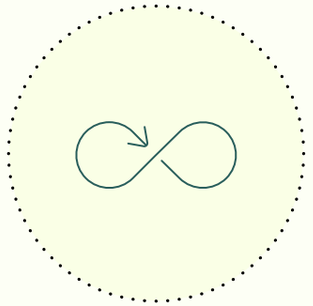
Zero Waste

GRI 306-1, 306-2

In line with one of the basic policies of the Mid-term Plan K27, “Become an essential company in a sustainable world,” we are aiming to achieve zero waste by reducing the amount of plastic used and recycling plastic by 2040, and to build a resource-circulating society.



Risks

- Increased costs due to stricter regulations on plastic packaging containers and industrial waste, or due to the rising price of recycled plastic
- Decline in competitiveness due to the stagnation of technology development related to packaging container recycling and waste reduction
- Decline in reputation and corporate value if insufficient action is taken in response to plastic and waste materials

Opportunities

- Cost reduction by reducing the amount of plastic used and the amount of waste generated
- Greater competitiveness and increase in sales by providing products made from reduced plastic and recycled plastic
- Increase in sales due to consumers being aware of recycling initiatives such as the collection of resources from the community and recyclable designs
- Increase in revenue from a licensing business that utilizes plastic reduction and recycling technology

Strategy

Overall	(1) Promoting innovative initiatives for zero waste in 2040 and negative waste in 2050
Overall	(2) Reducing waste and promoting resource recycling throughout the product lifecycle
Products	(3) Promoting the reduction of product and food waste
Packaging	(4) Promotion of the 4Rs (Reduce, Reuse, Replace, Recycle) with regard to packaging
Sites	(5) Promoting waste reduction at sites
Awareness-raising	(6) Deployment of awareness-raising activities for stakeholders
External collaboration	(7) Contribution to a resource-circulating society through external collaboration

Metrics, targets and results

Metrics	Targets	2024 results
% reduction of discarded products and discarded promotional materials (3)	95% in 2030	35%
% of waste generated at Kao’s sites* that is not recycled (3) * Beginning with production sites	Zero in 2030 (Less than 1%)	4.6%
Quantity of fossil-based plastic in packaging (4)	Peak out in 2030	79 thousand tons
Annual quantity of innovative packaging used (Kao + external companies) (4)	300 million in 2030	100 million items
Recycling rate of plastics involving Kao (4)	50% in 2030	8%
% of recycled plastic used in PET containers (Japan) (4)	100% in 2025	90%

Initiatives

- Increase users of recycled plastic (1)
- Expansion of sales of positive recycled products (1)
- Increased amount of plastic collected and used by society (1)
- Reducing plastic consumption (1)
- Promotion of reduce innovation and recycle innovation (technology development) (2)
- Initiatives for improving the return rate (3)
- Reduction of waste generation (5)
- Promotion of recycling of generated waste (5)
- Awareness-raising through products (Popularization of refillable containers such as *eco-peko bottles* and refilling at stores) (6)
- Awareness raising activities at the Kao Eco-Lab Museum (6)
- RecyCreation activities (7)
- Trial for a resource circulating model aimed at horizontal material recycling (7)
- Recycling of marine plastic (7)
- Participation in external organizations related to plastic issues organized by the government or NGOs (7)

Financial impact

- Environmental conservation costs: Costs related to waste and recycling measures: 11.551 billion yen
- Reduction in the burden of complying with plastic regulations
- Reduction in waste disposal costs through waste recycling at sites
- Increased sales due to increased demand for environmentally friendly products (resourcesaving and resource-circulating products)
- Strengthening of customer loyalty through increased recognition as a sustainable brand

Environmental and social impact

- Efficient use of resources and realization of a circular economy through the promotion of recycling
- Increase in employment opportunities through the creation of recycling businesses in local communities
- Eliminating the negative impact of waste, such as marine plastics, on ecosystems

* The numbers at the end of the metrics, targets, and initiatives indicate the strategy identifiers.

