INTERNATIONAL ALUMINIUM

A CIRCULARITY CASE FOR ALUMINIUM COMPARED WITH GLASS AND PLASTIC

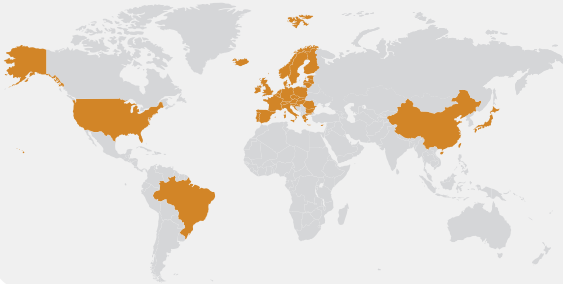
The International Aluminium Institute has analysed the circularity of three beverage materials – aluminium, glass and plastic (polyethylene terephthalate: PET). The data shows that all three materials have more to do to reach their full circularity potential. However, aluminium cans remain the most recycled single-use beverage container with the smallest losses in the recycling process.

71%

Percentage of all aluminium cans that are recycled – on average, 34 percentage points higher than glass and PET.

THE STUDY

The International Aluminium Institute commissioned Eunomia Research & Consulting to assess the data available for the circularity of three beverage packaging materials. The assessment included market share, end-of-life processing losses (including collection, sorting, reprocessing and thermal processing), closed-loop recycling and open-loop recycling into currently recycled and currently non-recycled products for aluminium beverage cans, PET and glass bottles for single use.



The Eunomia study uses data from Brazil, China, Europe, Japan and the USA. These five regions represent approximately:

70% of the global aluminium can market. Aluminium lids for steel cans are excluded.

70% of the PET bottle market for carbonated soft drinks, water and hot fill applications.

50% of the glass container global market.

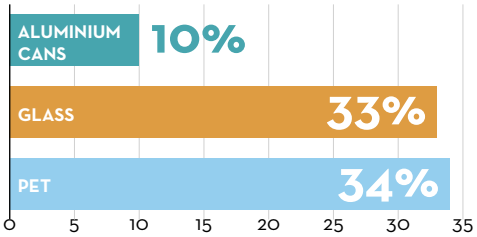
The available data shows that while no beverage packaging option has achieved maximum circular economy potential, aluminium currently outperforms the other two materials at all stages of the waste management stream in the five regions assessed.

Eunomia Research & Consulting and the IAI have visualised the data on **alucycle.international-aluminium.org**.

WHY ALUMINIUM CANS ARE THE BEST SOLUTION FOR A CIRCULAR ECONOMY TODAY

Once the aluminium can is collected for recycling, the efficiency of the combined recycling process (sorting, reprocessing and thermal processing) is 90%. Aluminium losses could be further reduced by implementing efficient deposit return systems in some of the key areas.

LOSSES IN SORTING, REPROCESSING & THERMAL PROCESSING (EXCLUDING COLLECTION)



2 out of 3 cans recycled

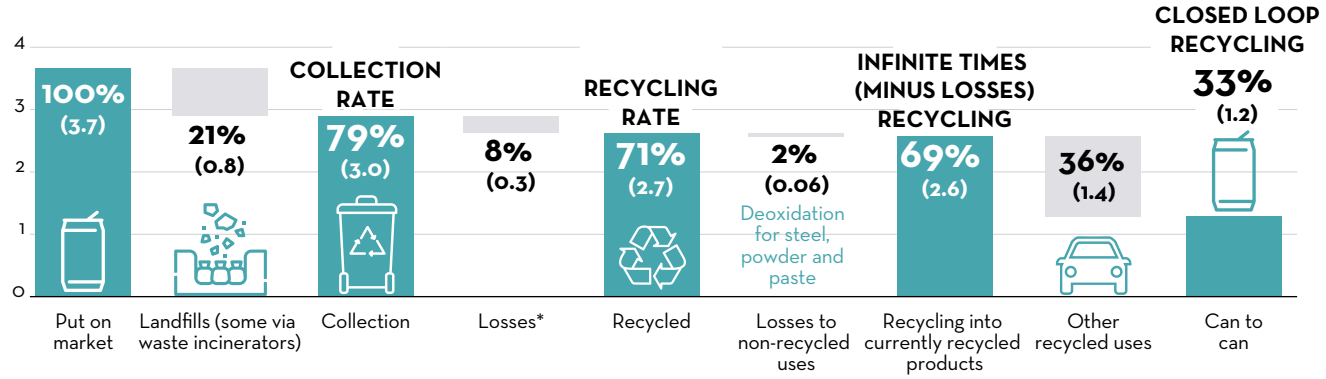
One out of three aluminium cans is back on the shelf in as little as 60 days, and one other gets recycled into other highly recyclable products.

