Owens-Brockway Glass Container
Carbon neutral Certified Wine Bottle
390g wine bottle plus cork and label

Qualifying Explanatory Statement

in support of the

Achievement of and Ongoing Commitment to Carbon Neutrality

Application Period: 01/01/2023 - 12/31/2023

Date: 16 March 2023

1. Executive Summary

This document is the Qualifying Explanatory Statement (QES) which provides collected evidence in support of the declaration that O-I Glass, Inc:

1. has achieved carbon neutrality for its Wine glass container marketed in France for the period commencing 01-01-2023 to 12-31-2023 (see Section 3); and
2. is committed to maintaining carbon neutrality for its wine bottle manufactured at Labegude plant (see section 4).

The carbon neutrality declaration has been made and the collected supporting evidence has been provided in accordance with the requirements prescribed by PAS 2060:2014 – Specification for the demonstration of carbon neutrality.

Randolph L. Burns

Chief Sustainability & Corporate Affairs Officer

March 17, 2023

2. General information

PAS 2060 Requirement	Information Relating to the Carbon Neutral Declaration
Entity making PAS 2060 declaration:	Owens-Brockway Glass Container
Subject of PAS 2060 declaration:	Wine packaging composed of a glass bottles produced at the Labégude plant (France), a cork and a paper label. Cradle to grave life cycle boundary was considered to estimate the carbon footprint of the stated product
Description of Subject:	Purpose: Owens-Brockway Glass Container aims to validate the Carbon Neutrality of its wine bottles as a total package (including the glass bottle, the cork, and the label), through certification with the Carbon Trust. **Objective:**

	The objective of the project is to calculate the carbon footprint (cradle-to-grave system boundaries) of a wine glass bottle, produced in Labégude (France) in 2021, following strict guidelines by the Carbon Trust. Similarly, the same analyses are performed on Labels manufactured by the labeling company and the cork manufactured by Amorim as the partnering companies. Results are expected to provide the total carbon footprint of a total packaging as well as a breakdown of impacts to understand the key drivers and inform improvement strategies within O-I. Also, results will lead to the quantification of how much carbon offsets are needed to claim it to be a carbon-neutral product. **Functional Unit:** The function of a wine bottle is to hold the product and to protect it from spills, evaporation or contact with other foreign substances as well as any UV damages from the environment. Therefore, the selected functional unit for the project is: One single 390 g wine glass bottle as a total packaging (including label and cork), produced in a O-I plant located in Labégude (France) in 2021.
Rationale for selection of the subject:	Being the world's number one producer of glass containers, O-I wants to be one of the first movers in the sustainability journey to provide unique green products to the brand owners that includes certifying a selected number of products as carbon-neutral packaging. The wine industry needs packaging solutions that will help them mitigate the carbon impact of their production. The use of lighter glass bottles is one way to achieve this objective. In the past, extreme lightweight bottles did not break through on the market as they were lacking design appeal to consumers. With its Carbon neutral Certified wine bottle, O-I has developed a lightweight glass bottle (390g) and an appealing design (validated in quantitative consumer test). O-I's Carbon neutral Certified wine bottle also minimizes its carbon footprint as it uses a cork closure, a simple paper label, and no additional plastic overcap. The color of the bottle has been chosen to be 'dead leaf', this allows a high % of recycled content of 80% and a versatile usage between red and white wines. The rationale of this project is to quantify the key drivers for the environmental impacts, lay out a well-thought-out plan, and eventually implement a reduction strategy to reduce the entire footprint of a bottle in the coming years. This project has its relevance as part of broader O-I sustainability roadmap and especially its ambition to reduce GHG emission 25% by 2030. France and Labégude plant have been chosen after the completion of a detailed LCA analysis of 5 O-I plants in France, USA and Italy. Labégude was selected as it has the best LCA profile.

	Labégude plant successful managed to produce the wine bottle at the light weight of 390g with no degradation of its line production performances.
Control approach:	We have employed the Cradle-to-Grave boundary
Type of conformity assessment:	Independent third-party certification (see Appendix 2)
Baseline date for PAS 2060 programme:	01.01.2023 to 31.12.2023 *Note that 2021 data period is being used as a proxy and that the footprint will be reconciled using 2023 data by March 2024.
Individuals responsible for evaluation and provision of data necessary for declaration:	Linda Coppola, Global Marketing Manager is the program lead of this project from O-I. Her responsibility is substantiating, product launching, communicating, and maintaining the declaration. She is also making the link with O-I France Marketing and Commercial team who commercialize the product. Sutapa Bhaduri, Global Sustainability Lead is responsible for providing and validating all the technical data necessary for the submission of the certification. EarthShift Global (ESG) is a reputed third-party entity that provided expertise for the LCA analyses. Agendi is a third-party entity that helped O-I to source, purchase, and retire Carbon offset that are fulfilling the Carbon Trust and PAS 2060 standard requirements.

3. Declaration of achievement of carbon neutrality

PAS 2060 Requirement	Information Relating to the Carbon Neutral Declaration
Declaration of achievement:	Carbon neutrality of O-I's Carbon neutral Certified wine bottle, a 390g wine bottle plus cork and label achieved by O-I Glass, Inc. in accordance with PAS 2060 on 16.03.23 for the period commencing 01.01.2023 to 31.12.2023, certified by the Carbon Trust.
Recorded carbon footprint of the subject during the period stated above	0.24948 Kg CO2 eq /wine glass bottle plus cork and label See section 3.2 for further details.
Carbon offsets purchased	Carbon Offsets have been purchased and retired through climate solutions provider Agendi Inc. O-I has purchased 250 offsets, representing 250 metrics tons of CO2e, to cover the emissions of

	1,000,000 bottles, which is the forecasted volumes for 2023 (certification timeframe). 200 offsets were retired on Dec. 16 2022 on Verra registry and 50 additional offsets were retired on March 6 2023 also from Verra registry following the full completion of the carbon footprint certification. On top of sourcing Verra certified credits, O-I also sourced credits from French 'Label Bas Carbone' supporting the reforestation of 1.44 hectare in the Jura region. This is going to create 512 metric tons of CO2e reduction. These offsets are not being used for the purpose of this declaration as they will only be issues after the trees have been planted and achieved carbon sequestration. See section 3.4 for further details.

