Crisp'n Light 7 grains

Environmental Product Declaration

1 EPD PROCESS

The first EPD process certified in the Food industries

wasa SINCE 1919

Barilla
The Italian Food Company. Since 1877.

EPD®
ENVIRONMENTAL PRODUCT DECLARATION

REGISTRATION NUMBER
S-P-00380

CPC CODE
234 BAKERY PRODUCTS
PCR 2012:06 VER. 3.0
20/01/2020

PUBLICATION DATE
2015/04/17

REVISION
5 of 2020/10/28

VALID UNTIL
2025/10/27

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 WASA

Wasa is celebrating its 100 year anniversary. Founded in 1919 Wasa is the largest crispbread baker in the world, selling its products in 40 different countries, from Sweden to America. In 1999 Wasa became part of the Barilla Group together with many other bakery brands such as Mulino Bianco, Harrys and Pavesi. The Wasa Bakeries are located in Filipstad (Sweden) and in Celle (Germany). From these two locations we bake crispbread and other products for many countries around the world. The largest markets for the Wasa brand outside Sweden are the other Nordic countries and Germany closely followed by The Netherlands, France, USA, Poland & Italy.

PLANT AND PROCESS

Crisp'n Light 7 grains is baked in Celle plant where a typical bakery process takes place. The raw materials included in the recipe are mixed together into dough and baked in specific ovens. Following baking, the products are packaged and shipped to distribution centres for market entry. Crisp'n Light 7 grains comes into 140 g packaging format;it is ready for consumption. More info on *www.wasa.com* .

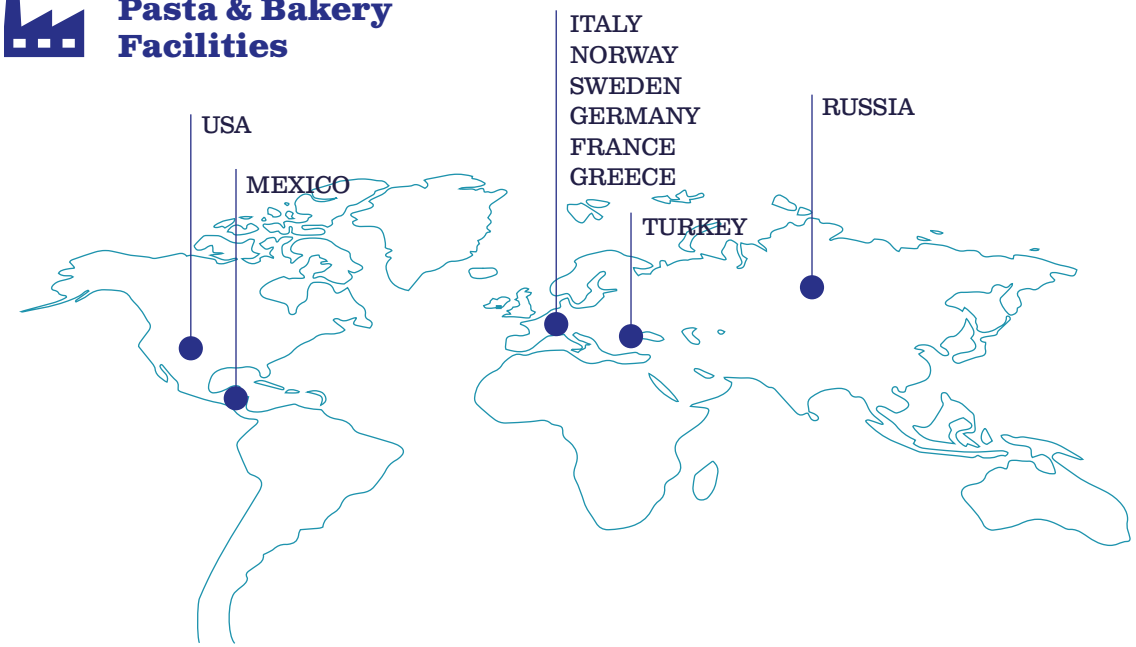
THE PRODUCT

NUTRITIONAL INFORMATION (per 100 g)		
Energy	kcal kJ	333 1 409
Fats *of which saturated*	grams	<1 *<1*
Carbohydrates *of which sugars*	grams	72 *6*
Fibres	grams	11
Proteins	grams	11
Salt	grams	0.500

