PRODUCT GROUP: UN CPC 2223, 2224 & 2225
YOGHURT, BUTTER AND CHEESE

2013:18
VERSION 1.01

VALID UNTIL: 2016-09-17

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GENERAL INTRODUCTION

This is a Product Category Rules (PCR) document developed in the framework of the International EPD® System, operating in accordance with ISO 14025:2006 and the following international standards:

- ISO 9001, Quality management systems
- ISO 14001, Environmental management systems
- ISO 14040, LCA - Principles and procedures
- ISO 14044, LCA - Requirements and guidelines

The International EPD® System is a system of voluntary environmental declarations applicable to any type of goods and services. The rules and requirements of the system are defined in the General Programme Instructions, available at the website: www.environdec.com.

A PCR is defined in ISO 14025 as a set of specific rules, requirements and guidelines for developing Type III environmental declarations for one or more product categories. This PCR document specifies the rules for the underlying life cycle assessment (LCA) and sets minimum requirements on EPDs for a specific product group that are more detailed than the standards and the General Programme Instructions.

In the case of building products, the International EPD® System also allows the use of EN 15804 (Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products) and ISO 21930 (*Environmental declaration of building products) as underlying standards, if relevant. The compliance with these standards shall be defined in each PCR.*

The principle programme elements in International EPD® System are presented below. More information is available in the General Programme Instructions and on the website:

PURPOSE	ELEMENT IDENTIFICATION AND PRINCIPAL APPROACH
Complying with principles set in ISO 14025 on modularity and comparability	1. "Book-keeping LCA approach" (attributional LCA) 2. A Polluter-Pays (PP), allocation method
Simplifying work to develop Product Category Rules (PCR)	3. PCR Module Initiative (PMI) in order to structure PCR in modules according to international classification 4. PCR Moderator for leadership and support of the PCR work 5. Pre-certification of EPDs
Secure international participation in PCR work	5. Online PCR Forum for open and transparent stakeholder consultation
Facilitating identification and collection of LCA-based information	6. Selective data quality approach for specific and generic data
Broaden market applications of EPDs	8. Introducing Sector EPDs 9. Introducing "Single-issue EPDs"
Expand possibilities for organisations to issue EPDs in a cost-effective way	10. Introducing "EPD process certification"

Alignment of Product Category Rules (PCR) across intermediate and final products in the supply chain and of PCRs developed in the framework of other ISO 14025 compliant programmes is strongly encouraged. In order to have a unique identification of each product group, the United Nation Statistics Division - Classification Registry CPC codes (http://unstats.un.org) are used in the International EPD® System.

All PCR documents have a maximum period of validity after which the document shall be revisited.

1 GENERAL INFORMATION

Name:	Yoghurt, butter and cheese
Programme operator:	The International EPD® System, www.environdec.com
Publication date:	2014-02-28 Version 1.0 was published 2013-09-17. A version history is available in Section 0
Registration no:	2013:18
This PCR was prepared by:	***Granarolo S.p.a.****(www.granarolo.it)* ***Life Cycle Engineering*** *(www.studiolce.it)* ***ENEA*** *(www.enea.it)* ***Distretto Latte Lombardo*** ***Politecnico di Milano*** **Università degli studi di Milano** - Dipartimento di Scienze Agrarie e Ambientali Produzione, Territorio, Agroenergia. ***Caseificio dell'Amiata*** *(http://www.alival.it/amiata.htm)* ***ICS*** *(http://www.ics.fi.it/)* ***Latteria Montello*** *(www.latteriamontello.com)*
Appointed PCR moderator:	Filippo Sessa, Life Cycle Engineering (sessa@studiolce.it)
Open consultation period:	2013-04-16 – 2013-05-21
Valid within the following geographical representativeness:	Global
PCR language:	English
Valid until:	2016-09-16

More information on this PCR's website:	http://environdec.com/en/PCR/Detail/?Pcr=8593

This document provides Product Category Rules (PCR) for the assessment of the life-cycle environmental performance of:

- Yoghurt and other fermented or acidified milk and cream (UN CPC 2223);
- Butter and other fats and oils derived from milk (UN CPC 2224);
- Cheese, fresh or processed (UN CPC 2225)

as well as the declaration of such performance by an Environmental Product Declaration. More information about the product is available in Section 2.

