



Help drive the transition to a circular economy by optimizing material selection and minimizing their use, recycling all our waste, and making our packaging practically reusable and recyclable.

## Kao's creating value to address social issues

### Social issues we are aware of

Considering that the world's resources are limited, standards of living are rising, and needed resources are steadily increasing as the global population continuously grows, the one-way economic models of the past will no longer support prosperous lifestyles and culture into the future. Consequently, efforts to achieve high levels of economic growth and create recycling-based societies, in other words, to develop secular economies that seek compatibility with high resource productivity, are gaining momentum around the world.

In regions where social infrastructure (i.e., waste treatment systems) is not sufficiently developed for the increases in the amount of waste generated including household waste, there are numerous instances of environmental pollution due to waste being dumped or insufficiently treated at disposal facilities. In addition, improper conduct by consumers after use results in waste dumped on land entering the oceans. Plastic in particular does not decompose naturally, and the volume of marine plastic waste continues to increase. Estimates are that by 2050, there will be more plastic in the ocean environment by weight than the weight of all the fish in the oceans. This marine plastic is starting to have detrimental impacts on marine ecosystems.

To keep temperature rise due to climate change under 2°C/1.5°C, consumption of fossil fuels must be

drastically reduced. Consequently, production of plastics, which are made from fossil fuels, may fall dramatically compared to current levels. It is obvious from clear that existing plastic containers made with large amounts of fossil fuel derived plastic are not sustainable.

### Kao's creating value

We are involved in many activities for increasing resource productivity in collaboration with various stakeholders.

We are continuously implementing 3R activities to reduce, reuse and recycle waste plastic generated at plants, distribution sites and offices and with regard to products and packaging.

In the area of plastic packaging in particular, we are undertaking ongoing development and use of film packages that use about one-sixth the plastic, and products in refillable film containers are becoming popular in Japan. We are rolling out these technologies to overseas group companies, making it possible to reduce the amount of plastic used in packaging. It goes without saying that if ordinary consumers also use these products, the effects will be even more substantial.

Furthermore, efforts to recover waste that has already been released into the environment greatly contribute to the protection of marine and land ecosystems.

### Risks related to realization of our vision by 2030

Items	Contents
<b>Policies, legal restrictions</b>	Stricter regulations on the processing of waste generated from business sites, increased regulation on consumption of plastic packaging (mandatory use of recycled plastic, taxation), mandatory labeling of information on plastic use, etc.
<b>Technology</b>	Increased volumes of waste generated from business sites in conjunction with the manufacture of new products and unsuccessful attempts to develop technology for reducing plastic consumption or using recycled plastic.
<b>Markets</b>	Higher disposal costs as a result of increases in the volume of waste generated in excess of disposal capacity throughout society, changes in consumer preferences, rising costs for virgin plastic or recycled plastic, etc., criticism of industries and individual companies, rising concerns from stakeholders, etc.
<b>Reputation</b>	Criticism of the industry or of individual companies, stronger concerns among stakeholders, changes in consumer preferences, etc.

### Opportunities related to realization of our vision by 2030

Items	Contents
<b>Resource efficiency</b>	Lower disposal costs as a result of decreases in the volume of waste generated from business sites and lower costs for packaging, better transportation efficiency, etc. as a result of reducing plastic consumption.
<b>Products, services</b>	Reduction in the volume of waste generated through the development of resource-saving products, higher sales due to expanded use of packaging using less plastic and development of innovative packaging, higher income due to licensing of development technology.
<b>Markets</b>	Higher sales due to improved access to new markets, use of public incentives for developing innovative technologies, etc.
<b>Resilience</b>	Improved resilience through actively continuing to promote 3R activities for plastic packaging.

### Contributions to the SDGs



Kirei Lifestyle Plan

Making my everyday more beautiful

Making thoughtful choices for society

Making the world healthier & cleaner

Walking the right path



## Policies

We continue to implement activities aimed at reducing waste at every stage from product development to disposal.

In accordance with our fundamental policies on the environment and safety, we are working to develop technologies that take into consideration resource conservation, energy conservation, waste reduction and other issues in the product design stage. In production, we are taking measures to efficiently use resources and energy and to reduce, reuse and recycle waste and byproducts.

Furthermore, the Kao Responsible Care Policy contains the following declaration: “We shall reduce, reuse and recycle waste and strive to continuously reduce environmental impact.”

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.”

It is expected that in a decarbonized society, the use of fossil fuels will be restricted even as demand for convenient plastics increases worldwide, and we are aware of the need to reduce the amount of plastic used in the future while switching to plastics that are not made from fossil fuels.

We announced “Our Philosophy & Action on

Plastic Packaging” in October 2018, expressly stating that our action on plastic packaging is driven by our 4R programme based on continuous improvement and bold innovation.

As a part of carrying out ESG-driven *Yoki-Monozukuri*, we announced in September 2019 that we will focus on innovations for reduction and recycling so that we can create a plastic recycling based society.