3.1. Carbon footprint methodology

PAS 2060 Requirement	Information Relating to the Carbon Neutral Declaration
Description of the standard and methodology used to determine GHG emissions and reductions	The methodology for calculating the carbon footprint was as follows: For the LCA analyses, we followed ISO 14067 standard. System modelling was carried out by using the commercial LCA software SimaPro 9.4.01 (developed by PRé Consultants) and the application of the IPCC GWP100 impact assessment (characterization factor provided in a separate file). The software allows the calculation of life cycle inventories and impact assessment, contribution analysis, parameterization, and related sensitivity analysis and uncertainty analysis. To exclude infrastructure from the assessment, models were all built using unit-level processes and assessed with infrastructure excluded. **For the glass bottle:** The study uses a combination of primary and secondary data. Primary LCA data was collected by O-I, based on the 2021 operation, and was used to calculate the impacts of: • Raw materials: Raw materials consumption for the manufacturing of one glass bottle. Supplier location and transportation distances. • Packaging: Packaging consumption (corrugated board and plastic film) for one glass bottle. • Manufacturing: Electricity and natural gas requirements for the melting and refining process. Water requirements, waste generation and non-CO2 emissions.

- Distribution: Transportation distances and way of transport from O-I's gate to bottle fillers.

Secondary data was used where primary data was not available.

Data from the Ecoinvent 3.8 cut-off database was used in:

- Raw materials (for glass bottle and packaging) extraction and manufacturing process.
- Electricity grid.
- End of life.

Distribution to final consumer data was calculated based on Eurostat reports on wine consumption and average freight transportation distances for Europe, North America and Asia.

CORK

Product characteristics	
Name	Natural cork
Producer	Amorim Cork
Place of Production	Portugal – Santa Maria de Lamas
Dimensions (mm x mm)	45 x 24
Weight (g)	3.87
Composition	100% Cork

Methodology

The carbon footprint presented in this report was developed according to the guidelines of Greenhouse Gas Protocol (GHG), developed by the World Business Council for Sustainable Development and the World Resources Institute.

- The methodology used is life cycle analysis (LCA) based, taking into consideration ISO 14040 series of standards and supported by estimated data from operational units, and also from bibliographic sources, complemented using the Ecobilan LCA database and PwC's specific life cycle analysis software – TEAM ®.
- The results presented are not third-party verified
- The methodology used in emission accounting is based on emission factors and activity data provided by, using the following equation: $GHG\ Emission = Activity\ data \times Emission\ Factor$
- Cork integrated into the product natural cork stoppers constitutes a carbon sink.
- Emissions from biomass energy production are considered neutral, according to GHG Protocol.
- **Approach:** Cradle-to-Grave (from raw material extraction to the end-of-life of the product).
- **Life cycle stages assessed**: Production of raw materials, Transport of raw materials, Production of closures, Transport of closures, Bottling, Use of closures and End-of-life. Activity information was gathered from Amorim Cork until the Bottling stage.
- **Functional Unit:** a standard bottle of wine bottled sold on the UK market.

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- **Reference flow**: The results are given per 1000 closures.
- Modelling software and database: TEAM™ software, Ecobilan database and data provided by Amorim Florestal and Amorim Cork (units Equipar and Distribution).

Label

For the purpose of the certification and to demonstrate the low impact of the label on the total functional unit of this product, we have partnered with Avery Dennison, a global leader in paper supply used for bottles labelling.

For our assumptions, as we cannot impose on our customers a specific label and in the absence of market data on this, we have taken a base case using a paper reference in Avery Dennison portfolio that is a worst-case scenario.

BE558 SABLE BLANC FSC S2030-BG45WH FSC

Adhesives - 2018- Emulsion

Liners - 2018-Glassine

Liner Papers - 2018-Uncoated paper

We have taken some assumptions on label size based on the technical drawing of O-I's Carbon neutral Certified Wine bottle and the average label size:

Assumption on label size OI bottle

	front	**back**
label size	9 cm x 7 cm	8 cm x 6 cm

This methodology was developed to be in accordance with the requirements of the ISO 14067 standard.

The provisions of the methodology for calculating the carbon footprint were applied as detailed and the principles set out in PAS 2060 were met.

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<tr><td>Justification for the selection of the methodologies chosen</td><td>

Glass bottle assumptions:

The following impacts were excluded from the scope and boundaries of the analysis:

Infrastructure (e.g. buildings and auxiliary plant equipment), human activities (e.g. employee travel to and from work), research and development (i.e. the laboratory and inputs related to the development of the technologies) and services (e.g. the use of purchased marketing, consultancy services, business traveling).

Wine bottle washing, sterilizing and filling by the wine manufacturer.

- **For raw materials:**

Sand is modelled as Silica Sand.

Limestone is modelled as Washed Limestone.

Soda ash is assumed as dense, produced by the modified Solvay process.

Based on chemical similarities, Iron Chromite is assumed as Chromium Oxide.

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"Coke" is modelled as Petroleum Coke.

Sodium Hydroxide is modelled as without water, in a 50% solution state.

Based on chemical similarities, Calcium Sulphate is assumed as Sodium Sulphate.

- **For transport:**

Road was assumed by lorry (16-32 tons), with Euro4 tech.

Maritime was assumed by container ship, without refrigeration.

Rail was assumed by freight train, without refrigeration.

- **Distribution:**

From bottle filler to market:

Given the absence of primary data: when applicable, transportation distance from bottle filler to port assumed equal to distribution from O-I's gate to bottle filler.

For maritime distribution, the origin port for all bottles: Labegude: Marseille.

The ports of arrival for each use phase geography: Europe: Barcelona

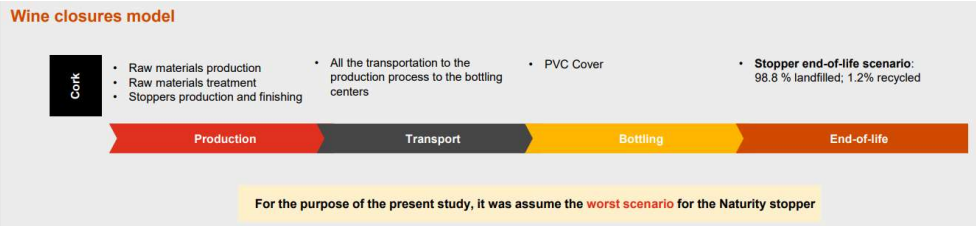
Land transportation distribution between lorry and rail in each use phase geography: Europe: Data taken from EuroStat (2018-2020).