2. Barilla group

Founded in Parma in 1877 from a bakery and pasta-making store, Barilla is now one of Italy's biggest food groups, world leader on the pasta market and number one in ready-to-use sauces in mainland Europe, bakery products in Italy and crispbreads in the Scandinavian countries. The Barilla Group has 28 production sites (14 in Italy and 14 abroad) and exports to more than 100 countries. Every year, its plants produce about 1,900,000 tons of food products, enjoyed by consumers all over the world, under the Barilla, Mulino Bianco, Harrys, Pavesi, Wasa, Filiz, Yemina and Vesta, Misko, Voiello, Gran Cereale, Pan di Stelle and Academia Barilla brands.
Further information on www.barillagroup.com

Pasta & Bakery Facilities



Good for You, Good for the Planet

When Pietro Barilla opened his shop in 1877, his main goal was to make "good food". That principle is now Barilla's way of doing business: "Good for You, Good for the Planet"

GOOD FOR YOU

Continuously improving the nutritional profile of existing products and launching new products that are tasty, safe and contribute to a balanced diet; and promoting healthy lifestyles and sustainable diet inspired by the Italian lifestyle and Mediterranean Diet.

GOOD FOR THE PLANET

Improving the efficiency of production processes in order to reduce greenhouse gas emissions and water consumption; and promoting more sustainable agricultural and farming practices for all of the Group's strategic supply chains.

Barilla
The Italian Food Company. Since 1877.

WASA A 100% CO_2 COMPENSATED BRAND

*The Wasa brand has embarked on a path that has led to the achievement of **100% carbon compensation**, in line with its core values - love of Nature. Progressiveness and promoting a **healthy lifestyle** for present and future generations.*

*The path includes three steps: **measure**. **reduce** and **compensate**. The path was certified by DNV-GL following the International Standard PAS 2060.*

This certification covers both Wasa brand and products.

WASA CO2 COMPENSATED

www.wasaCO2.com

WE MEASURE

All the greenhouse gas emissions arising from Wasa brand activities (from field to shelf) are identified and measured, related to a baseline year (2017).

WE REDUCE

Some measures are taken to reduce the greenhouse gases emissions, like Energy Saving Programs, Green Logistic Projects and purchasing renewable electricity (100% from hydropower sources).

WE COMPENSATE

To compensate the remaining emissions, Wasa has chosen to contribute to the protection of a rainforest and support solar energy use thorught projects labelled by the Verified Carbon Standard (VCS) and the Climate Community and Biodiversity Alliance Standard (CCBA). Projects developed under these programs must follow a rigorous assessment process in order to be certified. The selected projects are Madre de Dios (rainforest of 100.000 hectares in the Peruvian Amazon) and Saur India (installation of solar panel in different Indian states).

Barilla
The Italian Food Company. Since 1877.

WASA CO_2 COMPENSATION PROJECTS

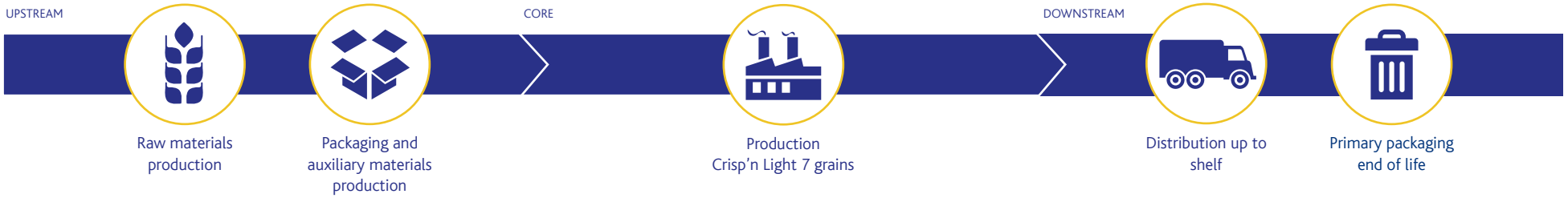
The project consists in the preservation of 100 000 hectares (that is about 250 000 acres of rainforest), located in the Peruvian Amazon.This area is an ecological corridor and one of the world's biodiversity hotspots. Without a conservation plan, illegal logging and slash-and-burn farming would cause further widespread deforestation and a consequent rise in CO_2 emissions.

The project helps to avoid deforestation and protects biodiversity as well as the livelihood of local communities. Thanks to the project 700 000 tons CO_2 of emissions are avoided from the atmosphere each year. Wasa compensate for an amount equivivalent to ca 17 000 of CO_2.

