

Water conservation 102-12, 102-15, 103-1, 303-1 (Water and effluents 2018)



Reduce water use across all of our business by adopting water-efficient formulations and production methods.

Kao's creating value to address social issues

Social issues we are aware of

Water is necessary to life for all plants and animals on the Planet. All humans also need access to sustainable sources of sanitary water in order to maintain the whole-hearted satisfaction and enrichment. In Japan, water used for washing apparently accounts for the largest share of total household water usage*1. Furthermore, given that water used by Japanese households when using Kao products accounts for around 15% of all household water usage in Japan*2, we recognize that we have a big responsibility to society.

Currently, problems including localized heavy rains and floods, chronic drought and related long-term dry conditions, are arising in many regions and are predicted to grow in severity due to future population growth and climate change.

*1 Water Resources Department, Water and Disaster Management Bureau, Ministry of Land, Infrastructure, Transport and Tourism (MLIT).

*2 Based on a survey conducted by Kao Corporation.

Kao's creating value

We aim to substantially improve water usage efficiency in all stages of the product lifecycles. At our plants, we set targets and continue to aim for water use reduction. We believe that this contributes toward safeguarding the river basins (rivers and their sources) that are used to supply water to the plants.

We are also developing water-saving products, which we are rolling out globally, to reduce water consumption during product use. As we see it, in this way, even if restrictions are placed on water usage, consumers can continue to enjoy lives of cleanliness.

Contributions to the SDGs



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Risks and opportunities related to realization of our vision by 2030

Due to the impact of climate change, the impact of drought and localized torrential rains is already being seen all over the world. Governments and business enterprises are implementing various measures to reduce GHG emissions, but further rises in temperature are inevitable, and the resulting impacts are sure to become even more serious.

At the same time, the number of people living in the world's major cities continues to increase. If urban water infrastructure is unable to keep pace with urban residents' continually increasing demand for water, then residents may not have enough water to use, and it may be impossible to implement wastewater treatment

properly. In this case, citizens' cleanliness and sanitation may be under threat. Furthermore, if the cost of municipal water supply rises, then factory operation costs will rise too, with a risk that this may lead to reduced profits.

On the other hand, because the rise in awareness of the need to save water and the need for cleanliness and hygiene, which has emerged in relation to climate change, is closely linked to Kao's business areas, current developments also represent a significant opportunity for us. Furthermore, continuous implementation of measures to reduce factory water usage in response to the situations outlined above should lead to both cost

reductions and increased profits.

If no action is taken to reduce usage, the overall municipal water usage of the Kao Group as a whole in 2030 will be 1.66 times higher than in 2017. Assuming that water charges rise by 20%*, then it can be anticipated that our costs will rise by 771 million yen. We have set ourselves the goal of reducing water usage by 45% by 2030 compared to 2005, which is expected to keep the increase in costs down to 51 million yen.

* Source: Development Bank of Japan, The Water Supply Sector: Future Forecasts and Management Reform, 2017.