- **End of Life:**

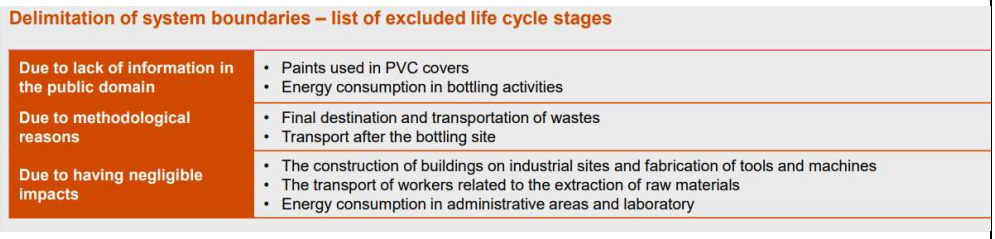
Manufacturing waste treatment for European plants is assumed as incineration (worst case scenario) in the same country it is produced.

Bottle and Packaging EoL is based on statistics from EuroStat from UK, FR, and DE (Eurostat, 2019) (see Life Cycle Inventory tab)

CORK



Labels



3.2. Carbon footprint breakdown

Carbon Footprint *(for latest footprinting year)*	**Information Relating to the Carbon Neutral Declaration**
Total Carbon Footprint	**Forecasted volumes for application period (bottles)** **1,000,000** **Total system (glass bottle, cork and label) impacts:** **Carbon Footprint:** 0.24948 Kg CO2 eq /glass bottle **Estimated emissions** = 0.24948 *1,000,000 bottle = 249.478.29 kg of CO2. The footprint will be reconciled using 2023 for 2024 recertification.

Table 1. Product footprint emissions broken down by product per functional unit

Region	SKU	Emissions	Units
Labegude, France	390 g wine bottle plus cork and label	0.24948	Kg CO_2 eq

3.2.1. Data methods

Data sources

When applicable, information such as batch materials composition, upstream data including transportation, downstream data, packaging, water, and air emissions, etc. used in the model comes from several business units (Procurement, EH&S, and R&D) within O-I. This fits with the objective of this report to obtain information from primary sources since all of the reporting pertains to information specific to O-I direct operational controlled manufacturing plants. Process data (melting, system, recycled contents) for each furnace within the plant are obtained from an internal database named Global Metrics. This database contains information such as the energy used in furnaces at each plant, the type of fuel used, cullet percentages, tons of glass melted, and other statistics for each plant O-I operates. This allows for impacts to be calculated for each plant individually. This database is updated frequently each day, with values reported directly from each plant

Primary data were sourced to support lifecycle stages such as:

- Batch raw materials (amount and transportation)
- Melting process data
    - Electricity consumption
    - Natural gas consumption

- System process data (Conditioning, forming and finishing)
    - Electricity consumption.
    - Natural gas consumption.
- Water consumption during manufacturing.
- Manufacturing waste and treatment.
- Non-CO_2 manufacturing emissions.
- Distribution to filler
- Packaging

Secondary data were sourced to support lifecycle stages such as:

- Raw materials and packaging extraction and production (transformation).
- Upstream electricity grid impacts.
- End of life.
- Distribution of market.

Data quality and uncertainties

All data packages quality is assessed based on time related coverage, geographical coverage, technology coverage, procession, completeness, representativeness, consistency and reproducibility.

Bottle raw materials:

Time coverage: Very good. Primary data from 2021 was used to represent the raw materials consumption for the production of the glass bottle. Background data was obtained from Ecoinvent 3.8, which were updated in 2021.

Geographical coverage: Good. Primary data from Labegude was used to represent the raw materials consumption for the production of the glass bottle. Background data representative of European processes was used to the extent possible, using global and “RER” inventories where necessary.

Precision and Completeness: Very good. Primary data from 2021 was obtained from production registers and normalized formats. Background data was obtained from Ecoinvent, a recognized and certified worldwide environmental data.

Representativeness: Very good.

Consistency and Reproducibility: Very good. All primary data was obtained via normalized internal procedures and secondary data was obtained from a certified database.

Overall score: Very good

Label:

Time coverage: Very good. Primary data from 2021 was used to represent the label manufacturing process

Geographical coverage: Acceptable.

Precision and Completeness: Good.

Representativeness: Good.

Consistency and Reproducibility: Very good. All primary data was obtained via normalized internal procedures and secondary data was obtained from a certified database.

Overall score: Good.

Cork:

Time coverage: Very good. Data from 2021 was used to represent the cork life cycle impacts.

Geographical coverage: Acceptable. Results represent impacts associated with the use of the cork in the UK.

Precision and Completeness: Very good. Study followed ISO standards and is in critical review process.

Representativeness: Very good. Study followed ISO standards and is in critical review process.

Consistency and Reproducibility: Very good. Study followed ISO standards and is in critical review process.

Overall score: Good.

Packaging:

Time coverage: Very good. Primary data from 2021 was used to represent the raw materials consumption for the production of the glass bottle. Background data was obtained from Ecoinvent 3.8, which were updated in 2021.

Geographical coverage: Good. Primary data from Labegude was used to represent packaging. Background data representative of European processes was used to the extent possible, using global and "RER" inventories where necessary.

Precision and Completeness: Very good. Primary data from 2021 was obtained from production registers and normalized formats. Background data was obtained from Ecoinvent, a recognized and certified worldwide environmental data.

Representativeness: Very good.

Consistency and Reproducibility: Very good. All primary data was obtained via normalized internal procedures and secondary data was obtained from a certified database.

Overall score: Very good.

Manufacturing (Electricity, natural gas, water consumption and waste generation):

Time coverage: Very good. Primary data from 2021 was used to represent the manufacturing process of the bottle. Background data was obtained from Ecoinvent 3.8, which were updated in 2021.

Geographical coverage: Good. Primary data from Labegude was used to represent manufacturing. Background data representative of European processes was used to the extent possible, using global and "RER" inventories where necessary.

Precision and Completeness: Very good. Primary data from 2021 was obtained from production registers and normalized formats. Background data was obtained from Ecoinvent, a recognized and certified worldwide environmental data.

Representativeness: Very good.

Consistency and Reproducibility: Very good. All primary data was obtained via normalized internal procedures and secondary data was obtained from a certified database.

Overall score: Very good.

Distribution

Time coverage: Good. Primary data from 2021 was used to represent the distribution to the bottle filler. Secondary data from 2020 was used to represent average transportation distances to final costumers.

