Containers and Packaging

We will create together

A society that circulates containers and packaging in a sustainable way

- Develop and disseminate sustainable containers and packaging
- Build a resource-recycling system to make containers and packaging sustainable

Basic Thinking

While containers and packaging are essential to protect the quality of products for delivery to our customers, it is also true that used containers and packaging account for a high percentage of household waste. To address this issue, the entire industry has promoted 3R (reduce, re-use, recycle) and achieved a high recycling rate. However, it cannot be said that all materials are recycled and we need to also consider the sustainability of containers and packaging materials. The Kirin Group continues to reduce the weight of containers and packaging, and is promoting the sustainable use of containers and packaging by increasing the ratio of recycled resin used in PET bottles and adopting FSC-certified paper for containers.

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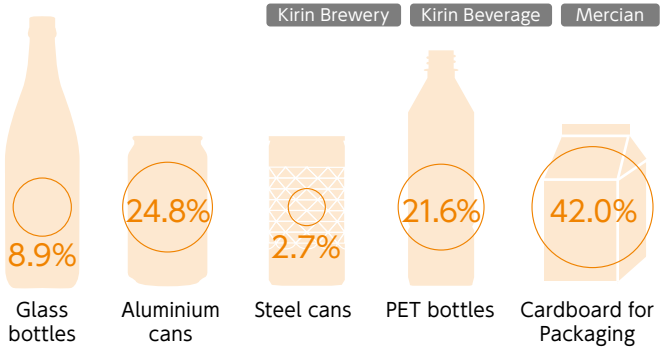
Overview of Approaches

Taking advantage of our strength in maintaining the Institute for Packaging Innovation in-house, the Kirin Group has achieved the lightest packaging in Japan for many types of containers and packaging.Further, we have achieved a high rate of recycling in Japan through the promotion of 3R (reduce, re-use, recycle), with the participation of industry organizations and the community.
In Australia, we are responding to the newly enforced container deposit scheme and we have been appointed as a consortium coordinator for the management and operation of the container deposit scheme in certain states.
To address the challenge of plastic waste, in February 2019, we established the Kirin Group Plastic Policy, and have launched initiatives to meet the target of increasing the percentage of recycled plastics in our PET bottles for the Japan market to 50% by 2027 declared in this policy. We are also promoting the use of FSC-certified paper containers. Kirin Brewery and Kirin Beverage had completed replacing all of their paper containers with FSC-certified paper by the end of 2019. Under our new long-term strategy, Environmental Vision 2050, announced this year, we declared to work toward 100% sustainable containers and packaging that use recycled materials and biomass by 2050.

Material mix of containers and packaging in 2019, by weight

Kirin Brewery | Kirin Beverage | Mercian



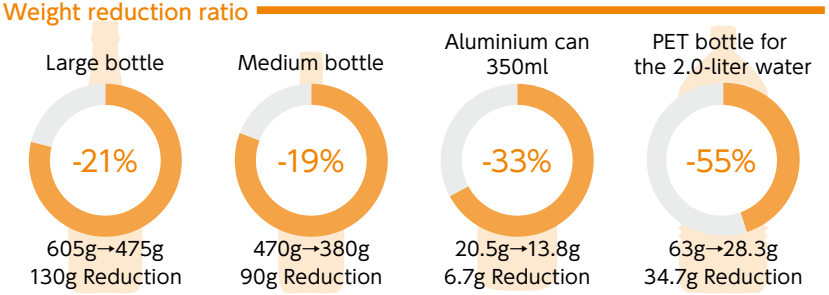
Highlights of Outcomes

Challenges	Progress
Develop and disseminate sustainable containers and packaging	In response to The Kirin Group Plastic Policy, PET bottles made from 100% recycled PET was adopted for 430 ml *Kirin Nama-cha Decaf*, which bears the R100 mark to indicate that it is made from 100% recycled PET material. (We have been using PET bottles made from 100% recycled PET material for some of the packaging of our *Kirin Gogo-no-Kocha Oishii Muto (sugar-free)* since 2014.) For paper containers, we had achieved 100% use of FSC-certified paper for 6-can packs, gift boxes, cardboard cartons for products and drink boxes, and approximately 98% for alcoholic beverage boxes by the end of 2019.We have also been working to reduce the weight of containers by developing and adopting the lightest weight in Japan for our returnable glass beer bottles of all sizes and 2.0-liter PET bottles.
We will build a resource-recycling system to make containers and packaging sustainable	In addition to maintaining the reuse system for returnable beer bottles, we are promoting the recycling of containers and packaging in Japan and maintaining a high recycling rate worldwide by taking initiatives such as various activities through recycling organizations, support for voluntary collection of aluminum cans, adoption of easy-to-sort containers and packaging, and activities to raise consumer awareness. We are also studying ways to achieve our 2027 target for a system to recycle PET bottles. In Australia, we are responding to the newly enforced container deposit scheme and we have been appointed as a consortium coordinator for the management and operation of the container deposit scheme in certain states.

Progress

Rate of FSC-certified Paper

Weight reduction ratio



Percentage of recycled plastic

Develop and disseminate sustainable containers and packaging

The Sustainability of raw materials

Plastic Policy

The convenience of plastic has made it a popular material for many different products, containers, and packaging. With such a vast range of types and applications of plastics, collection and recycling rates vary depending on the type of plastic used, and it could not be said that all plastics are being efficiently circulated. Plastic waste discarded into the environment is finding its way into the oceans, causing global concern about the potential for marine pollution and adverse impacts on ecosystems.

The issue of plastic waste has become one of the major environment-related social issues. Kirin Holdings established the Kirin Group Plastic Policy in February 2019 with the intention of finding a solution to this issue. In the Policy, to further promote resource circulation of PET bottles, we declared a target of increasing the percentage of recycled plastic in PET bottles for the Japan market to 50% by 2027. We also declared that we would consider the introduction of PET bottles made with plastic derived from inedible plant material, with the aim of moving away from petroleum resources.

