



ENVIRONMENTAL PRODUCT DECLARATION FOR EXTRA VIRGIN OLIVE OIL

According to ISO 14025.
Programme: The International EPD® System, www.environdec.com
Programme Operator: EPD International AB
Registration number: S-P- 00924
Publication date: 2016-10-26
Revision date: 2021-05-20
Validity date: 2026-05-20

TABLE OF CONTENTS

1. WHAT IS AN EPD	2	5.7. ALLOCATION RULES	16
1.1. PROGRAMME INFORMATION.....	3	6. CONTENT DECLARATION	17
2. BORGES INTERNATIONAL GROUP	4	6.1. INFORMATION ABOUT PACKAGING.....	17
3. BAIEO'S EXTRA VIRGIN OLIVE OIL	8	7. ENVIRONMENTAL PERFORMANCE	18
3.1. WHAT THE OLIVE OIL IS	8	7.1. ENVIRONMENTAL PERFORMANCE	18
3.2. INTENDED APPLICATIONS.....	8	7.2. USE OF RESOURCES.....	19
4. THE LIFE CYCLE OF EVOO	9	7.3. WASTE PRODUCTION AND OUTPUT FLOWS.....	19
5. PRINCIPLES AND CRITERIA OF LIFE CYCLE ANALYSIS	10	8. RESULTS OF LIFE CYCLE ANALYSIS	20
5.1. THE FUNCTIONAL UNIT.....	10	9. ADDITIONAL INFORMATION	28
5.2. SYSTEM BOUNDARIES.....	11	10. INFORMATION RELATED TO SECTOR EPDS	29
5.2.1. <i>Upstream processes (Field Phase)</i>	11	11. DIFFERENCES VERSUS PREVIOUS VERSIONS OF THE EPD	30
5.2.2. <i>Core processes (Industrial Phase and Packaging Phase)</i> .	12	12. REFERENCES	30
5.2.3. <i>Downstream processes (Distribution, use and EoL Phase)</i>	13	13. DECLARATION VALIDITY	31
5.3. TIME REFERENCE PERIOD OF LIFE CYCLE ANALYSIS.....	14	14. VERIFICATION	31
5.4. USE OF LCA SOFTWARE	14		
5.5. CRITERIA FOR LIFE CYCLE INVENTORY	15		
5.6. DATA QUALITY	15		

1. WHAT IS AN EPD

An EPD® (Environmental Product Declaration)¹ is a verified and registered document that communicates transparent and comparable information about the life-cycle environmental impact of a product. The International EPD® System is a global programme for environmental declarations based on ISO 14025.

The relevant standard for Environmental Product Declarations is ISO 14025, where they are referred to as "type III environmental declarations". A type III environmental declaration is created and registered in the framework of a programme, such as the International EPD® System.

The concept of type III environmental declarations was developed to primarily be used in business-to-business communication, but their use in business-to-consumer communication is increasingly demanded by markets.

¹ <http://www.environdec.com/en/What-is-an-EPD/>

1.1. PROGRAMME INFORMATION

EPD Program	EPD program: EPD International AB, Box 210 60, SE-100 31 Stockholm, Sweden, E-mail: info@environdec.com
EPD Program Operator	EPD Program Operator: EPD International AB
PCR revied by	The Technical Committee of the International EPD® System. A full list of members available on www.environdec.com . The review panel may be contacted via info@environdec.com. Members of the Technical Committee were requested to state any potential conflict of interest with the PCR moderator or PCR committee and were excused from the review
Chair of the PCR review:	Adriana del Borghi
Product category rules (PCR)	PCR 2010:07 v.3.0. VIRGIN OLIVE OIL AND ITS FRACTIONS - PRODUCT GROUP: UN CPC 21537
EPD Registration Number	S-P- 00924

EPD prepared by	CO2 Consulting S.L. More information at www.co2co.es Contact: Juan Antonio Polo, E-mail: japolo@co2co.es
EPD owner	BORGES INTERNATIONAL GROUP S.L. More information at https://www.borgesinternationalgroup.com/ Contact: Anna Cosconera E-mail: acosconera@borges-big.com
Validity date:	2026-05-20
Geographical scope:	Global
Comparasion of EPD within this PCR:	EPDs within the same product category but from different programmes may not be comparable.

2. BORGES INTERNATIONAL GROUP

The Mediterranean, with its ancient civilisations and sun-drenched lands, has provided a source of inspiration to the Borges International Group since its origins over 120 years ago. The culture handed down by generations in this part of the world is an asset contributing to all the group’s activities: all the products marketing under our brands are key ingredients of the Mediterranean diet, which is acknowledged by nutritionists the world over to be the healthiest there is. Borges International Group was born out of the values of a healthy lifestyle and serves as an ambassador for the fine produce of the Mediterranean region. This lies at the core of the organisation and is the driving force for all the company’s activities. We use our natural products to spread awareness among the world’s consumers and producers and highlight the positive message these foods embody, combining as they do quality, flavour and healthy eating. This constitutes our chief mission and the core philosophy with which our brands set about paving the way to a new future.

Borges International Group (BIG) is a company with worldwide scope. Today BIG has a presence in all five continents and its own subsidiaries in the following countries: Spain, Tunisia, Portugal, USA, Singapore, Brazil, India, France, China, Russia, Egypt, Morocco, Italy, while their international presence through our sales network easily reaches more than 110 countries.

Borges Agricultural & Industrial Edible Oils, SAU (BAIEO) is the head of division dedicated to the B2B industry and trade of olive oils and seed oils.

Its main prey plant is located in Tárrega, where the blends of Extra Virgin Olive Oil are prepared and counted all over the world.

The most important production lands are Spain, Tunisia, Egypt, Argentina, etc.

The company has ISO 14001 certification. Also, CCPAE authorizes the commercialization of Borges’ Organic Virgin Olive Oil.



Our Heritage

The history of Borges goes back to the end of the nineteenth century when, in 1896, the Pont Creus family began a small business buying and selling olives and almonds in the areas of Lleida and Tarragona. Within just a few years Borges olive oil was already known for its quality and extraordinary flavour.

That small company has now become Borges International Group, world leader in the global market for healthy and wholesome food. This large corporation is a standard-bearer in the sphere of the Mediterranean lifestyle and stays true to its origins, to the land of its birth and a deeply-rooted family tradition.

In an endless quest for excellence they have managed to preserve the essence of the early days and the Pont family's vision while maintaining the highest degree of professionalism welded to a spirit of growth and improvement.

On the basis of these firm foundations, Borges International Group aspires to continue being world leader in natural products, helping to introduce the benefits of the Mediterranean Lifestyle to future generations.

Our goal is to create value for our stakeholders, based on quality and innovation, offering consumers the standards and qualities of the enjoyment of Mediterranean life as a global cultural concept that defines food as a source of health and pleasure, understanding health from an

approach that includes both the physical health of customers and the health of the planet, society and health on a cultural level.

Group organization

Borges International Group is divided into three different operation areas:

- **BAIN:** Borges Agricultural & Industrial Nuts. The business unit of nuts, dried fruits and snacks integrates national and international subsidiaries engaged in agricultural activities, industrial processing and packaging, and marketing to the B2B channel.
- **BBF:** Borges Branded Foods. The consumer markets business unit integrates all domestic and international subsidiaries marketing packaged products with the Group's brands, mainly aimed at the retail and food channel outside the home.
- **BAIEO:** Borges Agricultural & Industrial Edible Oils. The industrial oil business unit integrates national and international subsidiaries engaged in industrial activities engaged in the production of olive oil and vegetable oils, refining, processing and packaging, and marketing to the B2B channel.

Borges International Group centralizes the corporate services of the whole Group: General Management, Finance, Accounting, Controlling, Internal Audit, Administration, Human Resources, Taxation, Legal, Corporate Development, Information Systems, Operational Efficiency and Relations with Management.

Corporate Social Responsibility

From day one, Borges International Group is continuously working to realize our ambition: **To adopt a business model that generates a positive impact on consumers, customers, suppliers, employees and the community at large through our products.** We want to offer healthy eating by contributing to sustainable development and creating shared value for our stakeholders.

This way of thinking defines our actions and our strategic decision-making of the group. With everything we do, we always seek to promote social well-being, health, environmental balance and economic progress in a sustainable way.

Professional ethics prepare the ground for putting Social Responsibility values into practice, values that help us fulfil their obligations within a framework of social harmony and coherence.

Genuine Social Corporate Responsibility does not exist unless social responsibilities are fulfilled, and the same applies to the practical implementation of professional ethics for companies.

Borges International Group is committed to the principles of the United Nations' Global Compact, which seeks to promote corporate civic responsibility so that businesses and companies can form part of the solution to the challenges of globalisation and achieve a more inclusive and sustainable economy.

Corporate Social Responsibility is key for Borges International Group. The company is over 100 years old, and over the course of their history they have grown in a sustainable manner. They have not only complied with legislation but have endeavoured to go beyond its stipulations in their social and environmental commitments, always listening to their stakeholders.

Their commitment goes beyond the legal obligations that circumscribe their activities.

Shared Sustainability

- ✓ **Shareholders:** As reflected in the heading of corporate governance, Borges International Group is a family-owned group where the members of the Board of Directors are the sole shareholders of the Group.

With your participation and trust we continue to advance and add value to each of the actions of our work.

- ✓ **Employees:** The collective of employees is one of the bases on which the growth and activity of the Group is based. In this line, the channels of communication and dialogue are extensive, encouraging their participation in the day-to-day of the business.

The commitment of the people who make up the Group's team of professionals is essential for business success. We want to retain your talent and commitment, so we seek to create the best working environment. We drive listening, engagement, participation, motivation, and professional progress. In addition, we have a wide range of social benefits to improve their quality of life and reconciliation.

