

## Environmental Perspectives on Wine Packaging: A Comparative Study of Single-Use and Reusable Options

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More information about the project

### INTRODUCTION

Spain is the world's leading vineyard, accounting for 13% of the global total. Wine packaging plays a crucial role in preservation and aging and has a significant environmental impact. It represents around 30-40% of the impact of the wine industry on Climate Change (PEFCR, 2020). EU Directive (EU) 2018/852 emphasizes reuse for resource efficiency and environmental impact reduction (EU, 2018). Spain aligns with this directive, focusing on promoting glass packaging reuse.

### OBJECTIVE

The main objective of this research to **provide a tool for Spanish wineries to compare the environmental performance of implementing a reusable glass bottle system in comparison to single use.**

### METHODOLOGY

- The tool is based on **life cycle assessment (LCA)** methodology.
- The **functional unit considered is the volume of wine bottled by the winery.**
- A **cradle-to-grave** approach is adopted.
- The latest version of GaBi software (nowadays named **LCA for Experts**) with integrated databases was used.
- **Environmental Footprint (EF) method** (European Commission, 2021) is used.
- System boundaries can be seen in Figures 1 and 2.

### RESULTS

- The tool is presented in an **Excel format.**
- It compares the impact of two packaging options: **single use vs. reusable glass bottles.**
- **Key inputs:**
  - Functional unit quantification (volume of wine)
  - Bottles data (volume, weight, color and recycling content)
  - Packaging data (material and weight)
  - Number of cycles of reusable crates
  - Breakage rates during the distribution cycle
  - Transport distances
  - End-of-life options
- **Key calculations:**
  - Number of bottles needed for single-use and reusable systems (including the needed pool for reusable).
  - Mass balance during the whole life cycle.
  - Environmental profile based on the mass balance and the environmental profile of each single stage.
- **Key outputs:**
  - Tables and graphs comparing the two systems in absolute and relative numbers.