This document has been prepared by a working group within a project promoted by the Italian Ministry of Environment (D.M. n. 468, 19/05/2011) aimed at the calculation of carbon footprint of several consumer products.

This PCR complies and has been developed in accordance with the General Programme Instruction of the International EPD® System, version 2.0 dated 2013-06-04. It is based on the requirements and guidelines given in "PCR Basic Module, CPC Division 22: Dairy products and egg products", version 1.0, dated November 30th 2010. For the preparation of this PCR the following guidelines have also been considered:

- BP X30-323-0. General principles for an environmental communication on mass market products (AFNOR, 2011).
- PAS 2050:2011. Specification for the assessment of the life cycle greenhouse gas emissions of goods and services (BSI, 2011)

Any comments to this PCR document may be submitted through the Global PCR Forum or directly to the PCR moderator during the period of validity.

The PCR document is a living document. If any relevant changes in the LCA methodology or in the technology for the product category are implemented, the document shall be revised and any changes published on the international website: www.environdec.com .

The EPD shall refer to a specific PCR version number. The production of new PCR versions does not affect the EPD certification period.

In the Section 11, the PCR also provide the additional indicators that must be considered in order to expand the scope of the EPD towards the sustainability product declaration. These indicators cover economic and social issues from a life cycle perspective and haven't previously been included in the EPDs. The declaration that includes the additional indicators can be identified as Sustainability Product Declaration (SPD).

2 DEFINITION OF THE PRODUCT GROUP

The scope of this PCR is yoghurt, butter and cheese derived from milk produced by mammals, as defined by the three Classes 2223, 2224 and 2225 in the UN CPC classification (http://unstats.un.org/unsd/cr/registry/regcs.asp?Cl=25&Lg=1&Co=222):

- Division: 22 - Dairy products and egg products
  - Group: 222 - Other dairy products
    - **Class 2223 - Yoghurt and other fermented or acidified milk and cream**
    - **Class 2224 - Butter and other fats and oils derived from milk**
    - **Class 2225 - Cheese, fresh or processed**

Please note that this PCR **does not** cover:

- Class 2221 - Milk and cream in solid forms
- Class 2222 - Milk and cream, concentrated or containing added sugar or other sweetening matter, other than in solid forms
- Class 2226 - Casein
- Class 2227 - Ice cream and other edible ice
- Class 2229 - Dairy products n.e.c.

See www.environdec.com for available PCRs for other product groups.

2.1 SPECIFICATION OF MANUFACTURING COMPANY

This section highlights all information related to the producing company that is required in the EPD, separated into mandatory and voluntary items.

Mandatory information:

- Manufacturing company
- Manufacturing sites involved in the production
- Issuer and contact information

Examples of voluntary information:

- ISO 14001 and/or EMAS certificate at the manufacturing site
- Specific aspects regarding the production
- Environmental policy
- Manufacturers logotype

2.2 SPECIFICATION OF THE PRODUCT

Product definition in agreement with the merchandise regulation, product group and the CPC code shall be specified in the EPD, including a specification of packaging and distribution conditions (chilled or ambient distribution).

3 DECLARED UNIT

The declared unit (DU) shall be 1 kg of product (yogurt, butter or cheese) including packaging. The declared unit shall be declared in the EPD.

4 CONTENT DECLARATION

A minimum of 99% of all ingredients per unit product shall be declared in the EPD, which is in line with regional/local food legislation. The nutritional values must also be stated in the same section in order to give indication about the specific characteristics of the product.

5 UNITS AND QUANTITIES

The International System of Units ("SI units") shall be used in all notations. Exceptions are allowed for:

- land use: concerning the crops yields, hectare (ha) could be used; impact assessment results shall be reported in square meter (m^2);

A maximum of three significant digits shall be used when reporting LCA results; in any case, it is recommended to provide rounded data in respect of their scientific significance.

6 GENERAL SYSTEM BOUNDARIES

Figure 1 shows the general system boundaries. Further information is available in the following sections of this PCR.

