# Containers and Packaging

#### **Background to Initiatives**

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. In response to problems related to deforestation and human rights, we soon began promoting sustainable paper use. By the end of 2020, we had achieved 100% use of FSC-certified paper for all paper containers in the Japan alcohol and non-alcoholic beverages businesses. In recent years, we have also begun looking seriously at the issue of plastics. Australia has also started a Container Deposit Scheme. Against this backdrop, the Kirin Group will accelerate its efforts to create a society that circulates containers and packaging, including plastics, in a sustainable manner.

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 circulation system to make containers and packaging sustainable



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- Achieved 100% use of FSC-certified paper for all paper containers in the Japan alcohol and non-alcoholic beverages businesses.
- Expanded use of "R100 PET bottles" made from 100% recycled PET resin to cover *Kirin Nama-cha* and *Kirin Nama-cha Hoji Sencha*. Also began selling no label products.
- With the aim of creating a "society that continuously circulates PET bottles," we have begun technical studies on PET recycling using chemical recycling in a joint project with Mitsubishi Chemical Corporation. As part of our aim to create a resource circulation system, we began trialing the collection of used PET bottles at convenience stores.
- Joined the "Alliance to End Plastic Waste (AEPW)," an industry-funded NGO.

#### Overview of initiatives

Initiative	lssue	Progress
Initiatives to achieve our vision	Joint research	In a joint project with Mitsubishi Chemical Corporation, we began studying technologies for using chemical recycling to recycle PET.
	Consortium	We were the first Japanese food company to participate in AEPW, as part of our aim to create a "society that continuously recycles plastics."
Develop and disseminate sustainable containers and packaging	Paper containers	Achieved 100% use of FSC-certified paper for all paper containers in the Japan alcohol and non-alcoholic beverages businesses in November 2020.
	Expanded use of recycled PET resin	Since 2021, we have expanded the use of "R100 PET bottles" made from 100% recycled PET resin from the previous <i>Kirin Nama-cha Decaf</i> to also cover <i>Kirin Nama-cha</i> and <i>Kirin Nama-cha Hoji Sencha</i> .
	Weight reduction of PET bottles	In 2020, we achieved a 16% weight reduction across 2L and 1.5L large PET bottle products in lines such as <i>Kirin Gogo-no-Kocha</i> and <i>Kirin Nama-cha</i> . In addition, we adopted "roll labels," which are much thinner and smaller than shrink labels, for vending machine products.
	Weight reduction of other containers	We have been continuously using the lightest returnable beer bottles produced in Japan, some of the lightest aluminum cans produced in Japan, smart-cut cartons, etc.
Build a resource circulation system to make containers and – packaging sustainable –	Recycling of PET bottles	As part of our aim to achieve the Kirin Group Plastic Policy (established in 2019), we have begun trialing the collection of used PET bottles at convenience stores using a bottle collection machine developed by the Institute for Packaging Innovation, as a system for recycling PET bottles. Continued use of easy-to-sort containers and packaging.
	Reuse of beer bottles	Firmly maintain a reuse system.
	Recycling of cans	Continuing to provide voluntary support for the recovery of aluminum cans.



Message from Top Management

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Activity 😵 🔿 🗢 Containers and Packaging 🖸

Governance and Risk Management



#### Expansion of the use of "R100 PET bottles" made from 100% recycled PET resin

In accordance with the Plastic Policy that we established in 2019, the Kirin Group has gradually expanded the use of "R100 PET bottles" made from 100% recycled PET resin. In June 2019, we switched to "R100 PET bottles" for 430 ml bottles of *Kirin Nama-cha Decaf*, and in March 2021, we also switched to "R100 PET bottles" for 600 ml bottles of both *Kirin Nama-cha* and *Kirin Nama-cha Hoji Sencha* sold in convenience stores throughout Japan. We use an R100 label on these packages that indicates the bottle is made from 100% recycled PET materials.

#### Plastic Policy

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The convenience of plastic has made it a popular material for many different products, including 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 cannot be said that all plastics are being efficiently circulated. Mismanaged plastic waste discarded into the environment is finding its way into the oceans, causing marine pollution and global concern about the potential adverse effects on ecosystems.