- ✓ **Customers:** Satisfaction and mutual loyalty with the end customer is one of the reasons for being of our Organization. We meet the needs and demands of customers with a direct and personalized

treatment, share with them objectives and seek the common benefit in our relationships.

- ✓ **Government and Administrations:** fluid relations with public administrations in aspects and labour, among others.

3. BAIEO'S EXTRA VIRGIN OLIVE OIL

3.1. WHAT THE OLIVE OIL IS

Extra virgin olive oil is the juice of the olive (*Olea europaea* L.). It is the only oil, among which are commonly found on the market, extracted from fresh fruit, and without the use of solvents. It is therefore a completely natural product with unique aroma and flavour come directly from the fruit you get.²

A virgin olive oil is obtained from fruit juice in perfect maturity, from a healthy olive oil being obtained starting from a fresh fruit at optimum ripeness and in perfect condition after harvesting and transportation being processed at the mill in a minimum period of time, under criteria and quality control, solely by mechanical or other physical means and which have not undergone any treatment other than washing, decantation, centrifugation and / or filtration. Maximum free acidity content is 0.8% as oleic acid. Virgin olive oils are classified as extra virgin, virgin and lampant. Only the first two are intended for direct consumption³.

² International Olive Oil Council: <http://www.internationaloliveoil.org/estaticos/view/83-designations-and-definitions-of-olive-oils>

3.2. INTENDED APPLICATIONS

Extra virgin olive oil is ideal for salads, sauces or dressings vegetables, so olive juice retains all the aroma and flavour.

Furthermore, it is also eaten raw sprinkled on bread or toast or even on table olives with smoked meats, sandwiches, sausages, etc. Very versatile for the preparation of all kinds of sauces.

Olive oils are the most stable vegetable fats and do not result toxic reactions when subjected to frying, grilling or baking, in normal conditions, thus contributing to improving the gastronomic qualities of food.

Therefore, olive oils, are most suitable for cooking at high temperatures requires the preparation of food skipped, roasted, stewed or fried.

³ Interprofesional del Aceite de Oliva.

4. THE LIFE CYCLE OF EVOO

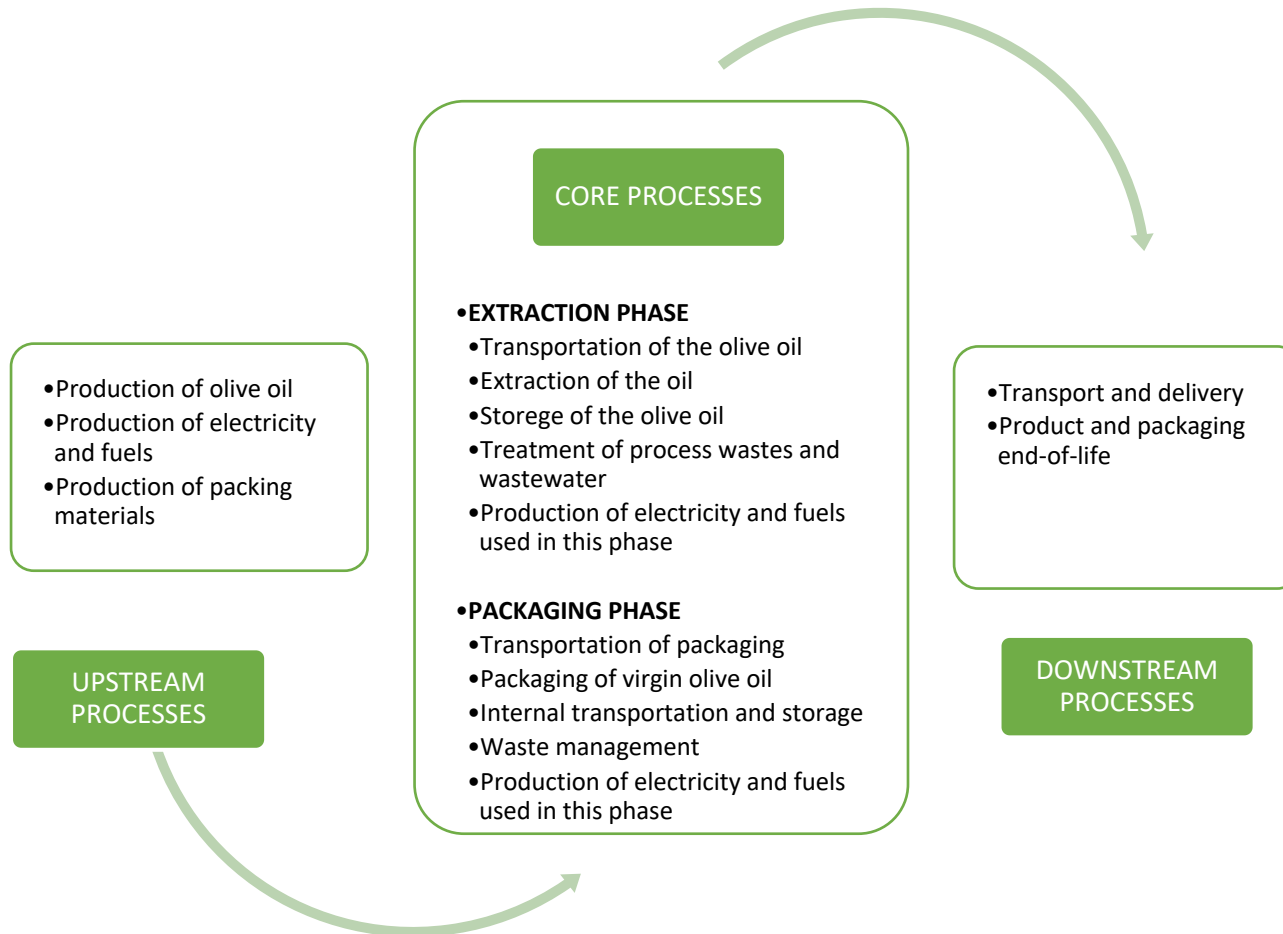


Figure 1. Stages of Extra Olive Oil's life cycle.

5. PRINCIPLES AND CRITERIA OF LIFE CYCLE ANALYSIS

This Environmental Product Declaration has been developed for the Extra Virgin Olive Oil produced from the 2016/2017, 2017/2018 and 2018/2019 harvest, by BAIEO at their facilities located in Catalonia (Spain).

5.1. THE FUNCTIONAL UNIT

As provided in Product category rule 2010:07 v 3.0, the declared functional unit is "1 liter of Extra Virgin Olive Oil, packaging included", to be used by consumers as salad dressing and for cooking.

The Product Category Rule 2010:07 v 3.0 includes the products that belong to group UN CPC 21537 "Virgin Olive Oil and its fractions".

Following tables present a summary of the data regarding the content of packaging materials per functional unit based on representativeness of the packaging types:

Table 1. Content of packaging materials per functional unit.

Packaging Material	Functional Unit (1 L)
Glass	3.72E-01
Cap	4.48E-02
Label	2.95E-03
Cardboard	6.18E-02
Pallet	4.28E-04

Table 2. Composition of Functional Unit.

Material	Volume (L)	Representativeness* (%)
Glass	1 L	7.98
	0.75 L	29.19
	0.50 L	53.25
	0.25 L	8.75
	0.125 L	0.83

*Representativeness over the total volume of olive oil extra virgin commercialized during three campaigns: 2016/20107, 2017/2018 and 2018/2019.

5.2. SYSTEM BOUNDARIES

As shown in Figure 1 and in accordance with PCR 2010:07 v 3.0, the LCA of extra virgin olive oil is divided into upstream, core processes and downstream. The system limits of this EPD are "cradle to grave".

5.2.1. Upstream processes (Field Phase)

For the purposes of this Environmental Product Declaration, considered *upstream processes* are the agronomic operations or Field phase:

- Operations for the transformation of land use if the lifespan of the sea olive grove is expected to be less than 25 years.
- Operations for the establishment of the olive grove including the irrigation system if the olive grove life is expected to be less than 25 years.
 - Olive fruit production (CPC 0145) used in the central process on crib farms, for which inputs are considered:
 - Production of seeds, cuttings or plants for cultivation.
 - Production of inputs, such as fertilizers and plant protection products.
 - Waste management.
 - Cultivation phase (e.g. land preparation, planting operation, irrigation, fertilization, application of plant protection products, collection).
 - Fertilizer emissions and plant protection/pesticide application products.

- Use of wood as a by-product of the renovation or end-of-life pruning of olive trees.
 - External transport of inputs to the production region and sites.
 - Water extraction and use.
 - Production of auxiliary products for harvesting (networks, boxes, detergents, etc.)
- Impacts due to the production of electricity and fuels in the upstream module (generation of energy products - fuel and electricity - uses in agriculture on the farm).
 - Manufacture of primary, secondary, and tertiary packaging.

5.2.2. Core processes (Industrial Phase and Packaging Phase)

As key processes in Industrial Phase are considered:

- Mechanical processes to extract the oil contained in the olives, consisting on grinding, centrifugation, malaxing, and filtering the oil.
- Use of water at the mill, exclusively for cleaning operations since this AOVE not incorporate water.
- Preservation in stainless steel tanks.
- Maintenance (e.g. of the machines).
- Production of electricity and fuels used in the extraction module.
- Pomace produced in this phase is considered as a co-product.
- Wastewater treatment.
- Waste management, mainly “alpeorujo” (wet pomace) and auxiliary elements.

