
Best Practices for Resource Circulation in the Food and Beverage Industry in Korea



Published by



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Recycle

Reduce

Reuse

Abstract

The food and beverage industry accounted for 0.3% of the total national carbon emissions in 2018 and 0.6% (ranking 15th place) of GHG & Energy Target Management System and GHG Emissions Trading Scheme industries. Although it is a relatively low carbon-emitting industry, there is rising concern due to the increase of food packaging wastes derived from the untact lifestyle of COVID-19.

Apprehending the seriousness of the increase in carbon emissions from food packaging waste, the food industry is making preemptive efforts, tilting toward reasonable and recyclable resources for a circular economy. Twenty of Korea's leading food and beverage corporations released a booklet highlighting their efforts to contribute to resource circulation.

This booklet is meaningful as it presents the results of the ongoing improvement over the years in the entire process of producing, consuming, managing, and regenerating packaging materials of the corporations in Korea. In particular, satisfying food hygiene and safety improvements, the unique functions of food packaging, and reducing packaging material is not an easy decision for corporations that have to bear the risk of food safety accidents directly related to the health of the customers. Nevertheless, this booklet includes 230 resource circulation best practices of the food industry demonstrating their capabilities to maintain food safety with minimum packaging.

Hereafter, this booklet looks forward to paving the way for coexistence and shared growth of large and small corporations as benchmarking data for small food corporations. Also this has been published in hopes for such corporations to improve packaging and develop into an indicator representing food packaging resource circulation.

Introduction

Recycle
Reduce
Reuse

<20 Leading Food and Beverage Corporations of Korea included in this booklet>



From a Linear Economy to a Circular Economy

Since the Industrial Revolution, with the resources from the Earth, we make products, and eventually throw them away as waste – this linear process is maintained in the current economic system. In particular, since World War II, the global economy has rapidly grown, and being a material with various advantages, the use of plastics has increased at a phenomenal rate.

Research has shown us that if the current production-consumption pattern continues, plastic waste will more than quadruple by 2050 compared to 2010. In this process, global warming has been derived by the increase of GHG, biodiversity has been reduced, and pollution from waste has been continuously rising. According to the United Nations Environment Program(UNEP), 90% of biodiversity losses are attributed to resource extraction and processing.

To solve this ongoing plastic crisis, it is important to establish a circular economy in which substances are circulated through 'reuse' without mining new resources. In the process of extraction, manufacturing, and disposal, it is indeed necessary to form a new frame so that the existing industrial structure in which resources were only worth one-time use can be redesigned to build a circular economy through reuse, recovery, and recycling.

Although today's global circular economy reaches only 8.6% , continuous innovations have been made to achieve such goals. A circular economy entails markets that give incentives to reusing products, rather than scrapping and extracting them into new resources. In such an economy, all forms of waste, including used plastics, are returned to devote to the economy or used more efficiently.

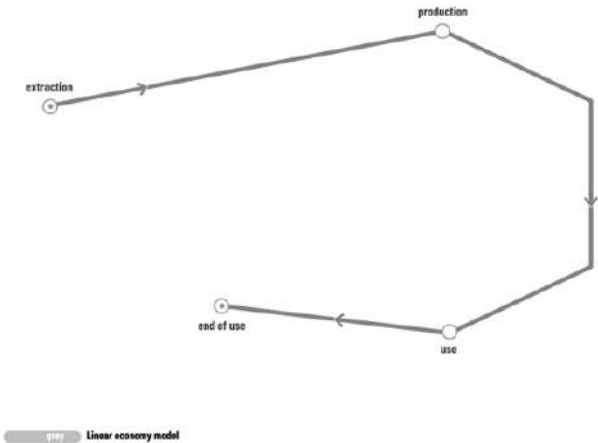


Figure 1 Linear Economy (Source: UNEP)

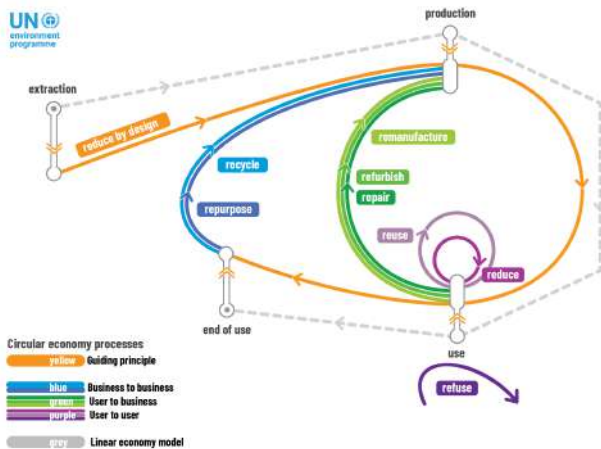


Figure 2 Linear Economy (Source: UNEP)