Geographical coverage: Good. Background data representative of European processes was used to the extent possible, using Ecoinvent 3.8 "RER" inventories where necessary.

Precision and Completeness: Very good. Primary data from 2021 was obtained from production registers and normalized formats. Secondary data was reported in official governmental reports.

Consistency and Reproducibility: Very good. All primary data was obtained via normalized internal procedures and secondary data was obtained from official reports.

Overall score: Good.

End of life:

Time coverage: Acceptable. Secondary data from 2019 was used to represent average end of life practices.

Geographical coverage: Acceptable. Secondary data from Europe was used to represent average end of life practices.

Precision and Completeness: Secondary data was reported in official governmental reports.

Consistency and Reproducibility: Secondary data was reported in official governmental reports.

Overall score: Good.

Limitations

When interpreting the results of an LCA it is important to consider the limitations of the methods and data used to provide a proper context for the study results.

The ability of LCA to consider the entire life cycle of a product makes it an attractive tool for the assessment of potential environmental impacts. Nevertheless, like other environmental management analysis tools, LCA has several limitations. These can be related to data quality and the unavailability of potentially relevant data.

Furthermore, LCA is based on a linear extrapolation of emissions with the assumption that all the emissions contribute to an environmental effect. This is contrary to threshold-driven environmental and toxicological mechanisms. Thus, while linear extrapolation may be a reasonable approach for more global and regional impact categories such as Global Warming Potential and Acidification, it may not accurately represent the human and ecotoxicity related impacts.

One important limitation is how LCA considers EoL which consists of material transport and processing in a landfill or incineration, but the material loss and possible leakage into the open environment are not considered.

It should be kept in mind that even if a study has been critically reviewed, the impact assessment results are relative expressions and do not predict impacts on category endpoints (e.g., human health, wildlife species), the exceedance of thresholds, or risks.

Another limitation of the LCA framework is the gaps in characterization factors for impact assessment and these gaps tend to be greater in toxicity related categories. Not all elementary flows will be reflected in the midpoint results. Also, some flows of concern particular to packaging such as leakage to the environment and microplastics are not included in impact assessment and are the subject of ongoing research.

This model and its results should not be used for product comparison, only for single product assertions.

When considering the cork, EoL practices are limited to the UK market.

Table 2. List of country of sales

Country of Sales
France

Table 2. Description of GHG emissions

Life cycle stage	Description	GHG Emissions Category	Excluded emissions & Justification

Use phase	Consumer use of the product	Scope 3-indirect emissions	Impacts related with the use of the product (bottle opening, pouring, and storing) are considered *de minimis* (mostly manual activities that do not involve energy consumption or industrial emissions). Also, O-I has no influence on the way the final customer uses the bottle, so it wouldn't be possible to include this life cycle phase in any reduction plan.
Use phase	Washing, sterilizing and filling	Scope 3- indirect emissions	Excluded due to uncertainty in data. All these processes are performed by O-I's clients and operation parameters are undisclosed. As well, O-I has no control or influence on the methodologies or technologies employed for these activities, so it wouldn't be possible to include them in reduction plans.
Process	Natural gas (used for melting and refining)	Scope 1 emissions	Included
Process	Electricity (used for melting and refining)	Scope 2 emissions	Included
Process	Manufacturing waste	Scope 3 emissions	Included
Process	Loss on ignition	Scope 1 emissions	Included
Process	Public water	Scope 3 emissions	Included
Raw Materials	Sand, Soda ash and limestones (primary materials)	Scope 3 emissions	Included

Raw materials	External and Internal cullet	Scope 3 emissions	Included
Raw materials	Bottle Label	Scope 3 emissions	Included
Raw materials	Bottle Stopper (cork)	Scope 3 emissions	Included
Raw materials	Transport from supplier to O-I's gate	Scope 3 emissions	Included
Packaging	Plastic, cardboard	Scop 3 emissions	Included
Distribution	Transportation emissions (to filling line and market)	Scope 3 emissions	Included
End of life	Bottle and packaging final disposition	Scope 3 emissions	Included

3.3. Carbon offsets

PAS 2060 Requirement	Information Relating to the Carbon Neutral Declaration
Offset methodology	Carbon Offsets have been purchased and retired through climate solutions provider Agendi Inc. O-I has purchased 250 offsets, representing 250 metrics tons of CO2e, to cover the emissions of 1,000,000 bottles, which is the forecasted volumes for 2023 (certification timeframe). 200 offsets were retired on Dec. 16 2022 on Verra registry and 50 additional offsets were retired on March 6 2023 also from Verra registry following the full completion of the carbon footprint certification. On top of sourcing Verra certified credits, O-I also sourced credits from French 'Label Bas Carbone' supporting the reforestation of 1.44 hectare in the Jura region. This is going to create 512 metric tons of CO2e reduction. These offsets are not being used for the purpose of this declaration as they will only be issues after the trees have been planted and achieved carbon sequestration.
Offset Confirmation	The offsets generated represent genuine, additional GHG emission reductions elsewhere. Projects involved in delivering offsets meet the criteria of additionality, permanence, leakage and double counting.

	Carbon offsets are verified by an independent third-party verifier. The credits from the selected carbon offset projects are: • only issued after the emission reduction has taken place. • retired within 12 months from the date of the declaration of achievement. • supported by publicly available project documentation on a registry which provides information about the offset project, quantification methodology and validation and verification procedures. • stored and retired in an independent and credible registry.
Offsets	Full details of the carbon offsets included in making this declaration are provided in Appendix 1.