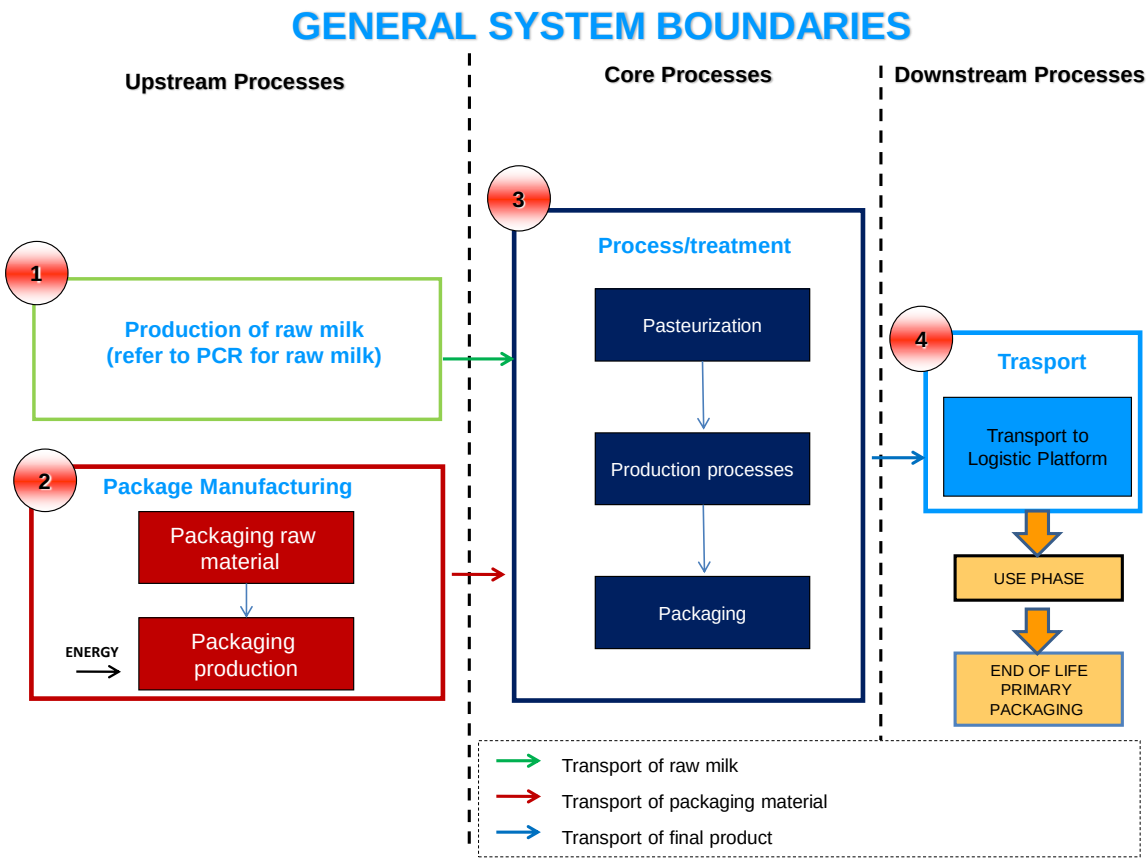

Figure 1 Presentation of both the Core Module (core process) and upstream and downstream processes

6.1 UPSTREAM PROCESSES

The upstream processes include the following inflow of raw materials and energy wares needed for the production of the raw milk

- Production of raw milk (refer to PCR for raw milk)
- Production of other ingredients used in the product (Subsystem 1.b – Figure 6.1)
- Production of packaging (Subsystem 2 – Figure 6.1).

6.2 CORE PROCESSES

The core processes include:

- External transportation of raw milk to the processing plant.
- Milk treatment (i.e. pasteurization processes).
- Processes for the transformation of milk into the final product (e.g. fermentation of milk for yoghurt production, churning for butter production, cheese making)
- Packaging process
- Waste treatment processes even if they are carried out by third parties;

6.3 DOWNSTREAM PROCESSES

The downstream processes include:

- Transportation from final manufacturing to an average retailer/distribution platform within the geographical boundaries.
- Possible domestic conservation of the product (in refrigerator)
- End of life of primary packaging materials.