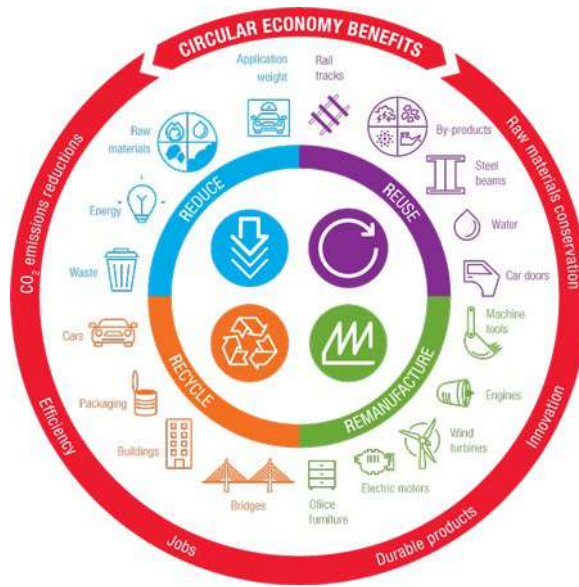


Figure 3 Benefits of the Circular Economy (Source: UNCTAD)

Food Industry Resource Circulation Booklet Content(s)

Based on the circulation system presented by UNEP (Figure 2), this case study shows the resource circulation of 20 Korean food corporations. The best cases were focused on the factor of 'improving the circulation of packaging waste'. The booklet categorized them in **three stages 'production-consumption-collection and recycling'**.

Food Industry Resource Circulation Best Practices

Production Stage

According to UNEP, plastic is one of the major threats to the global environment. More than 300 million tons of plastic is produced worldwide , especially with huge detrimental impacts on oceans, ecosystems, and climate change. The amount of plastic waste generated in the food industry also accounts for a significant proportion. According to a plastic report released by Greenpeace in 2021, a total of 16,629 disposable plastics were generated in a week by 60 households, of which food packaging accounted for 11,888(71.5%) . In other words, 7 out of 10 were food packaging plastic waste caused by households.

The most effective strategy to solve the increasing amount of packaging waste is changing the design(layout) of the product from the [**production**] stage to reduce resources or to improve recycling.

Therefore, this case study seeks to introduce three categories: the efforts to "**reduce**" the amount of plastic used in food and beverage products during the production step, endeavor to increase the ease of "**recycling**" in the disposal process, and to use plastic products based on "**alternative**" materials rather than fossil fuels.

Reduce

[Daesang Corp.]

Daesang significantly reduced the plastic content by changing the structure of the main product, paste, by changing the thickness of the vessel and cap(lid) and applying a double cap to a single cap. Through these efforts, the annual reduction of PP(Polypropylene) and PE(Polyethylene) is expected to reach approximately 8.2 tons. Additionally, the amount of plastic use was decreased by reducing the container weight of various products. Furthermore, mechanisms such as mold technology, thin film deposition, Impact PP, and HDPE(high-density polyethylene):LDPE(low-density polyethylene) ration adjustment are actively being applied to improve consumer usability problems.

[Dongsuh Foods Corp.]

Dongsuh Foods stands out for its various efforts to reduce plastic content through structural improvements of packaging materials and substance changes. The handle has been changed from plastic to paper, and the plastic aroma valve has been altered to a sticker type. As well, Dongsuh Foods reduced the amount of packaging material used for 10 items for coffee and other products, thereby annually reduces 237 tons of paper, 301 tons of plastic, and 30 tons of aluminum.













[Dongwon F&B Co., Ltd.]

Dongwon F&B has been able to achieve the weight reduction ratio of packaging materials to 63.1% by removing the plastic tray from the laver(Yangbangim) eco-package and reduce the area of inner and outer wrapping paper. Additionally, it contributed to saving resources in the production process by lessening the tray area and improving materials for gift sets. The total annual plastic reduction due to the improvement amounts to 171.4 tons.