The Saur India project activity involves the installation of solar panels in different Indian states (Telangana, Maharashtraand, Karnataka). The total installed capacity of the project is 120 MW. The project will therefore displace an equivalent amount of electricity which would have otherwise been generated by fossil fuel dominant electricity grid.

This decrease of GHG emissions results in a reduction of the country's pollution. The Saur India project helps to preserve natural resources and fights against climate change. In addition it also creates employment opportunities for the local communities, during the construction and operation phases, development of infrastructures in the region (construction of roads.,etc.) and provide local energy and help to reduce the demand supply gap in the states.

3. Environmental performance calculation



The Environmental performance of the product was calculated using the LCA (life cycle analysis) methodology, including the entire production chain, starting from the cultivation of the raw materials until the delivery of the finished product to the retailer.
The study was conducted following the specific product rules published for the EPD System: "CPC code 234 – Bakery products".
The contribution to the environmental impacts brought by generic data is less than 10% in all impact categories.

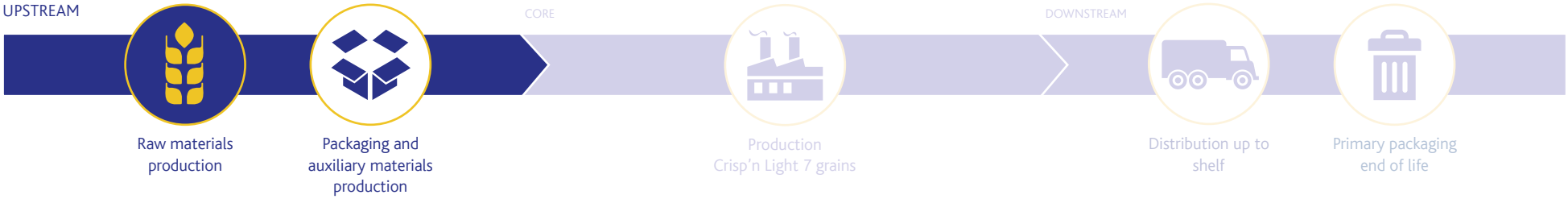
DECLARED UNIT

Data are referred to **1 kg** of product plus the related packaging (the packaging is referred to the **140 grams format**, reported to 1 kg of product).

SYSTEM BOUNDARIES

The processes constituting the analyzed system were organized according to following three successive phases, in compliance with the EPD system's requirements.

4. Raw materials production



INGREDIENTS PRODUCTIONS

RYE FLOUR AND SOFT WHEAT FLOUR

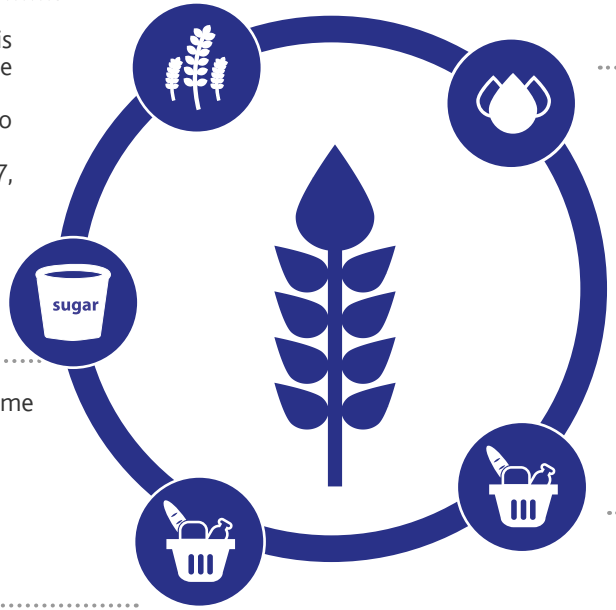
Cereals cultivation performances are calculated on the basis of primary data, yield, energy consumption and fertiliser use for each cereal, collected from farms.
Cultivation region is Germany, percentages are related to year 2019.
Cultivation yield is calculated as average of years 2017, 2018 and 2019.

SUGAR

Data related to sugar production are primary and come from Barilla suppliers.

APPLE

Data for apple come from the certified Environmental Product Declaration (EPD) number SP-00369.



