Wasa Light Rye, Integrale & Delikatess

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-00381

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

PUBLICATION DATE
2014/04/17

REVISION
6 of 2021/12/22

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

Founded in 1919 Wasa is the largest crispbread baker in the world. Using only a few simple ingredients the crispbreads are baked to deliver a distinctive crunch. Wasa has 2 bakeries, in Filipstad (Sweden) and Celle (Germany) and the products are sold in over 40 markets all over the world. Since 2018 Wasa is reducing, calculating and compensating its remaining emissions from field to shelf making it a 100% carbon compensated brand. In 1999 Wasa became part of the Barilla Group.

Read more at *www.wasa.com*.

PLANT AND PROCESS

Wasa Light Rye is baked in Celle plant where a typical bakery process takes place, and is sold in several country with different names:

- Light rye mainly in USA and Canada
- Integrale mainly in Italy and Romania
- Delikatess mainly in Denmark and Sweden

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. Wasa Light Rye comes into 270 g and 540 g packaging format; they are ready for consumption. More info on *www.wasa.com* .

THE PRODUCT

NUTRITIONAL INFORMATION (per 100 g)		
Energy	kcal kJ	344 1 450
Fats *of which saturated*	grams	1.5 *0.3*
Carbohydrates *of which sugars*	grams	65 *2.0*
Fibres	grams	17
Proteins	grams	9
Salt	grams	0.9

2. Barilla group

Passion for quality, continuous pursuit of excellent recipes and ability to combine tradition and innovation are the fundamental ingredients that that have allowed a small shop of bread and pasta, opened in 1877 in Parma, to become an international player in the market of pasta, ready-to-eat sauces, baked goods and crispy breads.

The Group operates in over 100 countries through its brands, which have become the icon of excellence in the food sector, and with 30 production sites, which every year contribute to the production of over 2,099,000 tonnes of products.

With its brands - Barilla, Mulino Bianco, Pan di Stelle, Gran Cereale, Harrys, Pavesi, Wasa, Filiz, Yemina e Vesta, Misko, Voiello, Cucina Barilla, Catelli, Lancia, Tolerant and Pasta Evangelists – promotes a tasty, joyful and healthy diet, inspired by the Mediterranean diet and the Italian lifestyle.

Further information on www.barillagroup.com

Pasta & Bakery Facilities

Good for You, Good for the Planet

In order to make a concrete contribution to global challenges, over the years, Barilla has developed a thought enclosed in the Good for You, Good for the Planet Mission that guides, step by step and offers people good, safe, nutritionally balanced food, coming from responsible supply chains.

GOOD FOOD means taste, pleasure and a daily gesture of love for the people themselves.

HEALTHY FOOD means selected raw materials and balanced nutritional profiles to support healthy lifestyles.

FOOD SOURCED FROM RESPONSIBLE SUPPLY CHAINS means seeking the best ingredients to guarantee excellent quality, respectful of people, animals and the environment.

A commitment “from field to fork”, which has led to the development of initiatives in the various stages of the supply chain and for which all Barilla Group brands contribute through projects aiming to improve the nutritional profile of products, reinforce the sustainability of the production and supply chains and provide transparent communication to consumers.

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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.

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 certified VCS projects. The VCS Program is the world's most widely used voluntary GHG program. Projects developed under the VCS Program must follow a rigorous assessment process in order to be certified. To know more about the projects see www.wasa.com/global/sustainability

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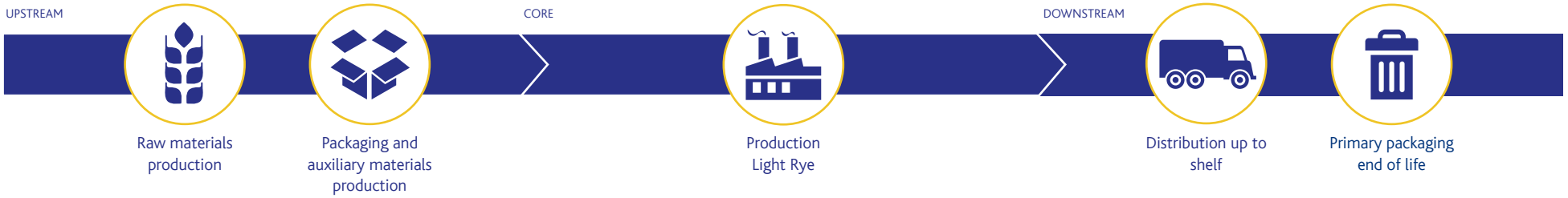
3. Environmental performance calculation



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.