As key processes in Packaging Phase are considered:

- External transportation of packaging & raw materials to the packing unit.
- Transportation of virgin olive oil to the packing unit.
- Packaging of virgin olive oil.
- Internal transportation.
- Storage of packed product before dispatch.
- Waste management generated during packing.
- Production of electricity and fuels used in the packaging module.



5.2.3. Downstream processes (Distribution, use and EoL Phase)

By *downstream processes* have been considered in this Environmental Product Declaration:

Transports:

Calculations of transportation of packed olive oil to distribution centres and the retail stores to reach the consumer is included in this phase. Data takes into account gross weight (including pallets weight, if applicable), packaging types and sizes, distances by road and by sea, vehicles of transportation. Activity data is expressed in tkm per litre of extra virgin olive oil. The consumer transports to the store are excluded.

Then, the main inputs need included in the logistic stage are the next points:

- The product distribution is done across Spain and the world. The main sales countries are: Spain, Brazil, France, Germany, Russia, Norway, etc.
- Transportation from final production/storage site to an average distribution platform, if applicable.
- Transportation to retailer, if applicable.

Use product:

In the phase is has been considered that is used for salad dressing, for cooking and for deep-frying. If for salad dressing, no further data are required, but it for cooking and deep frying the electricity consumption per process has to be included in the model.

In this study is assumed that 55% of all olive oil produced is used as salad resign, 38% for cooking (excluding deep-frying) and 7% for deep-frying. Moreover, for deep-frying it is assumed that the oil is cooked 10 minutes in 180°C, whereas for normal cooking it is assumed that the oil is cooked for 10 minutes in 100°C.

The waste of the product in use (e.g. the olive oil left after cooking and deep frying) is excluded from the use stage but is part of the end of life stage.

The inputs required in this phase are the following:

- Natural gas requirement for cooking.
- Energy requirement for deep-frying.

The end-of-life:

The End of Life (EoL) of packaging, it was modelled according to the EoL formula provided by the European Commission. All packaging waste not recycled are assumed to be incinerated or landfilled. It was considered that all the packaging materials were primary materials. The average recycling rates of the packaging materials in EU according to Eurostat statistics are included in the following table:

Table 3. Average recycled and non-recycled rates (source: Eurostat 2017).⁴

Packaging material	Recycled	Incineration	Landfill
Glass	74.70%	0.30%	25.00%
Aluminium	79.20%	0.40%	20.40%
Paper/cardboard	84.60%	7.40%	8.00%
Plastic	41.90%	27.90%	30.20%

The flows included in this phase are the following:

- End of life of the olive oil packaging materials.
- End of life of the waste olive oil left after deep-frying.

Here, it is assumed that waste oil is generated only from deep-frying, whereas in other use scenarios it is assumed that no waste is generated, as all olive oil is consumed.

⁴<https://ec.europa.eu/eurostat/tgm/graph.do?tab=graph&plugin=1&pcode=ten00063&language=en&toolbox=data>



5.3. TIME REFERENCE PERIOD OF LIFE CYCLE ANALYSIS

Data used for this study of LCA are referred for campaign 2016/2017, 2017/2018 and 2018/2019.

5.4. USE OF LCA SOFTWARE

Software system for global analysis "SimaPro 8.0.5" has been used for this lifecycle analysis. The Ecoinvent database (v3.01) has been applied.

5.5. CRITERIA FOR LIFE CYCLE INVENTORY

Results of the life cycle assessment are based on the following assumptions:

- Transport of all raw materials and/or secondary materials are calculated according to the means of transport used.
- Conversion factors to determine the value of impact of each activity data were obtained from ECOINVENT.
- The agronomy phase information is generic secondary data of the most representative supplier countries. The average data to cultivation of olive trees for the three last campaigns are used. (Table 6). A “mix” has been made for each country based on its cultivation systems (traditional, intensive and super-intensive) where the promoter of this EPD has provided 10% of the data for *Country 1*, leaving these as primary. The others are secondary.
- The kilometric distances have been obtained using “google maps” and nautical distances with “SeaRates.com⁵”.
- The glass material of the bottles has been modeled considering that 6% corresponds to transparent glass and the remaining 94% to green glass, of which 80% is recycled. This data refers to the three study campaigns.
- Electricity consumption at the packaging plant as of April 2019 has a certificate of renewable origin.

⁵https://www.searates.com/es/reference/portdistance/?K=ChJW4v8uNgiakARaLah655FD0&A=ChIJR1lojs6ephIRiOLzT12DrYM&shipment=3&weight=1&volume=1&weight_unit=KG&volume_unit=CBM

5.6. DATA QUALITY

All used data in this environmental declaration study counts on less than 5 years old. Viability of all data submitted has been checked.

All Information of industrial, packaging and distribution phases come from primary data and measurements, therefore, the quality of the data can be described as appropriate.

However, information of agronomy, use and end-of-life phases come from generic data.

Table 4. System boundary and scope of this study. The table illustrates the different life cycle stages according to the PCR.

PARAMETERS	UPSTREAM			CORE		DOWNSTREAM	
	Olive oil fruit	Electricity and fuels	Production of packaging material	Extraction phase	Packaging phase	Transport	Use and End of life
Quality data*	2º	2º	2º	1º	1º	1º	2º
Scope**	X	X	X	X	X	X	X

*Data Quality can be primary or specific data (1º) or secondary data (2º).

**Scope: X= module is declared in EPD. MND = module not declared (does not indicate zero impact result). According to PCR 2010:07 v3.0.

5.7. ALLOCATION RULES

The allocation refers to the allocation of input and output flows for a lifecycle module of the product that is being investigated as ISO 14040.

The assignment of the different factors of the impact categories studied for the case of electricity consumption is calculated from the average of Spanish electricity sources.

The calculation of emissions (e.g., CO₂, HCl, SO₂ or particulates) that depends on the inputs is carried out based on the composition of the feed material.

Table 5. Main inputs and outputs.

PROCESS	MAIN PRODUCT AND CO-PRODUCT	ALLOCATION INSTRUCTION
Cultivation of olives	Wood produced by pruning and tree renovation	Product mass
Production of olive oil	Pomace	Product mass

Olive oil arrivals to BAIEO's facilities come from both external suppliers and own oil mills controlled by BAIEO, so a mixed one is available.

The most representative suppliers of olive oil are collected in the following table:

Table 6. Representativeness of purchases by countries.

Countries	Representativeness			
	2017	2018	2019	Average
Country 1	80,69%	69,06%	60,06%	69,94%
Country 2	13,21%	21,30%	33,26%	22,53%
Country 3	1,06%	8,32%	6,35%	5,25%
Country 4	2,13%	0,29%	0,21%	0,87%
Total	97,09%	98,97%	99,69%	98,58%

The Country 1 and Country 2 show an 92,46% average of total purchases of Borges' olive oil in the last assessed campaigns.

In the face of this situation, a sample of the types more than more quadors of olive oil supplier mills has been selected to BAIEO, depending on the location and capacity of work, and the rest of the mills have been assigned to these references by the BAIEO technical team.

Table 7 shows geographical representativeness by oil mills:

Table 7. Geographical representativeness

Mills	2017	2018	2019	Average
COUNTRY 1				
Type 1	9,52%	9,22%	11,75%	10,17%
Type 2	3,52%	4,40%	6,18%	4,70%
Type 3	3,04%	4,27%	5,61%	4,31%
COUNTRY 2				
Type 4	70,69%	31,78%	54,80%	52,43%
Type 5	29,29%	68,21%	27,46%	41,65%

6. CONTENT DECLARATION

The content declared in this Environmental Product Declaration content exceeds 99% of the total ingredients, as this product does not include preservatives or additives, pursuant to the applicable national and European legislation.

6.1. INFORMATION ABOUT PACKAGING

The packaging has been classified as distribution or consumer packaging. The table 9 shows the type, composition (about Ecoinvent v 3.01 database), function and treatment end-of-life. The different size packaging is as follow:

Table 8. Type of packaging.

Material	Volume (L)
Glass	1 L
	0,75 L
	0,50 L
	0,25 L
	0,125 L

Table 9. Information about packaging.

Packaging	Type	Composition	Function	Treatment end-of-life
Distribution Packaging	Cardboard	Corrugated board box	Secondary packaging	Recycling treatment
	Pallet	EUR-flat pallet		Reuse
Consumer packaging	Glass bottle	Packaging glass, green	Primary packaging	Recycling treatment
	Cap	Aluminium/ Polyethylene		
	Label	Printed paper, offset		
	Cap	Polyvinylidenchloride, granulate		

Table 10. Impact categories.