Risks and opportunities related to realization of our vision by 2030

Items		Content
Risks	Transitional risk	<p>Enactment of water-related policies and regulatory regimes has the potential to increase our supervisory costs in this area. Investing in better facilities and developing of new technologies to comply with policies and regulations will mean higher equipment and operating costs, which could negatively impact our profitability.</p> <p>In addition, national or regional policies to limit water intake depending on plant locations or increased risk of water sources drying up could cause unscheduled production stoppages and result in lower sales.</p> <p>Examples of possible policy or regulatory restrictions</p> <ul style="list-style-type: none"> •Plant wastewater regulation. •Regulation of use of chemical substances in products. •Product labeling programs for environmental performance or chemical substance content. •Water intake restrictions.
		<p>Technology</p> <p>Risk of profit reduction due to higher operating costs entailed by higher R&D costs for developing water-saving and other products for dealing with water risks.</p> <p>Risk of failing to increase sales if technologies developed do not work out.</p>
		<p>Market</p> <p>If drought persists at the national or local level, limits on water consumption during product use may be imposed. While this creates opportunities in the form of stronger demand for water-saving products, we face the risk that sales of non-water-saving products may fall.</p> <p>Risk of lower sales if water-saving product technology levels fail to match levels demanded by the market.</p>
	<p>Reputation</p> <p>Risk of reputational harm due to insufficient measures or inadequate disclosure for dealing with the above risks.</p>	
Physical risk	<p>Acute</p> <p>Risk that short droughts or flooding due to localized downpours may stop plant operations and make production impossible. Similar conditions at suppliers' plants could make it impossible for us to procure raw materials, with the risk that we could not continue manufacturing products. There is also the risk that supply chains, from suppliers to our plants, and from our plants to our customers, could be interrupted. These risks, meaning that we could no longer supply our products to the market, would negatively impact sales, and if such risks actually materialized, would require special measures at additional cost, thus reducing our profits. In addition, damage to infrastructure due to widespread flooding would severely affect consumers' lives and reduce consumption activity, which carries the risk of lower sales for us.</p>	
	<p>Chronic</p> <p>In the case of our plants or suppliers located in areas where severe drought may occur, there is a risk that we may not be able to increase production necessary for future growth. There is also the risk that sales of water-using products may decline in these areas.</p>	
Opportunities	<p>Resource efficiency</p> <p>Continuing to reduce water use at our plants reduces operating costs for manufacturing products and is an opportunity to increase profits.</p>	
	<p>Products, services</p> <p>Our product development system centers on interface control technology. Interface control literally means controlling how substances mix with each other. This technology enables us to continue developing water-related products, for example, detergents that rinse readily or cement that does not readily mix with water, thus enabling us to respond appropriately to market changes.</p>	
	<p>Markets</p> <p>If restrictions on water use materialize after a disaster due to flooding or downpours, the spotlight will be on water-saving products, presenting an opportunity to increase sales.</p> <p>Construction of a more resilient infrastructure is also an opportunity to boost demand for concrete and cement additives essential for construction work.</p>	
	<p>Resilience</p> <p>Continuing to reduce water use at our plants and require suppliers to implement water risk surveys help improve our resilience with regard to water issues in manufacturing our products.</p> <p>We have been offering advice to consumers for over 60 years, and thanks to a database built up over 40-plus years, we can forecast consumer trends and propose new products, an activity necessary for improving the resilience of our business.</p>	



Policies

The product use stage accounts for around 90% of total lifecycle water usage for Kao products, with the raw materials procurement stage accounting for only around 10%. As one of Japan's leading manufacturers of consumer products, we are demonstrating leadership by actively rolling out new, water-saving products and striving to realize effective engagement with government bodies and suppliers.

We continue to implement activities aimed at minimizing the negative impact on water conservation at every stage, from product development through to disposal.

In our Policies Regarding the Environment and Safety, we undertake to "Assess environment and safety aspects throughout the entire lifecycle of the products, from manufacture through disposal, when developing products and technologies. Offer products with lower environmental impact to ensure safe usage by consumers, providing appropriate information i.e. instructions regarding proper use, cautions."

Furthermore, the Kao Responsible Care Policy contains the following declarations: "We shall strive to develop technologies and bring to market products that reduce our impact on the environment, thereby contributing to the peace of mind of our business customers and consumers," and "We shall strive to continue to reduce the environmental impact of our business operations by promoting reduction of uses of resources such as water."

Our Environmental Statement embodies our commitment to ensuring that "Kao products utilize original Kao-developed technologies to minimize the impact they have on the environment, not just in the

manufacturing process, but in the daily life of the customers who use them. From materials procurement and manufacturing, to distribution, sales, use and final disposal, we want to engage in 'eco together' with stakeholders and consumers worldwide."



- Basic Principle and Basic Policies on Environment and Safety
www.kao.com/content/dam/sites/kao/www-kao-com/global/en/sustainability/pdf/environment-safety-principle-policies.pdf
- Kao Responsible Care Policy
www.kao.com/content/dam/sites/kao/www-kao-com/global/en/sustainability/pdf/responsible-care-policy.pdf
- Kao Environmental Statement
www.kao.com/content/dam/sites/kao/www-kao-com/global/en/sustainability/pdf/environmental-statement.pdf

Education and promotion

In line with the "eco together" motto of the Kao Environmental Statement, we are working together with a wide range of stakeholders to promote a variety of different environmental protection activities, including water conservation. We are also implementing water conservation education and working to spread awareness of our initiatives.