Strategy

To reduce risks and create opportunities for zero waste, we are implementing strategies that are unique to Kao, are effective, and contribute to business growth and solving social issues.

Social issues

For Kao to remain a sustainable and competitive entity, it is essential to have an accurate understanding of social issues. This will not only mitigate business risks for Kao, but will also be an important starting point for identifying new business opportunities that will drive growth. Kao recognizes the following social issues related to this theme.

- Transition to a resource-circulating society
- Marine litter problems caused by the release of plastic into the natural world

Risks and opportunities

Kao is facing various risks in this business environment that includes these social issues, but it is also identifying new business opportunities. Identifying risks and opportunities is an important process in formulating corporate strategies and measures. The main risks and opportunities identified by Kao in this theme are as follows.

Risks

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Strategy

Kao has formulated the following strategies to address the identified risks and opportunities. In particular, the reduction of plastic packaging is an important initiative, and these strategies will have a significant impact on the “Build *Global Sharp Top businesses*” and “Build businesses through co-creation with partners” sections of the K27 Mid-term Plan. We will work to build a resource-circulating society through innovative technology development and collaboration with stakeholders.

(1) Promoting innovative initiatives for zero waste in 2040 and negative waste in 2050

By 2040, we will achieve zero waste by recycling used plastic to virtually eliminate the use of plastic packaging, and by 2050, we will realize negative waste by recycling more plastic packaging than is used. We aim to achieve zero waste through the cultivation of technology by the Matrix Research System and the Packaging Technology Research, and through collaboration with stakeholders.

Related initiative: P134 Development of asphalt modifier using waste PET materials

(2) Reducing waste and promoting resource recycling throughout the product lifecycle

We aim to reduce waste from the product design and development stages, and promote the construction of a resource-circulating system. In addition to reducing the size of main containers and promoting the sale of refillable packaging, we are focusing on designing containers that can be recycled and establishing technology for reusing containers collected from the public.

Related initiatives: P135 Initiatives for recycling oackaging, P136 Initiatives adopted at our business sites

(3) Promoting the reduction of product and food waste

(3)-1. Reducing discarded products

We intend to reduce returns by strengthening initiatives such as improving the accuracy of demand forecasts and extending the shelf life of products. In addition, we promote the reduction of waste through sales methods that utilize our own platform, My Kao.

(3)-2. Reducing food waste

We monitor the generated food waste that is treated through wastewater treatment or incineration and cannot be effectively used for other purposes.

Since food waste is generated when products close to their use-by dates are returned, we work with our suppliers to extend use-by dates and review return policies. Some returned products can be utilized effectively in methane fermentation and composting. Through activities such as these, we take steps to reduce food waste.

Related initiative: P136 Initiatives adopted at our business sites

(4) Promotion of the 4Rs (Reduce, Reuse, Replace, Recycle) with regard to packaging

In the field of packaging, we work on technological development from the perspective of the 4Rs: Reduce, Replace, Reuse, and Recycle, with the aim of developing products with less environmental impact.

In “Reduce,” we are minimizing plastic usage by decreasing bottle thickness and weight while maintaining usability and durability through innovative packaging design.

In “Reuse,” we are actively promoting refillable and reusable products so that containers, including bottles and pumps, can be used repeatedly.

In “Replace,” we are transitioning from fossil-based plastics to more sustainable raw materials, such as low-carbon, renewable plant-derived alternatives, while overcoming technological challenges.

In “Recycle,” we are actively incorporating recycled resins into plastic packaging. We have developed recycling technology for multi-layered refill packs composed of diverse materials, contributing to our goal of realizing a resource-recycling society for plastic packaging.

Related initiative: P135 Initiatives for recycling oackaging

(5) Promoting waste reduction at sites

We further strengthen waste reduction at each base, building on the TCR activities we have been working on for many years.

Related initiative: P136 Initiatives adopted at our business sites

(6) Development of awareness-raising activities for stakeholders

By sharing information and carrying out awareness-raising activities through our products, we aim to realize a resource-circulating society by encouraging changes in the awareness of consumers and the behavior of stakeholders.