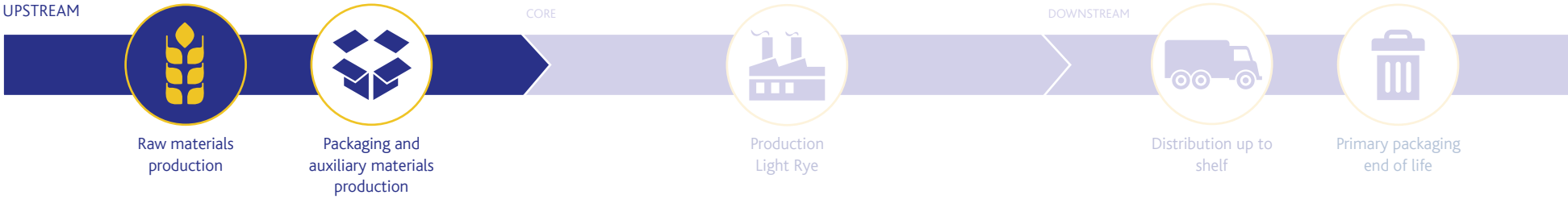
DECLARED UNIT

Data are referred to **1 kg** of product plus the related packaging (the packaging is referred to the **270 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

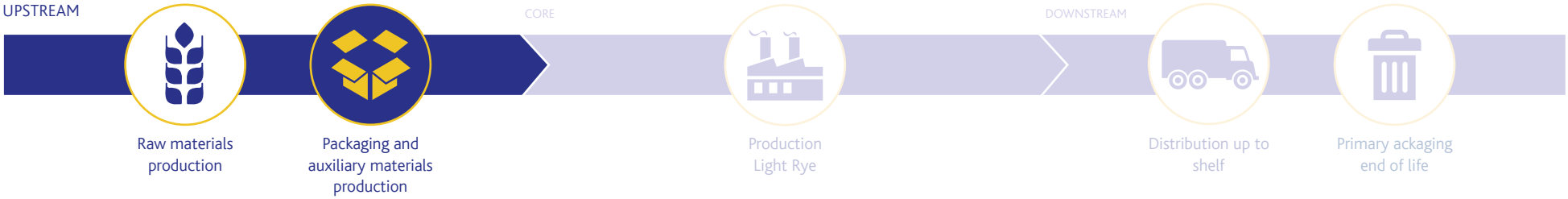
CEREAL

Cereal 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 and Sweden, percentages are related to year 2020.
Cultivation yield is calculated as average of years 2018, 2019 and 2020.

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

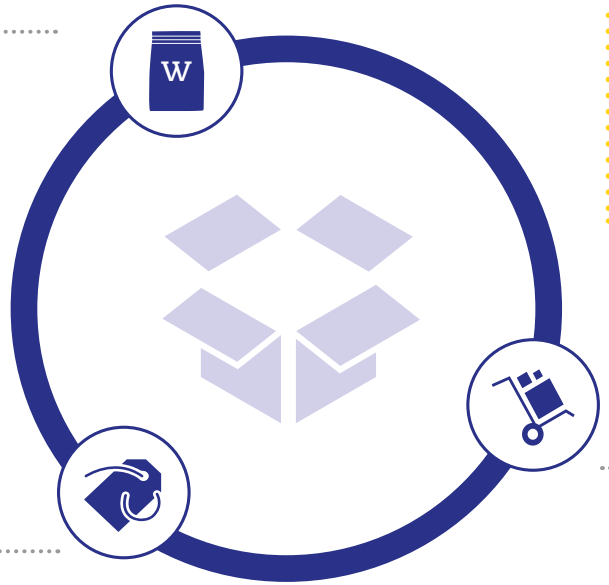
Packaging environmental performances are calculated using the 270 g format, following a precautionary approach, and reported per packaging used for 1 kg of product.

The primary packaging consists in a multilayer box (paper-based, with a thin plastic film), with a paper banderole.

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).

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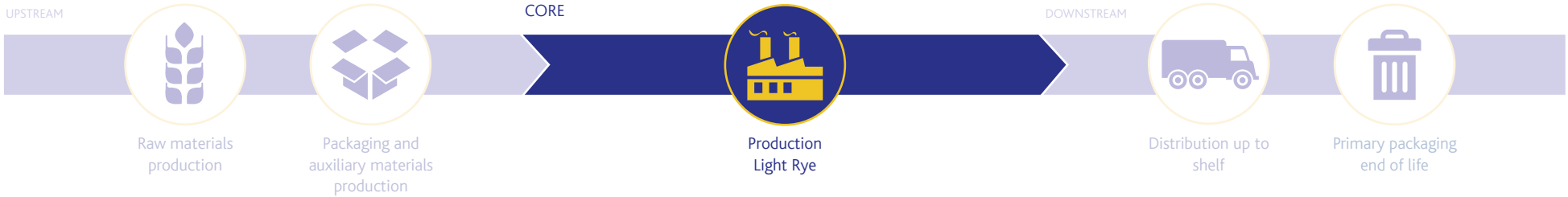
6. Light Rye production