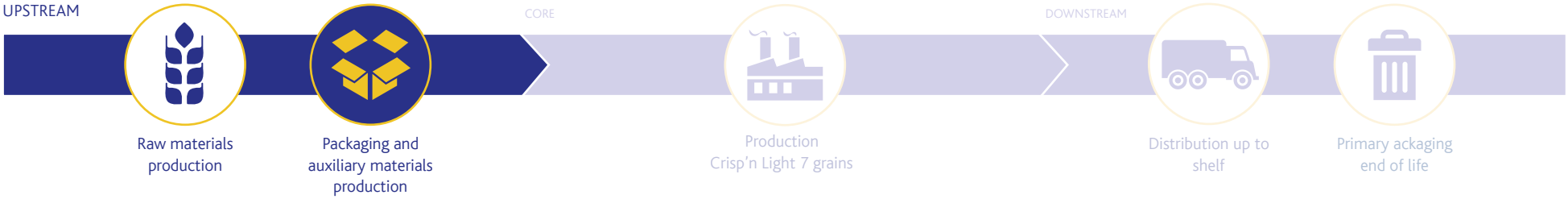
RAPESEED OIL

Data for rapeseed oil cultivation come from secondary data (collected from Agrifootprint database) and the refinery data come from literature (Schmidt 2007).

OTHER INGREDIENTS

Data related to sugar production are primary and come from Barilla suppliers.
Data from LCA databases are used for other material in the recipe (yeast, salt and flavours).

5. Packaging and auxiliary materials production



PRIMARY PACKAGING

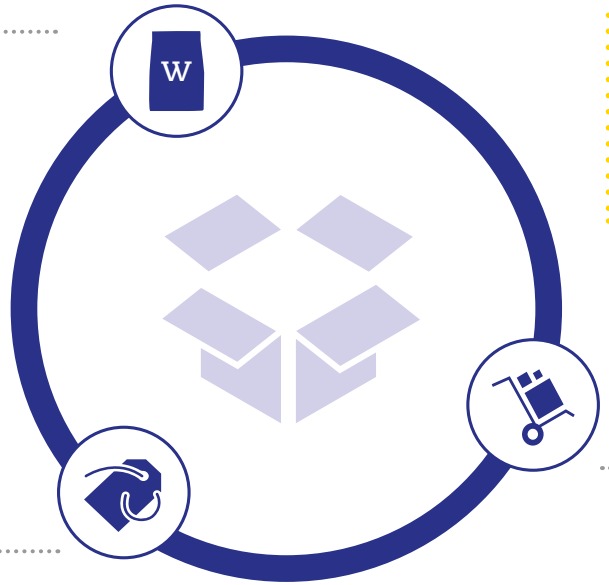
Packaging environmental performances are calculated using the 140 g format, the only existing one, and reported per packaging used for 1 kg of product.

The primary packaging consists in plastic film and paperboard box.

Primary data (from packaging unit) are used for packaging amount and packaging materials production; data about packaging production process come from Barilla LCA database.

AUXILIARY MATERIALS PRODUCTION

Auxiliary materials environmental performances are evaluated by using primary data from plant, during 2019 year.
Secondary data (Ecoinvent) are used for environmental aspects associated to materials production.



Packaging used for WASA products is 100% designed for recycle.

LCA Pack Designer

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 TRANSPORT

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

Barilla
The Italian Food Company. Since 1877.

6. Crisp'n Light 7 grains production

GENERAL INFORMATION

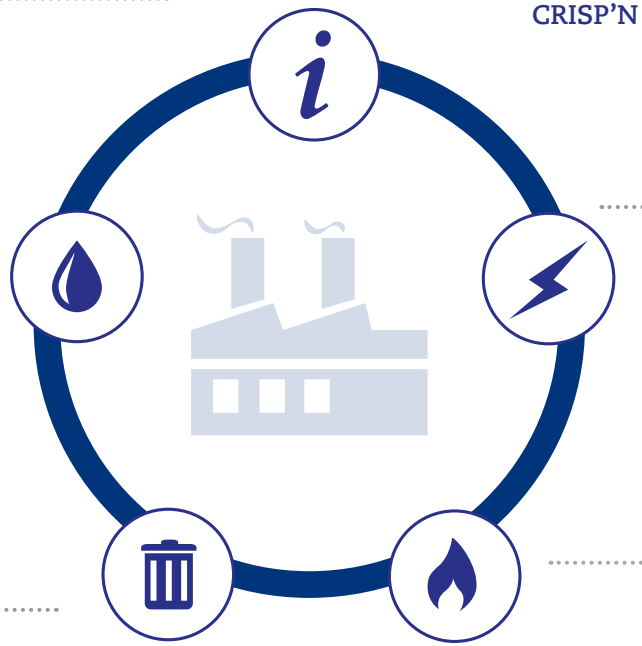
The environmental performances related to the production process are evaluated considering as primary data the energy and the water consumption and the waste production. Secondary data (mainly Ecoinvent) are used for the environmental aspects related to the production of energy and water.
The plant considered in the analysis is Celle.