Kirin Holdings developed the Kirin Group Plastic Policy in February 2019 with the intention of finding a solution to this issue. In the Policy, to further promote the resource circulation of PET bottles, we declared a target of increasing the percentage of recycled resin in PET bottles for the Japan market to 50% by 2027. We also declared that we would consider the introduction of PET resin made derived from inedible plant material, with the aim of moving away from petroleum resources.

In the Kirin Group Environmental Vision 2050 that we announced in February 2020, we declared our goal of creating a "society that sustainably recycles containers and packaging" by 2050. To that end, we are also working to move to 100% sustainable containers and packaging that use recycled materials, biomass, etc.

#### Sustainable use of PET bottles

Kirin Beverage is promoting "mechanical recycling," which uses recycled PET resin as raw materials for PET bottles. This method 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 "R100

PET bottles" made from 100% recycled PET resin for some of the packaging of its *Kirin Gogo-no-Kocha Oishii Muto (sugarfree)* product in February 2014, followed by all *Kirin Namacha Decaf* packaging in 2019, and *Kirin Nama-cha* and *Kirin Nama-cha Hoji Sencha* (600 ml sizes of each) sold only at convenience stores in 2021. This bottle uses 90% less resin derived from petroleum and achieves a reduction in CO<sub>2</sub> emissions of 50-60% compared with regular petroleumderived PET materials.

The R100 bottle used for *Kirin Nama-cha Decaf* won the President of Japan Packaging Institute Award at the Japan Packaging Contest 2019, and the WorldStar Award in the beverages category at the 2020 WorldStar Packaging Awards Competition.

## Aiming for a society where plastics are continuously recycled

In December 2020, Kirin started a joint project with Mitsubishi Chemical Corporation to analyze and commercialize technology for chemical recycling of PET bottles.

Some of the used PET bottles collected for recycling are



contaminated. In the current mechanical recycling system, there are impurities that are difficult to remove from recycled resins, and it is said that the quality of resins deteriorates with repeated recycling. In chemical recycling, we sort, pulverize, and wash used PET bottles to remove dirt and contaminants, then we depolymerize them (chemical decomposition treatment), and break down and purify the PET into intermediate raw materials, which we then polymerize (synthesize) again into PET, enabling us to recycle it into PET raw materials with a high level of purity. This means we can also recycle PET products other than used bottles as PET bottles. In the future, we will study the development of technologies aimed at the commercialization of this technology and establish a system to collect PET products other than bottles.

In March 2021, we joined the "Alliance to End Plastic Waste," an international non-profit organization dedicated to solving the world's plastic waste problem, with the aim of working with participating companies to address the problem from a global perspective.

The Kirin Group aims to identify the essential issues that plastics pose and work with a variety of stakeholders to create a "society that continuously recycles plastics."

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## Achieving 100% use of FSC-certified paper in all paper containers and packaging

At the end of November 2020, the Kirin Group achieved the 100% use of FSC-certified paper in all paper containers and packaging at Kirin Brewery, Kirin Beverage, and Mercian. This marked the achievement of the target the Kirin Group set forth in the "CSV Commitment" in February 2017. The targeted paper containers are "6-can packs," "gift boxes," "drink boxes," and "cardboard cartons." This is the first declaration and achievement of that declaration by a Japanese manufacturer to cover all paper containers. We plan to expand this program to other businesses in the future.

#### Initiatives for sustainable paper containers

In 2013, the Kirin Group developed the Action Plan for the Sustainable Use of Biological Resources, and we have since been working toward the sustainable use of paper. In the same year, with the aim of creating a society where sustainable paper is available for use in day-to-day settings, five companies engaged in advanced initiatives related to the use of paper formed the "Consortium for Sustainable Paper Use" together with WWF Japan, and engaged in initiatives such as holding dialogues with suppliers with the aim of promoting the supply of certified paper. In 2017, we revised our Action Plan for the Sustainable Use of Biological Resources, and declared a target of 100% FSC-certified paper for all paper containers. As of May 2016, before this declaration, we had adopted FSC-certified paper for all 250 ml drink boxes for the Tropicana 100% Orange. By the end of March 2019, all Kirin Brewery paper containers were using 100% FSC-certified paper, and by the end of November 2019, all Kirin Beverage paper containers were using 100% FSC-certified paper. In November 2020, we achieved 100% use of FSC-certified paper for all Mercian paper containers.