[LOTTE Chilsung Beverage Co., Ltd.]

In January 2020, LOTTE Chilsung Beverage launched ICIS ECO, the first label-free product in Korea, and contributed to the spread of label-free beverage products. LOTTE Chilsung Beverage introduced an unlabeled product and achieved a plastic reduction effect of 0.8 g per label bottle based on 2.0L products. Further, LOTTE Chilsung Beverage improved the convenience of separating and discharging labels by simplifying the process of removing and recycling labels from the vessel. LOTTE Chilsung Beverage considers the environment from the product packaging design stage and promotes various eco-friendly activities.

Reduce

Corporation	Details
	<div style="display: flex; align-items: center; justify-content: space-around;">   </div> <p>"Reduction of container and cap thickness"</p> <ul style="list-style-type: none"> ▷ (Before) Container 236g, Cap 178g ▷ (After) Container 210g, Cap 130g
	<div style="display: flex; align-items: center; justify-content: space-around;">   </div> <p>"Change of LDPE strap to paper strap"</p> <ul style="list-style-type: none"> ▷ (Before) Plastic 5.5g ▷ (After) Paper 4.3g
	<div style="display: flex; align-items: center; justify-content: space-around;">   </div> <p>"Removal of plastic tray and reduction of inner and outer packaging"</p> <ul style="list-style-type: none"> ▷ (Before) 149g / (per 20 packs) ▷ (After) 55g / (per 20 packs)
	<div style="display: flex; align-items: center; justify-content: space-around;">   </div> <p>"Removal of labels on plastic bottles, launch of ECO no-label products"</p> <ul style="list-style-type: none"> ▷ Bottle with labels ▷ Bottles without labels

Recycle

[Korea Ginseng Corporation(KGC)]

KGC derived specific eco-friendly results, by changing the packaging material for each product. The ease of recycling is maximized by introducing a label perforation line and using biodegradable water-activated tape, recycled paper, and uncoated paper. Additionally, recycled paper was introduced in packaging materials, receiving the FSC(Forest Stewardship Council) certification, which reflects its achievement in reaching a step closer to a circular economy.

[LOTTE FOODS Co., Ltd.]

LOTTE FOODS introduced a label perforation line for three representative dairy products to facilitate separation by material. Also, they removed the bond in between the PP(Polypropylene) label and HDPE(High Density Polyethylene) vessel, to facilitate its means of recycling. Meanwhile, LOTTE FOODS is also making efforts to reduce resource usage, through changing individual labels on 5 pieces yogurt pack products with an individual label to one single label. As a result, the annual amount of plastic reduction is 158 tons.

[Ottogi Co., Ltd.]

For the ease of recycling, Ottogi launched modifications on introducing perforated labels on its products, removal of color packaging materials, use of thermal alkaline adhesives, and use of mono-material. Particularly, by changing the specific gravity of the label substance density to less than 1, difficulty in the recycling sorting process was resolved. Through these adjustments, according to the standards of the Ministry of Environment, the recyclability grade of 120 items was improved from “difficult” to “normal”, and 3 items were improved from “difficult” to “excellent”. These efforts of Ottogi are actively contributing to eco-friendly behavior in the food industry as a whole.

[Sempio Foods Company]

Sempio has been committed to a multifaceted effort to improve the recyclability of packaging materials. Specifically, thermal alkaline separation adhesive was used to facilitate separation of the label from the body of its products, and two-row label perforations were added. A new type of lid was developed to help separate the body and the lid. In addition, a mono-material was applied to the body and handle to increase the value of the waste container as a renewable resource.

Sempio is implementing changes to increase the recycling rate for composite materials and synthetic resins, for example, excluding the use of PVDC Coating PET. A total of 39 items had improved its recyclability grades according to the standards of the Ministry of Environment (21 items improved from “Difficult to Recycle” to “Normal Recycling” and 9 items improved from “Normal Recycling” to “Excellent Recycling”). In particular, 4 items reached excellent achievements, rising by two sections from “recycling difficult” to “excellent recycling”. As such, Sempio is participating in improving the resource circulation rate of resources in the food industry by upgrading the recyclability of its products.

