

AMORIM CORK

CARBON FOOTPRINT

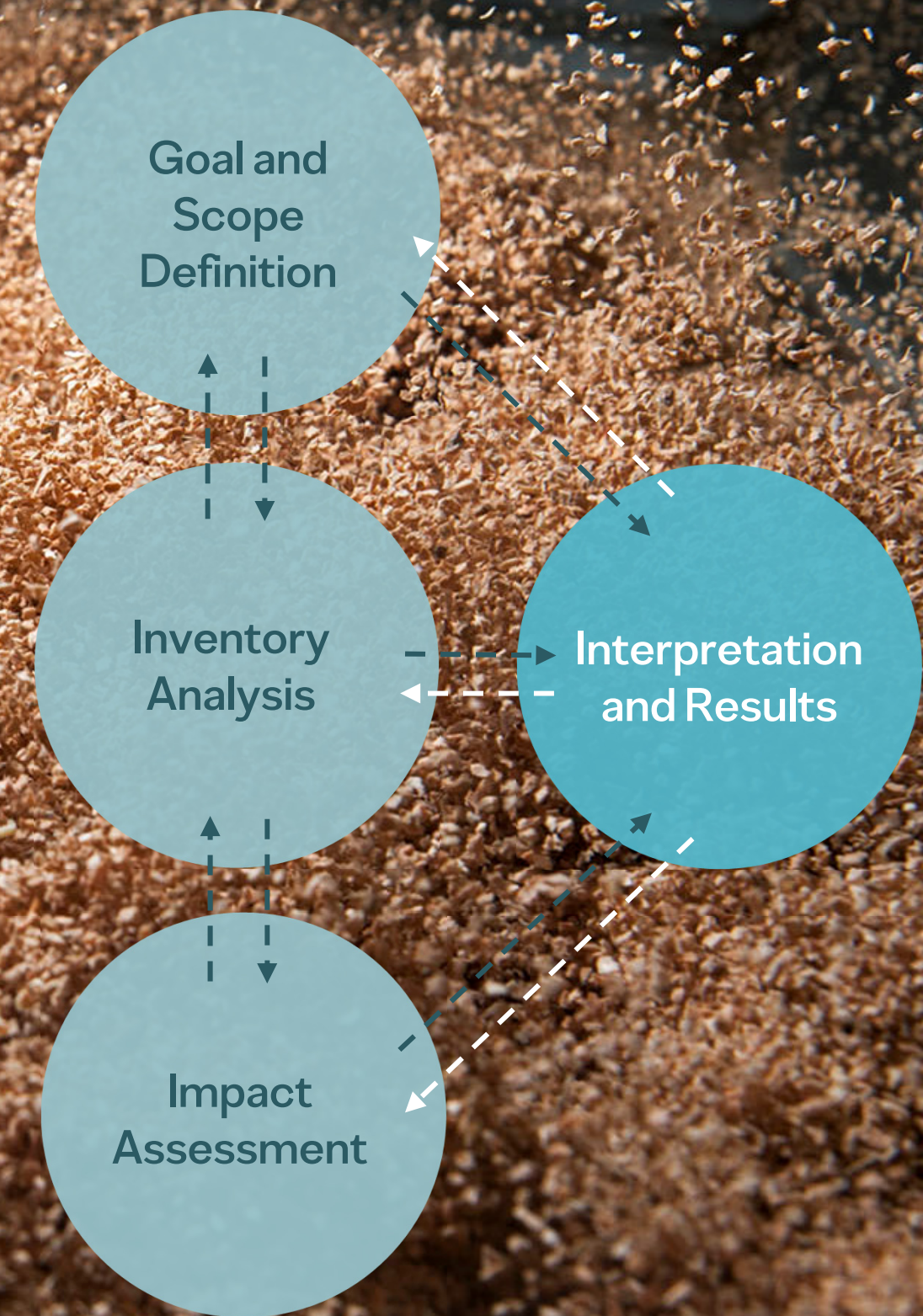
Spark[®] Top II

Executive Summary

02-13-2025, v1



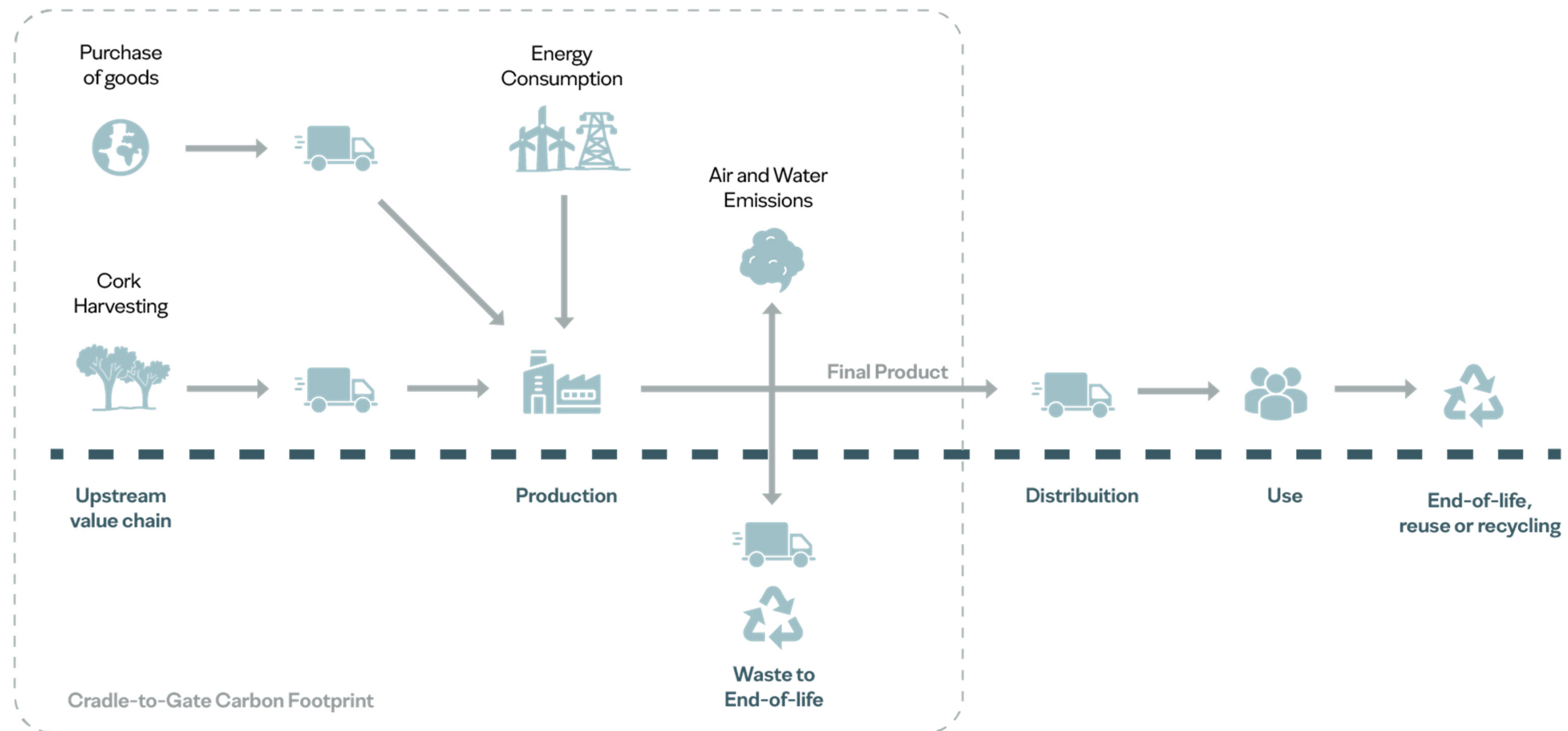
1. Study



1.
Study

2.
**Carbon
Footprint**

3.
Conclusions



$$\begin{array}{c}
 \text{Cork Carbon Content} \\
 \text{+} \\
 \text{Cradle to Gate GHG Emissions} \\
 \text{+} \\
 \text{Soil Carbon Retention} \\
 \text{=} \\
 \text{CARBON FOOTPRINT}
 \end{array}$$

1. Study



Context



Corticeira Amorim has been a market leader in the cork industry since its founding in 1870. The company, a global leader in the production and supply of cork stoppers, has its own distribution network, giving it a unique competitive advantage in offering the perfect stopper for any segment and type of wine and spirits, everywhere in the world.

Amorim Cork is the world's leading producer, supplier, and distributor of cork stoppers. The most advanced production techniques, unmatched quality control, and extensive know-how ensure unrivalled security in the supply of cutting-edge products.

Cork is an ecological, sustainable and **100 % natural raw material**.

The main goal of this study is to quantify the greenhouse gas emissions generated by the Spark® Top II stopper produced by Amorim Cork, using a life cycle approach.