The Kirin Group will promote the sustainable use and resource circulation of plastics by identifying the essential challenges that plastics pose and swiftly pursuing appropriate actions regarding the plastic containers and packaging that the Group provides.

Plastic Policy→P.88

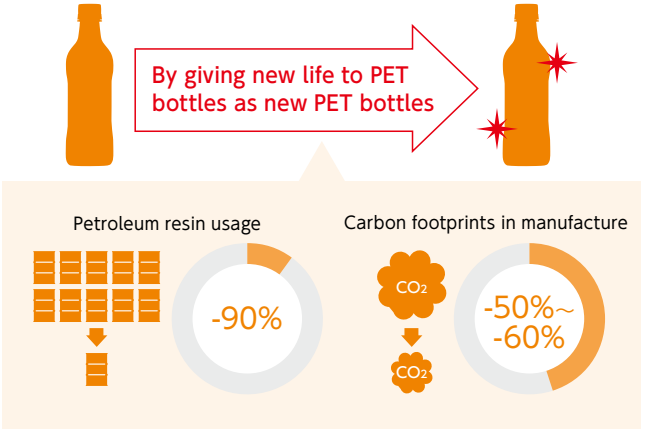
Sustainable use of PET bottles

With the establishment of safe methods for recycling PET plastics, Kirin Beverages is promoting initiatives to use recycled PET materials in its PET bottle production. This method, known as “mechanical recycling,” involves washing the bottles before processing them at high temperatures in a condition close to a vacuum state. This volatilizes and removes the impurities stuck inside the plastic, restoring the molecular weight, which is decreased in the recycling process, to a level suited to bottle formation.

Kirin Beverages began using PET bottles made from 100% recycled PET material for some of the packaging of its *Kirin Gogo-no-Kocha Oishii Muto (sugar-free)* product in February 2014. This bottle uses 90% fewer petroleum resources and achieves a reduction in CO_2 emissions of 50~60% than regular petroleum-derived PET materials.

In mid-June 2019, this bottle was adopted for 430 ml *Kirin Nama-cha Decaf*, which bears the R100 mark to indicate that it is made from 100% recycled PET material.

The R100 bottle used for *Kirin Nama-cha Decaf* won the President of Japan Packaging Institute Award at the Japan Packaging Contest 2019 sponsored by the Japan Packaging Institute in 2019 and the WorldStar Award in the beverages category at the 2020 WorldStar Packaging Awards Competition sponsored by the World Packaging Organization (WPO) in 2020.



Adoption of FSC-certified paper for containers and packaging

The Kirin Group established its CSV Commitment in February 2017. As the first stage in concrete approaches, we revised the 2013 Action Plan for the Sustainable Use of Biological Resources and announced our goal of switching to FSC-certified paper for all of our paper containers and packaging by the end of 2020. This indicates that we have entered a new stage of pursuing the sustainability of container and packaging materials themselves, and it is positioned as an important approach that deals with the dual challenges of "biological resources" and "containers and packaging" mentioned in our Environmental Vision 2050.

A major feature of this approach is that it targets 6-can packs, gift boxes, drink boxes and cardboard cartons for products, which covers all of our paper containers. This is the first declaration of its kind to be made by a Japanese manufacturer.

In non-alcoholic beverages, as of May 2016, before this declaration, Kirin Beverages had adopted FSC-certified paper for all of its 250-ml drink boxes for the *Tropicana 100%* range, and was displaying the FSC label on the boxes. After the declaration, it extended the use of FSC-certified paper to its *Tropicana* 900-ml drink boxes in March 2017, and to its *Kirin Gogo-no-Kocha Summer Citrus Tea* in May the same year.

It continued to progressively adopt FSC-certified paper for other products, and at the end of October 2018 FSC-certified paper was applied for 6-can beverage packs and cardboard cartons. By the end of November 2019, 100% use of FSC-certified paper was achieved for all paper containers of Kirin Beverage's products.

In alcoholic beverages, 100% use of FSC-certified paper for 6-can beer packs of all sizes was achieved by the end of November 2017, and certified paper was adopted for the *Kirin Ichiban Draft Set* gift boxes in October the same year.

By the end of March 2019, 100% use of FSC-certified paper was achieved for all paper containers used by Kirin Brewery, including gift boxes and cardboard cartons. FSC-certified paper is also used for over 98% of paper packs for alcoholic beverages, the remaining type of packaging, and Mercian expects to achieve 100% use of FSC-certified paper on all paper packs for alcoholic beverages by the end of 2020.

FSC-certified paper targets and status of achievement

The status of achievement of targets as of the end of March 2020 is as follows.

FSC-certified paper targets and rate of achievement

Type	Target	Target Year	Rate of FSC-certified paper	Rate of FSC labeling
6-can packs for beer	100%	End of 2017	100%	adout 93%
6-can packs for non-alcoholic beverages	100%	End of 2017	adout 97%	adout 78%
Gift boxes	100%	End of 2020	100%	adout 70%
Drink boxes for non-alcoholic beverages	100%	End of 2020	adout 98%	adout 75%
Drink boxes for alcoholic beverages	100%	End of 2020	adout 89%	adout 9%
Cardboard cartons for non-alcoholic beverages	100%	End of 2020	100%	adout 70%
Cardboard cartons for beer and RTD products	100%	End of 2020	100%	adout 60%
Cardboard cartons for wine and Shochu products	100%	End of 2020	100%	0%

For policies on biological resources→P.87~P.88

FSC logo displayed on top of 6-can beer packs and cardboard cartons for products

The Kirin Group is pursuing the display of the FSC-certified label to give consumers a real sense of the importance of protecting the forests. In May 2017, we became the first brewery in Japan to sell 6-can packs of beer displaying the FSC-certified label. Since October the same year, we have begun progressively displaying the label on the underside of other 6-can packs and it now appears on the underside of almost all of our 6-can packs.