Related initiative: P137 Collaboration with stakeholders based on “eco together”

(7) Contributing to a resource-circulating society through external collaboration

We promote RecyCreation activities that involve local governments, recyclers, competitors, and consumers. We aim to bring about change throughout society by collaborating with diverse stakeholders.

Related initiative: P137 Collaboration with stakeholders based on “eco together”

Impact generated by implementing the strategies

We believe that the aforementioned strategies will have the following financial, environmental, and social impacts.

Financial impact

- Reduction in the burden of complying with plastic regulations
- Reduction in waste disposal costs through waste recycling at sites
- Increased sales due to increased demand for environmentally friendly products (resource-saving and resource-circulating products)
- Strengthening of customer loyalty through increased recognition as a sustainable brand

Environmental and social impact

- Efficient use of resources and realization of a circular economy through the promotion of recycling
- Increase in employment opportunities through the creation of recycling businesses in local communities
- Eliminating the negative impact of waste, such as marine plastics, on ecosystems

Strategic resilience

Kao has high resilience to risks thanks to comprehensive measures aimed at reducing waste and building a resource-circulating society. By setting innovative targets such as waste reduction, zero waste, and negative waste, and taking specific measures for waste from our sites and products, we are building a system that can flexibly respond to stricter regulations and market changes. In addition, through awareness-raising activities and external collaboration, we are driving change throughout society and securing the foundations for achieving sustainable growth.

Metrics and targets

To improve the effectiveness of our strategies, we have established performance metrics related to risks and opportunities, and we regularly monitor our progress. We have set targets for the metrics related to particularly important risks and opportunities, and we are steadily promoting initiatives by utilizing the PDCA cycle to check the status of achievement of these targets.

Targets and progress

Strategy	Metrics	Results					Mid- to long-term targets	
		2020	2021	2022	2023	2024	Target value	Year
(1) (2) (4)	Quantity of fossil-based plastic in packaging	–	91 thousand tons	88 thousand tons	79 thousand tons*1	79 thousand tons	Will peak and begin to decline	2030
(1) (2) (4)	Annual quantity of innovative packaging used (Kao + external companies)	7 million items	11 million items	13 million items	46million items*2 (14million items)*3	100 million items	300 million items	2030
(1) (2) (4) (6) (7)	Recycling rate of plastics involving Kao	–	1%	3%	6%	8%	50%	2030
(4)	% of recycled plastic used in PET containers	–	19%	69%	81%	90%	100%	2025
(5)	% of waste generated at Kao's sites*4 that is not recycled	–	9.1%	4.2%	4.3%	4.6%	0 (Less than 1%)	2030
(3)	% reduction of discarded products and discarded promotional materials (Base year: 2020)	–	14%	20%	43%	35%	95%	2030

*1 Corrected results (Recounted due to some omissions)
*2 Corrected results (Reviewed aggregate targets and added retroactively)
*3 Value based on former definition
*4 Beginning with production sites

Since our commitment to environmental load reduction and resource recycling extends beyond film containers to include innovations like the eco peco bottle, we've broadened our measurement approach. Accordingly, we've changed our targets from "Quantity of innovative film-based packaging penetration for Kao and others per annum" to "Quantity of innovative packaging penetration for Kao and others per annum". With this expanded scope, we're pleased to report that our annual distribution of innovative containers has now reached 100 million units.

