wider range of customers.

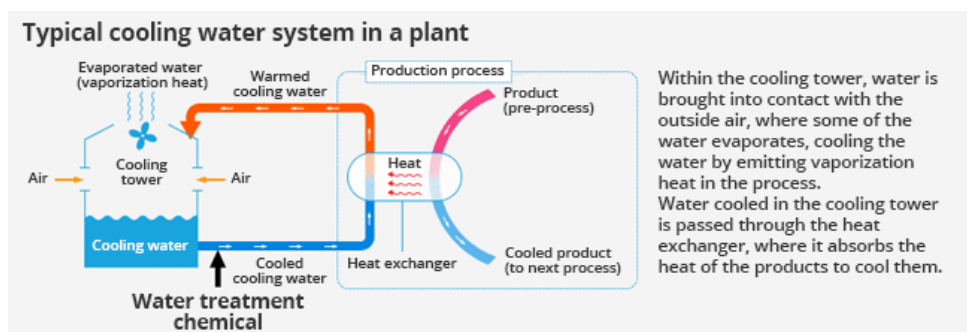


Conceptual Diagram of KWSS Pure Water Supply Service

Cooling Water Chemicals that Contribute to Safety Improvement in the Facility Environment and Labor Saving

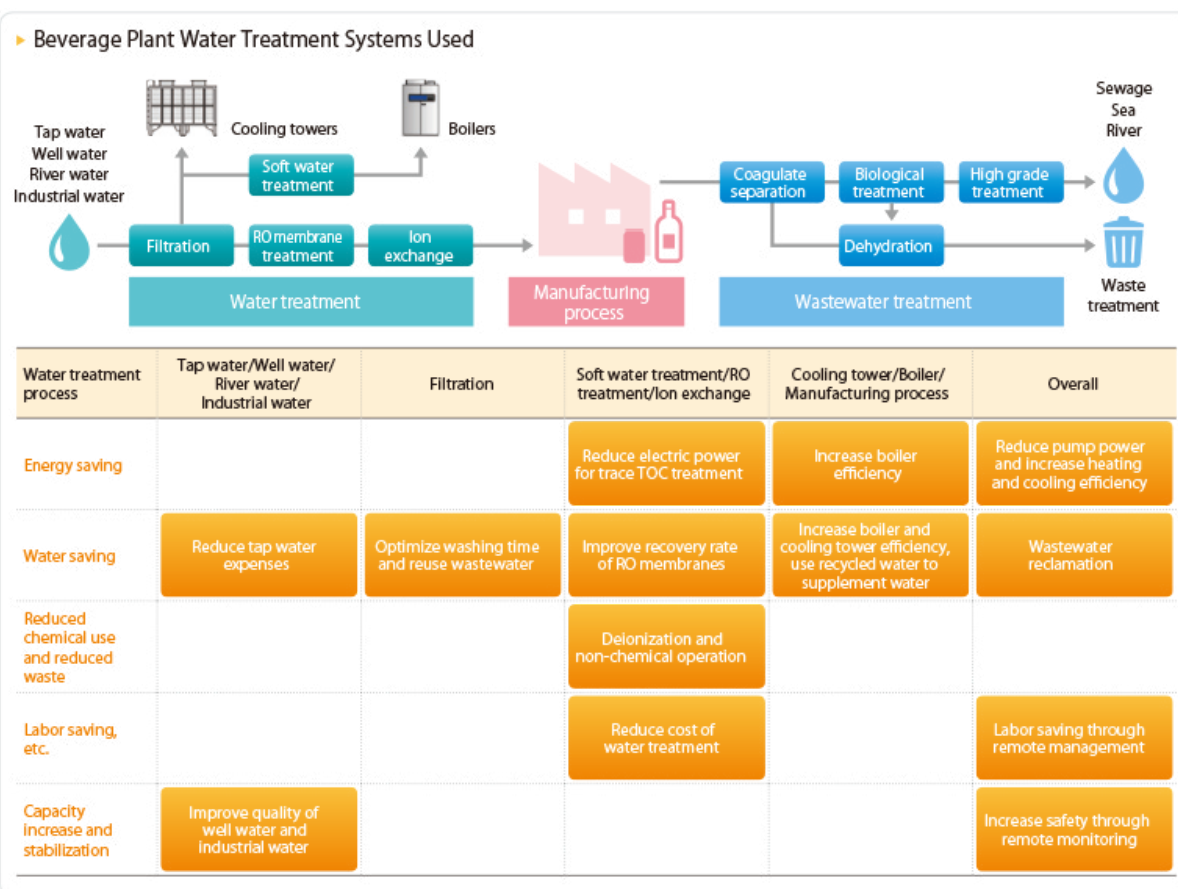
At many plants and office buildings, cooling water is used for production processes and air conditioning. When slime and scale build up in the piping and heat exchangers that cooling water passes through, heat exchange efficiency is reduced, requiring greater use of energy. Cooling water chemicals are generally used to treat and prevent this. Furthermore, hazardous Legionella bacteria sometimes grow inside cooling towers, making it necessary to implement anti-bacterial measures.