In the EPD, the environmental performance associated with each of the three life-cycle stages above must be reported separately.

7 CORE MODULE

7.1 SYSTEM BOUNDARIES

7.1.1 TECHNICAL SYSTEM

The processes listed below shall be included:

- Energy consumption;
- Emissions to the environment[1];
- Water consumption;
- Any ancillary materials used in the process such as detergents, chemicals, lubricant oil if used for more than 1 g per declared unit.

A minimum of 99% of the total weight of the declared product (including Packaging) shall be included.

[1] For the calculation of GHG emissions, carbon offsets shall not be included.

Environmental impact related to waste deposited in landfills should be included in the system boundaries; wastes must be stated as “kg of waste”. See further information about waste-management in the following paragraphs.

The manufacturing of production equipment, buildings and other capital goods with an expected lifetime over three years shall not be included.

Business travel and staff commuting should not be included.

For specific allocation rules, consult the following paragraphs regarding the issue.

If several production plants are involved in the production chain, an average virtual plant shall be defined by accounting for the annual production (expressed in mass) as the weighting factor.

Any deviations from these rules must be declared in the LCA and in the EPD.

7.1.2 GEOGRAPHICAL BOUNDARIES

The data regarding the core module shall be representative of both the actual production processes and of the site/region where the respective process is being performed.

7.1.3 TIME BOUNDARIES

The data should be representative of the years/time frame for which the EPD is valid (maximum three years).

7.1.4 BOUNDARIES TO NATURE

Boundaries to nature are defined as flows of material and energy resources from nature into the system and from the product system to nature. Emissions to air, water and soil cross the system boundary when they are emitted from or leave product system.

7.1.5 BOUNDARIES TO OTHER PRODUCT LIFE CYCLES

Should there be any inflow of recycled material into the production system, both the recycling process and the relevant transportation of the material from the recycling process to the site of use shall be included in the calculations.

If there is an outflow of material to recycling, the transportation of the material to the recycling process shall be indicated. The material going to recycling is regarded as an outflow of the production system.

Transportation of waste to landfills or other final treatment plants should be included.

(See the General Programme Instruction www.environdec.com).

7.2 CUT-OFF RULES

Life Cycle Inventory data for a minimum of 99 % of total inflows to the core module shall be included. Inflows not included in the LCA shall be documented in the EPD. *(CPC 22)*

7.3 ALLOCATION RULES

Whether the production plant generates more than one product (such as cheese and whey), the inputs (including raw milk and other ingredients) and outputs of the system should be partitioned between the different products.

Partitioning should reflect the physical relationships between their mass of protein and fat (allocation by mass of protein and fat). Table 7.3.1 shows an example of a plant producing mozzarella cheese and whey. In such plant for every produced kg of mozzarella cheese 4.9 kg of whey are generated as co-product.

Table 7.3.1. Allocation for mass of protein and fat

	Mozzarella cheese	**Whey**
Fat (g/100 g of product)	19	0,2
Protein (g/100 g of product)	18	0,8

Fat + protein (g/100 g of product)	37	1,0
Production related to the FU (kg/kg of product)	1	4,9
Mass product/mass of all the outputs of the process	1/(1+4,9)=**0,17**	4,9/(1+4,9)=0,**83**
Calculation formula	$\frac{37 * 0{,}17}{37 * 0{,}17 + 1{,}0 * 0{,}83}$	$\frac{1{,}0 * 0{,}83}{37 * 0{,}17 + 1{,}0 * 0{,}83}$
Allocation factor	**0,88**	**0,12**

Products that are not suitable for the market must be considered as waste.

Any deviation from these rules must be declared in the LCA and in the EPD.

7.4 DATA QUALITY RULES

Specific data (often called site-specific data) shall be used for the all core processes.

Specific data is collected from sites where specific processes are carried out. If many sites are involved in the analysed production system, site-specific data must cover most of the whole production.