We have also started displaying the label on the spout and sides of drink boxes for non-alcoholic beverages, with the label already visible on almost half of these products.

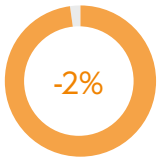
Further, starting with January 2019 shipments, the FSC logo is being displayed on the top of 6-can packs and cardboard cartons for alcoholic beverages. Now it is possible to see the logo on most products on store shelves.

Reduce

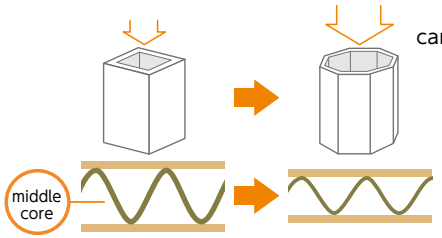
Corner-cut cartons

Our “corner-cut cartons” were developed by Institute for Packaging Innovation and introduced in 2004. The beveled corners have reduced the weight of the carton and, because the carton has eight sides, making it stronger, the cardboard thickness has been reduced, resulting in a 10.9% reduction in the weight of the carton compared to conventional cartons.

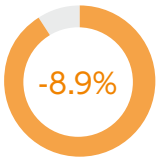
Quantity of paper saved by eliminating corners



Of the same thickness as well as the corner often becomes resistant to load.

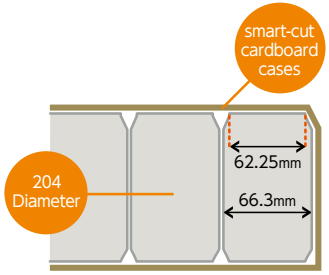


Quantity of paper saved by making cardboard core thinner



Smart-cut cartons

The smart-cut carton, which we introduced in 2015, is based on the corner-cut carton technology. In addition to the reduction in weight, the corners of the long edges at the top of the carton have been cut to fit the space created by the lids of the 204-diameter can, which are smaller than the rest of the can. This has resulted in a 16% weight reduction compared to the corner-cut carton.
Institute for Packaging Innovation developed the smart-cut carton in conjunction with a container and packaging manufacturer, with whom the Laboratories have obtained a joint design registration.



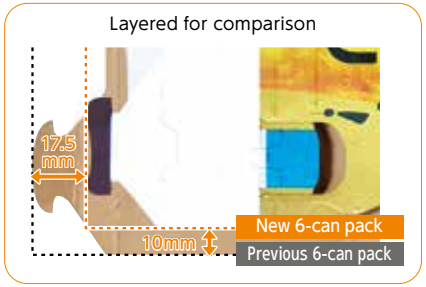
6-can pack

Innovations have been incorporated into various parts of the 6-can pack to make it more lightweight, as well as achieving ease of carrying and removing from the shelf. For example, a new cut-out section has been included at the sides of the pack to match the can edge (Kirin patent), and a “can bottom lock structure” is used to stabilize the bottoms of the can with paper. These innovations have resulted in a reduction in packaging material of 4 grams, or 8%, per 500-ml 6-can pack, while also improving the pack’s can-holding power.

Triangular fold on top side holes

Finger grip

Can lid lock



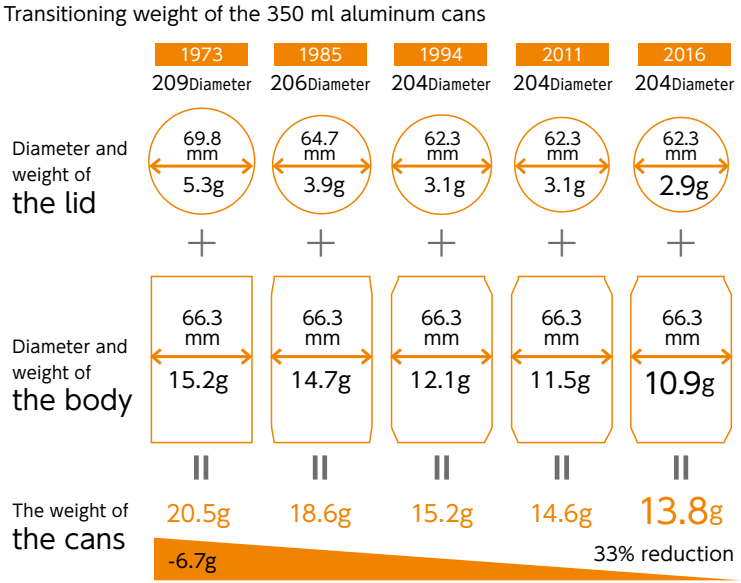
Lighter Cans

At Kirin Brewery, by reducing the diameter of the can ends and narrowing the top and bottom edges of the can body to reduce the weight of the can, as well as thinning out the walls of the can body, for our 350-ml aluminum cans, the current 204-diameter can end has achieved a weight reduction of approximately 29% compared to the old 209-diameter can end. This means an annual saving in aluminum resources* of approximately 19,000 tonnes. (*Kirin data from 2015 production volumes)

Further, working with can manufacturers, we developed Japan's lightest aluminum can with thinner can ends and bodies in 2016. The overall weight of the can has been reduced by approximately 5% (0.8 grams) from 14.6 grams to 13.8 grams. This represents a weight reduction of 33% (6.7 grams) from the 209-diameter can end.

In steel cans for beverages, the weight of the diamond-cut 190-gram steel can used for FIRE Hikitate Bito (low-sugar) coffee was reduced by 17% compared to the 2008 level in 2011.

