
ENVIRONMENTAL PRODUCT DECLARATION

# PESTI RUSTICI SAUCES

The first EPD process certified in the Food industries

**REGISTRATION NUMBER**
S-P-01150

**CPC CODE**
23995 Sauces
PCR 2010:19
v. 3.12 - 06.09.2019

**PUBLICATION DATE**
2018/06/04

**REVISION**
4 of 2022/11/22

**VALID UNTIL**
2025/06/29

**PROGRAMME**
The International EPD® System
www.environdec.com

**PROGRAMME OPERATOR**
EPD International AB

*This EPD has been developed in conformity to ISO 14025. An EPD should provide current information and may be updated if conditions change. The stated validity is, therefore, subject to the continued registration and publication at www.environdec.com.*

# 1. BRAND AND PRODUCT

## THE BRAND BARILLA

The Barilla brand has its roots in a small bread and pasta store opened in Parma in 1877.
Today it is the number one pasta in Italy and around the world. Thanks to the best durum wheat and impressive modern technologies, Barilla supplies millions around the world with pasta that always cooks to a perfect al dente texture, as well as ready-to-eat pasta sauces.

Further information on Barilla website.

## THE PLANT AND THE PROCESS

Pesto sauces are produced in an owned plant located in Rubbiano (Italy), where the preparation is very close to what people would do at home.
The process starts from basil preparation (washing and drying); basil is then added to other ingredients and mixed.
Vegetables, all coming from Mediterranean areas, are roughly pounded to maintain an intense flavour and the bright colours of seasonal vegetables.
Pesti Rustici sauce undergoes a heat treatment to pasteurize the product while preserving flavour and taste as much as possible over time. The pasteurization treatment, coupled with the integrity of the container, allows us to avoid using any preservatives.

The product is sold in package of 200 grams jar, in four recipes: basil and zucchinis, dried tomatos, Mediterranean vegetables, basil and olives. Sauce may be heated up before the consumption.

## THE PRODUCT

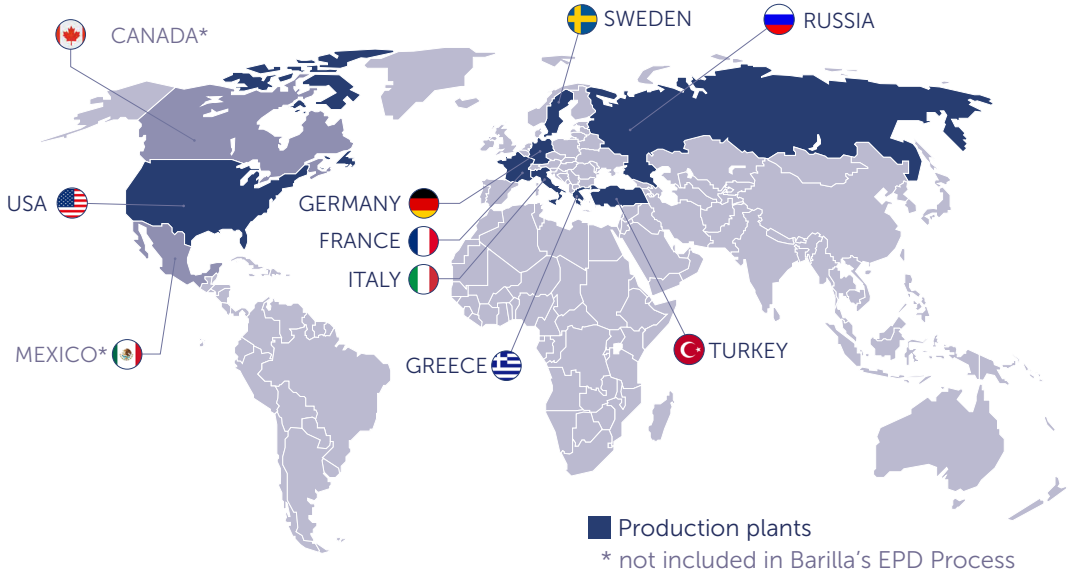

| NUTRITIONAL INFORMATION (per 100 g) | | | | | |
|---|---|---|---|---|---|
| | | BASIL AND ZUCCHINIS | BASIL AND OLIVES | MEDITERRANEAN VEGETABLES | DRIED TOMATOES |
| Energy | kJ<br>kcal | 802<br>194 | 874<br>212 | 752<br>182 | 727<br>176 |
| Fats<br>*of which saturated* | grams | 15.5<br>*1.4* | 19<br>*1.8* | 16<br>*1.4* | 14.5<br>*1* |
| Carbohydrates<br>*of which sugars* | grams | 9.9<br>*3.4* | 6.1<br>*4.9* | 6.9<br>*5.5* | 7.9<br>*6.8* |
| Fibres | grams | 3.5 | 3.9 | 2.2 | 2.8 |
| Proteins | grams | 1.9 | 2.1 | 1.5 | 2 |
| Salt | grams | 1.65 | 1.95 | 1.65 | 1.55 |

# 2. BARILLA GROUP

It is thanks to a path characterised by passion, quality, and attention to people's needs that a small bread and pasta shop, that opened in Parma in 1877, over time became the "Barilla" we know today: a world leader in the market for pasta, ready-made sauces, baked goods, and crispbread.

Barilla is present in over 100 countries with its brands and 30 production sites, which, every year, together produce more than 2,134,000 tonnes of products.

In different ways, on different markets, all of our brands have a common objective: to bring joy and conviviality around everyone's table.



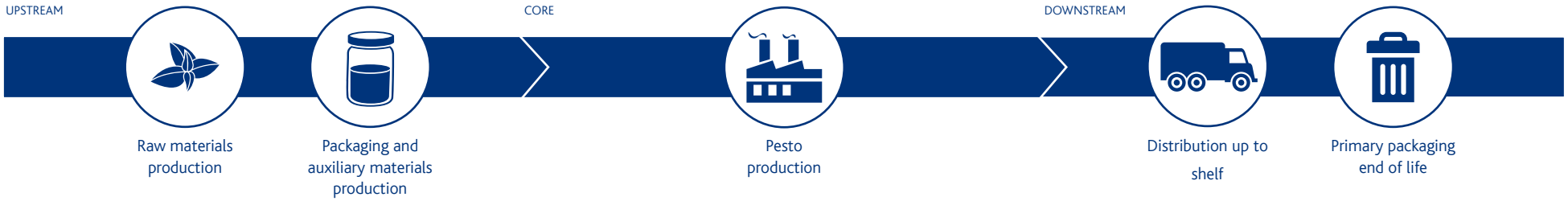

## Our Purpose: The joy of food for a better life

*In order to make a concrete contribution to global challenges, Barilla has renewed its commitment to society and the planet with a new Purpose containing the "why" of our way of doing business: "The joy of food for a better life".*

*"Bringing people closer to the joy of good food and making quality the choice for a better life, from each individual to the planet. Because this is how we are nurturing the future, today."*

*It's a commitment from field to fork, to bring to the world tasty, joyful and wholesome products, made with selected raw materials from responsible supply chains. Because what we eat today can change our tomorrow. Because good food is a joy for the present and a choice for a better future.*

# 3. ENVIRONMENTAL PERFORMANCE CALCULATION




The environmental performance of the product was calculated using the **LCA (life cycle analysis)** methodology, including the entire production chain, beginning with growing the vegetables up until delivery of the finished product to the shelf.

The study was conducted following the specific product rules (PCR) published by the EPD system: "CPC code 23995 – Sauce". The generic data contributes to the calculation of environmental impacts is lower than 10%.

## DECLARED UNIT

Data are referred to **1 kg** of product plus the related packaging (the packaging is referred to the **200 g** format, reported to 1 kg of product).

