

# Looking back at 2024: ASSO VETRO spotlights packaging sustainability

## **G** LASS PACKAGING: A SUSTAINABLE LEADER AMID INDUSTRY SHIFTS

As the packaging industry continues its transformation in response to sustainability demands, four key materials

-glass, PET, aluminum and multilayer composites- are all coming under increasing scrutiny. Among these, glass stands out for its ability to be reused indefinitely without degrading its chemical composition. Indeed, with an estimated recycling rate of 81.9 per-

cent in 2024, it remains one of the most environmentally-sustainable choices for food and beverage containers.

## **THE UNIQUE SUSTAINABILITY OF GLASS**

Packaging plays a vital role in



An all-time sustainability leader, glass packaging had a whopping 81.9 percent recycling rate last year. Despite production declines, its eco-benefits -low energy use, minimal CO<sub>2</sub> emissions and infinite recyclability- all outshine PET, aluminium and multilayer materials. Indeed, as is noted by recent ASSOVIETRO observations of the industry, ongoing innovations in lightweight design continue to rank glass among the key players in sustainable packaging.



**Prof. Sglavo**

preserving product quality, but the environmental impact of various materials remains a growing concern. A recent study, “The Recyclability of Packaging Materials: The Uniqueness of Glass,” conducted by Professor Vincenzo Maria Sglavo of the University of Trento and presented by Assovetro, highlights the superior recyclability of glass compared to PET, aluminium and multilayer packaging (“La riciclabilità dei materiali per contenitori: la specificità del vetro”). According to Marco Ravasi, President of Assovetro, “Proper recycling of packaging is key to a sustainable future, and glass has all the right credentials given that

it can be reused and recycled endlessly without losing its intrinsic qualities.”

Recycling rates for dark-colored glass bottles have reached as

high as 90 percent, reinforcing glass as the preferred material for long-term content preservation. However, weight remains a challenge, prompting industry efforts to develop lighter bottles,





## CIRCULAR ECONOMY



with some 75cl wine bottles now weighing as little as 300 grams.

### ECO-IMPACT ANALYSIS: GLASS VS. OTHER MATERIALS

Professor Sglavo's study evaluates the ecological footprint of glass, PET, aluminium and multilayer packaging - focusing upon virgin material production, transformation processes and recycled material production. Among these materials, glass requires the least energy to produce - resulting in lower CO<sub>2</sub> emissions and minimal water consumption. In contrast:

- Multilayer composites have a recycling rate below 40 per cent and require 1,350 litres of water per kg of material produced.

- Aluminium follows closely behind, with 1,000 litres per kg - while glass requires only 14 litres per kg.
- CO<sub>2</sub> emissions per kg are lowest for glass (600g) and multilayer packaging (1kg), with glass also leading in energy efficiency for recycled material production at 9 MJ/kg, compared to 24 MJ/kg for multilayer.
- Weight remains a drawback for glass: a 500ml glass bottle weighs 15 times more than an aluminium can



of the same capacity, influencing transportation emissions.

## THE RECYCLING LANDSCAPE: STRENGTHS AND CHALLENGES

Glass and aluminium benefit from well-established recycling systems. Glass, in particular, has a supply chain that guarantees high-quality secondary raw materials with minimal waste. For every ton of recycled glass used, CO<sub>2</sub> emissions are reduced by 300 grams.

Aluminium cans are often collected alongside plastics and steel before being separated, but oxidation issues impact recyclability. PET bottle recycling has shown progress, reaching 60 percent in 2022, but multilayer packaging remains problematic - only the paper fraction is effectively recovered, and only two paper mills in Italy specialize in processing it.

## INDUSTRY TRENDS: DECLINING GLASS CONTAINER PRODUCTION, RISING DEMAND FOR JARS

The geopolitical crisis and economic uncertainty have led to a decline in European glass container production. While glass remains a premium choice for food and beverage packaging, total glass

container production in 2024 fell by 3.4 percent year-over-year:

- Bottle production declined by 5 percent (to 3.6 million tons).
- Food jar production surged by 24.5 percent, signaling a shift in demand.

Foreign trade data (January - November 2024) further underscores the following trends:

- Bottle exports dropped by 7.8 percent, while imports fell by 9.7 percent.
- Jar imports soared by 44 percent, with exports increasing by 13.8 percent.
- Europewide, the downturn has been even more pronounced, with an 8 percent decline in tonnage and a 5 percent drop in unit count between early 2023 and early 2024.

After robust demand in 2021 and 2022, glass production began to shrink in 2023 due to several converging factors, namely:

- The war in Ukraine and its impact on supply chains;
- Surging energy costs in Europe;
- Decreasing alcohol consumption;



- Overproduction and declining demand for glass packaging.

## THE FUTURE OF GLASS IN A CIRCULAR ECONOMY

Despite all these industry shifts, glass remains a frontrunner in the circular economy. With strong recycling infrastructure and ongoing innovations in lightweight design, it continues to set the standard for sustainable packaging. While challenges like energy costs and shifting consumer preferences remain, the industry's commitment to sustainability ensures that glass will remain a key material in the packaging landscape for years to come. ■





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