The Spark® Top II stopper is a technical stopper created for the world's best effervescent wines. The Amorim Cork two-disc stopper achieves the highest level of physical, chemical and oenological performance. Composed of a granulated cork body and two natural cork discs at the top that are in contact with the wine, this stopper has excellent mechanical behavior and ease of bottling.

<i>Size</i> (mm x mm)	<i>Weight</i> (g)	<i>Composition</i>
48 x 30.5	9.19	85.79% cork granulate 11.86% glue 1.17% monopropylene 1.18% paraffinic oil

Methodology

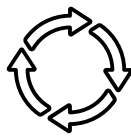
The carbon footprint presented in this report was calculated in accordance with the ISO 14067:2018 standard, using a life cycle analysis approach that assesses the potential impacts of a product in its different phases, and whose methodology is described in the ISO 14040/44:2006 standard. This study was verified by an external, accredited entity which issued a verification opinion based on the emissions, removals and storage of greenhouse gases presented in the GHG statement “Spark® Top II Carbon Footprint, 02-13-2025, v1” and its summary “Carbon Footprint - Spark® Top II Executive Summary 02-13-2025, v1”. The summary is available at: <https://www.amorimcork.com/en/sustainability/studies-and-certificates/>

Using standard 14067:2018 as a basis, and in order to standardize the calculation of the carbon footprint of its products, Amorim Cork has drawn up an internal procedure for this process PG.GR.DSI.012.0 - Carbon footprint of products.



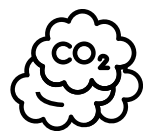
Approach

Cradle-to-gate (from the extraction of raw materials to the finished product when it leaves the factory).



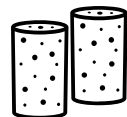
Life Cycle Stages Assessed

Production and harvesting of cork, boiling of the raw material, grinding, molding, production of discs, gluing of discs, mechanical finishes, electronic sorting, marking, treatment and packaging.



Method

The impact of CO₂ emissions over a 100-year period was calculated using the 'IPCC 2021 GWP100 (v.1.02)' method from the SimaPro v9.5 program. The GHG calculation relies on conversion factors sourced from the Ecoinvent v3.9 database, which is derived from the Sixth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) published in 2023.



Functional Unit

1000 stoppers

Data Collection and Quality

Annual Production Data



Raw material consumption
Secondary material consumption
(chemicals, packaging materials)
Water and energy consumption
Annual cork stopper production



Management control

Secondary Data



Transport related factors
Emission factors linked to steam production
Forestry Management



Ecoinvent v3.9 data base

*It was assumed that all the cork raw materials entering the system possess a similar amount of stored carbon. The estimate of the enclosed CO₂ is determined by the atomic weights of carbon (12) and carbon dioxide (44). The calculation considers the carbon fraction of 55% (dry basis) and the moisture fraction of 6% present in cork (Dias et al., 2014b).

Emissions from biomass energy production are considered neutral because it is assumed that the CO₂ released during the process was previously captured and therefore results in a neutral net balance of CO₂ emissions.