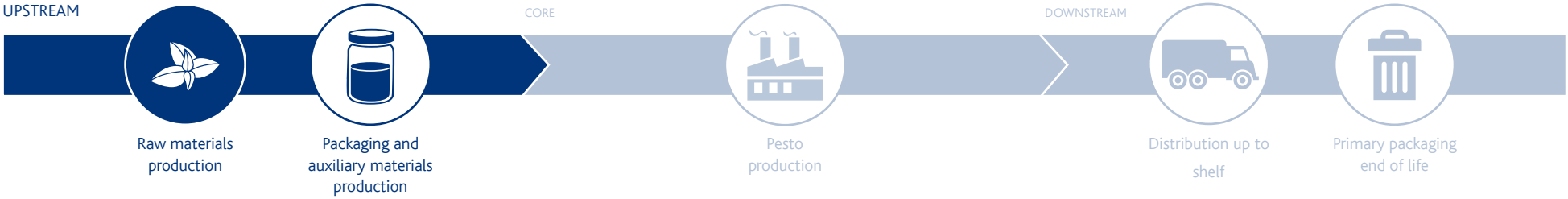
## SYSTEM BOUNDARIES

The processes constituting the analysed system were organized in upstream, core and downstream processes, in compliance with the requisites of the EPD system.

## GEOGRAPHICAL SCOPE

The geographical scope of this EPD corresponds to the distribution area of the product; concerning Pesti Rustici sauces, they are sold mainly in European Countries including Italy; however some volumes are distributed also outside Europe.

# 4. RAW MATERIALS PRODUCTION




### BASIL and BASIL SEMI-FINISHED PRODUCT

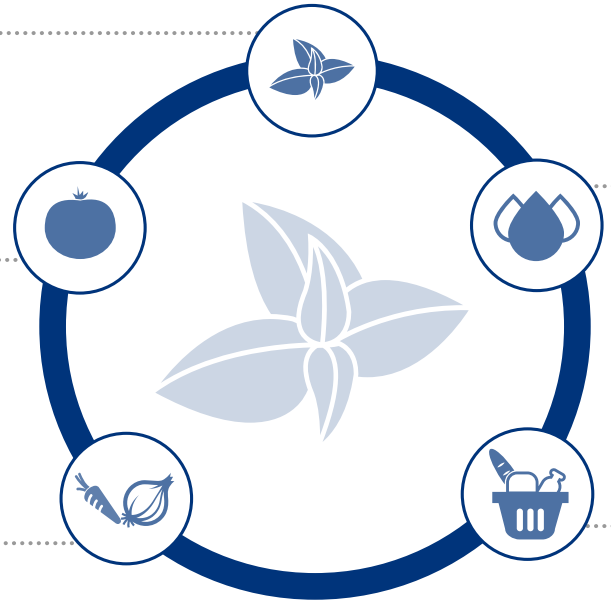
Impacts related to the basil cultivation and basil semi-finished product have been calculated on the basis of primary data collected from farmers. Information are related to 2020 crop.

### TOMATO

Impacts related to the tomatoes cultivation have been calculated on the basis of primary data collected by farmers.
The semifinished products are produced by suppliers, and the processes are modelized using primary data. Reference year 2019-2021.

### VEGETABLES

Zucchinis, pepper and onions data come from LCA database (Ecoinvent).



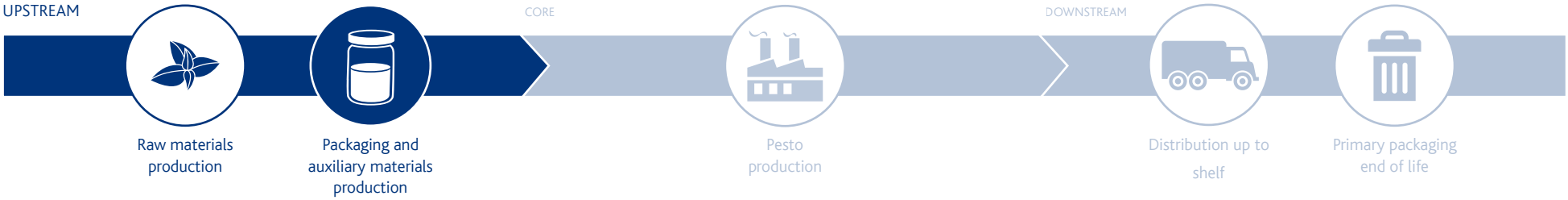
### VEGETABLE OILS

Data for vegetable oil production come from secondary data (from Agrifootprint database and World Food LCA database).

### OTHER INGREDIENTS

Data related to the sugar come from Barilla suppliers; data related to other raw materials have been collected by LCA database (mainly Ecoinvent).

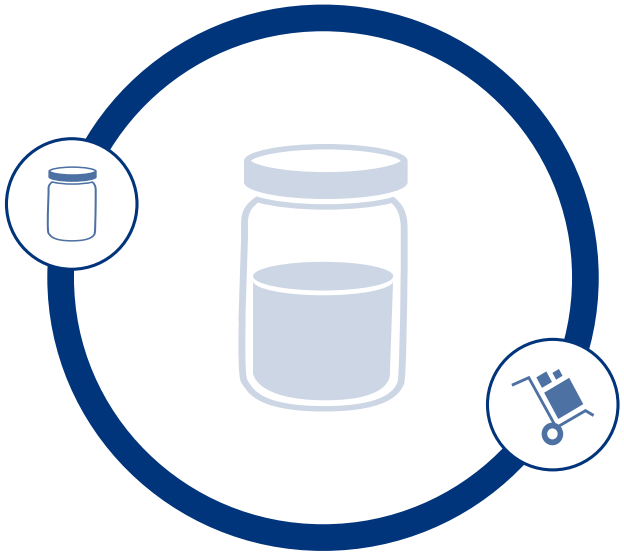
# 5. PACKAGING AND AUXILIARY MATERIALS PRODUCTION




## PRIMARY PACKAGING

Packaging environmental performances are calculated using the 200g format and are reported per packaging used for 1 kg of product.
The primary packaging consists in glass jar with screw top.

Primary data (from packaging unit, referred to current year 2022) are used for packaging amount and packaging materials production; data about packaging production process come from Barilla LCA database.



## PACKAGING PRODUCTION

*Since 2004. Barilla designs new packaging with the"LCA packaging design tool". It allows the assessment of the environmental impacts of the packaging solutions already during the design phase.*

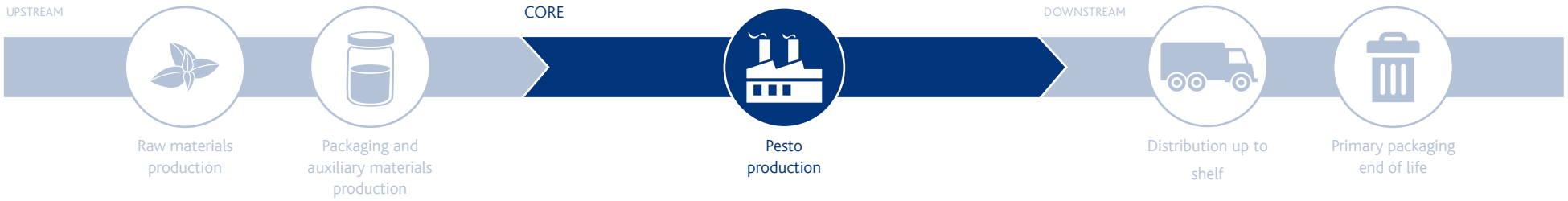
## PACKAGING FOR TRANSPORTATION

The packaging for transport consists in cardboard boxes (american box or tray), used for the distribution of the product, and a plastic extensible film. Boxes and trays are made mainly by recycled cardboard carton (pre and post consumer).
Data used have been collected from LCA databases (mainly Ecoinvent).

***Packaging used for Barilla products is designed for recycle.***

Auxiliary materials environmental performances are evaluated by using primary data from plant, during 2021 year.
Secondary data (Ecoinvent) are used for environmental aspects associated to materials production.