For the electricity used in the process, there are two alternatives: the company buys the energy from the electricity mix on the actual market or from a specific supplier. While in the first case the national electricity mix shall be adopted, in the second case a specific energy mix could be used if available. Electricity production impacts should be accounted for in this priority:

- RECS or Guarantee of origin from supplier
- Electricity supplier's residual energy mix
- National mix/electricity mix on the actual market (preferably residual mix, otherwise national mix.

The mix of energy shall be documented.

8 UPSTREAM MODULE

8.1 SYSTEM BOUNDARIES

All elementary flows of resource extraction shall be included, except for the flows that fall under the general 1% cut off rule

The upstream processes include:

- For the raw milk production phase refer to the PCR for Raw milk (www.environdec.com).
- Production of other raw materials used for the preparation of the final product;
- Production of primary, secondary packaging[2] from the raw material;

[2] Definition based on DIRECTIVE 94/62/EC of 20 December 1994 on packaging and packaging waste:

- sales packaging or primary packaging: packaging conceived so as to constitute a sales unit to the final user or consumer at the point of purchase;
- grouped packaging or secondary packaging: packaging conceived so as to constitute at the point of purchase a grouping of a certain number of sales units whether the latter is sold as such to the final user or consumer or whether it serves only as a means to replenish the shelves at the point of sale; it can be removed from the product without affecting its characteristics;

8.2 DATA QUALITY RULES

For the raw milk production phase refer to the PCR for Raw milk (www.environdec.com).

For production of *semiproducts* the operations at the farm(s) or other production sites specific data shall be used.

When no specific data are available, the above-mentioned data could be used as “selected generic data”.

In order to allow the use of select generic data, a number of pre-set characteristics must be fulfilled and demonstrated:

- Representativeness of the geographical area should be coherent to “Data originating from areas with the same legislative framework and the same energetic mix”,
- Technological equivalence should be coherent to “Data originating from the same chemical and physical processes or at least having the same technology coverage (nature of the technology mix, e.g. weighted average of the actual process mix, best available technology or worst operating unit)”,
- Boundaries towards technical systems should be coherent to “The boundaries of the considered life cycle stage shall be equivalent”;
- Data shall have been calculated with book-keeping approach i.e. without system expansion and credits for any avoided processes.

8.3 RULES FOR GENERIC DATA

If these data sources do not supply the necessary data, other generic data may be used and documented. The environmental impact of the processes where the other generic data are used must not exceed 10% of the overall environmental impact from the product system.

9 DOWNSTREAM MODULE

The downstream processes include:

- Transportation from the final product to an average distribution platform
- Eventual domestic conservation of the product (in the refrigerator)
- End of life of primary packaging.

9.1 FINAL PRODUCT TRANSPORT

The impact related to the transport of final product to an average distribution platform has to be assessed considering:

- average distance covered by trucks in order to deliver the product to the distribution platforms
- energy consumption for the refrigeration of trucks

The hypotheses used for this estimation, including the specific palletisation scheme and typology of track used (size) must be declared in the LCA

9.2 DOMESTIC CONSERVATION IN REFRIGERATOR

For the estimation of energy consumption of the product conservation in the domestic refrigerator of the final user the following hypothesis shall be used:

- transport packaging or tertiary packaging: packaging conceived so as to facilitate handling and transport of a number of sales units or grouped packaging in order to prevent physical handling and transport damage. Transport packaging does not include road, rail, ship and air containers.

- Annual energy consumption of the refrigerator (A class[3]): 300 kWh
- Average mass of products stored in refrigerator: 10 kg
- Estimated consumption of energy per kg of product according to the described hypothesis: =300 kWh * (365 days)$^{-1}$ * (10 kg)$^{-1}$ = 0,082 kWh*day^{-1} * kg^{-1}

Average permanence of the product in the refrigerator: half of the declared shelf life.

Any deviation from these rules must be declared in the LCA and in the EPD.

The use of the energy mix in the region/country where the product is sold and then used shall be approximated as the OECD electricity mix. For non-OECD countries, in order to adopt a suitable region- or country-specific electricity mix (reflecting approximately the region(s)/countries' share) a similar precision will be required. The mix shall be documented.

9.3 END-OF-LIFE OF PACKAGING

This phase could be assessed taking into account a scenario representative of the geographical area where the product is mainly distributed.