7. ENVIRONMENTAL PERFORMANCE

7.1. ENVIRONMENTAL PERFORMANCE

The Environmental performance considered for the evaluation of impact associated with the production of AOVE under 2010:07 v 3.0 PCR are as follows:

IMPACT CATEGORY (UNIT)	CHARACTERISATION FACTORS
Global warming potential (kg CO ₂ eq.)	GWP100, <u>CML 2001 baseline</u> Version: January 2016.
Acidification potential (kg SO ₂ eq.)	AP, <u>CML 2001 non-baseline</u> Version: January 2016.
Eutrophication potential (kg PO ₄₃₋ eq.)	EP, <u>CML 2001 baseline</u> Version: January 2016.
Photochemical oxidant formation potential (kg C ₂ H ₄ eq.)	POFP, LOTOS-EUROS as applied in ReCiPe 2008.
Abiotic depletion potential – Elements (kg Sb eq.)	ADPelements, <u>CML 2001 baseline</u> Version: January 2016.
Abiotic depletion potential – Fossil fuels (MJ)	ADPfossil, <u>CML 2001 baseline</u> Version: January 2016
Water Scarcity Footprint (m ³ H ₂ O eq)	WSF, <u>AWARE Method.</u> <u>Boulay et al (2017)</u>
Human toxicity (kg 1,4-DB eq.)	Tox H, <u>CML 2001 non-baseline</u> Version: January 2016.
Freshwater aquatic eco-toxicity (kg 1,4-DB eq)	Ecotox W, <u>CML 2001 non-baseline</u> Version: January 2016.
Ecological footprint (m ² a)	EF, Ecological footprint Version 1.01 (April 2009)
Land use (m ² a)	LU, Ecological footprint Version 1.01 (April 2009)

7.2. USE OF RESOURCES

The indicators for resource use based on the life cycle inventory (LCI) listed following:

- Primary energy resources – Renewable (MJ)
- Primary energy resources – Non-renewable (MJ)
- Secondary material (kg)
- Renewable secondary fuels (MJ)
- Non-renewable secondary fuels (MJ)
- Net use of fresh water (m³)

7.3. WASTE PRODUCTION AND OUTPUT FLOWS

- Hazardous waste disposed (kg)
- Non-hazardous waste disposed (kg)
- Radioactive waste disposed (kg)
- Components for reuse (kg)
- Material for recycling (kg)
- Materials for energy recovery (kg)
- Exported energy, electricity (MJ)
- Exported energy, thermal (MJ)

8. RESULTS OF LIFE CYCLE ANALYSIS

Evaluation of the impact categories are shown in the following tables, for the generic functional unit “1 liter of extra virgin olive oil” depend on different packaging:

- Environmental profile of the functional unit of 1 liter of extra virgin olive oil (Table 11).
- Environmental profile of the functional unit of 1 liter of extra virgin olive oil bottled in a glass bottle of 1 liter (Table 12).
- Environmental profile of the functional unit of 1 liter of extra virgin olive oil bottled in glass 0.750 liter (Table 13).
- Environmental profile of the functional unit of 1 of extra virgin olive oil bottled in glass 0.500 liter (Table 14).
- Environmental profile of the functional unit of 1 of extra virgin olive oil bottled in glass 0.250 liter (Table 15).
- Environmental profile of the functional unit of 1 of extra virgin olive oil bottled in glass 0.125 liter (Table 16).



Table 11. Functional unit: 1 liter of extra virgin olive oil.

CATEGORY	UNIT	TOTAL	UPSTREAM MODULE			CORE MODULE		DOWNSTREAM MODULE		
			Olive fruit production	Production of electricity and fuel	Production of packaging	Extraction of olive oil	Packaging phase	Distribution	Use phase	End-of-life
GWP Fossil	kg CO ₂ eq.	1,64E+00	9,20E-01	1,23E-01	3,82E-01	1,52E-01	1,62E-01	9,34E-02	3,54E-01	-5,45E-01
GWP Biogenic	kg CO ₂ eq.	1,24E+00	7,14E-02	2,56E-03	1,66E-01	7,54E-01	2,50E-03	8,17E-04	2,77E-01	-3,35E-02
GWP LU-LT	kg CO ₂ eq.	2,46E-02	2,26E-02	6,25E-05	3,83E-04	1,76E-03	7,14E-05	4,63E-05	7,49E-05	-4,21E-04
GWP TOTAL	kg CO ₂ eq.	2,91E+00	1,01E+00	1,25E-01	5,49E-01	9,08E-01	1,65E-01	9,42E-02	6,31E-01	-5,79E-01
AP	kg SO ₂ eq.	4,29E-02	3,93E-02	7,34E-04	2,12E-03	1,05E-03	9,73E-04	1,10E-03	1,80E-03	-4,22E-03
EP	kg PO ₄ 3- eq.	1,44E-01	1,41E-01	2,79E-04	9,79E-04	8,87E-04	2,98E-04	1,44E-04	3,46E-04	-7,48E-04
POCP	kg C ₂ H ₄ eq.	1,31E-02	5,88E-03	3,93E-04	8,73E-05	6,19E-03	3,60E-05	8,87E-04	1,65E-03	-2,04E-03
Abiot elem	kg Sb eq.	2,93E-05	1,79E-05	1,79E-07	1,45E-06	1,03E-05	3,36E-07	1,12E-07	9,91E-08	-9,80E-07
Abiot f	MJ	2,30E+01	1,30E+01	2,35E+00	4,96E+00	2,01E+00	2,41E+00	1,47E+00	3,67E+00	-6,88E+00
WSP	m ³ eq.	1,01E+00	1,00E+00	3,48E-04	4,45E-03	1,37E-03	3,69E-04	1,73E-04	2,10E-04	-2,90E-03
HT	kg 1,4-DB eq	3,65E+00	3,53E+00	2,32E-02	7,75E-02	2,81E-02	2,13E-02	1,78E-02	1,91E-02	-7,21E-02
Ecotox W	kg 1,4-DB eq	2,32E+00	1,99E+00	5,76E-02	1,39E-01	1,30E-01	5,26E-02	1,25E-02	3,81E-02	-9,96E-02
EF	m ² a	7,33E-01	4,09E-01	7,71E-03	4,27E-01	2,84E-02	1,55E-02	1,51E-02	5,05E-03	-1,75E-01
LU	m ² a	4,57E-01	2,35E-01	4,86E-03	3,04E-01	1,78E-02	8,39E-03	7,29E-03	3,17E-03	-1,24E-01
ByP	kg	5,60E+00	1,58E-01	0,00E+00	6,06E-02	3,89E+00	1,49E+00	0,00E+00	0,00E+00	0,00E+00

*GWP: Global warming potential; GWP LU-LT: GWP Land use and land transformation; AP: Acidification Potential; EP: Eutrophication potential; POCP: Formation potential of tropospheric ozone; Abiot elem: Abiotic depletion potential - Elements; Abiot f: Abiotic Depletion Potential -Fossil fuels; WSP: Water Scarcity Potential; HT: Human toxicity; Ecotox W: Freshwater aquatic eco-toxicity; EF: Ecological footprint; LU: Land use; ByP: By-products.

CATEGORY	UNIT	TOTAL	UPSTREAM MODULE			CORE MODULE		DOWNSTREAM MODULE			
			Olive fruit production	Production of electricity and fuel	Production of packaging	Extraction of olive oil	Packaging phase	Distribution	Use phase	End-of-life	
USE OF RESOURCES											
Primary energy resources - Renewable	Use as energy carrier	MJ	1,18E+00	5,45E-01	1,97E-01	1,35E-01	1,59E-01	1,57E-01	1,43E-02	1,13E-01	-1,42E-01
	Used as raw materials	MJ	3,87E+00	2,33E+00	3,38E-02	2,06E+00	1,60E-01	3,24E-02	1,01E-02	2,19E-02	-7,80E-01
	TOTAL	MJ	5,05E+00	2,88E+00	2,31E-01	2,19E+00	3,19E-01	1,90E-01	2,44E-02	1,35E-01	-9,22E-01
Primary energy resources - Non-renewable	Use as energy carrier	MJ	2,76E+01	1,53E+01	2,95E+00	5,26E+00	3,05E+00	2,89E+00	1,52E+00	3,84E+00	-7,19E+00
	Used as raw materials	MJ	1,84E+00	1,69E+00	1,65E-02	1,87E-01	3,59E-02	2,74E-02	1,63E-02	1,04E-02	-1,47E-01
	TOTAL	MJ	2,94E+01	1,69E+01	2,96E+00	5,45E+00	3,09E+00	1,21E+00	1,54E+00	3,85E+00	-7,34E+00
Secondary material	kg	8,85E-07	6,40E-07	0,00E+00	2,45E-07	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Renewable secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Non-renewable secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Net use of fresh water	m3 eq.	4,94E-01	4,93E-01	0,00E+00	1,84E-04	1,20E-03	4,47E-07	0,00E+00	0,00E+00	0,00E+00	0,00E+00
WASTE PRODUCTION AND OUTPUT FLOWS											
Hazardous waste disposed	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Non-hazardous waste disposed	kg	1,03E-02	0,00E+00	0,00E+00	0,00E+00	7,45E-03	2,85E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Radioactive waste disposed	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Components for reuse	kg	4,28E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,28E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Material for recycling	kg	5,23E-01	2,67E-06	0,00E+00	0,00E+00	0,00E+00	7,64E-02	6,18E-02	0,00E+00	0,00E+00	3,85E-01
Materials for energy recovery	kg	2,31E-01	0,00E+00	0,00E+00	0,00E+00	2,31E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, electricity	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, thermal	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Table 12. Functional unit: 1 liter of extra virgin olive oil bottled in glass 1 L.