"eco together" with consumers/customers

As the product usage stage accounts for around 90% of total product lifecycle water use, raising consumers' awareness about water is extremely important. For example, even if a consumer buys single-rinse laundry detergent, if the consumer sets the washing machine to do

two rinses, then there will be no reduction in water usage. It is thus very important for us to accurately communicate the environmental value that our products can provide and encourage consumers to use them properly. By organizing a wide range of different events, we aim to get across the importance of water conservation and the environmental value of Kao's activities and products.

"eco together" with business partners

In order to help our customers realize a Kirei Lifestyle, we continue to implement heartfelt *Yoki-Monozukuri* manufacturing and deliver the resulting products to our consumers and customers. This is something that we cannot achieve on our own. At every stage from raw materials procurement through production to delivery and sales, etc., we collaborate with a wide range of business partners. We believe that it is important to share our vision with our partners so that we can take action together, and we have established a number of different venues for sharing information with them.

"eco together" with society

We proactively participate in activities organized by the central government, local government authorities and NPOs, etc., where we provide information about Kao technologies and exchange opinions with other participants.

Employee education and promotion

Our employees are not only in the position to develop and supply products, but once they leave the company, they are consumers for the rest of their lives and are the ones who select those products. We thus recognize the importance of giving our employees the opportunity to learn about issues related to water through various programs and to actively engage in water conservation activities of their own accord.



Framework

Risk management is carried out by the Internal Control Committee and opportunity management is carried out by the ESG Committee, under the supervision of the Board of Directors. These committees are headed by the President and CEO.

The Responsible Care Promotion Committee, which manages policy/regulatory regime and technology risks, and the Risk and Crisis Management Committee, which manages market, reputational and acute risks, are under the Internal Control Committee. These committees are headed by the executive officer in charge of the Corporate Strategy.

The Responsible Care Promotion Committee of Corporate Strategy Division acts as the Responsible Care Promotion Committee Secretariat while the Crisis Management Department of Corporate Strategy Division acts as the Risk and Crisis Management Committee Secretariat.

The Responsible Care Promotion Committee meets twice a year to report on and discuss compliance with laws and regulations, status of water use reduction and other matters. It also sets targets for the following year. The Responsible Care Promotion Committee conducts monthly checks on compliance with laws and regulations, and monitors water use, mainly at plants which have a large impact on water issues, reporting on these and other matters to the head of the committee, committee members, members of the Internal Control Committee, auditors and others. The Risk and Crisis Management Committee which manages natural disaster and reputational risks, meets four times a year.

The Internal Control Committee meets one or

more times a year, receiving activity reports from the Responsible Care Promotion Committee and the Risk and Crisis Management Committee which it oversees and auditing the activities of the two committees.

Opportunity management relating to water issues is handled by the ESG Committee, which meets four times a year. Committee members are the persons in charge of the business, sales, R&D, SCM and other divisions, an arrangement which connects divisions horizontally. The Internal Control Committee, and the ESG Committee which it supervises, discuss water and environmental issues as well as social and governance issues. The committee reports on its activities to the Board of Directors one or more times a year and is audited by the Board of Directors.

The risk and opportunity management system for water resources is the same as the management system for climate change.



→ p. 86 Making the world healthier & cleaner > Decarbonization/Framework

Mid- to long-term targets and performance

Targets for 2020

We set the 2020 reduction targets for water consumption for all Kao Group sites in 2013 and have aimed to achieve a 1% reduction each year.