GENERAL INFORMATION

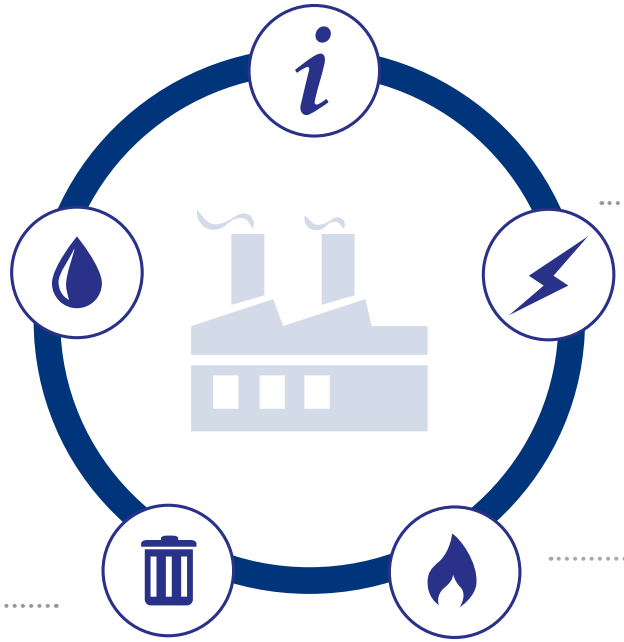
The environmental performances related to the production process are evaluated considering as primary data the energy and the water consumption and the waste production. Secondary data (mainly Ecoinvent) are used for the environmental aspects related to the production of energy and water.
The plant considered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

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 2020.

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 2020.



LIGHT RYE PRODUCTION

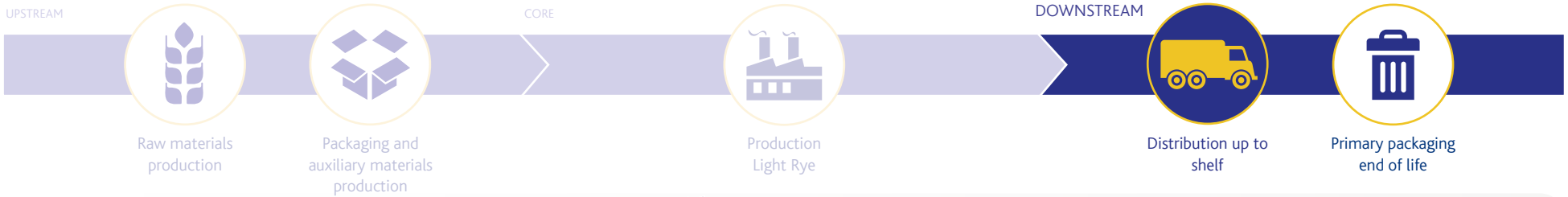
ELECTRICITY

Total plants electricity has been divided using mass allocation (plants produce other products beyond Frukost). 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 2020.

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 2020.

7. Distribution



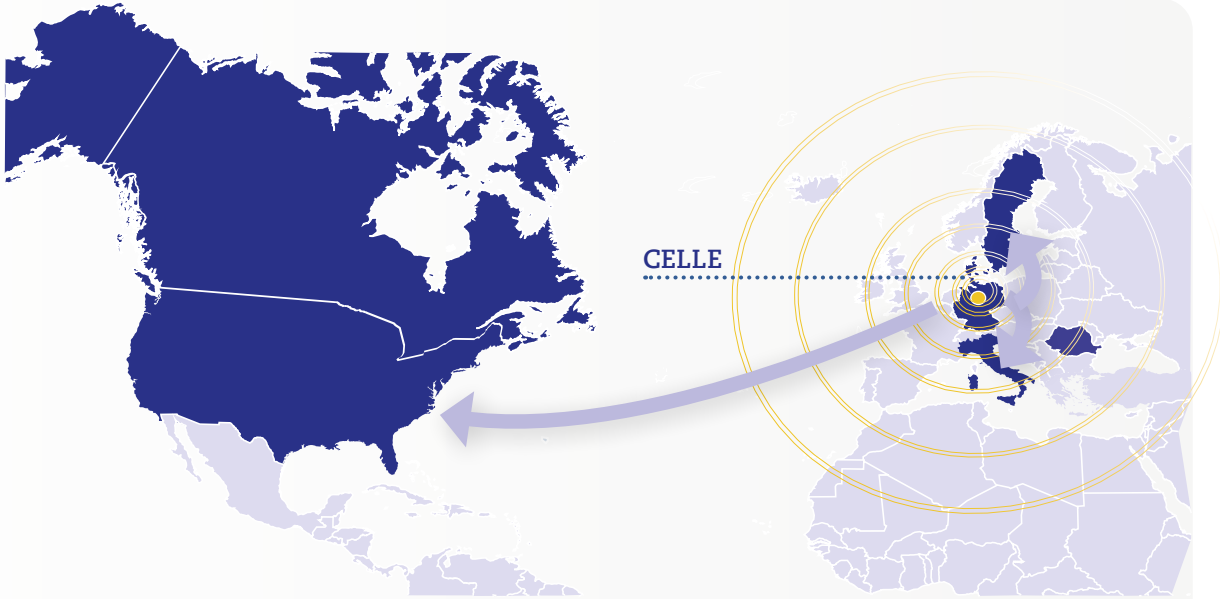
DISTRIBUTION

Light Rye is produced in Celle (Germany) and mostly distributed in Sweden and Denmark (Delikatess), Italy and Romania (Integrale) and USA and Canada (Light Rye). Distribution performance were calculated considering the transport by truck and sea.