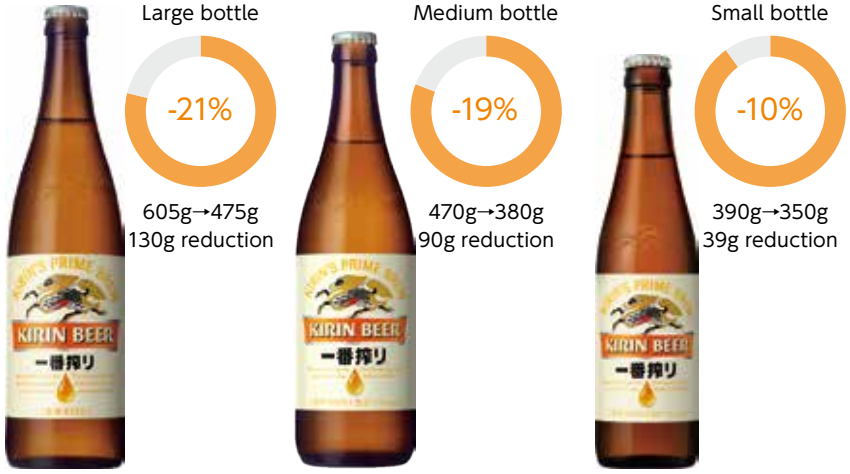
*Transitioning weight of the 350 ml aluminum cans

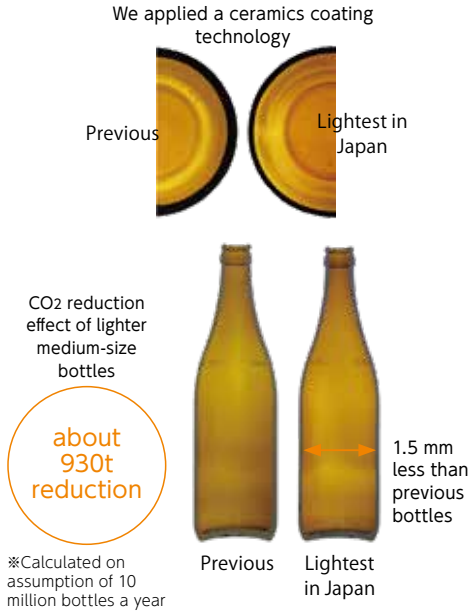


Japan's lightest returnable glass bottles

As well as being light in weight, returnable glass bottles need to be durable enough to maintain their returnable functionality and strong enough to ensure consumer safety and peace of mind.

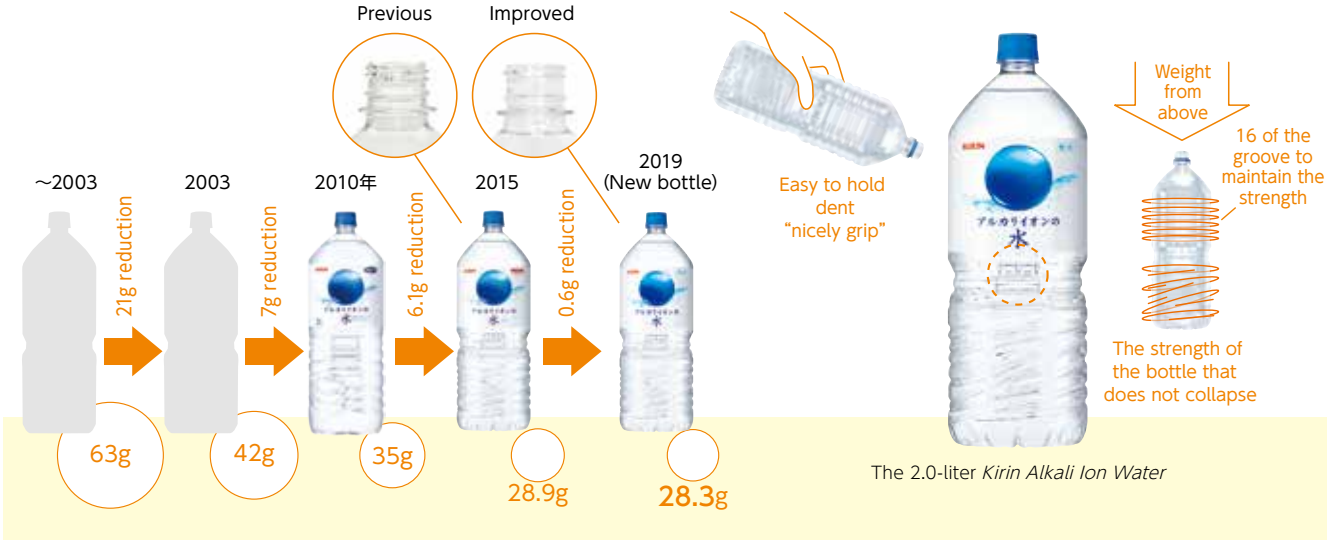
To meet this challenge, Institute for Packaging Innovation made excellent use of innovations such as a ceramic coating that forms a thin film on the bottle's outside surface, an impact-resistant shape design, and a bottle mouth design that meets the conflicting requirements of being easy to open and able to be sealed tightly and that is also strong enough not to chip, achieving Japan's lightest returnable glass beer bottles in all sizes, large, medium, and small.





One of Japan's lightest PET bottles

The Kirin Group's Institute for Packaging Innovation has continued their technological development efforts with the aim of reducing the weight of PET bottles.
In particular, the weight of the PET bottle for the 2.0-liter Kirin Alkali Ion Water was reduced from 63 grams prior to June 2003 to just 28.9 grams in 2015, with a further reduction to 28.3 grams achieved in 2019, making it the lightest in Japan.
Simply making the bottle walls thinner would make it difficult to maintain the strength of the bottle, so a design was developed that achieved both appropriate strength and ease of holding. Innovations were also incorporated that made it easy even for a small child to crush the bottle after the contents have been drunk.In April 2019, we moved forward with further weight reductions by making modifications to the bottle's screw top, including making the screw threads narrower and the screw portion shorter. These efforts will result in reductions of PET plastic use of approximately 107 tonnes and CO_2 emissions of approximately 375 tonnes.