We set the 2020 reduction targets for water consumption during the product use stage for the Kao Group in Japan in 2009. (2005 baseline)

Index	Scope	2019 targets	2020 targets
Water consumption	All Kao Group sites	40% reduction	40% reduction
	During consumer product use for the Kao Group in Japan	—	30% reduction

2030 long-term targets

Item	Scope	2030 targets
Water consumption (per unit of sales)	All Kao Group sites	45% reduction (2005 baseline)
	Overall Kao Group product lifecycles	10% reduction (2017 baseline)
	Overall Kao Group product lifecycles in drought areas	40% reduction (2017 baseline)

Anticipated benefits from achieving mid- to long-term targets

Business impacts

Achieving water consumption targets for all Kao Group sites will contribute to lowering operational costs and to improving earnings. For achieving water consumption targets during product use, we must increase sales of water-saving products, and reaching this target can help increase sales.

Social impacts

Achieving the above targets will contribute to sustainable availability or supply of fresh water in the river basins in question, and will have a positive effect on conserving ecosystems. In addition, this will also lead to reductions in waterworks infrastructure maintenance and replacement expenses and fees consumers pay for water and sewer service.

Water conservation

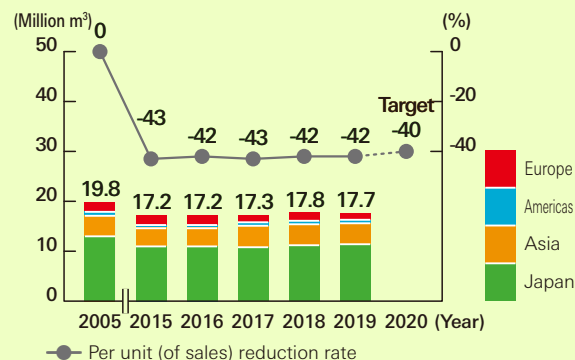
103-2, 103-3, 303-1 (Water and effluents 2018), 303-2 (Water and effluents 2018), 303-3 (Water and effluents 2018), 303-4 (Water and effluents 2018), 303-5 (Water and effluents 2018), 306-1



Performance in 2019

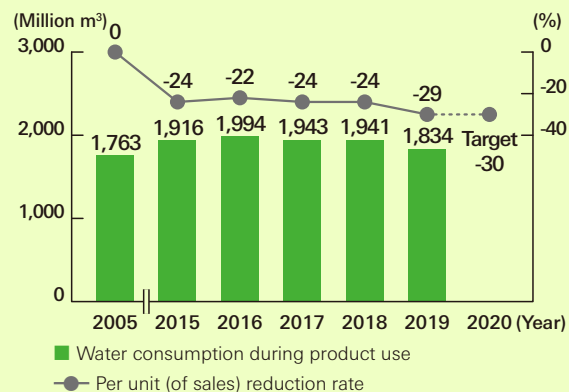
Performance*

Water consumption (withdrawal) (all sites)



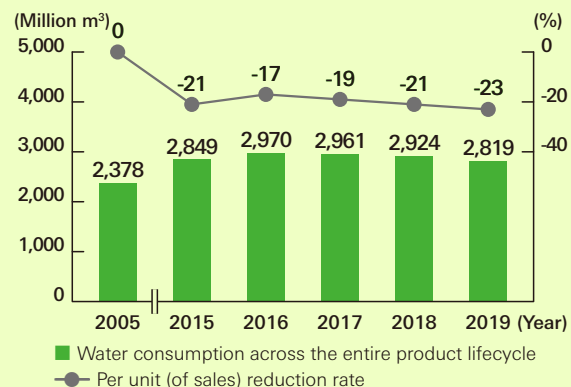
* Boundary: For 2005, all Kao Group production sites and non-production sites in Japan. In 2015, some non-production sites are included, and from 2016 all non-production sites are included.
* Assurance provided for water consumption (withdrawal).

Water consumption during product use (Kao Group in Japan)



* Water consumption during product use is calculated by multiplying the water consumption per unit of a product, mainly for consumer products in Japan, by the annual sales quantity of the product, and then adding all the results for these products together.
* Assurance provided for water consumption and per unit (of sales) reduction rates.

Water consumption across the entire product lifecycle (Kao Group)



* "Water consumption across the entire product lifecycle" is calculated as the combined total for the amount of lifecycle water consumption of individual products sold within and outside Japan, multiplied by their annual sales quantity. Among the lifecycle, the estimated water consumption during the manufacturing and distribution processes is substituted by the actual use during these processes. This amount includes water used for procurement in regard to chemical products but does not include water used in the use and disposal of such products.
* Assurance provided for water consumption and per unit (of sales) reduction rates.