→ p. 113 RecyCreation activities



→ 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](http://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](http://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](http://www.kao.com/content/dam/sites/kao/www-kao-com/global/en/sustainability/pdf/environmental-statement.pdf)

→ Statement regarding our plastic packaging

[www.kao.com/content/dam/sites/kao/www-kao-com/global/en/sustainability/pdf/plastic-packaging-001.pdf](http://www.kao.com/content/dam/sites/kao/www-kao-com/global/en/sustainability/pdf/plastic-packaging-001.pdf)

→ New Challenges of the Kao Group into the Future

[www.kao.com/global/en/news/business-finance/2019/20190926-001/](http://www.kao.com/global/en/news/business-finance/2019/20190926-001/)

## Efforts in raw materials procurement

To reduce waste generated at our plants, we continuously work with external suppliers to adjust the volume and frequency of raw materials deliveries. This contributes to reducing the amount of packaging materials we procure from suppliers as well as reducing CO<sub>2</sub> emissions from the transport of raw materials.

## Measures taken in relation to our products

We offer products such as disposable diapers and cleaning sheets that become waste after consumer use. While ensuring product performance, we are developing technologies to reduce the amount of materials used in products and contribute to reducing waste in order to reduce the amount of waste generated after product use. This also reduces costs and CO<sub>2</sub> emissions in conjunction with waste processing.

We also use recycled plastic for some of our products. As a result, we are able to reduce the amount of virgin plastic used, which leads to a reduction in the use of fossil fuels, the raw material for plastic. We are aware that these measures are important for solving the problem of plastic and creating a decarbonized society.

In addition, we are making a switch concerning the eye-catching plastic stickers used on products to attract consumers’ attention to certified paper when they absolutely must be used and eliminating all other use by the end of 2021.



## Initiatives targeting packaging

Kao undertakes measures in compliance with the ISO 18600 series standards for packaging and the environment. Specifically, we are reducing the amount of plastic used in packages and reducing the use of plastic packages, which have become a serious social issue, from a 4R (reduce, replace, reuse, recycle) perspective.

In terms of reducing, we are promoting the use of thinner packaging, the adoption of refill and replacement product. The use of plastic film packaging enables to slash the use of plastic to just one-sixth compared to plastic bottles. To expand the use of film packaging, we have continued to make improvements to these refill products according to bottle size, the viscosity of the contents and so on to make refilling easier for consumers, and we encourage the internal and external use of innovative film packaging. We are also exploring the possibility of in-store refilling whereby consumers bring packaging to the store and purchase only the products they are filled with.

With regard to replacing, we are working to replace fossil fuel derived plastics with alternative materials such as paper and glass as well as recycled plastic and plant-derived plastic. We have been using recycled paper for the carton boxes and instructional inserts for many products, including powdered laundry detergent, since the 1960s, and we plan to expand use.

As for reuse, we have adopted an approach for reusing bottles in the home by providing consumers with refill and replacement product. We are also working on a take-back system to accept packaging from customers for washing and reuse.

Last is recycling. As one aspect of our *Yoki-Monozukuri* measures, rather than treating the product launches as the end point, we take responsibility for

products through disposal and treatment. Based on the fundamental technology that we have accumulated until now, we are focused on creating innovative recycling technologies for used plastic, developing and using high-quality, low-cost recycled plastics, encouraging activities that generates value from used plastic and using plastic waste for industrial applications.

## Efforts in development, manufacturing and sales

We are reducing the amount of waste generated at our plants and offices, and we are reusing and recycling waste and other materials inside and outside the company. We have set reduction targets for how much waste we generate and are working company-wide to achieve them.

At plants, we are reducing loss of raw materials and products. For example, for liquid products, wastewater sludge is produced as a result of cleaning the mixing and storage tanks at the production facility when the product produced is switched. For sheet-type products, a portion of the sheet material is left unused when the material is switched out. We are studying loss reduction countermeasures on an ongoing basis according to the type of loss that occurs. We then implement improvements to reduce waste.

Because products that are returned from stores are ultimately disposed of as waste, considerable expense and impose environmental burdens arise including the waste of resources and GHG emissions during the disposal process as well as considerable disposal-related expense. Going forward, we will work with stores to review product shipping and placement methods in an effort to minimize waste. In addition, sales promotion materials are discarded after use, so

we are making a transition to disseminating information using digital means.

## Enhancing waste recycling

It would be difficult to reduce generated waste to zero with currently available technology. Accordingly, we ensure that generated waste is thoroughly sorted, and we select the most appropriate recycling methods in cooperation with contracted waste treatment providers. We monitor the amount of waste recycled and sent for final disposal along with the amount of waste generated to improve how waste is treated overall.