CATEGORY	UNIT	TOTAL	UPSTREAM MODULE			CORE MODULE		DOWNSTREAM MODULE		
			Olive fruit production	Production of electricity and fuel	Production of packaging	Extraction of olive oil	Packaging phase	Distribution	Use phase	End-of-life
GWP Fossil	kg CO ₂ eq.	1,72E+00	9,20E-01	1,23E-01	3,28E-01	1,52E-01	1,21E-01	1,34E-01	3,54E-01	-4,08E-01
GWP Biogenic	kg CO ₂ eq.	1,23E+00	7,14E-02	2,56E-03	1,52E-01	7,54E-01	1,23E-03	1,03E-03	2,77E-01	-2,66E-02
GWP LU-LT	kg CO ₂ eq.	2,49E-02	2,26E-02	6,25E-05	6,16E-04	1,76E-03	4,58E-05	7,85E-05	7,49E-05	-3,16E-04
GWP TOTAL	kg CO ₂ eq.	2,98E+00	1,01E+00	1,25E-01	4,80E-01	9,08E-01	1,22E-01	1,35E-01	6,31E-01	-4,35E-01
AP	kg SO ₂ eq.	4,47E-02	3,93E-02	7,34E-04	1,82E-03	1,05E-03	7,52E-04	2,38E-03	1,80E-03	-3,16E-03
EP	kg PO ₄ 3- eq.	1,43E-01	1,41E-01	2,79E-04	7,70E-04	8,87E-04	1,71E-04	2,71E-04	3,46E-04	-5,58E-04
POCP	kg C ₂ H ₄ eq.	1,44E-02	5,88E-03	3,93E-04	7,76E-05	6,19E-03	2,42E-05	1,72E-03	1,65E-03	-1,53E-03
Abiot elem	kg Sb eq.	2,94E-05	1,79E-05	1,79E-07	1,32E-06	1,03E-05	3,09E-07	8,02E-08	9,91E-08	-7,33E-07
Abiot f	MJ	2,40E+01	1,30E+01	2,35E+00	4,24E+00	2,01E+00	1,89E+00	2,01E+00	3,67E+00	-5,18E+00
WSP	m ³ eq.	1,01E+00	1,00E+00	3,48E-04	3,44E-03	1,37E-03	2,28E-04	2,25E-04	2,10E-04	-2,26E-03
HT	kg 1,4-DB eq	4,37E+00	4,15E+00	1,37E-01	6,48E-02	2,81E-02	1,85E-02	3,17E-02	8,86E-02	-1,46E-01
Ecotox W	kg 1,4-DB eq	2,30E+00	1,99E+00	5,76E-02	1,27E-01	1,30E-01	2,17E-02	1,42E-02	3,81E-02	-7,36E-02
EF	m ² a	6,73E-01	4,09E-01	7,71E-03	3,34E-01	2,84E-02	1,49E-02	1,06E-02	5,05E-03	-1,36E-01
LU	m ² a	4,13E-01	2,35E-01	4,86E-03	2,37E-01	1,78E-02	7,45E-03	5,17E-03	3,17E-03	-9,70E-02
ByP	kg	4,37E+00	1,58E-01	0,00E+00	1,26E-02	3,89E+00	3,10E-01	0,00E+00	0,00E+00	0,00E+00

*GWP: Global warming potential; GWP LU-LT: GWP Land use and land transformation; AP: Acidification Potential; EP: Eutrophication potential; POCP: Formation potential of tropospheric ozone; Abiot elem: Abiotic depletion potential - Elements; Abiot f: Abiotic Depletion Potential -Fossil fuels; WSP: Water Scarcity Potential; HT: Human toxicity; Ecotox W: Freshwater aquatic eco-toxicity; EF: Ecological footprint; LU: Land use; ByP: By-products.

CATEGORY	UNIT	TOTAL	UPSTREAM MODULE			CORE MODULE		DOWNSTREAM MODULE			
			Olive fruit production	Production of electricity and fuel	DOWNSTRE AM MODULE	Extraction of olive oil	Packaging phase	Distribution	Use phase	End-of-life	
USE OF RESOURCES											
Primary energy resources - Renewable	Use as energy carrier	MJ	9,97E-01	5,45E-01	1,97E-01	2,20E-02	1,59E-01	4,07E-02	2,55E-02	1,13E-01	-1,07E-01
	Used as raw materials	MJ	1,97E+00	2,33E+00	3,38E-02	2,04E-02	1,60E-01	1,52E-02	1,26E-02	2,19E-02	-6,27E-01
	TOTAL	MJ	2,97E+00	2,88E+00	2,31E-01	4,25E-02	3,19E-01	5,59E-02	3,80E-02	1,35E-01	-7,34E-01
Primary energy resources - Non-renewable	Use as energy carrier	MJ	2,72E+01	1,53E+01	2,95E+00	3,42E+00	3,05E+00	2,03E+00	2,11E+00	3,84E+00	-5,42E+00
	Used as raw materials	MJ	1,73E+00	1,69E+00	1,65E-02	4,37E-02	3,59E-02	2,40E-02	1,50E-02	1,04E-02	-1,10E-01
	TOTAL	MJ	2,90E+01	1,69E+01	2,96E+00	3,46E+00	3,09E+00	2,06E+00	2,12E+00	3,85E+00	-5,53E+00
Secondary material	kg	6,91E-07	6,40E-07	0,00E+00	5,11E-08	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Renewable secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Non-renewable secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Net use of fresh water	m3 eq.	4,94E-01	4,93E-01	0,00E+00	4,45E-06	1,20E-03	1,08E-08	0,00E+00	0,00E+00	0,00E+00	0,00E+00
WASTE PRODUCTION AND OUTPUT FLOWS											
Hazardous waste disposed	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Non-hazardous waste disposed	kg	8,04E-03	0,00E+00	0,00E+00	0,00E+00	7,45E-03	5,94E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Radioactive waste disposed	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Components for reuse	kg	1,76E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,76E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Material for recycling	kg	6,65E-01	2,67E-06	0,00E+00	0,00E+00	0,00E+00	8,89E-02	7,94E-02	0,00E+00	0,00E+00	4,97E-01
Materials for energy recovery	kg	2,31E-01	0,00E+00	0,00E+00	0,00E+00	2,31E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, electricity	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, thermal	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Table 13. Functional unit: 1 liter of extra virgin olive oil bottled in glass 0.75 L.

CATEGORY	UNIT	TOTAL	UPSTREAM MODULE			CORE MODULE		DOWNSTREAM MODULE		
			Olive fruit production	Production of electricity and fuel	Production of packaging	Extraction of olive oil	Packaging phase	Distribution	Use phase	End-of-life
GWP Fossil	kg CO ₂ eq.	1,57E+00	9,20E-01	1,23E-01	3,62E-01	1,52E-01	1,36E-01	7,05E-02	3,54E-01	-5,49E-01
GWP Biogenic	kg CO ₂ eq.	1,23E+00	7,14E-02	2,56E-03	1,57E-01	7,54E-01	2,01E-03	6,70E-04	2,77E-01	-3,34E-02
GWP LU-LT	kg CO ₂ eq.	2,44E-02	2,26E-02	6,25E-05	2,59E-04	1,76E-03	5,89E-05	3,03E-05	7,49E-05	-4,23E-04
GWP TOTAL	kg CO ₂ eq.	2,82E+00	1,01E+00	1,25E-01	5,19E-01	9,08E-01	1,38E-01	7,12E-02	6,31E-01	-5,83E-01
AP	kg SO ₂ eq.	4,20E-02	3,93E-02	7,34E-04	2,00E-03	1,05E-03	8,20E-04	5,18E-04	1,80E-03	-4,25E-03
EP	kg PO ₄ 3- eq.	1,43E-01	1,41E-01	2,79E-04	8,94E-04	8,87E-04	2,42E-04	8,37E-05	3,46E-04	-7,49E-04
POCP	kg C ₂ H ₄ eq.	1,27E-02	5,88E-03	3,93E-04	7,98E-05	6,19E-03	2,98E-05	5,00E-04	1,65E-03	-2,06E-03
Abiot elem	kg Sb eq.	2,92E-05	1,79E-05	1,79E-07	1,38E-06	1,03E-05	2,90E-07	1,15E-07	9,91E-08	-9,85E-07
Abiot f	MJ	2,19E+01	1,30E+01	2,35E+00	4,59E+00	2,01E+00	2,03E+00	1,14E+00	3,67E+00	-6,95E+00
WSP	m ³ eq.	1,01E+00	1,00E+00	3,48E-04	4,32E-03	1,37E-03	3,03E-04	1,40E-04	2,10E-04	-2,99E-03
HT	kg 1,4-DB eq	3,57E+00	3,48E+00	1,33E-02	7,32E-02	2,81E-02	1,82E-02	1,11E-02	1,31E-02	-6,47E-02
Ecotox W	kg 1,4-DB eq	2,30E+00	1,99E+00	5,76E-02	1,31E-01	1,30E-01	4,16E-02	1,09E-02	3,81E-02	-9,91E-02
EF	m ² a	6,94E-01	4,09E-01	7,71E-03	3,89E-01	2,84E-02	1,34E-02	1,57E-02	5,05E-03	-1,74E-01
LU	m ² a	4,29E-01	2,35E-01	4,86E-03	2,77E-01	1,78E-02	7,21E-03	7,54E-03	3,17E-03	-1,24E-01
ByP	kg	5,23E+00	1,58E-01	0,00E+00	4,62E-02	3,89E+00	1,14E+00	0,00E+00	0,00E+00	0,00E+00

*GWP: Global warming potential; GWP LU-LT: GWP Land use and land transformation; AP: Acidification Potential; EP: Eutrophication potential; POCP: Formation potential of tropospheric ozone; Abiot elem: Abiotic depletion potential - Elements; Abiot f: Abiotic Depletion Potential -Fossil fuels; WSP: Water Scarcity Potential; HT: Human toxicity; Ecotox W: Freshwater aquatic eco-toxicity; EF: Ecological footprint; LU: Land use; ByP: By-products.