All transport stage from plant to retailer are included.

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 scenario for paper board (presented in the following page), reference Eurostat 2017.



LIGHT RYE

2603 km 5360 km

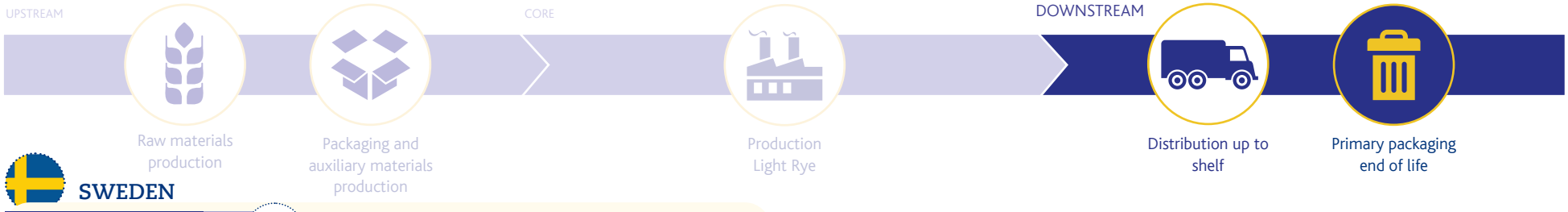
INTEGRALE

1421 km 3 km

DELIKATESS

1233 km 182 km 923 km

8. Packaging end of life



SWEDEN

82% RECYCLE		Avoiding the production of virgin paper.
<1% ENERGY RECOVERY		Recovering paper energy content
18% DISPOSAL		In Sweden, the waste sent to disposal is considered going to landfill.

Reference: Eurostat report 2017

DENMARK

89% RECYCLE		Avoiding the production of virgin paper.
11% ENERGY RECOVERY		Recovering paper energy content
<1% DISPOSAL		In Denmark, the waste sent to disposal is considered going to landfill.

Reference: Eurostat report 2017

ITALY

81% RECYCLE		Avoiding the production of virgin paper.
8% ENERGY RECOVERY		Recovering paper energy content
11% DISPOSAL		In Italy, the 19% of waste sent to disposal are incinerated without energy recovery, the remaining part goes to landfill

USA

		Avoiding the production of virgin paper
RECYCLE 75%		
		Recovering paper energy content
ENERGY RECOVERY 5%		
		In the USA, the waste sent to disposal is considered going to landfill.
DISPOSAL 20%		

ROMANIA

		Avoiding the production of virgin paper
RECYCLE 92%		
		Recovering paper energy content
ENERGY RECOVERY 1%		
		In Romania, the waste sent to disposal is considered going to landfill.
DISPOSAL 7%		

Primary packaging is 100% recyclable in separated paper collection.
Data elaborated from Eurostat, reference year 2017.

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9. Environmental results - Light Rye

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	6.62E-02	9.47E-01	5.95E+00	8.80E-03	1.51E-04	**6.98E+00**
	Used as raw materials*	0.00E+00	7.01E-01	0.00E+00	0.00E+00	0.00E+00	**7.01E-01**
	Total	**6.62E-02**	**1.65E+00**	**5.95E+00**	**8.80E-03**	**1.51E-04**	**7.68E+00**
PRIMARY ENERGY RESOURCES - NON RENEWABLE data in MJ	Used as energy carrier	6.26E+00	3.28E+00	4.87E+00	5.84E+00	2.45E-03	**2.02E+01**
	Used as raw materials	1.45E-04	3.06E-01	0.00E+00	0.00E+00	0.00E+00	**3.06E-01**
	Total	**6.26E+00**	**3.58E+00**	**4.87E+00**	**5.84E+00**	**2.45E-03**	**2.05E+01**
Secondary Material (g)		0.00E+00	3.81E+01	0.00E+00	0.00E+00	0.00E+00	**3.81E+01**
Renewable secondary fuels (MJ. net calorific power)		0.00E+00	2.27E-02	0.00E+00	0.00E+00	0.00E+00	**2.27E-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)		3.72E+00	2.72E+00	2.20E+00	1.15E-01	1.88E-03	**8.76E+00**