# 6. PESTO PRODUCTION




## GENERAL INFORMATION

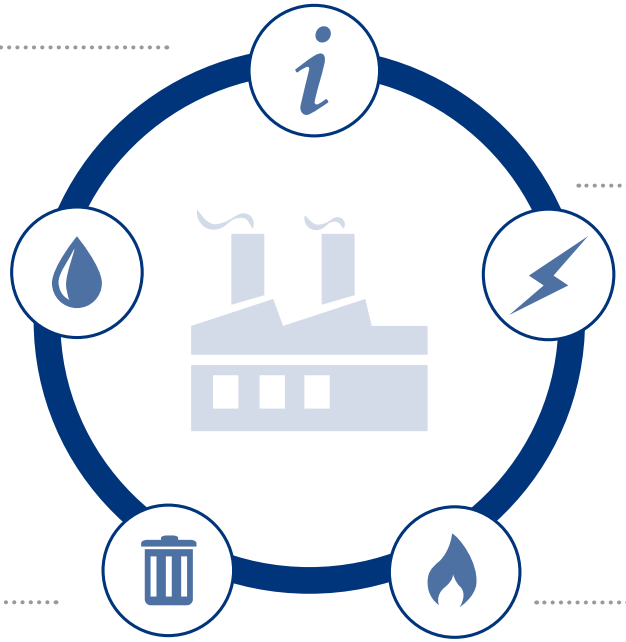
The environmental performance related to production processes is evaluated by considering the energy and the water consumption and the waste production as primary data. Secondary data (mainly Ecoinvent) are used for the environmental aspects related to the production of energy and water.

## WATER

Water consumption is evaluated using primary data. The overall value is attributed to the product using the mass allocation procedure.
Plant water consumption includes also the water amount needed for ingredients preparation.
Data refer to sauce production in 2021.

## WASTE

The primary data are collected by the plant registrations. The overall value is attributed to the product using the mass allocation procedure.
Data refer to sauce production in 2021.



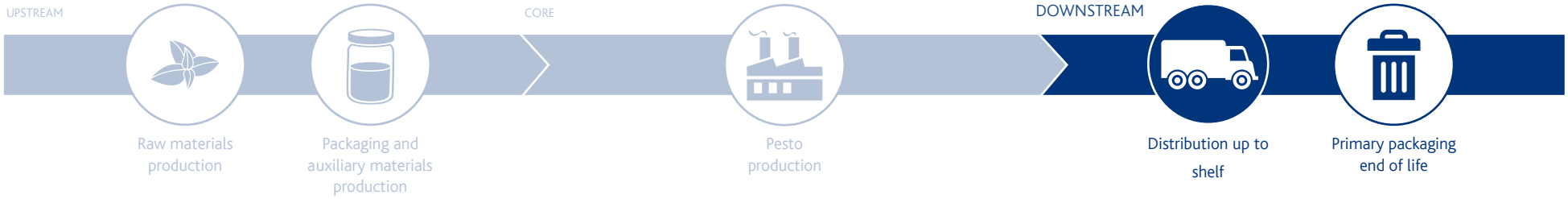
## ELECTRICITY

Total plant electricity consumption has been divided using the mass allocation procedure, as the plant produces a number of different sauces.
Barilla, through the GO certification system (Guaranty of origin market), buys energy from hydroelectric renewable resources as to cover the entire Rubbiano sauce production.
Data are referred to 2021.

## NATURAL GAS

Natural gas consumption is evaluated using primary data. The overall value is attributed to the product using the mass allocation procedure.
Data refer to sauce production in 2021.

# 7. DISTRIBUTION




## DISTRIBUTION

Pesti Rustici sauces are produced in Barilla's Rubbiano plant, Italy, and they are distributed mainly in Italy but also in other european countries.
The following hypothesis were applied for distribution scenarios:

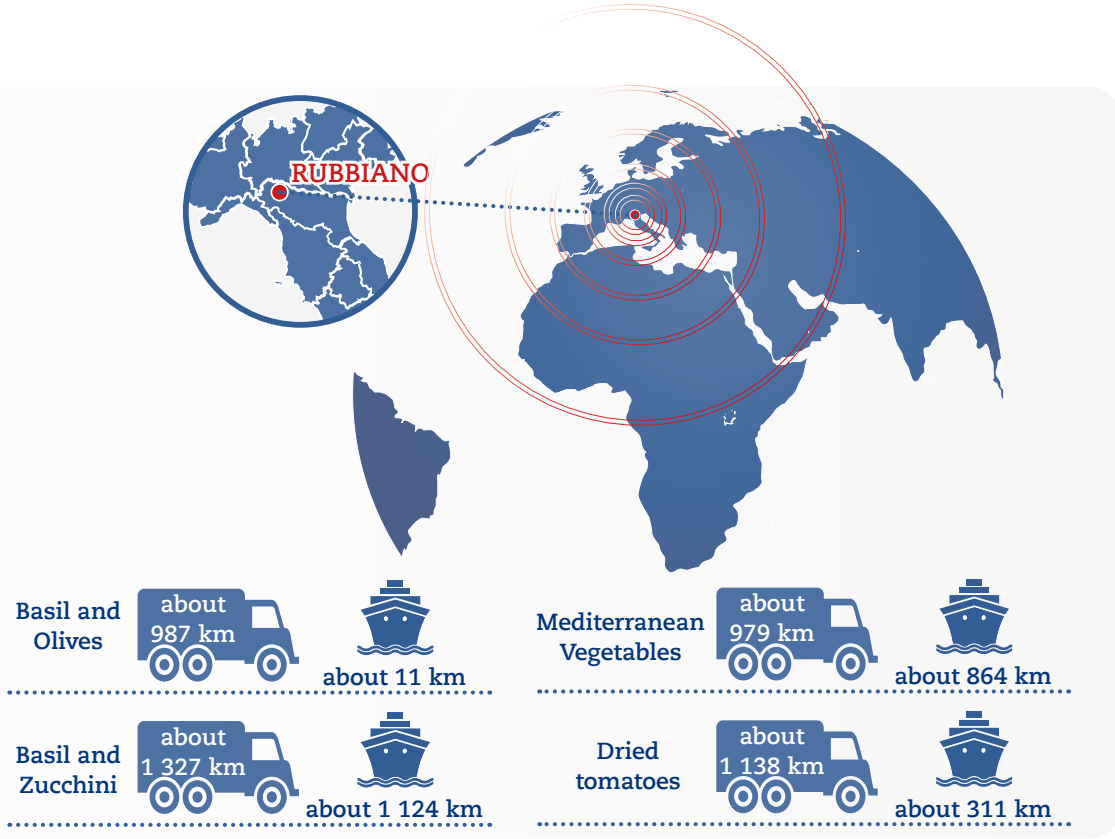
Basil and zucchinis are mainly distributed in Italy, France, Germany, Switzerland and Austria with average 1 327 km covered by truck and 1124 km covered by ship;
The end of life scenario for paper/board is 87% recycling, 7.5% energy recovery and 5.5% disposal. The scenario for plastic film is 32% recycling, 49% energy recovery, 19% disposal.

Mediterranean Vegetables are mainly distributed in Italy, Germany and France with average 979 km covered by truck and 864 km covered by ship.
The end of life scenario for paper/board is 87.5% recycling, 8% energy recovery and 4.5% disposal. The scenario for plastic film is 31% recycling, 59% energy recovery, 10% disposal.

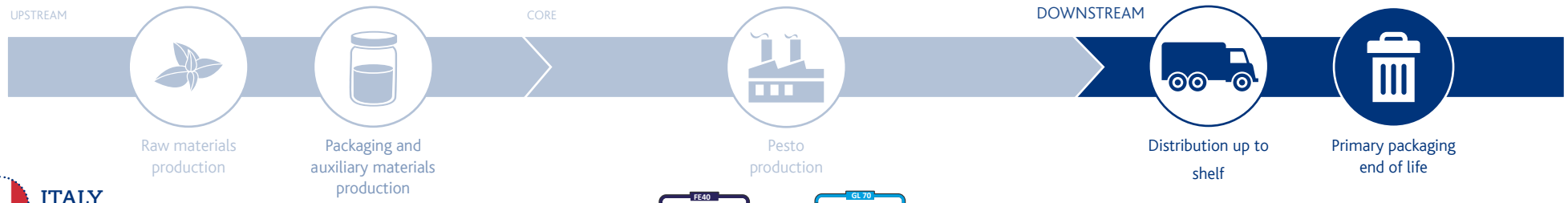
Dried Tomatoes are mainly distributed in Italy, Germany, France and USA with average 1138 km covered by truck and 311 km covered by ship.
The end of life scenario for paper/board is 87% recycling, 8% energy recovery and 5% disposal The scenario for plastic film is 30% recycling, 60% energy recovery, 10% disposal.