## Preventing illegal dumping of waste

When contracting waste treatment service providers to dispose of waste generated at our plants and offices, there is a risk of illegal dumping. To reduce this risk, we regularly visit the service providers to verify that the contracted waste is being disposed appropriately. The Kao Group in Japan has created a database containing information including contracts with waste treatment service providers and the results obtained from surveys of appropriate waste treatment to prevent illegal dumping. This system is also connected to the Electronic Manifest System, which also ensures prevention of illegal dumping.

## Proper storage and treatment of PCB waste

Polychlorinated biphenyls (PCBs) were formerly used in insulating oil, such as in transformers and ballasts, but they have low degradability and therefore pose a risk to human health and to creating hazards in living environments. We appropriately store and treat PCB-containing waste in accordance with the law until its disposal is contracted to a service provider.

## Education and promotion

Many of our products became waste after use. We are facing this fact earnestly and recognize the importance of giving of our employees the chance to learn about the generation of waste from our business activities and used products through various programs and to actively engage in waste reduction measures of their own accord. To this end, we have created many opportunities for employee education.

## Collaboration and engagement with stakeholders

Methods of processing waste generated from our business activities as well as waste generated by consumers and customers after using our products are regulated by government agencies. We are working proactively to address this issue through collaboration and consultation with government agencies and industry associations so that we can recycle even more waste or make it easier to process waste. Furthermore, it will be difficult to reduce the amount of plastic used in packaging and to increase recyclability without the cooperation of suppliers, and therefore, we actively engage in exchanges of opinions and joint development.

Reducing waste generated after consumers use products will require consumers to select products manufactured with fewer resources, so we actively engage in consumer education in collaboration with government bodies, industry associations and distributors.





## Framework

Management of waste generated from business activities is carried out by the Internal Control Committee and management of waste generated from use products as well as packaging is conducted by the ESG Committee under the supervision of the Board of Directors. These committees are headed by the President and CEO. The officer responsible for the Corporate Strategy Department serves as chair of the Responsible Care Promotion Committee, and the Corporate Strategy Department of the Responsible Care Division serves as the Secretariat for the committee. The committee meets twice annually to report on and discuss compliance with laws and regulations, the amount of waste generated, the status of recycling, and other matters and sets targets for the following year. The Responsible Care Promotion Committee conducts monthly checks on compliance with laws and regulations, monitors waste amounts and the status of recycling, mainly at plants which have a large impact, and reports on these and other matters to the head of the committee, committee members, members of the Internal Control Committee, auditors and others.

Activities related to waste issues are reported at the Japan RC Meeting and Global RC Meeting under the supervision of the Responsible Care Promotion Committee. The SCM Division, which manages our plants that account for the majority of waste generated by our plants and office, holds the Environment Working Group Meeting with environmental staff at all plants, manages progress relating to activity targets regarding recycling and reducing waste at plants, and internally develops Best Practices.

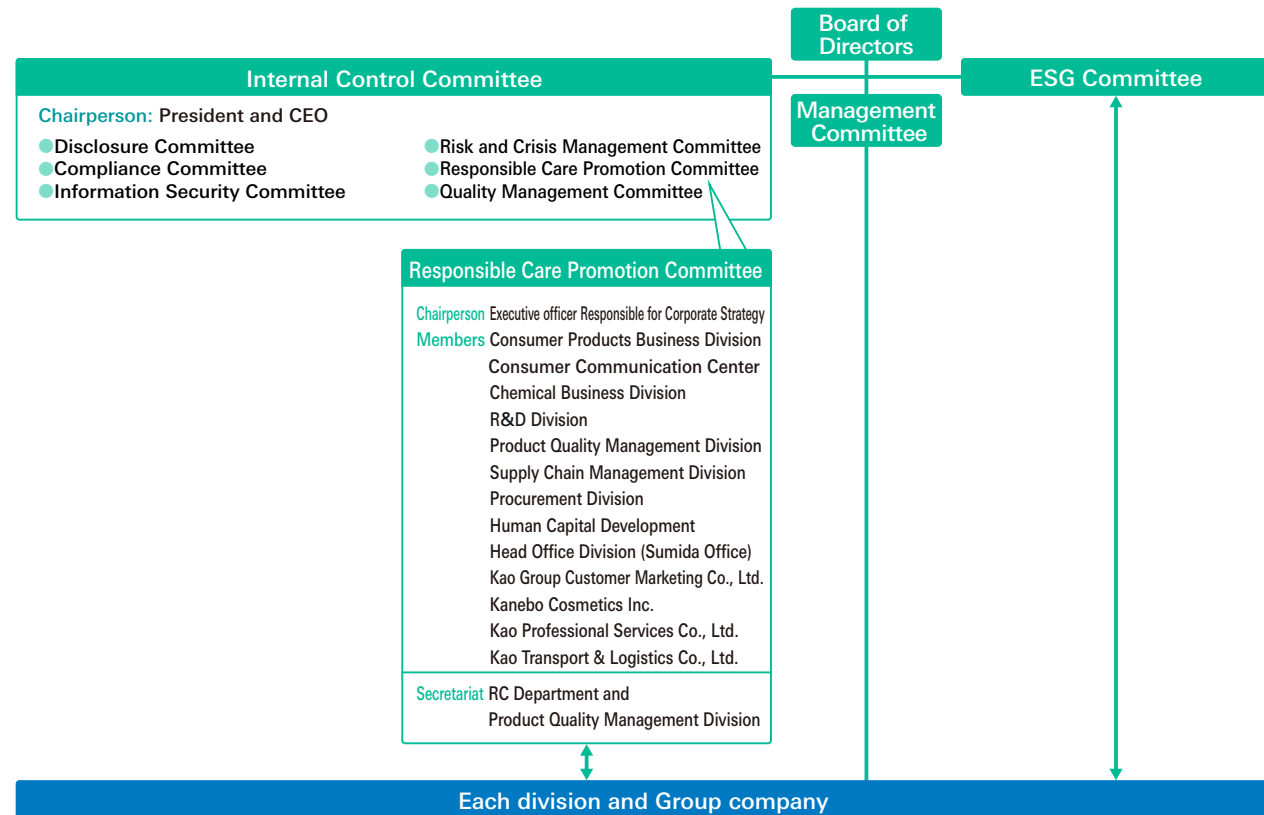
The Internal Control Committee meets one or more times each year, receiving activity reports from the Responsible Care Promotion Committee and other