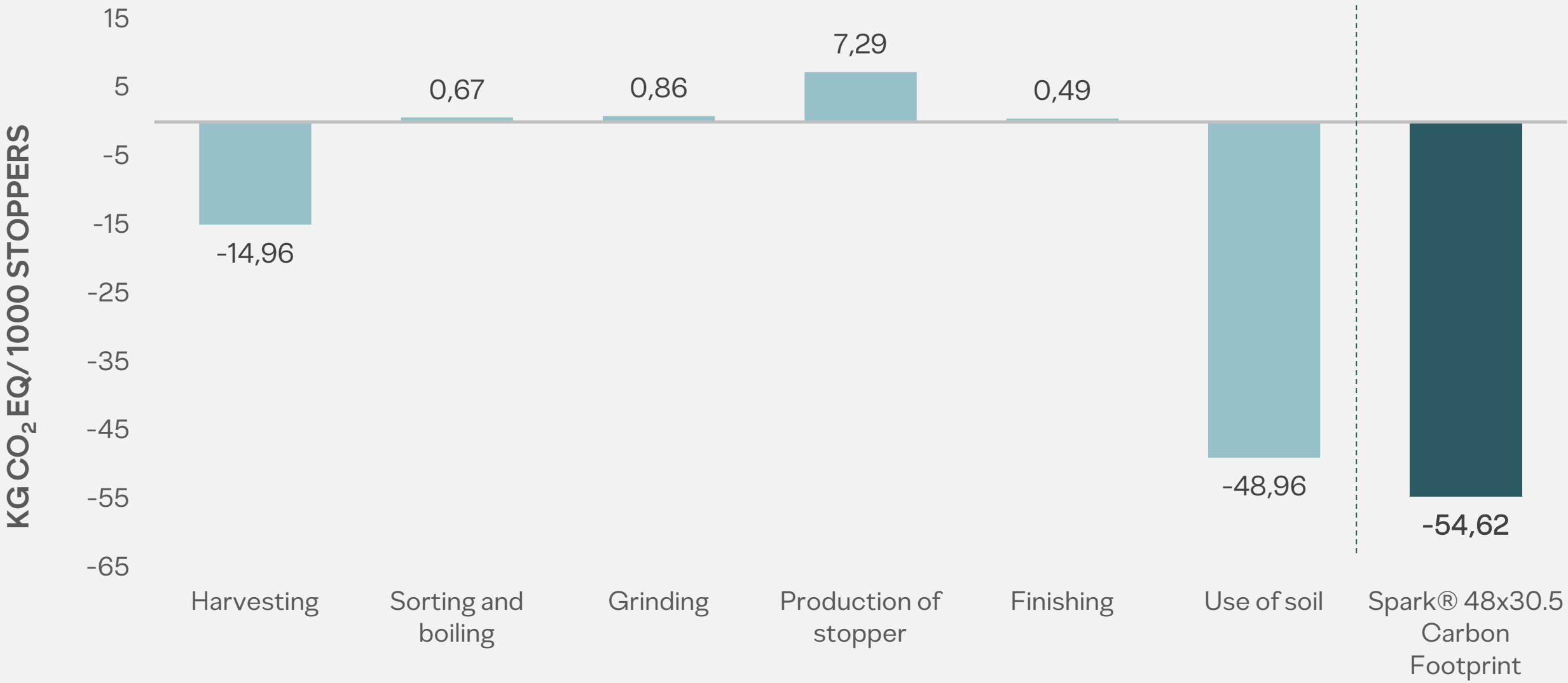
The land use estimate considered the cork yield potential of cork oak trees (Pereira and Tomé, 2014) and the typical extent of soil root occupation (which absorbs CO₂ over its lifespan) (Woodland Trust & IFN6). The carbon sequestration value resulting from the land usage of cork oaks was determined by considering the soil occupation required to manufacture 1000 stoppers (as indicated in the UF study) and the soil carbon storage per cork oak (as specified in Table 6-14 of the NIR, 2023).

2.