The Kurita Group has effective technologies for destroying Legionella bacteria; however, since two types of chemical agent were traditionally used, there has been an issue of labor involved in injecting the chemicals. The Kurita Group has now developed a cooling water treatment that is more effective at sterilizing Legionella bacteria with just a single agent. The new treatment increases the safety of the environment around cooling towers while reducing labor.



Development of Water Treatment Improvement Proposal Support Tools Using Insights on Water Treatment and Data

The Kurita Group's products and services are applied to a wide range of equipment related to overall water treatment at plants, from boiler and cooling water facilities, to water treatment facilities and wastewater treatment facilities. Since the operating conditions and operating status of each facility differ by operation site, significant experience has been needed to provide optimal proposals for water saving, energy saving, and waste reduction. The Kurita Group used its accumulated insight and data on water treatment to develop a Water Treatment Improvement Proposal Support Tool, which has enabled us to make faster, more suitable proposals for customers.



Establishing Next-Generation Semiconductor Washing Technology

IoT is spreading rapidly in applications for increasing convenience in daily life and increasing the efficiency of energy use. Today, semiconductors are used not only in electronic devices such as PCs, but also in various products such as household appliances and automobiles. To support this movement, we expect to see advances in semiconductors as well as increased production volume. This will create demand for reducing the energy usage of semiconductors themselves, as well as saving energy in their production process. Research is under way to achieve further scaling and energy saving of semiconductors with a focus on new semiconductor materials and structures. As part of this effort, there is a move to replace some copper wiring elements with cobalt. However, this presents a significant problem as cobalt dissolves readily in the ultrapure water used for washing in the semiconductor manufacturing process.

The Kurita Group is involved in joint research at imec*¹, looking at next-generation semiconductor production technologies in response to the issues raised by diversifying washing methods associated with application of new materials and increased structural sophistication. Given the current issue, we will contribute to increased productivity in next-generation semiconductors by establishing ultrapure water production technology for rinsing*² with controlled water quality and characteristics, as well as washing technologies that make use of it. We have already identified the characteristics of ultrapure water suitable for rinsing cobalt wiring and associated technologies for producing it, and we are currently carrying out trial testing with advanced semiconductor manufacturers.

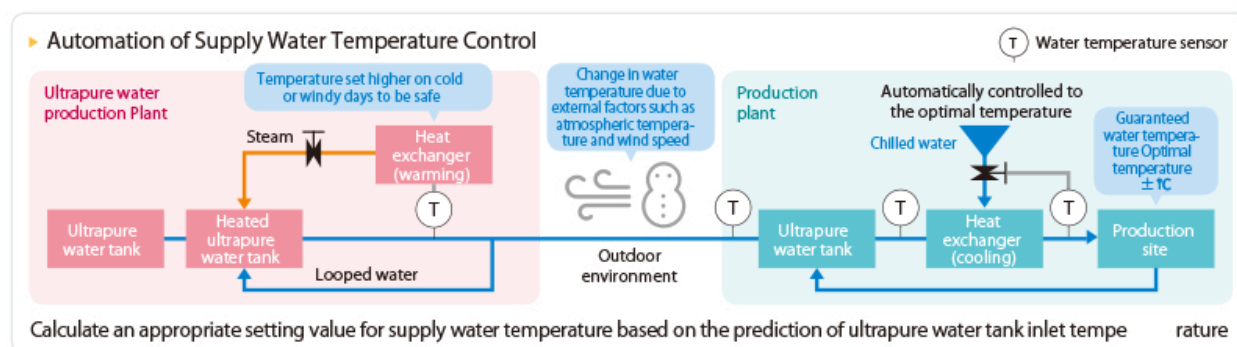
*1 Interuniversity Microelectronics Centre (imec) headquartered in Belgium is one of the world's largest private institutions related to semiconductors. Under its research mission to establish semiconductor design and manufacture technologies that are several generations ahead, the organization promotes joint development projects with leading semiconductor manufacturers and semiconductor manufacturing equipment and material manufacturers from all over the world. Kurita Water Industries is the first water treatment company to participate in joint research at imec.