Metrics and results

Strategy	Metrics	Results		
		2022	2023	2024
(1) (2) (3) (4)	Quantity of plastic used for packaging	91 thousand tons	85 thousand tons	86 thousand tons
(1) (2) (3) (4)	Quantity of recycled plastic used	2.6 thousand tons	5.2 thousand tons	6.4 thousand tons
(1) (2) (3) (4)	The amount of waste generated at sites*5 ☑	213 thousand tons	194 thousand tons	194 thousand tons
(5)	The amount of recycled waste and other materials*5 ☑	195 thousand tons	176 thousand tons	178 thousand tons
(5)	Recycling rate of waste and other materials	91%	91%	92%
(3)	Amount of food waste generated*6 ☑	706 tons	714 tons	1,642 tons*8
(3)	Amount of food waste utilized effectively*6 *7 ☑	8 tons	1 ton	4 tons*8
(3)	In-house disposal of food waste*6 ☑	698 tons	712 tons	1,638 tons*8

*5 Boundary: All production sites of the Kao Group, non-production sites in Japan, and selected non-production sites overseas
*6 Boundary: Kao's food businesses
*7 Contracted disposal: Contracted disposal includes methane fermentation or Composting, and also effective utilization of packaging (such as cans or cartons)
*8 The disposal volume of residual inventory and related items significantly increased due to the transfer of *Healthya*, a functional tea-catechin beverage brand on August 1, 2024.

Governance

Under the supervision of the Board of Directors, risk management in relation to zero waste issues is carried out by the Internal Control Committee and opportunity management is carried out by the ESG Managing Committee. These committees are both headed by the President & CEO.

Furthermore, the Plastic Packaging Steering Committee, which is headed by the executive officer, discusses issues such as the guidelines for environmentally conscious design of plastic containers and packaging and the progress of the 2030 targets, and promotes their steady and swift implementation. This committee meets eight times a year.

We have created an e-learning program containing the knowledge needed to implement the Kirei Lifestyle Plan in both English and Japanese, and we deliver zero-waste-themed content to employees both within and outside Japan.

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Responsible Care (RC) activities
https://www.kao.com/content/dam/sites/kao/www-kao-com/global/en/sustainability/pdf/our_foudations2025-e-02.pdf

Risk and opportunity management

Policies

In implementing its Zero Waste, Kao has established the following policies as guidelines for its daily operations and decision-making. For details, please see the website.

- Basic Principle and Basic Policies on Environment and Safety
  https://www.kao.com/global/en/sustainability/klp/policy/environment-safety-policy/
- Kao Group Responsible Care Policy
  https://www.kao.com/global/en/sustainability/klp/policy/responsible-care-policy/
- kao Environmental Statement
  https://www.kao.com/global/en/sustainability/klp/policy/environmental-statement/
- Our Philosophy & Action on Plastic Packaging
  https://www.kao.com/global/en/sustainability/planet/zero-waste/eco-friendly-products-plastic-packaging/

Management process

The status of our initiatives to address the risks and opportunities associated with zero waste is managed through the following processes: planning, implementation, evaluation of results, and corrective action, and we are working to make steady improvements.

<Zero-Waste Management Process: Plastic Packaging>

P (Planning)

Design of activities for the following year (Nov-Dec) and approval of targets (Feb)

D (Implementation)

Improvement and promotion activities (Feb)

C (Evaluation of results)

Reporting them at the Steering Committee (Apr)

A (Corrective action)

Reflection and identification of areas for improvement (Oct)

<Zero-Waste Management Process: Sites>

P (Planning)

Design of activities for the following year (Nov-Dec) and approval of targets (Feb)

D (Implementation)

Improvement and promotion activities (Feb)

C (Evaluation of results)

Reporting them in the Sustainability Report (Jun)

A (Corrective action)

Reflection and identification of areas for improvement (Oct)

Initiatives

Kao is engaged in a variety of initiatives to achieve zero waste. These initiatives are based on the aforementioned strategies and are being promoted together to achieve our targets. Here, we will introduce some of the important initiatives from among the many we are engaged in.