#### **FSC-certified paper targets and status of achievement**

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

#### FSC-certified paper targets and rate of achievement

Туре	Target	Target Year	Rate of FSC-certified paper	Rate of FSC labeling
6-can packs for beer	100%	End of 2017	100%	about 93%
6-can packs for non- alcoholic beverages	100%	End of 2017	100%	about 78%
Gift boxes	100%	End of 2020	100%	100%
Drink boxes for non- alcoholic beverages	100%	End of 2020	100%	about 75%
Drink boxes for alcoholic beverages	100%	End of 2020	100%	about 9%
Cardboard cartons for non-alcoholic beverages	100%	End of 2020	100%	about 85%
Cardboard cartons for beer and RTD products	100%	End of 2020	100%	100%
Cardboard cartons for wine and Shochu products	100%	End of 2020	100%	0%

\* Excluding commercial use

For policies on biological resources→P.90~P.91

## 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 been 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 most of these products. Starting with January 2019 shipments, we have begun displaying the FSC logo on the top of 6-can packs and cardboard cartons for alcoholic beverages. Now consumers can see the logo on most of our products on store shelves.

Tropicana Brotherstore

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6-can packs for nonalcoholic beverages



\* The Forest Stewardship Council (FSC) Forest Certification System is a system for the appropriate management of forests and the sustainable use and conservation of forest resources. The FSC label is a mark that protects forests.



#### Corner-cut cartons

The Institute for Packaging Innovation developed "corner-cut cartons" and we introduced them to the market 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.



#### 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.

The Institute for Packaging Innovation developed the smart-cut carton in conjunction with a container and packaging manufacturer, and obtained a joint design registration.



#### 6-can pack

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We have incorporated innovations 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, we have included a new cut-out section at the sides of the pack to match the can edge (Kirin patent), and use a "can bottom lock structure" 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

#### 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, we have achieved a weight reduction of approximately 29% for our 204-diameter can end compared with the 209-diameter can end in 2011.

Working with can manufacturers, we developed Japan's lightest aluminum can with thinner can ends and bodies in 2016. We have reduced the overall weight of the can 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. Weight reduction is necessary for both steel and aluminum cans, but aluminum in particular may require a large amount of electricity for smelting, so weight reduction contributes significantly to the reduction of Scope 3 GHG emissions.

# NICE OF CONTRACTOR

#### Transitioning weight of the 350 ml aluminum cans

	1973 209Diameter	1985 206Diameter	1994 204Diameter	2011 204Diameter	2016 204Diameter
Diameter and weight of <b>the lid</b>	69.8 mm 5.3g	64.7 mm 3.9g	62.3 mm 3.1g	62.3 mm 3.1g	62.3 mm 2.9g
	+	+	+	+	+
Diameter and weight of <b>the body</b>	66.3 mm 15.2g	66.3 mm 14.7g	66.3 mm 12.1g	66.3 mm 11.5g	66.3 mm 10.9g
	Ш	Ш	11	Ш	11
The weight of	20.5g	18.6g	15.2g	14.6g	13.8g
the cans	-6.7g			339	% reduction

We applied a ceramics coating technology

#### Lighter 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, the 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.



#### Lighter PET bottles

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The Institute for Packaging Innovation is continuously developing technologies to reduce the weight of PET bottles.

We reduced the weight of the 2L PET bottle for *Kirin Alkali Ion Water* from 63 grams prior to June 2003 to just 28.9 grams in 2015, and achieved a further reduction to 28.3 grams in 2019, making it the lightest such PET bottle produced in Japan. Simply making the bottle walls thinner would make it difficult to maintain the strength of the bottle, so we developed a design that achieved both appropriate strength and ease of holding. We also incorporated innovations 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 improving the bottle's screw top, including making the screw threads narrower and the screw portion shorter. These efforts will result in appual reductions of PET resinues of appu

result in annual reductions of PET resin use of approximately 107 tonnes and CO<sub>2</sub> emissions of approximately 375 tonnes.



38.2g→32.2g 6g reduction

2L PET bottles for water

63g→28.3g

-55%

34.7 greduction

bottle products for sale in vending machines. There are two main types of label for PET bottled soft drinks: shrink labels

and roll labels. We place shrink labels

Since September 2020, Kirin Beverage

has used "roll labels" on some PET

approximately 1,515 tons per year.