CATEGORY	UNIT	TOTAL	UPSTREAM MODULE			CORE MODULE		DOWNSTREAM MODULE			
			Olive fruit production	Production of electricity and fuel	Production of packaging	Extraction of olive oil	Packaging phase	Distribution	Use phase	End-of-life	
USE OF RESOURCES											
Primary energy resources - Renewable	Use as energy carrier	MJ	1,14E+00	5,45E-01	1,97E-01	1,33E-01	1,59E-01	1,21E-01	8,88E-03	1,13E-01	-1,43E-01
	Used as raw materials	MJ	3,80E+00	2,33E+00	3,38E-02	2,00E+00	1,60E-01	2,59E-02	8,43E-03	2,19E-02	-7,76E-01
	TOTAL	MJ	4,94E+00	2,88E+00	2,31E-01	2,13E+00	3,19E-01	1,47E-01	1,73E-02	1,35E-01	-9,19E-01
Primary energy resources - Non-renewable	Use as energy carrier	MJ	2,64E+01	1,53E+01	2,95E+00	4,94E+00	3,05E+00	2,41E+00	1,18E+00	3,84E+00	-7,28E+00
	Used as raw materials	MJ	1,83E+00	1,69E+00	1,65E-02	1,88E-01	3,59E-02	2,35E-02	1,55E-02	1,04E-02	-1,48E-01
	TOTAL	MJ	2,82E+01	1,69E+01	2,96E+00	5,13E+00	3,09E+00	2,43E+00	1,20E+00	3,85E+00	-7,42E+00
Secondary material	kg	8,27E-07	6,40E-07	0,00E+00	1,87E-07	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Renewable secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Non-renewable secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Net use of fresh water	m3 eq.	4,94E-01	4,93E-01	0,00E+00	5,58E-05	1,20E-03	1,36E-07	0,00E+00	0,00E+00	0,00E+00	0,00E+00
WASTE PRODUCTION AND OUTPUT FLOWS											
Hazardous waste disposed	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Non-hazardous waste disposed	kg	9,62E-03	0,00E+00	0,00E+00	0,00E+00	7,45E-03	2,17E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Radioactive waste disposed	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Components for reuse	kg	3,15E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,15E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Material for recycling	kg	5,80E-01	2,67E-06	0,00E+00	0,00E+00	0,00E+00	4,58E-02	3,24E-02	0,00E+00	0,00E+00	5,02E-01
Materials for energy recovery	kg	2,31E-01	0,00E+00	0,00E+00	0,00E+00	2,31E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, electricity	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, thermal	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Table 14. Functional unit: 1 liter of extra virgin olive oil bottled in glass 0.50 L.

CATEGORY	UNIT	TOTAL	UPSTREAM MODULE			CORE MODULE		DOWNSTREAM MODULE		
			Olive fruit production	Production of electricity and fuel	Production of packaging	Extraction of olive oil	Packaging phase	Distribution	Use phase	End-of-life
<i>GWP Fossil</i>	kg CO ₂ eq.	1,68E+00	9,20E-01	1,23E-01	3,73E-01	1,52E-01	1,91E-01	9,39E-02	3,54E-01	-5,31E-01
<i>GWP Biogenic</i>	kg CO ₂ eq.	1,24E+00	7,14E-02	2,56E-03	1,61E-01	7,54E-01	3,21E-03	8,12E-04	2,77E-01	-3,20E-02
<i>GWP LU-LT</i>	kg CO ₂ eq.	2,46E-02	2,26E-02	6,25E-05	3,41E-04	1,76E-03	8,73E-05	4,73E-05	7,49E-05	-4,11E-04
GWP TOTAL	kg CO ₂ eq.	2,94E+00	1,01E+00	1,25E-01	5,34E-01	9,08E-01	1,94E-01	9,47E-02	6,31E-01	-5,63E-01
AP	kg SO ₂ eq.	4,31E-02	3,93E-02	7,34E-04	2,06E-03	1,05E-03	1,14E-03	1,15E-03	1,80E-03	-4,12E-03
EP	kg PO ₄ 3- eq.	1,44E-01	1,41E-01	2,79E-04	1,02E-03	8,87E-04	3,71E-04	1,49E-04	3,46E-04	-7,35E-04
POCP	kg C ₂ H ₄ eq.	1,32E-02	5,88E-03	3,93E-04	8,38E-05	6,19E-03	4,36E-05	9,20E-04	1,65E-03	-1,98E-03
Abiot elem	kg Sb eq.	2,93E-05	1,79E-05	1,79E-07	1,42E-06	1,03E-05	3,73E-07	1,07E-07	9,91E-08	-9,58E-07
Abiot f	MJ	2,35E+01	1,30E+01	2,35E+00	4,88E+00	2,01E+00	2,80E+00	1,47E+00	3,67E+00	-6,67E+00
WSP	m ³ eq.	1,01E+00	1,00E+00	3,48E-04	4,31E-03	1,37E-03	4,54E-04	1,73E-04	2,10E-04	-2,72E-03
HT	kg 1,4-DB eq	3,59E+00	3,48E+00	1,33E-02	7,67E-02	2,81E-02	2,41E-02	1,83E-02	1,31E-02	-6,29E-02
Ecotox W	kg 1,4-DB eq	2,33E+00	1,99E+00	5,76E-02	1,35E-01	1,30E-01	6,90E-02	1,23E-02	3,81E-02	-9,88E-02
EF	m ² a	7,54E-01	4,09E-01	7,71E-03	4,41E-01	2,84E-02	1,69E-02	1,45E-02	5,05E-03	-1,68E-01
LU	m ² a	4,72E-01	2,35E-01	4,86E-03	3,14E-01	1,78E-02	9,43E-03	6,99E-03	3,17E-03	-1,19E-01
ByP	kg	6,20E+00	1,58E-01	0,00E+00	8,42E-02	3,89E+00	2,07E+00	0,00E+00	0,00E+00	0,00E+00

*GWP: Global warming potential; GWP LU-LT: GWP Land use and land transformation; AP: Acidification Potential; EP: Eutrophication potential; POCP: Formation potential of tropospheric ozone; Abiot elem: Abiotic depletion potential - Elements; Abiot f: Abiotic Depletion Potential -Fossil fuels; WSP: Water Scarcity Potential; HT: Human toxicity; Ecotox W: Freshwater aquatic eco-toxicity; EF: Ecological footprint; LU: Land use; ByP: By-products.

CATEGORY	UNIT	TOTAL	UPSTREAM MODULE			CORE MODULE		DOWNSTREAM MODULE			
			Olive fruit production	Production of electricity and fuel	Production of packaging	Extraction of olive oil	Packaging phase	Distribution	Use phase	End-of-life	
USO DE RECURSOS											
Primary energy resources - Renewable	Use as energy carrier	MJ	1,25E+00	5,45E-01	1,97E-01	1,39E-01	1,59E-01	2,16E-01	1,47E-02	1,13E-01	-1,38E-01
	Used as raw materials	MJ	4,09E+00	2,33E+00	3,38E-02	2,23E+00	1,60E-01	4,18E-02	1,01E-02	2,19E-02	-7,42E-01
	TOTAL	MJ	5,34E+00	2,88E+00	2,31E-01	2,37E+00	3,19E-01	2,58E-01	2,47E-02	1,35E-01	-8,80E-01
Primary energy resources - Non-renewable	Use as energy carrier	MJ	2,84E+01	1,53E+01	2,95E+00	5,26E+00	3,05E+00	3,46E+00	1,53E+00	3,84E+00	-6,96E+00
	Used as raw materials	MJ	1,85E+00	1,69E+00	1,65E-02	1,92E-01	3,59E-02	3,09E-02	1,58E-02	1,04E-02	-1,43E-01
	TOTAL	MJ	3,02E+01	1,69E+01	2,96E+00	5,45E+00	3,09E+00	3,49E+00	1,54E+00	3,85E+00	-7,10E+00
Secondary material	kg	9,81E-07	6,40E-07	0,00E+00	3,41E-07	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Renewable secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Non-renewable secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Net use of fresh water	m3 eq.	4,94E-01	4,93E-01	0,00E+00	1,91E-04	1,20E-03	4,65E-07	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PRODUCCIÓN DE RESIDUOS Y FLUJOS DE SALIDA											
Hazardous waste disposed	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Non-hazardous waste disposed	kg	1,14E-02	0,00E+00	0,00E+00	0,00E+00	7,45E-03	3,97E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Radioactive waste disposed	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Components for reuse	kg	6,25E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6,25E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Material for recycling	kg	4,31E-01	2,67E-06	0,00E+00	0,00E+00	0,00E+00	5,60E-02	4,38E-02	0,00E+00	0,00E+00	3,31E-01
Materials for energy recovery	kg	2,31E-01	0,00E+00	0,00E+00	0,00E+00	2,31E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, electricity	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, thermal	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Table 15. Functional unit: 1 liter of extra virgin olive oil bottled in glass 0.25 L.