Strategy		Initiatives			
Overall	(1) Promoting innovative initiatives for zero waste in 2040 and negative waste in 2050	Increase users of recycled plastic	Expansion of sales of positive recycled products	Increased amount of plastic collected and used by society	Reducing plastic consumption
	(2) Reducing waste and promoting resource recycling throughout the product lifecycle	Promotion of reduce innovation and recycle innovation (technology development)			
Products	(3) Promoting the reduction of product and food waste	Initiatives for improving the return rate			
Packaging	(4) Promotion of the 4Rs (Reduce, Reuse, Replace, Recycle) with regard to packaging	Promotion of reduce innovation	Expansion of refill and replacement products	Shift to Paper and Plant-based plastics	Promotion of recycle innovation
Sites	(5) Promoting waste reduction at sites	Reduction of waste generation	Promotion of recycling of generated waste		
Awareness-raising	(6) Developing awareness-raising activities for stakeholders	Awareness-raising through products (Popularization of refillable containers such as eco-peko bottles and refilling at stores)	Awareness-raising activities at the Kao Eco-Lab Museum		
External collaboration	(7) Contributing to a resource-circulating society through external collaboration	RecyCreation activities	Trial for a resource-circulating model aimed at horizontal material recycling	Recycling of marine plastic	Participation in external organizations related to plastic issues organized by the government or NGOs

Development of asphalt modifier using waste PET materials

Region: Global
Corresponding strategy: (2)

With the aim of achieving plastic packaging net zero waste by 2040, we are pursuing initiatives to recycle plastic waste discharged into society as Kao products and services. We are converting discarded PET materials into valuable resources and developing them as an asphalt modifier called *NEWTLAC 5000*. Using our proprietary technology, we can convert discarded PET materials into a modifier that can increase the durability of asphalt pavement by up to five times.

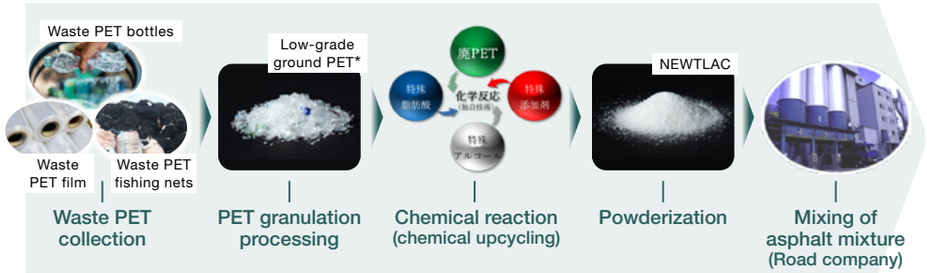
Asphalt pavement, which accounts for over 90% of roads in Japan, can develop ruts in areas with heavy traffic, and the replacement work to repair these ruts also generates CO_2 emissions and traffic congestion. However, by making asphalt pavement more durable, it is possible to reduce damage to the road surface and limit the CO_2 emissions associated with the repair work. To date, we have achieved results of over 400,000 m^2 in factory premises, parking lots, and public roads.

In addition, we are collaborating with Iwata City to recycle PET bottles and use them to manufacture this product, and we are contributing to environmental education and local communities by paving the courtyards of elementary schools. In 2023, we carried out regional collaboration projects such as the construction of prefectural roads using used PET fishing nets in Miyagi Prefecture and the paving of bus rotaries using marine plastic waste in Wakayama City. We are also working on the sale of products for cold regions and expansion outside Japan.

In the future, as we move towards a society where cars drive themselves, it will be important to make pavements more durable, and we are currently working with local governments and research institutions to carry out demonstration experiments to reduce waste plastic. Kao received the 2024 Awards for Resource-Recycling Technologies and Systems from the Minister of Economy, Trade and Industry for its efforts in this area.

Kao will continue to work with consumers, recyclers, road companies, local governments, and businesses to promote green pavement.

Manufacturing process for *NEWTLAC* eco-friendly asphalt modifier



* Low-grade materials that are difficult to recycle horizontally from bottle to bottle

Initiatives for recycling packaging

Region: Japan

Corresponding strategies: (1) (2) (3) (4)

RecyCreation activities aimed at creating a new resource cycle

Kao proposes the concept of RecyCreation—the creation of new value by adding technology and the wisdom and ideas of various people to used products—and is working towards building a recycling-oriented society. In this activity, we collaborate with local governments and NPOs such as Kitami City, Onagawa Town, Ishinomaki City, Kamakura City, and Kamikatsu Town to collect used packaging. In addition, we are carrying out in-store collection in collaboration with companies such as Lion Corporation, Ito-Yokado Co., Ltd., WELCIA YAKKYOKU CO., LTD., and HAMAKYOREX CO., LTD., and promoting collection from employees within Kao Corporation. Furthermore, we have also been participating in the Kobe Plastic Next: Joining Forces to Recycle Refill Packs*1 project since 2021. The total amount of refill packs collected through these initiatives in 2024 (January to December) reached Approx. 11 tons.