For some large-size PET bottle products such as Kirin Gogo-no-Kocha

and Kirin Nama-cha in 2L and 1.5L sizes, we have reduced the weight

by approximately 16%, from 38.2 grams to 32.2 grams, by improving

the preform mold used for PET bottles. We began introducing these

bottles sequentially starting with products in December 2020.

The Institute for Packaging Innovation developed the newly

introduced 32.2 gram PET bottle by applying technology from

Japan's lightest 2L bottle, the Alkali Ion Water 2L PET bottle.

As a result, we were able to reduce the amount of PET resin

Use of roll labels for vending machine products

used by approximately 439 tons per year, and CO<sub>2</sub> emissions by



Previous Improved Weight from above 16 of the groove to 2019 maintain the ~2003 2003 2010年 2015 (New bottle) Easy to hold 0.6g reduction strength 21g reduction dent 7g reduction 75.091120 "nicely grip" 6.1g The strength of the bottle that does not collapse 63g 42g 35g The 2.0-liter Kirin Alkali Ion Water 28.9g **28.3**g

over bottles with a labeler in the filling plant, then apply heat to shrink the label. This means a certain thickness is required to prevent the label from bending. We do not use heat to shrink roll labels, instead attaching them by wrapping them around the PET bottle, which enables us to make the label thinner. Customers can easily remove the label by simply pulling the edge of the label, making it easier to sort trash, and thereby promoting recycling. We are introducing roll labels for certain products exclusive to vending machines, such as *Kirin Nama-cha* and *Kirin Gogo-no-Kocha Oishii Muto (sugar-free)*. By making the labels thinner and smaller, we have been able to reduce resin use by approximately 180 tons per year and CO<sub>2</sub> emissions by approximately 400 tons per year.

#### No label

Since mid-March 2021, we have been selling *Kirin Nama-cha Label-free 6-Pack* and *Kirin Nama-cha Hoji Sencha Label-free 6-Pack* at general merchandise stores nationwide, as well as *Kirin Nama-cha Label-free* (carton of 24 525 ml bottles or 9 2L bottles) and *Kirin Nama-cha Hoji Sencha Label-free* (carton of 24 525 ml bottles) exclusively online. We believe that eliminating labels makes sorting waste easier for customers and thereby promotes recycling. It also reduces the use of resin derived from petroleum and thus reduces CO<sub>2</sub> emissions during production.

We also use FSC-certified paper for the 6-bottle packs that we sell in general merchandise stores, and display a certification label.





#### Re-use of glass bottles

In Japan, people have collected and re-used glass bottles over and over since the Meiji Era (1868-1912), long before the word "3R" was coined.

We wash returnable glass bottles that come back to the plant thoroughly inside and out to make them as clean as a new bottle. After stringently checking the bottles for scratches and cracks with an empty bottle inspection machine, we put them back into product service and fill them with beer. When handled carefully, returnable glass bottles last for an average of about eight years. This means they are used around 24 times.

When bottles have small scratches or fine cracks or are too old to be of service any longer, we crush them and turn them into a material called cullet, which we use as the raw material to make new bottles.





#### **Recycling of PET bottles**

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The Kirin Group promotes the recycling of PET bottles as a member of the Council for PET Bottle Recycling. Under the Council's Fourth Voluntary Action Plan (FY2021-FY2025), we are working toward a target recycling rate of at least 85% (base year: FY2004). In July 2021, we began trialing the collection of used PET bottles at convenience stores using the proprietary bottle recovery machine we developed. (More information on collection at stores-+P.55)

#### 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, we collect the empty containers and even clean the area around the vending machines.



#### Recycling of glass bottles

We turn old returnable glass beer bottles that can no longer be reused and one-way bottles which are used only once into cullet, for use primarily as the raw material for making new glass bottles. We are pursuing uses for cullet made from colored glass, which cannot easily be re-used for glass bottles. We are expanding potential ways to recycle this material for other applications, including in building materials such as tiles and blocks and road paving materials.

#### Recycling of cans

The Kirin Group is pursuing the adoption of aluminum cans that use 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. Can manufacturers recycle aluminum cans discarded at breweries and use them as 100% aluminum cans for beer.