*2 Rinse: To remove chemicals used for washing

Using AI to Reduce Energy Consumption

The Kurita Group operates the ultrapure water supply business, mainly at large-scale production plants for semiconductors and LCD displays. This involves constructing and maintaining water treatment facilities inside customers' plants, supplying ultrapure water for washing, and appropriately treating, reclaiming, and reusing wastewater from production plants. The Group is working on using artificial intelligence (AI) to stabilize and optimize operation and maintenance of water treatment facilities. As part of this initiative, we have automated the temperature control of supplied ultrapure water.

The ultrapure water supplied to production plants is heated to increase its washing capability; however, since the ultrapure water production facility and the manufacturing plant are separated in some cases, the water is heated to a high temperature on the supply side so that it will have cooled to the optimal temperature on the receiving side. Using AI, the temperature at the production facility can be predicted, taking into account the weather conditions and other factors, in order to set the heating temperature. This enables users to reduce excessive energy use for heating and cooling.



Building Good Relationships with Suppliers

In order for the Kurita Group to fulfill its social responsibilities, its suppliers who provide raw materials, supplies, and perform services also need to cooperate with the Group's CSR initiatives.

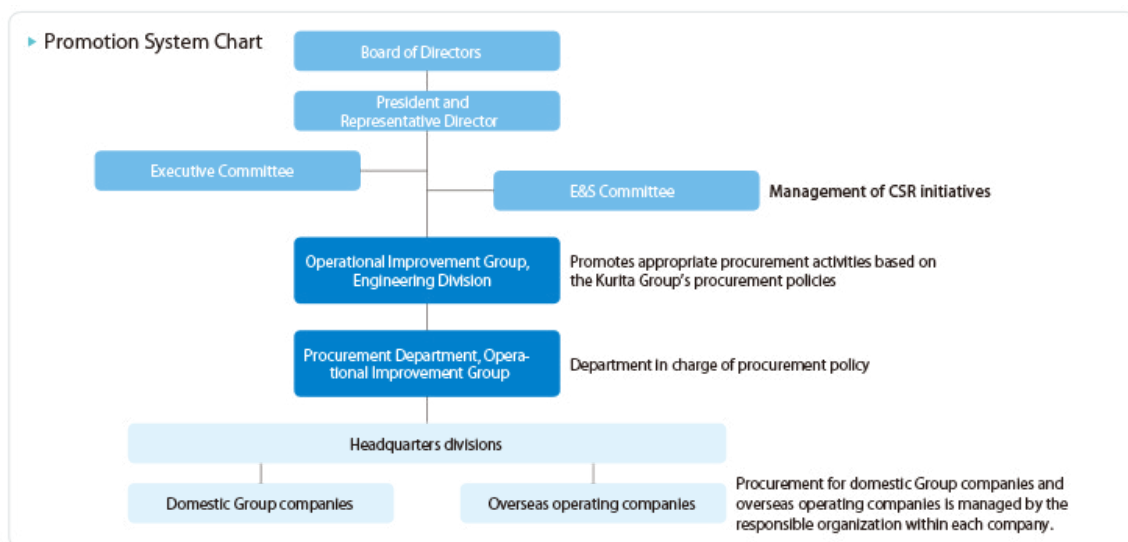
The Group has newly formulated [the Kurita Group Procurement Policy](#), as a common policy on procurement for the Group, as well as [the Kurita Group CSR Procurement Guidelines](#) to set out the Group's expectations of suppliers, such as respecting basic human rights, preserving the earth's environment, and complying with laws, regulations, and social norms.

Policy

- To conduct transactions in consideration of basic human rights, occupational health and safety, and preservation of the global environment in compliance with laws and regulations as well as social norms;
- To provide fair and equal business opportunities to the suppliers, to conduct transactions in reliable quality, at competitive and reasonable prices, based on appropriate specifications and standards;
- To procure materials and services that enables continuous and stable supply of our products and services to customers, and contribute to the sustainable development of the society; and
- To forbid entering into any transaction that would benefit antisocial forces or terrorist groups.