The “RecyCreation” Initiative
https://www.kao.com/global/en/sustainability/nature/environment/waste-disposal/recycreation/

Commencement of the verification process for a resource-circulating model project

Kao has been participating in the Kobe Plastic Next: Joining Forces to Recycle Refill Packs*2 project since October 2021. This project collects used refill packs for detergents, shampoos, etc., from citizens using collection boxes installed at 75 retail stores in Kobe City. The packs are collected in cooperation with the return delivery of retail stores and existing waste collection companies, which also reduces the environmental burden by increasing transportation efficiency. The collected refill packs are recycled by recyclers and manufacturers into useful products for everyday life, and we are also aiming for horizontal recycling to reuse the film packing. We will continue to work with a diverse range of stakeholders and expand our activities from Kobe to the whole country.

*1,2 Kobe Plastic Next: Joining Forces to Recycle Refill Packs: A project in which Kobe City, retailers, daily goods manufacturers, and recyclers work together to promote resource recycling.

Challenge to recycle marine plastic waste

It is said that about 65% (by number) of the waste that washes up on Japanese shores is plastic. Kao is not only working to reduce the amount of plastic it uses, but is also actively working to make effective use of marine plastic waste. In collaboration with Wakayama City, Kao has been collecting marine plastic waste on Tomogashima Island, where the problem of large amounts of washed-up trash has become a serious issue, and has been developing products that reuse it using its own technology. One such product is an asphalt modifier made from waste plastic (PET). In December 2023, paving work using this product was carried out at the bus terminal in front of Wakayama City Station.

Development of film packing recycling technology

Refill packs use significantly less plastic than the main containers, but because they are made up of multiple layers of composite materials, they become heterogeneous plastic made up of many different components when recycled, so it is currently difficult to recycle them as film packing again. Kao introduced a pilot plant for recycling film packing at Wakayama Research Laboratories in June 2021, and is currently developing and verifying recycling technologies for film packing. Furthermore, we focus on effective

sorting and collection processes for consumers and recyclable packing design, in order to improve the recycling rate and achieve horizontal recycling. As a result, we have commercialized refill packs that use some recycled materials in collaboration with Lion Corporation, and have released them in limited quantities at some stores*.

* Kao and Lion products at certain Ito-Yokado stores and Welcia Yakkyoku stores; Kao products only at certain AEON stores.

Initiatives adopted at our business sites

Region: Global

Corresponding strategies: (1) (2) (3) (4)

Reducing the amount of waste produced

Kao handles many liquid products and sludge is generated as a result of treating concentrated wastewater generated during tank cleaning when switching products. Kao is working on various initiatives at its sites within and outside Japan to reduce this.

Kao Industrial (Thailand) has introduced a system in which wastewater is treated in individual treatment facilities according to the concentration of COD in the wastewater, and this has greatly reduced the amount of sludge generated at the wastewater treatment plant. In addition, Fatty Chemical (Malaysia) has introduced sludge dewatering equipment, which has enabled it to reduce the amount of waste it generates. We are also working to reduce the amount of waste generated by retailers. With the understanding and cooperation of retailers, we are working to reduce the amount of boxes used to deliver products and reduce waste throughout the supply chain.

Enhancing waste recycling

Kao is promoting an initiative to recycle the waste generated in the manufacturing process of diapers and sanitary products into plastic pallets. This initiative has been implemented since 2016 at Kao plants and was made possible by the cooperation of related divisions, including research laboratories, and by leveraging the strengths of Kao's matrix management organization.