WATER

The 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 dough preparation: this amount is included both in plant consumption and product recipe following a precautionary approach.
Data are referred to year 2019.

WASTE

The primary data are collected by the plant registrations. The overall value is attributed to the product using the mass allocation procedure.
Data are referred to year 2019.



CRISP'N LIGHT 7 GRAINS PRODUCTION

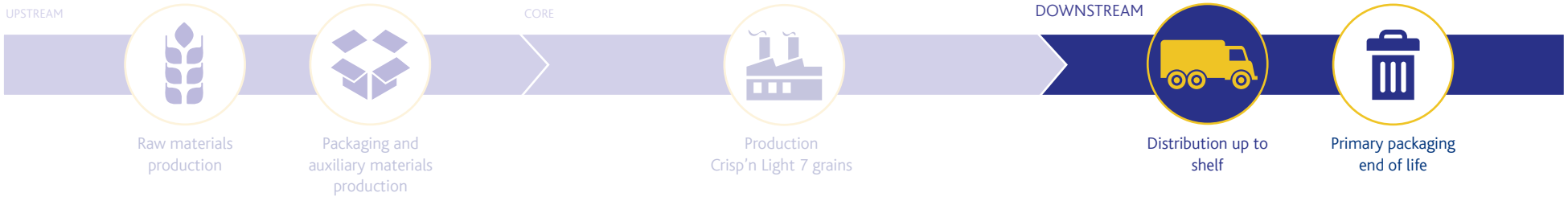
ELECTRICITY

Total plants electricity has been divided using mass allocation (plants produce other products beyond 7 grains). Barilla, through the GO certification system (Guaranty of origin market), buys energy from hydroelectric and wind renewable resources as to cover the entire WASA production.
Data are referred to 2019.

NATURAL GAS

The natural gas consumption is evaluated using primary data. The overall value is attributed to the product using the mass allocation procedure.
Data are referred to year 2019.

7. Distribution



DISTRIBUTION

Crisp'n Light 7 grain is produced in Celle (Germany) and mostly distributed in USA. Distribution performance were calculated considering the transport for about 1 692 km by truck and about 6 176 km by ship.

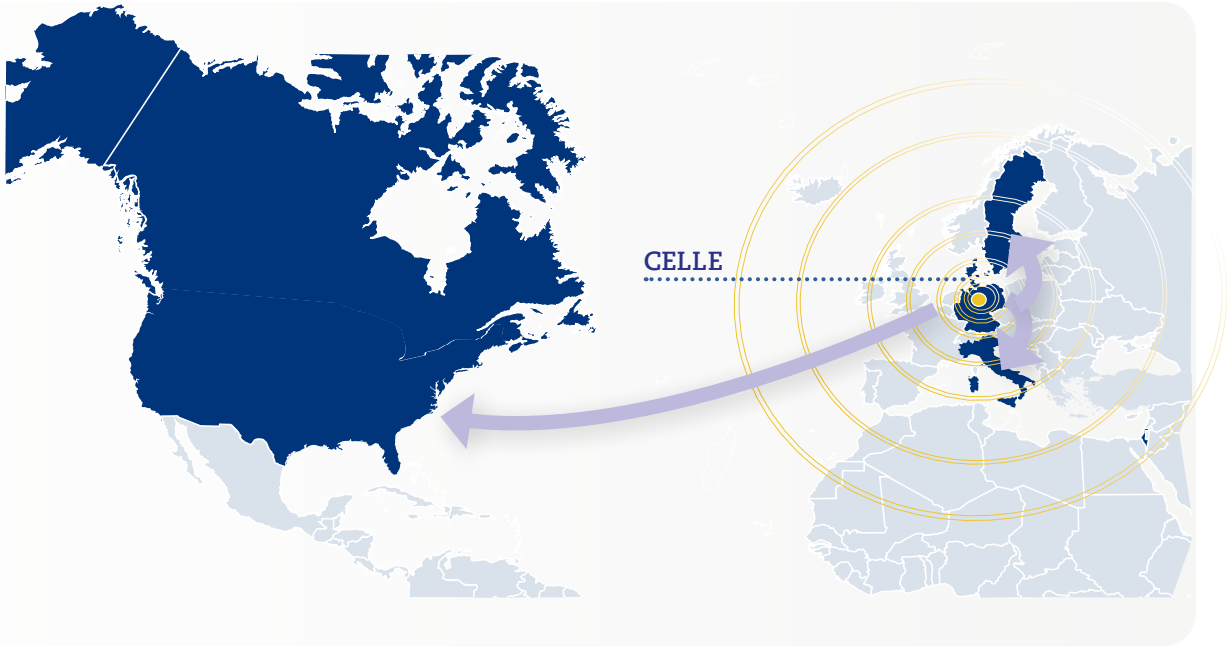
The product does not need any particular storage condition (such as refrigeration).