Visit international-aluminium.org for more information.

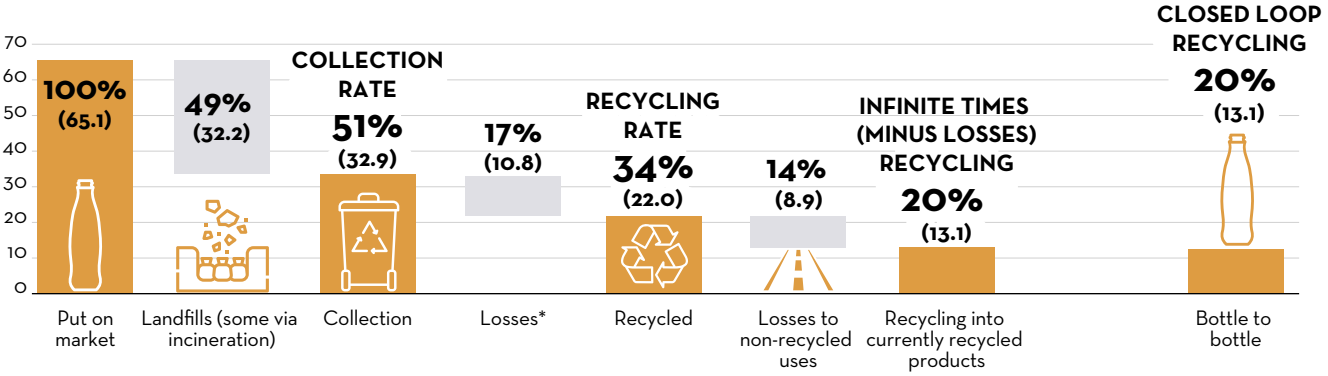
MAPPING LOSSES FROM FIRST TO SECOND LIFE

The chart below maps out where the different losses occur in each stage of the recycling chain for the combined five regions. To analyse data on a regional level, please visit: **alucycle.international-aluminium.org**

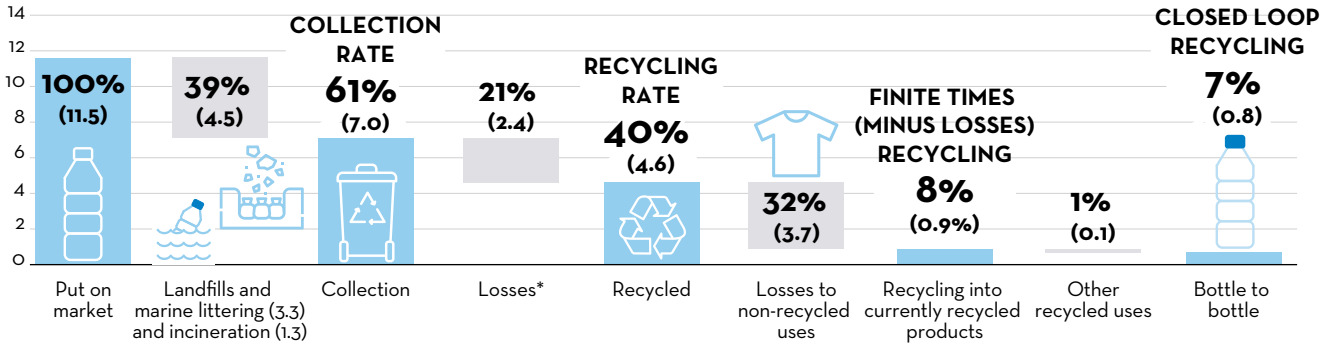
ALUMINIUM CANS (MILLION TONNES)