Carbon Footprint

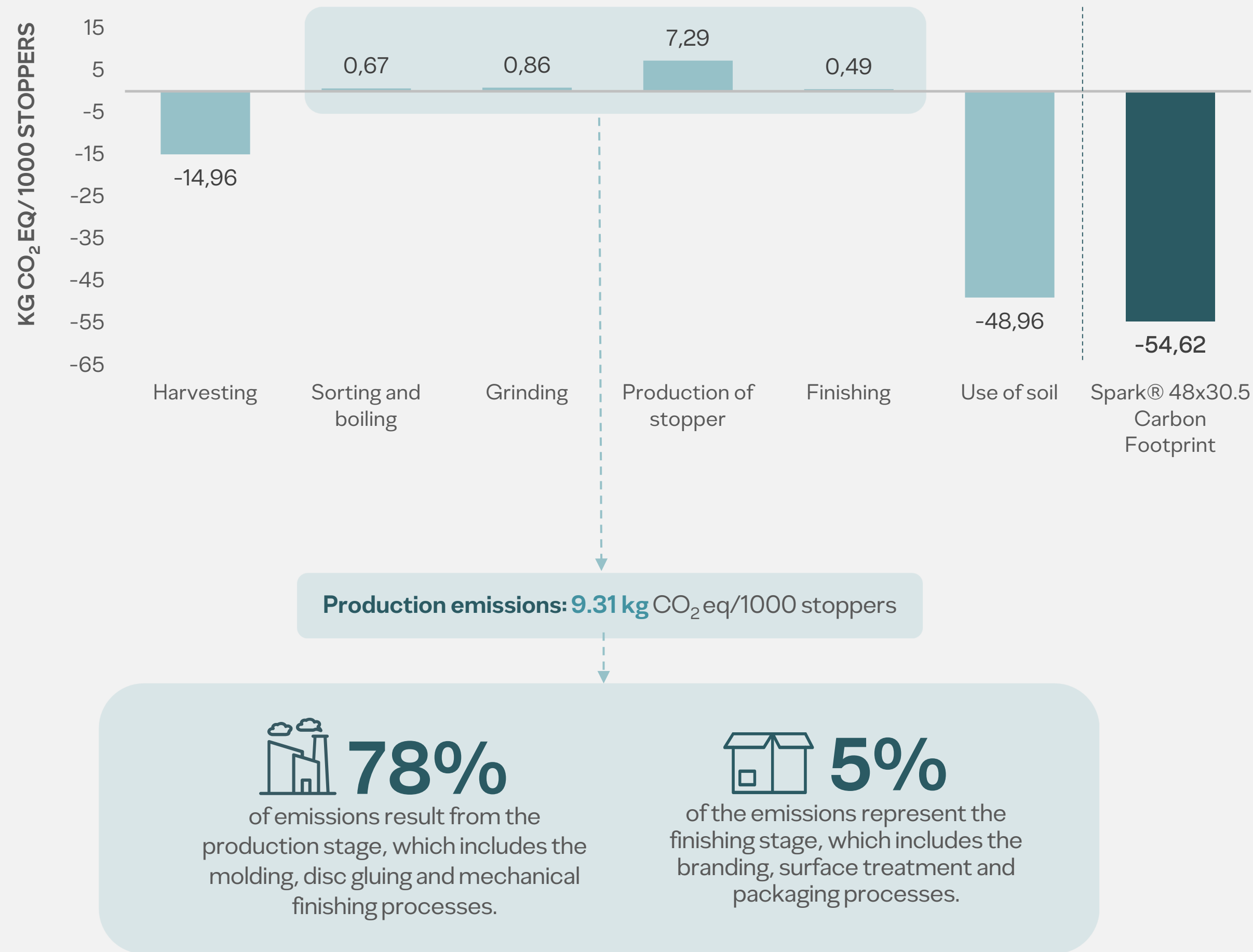


Results



Spark® Top II carbon footprint, according to standard 14067:2018: **-54.62 kg CO₂eq/1000 stoppers.**

Results



3.

Conclusions



Conclusões



The results, based on 2023 data, show that, according to a cradle-to-gate approach, the greatest impacts are associated with the **production stage**, which includes the molding, disc gluing and mechanical finishing processes. Emissions from this stage account for **78%** of production emissions.

Production emissions have a total impact of 9.31 kg CO₂eq per 1000 stoppers. Considering the carbon contained in cork (14.96 kg CO₂eq per 1000 stoppers) and land use (48.96 kg CO₂eq per 1000 stoppers), this results in a **product carbon footprint of -54.62 kg CO₂eq per 1000 stoppers**, in a cradle-to-gate approach.



Glossary

GEE Greenhouse Gases

CO₂eq Carbon dioxide equivalents

TCA 2,4,6-Trichloroanisole

IFN6 Sixth National Forest Inventory
(Institute for Nature
Conservation and Forests)

INERPA Inventário Nacional de Emissões
por Fontes e Remoção por
Sumidouros de Poluentes
Atmosféricos (Agência
Portuguesa do Ambiente)

UF Functional Unit

UI Industrial Unit

Technical Data Sheet

Title:

“Carbon Footprint– Spark® Top II: Executive Summary, 02-13-2025, v1”

A study conducted by:

Amorim Cork, S.A.

Email: amorim@amorim.com

Coordination:

Ana Maria Matos

Project Leader:

Sara Beatriz Silva

With the support of:

Marco Castelo

Cátia Teixeira

Luís Miguel Silva

José Pedro Fernandes

Ana Mendes

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Santa Maria de Lamas, Portugal

February 2025



ABOUT AMORIM CORK

Amorim Cork is the world's largest producer and supplier of cork stoppers, trusted by leading wine producers in an industry that is continually expanding and reinventing itself.

With subsidiaries in all the main wine-producing countries, from Europe to South Africa, Australia and South America, Amorim Cork sells to more than 22,000 customers, including some of the world's most renowned wine and Champagne brands.

The company offers a portfolio of high-quality solutions with impeccable sustainable credentials, from natural cork stoppers to technical stoppers. With over 150 years of history, the company demonstrates a comprehensive commitment to innovation. A strong investment in R&D has launched some of the most advanced sorting technologies on the market for still and sparkling wine cork stoppers, such as NDtech[®], Naturity[®] or Xpür[®].

Innovative production technologies, unbeatable know-how and excellent quality control are some of the reasons why the world's leading wine and sparkling wine producers trust Amorim Cork to protect their best wines.

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