The 2.0-liter *Kirin Alkali Ion Water*

Other Reduce initiatives

Short-flap carton

The area of the side flap has been reduced to conserve resources. CO_2 emissions during manufacture have been reduced by 10%.

Steel cans

The weight of the diamond-cut 190-gram steel can used for FIRE Hikitate Bito (low-sugar) coffee was reduced by 17% compared to the 2008 level in 2011

Aluminum Cans Laminated Inside and Outside with PET Film

No water is used in the molding process and the elimination of painting inside the can has reduced CO_2 emissions.

Corner-cut cartons

Resource conservation by cutting out the four corners

In 2016, Lion Pty Limited also succeeded in reducing the weight of its one-way bottles from 205 grams to 190 grams.

Institute for Packaging Innovation

Institute for Packaging Innovation develops and evaluates technologies related to packaging lines and packaging and containers used in the Kirin Group's alcoholic and non-alcoholic beverages businesses. The Research Laboratories is one of the few research laboratories owned by a Japanese beverage company for the development of packaging and containers for the company's own use. It leverages the technologies it has accumulated in areas such as glass bottles, cans, PET bottles, cardboard cartons, and other paper packaging over many years to provide the necessary technical assistance to bring products to market. It promotes the creation of technical "seeds" that will enrich our customers and society through new packaging and containers.
The Laboratory is as well equipped as a small factory, with machinery to fill glass bottles and aluminum cans with beer and equipment to attach labels to bottles.

Recycling

Recycling of PET bottles

The Kirin Group promotes the recycling of PET bottles as a member of the Council for PET Bottle Recycling. Under the Council's Third 3R Promotion Voluntary Action Plan (FY2016-FY2020), we are working toward a target recycling rate of 85% (base year: FY2004).

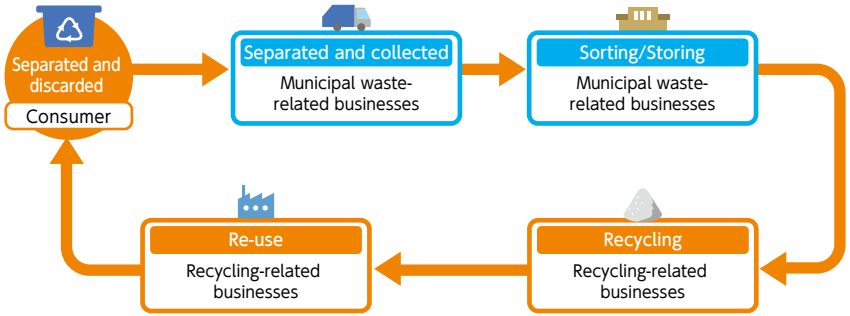
Recycling of cans

Kirin Group is pursuing the adoption of aluminum cans, which have a high rate of recycled metal. We have also joined the Japan Aluminum Can Recycling Association, and we are providing assistance for the collection of used aluminum cans as a way to promote their recycling.
Under the Third 3R Promotion Voluntary Action Plan (FY2016-FY2020) of Japan Aluminum Can Recycling Association and Japan Steel Can Recycling Association, we are working toward a target recycling rate of 90% (base year: FY2004) for both aluminum and steel cans.
Empty aluminum cans that have been discarded at the breweries are recycled by the can manufacturers and used entirely for aluminum beer cans.

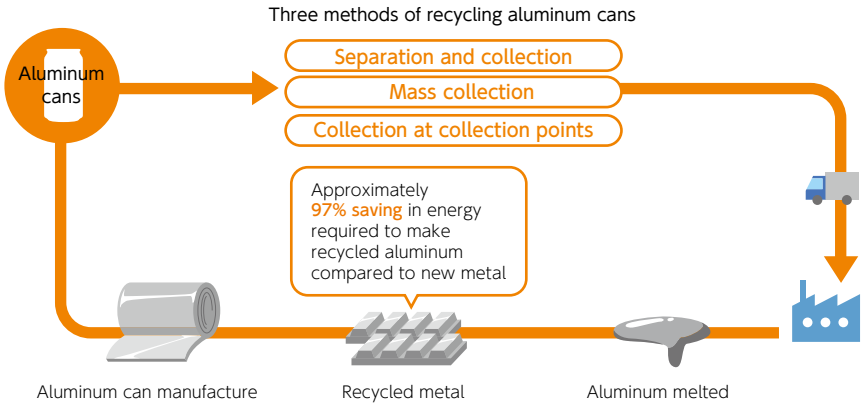
Recycling of glass bottles

Old returnable glass beer bottles that can no longer be re-used and one-way bottles which are used only once are turned into cullet, for use primarily as the raw material for making new glass bottles.
With the aim of the 100% recycling of empty glass bottles, we are pursuing uses for cullet made from colored glass, which cannot easily be re-used for glass bottles. We are finding other applications for colored cullet, including in building materials such as tiles and blocks and road paving materials.

Flow of recycling of PET bottles



CAN-to-CAN flow



Containers and Packaging (Lion)

Consistent with Lion's strategic goals to increase recycled content and recyclable packaging there were several initiatives completed in 2019 that continue to reduce the environmental footprint of our packaging.

By changing bottle supplier for *5 Seeds Cider* and *Tooheys Extra Dry* from a Middle-East based supplier to a local Adelaide supplier, a significant carbon emission reduction has been achieved for West End Brewery through the avoidance of international movement of bottles from the Middle-East to Adelaide.

Plastic packaging for plastic label reels has been removed which avoids the use of 65,000 plastic bags per year. Stretch film was also transitioned from 20um film to 15um film, reducing annual plastic usage by 100 tonnes.