Reducing the amount of food waste generated

Kao defines food waste as that generated by returns from business partners due to factors such as damaged containers or expired best-before dates and manages and measures such waste by product category. Of the food waste generated, we define the amount that is effectively utilized through conversion to animal feed or composting, and the amount that is processed and disposed of through wastewater treatment, incineration, etc., as in-house treatment. In 2023, the Kao Group disposed of 1,642 tons of food waste, of which 4 tons were put to good use through methane fermentation and composting*1.

In order to reduce the amount of food waste to be treated in-house, we are developing products with longer use-by dates and minimizing the amount of time products are held in storage during distribution. We are also working with our business partners to review the rules for returning products with approaching use-by dates.

*1 In addition to the methane fermentation and composting of food, this includes the effective use of outer packaging (such as cans and cartons).

Reduction of waste plastic products

Kao is committed to reducing the amount of waste plastic discharged. In 2024, the only Kao Group company in Japan to discharge 250 tons or more of waste plastic (including in-house treatment, excluding valuable resources) was Kao Corporation, and the total amount of waste discharged was 5,208 tons, achieving the target of less than the previous year's amount (6,176 tons). The total amount of waste discharged of the Kao Group in Japan was 5,706 tons, less than the previous year's amount (6,728 tons).

Collaboration with stakeholders based on “eco together”

Region: Global

Corresponding strategies: (1) (2) (3) (4)

“eco together” with consumers/customers

Kao is conducting awareness-raising activities to promote refillable and replaceable products that can significantly reduce plastic use through the Kao Eco-Lab Museum, which shares information on the global environment and Kao’s eco-technologies, and an exhibition of environmentally friendly products and services, so that more consumers can adopt environmentally friendly consumption behavior.

“eco together” with business partners

We recognize that collaborating with material manufacturers, recycled resin manufacturers, and packaging manufacturers is essential for the development and market launch of packaging, and we are promoting extensive joint development.

“eco together” with society

Kao is participating in the Clean Ocean Material Alliance, which aims to solve the problem of marine plastic waste on a global scale. A special advisor to Kao Corporation serves as chairperson, leading the activities of Japanese companies to solve the problem of marine plastic waste.

Participation in the Japan Partnership for Circular Economy (J4CE)

Kao is participating in the Japan Partnership for Circular Economy, which was established with the aim of strengthening public-private partnerships to promote further understanding and action on circular economy among a wide range of stakeholders, including domestic companies, as the global trend towards creating a circular economy accelerates. We provided case studies and our representatives were included in the panelists for a panel discussion held to accompany the official ceremony that marked the publication of a collection of the case studies and the launch of the related website.

Participation in Circular Partners (CPs)

Kao is participating in Circular Partners, a partnership established by the Ministry of Economy, Trade and Industry that brings together industry, government, and academia to work ambitiously at the forefront to achieve a circular economy, and to consider policies. In addition to participating in discussions on policies by experts and examining visions and roadmaps, we are also sharing knowledge on asphalt modifiers made from waste plastic as part of efforts to strengthen collaboration.

Package collection measures

Together with external organizations, Kao is involved in recovering packaging and other waste that have been discharged into the natural environment. In October 2020, Kao concluded a cooperation agreement with Wakayama City and conducted surveys and collected marine plastic waste at Tomogashima, Kataonami, and Hamanomiya beaches. The plastic collected is being researched with the aim of reusing it as desks, chairs, etc., used at seaside facilities and high-strength materials for roads. Kao is also independently carrying out its own collection activities for marine litter, river litter, and litter in cities.

Introducing cases at seminars on waste

In Japan, many incidents have been reported at waste treatment companies, which are caused by not providing sufficient information on the chemical substances to the contractor when contracting waste treatment. Therefore, we present cases at various seminars regarding waste with the aim of spreading our knowledge about past successful cases of improving communication with waste treatment companies, and work to raise awareness throughout society while identifying areas for improvement at Kao itself. Thanks to these activities, we continue to have no incidents involving waste contracted for disposal in 2024.