4. Declaration of ongoing commitment to carbon neutrality

PAS 2060 Requirement	Information Relating to the Carbon Neutral Declaration
Declaration of on-going commitment:	O-I Glass, Inc. commits to maintain carbon neutrality for O-I's Carbon neutral certified Wine bottle (390 g wine bottle plus cork and label) in accordance to PAS 2060 for the period Jan 2024-Dec 2024. Carbon neutrality for O-I's Carbon neutral certified Wine bottle (390 g wine bottle plus cork and label) for the period Jan 2024-Dec 2024 will be achieved by mid-2025

4.1. Carbon management plan

PAS 2060 Requirement	Information Relating to the Carbon Neutral Declaration
Targets for GHG reduction for the defined subject appropriate to the timescale for achieving carbon neutrality	The baseline and the target year are 2023 and 2025 respectively. O-I will carry out a concerted effort to reduce scope 1 and 2 emissions to reduce the footprint of the glass bottle approximately between 0.5 to 1 percent per year. Due to the current uncertainties related to the possible substitution of natural gas with renewable fuels such as green hydrogen or biomethane, it is difficult to provide a concrete roadmap with a specific timeline. However, O-I has committed to the science-based target with a 25% reduction target by 2030 globally and steadily progressing to reach the goal with approximately a 13% reduction compared with the baseline year of 2017

	Labegude, being one of the best-performing plants within O-I's manufacturing landscape, it limits major improvement opportunities. Being ISO 50001-certified plant, an energy management plan is already in place. Approximately 0.5 to 1 percent per year emission reduction is possible by committing to various decarbonization technologies such as waste heat recovery, improving furnace efficiency, and increasing recycled (cullet) content, etc. It is to be noted that Labegude furnace has been repaired in 2014, and furnace repair contributes to better efficiency, nevertheless each year due to aging this efficiency decreases. Therefore the efforts done in emission reduction each year are partially balanced by this unavoidable loss. Our aim is to avoid entire unnecessary emissions by making the furnace efficient. For example, In a traditional glass furnace, flue gas containing a significant amount of CO2, escaped from the stack, causing emissions. Installation of a gas-oxy furnace with a cullet preheater (GOAT) in 2029 is scheduled. The new GOAT furnace technology usually leads to 14 to 15 percent energy reduction. After that, the offsets will be purchased to compensate for the remaining emissions.
Planned means of achieving avoided GHG emissions	• Committing to 100% renewable electricity by 2027.
Planned means of achieving and maintaining GHG emissions reduction	• Cullet increases by 0.5%/year for the next 6 years. Cullet is one of the biggest levers for emission reduction as it melts relatively lower temperature compared to virgin materials and thus requires less melting energy. • Additional Bottle glass weight reduction in 2031. It leads to fewer transportation emissions as glass is heavy. • By utilizing flue gas to preheat the raw materials, a portion of that emissions can be avoided. It also improves the furnace's efficiency because it preheats the incoming batch materials, therefore less energy is required to melt glass. See Annex 2 for further details.
The offset strategy to be adopted for residual emissions	O-I has developed the Carbon neutral certified wine bottle (390g wine bottle plus cork and label) to avoid and reduce its emissions as much as possible (lightweighted glass bottle, high cullet %, cork, no capsule, paper label, choice of Labegude as production plant). O-I will continue to reduce the footprint of the Carbon neutral certified wine bottle (390g wine bottle plus cork and label) according to declared Carbon management plan. While the emissions of the Carbon neutral certified wine bottle (390g wine bottle plus cork and label) have been minimized and will continue to reduce year on year, an offset strategy has been adopted to offset the residual emissions. For 2023, the residual emissions are planned to be 249.478.29 kg of CO2.

Carbon Offsets have been purchased and retired through climate solutions provider Agendi Inc. O-I has purchased 250 offsets, representing 250 metrics tons of CO2e, to cover the emissions of 1,000,000 bottles, which is the forecasted volumes for 2023 (certification timeframe). 200 offsets were retired on Dec. 16 2022 on Verra registry and 50 additional offsets were retired on March 6 2023 also from Verra registry following the full completion of the carbon footprint certification.

On top of sourcing Verra certified credits, O-I also sourced credits from French 'Label Bas Carbone' supporting the reforestation of 1.44 hectare in the Jura region. This is going to create 512 metric tons of CO2e reduction. These offsets are not being used for the purpose of this declaration as they will only be issues after the trees have been planted and achieved carbon sequestration.

Région et Dépt	Méthode et statut labellisation	Description Projet	Surface (ha)	Essences plantées	Estimation des Réductions d'émissions (tCO2)
Jura (39)	Notifié, en cours d'instruction depuis octobre 2022, labellisation fin 2022	-Reboisement de peuplement dépérissant ayant subi une attaque de scolytes, avec au moins 3 essences, avec 2 essences ou plus autochtones et représentant minimum 40 % des plants. - Respect du critère de diversification de 20% minimum : oui -Maintien d'arbres d'intérêt écologique ou de bordures boisées présentes à l'intérieur ou en limite des parcelles à reboiser.	1,44 Ha	3	512

Annex of Qualifying Explanatory Statement

Annex 1: Greenhouse gas emissions summary

A1.1 Carbon footprint details

Product	Stock Keeping Unit	Geographic Area	Total Net CO_2e not rounded	$KgCO_2$ per Functional Unit not rounded	$KgCO_2$ per Functional Unit rounded	Functional Unit
Carbon neutral certified wine bottle (390g wine bottle plus cork and label)	1 bottle with cork and label	France	0.24948 Kg CO2 eq *1,000,000 bottle with cork and label = 249.478.29 kg of CO2.	0.24948	0.249	390g Glass bottle with cork and label

A1.2 Methodology overview

Requirement	Information Relating to the Carbon Neutral Declaration
Boundary of the product	A glass wine bottle composed of a glass bottle of 390g, a cork closure and a paper label (NO overcap). Packaging consumption (corrugated board and plastic film) for one glass bottle.
Boundary of carbon footprint (the greenhouse gas emissions system considered)	We have employed the Cradle-to-Grave boundary **For the glass bottle :** the study uses a combination of primary and secondary data. Primary LCA data was collected by O-I, based on the 2021 operation in Labégude plant, France. Secondary data was used where primary data was not available. Data from the Ecoinvent 3.8 cut-off database was used in:

•Raw materials (for glass bottle and packaging) extraction and manufacturing process.
•Electricity grid.
•End of life.

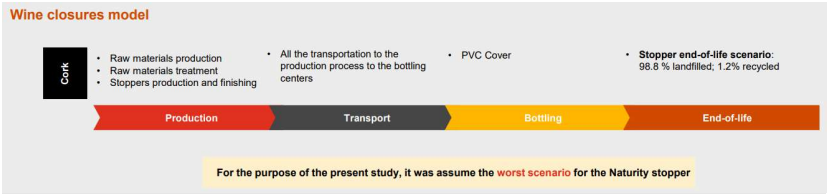
For the cork:

Product characteristics	
Name	Natural cork
Producer	Amorim Cork
Place of Production	Portugal – Santa Maria de Lamas
Dimensions (mm x mm)	45 x 24
Weight (g)	3.87
Composition	100% Cork

Methodology

The carbon footprint presented in this report was developed according to the guidelines of Greenhouse Gas Protocol (GHG), developed by the World Business Council for Sustainable Development and the World Resources Institute.