#### Voluntary collection of aluminum cans

The Kirin Group supports the collection of used aluminum cans by can manufacturers. Can manufacturers collect more than 40,000 tonnes of aluminum cans 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



CAN-to-CAN flow



#### Lion's efforts to realize a circular economy

In its "Sustainable Packaging Strategy," Lion sets out how it wants to improve the circularity of materials used in the value chain. As part of this strategy, Lion focuses on increasing the recycled content in packaging through the following three tiers of action:

- **1.** Lion aims to maximize recycled content in existing materials while maintaining quality and safety.
- 2. Where it is not yet possible to increase recycled content in packaging, Lion evaluates alternative materials.
- Lion supports recovery schemes to ensure the collection of clean, high-quality recycled materials that can be sourced by local suppliers and recycled back into products of equal or higher value.

Lion's has also set ambitious targets aligned with the Australian Packaging Covenant Organisation (APCO) 2025 targets as follows:

- 1. Increasing recycled content to at least 50 percent by 2025
- **2**. 100 percent of Lion's packaging materials to be reusable, recyclable or compostable by 2025

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#### Lion's role in Australia's Container Deposit Schemes

Australia has Container Deposit Schemes operating within six of its eight states, with future schemes announced for all the remaining states in Australia. Victoria's and Tasmania's implementation is expected in 2022/23.

Lion plays an active role in Australia's Container Deposit Schemes, holding majority ownership of Marine Stores, a Super Collector 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 and Western Australia, Lion is a member of the Container Exchange (QLD) Limited (CoEx) and WA Return Recycle Renew Limited (WARRRL), which have been appointed as the Producer Responsibility Organisations to administer and run the Queensland and Western Australian schemes respectively. New South Wales has returned more than five billion bottles and cans in just over three years of the Container Deposit Scheme being in place. An average of 7 million drink containers per day are being returned in New South Wales. There are currently 628 return points operating across the state.

The Queensland Container Refund Scheme has been operating for just over two years with approximately 3 billion containers returned and 311 points return points in operation.

The Western Australian Container Deposit Scheme commenced on October 1, 2020. To date, this has been the most successful scheme launch, with over 200 million containers already returned. The South Australian scheme has been operating for over 40 years and is currently reporting a return rate of beverage containers sold of approximately 76.9%. In 2021, the South Australian government is looking to modernize the scheme and push returns even higher. Lion is working with the government to assist in the development and implementation of improvements.

In the Australian Capital Territory, the scheme operating has returned

and recycled more than 150 million containers since it commenced in December 2017.

The Northern Territory scheme continues to operate with a target return rate of 80% of containers sold in 2020.

New Zealand have announced that a Container Return Scheme is being considered for introduction across New Zealand to remove the issue of beverage containers entering landfill waste. The proposed scheme's design is expected to be finalized in 2021.





#### Collecting used PET bottles at stores

In July 2021, we began trialing the collection of used PET bottles at convenience stores using the proprietary bottle recovery machine we developed. In order to utilize PET bottles as resources, we believe it is necessary to make it more convenient for customers to place used PET bottles on collection routes. We selected convenience stores as "resource recycling infrastructure able to accept resources 24 hours a day."

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The Institute for Packaging Innovation has developed a proprietary new "PET bottle volume reduction and recovery machine." We have installed these machines at convenience stores to enable customers visiting the store to throw in used PET bottles from home. By using the vending machine operation routes of affiliates of Kirin Beverage to collect used PET bottles, we aim to enhance transportation efficiency, before transporting these resources to recycling plants. The trial collection will start at one Lawson store in Yokohama and expand to several stores in Yokohama after 2022. When the "Bill for the Act on Promotion of Resource Circulation for Plastics" comes into effect after 2022, we aim to implement initiatives based on the knowledge we have gained through our demonstration experiments.

#### Plastic resource circulation efforts in the soft drink industry

The Japan Soft Drink Association, of which Kirin Beverages is a member, issued a Soft Drink Business Plastic Resource Reclamation Declaration in November 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. In April 2021, we made a "declaration of 50% bottle-to-bottle ratio by 2030" for PET bottles. This declaration is based on current technology and economic efficiency. In future, we will aim for a higher "bottle-to-bottle recycling ratio" through "advances in material recycling technology" and the "establishment of chemical recycling." With advances in the development of "PET materials derived from plants and organisms," we are also promoting reductions in the use of new fossil-derived resources.

#### 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. To raise awareness about the recycling of containers and packaging, we provide containers and packaging that are easy to separate.