Promotion System

The Kurita Group is undertaking appropriate procurement activities in line with the Kurita Group Procurement Policy. As our system for promoting these activities, the Group Manager of the Operational Improvement Group, Engineering Division is in charge of promoting procurement activities based on the policy. The policy is promoted at Group companies in Japan and overseas through the business management divisions of their respective supervising headquarters divisions.



Main Initiatives

Formulation of Procurement Operation Regulations

Based on [the Kurita Group Procurement Policy](#) the Company has formulated Procurement Operation Regulations. These set out the implementation of appropriate procurement activities that emphasize social responsibility as a regulation related to supplies, equipment, labor and services required in the Company's business activities.

CSR Requirements for Suppliers

The Kurita Group considers it vital to obtain cooperation from suppliers in order to conduct business in accordance with its [CSR Policy](#) across the entire supply chain. To this end, we have established [the Kurita Group CSR Procurement Guidelines](#), and we have asked suppliers to understand and implement the Kurita Groups policies regarding matter such as human rights, safety, and environmental improvement, and the response that we require of them, and to provide appropriate information. In particular, we ask major suppliers to conduct a self-evaluation based on the guideline and to implement improvement measures.

Supplier Questionnaire Survey

The Company requires its suppliers to understand its compliance activities such as observing the Subcontract Act and confidential information management, and confirms the appropriateness of its transactions with them by conducting Surveys on Transactions with Kurita Water Industries Ltd. This survey targets suppliers who fall under the category of subcontractors as provided in the Subcontract Act and is conducted once a year by the secretariat of the E&S Committee, which is in charge of compliance activities. If the E&S Committee secretariat considers a status check or improvement to be necessary in some cases after confirming the responses, it instructs the relevant department to respond and conducts a follow-up check on the result of the response.

Status of Survey Implementation

	FY2017	FY2018	FY2019
Number of companies surveyed	917	952	995
Number of respondents	623	667	680
Response rate (%)	67.9	70.1	68.3

Public-Interest Whistle-Blowing and Helpline

The Company has created Public-Interest Whistle Blower Protection Rules and strives to quickly discover misconduct. In accordance with these rules, an advising and reporting liaison that makes use of an independent organization was established, and employees of the Company and its domestic Group companies, as well as dispatch staff and suppliers, can use the liaison. A "Supplier Helpline" was also launched so that suppliers can seek advice on issues such as concerns and worries they have about business with the Kurita Group.

Status of Use of Supplier Helpline

	FY2017	FY2018	FY2019
Number of cases	0	0	0



Status of Business Dealings

The status of business dealings with the Company's suppliers is as follows.

		FY2018	FY2019
Number of suppliers		2,444	2,354
Transaction amount (Millions of yen)		69,960	98,443
Ratio (%)	Domestic	89.2	90.4
	International	10.8	9.6

Communication with Suppliers

The Company provides opportunities for communication with suppliers and strives to strengthen its partnerships with them. The main initiatives conducted in fiscal 2019 were as follows.

Name	Purpose / Details	Number of participating companies
Roundtable discussion with suppliers	Explanation of forecast for orders in the following fiscal year and explanation of new initiatives and policies	75
Liquid transportation operation training session	Safety course regarding liquid transportation operations	15
Transportation safety and quality seminar	Safety lecture for transportation service providers	10
Safety events	Safety lectures, and explanation of revised safety rules	161

Third-Party Opinion/In Response to the Third-Party Opinion

Evaluation

Kurita Water Industries is highly advanced in its thorough examination of the value that it can provide and the way that it has related this to its corporate social responsibility (CSR). The Company has also clarified its stance on initiatives for the SDGs and prepared internal policies by reviewing its corporate philosophy. The Company's efforts to analyze its materiality and provide clear disclosure on its direction are laudable. Its business model excels in solving social issues through the actual business, and we sense that this is behind the Company's strong desire to embark on a new transformation having considered the direction that it should aim for and its purpose as a company in light of the SDGs. Now that the Company has defined the "CSV business" and is working to expand it, we think there is a strong expectations for it to offer further solutions for social issues and to channel these into the development of the Kurita Group.