Carton board grade at Burnie now has greater recycling content with an increase from an average of 42% to 100% in the lids of shelf ready cartons. This results in a reduction of approximately 263 tonnes per year of cardboard. Cartons weights have also been reduced by approximately 3.4% to 10% (dependent on board grade), resulting in a reduction of 23.5 tonnes of cardboard use per year.

Other Recycling initiatives

PET bottles

Clear PET bottles used for easier recycling.

Aluminum cans

Cans with a high percentage of recycled metal used as much as possible.

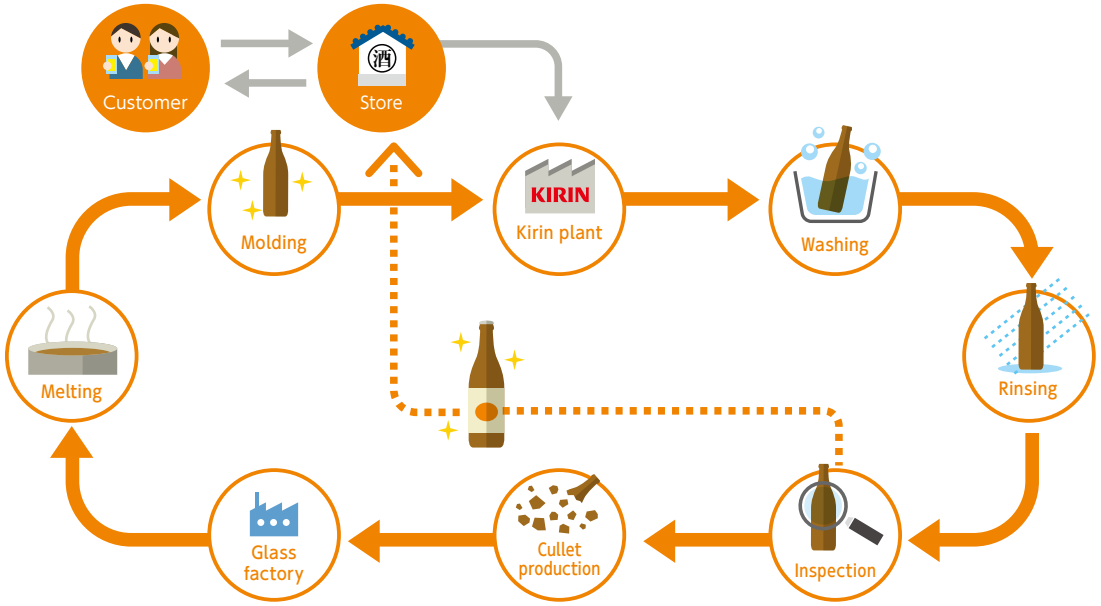
Outer case cartons

Cardboard suitable for recycling.

Reuse

Re-use of glass bottles

In Japan, glass bottles have been collected and re-used over and over since the Meiji Era (1868-1912), long before the word "3R" was coined.
Returnable glass bottles that come back to the factory are washed thoroughly inside and out to make them as clean as a new bottle. After the bottles are stringently checked for scratches and cracks with an empty bottle inspection machine, they are put back into product service and filled with beer. When handled carefully, returnable glass bottles last for an average of about eight years. This means they are used around 24 times.
Bottles that have small scratches or fine cracks or that are too old to be of service any longer are crushed and turned into a material called cullet, which is used as the raw material to make new bottles.



For Kirin Brewery and Kirin Beverage returnable bottle collection rates→P.58

Other Reuse initiatives

Returnable bottle (alcoholic beverages)

Returnable bottle (soft drinks)

Large commercial draft barrels (stainless steel)

With the Society

Consumer awareness stickers affixed to empty container recycling boxes for vending machines

The Japan Soft Drink Association, of which Kirin Beverages is a member, issued a Soft Drink Business Plastic Resource Reclamation Declaration on November 29, 2018.
As one of the initiatives under this declaration, from May 2019, the Association rolled out a campaign to attach 500,000 stickers to the empty container recycling boxes placed next to vending machine, to make consumers aware that these boxes are solely for the collection of empty containers for recycling purposes. The soft drinks industry aims to reduce any contaminants from the PET bottle recycling chain to ensure that 100% of the bottles can be used effectively.

Voluntary collection of aluminum cans

As a member of the Japan Aluminum Can Recycling Association, the Kirin Group is engaged in the recycling of aluminum cans. In addition, it also supports the activities of can manufacturers to collect used cans. More than 40,000 tonnes of aluminum cans are collected via these activities, all of which are recycled back into new cans, which Kirin uses for its products.

Bags for recycling provided by Kirin Brewery

Collection of used containers at vending machines

For vending machines installed by Kirin Beverage, the company conducts a comprehensive operation, from proposal and refilling of merchandise to service and repair of the vending machines. In addition, as an environmental initiative, it collects the empty containers and even cleans the area around the vending machines.

Easily separated containers and packaging

In consideration of ease of trash separation, we endeavor as far as possible to use single materials in our containers and packaging or make it easier to separate them into single materials. Also, to raise awareness about the recycling of containers and packaging, we provide containers and packaging that are easy to separate. We also take into consideration the ability to recycle the materials without problems at general waste processing facilities.

Consumer awareness activities

We are engaged in a number of 3R awareness-raising activities on the internet. These include the Kirin's Containers and Packaging and 3R website, which is the most informative website about recycling in the industry, and the KIRIN KIDS website for children. We also deal with the theme of 3R for containers and packaging at our Kirin School Challenge workshops for junior and senior high school students.

We also use Eco Panda, an environmental-awareness mascot character that made its first appearance to coincide with the launch of the "pecology bottle," an environmentally-friendly, resource-conserving, easily crushable container, to conduct awareness-raising activities aimed at children junior and senior high school students.