CATEGORY	UNIT	TOTAL	UPSTREAM MODULE			CORE MODULE		DOWNSTREAM MODULE		
			Olive fruit production	Production of electricity and fuel	Production of packaging	Extraction of olive oil	Packaging phase	Distribution	Use phase	End-of-life
GWP Fossil	kg CO ₂ eq.	1,58E+00	9,20E-01	1,23E-01	4,84E-01	1,52E-01	1,05E-01	1,24E-01	3,54E-01	-6,77E-01
GWP Biogenic	kg CO ₂ eq.	1,27E+00	7,14E-02	2,56E-03	2,06E-01	7,54E-01	1,11E-03	1,10E-03	2,77E-01	-4,02E-02
GWP LU-LT	kg CO ₂ eq.	2,46E-02	2,26E-02	6,25E-05	5,54E-04	1,76E-03	4,02E-05	5,98E-05	7,49E-05	-5,17E-04
GWP TOTAL	kg CO ₂ eq.	2,88E+00	3,93E-02	1,25E-01	6,90E-01	9,08E-01	1,06E-01	1,25E-01	6,31E-01	-7,18E-01
AP	kg SO ₂ eq.	3,07E-03	3,93E-02	7,34E-04	2,70E-03	1,05E-03	6,47E-04	1,35E-03	1,80E-03	-5,22E-03
EP	kg PO ₄ 3- eq.	1,43E-01	1,41E-01	2,79E-04	1,06E-03	8,87E-04	1,52E-04	1,82E-04	3,46E-04	-9,07E-04
POCP	kg C ₂ H ₄ eq.	1,28E-02	5,88E-03	3,93E-04	1,21E-04	6,19E-03	2,11E-05	1,12E-03	1,65E-03	-2,55E-03
Abiot elem	kg Sb eq.	2,93E-05	1,79E-05	1,79E-07	1,70E-06	1,03E-05	2,62E-07	1,58E-07	9,91E-08	-1,21E-06
Abiot f	MJ	2,25E+01	1,30E+01	2,35E+00	6,51E+00	2,01E+00	1,63E+00	1,95E+00	3,67E+00	-8,65E+00
WSP	m ³ eq.	1,01E+00	1,00E+00	3,48E-04	5,92E-03	1,37E-03	2,01E-04	2,33E-04	2,10E-04	-3,91E-03
HT	kg 1,4-DB eq	3,59E+00	3,48E+00	1,33E-02	9,32E-02	2,81E-02	1,58E-02	2,28E-02	1,31E-02	-7,95E-02
Ecotox W	kg 1,4-DB eq	2,30E+00	1,99E+00	5,76E-02	1,69E-01	1,30E-01	2,02E-02	1,71E-02	3,81E-02	-1,18E-01
EF	m ² a	7,51E-01	4,09E-01	7,71E-03	4,78E-01	2,84E-02	1,26E-02	2,15E-02	5,05E-03	-2,11E-01
LU	m ² a	4,68E-01	2,35E-01	4,86E-03	3,40E-01	1,78E-02	6,33E-03	1,03E-02	3,17E-03	-1,50E-01
ByP	kg	4,40E+00	1,58E-01	0,00E+00	1,38E-02	3,89E+00	3,40E-01	0,00E+00	0,00E+00	0,00E+00

*GWP: Global warming potential; GWP LU-LT: GWP Land use and land transformation; AP: Acidification Potential; EP: Eutrophication potential; POCP: Formation potential of tropospheric ozone; Abiot elem: Abiotic depletion potential - Elements; Abiot f: Abiotic Depletion Potential -Fossil fuels; WSP: Water Scarcity Potential; HT: Human toxicity; Ecotox W: Freshwater aquatic eco-toxicity; EF: Ecological footprint; LU: Land use; ByP: By-products.

CATEGORY	UNIT	TOTAL	UPSTREAM MODULE			CORE MODULE		DOWNSTREAM MODULE			
			Olive fruit production	Production of electricity and fuel	Production of packaging	Extraction of olive oil	Packaging phase	Distribution	Use phase	End-of-life	
USE OF RESOURCES											
Primary energy resources - Renewable	Use as energy carrier	MJ	1,09E+00	5,45E-01	1,97E-01	1,91E-01	1,59E-01	4,16E-02	1,83E-02	1,13E-01	-1,77E-01
	Used as raw materials	MJ	4,23E+00	2,33E+00	3,38E-02	2,58E+00	1,60E-01	1,39E-02	1,37E-02	2,19E-02	-9,31E-01
	TOTAL	MJ	5,32E+00	2,88E+00	2,31E-01	2,77E+00	3,19E-01	5,55E-02	3,20E-02	1,35E-01	-1,11E+00
Primary energy resources - Non-renewable	Use as energy carrier	MJ	2,69E+01	1,53E+01	2,95E+00	7,05E+00	3,05E+00	1,77E+00	2,03E+00	3,84E+00	-9,08E+00
	Used as raw materials	MJ	1,85E+00	1,69E+00	1,65E-02	2,39E-01	3,59E-02	2,05E-02	2,27E-02	1,04E-02	-1,81E-01
	TOTAL	MJ	2,87E+01	1,69E+01	2,96E+00	7,29E+00	3,09E+00	1,79E+00	2,05E+00	3,85E+00	-9,26E+00
Secondary material	kg	6,96E-07	6,40E-07	0,00E+00	5,60E-08	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Renewable secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Non-renewable secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Net use of fresh water	m3 eq.	4,95E-01	4,93E-01	0,00E+00	3,59E-04	1,20E-03	8,73E-07	0,00E+00	0,00E+00	0,00E+00	0,00E+00
WASTE PRODUCTION AND OUTPUT FLOWS											
Hazardous waste disposed	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Non-hazardous waste disposed	kg	8,10E-03	0,00E+00	0,00E+00	0,00E+00	7,45E-03	6,52E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Radioactive waste disposed	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Components for reuse	kg	1,76E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,76E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Material for recycling	kg	7,29E-01	2,67E-06	0,00E+00	0,00E+00	0,00E+00	2,64E-01	2,30E-01	0,00E+00	2,35E-01	0,00E+00
Materials for energy recovery	kg	2,31E-01	0,00E+00	0,00E+00	0,00E+00	2,31E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, electricity	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, thermal	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Table 16. Functional unit: 1 liter of extra virgin olive oil bottled in glass 0.125 L.

CATEGORY	UNIT	TOTAL	UPSTREAM MODULE			CORE MODULE		DOWNSTREAM MODULE		
			Olive fruit production	Production of electricity and fuel	Production of packaging	Extraction of olive oil	Packaging phase	Distribution	Use phase	End-of-life
GWP Fossil	kg CO ₂ eq.	1,81E+00	9,20E-01	1,23E-01	1,11E+00	1,52E-01	2,09E-01	1,55E-01	3,54E-01	-1,22E+00
GWP Biogenic	kg CO ₂ eq.	1,55E+00	7,14E-02	2,56E-03	5,67E-01	7,54E-01	1,71E-03	1,19E-03	2,77E-01	-1,27E-01
GWP LU-LT	kg CO ₂ eq.	2,71E-02	2,26E-02	6,25E-05	3,39E-03	1,76E-03	7,42E-05	9,08E-05	7,49E-05	-9,93E-04
GWP TOTAL	kg CO ₂ eq.	3,38E+00	1,01E+00	1,25E-01	1,68E+00	9,08E-01	2,10E-01	1,56E-01	6,31E-01	-1,35E+00
AP	kg SO ₂ eq.	4,39E-02	3,93E-02	7,34E-04	6,40E-03	1,05E-03	1,31E-03	2,77E-03	1,80E-03	-9,50E-03
EP	kg PO ₄ 3- eq.	1,44E-01	1,41E-01	2,79E-04	2,75E-03	8,87E-04	2,63E-04	3,15E-04	3,46E-04	-1,74E-03
POCP	kg C ₂ H ₄ eq.	1,18E-02	5,88E-03	3,93E-04	3,18E-04	6,19E-03	3,99E-05	1,99E-03	1,65E-03	-4,62E-03
Abiot elem	kg Sb eq.	3,13E-05	1,79E-05	1,79E-07	4,51E-06	1,03E-05	5,70E-07	8,94E-08	9,91E-08	-2,22E-06
Abiot f	MJ	2,53E+01	1,30E+01	2,35E+00	1,40E+01	2,01E+00	3,32E+00	2,31E+00	3,67E+00	-1,54E+01
WSP	m ³ eq.	1,01E+00	1,00E+00	3,48E-04	1,16E-02	1,37E-03	3,63E-04	2,58E-04	2,10E-04	-6,93E-03
HT	kg 1,4-DB eq	3,69E+00	3,48E+00	1,33E-02	2,31E-01	2,81E-02	3,36E-02	3,67E-02	1,31E-02	-1,46E-01
Ecotox W	kg 1,4-DB eq	2,49E+00	1,99E+00	5,76E-02	4,58E-01	1,30E-01	2,63E-02	1,62E-02	3,81E-02	-2,28E-01
EF	m ² a	1,20E+00	4,09E-01	7,71E-03	1,29E+00	2,84E-02	2,77E-02	1,18E-02	5,05E-03	-5,87E-01
LU	m ² a	7,81E-01	2,35E-01	4,86E-03	9,21E-01	1,78E-02	1,36E-02	5,75E-03	3,17E-03	-4,19E-01
ByP	kg	4,08E+00	1,58E-01	0,00E+00	1,32E-03	3,89E+00	3,24E-02	0,00E+00	0,00E+00	0,00E+00

*GWP: Global warming potential; GWP LU-LT: GWP Land use and land transformation; AP: Acidification Potential; EP: Eutrophication potential; POCP: Formation potential of tropospheric ozone; Abiot elem: Abiotic depletion potential - Elements; Abiot f: Abiotic Depletion Potential -Fossil fuels; WSP: Water Scarcity Potential; HT: Human toxicity; Ecotox W: Freshwater aquatic eco-toxicity; EF: Ecological footprint; LU: Land use; ByP: By-products.