- The methodology used is life cycle analysis (LCA) based, taking into consideration ISO 14040 series of standards and supported by estimated data from operational units, and also from bibliographic sources, complemented using the Ecobilan LCA database and PwC's specific life cycle analysis software – TEAM ®.
- The results presented are not third-party verified
- The methodology used in emission accounting is based on emission factors and activity data provided by, using the following equation: $GHG\ Emission = Activity\ data \times Emission\ Factor$
- Cork integrated into the product natural cork stoppers constitutes a carbon sink.
- Emissions from biomass energy production are considered neutral, according to GHG Protocol.
- **Approach:** Cradle-to-Grave (from raw material extraction to the end-of-life of the product).
- **Life cycle stages assessed**: Production of raw materials, Transport of raw materials, Production of closures, Transport of closures, Bottling, Use of closures and End-of-life. Activity information was gathered from Amorim Cork until the Bottling stage.
- **Functional Unit:** a standard bottle of wine bottled sold on the UK market.

	• **Reference flow**: The results are given per 1000 closures. • Modelling software and database: TEAM™ software, Ecobilan database and data provided by Amorim Florestal and Amorim Cork (units Equipar and Distribution).  **For the label :** For the purpose of the certification and to demonstrate the low impact of the label on the total functional unit of this product, we have partnered with Avery Dennison, a global leader in paper supply used for bottles labelling. For our assumptions, as we cannot impose on our customers a specific label and in the absence of market data on this, we have taken a base case using a paper reference in Avery Dennison portfolio that is a worst-case scenario. BE558 SABLE BLANC FSC S2030-BG45WH FSC Adhesives - 2018- Emulsion Liners - 2018-Glassine Liner Papers - 2018-Uncoated paper We have taken some assumptions on label size based on the technical drawing of OI Oxygen bottle and the average label size: **Assumption on label size OI bottle** **front** **back** label size 9 cm x 7 cm 8 cm x 6 cm
Functional unit	The function of a wine bottle is to hold the product and to protect it from spills, evaporation or contact with other foreign substances as well as any UV damages from the environment. Therefore, the selected functional unit for the project is:

	One single 390 g wine glass bottle as a total packaging (including label and cork), produced in a O-I plant located in Labégude (France) in 2021.

A1.3 Lifecycle Overview

Life cycle stage	Description	Excluded emissions & Justification	Primary data sources	Secondary data sources	Data quality and uncertainties
e.g. Raw material acquisition	Sand is modelled as Silica Sand. Limestone is modelled as Washed Limestone. Soda ash is assumed as dense, produced by the modified Solvay process. Based on chemical similarities, Iron Chromite is assumed as Chromium Oxide. “Coke” is modelled as Petroleum Coke. Sodium Hydroxide is modelled as without water, in a 50% solution state. Based on chemical similarities, Calcium Sulphate is assumed as Sodium Sulphate. **Cork:** Cork impacts are based on a cradle-to-grave study by Amorim, considering one cork sold in the UK market. Cork impacts exclude distribution to bottle filler and final consumer. CO2 uptake analysis is based on a well-managed cork oak montado with a high tree coverage and good soil and climate conditions, reaching a maximun of 14.7 tons CO2/ha, corresponding to 73 tons CO2 / ton of cork extracted.		All primary data were obtained via normalized internal procedures.	All the secondary and background data were obtained from Ecoinvent 3.8, which were updated in 2021.	**Bottle raw materials:** **Time coverage:** Very good. Primary data from 2021 was used to represent the raw materials consumption for the production of the glass bottle. **Geographical coverage:** Good. Primary data from Labegude was used to represent the raw materials consumption for the production of the glass bottle. Background data representative of European processes was used to the extent possible, using global and “RER” inventories where necessary. **Precision and Completeness:** Very good. Primary data from 2021 was obtained from production registers and normalized formats. Background data was obtained from Ecoinvent, a recognized and certified worldwide environmental data. Representativeness: Very good. Consistency and Reproducibility: Very good. **Overall score: Very good** **Label:** **Time coverage:** Very good. Primary data from 2021 was used to represent the label manufacturing process **Geographical coverage:** Acceptable. Precision and Completeness: Good. **Representativeness:** Good. **Consistency and Reproducibility:** Very good. **Overall score: Good.** **Cork:**

	Labels: Labels produced in Avery Dennison Luxembourg. Adress: PED, 4801 Petange, Luxembourg. Standard label assumed as the highest selling paper label for wines. Label production volume: 1,000,000 m2.				**Time coverage:** Very good. Data from 2021 was used to represent the cork life cycle impacts. **Geographical coverage:** Acceptable. Results represent impacts associated with the use of the cork in the UK. **Precision and Completeness:** Very good. Study followed ISO standards and is in critical review process. Representativeness: Very good. Study followed ISO standards and is in critical review process. **Consistency and Reproducibility:** Very good. Study followed ISO standards and is in critical review process. **Overall score: Good.**
e.g. Manufacturing	Electricity, natural gas, water consumption and waste generation		Primary data from 2021 was used to represent the manufacturing process of the bottle	Secondary data were obtained from Ecoinvent 3.8, which were updated in 2021.	**Time coverage: Very good.** **Geographical coverage: Good.** Primary data from Labegude was used to represent manufacturing. Background data representative of European processes was used to the extent possible, using global and “RER” inventories where necessary. **Precision and Completeness: Very good.** Primary data from 2021 was obtained from production registers and normalized formats. Background data was obtained from Ecoinvent, a recognized and certified worldwide environmental data. **Representativeness: Very good.** **Consistency and Reproducibility: Very good.** All primary data was obtained via normalized internal procedures and secondary data was obtained from a certified database. **Overall score: Very good.**

e.g. Distribution	Including: - the emissions due to international transport (where available)		Primary data from 2021 was used to represent the distribution to the bottle filler.	Secondary data from Eurostat (2020) and Conseil Interprofessionel Du Vin De Bordeaux (2021) was used to represent average transportation distances to final costumers.	**Geographical coverage: Good.** Background data representative of European processes was used to the extent possible, using Ecoinvent 3.8 "RER" inventories where necessary. **Precision and Completeness: Very good.** Primary data from 2021 was obtained from production registers and normalized formats. Secondary data was reported in official governmental reports. **Consistency and Reproducibility: Very good.** All primary data was obtained via normalized internal procedures and secondary data was obtained from official reports. **Overall score: Good.**
e.g. Use phase	Including: - methods of processing the use stages - the emissions taken into account for the electricity or gas consumed from networks	Not applicable	Excluded	Excluded	Not applicable
e.g. End of life	Including: - methods of processing the end-of-life stages		No primary data was used to model this life cycle phase	Secondary data from Eurostat (2019) was used to represent average end of life practices. Background data, used to represent impacts of average EoL practices in the analysed geography, were obtained from Ecoinvent 3.8, which were updated in 2021.	**Time coverage: Acceptable** **Geographical coverage: Acceptable.** Secondary data from Europe was used to represent average end of life practices. **Precision and Completeness:** Secondary data was reported in official governmental reports. **Consistency and Reproducibility:** Secondary data was reported in official governmental reports. **Overall score: Good.**