Basil and Olives are mainly distributed in Italy and France with average 987 km covered by truck and 11 km covered by ship.
The end of life scenario for paper/board is 89% recycling, 6% energy recovery and 5% disposal. The scenario for plastic film is 28% recycling, 51% energy recovery, 21% disposal.

The products do not require special storage conditions (refrigeration, etc).



# 8. PRIMARY PACKAGING END OF LIFE




## ITALY

| | | |
|---|---|---|
| 68.5% | RECYCLE | Avoiding the production of virgin material. |
| 6.5% | ENERGY RECOVERY | Recovering packaging energy content. |
| 25% | DISPOSAL | In Italy, 16% of waste sent to disposal are incinerated without energy recovery, the remaining part goes to landfill. |

## FRANCE

| | | |
|---|---|---|
| 91% | RECYCLE | Avoiding the production of virgin material. |
| 9% | DISPOSAL | In France, 3% of waste sent to disposal are incinerated without energy recovery, the remaining part goes to landfill. |

## GERMANY

| | | |
|---|---|---|
| 90% | RECYCLE | Avoiding the production of virgin material. |
| 8% | ENERGY RECOVERY | Recovering packaging energy content. |
| 2% | DISPOSAL | In Germany, 2% of waste sent to disposal are incinerated without energy recovery, the remaining part goes to landfill. |


## ITALY

| | | |
|---|---|---|
| Avoiding the production of virgin material | RECYCLE | 79% |
| In Italy, 16% of waste sent to disposal are incinerated without energy recovery, the remaining part goes to landfill. | DISPOSAL | 21% |

## FRANCE

| | | |
|---|---|---|
| Avoiding the production of virgin material. | RECYCLE | 76% |
| In France, 3% of waste sent to disposal are incinerated without energy recovery, the remaining part goes to landfill. | DISPOSAL | 24% |

## GERMANY

| | | |
|---|---|---|
| Avoiding the production of virgin material. | RECYCLE | 83% |
| In Germany, 72% of waste sent to disposal are incinerated without energy recovery, the remaining part goes to landfill. | DISPOSAL | 17% |

Waste scenarios for Italy, France and Germany are reported since these country cover the main part of distribution for all products (more than 80%).
Data elaborated from CONAI 2020 Report and from Eurostat, year 2018.

# 9. ENVIRONMENTAL RESULTS

## PESTO RUSTICO BASIL AND ZUCCHINI

| USE OF RESOURCES<br>data referred to1 kg of product | | UPSTREAM | | CORE | DOWNSTREAM | | TOTAL |
|---|---|---|---|---|---|---|---|
| | | *Raw material production* | *Packaging and auxiliary materials production* | *Production* | *Distribution up to shelf* | *Primary packaging end of life* | |
| PRIMARY ENERGY RESOURCES - RENEWABLE<br>data in MJ | Used as energy carrier | 3.04E+00 | 1.95E+00 | 1.03E+00 | 8.30E-03 | 4.58E-04 | **6.03E+00** |
| | Used as raw materials* | 0.00E+00 | 1.65E-01 | 0.00E+00 | 0.00E+00 | 0.00E+00 | **1.65E-01** |
| | **Total** | **3.04E+00** | **2.11E+00** | **1.03E+00** | **8.30E-03** | **4.58E-04** | **6.20E+00** |
| PRIMARY ENERGY RESOURCES - NON RENEWABLE<br>data in MJ | Used as energy carrier | 8.76E+00 | 1.48E+01 | 5.19E+00 | 4.88E+00 | 9.83E-03 | **3.37E+01** |
| | Used as raw materials | 0.00E+00 | 3.70E-01 | 0.00E+00 | 0.00E+00 | 0.00E+00 | **3.70E-01** |
| | **Total** | **8.76E+00** | **1.52E+01** | **5.19E+00** | **4.88E+00** | **9.83E-03** | **3.40E+01** |
| Secondary Material (g) | | 0.00E+00 | 2.72E+02 | 0.00E+00 | 0.00E+00 | 0.00E+00 | **2.72E+02** |
| Renewable secondary fuels (MJ. net calorific power) | | 0.00E+00 | 1.04E-02 | 0.00E+00 | 0.00E+00 | 0.00E+00 | **1.04E-02** |
| Non-renewable secondary fuels (MJ. net calorific power) | | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | **0.00E+00** |
| Net use of fresh water (liters) | | 1.70E+02 | 2.34E+01 | 6.34E+00 | 1.03E-01 | 1.23E-03 | **1.99E+02** |

| OUTPUT FLOWS<br>data referred to1 kg of product | UPSTREAM | | CORE | DOWNSTREAM | | TOTAL |
|---|---|---|---|---|---|---|
| | *Raw material production* | *Packaging and auxiliary materials production* | *Production* | *Distribution up to shelf* | *Primary packaging end of life* | |
| Waste to animal feed or similar (g) | 0.00E+00 | 0.00E+00 | 3.60E+01 | 0.00E+00 | 0.00E+00 | **3.60E+01** |
| Components for reuse (g) | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | **0.00E+00** |
| Materials for recycling (g) | 1.98E+01 | 1.02E+02 | 1.26E+02 | 1.97E+01 | 6.37E+02 | **9.04E+02** |
| Materials for energy recovery (g) | 0.00E+00 | 0.00E+00 | 1.00E+00 | 6.02E+00 | 4.80E+00 | **1.18E+01** |
| Exported energy, electricity (MJ) | 0.00E+00 | 0.00E+00 | 0.00E+00 | 3.85E-04 | 6.60E-05 | **4.51E-04** |
| Exported energy, thermal (MJ) | 0.00E+00 | 0.00E+00 | 0.00E+00 | 8.05E-04 | 1.38E-04 | **9.43E-04** |

*Secondary energy resources and recovered energy flows do not show relevant contributions.*

**The biomasses transformed into the product are not considered.*

# 9. ENVIRONMENTAL RESULTS

## PESTO RUSTICO BASIL AND ZUCCHINI

| POTENTIAL ENVIRONMENTAL IMPACTS data referred to1 kg of product | | UPSTREAM | | CORE | DOWNSTREAM | | TOTAL |
|---|---|---|---|---|---|---|---|
| | | *Raw material production* | *Packaging and auxiliary materials production* | *Production* | *Distribution up to shelf* | *Primary packaging end of life* | |
| GLOBAL WARMING POTENTIAL - GWP ($g\ CO_2$ eq) | Fossil | 7.51E+02 | 1.08E+03 | 3.42E+02 | 3.58E+02 | 8.49E-01 | **2.53E+03** |
| | Biogenic | 2.41E+01 | 5.73E+00 | 4.83E+00 | 7.37E-01 | 4.71E-01 | **3.59E+01** |
| | Land use and land transformation | 8.25E+01 | 1.68E+01 | 3.79E-03 | 3.48E-03 | 3.49E-04 | **9.93E+01** |
| | **Total** | **8.58E+02** | **1.10E+03** | **3.47E+02** | **3.59E+02** | **1.32E+00** | **2.67E+03** |
| Acidification Potential - $g\ SO_2$ eq. | | 1.12E+01 | 6.29E+00 | 1.06E+00 | 1.64E+00 | 6.23E-03 | **2.02E+01** |
| Eutrophication Potential - $g\ PO_4^{---}$ eq. | | 5.94E+00 | 1.00E+00 | 1.61E-01 | 1.97E-01 | 1.25E-03 | **7.30E+00** |
| Photochemical Oxidant Formation Potential - g NMVOC eq. | | 3.61E+00 | 3.58E+00 | 1.18E+00 | 1.56E+00 | 6.53E-03 | **9.95E+00** |
| Abiotic Depletion Potential - Elements g Sb eq. | | 1.85E-03 | 3.51E-02 | 8.14E-06 | 1.48E-05 | 7.13E-08 | **3.69E-02** |
| Abiotic Depletion Potential - Fossil fuels - MJ, net calorific value | | 8.15E+00 | 1.46E+01 | 5.17E+00 | 4.87E+00 | 9.43E-03 | **3.28E+01** |
| Water scarcity potential, m3 eq. | | 5.89E+00 | 9.40E-01 | 2.84E-01 | -7.49E-04 | 2.21E-05 | **7.12E+00** |