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	2.28E-01	0.00E+00	0.00E+00	**2.28E-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)	2.71E+01	9.16E+00	1.92E+02	2.70E+01	3.86E+01	**2.94E+02**
Materials for energy recovery (g)	0.00E+00	0.00E+00	1.16E+01	0.00E+00	0.00E+00	**1.16E+01**
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	7.90E+02	1.63E+02	2.83E+02	4.20E+02	8.98E-01	**1.66E+03**
	Biogenic	9.49E-02	1.15E+00	2.67E-01	1.10E+01	1.31E+01	**2.56E+01**
	Land use and land transformation	4.51E-01	1.29E+00	3.74E-03	3.63E-03	1.94E-04	**1.75E+00**
	Total	**7.91E+02**	**1.65E+02**	**2.84E+02**	**4.31E+02**	**1.40E+01**	**1.68E+03**
Acidification Potential - $g\ SO_2$ eq.		2.45E+01	8.12E-01	3.76E-01	2.83E+00	2.59E-03	**2.85E+01**
Eutrophication Potential - $g\ PO_4^{---}$ eq.		1.11E+01	1.81E-01	5.87E-02	3.31E-01	6.96E-03	**1.17E+01**
Photochemical Oxidant Formation Potential - gNMVOC eq		1.85E+00	8.39E-01	4.12E-01	2.75E+00	6.26E-03	**5.86E+00**
Abiotic Depletion Potential - Elements g Sb eq.		1.38E-03	1.56E-05	2.76E-06	1.64E-05	1.81E-08	**1.42E-03**
Abiotic Depletion Potential - Fossil fuels - MJ. net calorific value		5.73E+00	3.20E+00	4.85E+00	5.83E+00	2.23E-03	**1.96E+01**
Water scarcity potential. m^3 eq.		4.10E-02	9.50E-02	4.06E-03	-1.28E-03	6.86E-05	**1.39E-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)	4.62E-05	9.29E-05	0.00E+00	0.00E+00	0.00E+00	**1.4E-04**
Non-Hazardous waste disposed (g)	6.95E-01	5.03E+00	0.00E+00	0.00E+00	0.00E+00	**5.7E+00**
Radioactive waste disposed (g)	6.61E-01	4.43E-01	4.73E-02	1.89E-01	2.99E-04	**1.3E+00**

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.

**Non-zero values indicate waste flows to disposal whose treatment impact isn't evaluated within system boundaries (usually they come from secondary data used in calculation model).*
Zero values indicate that – even if some waste are produced and disposed – their impact is evaluated within the system boundaries.

PRODUCT ENVIRONMENTAL PERFORMANCES

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.

10. Environmental results - Integrale

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	6.62E-02	9.47E-01	5.95E+00	4.36E-03	7.96E-05	**6.97E+00**
	Used as raw materials*	0.00E+00	7.01E-01	0.00E+00	0.00E+00	0.00E+00	**7.01E-01**
	Total	**6.62E-02**	**1.65E+00**	**5.95E+00**	**4.36E-03**	**7.96E-05**	**7.67E+00**
PRIMARY ENERGY RESOURCES - NON RENEWABLE data in MJ	Used as energy carrier	6.26E+00	3.28E+00	4.87E+00	2.85E+00	1.58E-03	**1.73E+01**
	Used as raw materials	1.45E-04	3.06E-01	0.00E+00	0.00E+00	0.00E+00	**3.06E-01**
	Total	**6.26E+00**	**3.58E+00**	**4.87E+00**	**2.85E+00**	**1.58E-03**	**1.76E+01**
Secondary Material (g)		0.00E+00	3.81E+01	0.00E+00	0.00E+00	0.00E+00	**3.81E+01**
Renewable secondary fuels (MJ. net calorific power)		0.00E+00	2.27E-02	0.00E+00	0.00E+00	0.00E+00	**2.27E-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)		3.72E+00	2.72E+00	2.20E+00	6.06E-02	3.45E-03	**8.71E+00**

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	2.28E-01	0.00E+00	0.00E+00	**2.28E-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)	2.71E+01	9.16E+00	1.92E+02	2.94E+01	4.22E+01	**3.00E+02**
Materials for energy recovery (g)	0.00E+00	0.00E+00	1.16E+01	0.00E+00	0.00E+00	**1.16E+01**
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.*