Recommendations for the responsible and correct management of packaging materials should be provided.

Any deviation from these rules must be declared in the LCA and in the EPD.

10 ENVIRONMENTAL PERFORMANCE-RELATED INFORMATION

10.1 USE OF RESOURCES

The consumption of natural resources and resources per declared unit shall be reported in the EPD, divided into core, upstream and, if relevant, downstream module.

Input parameters, extracted resources:

- Non-renewable resources
  - Material resources
  - Energy resources (used for energy conversion purposes)
- Renewable resources
  - Material resources
  - Energy resources (used for energy conversion purposes)
- Secondary resources
  - Material resources
  - Energy resources (used for energy conversion purposes)
- Recovered energy flows (such thermal) expressed in MJ
- Water use divided in:
  - Total amount of water
  - Direct amount of water used by the core process

The following requirements on the resource declaration also apply:

[3] Directive 2010/30/EU of the European Parliament and of the Council of 19 May 2010 on the indication by labelling and standard product information of the consumption of energy and other resources by energy-related products". Europa (web portal). Retrieved 24 April 2011.

- all parameters for resource consumption shall be expressed in mass, with the exception of renewable energy resources used for the generation of hydroelectric, wind electricity and solar energy, which shall be expressed in MJ;
- all parameters shall not be aggregated but reported separately. Resources which contribute for less than 5% in each category shall be included in the resources list as “other”;
- nuclear power shall be reported among the non-renewable energy resources as kg of uranium calculated by converting the thermal energy (MJ) considering a reactor of III generation with an efficiency of 33%;
- energy content of biomass used for feed or food purposes shall not be considered.

10.2 POTENTIAL ENVIRONMENTAL IMPACT

The EPD includes the environmental impact per declared unit, divided into upstream and core, expressed through the following indicators:

- Emissions of greenhouse gases (global warming potential, GWP, in a 100-year perspective, expressed in CO_2-equivalents).
- Emission of acidification gases (acidification potential, expressed in SO_2- equivalents).
- Emissions of gases that contribute to the creation of ground level ozone (ozone-creating potential, expressed in ethene-equivalents).
- Emission of substances to water contributing to oxygen depletion (expressed in PO_4^{3-}-equivalents).

The recommended characterisation factors to use are available on the website, www.environdec.com.

10.3 WASTE PRODUCTION

Waste generated along the whole life cycle production chains shall be treated following the technical specifications described in the General Programme Instructions Annex A. When the amount of waste has to be declared, the following information shall be reported:

- Hazardous waste, kg (as defined by regional directives)
- Non-hazardous waste, kg

10.4 OTHER ENVIRONMENTAL INDICATORS

Some additional optional indicators that could be included in the LCA report and in the EPD are reported in the following paragraphs.

10.4.1 ECOLOGICAL FOOTPRINT

This indicator shall be expressed as *global* m^2 per DU. Further information about the calculation procedure is available in Annex 1.

10.4.2 WATER FOOTPRINT

This value shall be calculated according to the indications presented by the “Water footprint network” in the specific accounting protocol. The indicators shall be expressed in litres of water per DU. Further information is presented in Annex 2.

10.4.3 LAND USE

This indicator represents the land that is used per declared unit during a certain period of time and could be expressed in total square meter * year. Land use give indication about the impact on ecosystem and biodiversity and shall includes: agricultural land, farm land, grazing land, forestry land, built environment land, etc...

Further information about the calculation procedure is available on http://www.epa.gov/ncea/roe/

10.4.4 LAND USE AND LAND USE CHANGE AND FORESTRY [LULUCF]

The indicator expressed in terms of greenhouse gas emissions (kg of CO_2 eq.) represents an estimate of the absorption and emission of carbon resulting from the:

- Land use
- Change of land use
- Forest management activities

Further information about the calculation is available on http://www.ipcc-nggip.iges.or.jp/

10.4.5 MARINE WATER EUTROPHICATION

This indicator is measured in g N eq. and represents the impact related to eutrophication due to nitrogen and phosphorus emissions in water.

The method suggested for the indicator calculation is ReciPe[4].