| WASTE PRODUCTION* data referred to1 kg of product | UPSTREAM | | CORE | DOWNSTREAM | | TOTAL |
|---|---|---|---|---|---|---|
| | *Raw material production* | *Packaging and auxiliary materials production* | *Production* | *Distribution up to shelf* | *Primary packaging end of life* | |
| Hazardous waste disposed | 3.61E-04 | 2.79E-02 | 0.00E+00 | 0.00E+00 | 0.00E+00 | **2.8E-02** |
| Non-Hazardous waste disposed | 3.87E+00 | 2.56E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | **6.4E+00** |
| Radioactive waste disposed | 3.94E-05 | 3.79E-05 | 4.25E-06 | 2.62E-06 | 1.07E-07 | **8.4E-05** |

*The biogenic contribution to Global Warming Potential refers only to biogenic methane.*
*The contribution given by biogenic $CO_2$ is equal to zero, since the absorbed amount is equal to the emitted biogenic $CO_2$ within the reference 100 years period.*

* *Only flows coming from processes under direct Barilla control were considered, if not associated to a treatment whose environmental impact is considered. Flows generated by secondary data were excluded (since already accounted for their environmental burden).*

# 10. PRODUCT ENVIRONMENTAL PERFORMANCE


**Pesto Rustico BASIL AND ZUCCHINI**

| | Raw material production | Packaging and auxiliary materials productiuion | Pesto production | Distribution up to shelf | Primary packaging end of life | From field to primary packaging end of life |
|---|---|---|---|---|---|---|
| ECOLOGICAL FOOTPRINT | 2.1 | 3.3 | 0.9 | 1.0 | <0.1 | 7.3 global m²/kg |
| CARBON FOOTPRINT | 858 | 1 103 | 347 | 359 | 1 | 2 667 $gCO_2eq/kg$ |
| WATER SCARCITY | 5 895 | 940 | 284 | <0.1 | <0.1 | 7 118 litres eq/kg |

*Compared to the last EPD, in this section the Water Scarcity indicator has substituted the Virtual Water Content, previously reported, to improve coherence with the indicators section.*

# 11. ENVIRONMENTAL RESULTS

## PESTO RUSTICO BASIL AND OLIVES


| USE OF RESOURCES<br>data referred to1 kg of product | | UPSTREAM | | CORE | DOWNSTREAM | | TOTAL |
|---|---|---|---|---|---|---|---|
| | | *Raw material production* | *Packaging and auxiliary materials production* | *Production* | *Distribution up to shelf* | *Primary packaging end of life* | |
| PRIMARY ENERGY RESOURCES - RENEWABLE<br>data in MJ | Used as energy carrier | 2.48E+00 | 1.95E+00 | 1.03E+00 | 7.57E-03 | 6.25E-04 | **5.47E+00** |
| | Used as raw materials* | 0.00E+00 | 1.65E-01 | 0.00E+00 | 0.00E+00 | 0.00E+00 | **1.65E-01** |
| | **Total** | **2.48E+00** | **2.11E+00** | **1.03E+00** | **7.57E-03** | **6.25E-04** | **5.64E+00** |
| PRIMARY ENERGY RESOURCES - NON RENEWABLE<br>data in MJ | Used as energy carrier | 6.53E+00 | 1.48E+01 | 5.09E+00 | 3.48E+00 | 1.26E-02 | **2.99E+01** |
| | Used as raw materials | 0.00E+00 | 3.70E-01 | 0.00E+00 | 0.00E+00 | 0.00E+00 | **3.70E-01** |
| | **Total** | **6.53E+00** | **1.52E+01** | **5.09E+00** | **3.48E+00** | **1.26E-02** | **3.03E+01** |
| Secondary Material (g) | | 0.00E+00 | 2.72E+02 | 0.00E+00 | 0.00E+00 | 0.00E+00 | **2.72E+02** |
| Renewable secondary fuels (MJ. net calorific power) | | 0.00E+00 | 1.04E-02 | 0.00E+00 | 0.00E+00 | 0.00E+00 | **1.04E-02** |
| Non-renewable secondary fuels (MJ. net calorific power) | | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | **0.00E+00** |
| Net use of fresh water (liters) | | 1.02E+02 | 2.34E+01 | 6.34E+00 | 8.26E-02 | 1.75E-03 | **1.32E+02** |

| OUTPUT FLOWS<br>data referred to1 kg of product | UPSTREAM | | CORE | DOWNSTREAM | | TOTAL |
|---|---|---|---|---|---|---|
| | *Raw material production* | *Packaging and auxiliary materials production* | *Production* | *Distribution up to shelf* | *Primary packaging end of life* | |
| Waste to animal feed or similar (g) | 0.00E+00 | 0.00E+00 | 3.60E+01 | 0.00E+00 | 0.00E+00 | **3.60E+01** |
| Components for reuse (g) | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | **0.00E+00** |
| Materials for recycling (g) | 2.68E+01 | 1.02E+02 | 1.26E+02 | 1.91E+01 | 6.13E+02 | **8.87E+02** |
| Materials for energy recovery (g) | 0.00E+00 | 0.00E+00 | 1.00E+00 | 5.60E+00 | 4.27E+00 | **1.09E+01** |
| Exported energy, electricity (MJ) | 0.00E+00 | 0.00E+00 | 0.00E+00 | 6.60E-04 | 1.32E-04 | **7.92E-04** |
| Exported energy, thermal (MJ) | 0.00E+00 | 0.00E+00 | 0.00E+00 | 1.38E-03 | 2.76E-04 | **1.66E-03** |

*Secondary energy resources and recovered energy flows do not show relevant contributions.*

**The biomasses transformed into the product are not considered.*



Barilla
The Italian Food Company. Since 1877.

# 11. ENVIRONMENTAL RESULTS

## PESTO RUSTICO BASIL AND OLIVES


| POTENTIAL ENVIRONMENTAL IMPACTS data referred to1 kg of product | | UPSTREAM | | CORE | DOWNSTREAM | | TOTAL |
|---|---|---|---|---|---|---|---|
| | | *Raw material production* | *Packaging and auxiliary materials production* | *Production* | *Distribution up to shelf* | *Primary packaging end of life* | |
| GLOBAL WARMING POTENTIAL - GWP ($g\ CO_2$ eq) | Fossil | 5.81E+02 | 1.08E+03 | 3.34E+02 | 2.55E+02 | 1.01E+00 | **2.25E+03** |
| | Biogenic | 2.62E+01 | 5.73E+00 | 4.83E+00 | 1.34E+00 | 7.53E-01 | **3.88E+01** |
| | Land use and land transformation | 4.71E+01 | 1.68E+01 | 3.73E-03 | 3.50E-03 | 5.08E-04 | **6.40E+01** |
| | **Total** | **6.55E+02** | **1.10E+03** | **3.39E+02** | **2.56E+02** | **1.76E+00** | 2.36E+03 |
| Acidification Potential - $g\ SO_2$ eq. | | 5.91E+00 | 6.29E+00 | 1.03E+00 | 1.15E+00 | 7.82E-03 | **1.44E+01** |
| Eutrophication Potential - $g\ PO_4^{---}$ eq. | | 4.09E+00 | 1.00E+00 | 1.56E-01 | 1.68E-01 | 1.63E-03 | **5.42E+00** |
| Photochemical Oxidant Formation Potential - g NMVOC eq. | | 2.53E+00 | 3.58E+00 | 1.14E+00 | 1.32E+00 | 7.89E-03 | **8.57E+00** |
| Abiotic Depletion Potential - Elements g Sb eq. | | 1.59E-03 | 3.51E-02 | 7.81E-06 | 1.10E-05 | 9.24E-08 | **3.67E-02** |
| Abiotic Depletion Potential - Fossil fuels - MJ, net calorific value | | 6.13E+00 | 1.46E+01 | 5.07E+00 | 3.47E+00 | 1.20E-02 | **2.93E+01** |
| Water scarcity potential, m3 eq. | | 3.40E+00 | 9.40E-01 | 2.84E-01 | -4.06E-04 | 3.37E-05 | **4.63E+00** |