subordinate committees that it oversees and auditing the activities of those committees. Opportunity management of waste generated from used products 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 supervise and discuss environmental issues including waste derived from

packaging as well as social and governance issues.

Site inspections of waste treatment service providers are conducted systematically in cooperation with the SCM Division, Procurement Division, Logistics Division, Information Technology Division, Sales Division and related companies. Data reliability is ensured by using a database that centrally manages environmental data, and work tasks are standardized and made more efficient to adequately conduct activities with targeted outcomes.

### Waste, Container and Packaging Management Systems



\* As of December 2019.



## Mid- to long-term targets and performance

### 2020 target relating to waste

In 2013, we set the 2020 reduction targets for waste and other unwanted materials generated at all Kao Group sites and have aimed to achieve a reduction of 0.5% each year. The target percentage of final disposal at all Kao Group sites in Japan has been increased in phases. We began with the target of 0.5% or lower in 2004, then 0.2% or lower in 2007 and 0.1% or lower since 2010.

Index	Scope	2019 targets	2020 targets
Generated waste and other unwanted materials*1	All Kao Group sites	33% reduction	33% reduction
Final disposal ratio*2	All Kao Group sites in Japan	0.1% or lower	0.1% or lower

\*1 Per unit of sales (2005 baseline).

\*2 Ratio destined for final landfill disposal to the amount of generated waste.

### 2021 target relating to eye-catching stickers

- Complete elimination of eye-catching stickers (When stickers are absolutely necessary, certified paper will be used)

### 2025 mid-term targets relating to packaging

- Develop film packaging made from a single material
- Shift to 100% recyclable, reusable packaging
- Consumption of recycled plastics: x5
- Consumption of bio-based plastics: x3

### 2030 mid-term targets relating to Zero waste

Items	Scope	Targets for 2030
Quantity of innovative film packaging penetration	Kao Group and other companies	300 million products*1
Amount of waste*2	All Kao Group sites	Zero

\*1 Annual penetration amount

\*2 Amount of waste not recycled from business sites

### Anticipated benefits from achieving mid- to long-term targets

#### Business impacts

It will be necessary to raise productivity in order to curtail the amount of waste and the like generated from business activities. If productivity is raised, manufacturing costs can be reduced. In addition, promoting recycling can also be expected to reduce waste processing costs.

By using innovative film packaging both internally and externally and meeting our targets for reducing plastic consumption, we can boost sales in new markets and earn revenue from licensing our patents.

By increasing consumption of recycled and bio-based plastics, we can also avoid new taxes on the use of virgin plastic.

#### Social impacts

By curtailing waste and the like generated from business activities, promoting recycling to achieve zero waste, and developing a society where innovative film packages that can drastically reduce the amount of plastic used are widespread both inside and outside Kao Group will contribute to enhancing resource productivity throughout society as a whole. Doing this will contribute to realizing a recycle-based society and make it possible to offer consumers clean products in a future society with limited resource availability. These are important approaches for carrying out the Kirei Lifestyle and achieving One Planet Living vision.





## Performance in 2019

### Waste

#### Performance

##### 1. Amount of generated waste and other unwanted materials

Due to reduction efforts at our worksites in 2019, the amount of generated waste and other unwanted materials came to 225 thousand tons, a decrease of 3 thousand tons compared with the previous year, resulting in a 1 percentage point improvement in the reduction rate (per unit of sales) over the previous year to 27%, but did not reach our target of a 33% reduction. We will continue to strengthen our activities to reduce generated waste and other unwanted materials. We will continue to strengthen our activities to reduce generated waste and other unwanted materials.