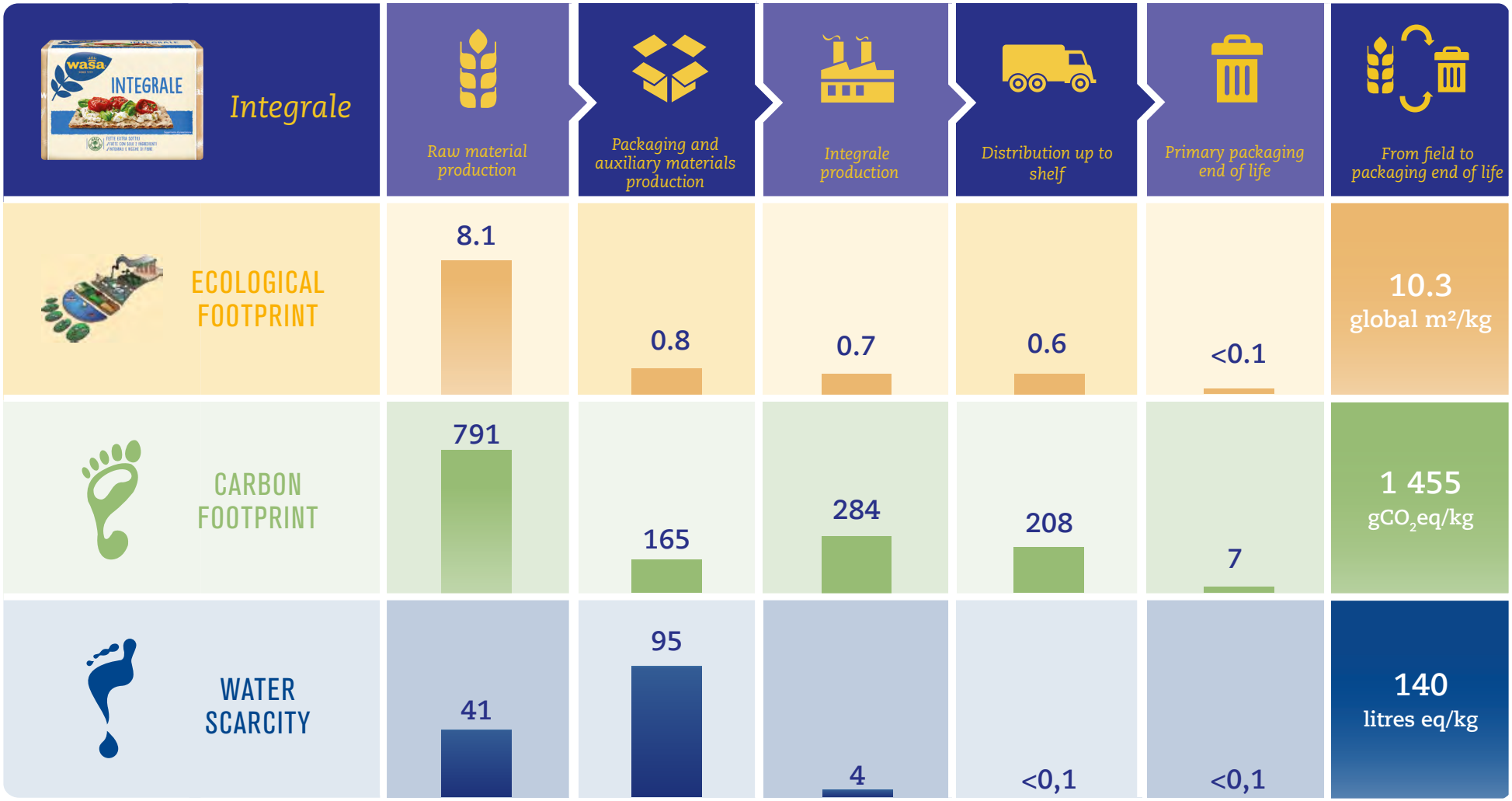
POTENTIAL ENVIRONMENTAL IMPACTS data referred to 1 kg of product		UPSTREAM		CORE	DOWNSTREAM		TOTAL
		Raw material production	*Packaging and auxiliary materials production*	*Production*	*Distribution up to shelf*	*Primary packaging end of life*	
GLOBAL WARMING POTENTIAL - GWP ($g\ CO_2$ eq)	Fossil	7.90E+02	1.63E+02	2.83E+02	2.03E+02	1.53E+00	**1.44E+03**
	Biogenic	9.49E-02	1.15E+00	2.67E-01	4.67E+00	5.62E+00	**1.18E+01**
	Land use and land transformation	4.51E-01	1.29E+00	3.74E-03	1.73E-03	9.51E-05	**1.75E+00**
	Total	**7.91E+02**	**1.65E+02**	**2.84E+02**	**2.08E+02**	**7.15E+00**	**1.46E+03**
Acidification Potential - $g\ SO_2$ eq.		2.45E+01	8.12E-01	3.76E-01	8.52E-01	1.75E-03	**2.65E+01**
Eutrophication Potential - $g\ PO_4^{---}$ eq.		1.11E+01	1.81E-01	5.87E-02	1.23E-01	3.16E-03	**1.15E+01**
Photochemical Oxidant Formation Potential - gNMVOC eq		1.85E+00	8.39E-01	4.12E-01	1.01E+00	3.48E-03	**4.11E+00**
Abiotic Depletion Potential - Elements g Sb eq.		1.38E-03	1.56E-05	2.76E-06	8.78E-06	3.46E-08	**1.41E-03**
Abiotic Depletion Potential - Fossil fuels - MJ. net calorific value		5.73E+00	3.20E+00	4.85E+00	2.84E+00	1.48E-03	**1.66E+01**
Water scarcity potential. m^3 eq.		4.10E-02	9.50E-02	4.06E-03	-5.16E-04	1.37E-04	**1.40E-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)	4.62E-05	9.29E-05	0.00E+00	0.00E+00	0.00E+00	**1.4E-04**
Non-Hazardous waste disposed (g)	6.95E-01	5.03E+00	0.00E+00	0.00E+00	0.00E+00	**5.7E+00**
Radioactive waste disposed (g)	6.61E-01	4.43E-01	4.73E-02	9.27E-02	1.47E-04	**1.2E+00**

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.