The impacts related to the disposal of the packaging for transport have been calculated considering the average US scenario for paper/board (reference: EPA).

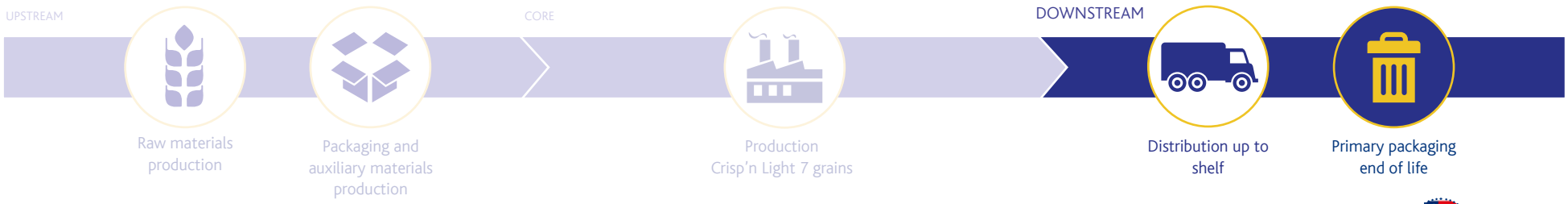
CRISP'N LIGHT 7 GRAINS

1692 km

6176 km



8. Packaging end of life



USA

In US, recyclable paper packaging for selective waste collection in urban areas are usually sent to:	Avoiding the production of virgin paper.	RECYCLE	75%
	Recovering paper energy content	ENERGY RECOVERY	5%
	In USA, all waste sent to disposal are considered to as going to landfill	DISPOSAL	20%
In US, recyclable plastic packaging for selective waste collection in urban areas are usually sent to:	Avoiding the production of plastic	RECYCLE	15%
	Recovering plastic energy content	ENERGY RECOVERY	17%
	In USA, all waste sent to disposal are considered to as going to landfill	DISPOSAL	68%
In US, packaging not recyclable are usually sent to:	Recovering plastic energy content	ENERGY RECOVERY	19%
	In USA, all waste sent to disposal are considered to as going to landfill	DISPOSAL	81%

PACKAGE PAPER PAPER Recycling

PACKAGE PLASTIC FILM PLASTIC Recycling

PACKAGE Not Recyclable MSW Collection

Reference: EPA report 2014

Barilla
The Italian Food Company. Since 1877.

9. Environmental results

USE OF RESOURCES data referred to 1 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	1.27E+00	1.23E+00	4.95E+00	6.91E-03	7.62E-04	**7.46E+00**
	Used as raw materials*	0.00E+00	3.15E+00	0.00E+00	0.00E+00	0.00E+00	**3.15E+00**
	Total	**1.27E+00**	**4.38E+00**	**4.95E+00**	**6.91E-03**	**7.62E-04**	**1.06E+01**
PRIMARY ENERGY RESOURCES - NON RENEWABLE data in MJ	Used as energy carrier	5.55E+00	5.97E+00	3.63E+00	4.85E+00	1.32E-02	**2.00E+01**
	Used as raw materials	0.00E+00	1.18E+00	0.00E+00	0.00E+00	0.00E+00	**1.18E+00**
	Total	**5.55E+00**	**7.15E+00**	**3.63E+00**	**4.85E+00**	**1.32E-02**	**2.12E+01**
Secondary Material (g)		0.00E+00	1.56E+00	0.00E+00	0.00E+00	0.00E+00	**1.56E+00**
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**
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)		1.96E+01	1.65E+02	4.08E+00	2.02E-01	1.23E-02	**1.89E+02**

OUTPUT FLOWS data referred to 1 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	1.99E+02	0.00E+00	0.00E+00	**1.99E+02**
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)	1.14E+01	4.90E-01	1.18E+02	1.82E+00	1.61E+02	**2.93E+02**
Materials for energy recovery (g)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	**0.00E+00**
Exported energy, electricity (MJ)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	**0.00E+00**
Exported energy, thermal (MJ)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	**0.00E+00**