A1.4 Geographical Areas of Emissions Overview:

Geographical Area	Relevant Emissions				
	Raw Material Acquisition	Manufacturing	Distribution	Use Phase	End of life
France	0.04647 Kg CO_2 eq	0.12014 Kg CO_2 eq	0.02528 Kg CO_2 eq	N.A	0.00093 Kg CO_2 eq

Annex 2: Greenhouse gas emissions reduction trajectory

The below tables state the target trajectory for reducing greenhouse gas emissions associated with the product or service advertised. The trajectory includes quantified annual progress targets, covering at least the ten years following the publication of the report.

SKU	Geography	Functional Unit	Requirement	[Baseline] 2023	2024	[2025]	[2026]	[2027]	[2028]	[2029]	[2030]	[2031]	[2032]	[2033]
SKU 1	France	kgCO2e / bottle	**Carbon footprint per functional unit**	0,24948 *($kgCO_2e$)*	0,24948 *($kgCO_2e$)*	0,24823 *($kgCO_2e$)*	0,24774 *($kgCO_2e$)*	0,24650 *($kgCO_2e$)*	0,24600 *($kgCO_2e$)*	0,24354 *($kgCO_2e$)*	0,24306 *($kgCO_2e$)*	0,24184 *($kgCO_2e$)*	0,24136 *($kgCO_2e$)*	0,24088 *($kgCO_2e$)*
			Percentage reduction target			0,5%	0,2%	0,5%	0,2%	1%	0,2%	0,5%	0,20%	0,20%
			Reduction realised	Estimation based on 2021 production figures	Reconciliation based on actual production No reduction targeted	Cullet % increase	Cullet % increase	Increase Renewable energy		New furnace repair		further weight reduction of glass bottle	cullet increase	

Annex 3: Offsets

The below information relates to the compensation of residual emissions (i.e. offsetting):

The offsets generated represent genuine, additional GHG emission reductions elsewhere. Projects involved in delivering offsets meet the criteria of additionality, permanence, leakage and double counting. We immediately retired those amount of offsets from the registry to avoid double counting.

Carbon offsets are verified by an independent third-party verifier. Carbon Offsets have been purchased and retired through climate solutions provider Agendi Inc. O-I has purchased 250 offsets, representing 250 metrics tons of CO2e, to cover the emissions of 1,000,000 bottles, which is the forecasted volumes for 2023 (certification timeframe). 200 offsets were retired on Dec. 16 2022 on Verra registry and 50 additional offsets were retired on March 6 2023 also from Verra registry following the full completion of the carbon footprint certification.

The credits from the selected carbon offset projects are:

- only issued after the emission reduction has taken place.

- retired within 12 months from the date of the declaration of achievement, respectively on Dec 16 2022 for 200 offsets and March 6 2023 for 50 additional offsets.
- supported by publicly available project documentation on a registry which provides information about the offset project, quantification methodology and validation and verification procedures.
- stored and retired in an independent and credible registry.

Project name	Country	Project type	Standard	Type of credits	Total credits	Generation period	Retirement date	Reference No. & link to registry	Offset volume (tCO_2e)	Offset Price	Justification for choice of offset
Cikel Brazilian Amazon REDD APD	Brazil	Project Avoiding Planned Deforestation	Verra	VCU	200	19/07/2007-18/07/2010	Dec. 16 2022	8615-34037365-34037564-VCS-VCU-261-VER-BR-14-832-19072007-18072010-0 Verra Registry	200	10 USD per ton	Verra is a recognized standard. Brazil is a country where O-I operates with production facilities.
Cikel Brazilian Amazon REDD APD	Brazil	Project Avoiding Planned Deforestation	Verra	VCU	50	19/07/2007-18/07/2010	March 6 2023	8981-57348460-VCS-VCU-261-VER-BR-14-832-19072007-18072010-0 Verra registry	50	10 USD per ton	Verra is a recognized standard. Brazil is a country where O-I operates with production facilities.
							Total tonnes (tCO_2e) offset		**250**		

On top of sourcing Verra certified credits, O-I also sourced credits from French 'Label Bas Carbone' supporting the reforestation of 1.44 hectare in the Jura region. This is going to create 512 metric tons of CO2e reduction. These offsets are not being used for the purpose of this declaration as they will only be issues after the trees have been planted and achieved carbon sequestration. This additional purchase of credits represent an investment of EUR 9,625.6 for 512 tons.

Région et Dépt	Méthode et statut labellisation	Description Projet	Surface (ha)	Essences plantées	Estimation des Réductions d'émissions (tCO2)
Jura (39)	Notifié, en cours d'instruction depuis octobre 2022, labellisation fin 2022	-Reboisement de peuplement dépérissant ayant subi une attaque de scolytes, avec au moins 3 essences, avec 2 essences ou plus autochtones et représentant minimum 40 % des plants. - Respect du critère de diversification de 20% minimum : oui -Maintien d'arbres d'intérêt écologique ou de bordures boisées présentes à l'intérieur ou en limite des parcelles à reboiser.	1,44 Ha	3	512

VERRA

Verified Carbon Standard

Certificate of Verified Carbon Unit (VCU) Retirement

Verra, in its capacity as administrator of the Verra Registry, does hereby certify that on 16 Dec 2022, 200 Verified Carbon Units (VCUs) were retired on behalf of:

0-I PAS2060

Project Name

Cikel Brazilian Amazon REDD APD Project Avoiding Planned Deforestation

VCU Serial Number

8615-34037365-34037564-VCS-VCU-261-VER-BR-14-832-19072007-18072010-0

Additional Certifications

Powered by APX

Verified Carbon Standard

Certificate of Verified Carbon Unit (VCU) Retirement

Verra, in its capacity as administrator of the Verra Registry, does hereby certify that on 06 Mar 2023, 50 Verified Carbon Units (VCUs) were retired on behalf of:

