

# Carbon footprint analysis of beverage packaging alternatives: a case study for Brazil



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# Context, research question and methodology

- Context: Long neck beer bottles present considerable waste management challenges worldwide, characterized by low recycling rates. Improper disposal exacerbates issues such as sewer blockages and flooding in various Brazilian cities.
- Glass manufacturing is a high energy demanding process.
- Research Question: what is the impact in CO<sub>2</sub> emissions of a policy aimed at reducing glass consumption in favour of aluminium cans, for Brazil.
- Methodology: Input-Output-based Life-Cycle Assessment using MARIO, Exiobase database (IOT 2022).

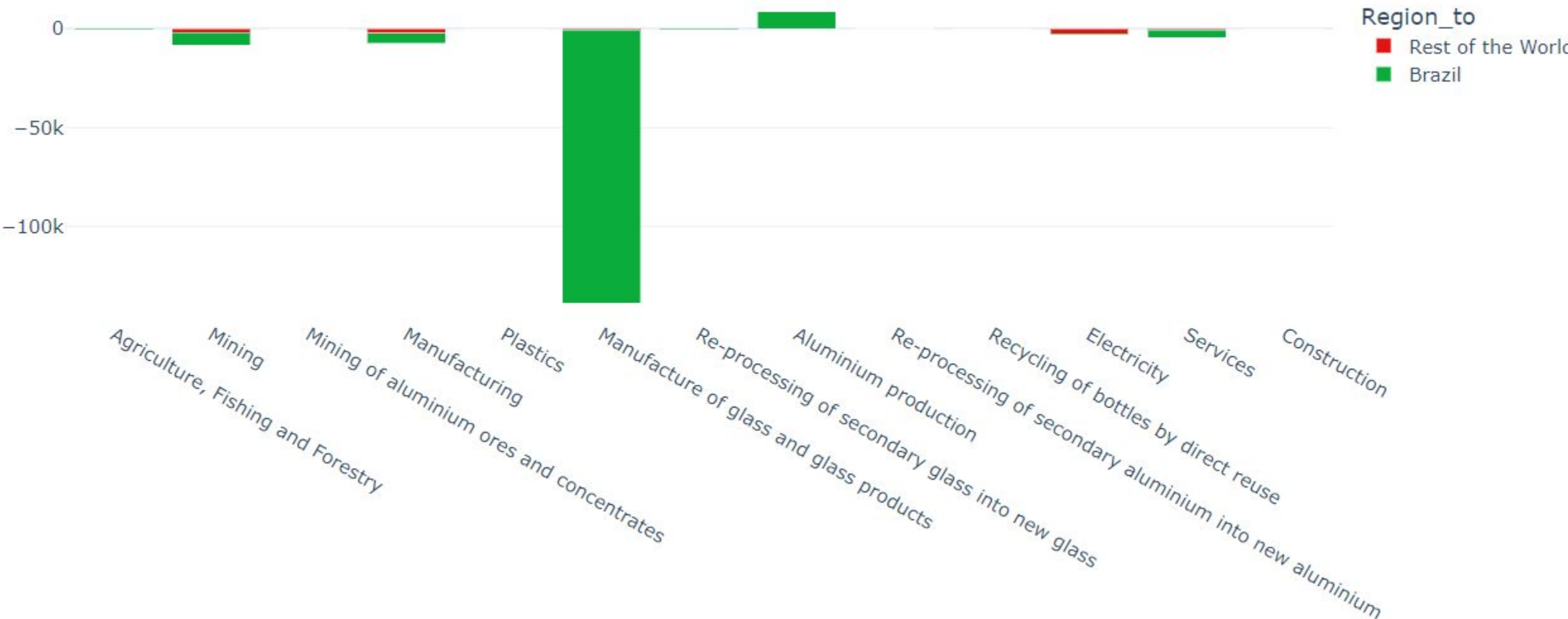


# Scenarios

Through Input-Output-based Life-Cycle Assessment using MARIO, the following scenarios were investigated:

Scenario Label	Scenario Description	Key Assumptions
Reduced glass consumption	Substitution of glass consumption for primary and reprocessed aluminium	10% decrease in Manufacture of glass 0.10% increase in reprocessing of secondary aluminium 0.03% increase in primary aluminium. Aluminium packaging requires 7,7 x less materials than glass. 80% of new cans produced in Brazil use recycled aluminium

# Results



154 tonnes CO2 reduction total. Mostly in Brazil (146 tons).

# Conclusions and Policy Insights

Reduction in carbon emissions stemming from decreased glass consumption, given that Manufacture of glass sector is a high energy-intensive production processes.

The production of aluminium contributed to a rise in carbon emissions. Re-processing of secondary aluminium into new aluminium played a minor role in emissions growth, given its significantly lower energy requirements compared to primary aluminium production.

Transition to aluminium packaging presents opportunities for increased earnings for can collectors.

## **Policy insights:**

Need for enhanced waste management policies: promote selective collection and prevent improper disposal. Raise awareness, and expand collection points for glass waste.

Increased utilization of low-carbon renewable energy sources in packaging production processes to further mitigate emissions.

**Thanks for your attention!**