| WASTE PRODUCTION* data referred to1 kg of product | UPSTREAM | | CORE | DOWNSTREAM | | TOTAL |
|---|---|---|---|---|---|---|
| | *Raw material production* | *Packaging and auxiliary materials production* | *Production* | *Distribution up to shelf* | *Primary packaging end of life* | |
| Hazardous waste disposed | 3.21E-04 | 2.79E-02 | 0.00E+00 | 0.00E+00 | 0.00E+00 | **2.8E-02** |
| Non-Hazardous waste disposed | 4.49E+00 | 2.56E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | **7.0E+00** |
| Radioactive waste disposed | 2.64E-05 | 3.79E-05 | 4.20E-06 | 2.87E-06 | 1.57E-07 | **7.2E-05** |

*The biogenic contribution to Global Warming Potential refers only to biogenic methane.*
*The contribution given by biogenic $CO_2$ is equal to zero, since the absorbed amount is equal to the emitted biogenic $CO_2$ within the reference 100 years period.*

* *Only flows coming from processes under direct Barilla control were considered, if not associated to a treatment whose environmental impact is considered. Flows generated by secondary data were excluded (since already accounted for their environmental burden).*

# 12. PRODUCT ENVIRONMENTAL PERFORMANCE


**Pesto Rustico BASIL AND OLIVES**

| | Raw material production | Packaging and auxiliary materials productiuion | Pesto production | Distribution up to shelf | Primary packaging end of life | From field to primary packaging end of life |
|---|---|---|---|---|---|---|
| ECOLOGICAL FOOTPRINT | 1.8 | 3.3 | 0.9 | 0.7 | <0.1 | 6.7 global m²/kg |
| CARBON FOOTPRINT | 655 | 1 103 | 339 | 256 | 2 | 2 355 $gCO_2eq/kg$ |
| WATER SCARCITY | 3 402 | 940 | 284 | <0.1 | <0.1 | 4 625 litres eq/kg |

*Compared to the last EPD, in this section the Water Scarcity indicator has substituted the Virtual Water Content, previously reported, to improve coherence with the indicators section.*

# 13. ENVIRONMENTAL RESULTS

## PESTO RUSTICO DRIED TOMATOES

| USE OF RESOURCES<br>data referred to1 kg of product | | UPSTREAM | | CORE | DOWNSTREAM | | TOTAL |
|---|---|---|---|---|---|---|---|
| | | *Raw material production* | *Packaging and auxiliary materials production* | *Production* | *Distribution up to shelf* | *Primary packaging end of life* | |
| PRIMARY ENERGY RESOURCES - RENEWABLE<br>data in MJ | Used as energy carrier | 9.85E-01 | 1.95E+00 | 1.03E+00 | 6.57E-03 | 4.09E-04 | **3.97E+00** |
| | Used as raw materials* | 0.00E+00 | 1.65E-01 | 0.00E+00 | 0.00E+00 | 0.00E+00 | **1.65E-01** |
| | **Total** | **9.85E-01** | **2.11E+00** | **1.03E+00** | **6.57E-03** | **4.09E-04** | **4.14E+00** |
| PRIMARY ENERGY RESOURCES - NON RENEWABLE<br>data in MJ | Used as energy carrier | 6.04E+00 | 1.48E+01 | 4.97E+00 | 4.05E+00 | 9.03E-03 | **2.99E+01** |
| | Used as raw materials | 0.00E+00 | 3.70E-01 | 0.00E+00 | 0.00E+00 | 0.00E+00 | **3.70E-01** |
| | **Total** | **6.04E+00** | **1.52E+01** | **4.97E+00** | **4.05E+00** | **9.03E-03** | **3.03E+01** |
| Secondary Material (g) | | 0.00E+00 | 2.72E+02 | 0.00E+00 | 0.00E+00 | 0.00E+00 | **2.72E+02** |
| Renewable secondary fuels (MJ. net calorific power) | | 0.00E+00 | 1.04E-02 | 0.00E+00 | 0.00E+00 | 0.00E+00 | **1.04E-02** |
| Non-renewable secondary fuels (MJ. net calorific power) | | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | **0.00E+00** |
| Net use of fresh water (liters) | | 9.89E+01 | 2.34E+01 | 6.34E+00 | 8.51E-02 | 1.12E-03 | **1.29E+02** |

| OUTPUT FLOWS<br>data referred to1 kg of product | UPSTREAM | | CORE | DOWNSTREAM | | TOTAL |
|---|---|---|---|---|---|---|
| | *Raw material production* | *Packaging and auxiliary materials production* | *Production* | *Distribution up to shelf* | *Primary packaging end of life* | |
| Waste to animal feed or similar (g) | 0.00E+00 | 0.00E+00 | 3.60E+01 | 0.00E+00 | 0.00E+00 | **3.60E+01** |
| Components for reuse (g) | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | **0.00E+00** |
| Materials for recycling (g) | 3.07E+01 | 1.02E+02 | 1.26E+02 | 1.98E+01 | 6.44E+02 | **9.22E+02** |
| Materials for energy recovery (g) | 0.00E+00 | 0.00E+00 | 1.00E+00 | 5.97E+00 | 4.85E+00 | **1.18E+01** |
| Exported energy, electricity (MJ) | 0.00E+00 | 0.00E+00 | 0.00E+00 | 2.09E-04 | 3.30E-05 | **2.42E-04** |
| Exported energy, thermal (MJ) | 0.00E+00 | 0.00E+00 | 0.00E+00 | 4.37E-04 | 6.90E-05 | **5.06E-04** |

*Secondary energy resources and recovered energy flows do not show relevant contributions.*

**The biomasses transformed into the product are not considered.*

# 13. ENVIRONMENTAL RESULTS

## PESTO RUSTICO DRIED TOMATOES

| POTENTIAL ENVIRONMENTAL IMPACTS data referred to1 kg of product | | UPSTREAM | | CORE | DOWNSTREAM | | TOTAL |
|---|---|---|---|---|---|---|---|
| | | *Raw material production* | *Packaging and auxiliary materials production* | *Production* | *Distribution up to shelf* | *Primary packaging end of life* | |
| GLOBAL WARMING POTENTIAL - GWP ($g\ CO_2$ eq) | Fossil | 4.99E+02 | 1.08E+03 | 3.26E+02 | 2.98E+02 | 8.07E-01 | **2.20E+03** |
| | Biogenic | 2.30E+01 | 5.73E+00 | 4.82E+00 | 8.18E-01 | 4.67E-01 | **3.48E+01** |
| | Land use and land transformation | 3.48E+01 | 1.68E+01 | 3.65E-03 | 2.65E-03 | 3.03E-04 | **5.17E+01** |
| | **Total** | **5.57E+02** | **1.10E+03** | **3.31E+02** | **2.98E+02** | **1.27E+00** | **2.29E+03** |
| Acidification Potential - $g\ SO_2$ eq. | | 4.73E+00 | 6.29E+00 | 9.86E-01 | 1.04E+00 | 5.78E-03 | **1.31E+01** |
| Eutrophication Potential - $g\ PO_4^{---}$ eq. | | 3.76E+00 | 1.00E+00 | 1.49E-01 | 1.31E-01 | 1.19E-03 | **5.04E+00** |
| Photochemical Oxidant Formation Potential - g NMVOC eq. | | 2.16E+00 | 3.58E+00 | 1.09E+00 | 1.02E+00 | 6.17E-03 | **7.86E+00** |
| Abiotic Depletion Potential - Elements g Sb eq. | | 2.16E-03 | 3.51E-02 | 7.44E-06 | 1.26E-05 | 6.54E-08 | **3.73E-02** |
| Abiotic Depletion Potential - Fossil fuels - MJ, net calorific value | | 5.60E+00 | 1.46E+01 | 4.95E+00 | 4.04E+00 | 8.69E-03 | **2.92E+01** |
| Water scarcity potential, m3 eq. | | 3.70E+00 | 9.40E-01 | 2.84E-01 | -6.21E-04 | 2.08E-05 | **4.93E+00** |