Water withdrawal amount by source (Million m³)*

	2017	2018	2019
Surface water	0	0	0
Brackish water/seawater	0	0	0
Rainwater	0	0	0
Groundwater (renewable)	5.1	5.3	5.1
Groundwater (not renewable)	0	0	0
Oil-contaminated water/process water	0	0	0
City water	12.2	12.5	12.5
Wastewater from other organizations	0.03	0.02	0.07

* Boundary: All Kao Group sites

Wastewater discharge by destination (Million m³)*

	2017	2018	2019
Rivers/lakes	2.3	2.4	2.5
Brackish water/seawater	5.8	6.4	6.3
Groundwater	0.0	0.0	0.0
Sewage system	2.8	2.9	2.8
Wastewater to other organizations	0.0	0.0	0.0
Total	10.9	11.7	11.7

* Boundary: All Kao Group sites



→ For the CDP evaluation see p. 89 Making the world healthier & cleaner > Decarbonization/Performance in 2019: CDP evaluation

Reviews of performance

Our water consumption (all sites) came to 17.7 million m³, slightly less than the previous year for a per unit (of sales) reduction rate of 42%, almost the same as the previous year. We again achieved our 2019 and 2020 targets, as in the previous year. Water consumption at production sites with water intake risks came to 3.0 million m³.

Our water consumption across the entire product lifecycle (Kao Group) and water consumption during product use (Kao Group in Japan) decreased by 105 million m³ and 107 million m³, respectively, resulting in respective improvement of 2 percentage points in the per unit (of sales) reduction rate to a 23% reduction (6% reduction compared with 2017), and improvement of 5 percentage points over the previous year to a 29% reduction.

The challenge is to reduce water consumption during the use stage. We are working to further expand our water-saving products.



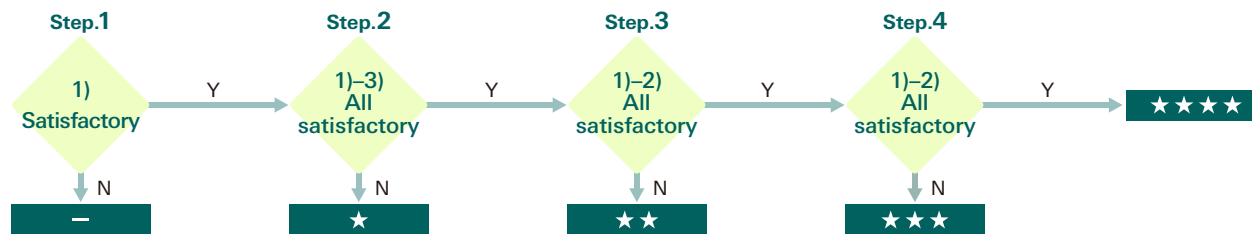
Our initiatives

Efforts in raw materials procurement

We began participating in the CDP Supply Chain Program in 2015 and we encourage suppliers in high water risk sectors to work on improving their water management standards. More specifically, we ask suppliers to fill out the CDP questionnaire survey. We use our unique methods to evaluate suppliers' water management status, and we provide feedback on the evaluation results.

The 2019 survey results showed that the number of suppliers obtaining an evaluation of at least "three stars" had increased by eight compared to the previous year, indicating that the overall supplier activity level had risen. At the same time, in regard to the roughly 30% of suppliers who failed to respond to the survey, we are working on engagement to encourage these suppliers to respond.

Determination flowchart



Step	Conforming	Implementing	Evaluation targets
1	●	●	1) Replies to some questions
2	●	●	1) Identifies facilities with water risk
		●	2) Monitors amount of water withdrawal, water discharge and water consumption
3	●	●	3) Monitors changes in volumes
		●	1) Leadership / organizational readiness
4	●	●	2) Periodic monitoring reports with respect to risk etc.
		●	1) Identifies whether negative impacts on water exist
		●	2) Clarifies impact content and countermeasures

Efforts in development, manufacturing and sales

We use water as a product ingredient as well as to clean and cool equipment at our plants. We set targets to reduce water consumption at each plant and are working to reduce consumption and increase recycling based on the 3Rs (reduce, reuse and recycling).