> Since September 2020, Kirin Beverage has gradually begun selling products with "roll labels," which can be easily peeled off by simply pulling the edge of the label.

#### Consumer awareness activities

We are engaged in awareness-raising activities on the internet, such as the KIRIN KIDS website to raise awareness of the 3Rs among 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, resourceconserving, easily crushable container, to conduct awareness-raising activities aimed at junior and senior high school students. We have also conducted awareness-raising activities at a variety of



Kirin School Challenge (FSC logo image)



G20 Innovation Exhibition

events, including exhibiting our R100 PET Bottle for the Kirin Namacha Decaf, which uses 100% recycled PET resin, and Japan's lightest 2L PET bottle used for Kirin Alkali Ion Water, at the G20 Innovation Exhibition and PR for the International Media Center (IMC) during the G20 Osaka Summit in 2019.

#### 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 producer 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.



Main activities of the Beverage Industry Environment



the education and practice of community beautification. It also produces and supplies community beautification education guides for teachers.

Littering prevention campaign

stickers on roadside signs and

vending machines to call for the

BIEBA places "No Littering"

prevention of littering.



**Beautification Association** 

Message from Top Management





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## Institute for Packaging Innovation

The 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 Institute for Packaging Innovation engages in activities such as the in-house development of containers and packaging, as one of the few research laboratories of its scale owned by a global alcoholic beverage company. Based on the technologies it has accumulated over many years in areas such as glass bottles, cans, PET bottles, cardboard cartons, and other paper packaging, the Institute for Packaging Innovation utilizes AI technology, kansei (affective) engineering, and other technologies to provide the necessary technical assistance to bring products to market, and create technical "seeds" that enrich the lives of our customers and society through new containers and packaging.

The Institute is as well equipped as a small plant, with machinery to fill glass bottles and aluminum cans with beer, as well as equipment to attach labels to bottles.

We are also trying to solve problems related to plastics. We are working to develop technology that enables the stable recycling of plastic containers such as PET bottles. The number of times plastics can be recycled is limited because their quality generally deteriorates after repeated recycling owing to impurities. At Kirin, we are working to develop technologies for high-purity recycling and "chemical recycling" based on the chemical decomposition, purification, and repolymerization of PET bottles, as part of our aim to create a "society that continuously recycles plastics."



		Social value	Economic value
	Smart-cut cartons	17% reduction in paper usage (compared to 2014) GHG 2,000 tonnes reduction	170 million yen reduction per year
	Lighter PET bottle for the 2.0-liter	20% lighter(compared to 2014) GHG 3,850 tonnes reduction	160 million yen reduction per year
Previous	Lighter medium- size bottles	20% lighter GHG 1,000 tonnes reduction	30 million yen reduction per year

#### World-class container and packaging R&D capabilities



The packaging developed by the Institute for Packaging Innovation has received many prestigious awards around the world. Japan's lightest (returnable) medium-size beer bottle won the WorldStar Award in the 2018 WorldStar Packaging Awards Competition sponsored by the World Packaging Organization (WPO), while *Kirin Nama-cha Decaf* won this award at the 2020 WorldStar Packaging Awards Competition, and our New Thin Film Deposition Technology for PET bottles won it at the 2021 WorldStar Packaging Awards Competition.

## Graphs for Containers and Packaging



#### Can lighter transition



Trends in weight reduction of cartons and 6-can packs

Related Information→P.98~P.99



#### Returnable beer bottles lighter transition

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### Kirin Brewery trends in sale and collection of returnable glass bottles



Sale Collection •••Collection rate

## Kirin Beverage trends in sale and collection of returnable glass bottles



#### Rate of PET bottle recycling in Japan



Rate of aluminum can recycling in Japan

Weight of consumed volume Recycling volume • Recycling rate ••Can to Can rate (kt) (%) 93.6 97.9 400 92.5 100 92.4 90.1 O 80 300 60 200 40 332 299 341 315 336 310 331 309 330 324 100 20 0 -0 2016 2017 2015 2018 2019 Source: Japan Aluminum Can Recycling Association

#### Rate of steel can recycling in Japan

■ Weight of consumed volume ■ Recycling volume •• Recycling rate



Source: Japan Steel Can Recycling Association

#### Glass bottle production and cullet utilization rate



Cullet applications



Source: Glass Bottle 3R Promotion Association

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