Employees' opinions

Cosmetics plastic packaging: Initiatives for achieving horizontal recycling

Yukio Otsuka
Director, Prestige Brand Business, Cosmetics Business, Global Consumer Care

I believe that cosmetics have the power to lift people's spirits and make them smile. With the aim of contributing to the sustainable development of the cosmetics industry by making cosmetics that are even more environmentally friendly while enhancing their appeal, we are working with stakeholders both inside and outside the company to achieve horizontal recycling.

The design of packaging is one of the appeals of cosmetics, but until now it has been difficult to recycle packaging that have been colored or decorated. We have been working with JEPLAN INC. to make this a reality by utilizing their unique chemical recycling technology, which excels in terms of removing foreign matter and dirt.

As a demonstration experiment, we collected used packaging from customers, used the recycled materials to make new packaging, and then provided it back to the customers, thus creating a horizontal recycling loop.

However, this is still at the stage of a demonstration experiment, so we will work with various stakeholders to establish an infrastructure, such as a collection scheme for used packaging, with the aim of establishing a sustainable social implementation model, and we will work towards the social acceptance of horizontal recycling for cosmetic plastic packaging.

Stakeholder engagement

Challenge toward Zero Waste and expectations for the future

Masanobu Ishikawa
Vice President / Dean of the Department of Social System Design / Specially Appointed Professor
Eikei University of Hiroshima

Kao's activities in FY2024 are steadily advancing toward its ambitious environmental goals: carbon zero and zero waste by FY2040, and carbon negative and waste negative by FY2050. The Company is achieving meaningful progress through a variety of initiatives.

Key points of activity

1. Realization of refill pouch horizontal recycled products and deepening of initiatives
2. Practical interface design between co-creation and competitive domains
3. Expansion of collection hubs at retail stores and similar locations
4. Deployment of various collection models and exploration of collection models tailored to products and regions
5. Development of material and chemical recycling aligned with product types and applications

As of October 1, 2024, Kao's horizontal recycling initiatives for used refill pouches of daily necessities, which was launched in Kobe and other locations, has made solid progress. A jointly developed product with AEON RETAIL, *Attack ZERO Green Life*, has been released, incorporating recycled refill pouch material with some of the refill pouches. This is believed to be the world's first widely distributed consumer product using horizontally recycled refill pouch materials, marking a groundbreaking achievement in the transition to a circular economy.

In the Kobe-based collaborative collection initiative, Kao is working with industry peers, including direct competitors in the product market, to collect used refill pouches and convert them into recycled materials that each company uses in their products. This model requires seamless integration between the co-creation stage (collection and recycling) and the competitive domain (product commercialization), which has been carefully designed in compliance with the Act on Prohibition of Private Monopolization and Maintenance of Fair Trade. This experience offers valuable insights that can serve as a reference for many other horizontal recycling projects.

The refill pouch collection program in Kobe involves many collection sites. As such, hypotheses have been developed and tested through comparative experiments to increase collection volume. These efforts have already begun to yield positive results.

In addition, Kao is steadily advancing pilot projects targeting items such as daily-use bottles and cosmetic containers. These projects explore recovery methods suited to specific products, employ material or chemical recycling as appropriate, and aim to manufacture and sell horizontally recycled products. The Company is working toward the social implementation of sophisticated resource circulation systems that align with the unique properties of each product category.

While Kao continues to collect and reuse post-consumer products, such as daily necessities and cosmetics, within its own business scope, a common challenge remains reducing the costs associated with identifying and aggregating target products immediately after disposal. Even with consumer-driven sorting and hub-based collection, or the pickup of target items from municipally separated plastic waste streams (whether packaging or product), low disposal volumes in the daily-use and cosmetic sectors limit efficiency. One promising solution is integrating post-consumer packaging and products from other industries into the same processing systems. This approach shifts from relying solely on economies of scale to leveraging economies of scope—a vital and highly anticipated expansion for the future.