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

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

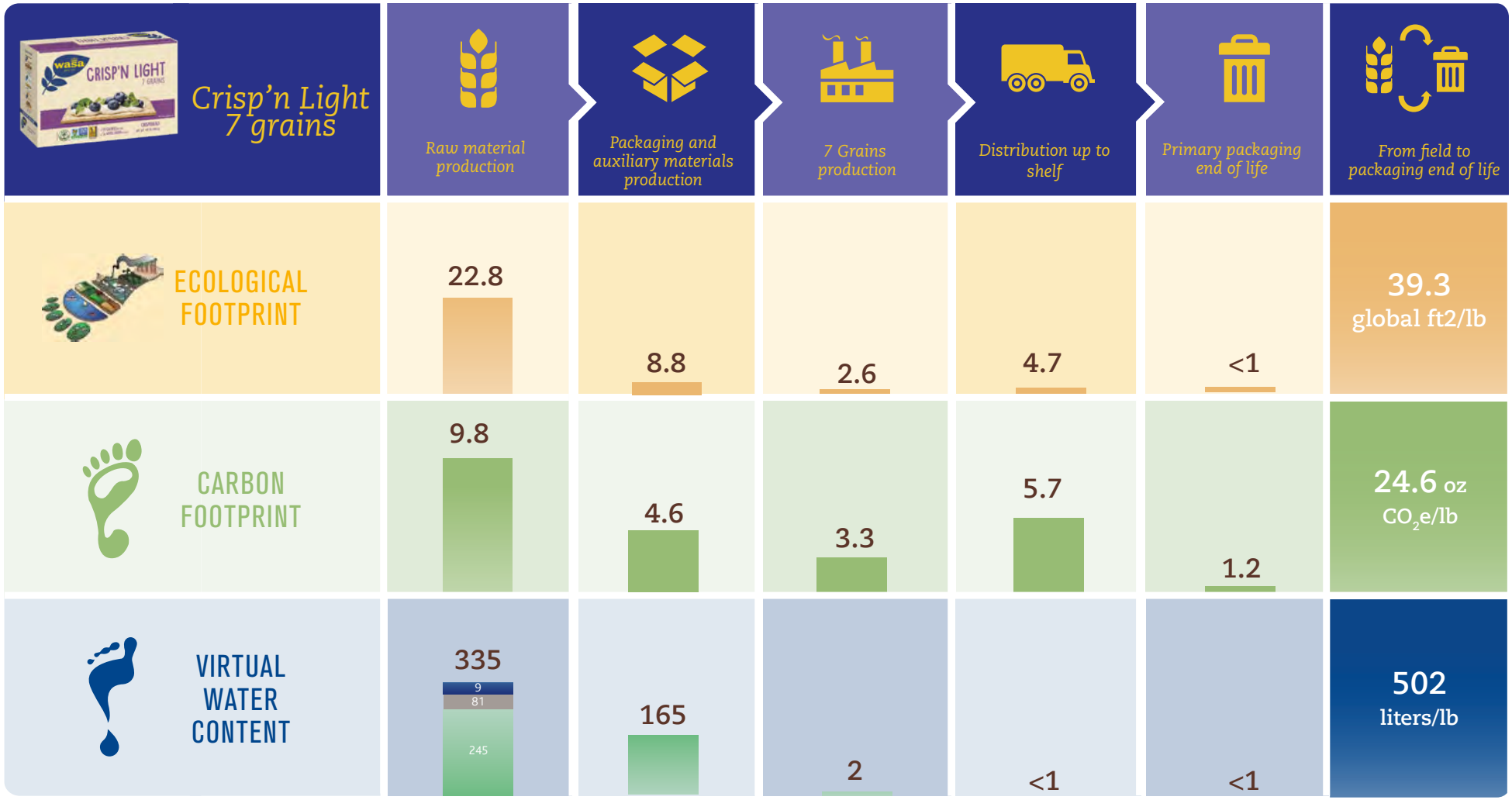
POTENTIAL ENVIRONMENTAL IMPACTS data referred to 1 kg of product		UPSTREAM		CORE	DOWNSTREAM		TOTAL
		Raw material production	*Packaging and auxiliary materials production*	*Production*	*Distribution up to shelf*	*Primary packaging end of life*	
GLOBAL WARMING POTENTIAL - GWP ($g\ CO_2$ eq)	Fossil	6.01E+02	2.88E+02	2.08E+02	3.52E+02	7.20E+00	**1.46E+03**
	Biogenic	3.59E+00	7.52E-02	4.16E-01	3.03E+00	6.52E+01	**7.23E+01**
	Land use and land transformation	9.46E+00	4.93E-01	2.87E-03	3.10E-03	1.00E-03	**9.96E+00**
	Total	**6.14E+02**	**2.89E+02**	**2.08E+02**	**3.55E+02**	**7.24E+01**	**1.54E+03**
Acidification Potential - $g\ SO_2$ eq.		1.05E+01	9.32E-01	2.91E-01	2.93E+00	1.36E-02	**1.46E+01**
Eutrophication Potential - $g\ PO_4^{---}$ eq.		6.83E+00	1.75E-01	5.01E-02	3.37E-01	3.52E-02	**7.43E+00**
Photochemical Oxidant Formation Potential - gNMVOC eq		1.75E+00	4.58E-01	3.29E-01	2.64E+00	3.23E-02	**5.21E+00**
Abiotic Depletion Potential - Elements g Sb eq.		5.68E-03	2.37E-05	6.60E-06	1.86E-05	2.45E-06	**5.73E-03**
Abiotic Depletion Potential - Fossil fuels - MJ, net calorific value		5.21E+00	4.99E+00	3.62E+00	4.84E+00	1.20E-02	**1.87E+01**
Water scarcity potential, m^3 eq.		1.12E+00	1.12E+01	3.74E-03	-1.16E-03	3.49E-04	**1.23E+01**