Of the generated waste, 22 thousand tons were hazardous waste. No hazardous waste was transported internationally under the Basel Convention.

##### 2. Recycling

Waste reused or recycled\* came to 209 thousand tons \*, a recycling rate of 93%.

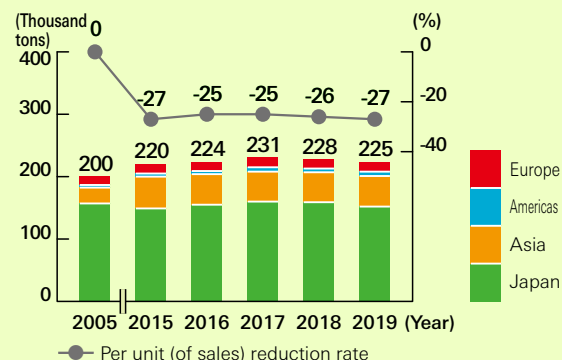
We maintained our target of a 0.1% or lower final disposal ratio for waste. We have achieved our target of zero emissions for the 15th consecutive year since the target was set (final disposal ratio to generated waste for all Kao Group worksites in Japan).

In 2019, while we saw an improving trend in the amount of generated waste, reducing the gap with our 2020 target is a challenge and we will continue conducting activities to reduce waste.

\* Includes thermal recycling (heat recovery).

\* Assurance provided for amount of generated waste since 2015.

Amount of generated waste and other unwanted materials  (all sites)



\* Boundary: For 2005, all Kao Group production sites and non-production sites in Japan. From 2015, some non-production sites outside Japan are also included.

\* Assurance provided for amount of generated waste and other unwanted materials.

\* Per unit of sales is calculated based on Japanese standards up to fiscal 2015, and on International Financial Reporting Standards (IFRS) from fiscal 2016.

##### 3. Inspection of waste treatment facilities

In 2019, we conducted inspections of 192 waste treatment sites with the cooperation of 153 waste treatment companies (Japan). As a result, no waste treatment companies were found to be in noncompliance with our evaluation standards.

##### 4. Eye-catching stickers

We have started working towards the complete elimination of eye-catching plastic stickers.



## Performance in 2019

### Packaging

#### Performance

##### 1. Develop film packaging made from a single material

Development of film packaging made from a single material is underway in collaboration with film makers and converters.

##### 2. Shift to 100% recyclable, reusable packaging

Plastic packaging used for household products in Japan are required to have structures that enable facility under the Act on the Promotional Sort of Collection and Recycling of Containers and Packaging and are already 100% recyclable.

We are currently confirming the definition of recyclable packaging in other countries and regions.

##### 3. Amount of recycled plastic used

Recycled plastic (PCR) is used for shampoo, conditioner and body wash by Kao (Taiwan) Corporation, for *Jergens* body wash in the Americas, and *Guhl* shampoo and other products sold in Europe, and the total amount used has reached 333 tons (2.2 times the amount in 2018).

##### 4. Amount of bio-based plastics used

Bio-based plastics are used for *Merit* shampoo and conditioner, *Segreta* shampoo and conditioner, *CuCute* 1,500ml containers, *Raku-raku Eco Pack Refill*, and shampoo and treatment, and other products, and the total amount used has reached 463 tons (1.2 times the amount in 2018).

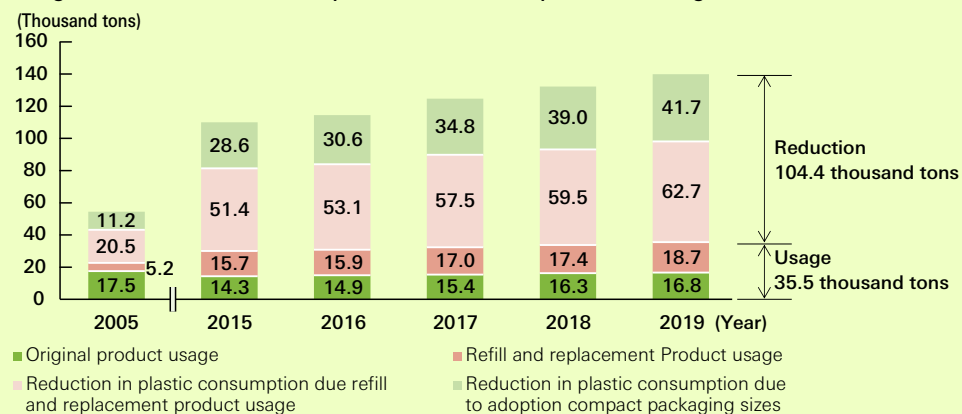
##### 5. Amount of packaging used

Kao Corporation, Kanebo Cosmetics Inc. and Kao Professional Services Co., Ltd. combined used a total of 160.6 thousand tons of packaging.