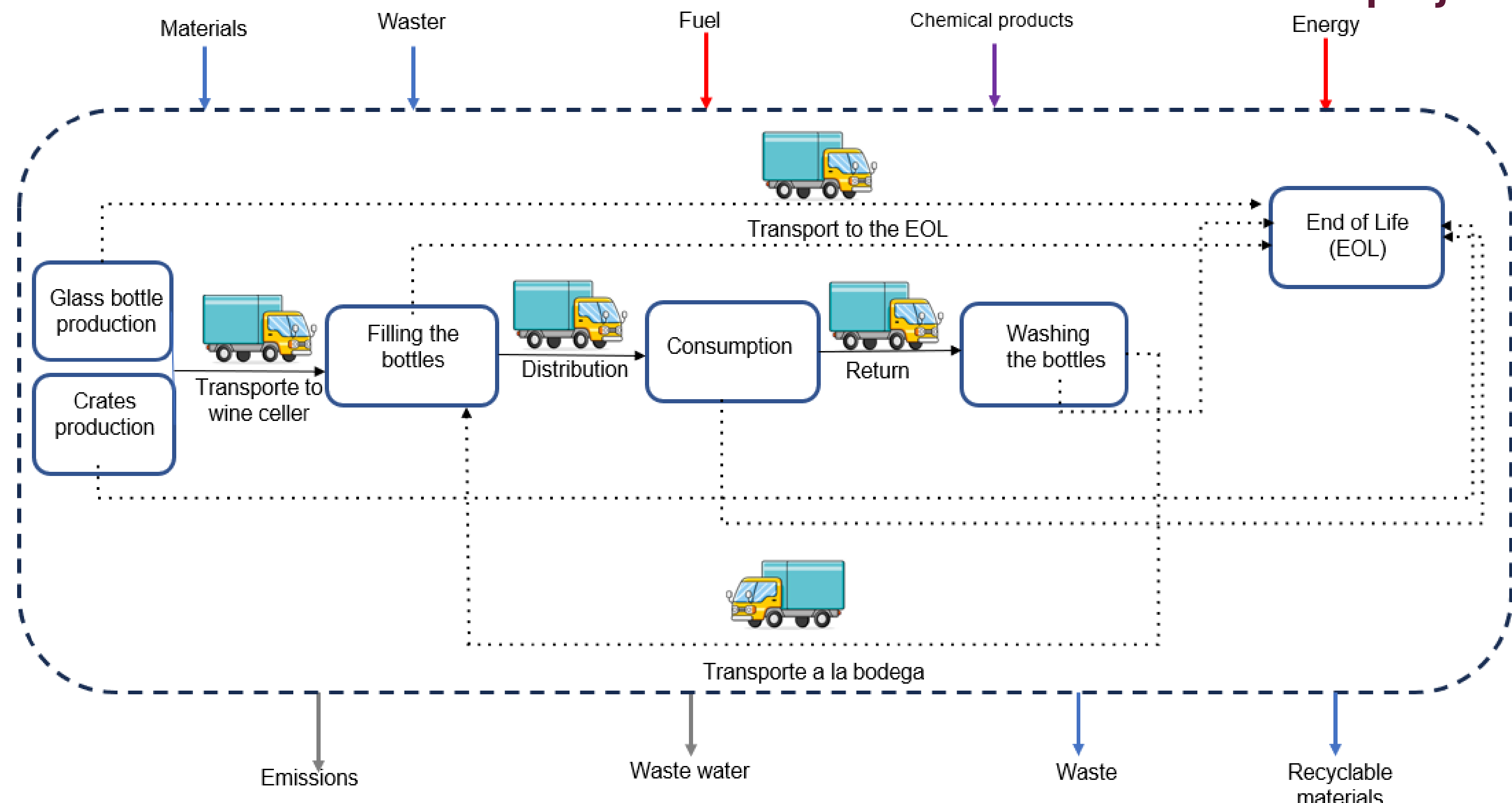


Figure 1. Boundaries of reusable bottles

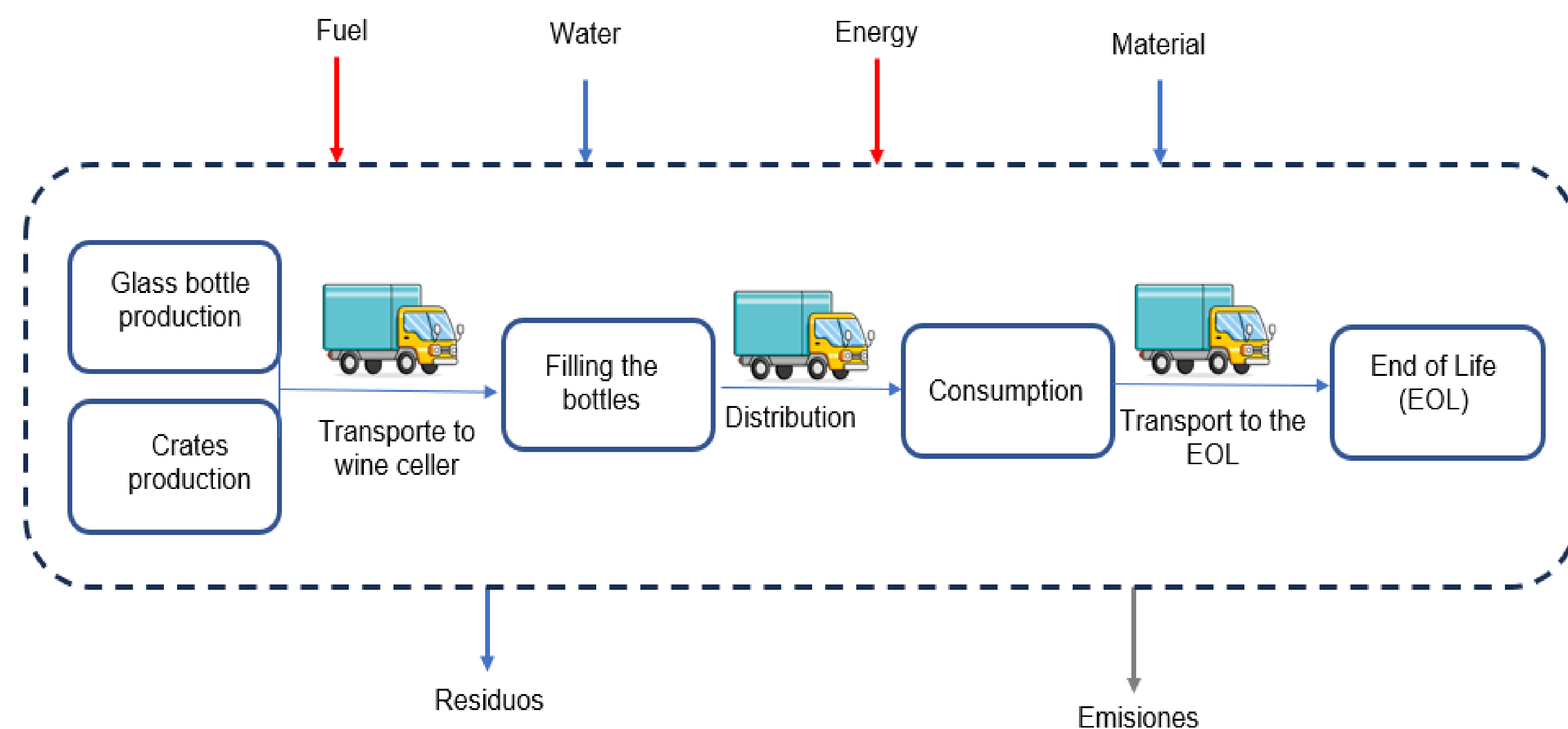


Figure 2. Boundaries of single use bottles

### References

- European Commission. (2021). COMMISSION RECOMMENDATION of 16.12.2021 on the use of the Environmental Footprint methods to measure and communicate the life cycle environmental performance of products and organizations.
- European Union (EU). (2018). DIRECTIVE (EU) 2018/852 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 30 May 2018, amending Directive 94/62/EC on packaging and packaging waste.
- Product Environmental Footprint Category Rules (PRFCR) for still and sparkling wine (2020). Version 2.0.

### Acknowledgments

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- **Responsable del contenido:** Socios beneficiarios del grupo operativo.
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