WASTE PRODUCTION* data referred to 1 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 (g)	1.87E-03	1.37E-01	0.00E+00	0.00E+00	0.00E+00	**1.4E-01**
Non-Hazardous waste disposed (g)	3.81E+00	1.39E+00	1.99E+02	0.00E+00	0.00E+00	**2.0E+02**
Radioactive waste disposed (g)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.

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).*

PRODUCT ENVIRONMENTAL PERFORMANCES


Crisp'n Light 7 grains
Raw material production
Packaging and auxiliary materials production
7 Grains production
Distribution up to shelf
Primary packaging end of life
From field to packaging end of life
ECOLOGICAL FOOTPRINT
22.8
8.8
2.6
4.7
<1
39.3 global ft2/lb
CARBON FOOTPRINT
9.8
4.6
3.3
5.7
1.2
24.6 oz CO2e/lb
VIRTUAL WATER CONTENT
335
9
81
245
165
2
<1
<1
502 liters/lb

10. Difference versus previous versions of the EPD

The differences versus previous EPD versions are due mainly to the use of updated emission factors for the energy mixes, updated yields for soft wheat cultivation calculated as average value of the last three available years for every region and modification of the distribution scenario. Moreover, new charachterization factors and indicators were introduced, as a consequence of GPI update to 3.01 version.

11. 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);
- Arjen Y. Hoekstra, Ashok K. Chapagain, Maite M. Aldaya, Mesfin M. Mekonnen; Water Footprint The Water Footprint Manual 2011, Waterfootprint Network;
- PCR 2012:06 CPC 234: Bakery Products; ver. 3.0 of 20/01/2020;
- Nilsson K., Flysjö A., Davis J., Sim S., Unger N., Bell S. "Comparative life cycle assessment of margarine and butter consumed in the UK, Germany and France" 2010, Int J Life Cycle Ass vol. 15 num. 9 p 916-926;
- Eurostat database for waste management, latest version (2017)

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:

- [ ] Yes
- [x] 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 srl - Italy www.lcengineering.eu**

LCE

Barilla
The Italian Food Company. Since 1877.

12. 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

VIRTUAL WATER CONTENT

The virtual water content is the water both direct and indirect required to manufacture a product along its entire life cycle. Water footprint is defined as green water (evapotranspiration of water from plants). as blue water (directly used fresh surface and groundwater) and as grey water (the volume of water that is required to dilute pollutants so that the quality of the water remains above agreed quality standards).

www.waterfootprint.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 ethylene equivalent (g NMVOC - equivalent).

WASA Brand EPDs

8

Wasa products covered by EPD

The year of the first EPD publication is reported

2010

Ragi Original

2011

Husman

2015

Light Rye. Integrale & Delikatess

2019

Frukost

Havre and Vitalitè

Crisp'n Light 7 grains

Multigrain. Mehrkorn and Surdeg Flerkorn

WASA 100

Barilla
The Italian Food Company. Since 1877.