Recycle

Corporation	Details
	  <p>“Increased recyclability through change of materials”</p> <ul style="list-style-type: none"> ▷ (Before) Paper + Laminating + Plastic strap + PET sticker ▷ (After) Recycled paper(craft) + No laminating + Fabric strap + FSC certified paper label
	  <p>“Suspension of carved printing on glass bottles”</p> <ul style="list-style-type: none"> ▷ (Before) Glass bottles + Carved printing ▷ (After) Glass bottles + Shrink film labels + Perforated labels
	  <p>“Introduction of perforated labels”</p> <ul style="list-style-type: none"> ▷ (Before) No label perforation lines ▷ (After) two-row label perforations
	  <p>“Improvement of recyclability through a handle-integrated container that uses the same material for its container and handle”</p> <ul style="list-style-type: none"> ▷ (Before) Container(PET), handle(PP) Different material ▷ (After) Container, handle(PET) same material

Replace

[CJ CheilJedang Corp.]

CJ CheilJedang achieved a groundbreaking reduction in plastic usage through plastic weight reduction and application of new technologies(bioplastics). In addition, by changing the film used for tofu packaging to PLA+PHA biodegradable material, the amount of plastic used has been reduced by approximately 27.4 tons per year.

[Dr.Chung's Food Co., Ltd.]

Dr.Chung's Food improved their PE and plastic based packaging to Bio-PE and paper based green packaging and reduced 4.5 tons of PE and 37.8 tons of PP annual usage. They are contributing to consumers' plastic reduction by replacing plastic straws into paper straws, commonly found in beverage products.

[Pulmuone Co., Ltd.]

Pulmuone is considered as an excellent example introducing bioplastic and inorganic substance added plastic blends. They are the leading corporation in reducing fossil fuel-based plastics. This was achieved through replacing 100% PET containers to 30% Bio-PET blended substitutes and 100% PP containers to 30% calcium carbonate blended substitutes. Moreover, they achieved an annual reduction of 203 tons of PP and 58 tons of PET by lightening packaging.

Replace

Corporation	Details
	 <p>“Usage of biodegradable plastic”</p> <ul style="list-style-type: none"> ▷ (Before) OPP/CPP ▷ (After) PLA+PHA biodegradable film
	 <p>“Replacement of cap material to bio-plastic”</p> <ul style="list-style-type: none"> ▷ (Before) PE ▷ (After) Bio-PE



“Application of Bio-PET made from sugar canes in the PET salad containers”

- ▷ (Before) PET 100%
- ▷ (After) Bio-PET 30%, PET 70%

Consumption Stage

Responsible ‘consumption’ is as significant as production for a circular economy. In particular, as food and beverage products are representative consumer goods that we come across in our daily lives, the generalization of resource circulation in the food and beverage industry has great impact. In addition, consumers’ awareness on sustainability is increasing. According to the poll results of CivicScience(US), in 2020, 57% out of 2,260 adults considered ‘sustainability’ when buying products and such green consumption was spreading globally among youth (millenials and Gen Z). Accordingly, this booklet introduces outstanding models from the food and beverage industry that guide sustainable consumption in the [consumption] stage. This booklet covers ‘**green campaign**’ cases that encourage consumer participation in resource circulation such as packaging label removal or collection of waste materials, and ‘**green certification**’ cases that provide information on sustainability.

Green Campaigns

[Binggrae Co., Ltd.]

The communicative resource circulation campaign of Binggrae through consumers' participation and their thoughts for the environment is noticeable. The banana milk cleaner campaign 'Banana, Protect Our Planet' and the four other hands-on campaigns were efforts of Binggrae to share actions to solve global warming and to set the trend for proper recycling culture of consumers. In particular, their 'Bonbastic Campaign' was awarded with presidential citation in the practical low-carbon lifestyle field in November 2020.

[Coca-Cola Korea Company Ltd.]

Coca-Cola Korea is running the campaign 'ONETHEPL' that reuses plastic to establish a proper recycling culture and to raise consumers' awareness on resource circulation. They provided zero-waste boxes and recycled merchandise made from plastic that consumers collected to participants as a reward for accomplishing proper recycling. As a result, they managed to raise awareness on eco-friendliness of over 7,000 participants and recycled a total of 30 tons of plastic waste in 2020 and 2021.

[hy Co., Ltd.]

hy achieved an improvement of 2,921 tons in recycling efficiency based on the 330 million bottles, sold annually through its recycling campaign 'Remove Label' that raised consumers' awareness on label removal and recycling. They managed to expand consumers' practices on recycling Yakult and dairy products, and expanded the base of resource circulation awareness.