From 2019, the Company has started producing an integrated report (annual report), and the sustainability report will now function as a medium for communicating details of the Group's CSR information. The Kurita Group's annual report had already started changing towards integrated reporting since Annual Report 2018 issued during fiscal 2019, which actively presented Value Creation of the Kurita Group as a business model and provided performance reports on each of five capitals. This is an excellent initiative, and has been evaluated highly. We think the next issue to focus on is what kind of numerical targets the Company will develop in the water treatment facilities business for manufactured capital, one of the six capitals in the integrated reporting model. Furthermore, in the medium-term management plan, MVP-22, CSR is positioned at the core of management, with priority measures including development of CSV business, creation of new business and the promotion of innovation. These represent concrete action on the measures disclosed in the business model. The seven materiality items presented in the CSR Policy are clearly related to the Sustainable Development Goals (SDGs), making them easy to understand. Moreover, the Company has been studying the integrated thinking that underpins the creation of integrated reports, and the Company's strong intention to transform management from the ground up is evident.

The relationship between value as viewed by Kurita Water Industries and KPIs is important. The Kurita Group's ordinary businesses are in a class of businesses that directly provides solutions to social issues. For this reason, the Group needs to consider its response to the SDGs anew and consider what CSV means. Under the current medium-term management plan, the volume of orders in the CSV business is presented as an internal management indicator. This CSV business is designated by the Kurita Group from among its conventional businesses as business that contributes to solving social issues through customers. The Group is expected first to start by developing this CSV business, and expanding it. As seeds for the next stage, the Group has prepared guidelines for corporate citizenship initiatives, and is now expected to build connections with people internally and externally and drive innovation, for example by entering new business fields using the Kurita Group's strengths with the theme of "water." Since water is one of the goals presented in the SDGs, it should provide a good entry point for the Kurita Group's activities.

The sustainability report features details of the Kurita Group's CSR activities structured around its new corporate philosophy system, which was rebuilt last year. The Kurita Group is making progress on globalization, with nearly 40% of net sales and over 40% of its employees originating from outside Japan. From 2019, the Group's environmental data has also been presented from a global perspective. Some variation remains in the level of accuracy of the information, but the Group is expected to align itself with the Kurita Group's corporate philosophy system and manage environmental data for KPIs at the same level as in Japan. This is because the Kurita Group's environmental database is a potential source of significant competitive advantage. Since it includes a large quantity of information, it is important for the Group to device mechanisms that ensure collection of data does not become a burden, while facilitating timely checking.

We have conducted a basic check of the collection of environmental performance data, and we found it to be free of material errors.

Professor of the Graduate School of Business Administration, Kobe University.
Ph.D. in Management. Dean of the Graduate School of Business Administration,
Kobe University (2014-2016). Since 2019, Vice President of Kobe University.
Chairman of MFCA Forum Japan. Chair of ISO/TC207/WG8.
Numerous published works include *Beyond Accountability toward Management Ethics* (Yuhikaku Publishing Co., Ltd.), and *Emergent-type Responsibility Management* (Nikkei Publishing, Inc.)



Katsuhiko Kokubu

In Response to the Third-Party Opinion

I would like to thank Professor Kokubu for sharing his valuable opinion.

In fiscal 2019, the Kurita Group positioned CSR at the core of management, and started to engage fully in activities based on its CSR Policy for the first time. Accordingly, the Group's CSR-related policies and initiatives were strengthened, and we have enhanced our disclosure of information to stakeholders. As a tangible result of this effort, the Group has been included as constituent stock in new ESG indices.

Meanwhile, as Professor Kokubu has pointed out, we need to work on improving recognition of the value provided by the Kurita Group to society. In fiscal 2019, the Group has promoted its products and businesses that contribute to solving social issues presented in the SDGs as the "CSV business," and this has achieved a certain level of success. However, going forward we need to drive innovation inspired by social issues and provide value that goes beyond the Kurita Group's conventional business models and markets.

In the E&S Committee for fiscal 2020, we have started initiatives to strengthen recognition of the Kurita Group's strengths and value creation from a CSR perspective. Through these initiatives, we aim to enhance the value provided by the CSV business, and create an "environment in which nature and man are in harmony" as described by the Kurita Group's corporate philosophy.



Kiyoshi Itou
Executive Senior Managing
Director and Representative Director
Executive General Manager of Corporate
Planning and Control Division
Chairperson of the E&S Committee



KURITA WATER INDUSTRIES LTD.

Nakano Central Park East, 4-10-1 Nakano
Nakano-ku, Tokyo 164-0001, Japan
Tel: +81-3-6743-5000

CSR Section
Corporate Communications and CSR Department
Corporate Planning and Control Division
Tel: +81-3-6743-4389

<https://www.kurita.co.jp/english/>