We have also conducted awareness-raising activities at a variety of events, including exhibiting our R100 PET Bottle for the *Kirin Nama-cha* Decaf which used 100% recycled PET plastic, and our Japan's-lightest 2.0-liter PET bottle used for Kirin Alkali Ion Water at the G20 Innovation Exhibition and PR for International Media Center (IMC) during the G20 Osaka Summit.

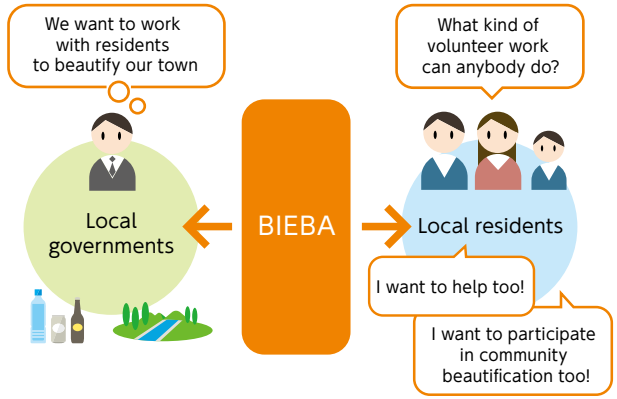
Kirin School Challenge
(FSC logo image)

G20 Innovation Exhibition

Adopt Program (Community Beautification)

The Adopt Program is a method of community beautification in which residents "adopt" a section of a neighborhood and participate in cleanup activities. The Beverage Industry Environment Beautification Association (BIEBA) brings together six beverage manufacturing industry bodies to conduct promotions and activities aimed at the beautification of communities. Kirin Brewery and Kirin Beverage participate in BIEBA as members of their respective industry bodies, the Brewers Association of Japan and the Japan Soft Drink Association, providing support for activities in this Program.

Adopt Program



Main activities of the Beverage Industry Environment Beautification Association

Support for education

BIEBA grants awards to schools that are actively engaged in the education and practice of community beautification. It also produces and supplies community beautification education guides for teachers.

Littering prevention campaign

BIEBA places "No Littering" stickers on roadside signs and vending machines to call for the prevention of littering.

Australia's Container Deposit Schemes and Lion's Initiatives

Lion plays an active role in Australia's Container Deposit Schemes, holding majority ownership of Marine Stores, a Recovery Coordinator in South Australia and the Northern Territory. Lion is also a part of the joint venture which coordinates the NSW Container Deposit Scheme, Exchange for Change (EfC). In Queensland, Lion is a member of the Container Exchange Limited (CoEx), appointed as the Product Responsibility Organisation to administer and run the Queensland scheme.

Australia has Container Deposit Schemes operating within five of its eight states, with future schemes announced for all the remaining states in Australia. Western Australia's implementation is expected in June 2020, Victoria's implementation in 2022/23 and Tasmania's in 2022. New South Wales has returned more than three billion bottles and cans in just over 2 years of the scheme being in place. An average of 7 million drink containers per day are being returned in New South Wales. There are currently 640 return points operating across the state.

The Queensland Container Refund Scheme commenced on 1 November 2018 with more than 230 points return points in operation.

The South Australian scheme continues to operate, this scheme is reporting a return rate of beverage containers sold of approximately 76.4%.

In the first year of the Australian Capital Territory scheme operating, there has been greater than 26 million containers returned and recycled. New return sites continue to be expanded to increase volumes of containers being recycled.

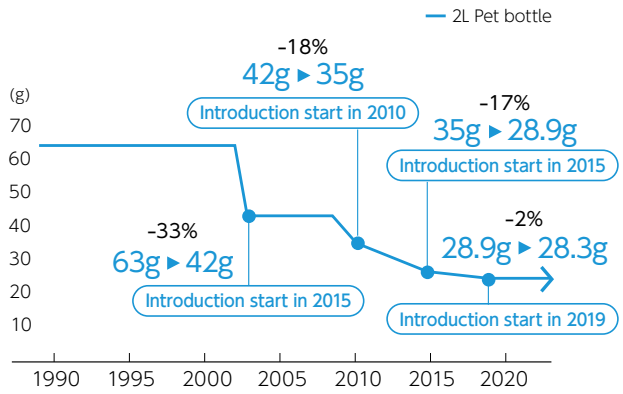
The Northern Territory scheme continues to operate and in the 2018 – 2019 report their return rate has increased by 10%, bring the total return rate to 84% of containers sold.

New Zealand has announced that a Container Return Scheme is being developed for introduction across New Zealand to address the issue of beverage containers entering landfill. A fit for purpose scheme will be designed based on schemes operating in other markets that meets New Zealand's geographical location needs and recycling requirements. The scheme's design is due to be presented to the New Zealand Government in August 2020.