[Hyundai Green Food Co., Ltd.]

Hyundai Green Food is reducing a monthly 10 thousand disposable plastic cups in their canteen through their plastic reduction campaign. They are cooperating with a start-up that provides solutions to reduce disposable wastes and replacing all disposable cups to reusable cups. As a result, Hyundai Green Food managed to reduce 90% of wastes produced from their cafe.

Green Campaigns

Corporation	Details
	 <p>“Provision of recycling kits to participants of empty bottle collection campaign”</p>
	<p>“Beverage bottle and plastic container collection campaign with WWF Korea, e-mart, SSG.com and TerraCycle”</p>  
	 <p>“Campaign on different material label removal and recycling”</p>
	 <p>“Replacement of plastic cups to reusable cups in the canteen”</p>

Green Certification

[CJ CheilJedang Corp.]

CJ CheilJedang introduced an eco-friendly production process based on microbial fermentation and developed CJ PHA, which decomposes more than 90% in most environments such as soil and the ocean, and obtained four TUV biodegradation certifications. It has been recognized as a substitute for petroleum plastics in various fields.

[Hyundai Green Food Co., Ltd.]

Hyundai Green Food was the first national food and beverage corporation to be recognized as an exceptional performance group 'AAA certification' in the global green certification GRP(Guidelines for Reducing Plastic Waste & Sustainable Ocean and Climate Action Acceleration). GRP, a voluntary commitment of ocean action to implement the UN SDGs, recognizes leading practices of plastic reduction and categorizes them into appropriate groups.









[LOTTE Confectionery Co., Ltd.]

LOTTE Confectionery is contributing to the reduction of harmfulness from ecotoxic substances through the usage of green technology applied film packaging certified by the Ministry of Agriculture, Food and Rural Affairs(MAFRA) on 11 products including Margaret.

[SeoulMilk Cooperative]

Through the application of water ink film technology that received a 'Green Certificate' from Korea Institute for Advancement of Technology(KIAT) on the Green Label Milk(1000ml) and the declaration of 'FSC Certification' from the Forest Stewardship Council on all aseptic packaging products, they are devoted to providing information on their green products to consumers. In addition, SeoulMilk is receiving credit for their implementation of total environmental management as a result of the ISO 14001(Environmental Management System) certification.

Green Certification

Corporation	Photos
	 <p>“Acquired 4 TUV biodegradable certifications for self-developed PHA material”</p>
	 <p>“Recognized as an exceptional performance group ‘AAA certification’ in GRP, a voluntary commitment of ocean action to implement the UN SDGs”</p>
	 <p>“Application of green technology in film packaging, replacement of ecotoxic substances”</p>
	 <p>“Green certification in water ink, FSC certification in paper packs”</p>

Collection and Recycling Stage

Finally, [Collection and Recycling] is the stage which closes the loop of resource circulation and is most significant when aiming toward a circular economy. There are various ways for the food and beverage industry to contribute to resource circulation. For example, collected PET from food and beverage, especially beverages, can be used as high-quality waste material. As a result, the final stage is organized with cases of national food and beverage corporations leading the circular economy model through collection and recycling.

Collection and Recycling

[LOTTE Confectionery Co., Ltd.]

LOTTE Confectionery accomplished an annual reduction of 107 tons of virgin plastic usage by increasing the ratio of recycled materials of their product Custard's tray to 30%. In particular, they are setting an excellent example of using biomass by upcycling the by-product(cacao shells) produced during the processing stage of the chocolate in their cases.

[Maeil Dairies Co. Ltd.]

Maeil Dairies is making efforts for the establishment of a virtuous structure in the recycling market through the execution of an MOU on recycling aseptic packaging that contributes to an annual 3,000 tons of composite materials being recycled.









[Namyang Dairy Products Co., Ltd.]

Namyang Dairy Products managed participatory eco-friendly campaigns 'Save the Earth', '*Ppaldaereul dollyeojwo* (빨대를 돌려줘)', '*Ji-Dang-Han*(지.당.한)', which promotes resource circulation by interacting with customers in their daily lives and converted collected straws and lids into the materials of upcycling products. They are contributing to the resource circulation by producing upcycling products from plastics picked up during this campaign with corporations occupied at Seoul Upcycling Plaza(SUP).

