



THE MIGHTY EMPTIES STUDY MATERIAL PACKAGE:

# BACKGROUND INFORMATION ON THE RECYCLING OF BEVERAGE CONTAINERS

## WHY IS IT WORTHWHILE RECYCLING BEVERAGE CONTAINERS?

The purer the material and the better its composition is known, the better recycling it succeeds. When the materials to be recycled are sorted at the very beginning of the recycling process, less time and money is required for cleaning and sorting it later.

A deposit-based beverage container recycling system is effective: it is much more efficient to collect beverage containers separately and sort them by packaging material than to screen it from mixed waste at a waste processing plant.

## WHAT MAKES PEOPLE RECYCLE?

A suitable deposit is a good incentive for recycling. The willingness to recycle is, however, influenced by other factors as well, such as the location of the nearest return point and the functioning of its reverse vending machines.

Habit and attitude matter, too: Finns learn to return bottles already as children, and they consider it important. The return rate of bottles and cans from households is excellent. Approximately 90–98% of containers with a deposit are returned for recycling, varying a little by type of container. Cans and plastic bottles are returned slightly more often than reusable glass bottles.

## WHAT IS THE BASIS OF THE DEPOSIT SYSTEM?

The Waste Act encourages the producers and importers of beverages to recycle through taxation. There is a beverage container tax of EUR 0.51 per litre on the containers of alcohol and soft drink packaging, but the tax needs not be paid when joining an approved functioning recycling system or providing one independently.

In practice, most companies join the system operated by Suomen Palautuspakkaus Oy, or PALPA. PALPA is a non-profit company owned 50/50 by the retail trade and breweries. The Waste Act also lays down provisions on the recycling rate goals of the system and minimum deposits for different types of containers.



## WHO IS INVOLVED IN THE RECYCLING ACTIVITIES?

Consumers return containers with a deposit to shops. Hotels and restaurants, as well as offices, schools and diverse event organisers, to name a few, also return containers with deposits, but via the suppliers of beverages.

Shops receive returned containers with a deposit and pay the deposit to the consumer. Shops are responsible for the reverse vending machines and their operation. Small shops and kiosks that sell beverage containers with a deposit are also obligated to receive containers with a deposit, even if they do not have a reverse vending machine.

The producers and importers of beverages fund the recycling system through various membership-related fees. Costs are incurred due to the transport and further processing of materials, for example.

PALPA takes care of the administration of the recycling system and outsources services required to transporting and processing the materials, for example, to its subcontractors.

## HOW DOES THE RECYCLING OF BEVERAGE CONTAINERS FUNCTION ELSEWHERE?

In the other Nordic countries, beverage containers are recycled in the same way as in Finland through a nationwide deposit-based system. The recycling rates, or the percentage of containers returned of the total number of containers sold, are very high in the Nordic countries.

Other alternatives for the recycling of beverage containers include retail chains' own deposit systems, voluntary sorting in the same way as other household waste, and sorting at the waste processing plant.

## WHAT KINDS OF BEVERAGE CONTAINERS WITH A DEPOSIT AND MATERIALS ARE USED IN FINLAND?

**Aluminium cans:** The aluminium used in cans is an excellent material in terms of recycling. Almost 100% of the collected material can be used directly for producing new cans, and recycling can be repeated almost infinitely. Producing new cans using recycled aluminium consumes only about 5% of the energy consumed by the primary production process. The recycling of aluminium is so efficient that it makes sense to also return foreign cans due to environmental reasons.

**Recyclable plastic bottles:** There are several types of plastic, and they are suited for reuse in different ways. The benefit of the deposit system is that with it the composition of containers returned for recycling is known accurately.



**Recyclable glass bottles (mainly wine and specialty beer bottles):** Glass can be recycled almost infinitely, and a tonne of glass produced from recycled glass consumes approximately 30% less energy than producing it from virgin raw materials. Recycled glass obtained from deposit-based containers is very pure – it is common for porcelain, for example, to end up in general glass collection points, which decreases the quality of the scrap glass.

**Refillable glass bottles (mainly conventional brown beer bottles):** The recycling system for washable and refillable glass bottles was established already in the 1950s. Each bottle is reused 33 times on average, after which the material is reused as recycled glass.

### **WHAT HAPPENS TO CANS AND BOTTLES AFTER THEY HAVE BEEN RETURNED?**

The containers are sorted and cans and plastic bottles crushed usually already at the shop. The material is then transported for further processing.

What happens next depends on the type of the container. Returned cans are crushed into large bales and melted into aluminium bars from which thin aluminium sheet is rolled for use as raw material for new cans.

PET plastic bottles are sorted by colour and ground. New bottle billets are made from clear plastic for use by the beverage industry, and coloured plastic is utilised in the packaging, textile and footwear industries, among others. Recycled glass bottles – such as wine and specialty beer bottles – are crushed and sorted, and the scrap glass is used in producing new glass packaging and diverse insulation and filler materials for use by the construction industry, for example.

Refillable glass bottles are washed, filled and put on sale again.

### **HOW DOES A REVERSE VENDING MACHINE WORK?**

A reverse vending machine reads the barcode of the container and examines its shape using cameras. It compares these with the data in its information system to identify the type of can or bottle. Based on this identification, the machine sorts the beverage containers according to the material into separate containers and prints the correct deposit on the receipt. Usually, the machine also crushes plastic bottles and cans to make transporting and processing them more efficient.

A reverse vending machine does not accept crushed cans or bottles without a label because it cannot identify them as containers with a deposit.



## FIGURES

The return rates of containers with a deposit are hitting world records in Finland: cans approx. 97%, plastic bottles 90%, recycled glass bottles 98% and refillable glass bottles 98%.

There are approximately 5,000 in-shop return points and nearly 4,000 reverse vending machines in Finland.

Approximately 1,460 million cans, 600 million plastic bottles and 150 million recycleable glass bottles are annually returned. Each Finn returns approximately 265 cans, 109 plastic bottles and 27 glass bottles a year on average.

The annual value of deposits in circulation is approximately EUR 360 million.

The deposit system results in approximately 20,100 tonnes of recycleable aluminium, 16,500 tonnes of recycleable plastic and 52,900 tonnes of recycleable glass being recovered per year. For the sake of comparison: a bus weighs around 15 tonnes, a jumbo jet 200 tonnes and a cruise ship 5,000 tonnes.

If all of the cans and bottles returned during a single year were placed one after another, there would be enough cans and for 300,000 kilometers – almost eight times around the globe.

## ONLINE INFORMATION SOURCES

[www.palpa.fi](http://www.palpa.fi)

[www.ymparisto.fi/fi-FI/Kulutus\\_ja\\_tuotanto/Jatteet\\_ja\\_jatehuolto/Tuottajavastuu/Juomapakkausten\\_palautusjarjestelmat](http://www.ymparisto.fi/fi-FI/Kulutus_ja_tuotanto/Jatteet_ja_jatehuolto/Tuottajavastuu/Juomapakkausten_palautusjarjestelmat)