| WASTE PRODUCTION* data referred to1 kg of product | UPSTREAM | | CORE | DOWNSTREAM | | TOTAL |
|---|---|---|---|---|---|---|
| | *Raw material production* | *Packaging and auxiliary materials production* | *Production* | *Distribution up to shelf* | *Primary packaging end of life* | |
| Hazardous waste disposed | 1.00E-03 | 2.79E-02 | 0.00E+00 | 0.00E+00 | 0.00E+00 | **2.9E-02** |
| Non-Hazardous waste disposed | 2.75E+00 | 2.56E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | **5.3E+00** |
| Radioactive waste disposed | 3.37E-05 | 3.79E-05 | 4.15E-06 | 1.97E-06 | 9.30E-08 | **7.8E-05** |

*The biogenic contribution to Global Warming Potential refers only to biogenic methane.*
*The contribution given by biogenic $CO_2$ is equal to zero, since the absorbed amount is equal to the emitted biogenic $CO_2$ within the reference 100 years period.*

* *Only flows coming from processes under direct Barilla control were considered, if not associated to a treatment whose environmental impact is considered. Flows generated by secondary data were excluded (since already accounted for their environmental burden).*

# 14. PRODUCT ENVIRONMENTAL PERFORMANCE


**Pesto Rustico DRIED TOMATOES**

| | *Raw material production* | *Packaging and auxiliary materials productiuion* | *Pesto production* | *Distribution up to shelf* | *Primary packaging end of life* | *From field to primary packaging end of life* |
|---|---|---|---|---|---|---|
| **ECOLOGICAL FOOTPRINT** | 2.0 | 3.3 | 0.9 | 0.8 | <0.1 | 7.0 global m²/kg |
| **CARBON FOOTPRINT** | 557 | 1 103 | 331 | 298 | 1 | 2 291 $gCO_2eq/kg$ |
| **WATER SCARCITY** | 3 703 | 940 | 284 | <0.1 | <0.1 | 4 926 litres eq/kg |

*Compared to the last EPD, in this section the Water Scarcity indicator has substituted the Virtual Water Content, previously reported, to improve coherence with the indicators section.*

# 15. ENVIRONMENTAL RESULTS

## PESTO RUSTICO MEDITERRANEAN VEGETABLES

| USE OF RESOURCES<br>data referred to1 kg of product | | UPSTREAM | | CORE | DOWNSTREAM | | TOTAL |
|---|---|---|---|---|---|---|---|
| | | *Raw material production* | *Packaging and auxiliary materials production* | *Production* | *Distribution up to shelf* | *Primary packaging end of life* | |
| **PRIMARY ENERGY RESOURCES - RENEWABLE** data in MJ | Used as energy carrier | 1.12E+00 | 1.95E+00 | 1.03E+00 | 6.24E-03 | 3.37E-04 | **4.11E+00** |
| | Used as raw materials* | 0.00E+00 | 1.65E-01 | 0.00E+00 | 0.00E+00 | 0.00E+00 | **1.65E-01** |
| | **Total** | **1.12E+00** | **2.11E+00** | **1.03E+00** | **6.24E-03** | **3.37E-04** | **4.27E+00** |
| **PRIMARY ENERGY RESOURCES - NON RENEWABLE** data in MJ | Used as energy carrier | 5.48E+00 | 1.48E+01 | 4.98E+00 | 3.60E+00 | 7.87E-03 | **2.89E+01** |
| | Used as raw materials | 0.00E+00 | 3.70E-01 | 0.00E+00 | 0.00E+00 | 0.00E+00 | **3.70E-01** |
| | **Total** | **5.48E+00** | **1.52E+01** | **4.98E+00** | **3.60E+00** | **7.87E-03** | **2.93E+01** |
| Secondary Material (g) | | 0.00E+00 | 2.72E+02 | 0.00E+00 | 0.00E+00 | 0.00E+00 | **2.72E+02** |
| Renewable secondary fuels (MJ. net calorific power) | | 0.00E+00 | 1.04E-02 | 0.00E+00 | 0.00E+00 | 0.00E+00 | **1.04E-02** |
| Non-renewable secondary fuels (MJ. net calorific power) | | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | **0.00E+00** |
| Net use of fresh water (liters) | | 6.06E+01 | 2.34E+01 | 6.34E+00 | 7.72E-02 | 9.66E-04 | **9.04E+01** |

| OUTPUT FLOWS<br>data referred to1 kg of product | UPSTREAM | | CORE | DOWNSTREAM | | TOTAL |
|---|---|---|---|---|---|---|
| | *Raw material production* | *Packaging and auxiliary materials production* | *Production* | *Distribution up to shelf* | *Primary packaging end of life* | |
| Waste to animal feed or similar (g) | 0.00E+00 | 0.00E+00 | 3.60E+01 | 0.00E+00 | 0.00E+00 | **3.60E+01** |
| Components for reuse (g) | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | **0.00E+00** |
| Materials for recycling (g) | 2.85E+01 | 1.02E+02 | 1.26E+02 | 1.98E+01 | 6.53E+02 | **9.29E+02** |
| Materials for energy recovery (g) | 0.00E+00 | 0.00E+00 | 1.00E+00 | 6.77E+00 | 5.32E+00 | **1.31E+01** |
| Exported energy, electricity (MJ) | 0.00E+00 | 0.00E+00 | 0.00E+00 | 3.30E-04 | 6.60E-05 | **3.96E-04** |
| Exported energy, thermal (MJ) | 0.00E+00 | 0.00E+00 | 0.00E+00 | 6.90E-04 | 1.38E-04 | **8.28E-04** |

*Secondary energy resources and recovered energy flows do not show relevant contributions.*

**The biomasses transformed into the product are not considered.*

# 15. ENVIRONMENTAL RESULTS

## PESTO RUSTICO MEDITERRANEAN VEGETABLES

| POTENTIAL ENVIRONMENTAL IMPACTS data referred to1 kg of product | | UPSTREAM | | CORE | DOWNSTREAM | | TOTAL |
|---|---|---|---|---|---|---|---|
| | | *Raw material production* | *Packaging and auxiliary materials production* | *Production* | *Distribution up to shelf* | *Primary packaging end of life* | |
| GLOBAL WARMING POTENTIAL - GWP ($g\ CO_2$ eq) | Fossil | 4.81E+02 | 1.08E+03 | 3.26E+02 | 2.66E+02 | 7.73E-01 | **2.16E+03** |
| | Biogenic | 2.70E+01 | 5.73E+00 | 4.82E+00 | 5.54E-01 | 2.81E-01 | **3.84E+01** |
| | Land use and land transformation | 4.14E+01 | 1.68E+01 | 3.65E-03 | 2.65E-03 | 2.33E-04 | **5.82E+01** |
| | **Total** | **5.49E+02** | **1.10E+03** | **3.31E+02** | **2.67E+02** | **1.05E+00** | **2.25E+03** |
| Acidification Potential - $g\ SO_2$ eq. | | 4.18E+00 | 6.29E+00 | 9.87E-01 | 1.26E+00 | 5.13E-03 | **1.27E+01** |
| Eutrophication Potential - $g\ PO_4^{---}$ eq. | | 3.50E+00 | 1.00E+00 | 1.49E-01 | 1.54E-01 | 9.66E-04 | **4.80E+00** |
| Photochemical Oxidant Formation Potential - g NMVOC eq. | | 2.01E+00 | 3.58E+00 | 1.09E+00 | 1.22E+00 | 5.62E-03 | **7.90E+00** |
| Abiotic Depletion Potential - Elements g Sb eq. | | 1.09E-03 | 3.51E-02 | 7.45E-06 | 1.10E-05 | 5.75E-08 | **3.62E-02** |
| Abiotic Depletion Potential - Fossil fuels - MJ, net calorific value | | 5.17E+00 | 1.46E+01 | 4.96E+00 | 3.59E+00 | 7.61E-03 | **2.83E+01** |
| Water scarcity potential, m3 eq. | | 2.26E+00 | 9.40E-01 | 2.84E-01 | -5.20E-04 | 1.85E-05 | **3.49E+00** |