GLASS BOTTLES (MILLION TONNES)



PET BOTTLES (MILLION TONNES)



*Includes: Sorting losses, reprocessing losses and thermal processing losses. Numbers may not add up due to rounding.

Collection rate: The collection of different beverage containers via Deposit Return Systems, separate collection (multi and single material), incentive-based systems and bring banks (recycling containers provided by local waste collection authorities).

Recycling rate: Recycling into new products, regardless of quality.

Infinite times recycling: Defined by the IAI as recycling into the same or a different product than its original form, which is further recycled after reaching the end of its productive lifetime. Since the material does not degrade, this can happen an infinite number of times.

Closed Loop Recycling: Recycling back to the same product as it orginated from.

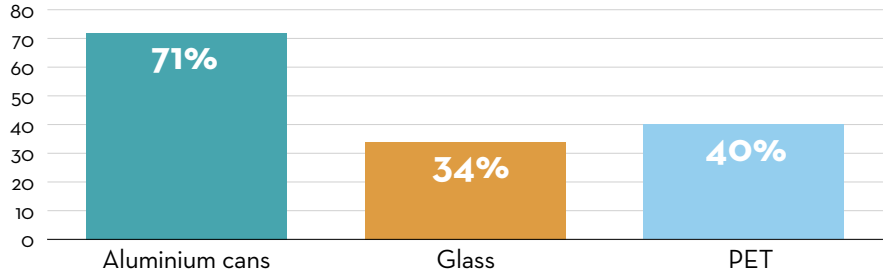
Finite times recycling: Defined by the IAI as recycling into the same or a different product than its original form, which is further recycled after reaching the end of its productive lifetime. Due to material degradation, this can only happen a finite number of times.

Visit international-aluminium.org for more information.

CIRCULARITY IN REAL FIGURES

Aluminium cans are the most recycled beverage containers globally, with a 71% recycling rate. They also have the highest closed-loop recycling rate, which is when the product is recycled for use as the same product, at 33%.

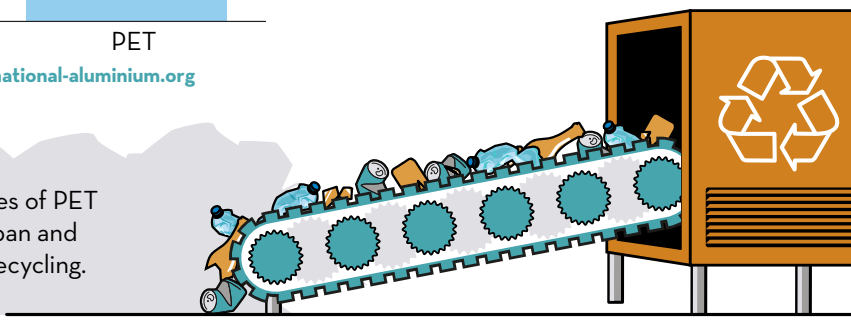
RECYCLING RATES (WEIGHTED AVERAGE)



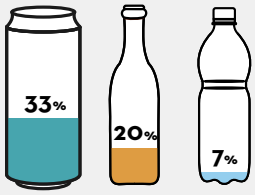
Regional difference can be explored at **alucycle.international-aluminium.org**

Compared with aluminium cans, more PET and glass bottles end up in landfills because they are not collected.
Aluminium: **21%**
Glass: **49%**
PET: **28%** (landfill and marine litter);
11% is incinerated.

In 2019, about 0.8 million tonnes of aluminium cans, 32.2 million tonnes of glass bottles and 3.3 million tonnes of PET bottles ended up in landfills in Europe, China, USA, Japan and Brazil combined because they were not collected for recycling.