[Nongshim Co., Ltd.]

Nongshim is promoting a ‘separately discharge transparent plastic bottles’ campaign with not only their executives but also consumers through the installation of collection boxes in the Korean Folk Village. In addition, they are the first runner in Korea, applying polyester film using recycled PCR materials in the primary packaging. Such efforts to invigorate the recycling market and establish a sustainable resource circulation system has been highly noticeable.

Collection and Recycling

Corporation	Photos
	 <p>“Cooperation in the development of green packaging using cacao by-products”</p>
	 <p>“Execution of MOU for the recycling of composite material in waste aseptic packaging”</p>
	 <p>“Donation of disposable plastic straws and lids for upcycling products’ material”</p>
	 <p>“Usage of PCR PET bottle-recycled film, which established a cooperation relationship with a recycling entrepreneur”</p>

Achievement

The combined total amount of plastics reduced by the 20 corporations within this booklet is 7,414 tons, and the total amount of carbon dioxide reduced is 46,258 tons of CO₂ equ. This amount allows us to realize the influence of the food and beverage sector on resource circulation.

Likewise, responsible production and consumption of the food and beverage industry on resource circulation also contributes to the achievement of the UN SDGs(Sustainable Development Goals). Both from the micro-perspective of health improvement, water quality improvement, climate change mitigation and climate/land ecosystem preservation, and the macro-perspective, the efforts of the food and beverage industry on resource circulation serve as a model to other industries in terms of the achievement of one of the main SDGs ‘sustainable economic growth’.



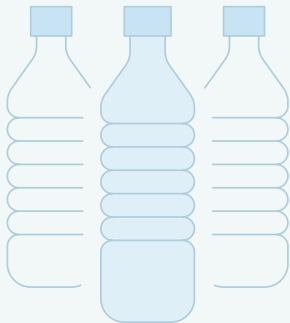
In a period when the configuration and execution of environmental policies are accelerating and the consumers’ awareness on the environment is increasing, it is encouraging that the food and beverage corporations are examining the efforts on resource circulation and regularly publishing the record of the industry as a whole. This booklet in particular serves as a detailed and accurate handbook which demonstrates what changes a certain industry’s efforts on resource circulation can bring about.

Achievement Infographic

* The infographic below is made from the best practice cases in this booklet

1

Annual plastic reduction



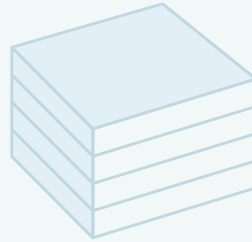
7,414 tons

Amounts to the usage of approximately
75,200 Koreans

2

Annual paper reduction

+ ink, aluminum and other substances
reduced by 300 tons

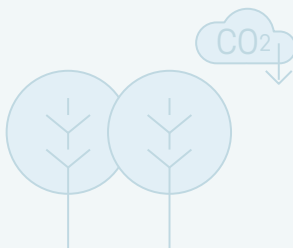


455 tons

Amounts to 22.75 million books of 300 pages

3

Annual reduction in carbon emissions



46,258 tons

Equivalent of 57.6 million 30 year-old
pine trees absorbing CO₂

4

Ideas for reduction



45

Lightening containers, change of label structure (two-
row perforation lines, unlabeled), change of label
substance (thermal alkaline adhesives), etc.

5

National & int'l certifications on the environment

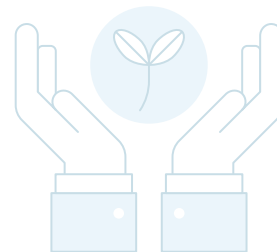


6 types

TUV, green certification, Korea Eco-Label from the Ministry of Environment, ISO 14001, FSC Certification, 'AAA' Certification in GRP

6

Campaigns that raise awareness on resource circulation



46

7

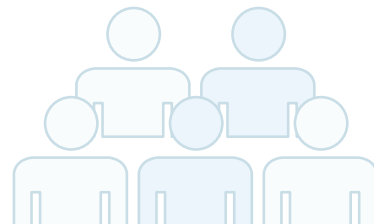
Products with improvement in the recyclability grade



569

8

Campaign participants



Approximately 178,000 people

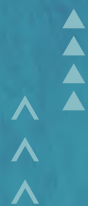
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Recycle

Reduce

Reuse



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