Reduce

Multiple plants including Kao Chemicals GmbH in Germany conduct efforts to increase the number of times that water is reused for boilers and for cooling to reduce their water consumption.

Reuse

Rainwater is collected and used to water green spaces at the Sumida Office, Kao Chemical Corporation Shanghai and Fatty Chemical (Malaysia).

Recycle

Active recycling efforts, such as recovering steam and treating and reusing water that has been used in production processes, are being carried out at many plants.



Examples of 3R activities

Company name	Description of activity
Kao Chemical Corporation Shanghai	Reduces its water consumption for the manufacturing of some products by reusing water from reaction processes of other products.
Kao Vietnam	Introduced a spray technique for washing and sanitizing tanks, resulting in reducing its use of water and steam.
Kao Industrial (Thailand)	Returns cooling water overflow to a cooling water pool to help eliminate unnecessary water consumption.
Quimi-cao S.A. de C.V. (Mexico)	Concluded an agreement with the local community to receive treated water from the community's wastewater treatment plant. Reverse osmosis is employed to use sewerage effectively, and Quimi-cao further purifies the treated water it has purchased and releases water left over from production into a river through the community's facility, thus contributing to local water recycling.

Efforts during use

As water consumption in the product use stage accounts for around 90% of water consumption across the entire lifecycle, we are providing water-saving products and implementing consumer communication in regard to how to use these products properly. In 2009, we launched *Attack Neo* laundry detergent, which requires only one rinse cycle, in Japan. 2019 saw the launch of *Attack ZERO*, which combines superb washing power and odor removal capability with zero detergent residues. Laundry detergents that require only one rinse cycle are now offered in Japan and Taiwan. We aim to make one rinse cycle the norm for clothes washing.

Through our Essential Research focused on foam, we have also succeeded in reducing the amount of water used when rinsing with other product categories too. In 2010 we launched *Merit Shampoo*, which uses 20% less water for rinsing than conventional products, followed in 2014 by *CuCute* dishwashing detergent, which also reduces the amount of water needed for rinsing by 20%, and in 2015 by *Bath Magiclean* bathroom cleaning liquid, which uses 10% less water for rinsing. We plan to continue rolling out new water-saving products based on our Essential Research.

We also communicate ways to save water to consumers using a variety of approaches. For example, we have developed eco shampoo techniques to use less water when shampooing hair, and we communicate these to consumers. Communicating ways to conserve water while

offering water-saving products truly embodies “eco together,” the slogan of the Kao Environmental Statement.



Eco shampoo techniques to use less water when shampooing hair.



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Implementing education and activities based on “eco together”

Employees

- In regard to employee education based on Responsible Care activities, we implement relevant education for all employees.
- We implement relevant education for all employees working at applicable worksites at plants and research institutes that have secured ISO 14001 certification.
- We hold guided tours of the Kao Eco-Lab Museum for our employees.

Business partners

- We hold the Kao Vendor Summit, which important suppliers are invited to attend, where we hold presentations on our ESG-related initiatives, including water conservation, and ask suppliers to complete the CDP questionnaire survey.

Customers

- At the EcoPro 2019 exhibition, we presented displays relating to water conservation, and also gave a presentation.
- We implement visiting classes at elementary schools, to teach the children about water conservation.

Society

Participation in China’s Nationwide Cleanliness and Water-saving Initiatives

The Chinese government’s efforts to raise awareness of the importance of water conservation align with Kao’s approach to implementing “eco together” activities with customers, for example, in relation to sales of water-saving laundry detergent. Since 2012, we have been collaborating with the Chinese government on China’s Nationwide Cleanliness and Water-saving Initiatives, a water conservation campaign, which had been held for eight consecutive years as of 2019. We expanded the areas of activity and conducted awareness-raising for water conservation at 64 universities in China’s northwestern region in this year’s campaign.



Opening ceremony held in Xian, China.