0-I PAS2060

Project Name

Cikel Brazilian Amazon REDD APD Project Avoiding Planned Deforestation

VCU Serial Number

8981-57348411-57348460-VCS-VCU-261-VER-BR-14-832-19072007-18072010-0

Additional Certifications

CARBON TRUST

Certificate of Achievement

O-I Glass Inc.

has achieved carbon neutrality and is committed to on-going carbon neutrality of the total carbon footprint of its

390g wine glass bottle plus cork and label

Carbon Trust Assurance Limited certifies that O-I Glass Inc. has calculated the carbon footprint representing all 390g wine glass bottle plus cork and label Cradle-to-Grave and marketed in France, in accordance with:

- PAS 2060:2014 – Specification for the demonstration of carbon neutrality

A detailed list of certified results can be found in the associated Certification Letter CERT-13433.

Awarded: 16 March 2023

for and on behalf of Carbon Trust Assurance Ltd,

Martin Hockaday,
Head of Assurance

Annex 5: Additional supporting information for interested parties

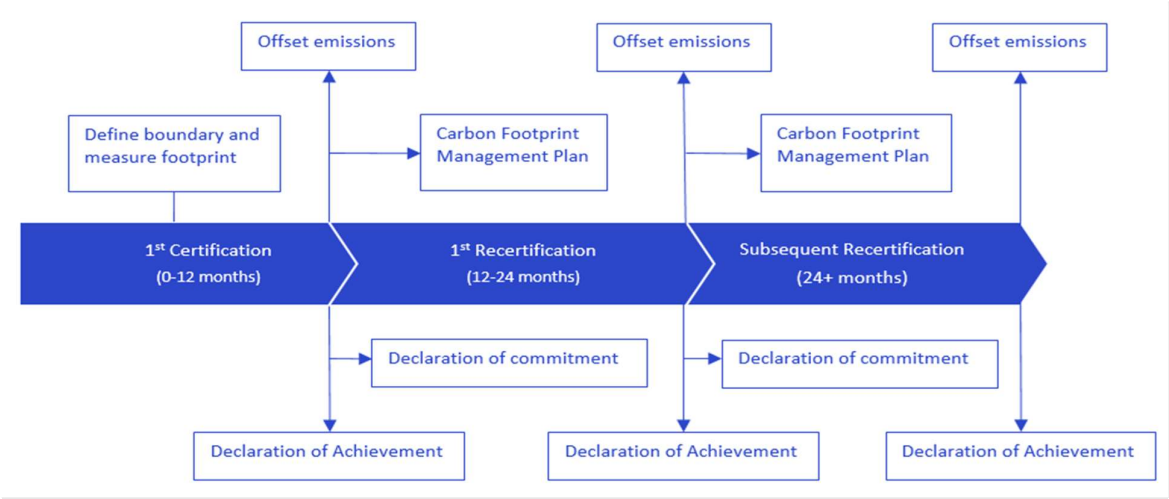


Figure 1. PAS 2060 certification process

Source: Carbon Trust. Adapted from "BSI - PAS 2060:2014: *Specification for the demonstration of carbon neutrality: Figure 1 – Illustration of the cyclical process for demonstrating carbon neutrality, taking into account permitted baseline period exceptions"*. [Simplified version]

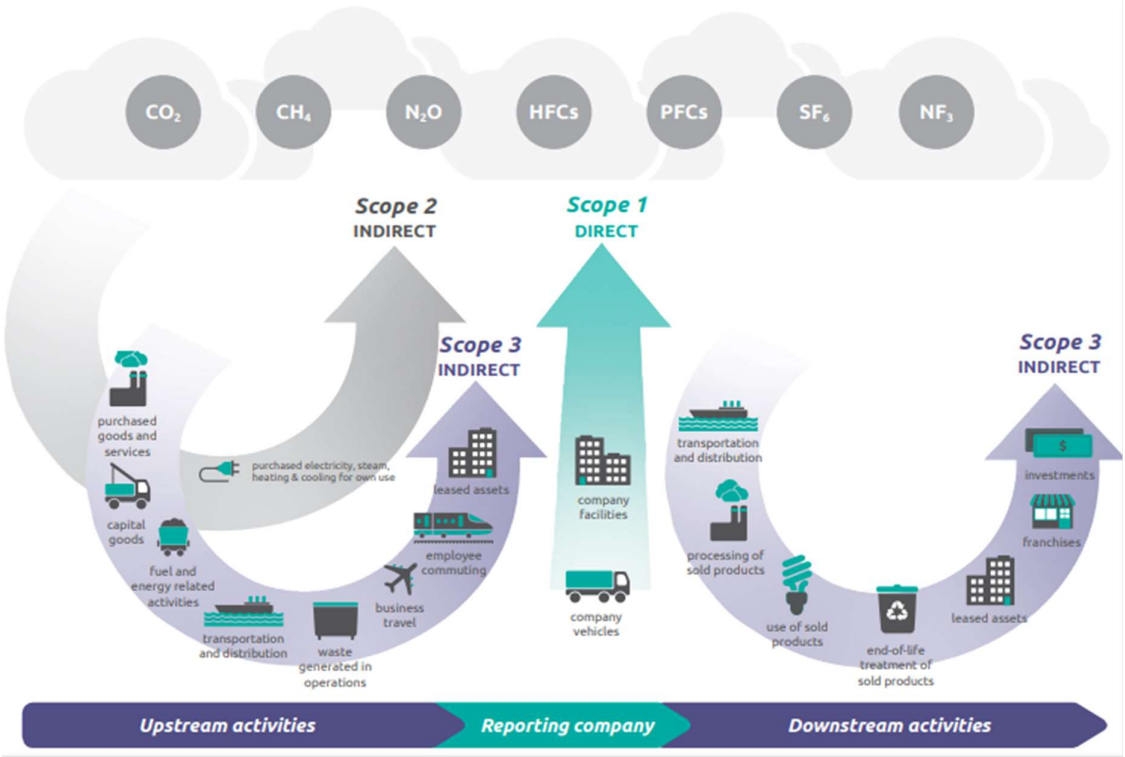


Figure 2. Organisational carbon footprinting

Source: Greenhouse Gas Protocol: http://ghgprotocol.org/