**Non-zero values indicate waste flows to disposal whose treatment impact isn't evaluated within system boundaries (usually they come from secondary data used in calculation model).*
Zero values indicate that – even if some waste are produced and disposed – their impact is evaluated within the system boundaries.

PRODUCT ENVIRONMENTAL PERFORMANCES



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 - Delikatess

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	6.62E-02	9.47E-01	5.95E+00	6.43E-02	1.07E-04	**7.03E+00**
	Used as raw materials*	0.00E+00	7.01E-01	0.00E+00	0.00E+00	0.00E+00	**7.01E-01**
	Total	**6.62E-02**	**1.65E+00**	**5.95E+00**	**6.43E-02**	**1.07E-04**	**7.73E+00**
PRIMARY ENERGY RESOURCES - NON RENEWABLE data in MJ	Used as energy carrier	6.26E+00	3.28E+00	4.87E+00	3.06E+00	1.70E-03	**1.75E+01**
	Used as raw materials	1.45E-04	3.06E-01	0.00E+00	0.00E+00	0.00E+00	**3.06E-01**
	Total	**6.26E+00**	**3.58E+00**	**4.87E+00**	**3.06E+00**	**1.70E-03**	**1.78E+01**
Secondary Material (g)		0.00E+00	3.81E+01	0.00E+00	0.00E+00	0.00E+00	**3.81E+01**
Renewable secondary fuels (MJ. net calorific power)		0.00E+00	2.27E-02	0.00E+00	0.00E+00	0.00E+00	**2.27E-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)		3.72E+00	2.72E+00	2.20E+00	3.67E-01	1.04E-03	**9.01E+00**

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	2.28E-01	0.00E+00	0.00E+00	**2.28E-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)	2.71E+01	9.16E+00	1.92E+02	3.01E+01	4.29E+01	**3.02E+02**
Materials for energy recovery (g)	0.00E+00	0.00E+00	1.16E+01	0.00E+00	0.00E+00	**1.16E+01**
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	7.90E+02	1.63E+02	2.83E+02	2.03E+02	5.09E-01	**1.44E+03**
	Biogenic	9.49E-02	1.15E+00	2.67E-01	7.91E+00	9.41E+00	**1.88E+01**
	Land use and land transformation	4.51E-01	1.29E+00	3.74E-03	4.05E-02	1.38E-04	**1.78E+00**
	Total	**7.91E+02**	**1.65E+02**	**2.84E+02**	**2.11E+02**	**9.92E+00**	**1.46E+03**
Acidification Potential - $g\ SO_2$ eq.		2.45E+01	8.12E-01	3.76E-01	9.20E-01	1.78E-03	**2.66E+01**
Eutrophication Potential - $g\ PO_4^{---}$ eq.		1.11E+01	1.81E-01	5.87E-02	1.37E-01	4.99E-03	**1.15E+01**
Photochemical Oxidant Formation Potential - gNMVOC eq		1.85E+00	8.39E-01	4.12E-01	1.06E+00	4.40E-03	**4.16E+00**
Abiotic Depletion Potential - Elements g Sb eq.		1.38E-03	1.56E-05	2.76E-06	9.08E-06	9.82E-09	**1.41E-03**
Abiotic Depletion Potential - Fossil fuels - MJ. net calorific value		5.73E+00	3.20E+00	4.85E+00	2.87E+00	1.54E-03	**1.66E+01**
Water scarcity potential. m^3 eq.		4.10E-02	9.50E-02	4.06E-03	3.26E-03	3.64E-05	**1.43E-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)	4.62E-05	9.29E-05	0.00E+00	0.00E+00	0.00E+00	**1.4E-04**
Non-Hazardous waste disposed (g)	6.95E-01	5.03E+00	0.00E+00	0.00E+00	0.00E+00	**5.7E+00**
Radioactive waste disposed (g)	6.61E-01	4.43E-01	4.73E-02	3.14E-01	2.13E-04	**1.5E+00**