CATEGORY	UNIT	TOTAL	UPSTREAM MODULE			CORE MODULE		DOWNSTREAM MODULE			
			Olive fruit production	Production of electricity and fuel	Production of packaging	Extraction of olive oil	Packaging phase	Distribution	Use phase	End-of-life	
USO DE RECURSOS											
Primary energy resources - Renewable	Use as energy carrier	MJ	1,19E+00	1,40E+01	2,35E+00	4,48E-01	1,66E+00	2,20E-02	2,31E+00	3,67E+00	-1,54E+01
	Used as raw materials	MJ	6,60E+00	1,99E+00	5,76E-02	7,22E+00	1,19E-01	2,04E-02	1,62E-02	3,81E-02	-2,28E-01
	TOTAL	MJ	7,80E+00	1,60E+01	2,40E+00	7,67E+00	1,78E+00	4,25E-02	2,33E+00	3,70E+00	-1,56E+01
Primary energy resources - Non-renewable	Use as energy carrier	MJ	2,99E+01	3,63E+00	1,40E-02	1,50E+01	3,08E-02	3,42E+00	3,90E-02	1,51E-02	-1,53E-01
	Used as raw materials	MJ	2,12E+00	3,93E-01	4,86E-03	6,39E-01	3,91E+00	4,37E-02	5,75E-03	3,17E-03	-4,19E-01
	TOTAL	MJ	3,20E+01	4,02E+00	1,89E-02	1,56E+01	3,94E+00	3,46E+00	4,48E-02	1,82E-02	-5,72E-01
Secondary material	kg	6,46E-07	6,40E-07	0,00E+00	5,32E-09	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Renewable secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Non-renewable secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Net use of fresh water	m3 eq.	4,98E-01	4,93E-01	0,00E+00	4,10E-03	1,20E-03	9,98E-06	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PRODUCCIÓN DE RESIDUOS Y FLUJOS DE SALIDA											
Hazardous waste disposed	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Non-hazardous waste disposed	kg	7,51E-03	0,00E+00	0,00E+00	0,00E+00	7,45E-03	6,19E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Radioactive waste disposed	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Components for reuse	kg	1,76E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,76E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Material for recycling	kg	9,00E-01	2,67E-06	0,00E+00	0,00E+00	0,00E+00	3,60E-01	3,09E-01	0,00E+00	0,00E+00	2,31E-01
Materials for energy recovery	kg	2,31E-01	0,00E+00	0,00E+00	0,00E+00	2,31E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, electricity	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, thermal	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

9. ADDITIONAL INFORMATION

Agricultural practices can play an important role in atmospheric CO₂ emission and fixation.

The company's vision tries to implement year by year best productive practices at all stages of the olive oil obtention chain to assurance the sustainability of their fields.

So, Borges Agricultural & Industrial Edible Oils would show through its data the benefit of this practices.

According to the article "Net CO₂ storage in Mediterranean olive and peach orchards" published by *A. Sofo et al*, we have assessment the balance between the total GWP emissions of our generic functional unit and the CO₂ fixation through senescent leaves and pruning material.

To evaluate the carbon fixation of an olive grove, the age of the tree, the leaf products and pruning material incorporated into the soil as annual dry matter have been considered. The following table shows the carbon capture values of each of the inputs in the agronomic system for a young (less than 10 years) and mature (more than 10 years) plantation:

⁶ Net CO₂ storage in mediterranean olive and peach orchards. Adriano Sofo a,*, Vitale Nuzzo a, Assunta Maria Palese a, Cristos Xiloyannis a, Giuseppe Celano a, Paul Zukowskyj b, Bartolomeo Dichio

Table 117. Fixed CO₂ p by senescent leaves and pruning material on a Young and mature olives orchard.

Orchard	Plant organ	Dry matter (t ha/year)	Fixed CO ₂ (t ha/year)
Young	Senescent leaves	0.50	0.91
	Pruning material	1.00	1.83
	Total	1.50	2.74
Mature	Senescent leaves	0.91	1.67
	Pruning material	4.30	7.87
	Total	5.21	9.54

Fuente: *A. Sofo et al, (2005)⁶*.

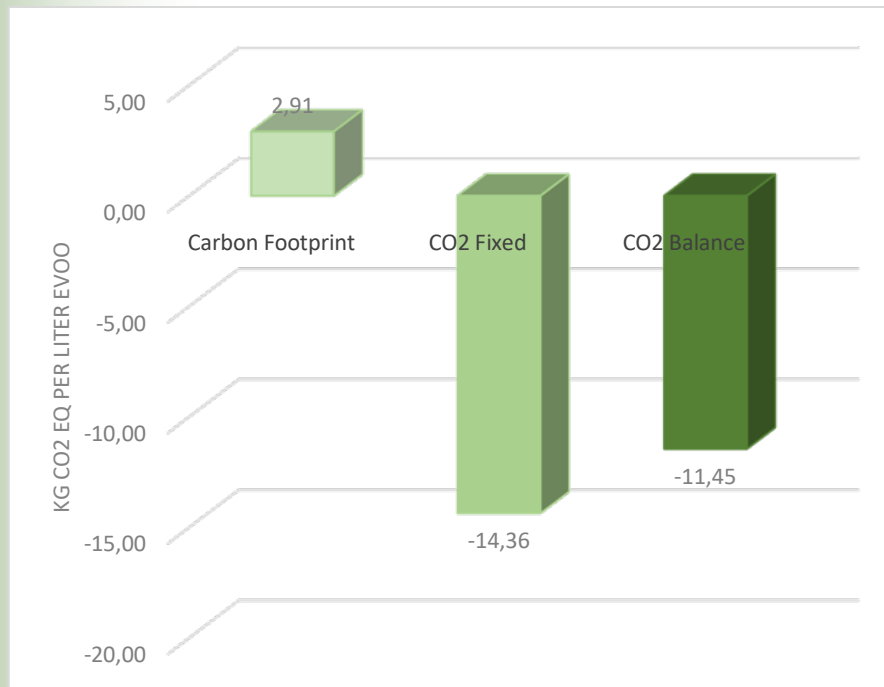
The fixed CO₂ by a mature olive orchard, show in this publication is 9.54 t ha⁻¹ year⁻¹, while for a young olive orchard is around 2.74 t ha⁻¹ year⁻¹. (Table 17).

To assess the AOVE's carbon storage of Borges Agricultural & Industrial Edible Oils, S.A.U., it is noted that Borges buys both olive oil from young and mature olive orchard to meet their annual olive oil needs. The term mature olive grove applies to the amount of oil from traditional olive orchard (between 100 - 200 trees/ha) and the term young olive orchard to oil from intensive and super-intensive olive groves (200 – 400 trees/ha and >1,000 trees/ha). Based on this approach, the representation of the

different production systems for each country of study from which Borges olive oil comes has been applied.

This data is compared, and the following figure is obtained:

Figure 3. Borges AOVE's Carbon Footprint.



The Carbon Footprint is 2.91 kg CO₂ equivalent for 1 liter of bottled olive oil, compared to a carbon fixation of -14.36 kg CO₂/l olive oil. Thus, the carbon balance amounts to -11.45 kg CO₂ per liter of Borges olive oil.

10. INFORMATION RELATED TO SECTOR EPDS

- The selection of the production sites in this EPD have been the specific production sites of the functional unit: agronomic farms, mil, and packer of Borges Agricultural & Industrial Edible Oils, S.A.U.
- In order to assessment of environmental impacts the last three harvest 2016/2017, 2017/2018 and 2018/2019 have been applied based on the representativeness of volume of EVOO market in each campaign.
- This EPD covers average values for an entire product category. Table 2 shows the percentage of representativeness per each packaging over the functional unit. The functional unit is an average of different types of packaging; hence, this product is not available for purchase on the market.

11. DIFFERENCES VERSUS PREVIOUS VERSIONS OF THE EPD

This EPD has new aspects versus previous version of Borges:

- The data has been updated and corresponds to last three campaigns 2016/2017, 2017/2018 and 2018/2019 versus the information of previous EPD that included the campaigns 2013/2014, 2014/2015 and 2015/2016.
- A new stage within of Agronomic Phase has been included. The emissions of fertilizers, plant protection products and pesticides has been assessed according to PCR 2010:07 v 3.0.
- The evaluation data of the industrial phase are primary, that is, provided directly by the promoter of the EPD. In the case of Borges, these data come from the oil mills mentioned above where they buy oil for bottling.
- Electricity consumption at the packaging plant as of April 2019 has a certificate of renewable origin, so its contribution to climate change from here is zero.
- The packaging glass material of the company's production is both transparent (6%) green (94%). Of the first, 10% come from recycled material while the second is 79%.
- GWP Category is 2.91 kg CO₂/l of olive oil that is 35% less than the result obtained in last EPD. The previous value was 4.48 kg CO₂/l of olive oil.

12. REFERENCES

- Product Category Rules 2010:07 v 3.0, publication date 31-03-2020 for the CPC 21537 product group “Virgin Olive Oil and its fractions”.
- ISO 14040:2006 - Environmental management - Life cycle analysis - Principles and frame of reference.
- ISO 14044:2006 - Environmental management - Life cycle analysis - Requirements and guidelines.
- ISO 14025:2006 - Environmental labels and declarations - Type III environmental declarations - Principles and procedures.
- EPD International (2017) General Programme Instructions for the International EPD® System. Version 3.01, dated 2017-12-11. www.environdec.com

13. DECLARATION VALIDITY

The validity established for this environmental statement to Borges Branded Foods S.L., is a 5-year period starting from the date of the verification report (until May of 2026).


This Environmental Product Declaration can only be compared to that which relates to the same product category within the same recognition scheme.

14. VERIFICATION

This verification has been made under PCR 2010:07 v3.0 and the Environdec’s Program General Instructions 3.01. published in December 2017.

The declaration is complete and contains:

- Product definition and physical data related to manufacturing.
- Details of inputs and their origin.
- Description of how the product is manufactured.
- Data on the conditions of use, and the final phase of life.
- Results of the evaluation of the life cycle.
- Evidence, verification and testing.

Independent verification according to ISO 14025:2006	
<input type="checkbox"/> EPD process certification	<input checked="" type="checkbox"/> EPD verification
Procedure for follow-up of data during EPD validity involves third part verifier:	
<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Third part verifier:  Anxo Mourelle Álvarez Approved by: The International EPD® System Technical Committee, supported by the Secretariat A Coruña, May, 20 th 2021	