Kao Corporation used 146.8 thousand tons of packaging, of which 59.7 thousand tons were plastic packaging. These figures were +2.8% and +4.6%, respectively, compared to the previous year. Kao Corporation now offers 326 refill and replacement product (as of December 2019), with a penetration rate of 84% and slightly more than 80% recently. The refill ratio for fabric softener and fabric bleach in particular now stands at more than 90% (unit basis). Consumption of plastic for refills and replacements has dropped by 62.7 thousand tons, totaling 104.4 thousand tons when making products more concentrated is accounted for, compared to if products had been in original plastic packaging. Overall reduction rate was 74.6%.

\* Corrugated board, paper, plastic, metal, glass

##### Usage and reduction volume of plastic in refill and replacement categories



\* Boundary: Kao Corporation

\* Body wash, hand soap, shampoo & rinse, liquid laundry detergent, fabric softener, kitchen cleaner, household cleaner, bleach, mold remover.

\* The values for Original product usage and Reduction in plastic consumption due to adoption compact packaging sizes in 2018 contained errors and have been revised accordingly.





## Our initiatives

### Measures taken in relation to our products

#### Reducing the amount of product materials used

We continue to reduce the materials used in making products that become waste after product use by consumers. For example, we reduced the product weight of medium-sized *Merries* disposable taped diapers by 37% while improving product function compared to its 1990 version.

#### Products that use raw materials with low environmental impact

Paper hot water pipes handled by the Chemical Business Division combine molding technologies with high-temperature material technologies and are made from waste paper. Compared to general ceramic hot water pipes, the amount of raw materials used is reduced to one-tenth and post-use waste to one-sixteenth.

#### Products that use recycled materials

We use recycled materials for some of our products. We have been using recycled paper in the carton boxes and instructional inserts of many products since the 1960s, including powder-type clothing detergents. We use recycled polypropylene (PP) in the

measuring spoon for *Attack* powder type laundry detergent, which was first put on the market in 1987, and recycled polyethylene terephthalate (PET) in the fibers of *Quickle Wiper* floor dry cleaning sheets, which first appeared on the market in 1994.

### Initiatives targeting and packaging

#### Initiatives to reduce

##### *Smart Holder and Raku-raku Eco Pack Refill*

In 2017, we proposed *Raku-raku Eco Pack Refill*, which can be used with our *Smart Holder*, improving usability and allowing the product to be completely consumed, thus reducing environmental impact. This eliminates the need for an original plastic bottle.

Until now, these were sold only on our online site, but we implemented a full-scale rollout to stores in April 2020. We believe this will make them accessible to more consumers and will encourage use.

For this technology we were awarded the Minister of Economy, Trade and Industry Prize, the grand prize at the 57th Japan Packaging Competition, and a Good Design Award, all in 2018.



*Smart Holder and Raku-raku Eco Pack Refill*

#### Refillable in stores

*Molton Brown* has made refills of eau de toilette and eau de parfum available in some stores in the UK since 2019. Repeatedly using bottles reduces environmental impact.



In-store refilling system



## Total elimination of eye-catching plastic stickers

Eye-catching plastic stickers attached to products provide consumers with information on product advantages and correct usage at the time of purchase, but they increase the amount of plastic used, and the increase in plastic waste and CO<sub>2</sub> emissions at the time of disposal is an issue.

As a result, we are working to completely eliminate the use of eye-catching plastic stickers. Some *Bioré u* body wash products, body care products and bath additives successively released from April 2020 have all of the information that was contained on eye-catching stickers in the past printed on the bottle to eliminate the use of eye-catching stickers.



## Initiatives to replace

### Use of recycled plastic

We are increasing the use of recycled plastic for packaging around the world.

In 2019, we launched packaging made of recycled products for *Ghul* brand products sold in Germany and *Jergens* products sold in the Americas.

### Use of bio-based plastics

We are actively developing technologies for using bio-based plastics for bottles and refills. Since we began this initiative in 2012, our consumption of bio-based plastics and the range of products for which they are used have continued to expand.

For example, *Raku-raku Ecco Pack Refills* are made from 15% bio-based plastic on a weight basis.



Products using packaging made from bio-polyethylene



*Kao Shampoo, Kao Body Wash, Bioré Prime Body, and Men's Bioré Shampoo* in Taiwan: Adopted packaging using 100% recycled plastics since 2016.



*Ghul* brand haircare products sold in Germany, Austria, Switzerland and the Netherlands: Shampoo bottles made with 50% recycled polyethylene terephthalate (PET) and conditioner tubes made 100% from recyclable polypropylene introduced in stages starting in 2019.



*Jergens* brand products sold in the Americas: Bottles made with 50% recycled polyethylene terephthalate (PET) for some body wash products introduced in 2019.



*Quickle Wiper Wet Sheets* in Japan: Packaging is made from 80% recycled plastic.

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Kirei Lifestyle Plan

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## Reuse: Promoting refill and replacement products

We continue to provide refill and replacement products and expand sales of *Smart Holder*.