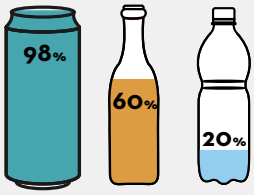


The average used beverage container content of new cans purchased by the consumer is **33%.**



98%

98% of recycled aluminium cans are recycled into products that are recycled again compared with **60% for glass** and **20% for PET**.



7%

of all aluminium used went into aluminium cans in 2019.

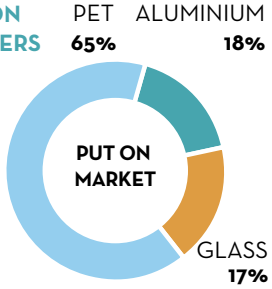
Cans **7%**
Other Packaging **5%**
Building and construction **25%**
Transport **25%**
Electrical **13%**
Consumer durables **9%**
Machinery **9%**
Other **7%**

MARKET SHARE

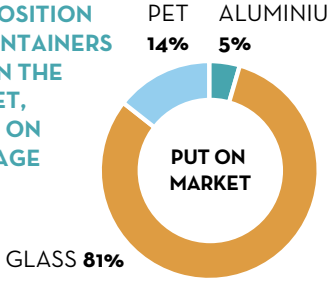
Aluminium cans constitute three times as much of the recycling stream (excluding recycling into non-recycled uses) than its initial market share.

PET packaging is currently used for 65% of beverages, followed by aluminium at 18% and glass at 17%. Since both aluminium and PET are lightweight materials, the market share (based on the packaging tonnage) are as follows: glass 81%, PET 14% and aluminium 5%.