The biogenic contribution to Global Warming Potential refers only to biogenic methane.
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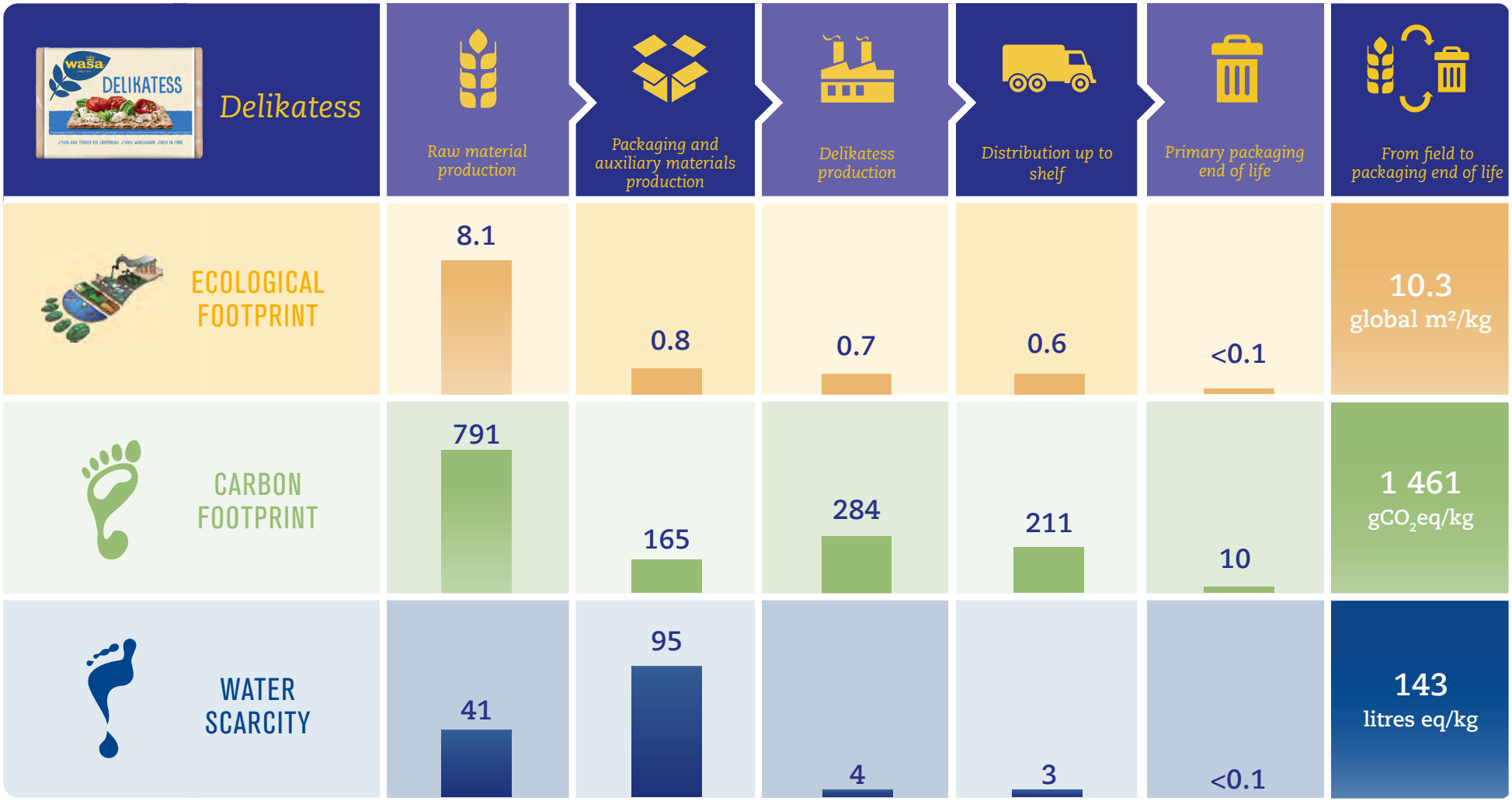
PRODUCT ENVIRONMENTAL PERFORMANCES



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.

12. Difference versus previous versions of the EPD

The differences versus previous EPD versions are due mainly to the improved evaluation of scraps generated during the production process, the use of updated emission factors for the energy mixes, updated yields for soft wheat and rye cultivation calculated as average value of the last three available years for every region. Moreover, the product Environmental performances section has been modified with the substitution of Virtual Water Content with Water Scarcity indicator.

13. 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 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;
- COMIECO Raccolta, Riciclo e Recupero di carta e cartone 2018;
- COREPLA relazione sulla gestione 2018;
- 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 SpA - Italy www.lcengineering.eu**

LCE

Barilla
The Italian Food Company. Since 1877.

14. 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).

WASA Brand EPDs

17

Wasa products covered by EPD

The year of the first EPD publication is reported

2010

Ragi Original

2011

Husman

2015

Light Rye Integrale and Delikatess

2019

Frukost

2021

Small rounds Sesam and Seasalt

Delicate Crisp Rosemary & Seasalt

Sandwich Cheese & Chives

2015

Havre and Vitalitè

Crisp'n Light 7 grains

Multigrain Mehrkorn and Surdeg Flerkorn

WASA 100

The number of products covered by EPD could vary on the base of the date of publication