| WASTE PRODUCTION* data referred to1 kg of product | UPSTREAM | | CORE | DOWNSTREAM | | TOTAL |
|---|---|---|---|---|---|---|
| | *Raw material production* | *Packaging and auxiliary materials production* | *Production* | *Distribution up to shelf* | *Primary packaging end of life* | |
| Hazardous waste disposed | 3.46E-04 | 2.79E-02 | 0.00E+00 | 0.00E+00 | 0.00E+00 | **2.8E-02** |
| Non-Hazardous waste disposed | 2.77E+00 | 2.56E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | **5.3E+00** |
| Radioactive waste disposed | 3.44E-05 | 3.79E-05 | 4.15E-06 | 2.00E-06 | 7.12E-08 | **7.8E-05** |

*The biogenic contribution to Global Warming Potential refers only to biogenic methane.*
*The contribution given by biogenic $CO_2$ is equal to zero, since the absorbed amount is equal to the emitted biogenic $CO_2$ within the reference 100 years period.*

* *Only flows coming from processes under direct Barilla control were considered, if not associated to a treatment whose environmental impact is considered. Flows generated by secondary data were excluded (since already accounted for their environmental burden).*

# 16. PRODUCT ENVIRONMENTAL PERFORMANCE


**Pesto Rustico MEDITERRANEAN VEGETABLES**

| | *Raw material production* | *Packaging and auxiliary materials productiuion* | *Pesto production* | *Distribution up to shelf* | *Primary packaging end of life* | *From field to primary packaging end of life* |
|---|---|---|---|---|---|---|
| **ECOLOGICAL FOOTPRINT** | 1.6 | 3.3 | 0.9 | 0.7 | <0.1 | 6.5 global m²/kg |
| **CARBON FOOTPRINT** | 549 | 1 103 | 331 | 267 | 1 | 2 252 $gCO_2eq/kg$ |
| **WATER SCARCITY** | 2 263 | 940 | 284 | <0.1 | <0.1 | 3 487 litres eq/kg |

*Compared to the last EPD, in this section the Water Scarcity indicator has substituted the Virtual Water Content, previously reported, to improve coherence with the indicators section.*

# 17. DIFFERENCES VERSUS PREVIOUS VERSIONS OF EPD

The differences versus previous EPD versions are due mainly to the use of updated emission factors for the energy mixes, updated packaging weights and updated recipes of the product. For raw material production, primary data for basil and tomatoes, and secondary data for other raw materials (from updated version of LCA databases) were updated.

Moreover, the product Environmental performances section has been modified with the substitution of Virtual Water Content with Water Scarcity indicator.

# 18. ADDITIONAL INFORMATION

### REFERENCES


- International EPD Consortium, General Programme Instructions (EPD), ver. 3.01 of 18/09/2019;
- WWF, Global Footprint Network, Zoological Society of London, Living Planet Report 2008, WWF (2008);
- PCR 2010:19 CPC 23995: Sauces; ver. 3.12 of 01/09/2019;
- CONAI Report, relazione sulla gestione e Bilancio, 2020
- Eurostat database for waste management, latest version (2018)


*Environmental declarations published within the same product category, though originating from different programs. may not be comparable. This declaration and further information in regards are available at www. environdec.com*

*As EPD owner, Barilla has the sole ownership, liability and responsibility for the EPD.*

## EPD PROCESS CERTIFICATION

Product category Rules (PCR) review conducted by:
Technical Committee of the International EPD® system.
Chair Filippo Sessa
Contact via info@environdec.com

Program operator:
**EPD International AB**
Box 210 60, SE-100 31 Stockholm, Sweden
info@environdec.com

EPD®
ENVIRONMENTAL PRODUCT DECLARATION

### EPD PROCESS CERTIFICATION

Independent verification of the declaration and data, according to ISO 14025:

- [x] EPD process verification
- [ ] EPD verification- Third party verifier

### PROCESS INTERNAL VERIFICATION

Procedure for follow-up of data during EPD validity involves third part verifier:

- [x] Yes
- [ ] No

Third party verifier: **Bureau Veritas Certification Sweden AB,** Accredited by: **SWEDAC**

BUREAU VERITAS

Process internal verifier: **Ugo Pretato,** Approved by: **The International EPD® System**

STUDIOFIESCHI & SOCI

## CONTACTS

Barilla G. e R. Fratelli- Società per Azioni, via Mantova 166, 43122, Parma, Italy. www.barillagroup.com
For additional information relative to the activities of the Barilla Group or in regards to this environmental declaration, please contact:
*Laura Marchelli - laura.marchelli@barilla.com*

Barilla
The Italian Food Company. Since 1877.

Technical support and grafic design: **Life Cycle Engineering SpA - Italy www.lcengineering.eu**

LCE



Barilla
The Italian Food Company. Since 1877.

# 19. GLOSSARY

## ECOLOGICAL FOOTPRINT

The ecological footprint measures the area of biologically productive land and water required to provide the resources used and absorb the carbon dioxide waste generated along the entire life cycle. It is measured in standard units called global hectares (gha).

www.globalfootprint.org

## CARBON FOOTPRINT

A product carbon footprint is the total amount of greenhouse gases produced along the entire life cycle. It is expressed in equivalent mass of carbon dioxide ($CO_2$-eq).
In agriculture a significant contribution is given by the emission of nitrous oxide (N2O) due to the fertilizers use. It is also known as Global Warming Potential (GWP).

www.ipcc.ch

## WATER SCARCITY

Water scarcity measures the available water remaining per unit of surface in a given watershed relative to the world average, after human and aquatic ecosystem demands have been met. This method builds on the assumption that the potential to deprive another user of water is directly proportional to the amount of water consumed and inversely proportional to the available water remaining per unit of surface and time in a region (watershed).

www.wulca-waterlca.org

## ACIDIFICATION (AP )

It is a phenomenon for which precipitation is unusually acidic, meaning that it has substandard levels of pH. It can have harmful effects on plants, aquatic animals and infrastructure. Acid rain is caused by emissions of $SO_2$. $NO_x$ and $NH_3$. The acidification potential is measured in mass of sulphur dioxide equivalent (SO2-eq).

## EUTROPHICATION (EP )

It is an abnormal proliferation of vegetation in the aquatic ecosystems caused by the addition of nutrients into rivers. lakes or ocean. which determinates a lack of oxygen. The eutrophication potential is mainly influenced by emission into water of phosphates and nitrates. It is expressed in mass of $PO_{4^{--}}$equivalent.

## PHOTOCHEMICAL OXIDANT FORMATION POTENTIAL (POFP)

Production of compounds that, under the light effect, are able to promote an oxidation reaction leading to ozone production in the troposphere.
The indicator is mainly influenced by VOCs (Volatile organic compounds) is usually expressed in mass of VOCs equivalent (g NMVOC - equivalent).