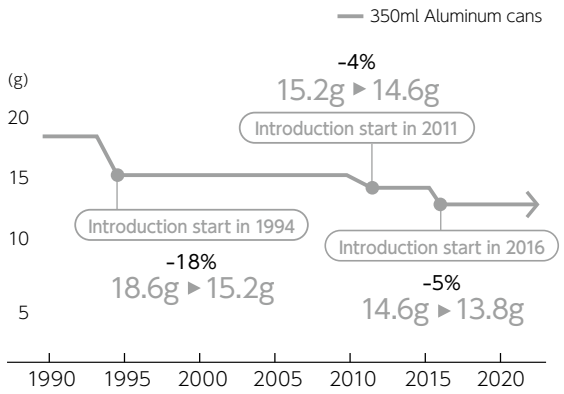
Graphs for Containers and Packaging

Related Information→P.87~P.88

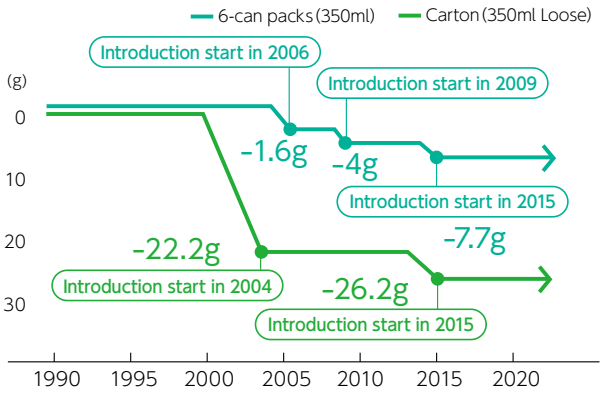
PET bottles lighter transition



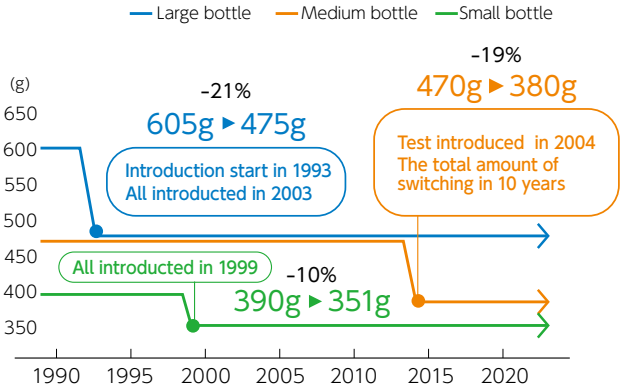
Can lighter transition



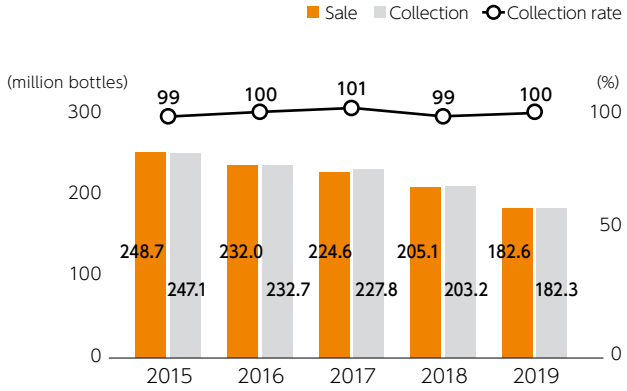
Trends in weight reduction of cartons and 6-can packs



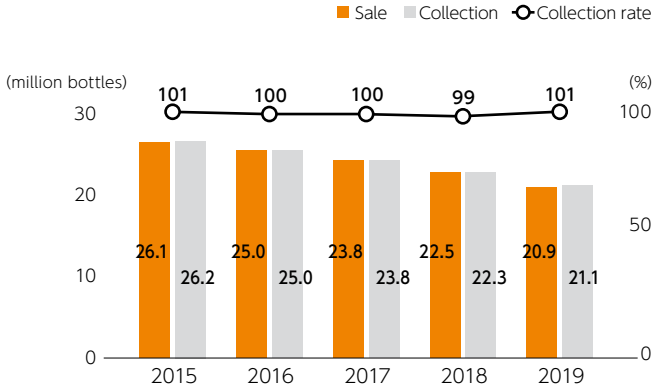
Returnable beer bottles lighter transition



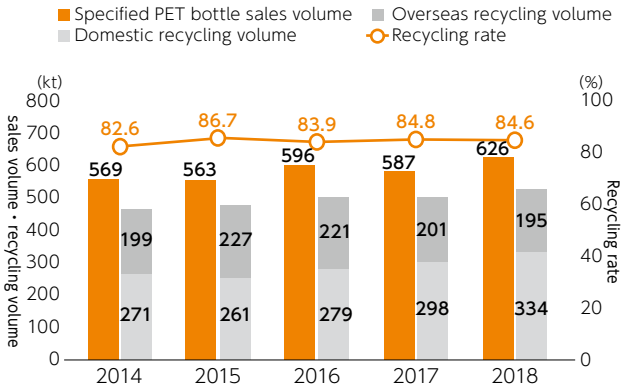
Kirin Brewery trends in sale and collection of returnable glass bottles



Kirin Beverage trends in sale and collection of returnable glass bottles

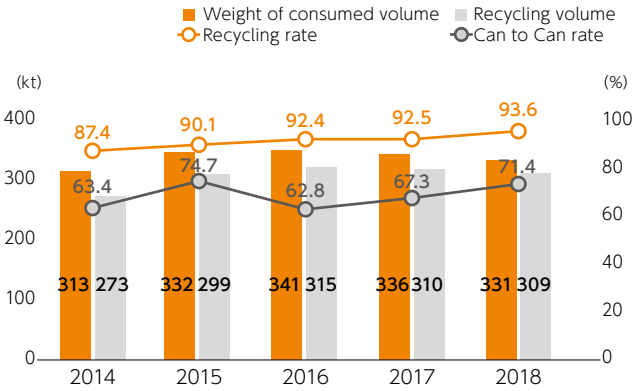


Rate of PET bottle recycling in Japan



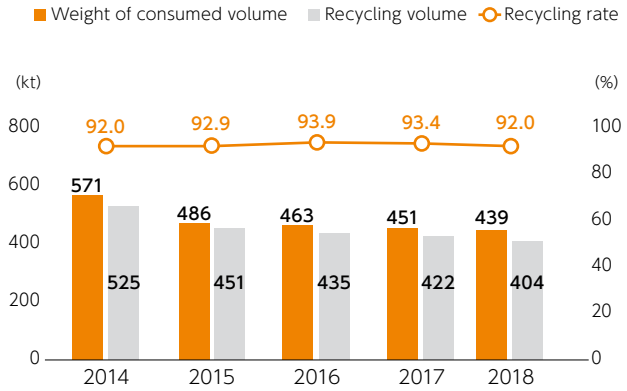
Source: The Council for PET Bottle Recycling

Rate of aluminum can recycling in Japan



Source: Japan Aluminum Can Recycling Association

Rate of steel can recycling in Japan



Source: Japan Steel Can Recycling Association