## Printer head refurbishment

In 2012, Kao Collins launched a refurbishment program for some inkjet printer heads that are no longer usable. Curtails the number of printer heads that are discarded, leads to a reduction in environmental impact.

## Take back system creation

The Chemical Business Division is conducting a program to reuse sold product packaging (take back system) to reduce their environmental impact. In 2019, we collected and reused 13,769 IBC packages used by customer companies.

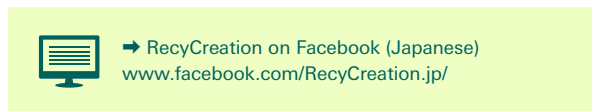
## Initiatives to recycle

### RecyCreation activities

We have been engaged in research toward creating a new resource recycling system for packaging. We have proposed the RecyCreation approach, which generates new value by adding technology and the knowledge and ideas of various people to used items. To date, we have continuously conducted verification in five areas with members of the community.

In a trial, we collected used refill packs for laundry detergent, shampoo and other products from members of the community and recycled them to create a block of recycled plastic that symbolizes "creation" of various objects and values that will be useful for community development and lifestyle development.

This project was reported in activities the 2019 White Paper on the Environment issued by the Ministry of the Environment and has received outside commendation, such as the EcoPro 2019 Executive Committee Chairman's Award.



### The RecyCreation Concept



Award ceremony for the EcoPro 2019 Executive Committee Chairman Award.

## Efforts in development, manufacturing and sales

### Reducing the amount of waste produced

We handle a large number of liquid products, and reducing the sludge produced from treating concentrated wastewater generated in the process of cleaning tanks and switching products is a major issue.

Kao Industrial (Thailand) treats wastewater using separate wastewater treatment facilities according to the COD concentration of the wastewater, which has successfully reduced the amount of sludge produced and contributes to reducing waste. Fatty Chemical (Malaysia) is also considering introducing equipment to treat wastewater.

Also, to contribute to reducing the amount of generated waste at retailers, we are working with the understanding and cooperation of retailers to reduce the number of boxes used in the delivery of products.

### Enhancing waste recycling

One example of this is recycling the waste generated by the manufacture of diaper and feminine products to be turned into plastic pallets. We began test operation of this system at our plants in 2016, with cooperation from research laboratories and related divisions using the strengths of our matrix management.

By 2019, we were able to recycle 615 tons of waste into approximately 39,520 plastic pallets.

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## Assessment of environmental impact on society

In 2019, we continued our work with Norihiro Itsubo, Professor of Faculty of Environmental Studies, Tokyo City University, and used the LIME3 method to conduct an environmental assessment of the use of refill packaging common in Japanese society. Results of the assessment indicated that societies that use refill packaging have a lower environmental impact than societies that recycle original plastic packaging.

## Spreading internal awareness of zero waste

### Global RC Meeting

As a part of our responsible care measures, RC managers of subsidiaries with plants hold an annual meeting in Japan. The aims are to invigorate RC activities and raise their level including reducing waste produced by subsidiaries.

### RC Environment Committee of the SCM Division

The RC Environment Committee of the SCM Division meets twice annually to gain an understanding of conditions at each plant and share information on best practices with the objectives of curtailing the production of waste from plants and promoting recycling.

### A packaging review meeting

To promote activities and understanding internally, Packaging Technology Research holds packaging review meetings when new and improved products

are launched. Members from the relevant divisions, including business units, the SCM Division and the Consumer Communication Center, evaluate the environmental performance of the packaging. In 2019, we held packaging review meetings 48 times in Japan and 8 times elsewhere in Asia.



A packaging review meeting

## Collaboration with stakeholders based on “eco together”

### “eco together” with consumers/customers

Kao introduces its initiatives in packaging at EcoPro exhibition, at the Kao Eco-Lab Museum and elsewhere, to help consumers opt to use more product refills and replacements, in order to greatly reduce plastic consumption.

### “eco together” with business partners

Recognizing that it is essential to collaborate with manufacturers producing materials, recycled plastics and packaging when developing and launching new packaging, we work together with a wide range of business partners.

### “eco together” with society

#### Clean Ocean Material Alliance

We are participating in the Clean Ocean Material Alliance, which was established to encourage global initiatives for solving the ocean plastic pollution problem. The Kao Corporation President and CEO is chairman of the alliance, and Kao is taking a leading role among Japanese businesses.



→ Clean Ocean Material Alliance  
[cloma.net/english/](http://cloma.net/english/)

#### Formulate policies to address the problem of plastic waste as a member of Japan TCGF

We participate in the Japan TCGF, in which companies in consumer good distribution industries play a central role, to solve common issues in non-competitive fields in Japan. The Japan TCGF has taken up the issues of plastic waste and will address it, and we participated in the formulation of policies that will serve as the foundations for future measures.