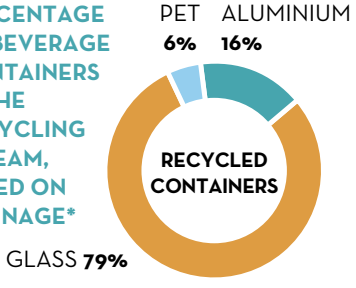
COMPOSITION OF CONTAINERS PUT ON THE MARKET, BASED ON VOLUME



COMPOSITION OF CONTAINERS PUT ON THE MARKET, BASED ON TONNAGE



PERCENTAGE OF BEVERAGE CONTAINERS IN THE RECYCLING STREAM, BASED ON TONNAGE*

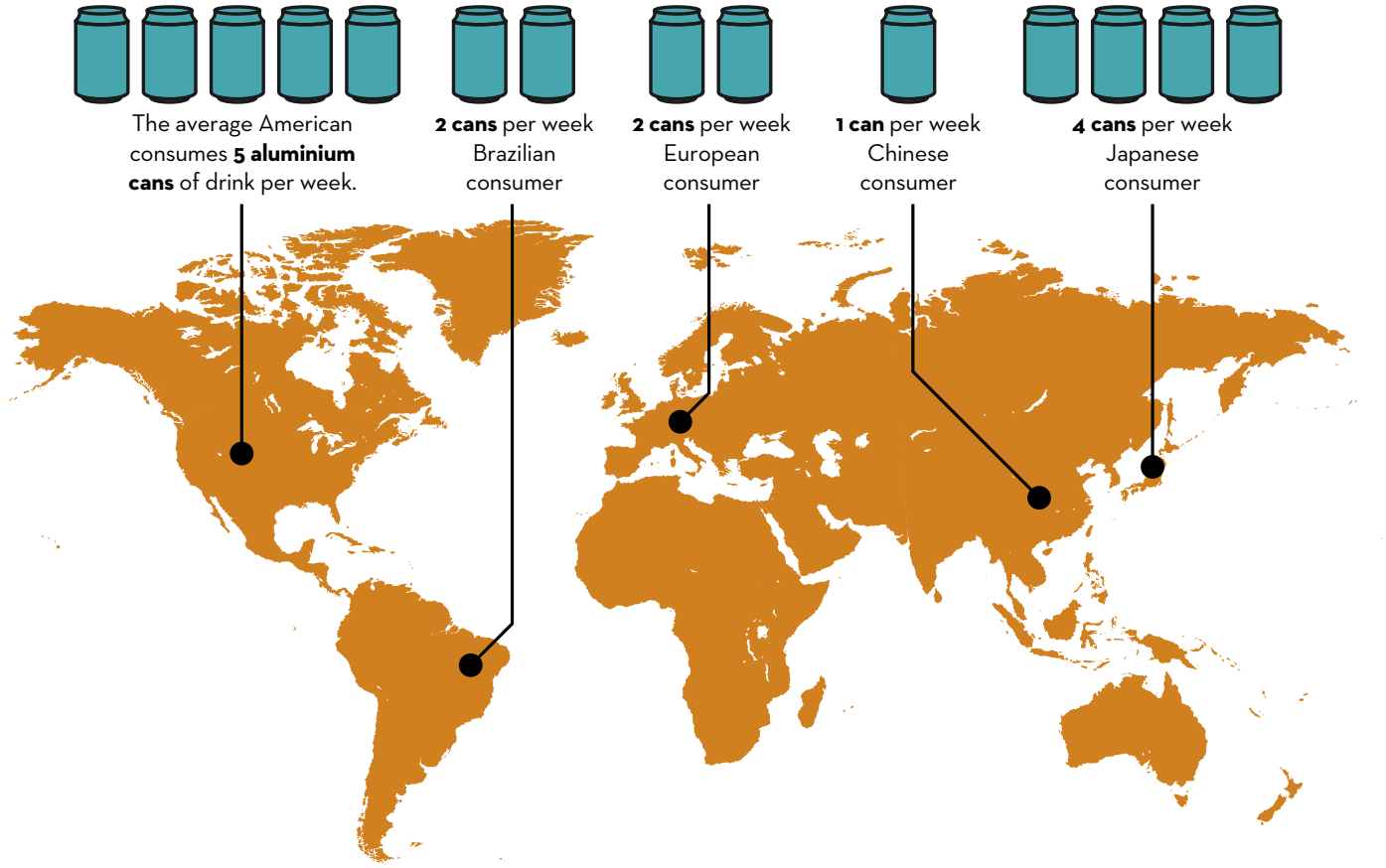


Source: alucycle.international-aluminium.org

*Excluding recycling into non-recycled uses.
Numbers may not add up due to rounding.

Visit international-aluminium.org for more information.

ALUMINIUM CAN USE AND RECYCLING ACROSS THE WORLD



USA

Highest rate in closed loop recycling

46.1% of aluminium beverage cans consumed in the USA were used by recyclers as feedstock material in 2019. Of this amount, 92.6% were used to make new cans.

BRAZIL

High social and economic value of cans

Brazil is achieving high recycling rates in non-governmental recycling systems. These rates (91.4%)* for aluminium (vs 31.5% for glass and 36.3% for PET) are due to the industry's investment in collection and recycling centres and close cooperation with cooperatives.

EUROPE

Zero collection and sorting losses by 2030

75.8% of aluminium beverage cans consumed in Europe were used as feedstock material by recyclers in 2019. European Aluminium and Metal Packaging Europe has launched a joint roadmap towards increasing this rate to 100% by 2030.

CHINA

Biggest can recycler worldwide

More than 1 million tonnes of aluminium cans are recycled, representing 39% of all recycled cans in the five regions included in this study.

JAPAN

Highest recycling rate

93.5%* of aluminium cans are recycled (including collection, sorting, reprocessing, delacquering and remelting). Modern recycling systems mean that almost no cans are lost from the recycling system.

*The official recycling rate is 97.6% for Brazil, and 97.9% for Japan, and is measured as: $\frac{\text{used beverage cans used as feedstock by recyclers}}{\text{beverage cans put on the market}}$
This rate excludes losses during delacquering and remelting.

Visit international-aluminium.org for more information.