→ Formulation of policies on the problem of plastic waste (Japanese)  
[www.kao.com/jp/corporate/news/2019/20190605-002/](http://www.kao.com/jp/corporate/news/2019/20190605-002/)



## Containers and Packaging Diet Campaign sponsored by a group of nine prefectures and cities in Japan

We proactively participate in activities organized by the central and local governments, where we provide information about Kao technologies and exchange opinions with other participants. We participated in the Containers and Packaging Diet Campaign sponsored by a group of nine prefectures and cities in Japan for the 10th year running, ever since the program began. This campaign addresses consumers to promote reducing the amount of packaging waste discharged by households.

## Package collection measures

Together with outside organizations, we are involved in recovering packaging, etc. discharged into the natural environment. We also independently conduct clean-up activities for river and ocean waste and in the community.

## Introducing cases at seminars and lectures on waste

In Japan, there have been reported that many incidents occur at waste treatment companies, which are caused by not providing sufficient information on the chemical substances to the contractor when contracting the waste treatment.

Therefore, we present cases at various seminars regarding waste with the aims of spreading our knowledge about past successful cases of improving communication with waste treatment companies, and identifying points of improvement in how we communicate information.

Thanks to these activities, there were again no incidents involving waste contracted for disposal from us in 2019.

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## Message from External Expert

### My Expectations for Kao's Ambitious Targets for "Zero Waste"



**Masanobu Ishikawa**

Professor Emeritus, Kobe University  
President, NPO Gomi-Japan

#### Main Points of Kao's Zero Waste Measures

1. High-level commitment as a maker
2. Product system reductions going beyond simple weight reduction
3. Step-up from high reduction achievements
4. Tackling the challenges of material recycling of laminate films
5. Collaboration with diverse parties including citizens, governments and NPOs

#### Future Issues for the Audit & Supervisory Board

1. Securing economic feasibility to ensure sustainability of the entire system
  - 1.1. Developing demand for recycled materials
  - 1.2. Reducing cost of recycling
2. Active involvement by various actors and designing incentives to make this possible
  - 2.1 Increasing efficiency of collection from consumers
3. Establishing voluntary industry standards for target packaging

Upon reading Kao's Kirei Lifestyle Plan 2020, its ESG Strategy, I was impressed with how far Japanese companies have progressed. Until now, Japanese companies have earnestly attempted to solve problems by using an "actions speak louder than words" type approach, but few have externally announced their objectives in advance.

Addressing pollution originating from plants and other sites is an internal technical issue with the cost of countermeasures borne by companies. Although companies made their best efforts to achieve the objectives demanded by society, control measures were internalized and closed to those outside a company. When dealing with an issues that involves numerous diverse parties such as the creation of a sustainable society, measures cannot be limited to within one company.

The more parties involved in the measures to address a problem, the more difficult it is to coordinate among them, but there is no other path to solving such problems. To solve such problems, it is necessary that someone stand up and take the initiative. Leading companies are most suited to playing this role. Kao's "Our Philosophy & Action on Plastic Packaging" should be praised for stating that no plastic should be released into the natural environment and plastic including that which has already been released should be collected and recycled.

I think it wonderful that the measures to achieve this lofty ideal are not temporary, and Kao seeks to create a system where all stakeholders can carry out sustainable measures with minimal burden on their day-to-day activities.

Among the measures for achieving zero waste are the RecyCreation activities. This program seeks to collect used refill packs for soap, shampoo and other products to conduct material recycling. However, refill packs are made of composite films that use multiple kinds of plastics, and the frequency and volume of waste generation are low.

The value of mixtures of different types of plastic

recovered from the market is considerably reduced, as the material ratios are not stable and the physical properties are inferior to a single material. In addition, since the volumes generated are low, it is difficult to collect refill packs as source separated items under the current collection system. It is also quite difficult to separate refill packs from other types of plastic packaging after collection. Because of these issues, material recycling of refill packs is an extremely difficult challenge and has not been undertaken in the past.

Nonetheless, if a goal is set to not to release plastic into the natural environment and to recover and recycle plastics, a path will emerge from the perspective of considering how this can be achieved.

Refill packs have a relatively similar material composition, including the products of other companies; therefore, if it is possible to collect only refill packs, then material ratios will be quite stable. Since refill packs are lightweight and are generated at low frequency, the burden on consumers from bringing them to collection sites is small, making them suitable for collection sites.

Kao has collaborated with civic organizations including NPOs and the Girl Scouts as well as local governments to implement various types of collection systems with some success. The next step is to analyze the performance of each collection method and expanding them with a view to implementing methods that have not yet been tried for nationwide roll-out.

Development of uses for recovered materials is another major issue. This too is a difficult task but using such materials in Kao's products can be an effective path. These issues are challenging, but Kao has grown with technology at the core of its corporate personality and can be expected to solve them. I hope that the development and design team for packaging would involve various external parties to create a team to systematize and expand collection to achieve major goals through close cooperation.