10.4.6 AQUATIC ECOTOXICITY

This indicator is measured in Comparative Toxic Unit (CTU) and refers to the impact of toxic substances (chemical and physical agents) on aquatic ecosystems. The impact is obtained by three characterisation factors:

- the fate factor, representing the persistence of a chemical in the environment,
- the exposure factor, representing the bioavailability of a chemical (fraction of the chemical dissolved)
- the effect factor, reflecting the change in the potentially affected fraction of species due to change in concentration

The method suggested for the calculation of the indicator is USEtox[5] (http://www.usetox.org/).

[4] ReCiPe main Report: Goedkoop M.,Heijungs R., Huijbregts M., De Schryver A., Struijs J., Van Zel R., "ReCiPe 2008 A life cycle impact assessment method wich comprises harmonised category indicators at the midpoint and endpoint level – Report I: Characterisation", Ruimte en Miliieu Ministerie van Volkshuisvesting Ruimtelijke Ordening en Milieubeheer, July 2012.

[5] User manual: Huijbregts M., Hauschild M., Jolliet O., Margni M., McKone T., Rosenbaum R.K., Van de Meent D., "USEtox™ User manual"; February 2010.

11 TOWARD THE SUSTAINABILITY DECLARATION

This section of the PCR is dedicated to the additional indicators covering economic and social issue that must be considered in order to expand the scope of the EPD toward the SPD. In a SPD at least 5 of the following indicators shall be reported (at least two economic and two social indicator shall be reported).

11.1.1 ECONOMIC INDICATORS FOR SUSTAINABILITY PRODUCT DELCARATION

	INDICATORS	UNIT OF MEASUREMENT	DESCRIPTION	CALCULATING APPROACH	VERIFYNG PROCESS
Supply chain	Number of economic step from primary producer to consumer (for materials greater in mass than 10%)	Numeric / Assertive	The indicator shows the number of economic step from primary producer to consumer for materials greater in mass than 10%. An "economic step" is inteted as a economicn movement of the meterial (from primary producer, transformation enterprice, retailers, ecc).	Material greater in mass than 10% shall be individuated. For these materials the company collect information related to economic step from primary producer to consumer.	Audit of documents provided by the company and market intermediaries.
	Price of raw material at the origin of the production.	Numeric	The indicator shows the price of raw materials at the origin of the production. The term "origin" shall be defined according to product take into consideration. E.g. for pasta: durum wheat price for 1 kg of pasta	This datum is provided by the company according to its suppliers market contract	Audit of primary data provided by the company and relative suppliers
	% of raw materials from specific supply chain contract	%	The indicator shows the percentage of raw materials that come from specific supply chain contract and not from market purchases.	Raw material that come from specified supply chain contract is divided by the total consumption of raw materials	Verification of primary data provided by the company and relative suppliers
Improvement projects	Improvement projects	Assertive	Operations substantially benefit local value creation through employment at all levels of qualification, investment, marketing , tax payments. Social and environmental project are take into account.	The company declare their improvement projects	Verification of documents provided by the company that can demonstrate its engagement in one or more improvement projects

11.1.2 SOCIAL INDICATORS FOR SUSTAINABILITY PRODUCT DELCARATION

	INDICATORS	UNIT OF MEASUREMENT	DESCRIPTION	CALCULATING APPROACH	VERIFYNG PROCESS
Animal Welfare	Liters per day	Numeric	The indicator shows the average number of liters produced by a single head in a average milking day	Data are collected and reported by the company	Audit of the datum provided by the company
	Average life of the animal or average number of births	Numeric	The indicator shows the average life of the animal or the average number of births	Data are collected and reported by the company	Audit of primary data provided by the company
	Average available surface per head (by type: open and stable)	Numeric	The indicator show the average available surface per head including distinction from open surface and stable surface.	The company provide the average number of managed head and the total external and internal surface. Surface data are divided by number of managed head	Audit of primary data provided by the company
	Disease / (1000 heads * year)	Numeric	The indicator show, taking into consideration 1000 heads, the number of them interested by disease in one years.	The company provide the average number of managed head and data about disease in one year (the specific meaning of "disease" shall be defined case-by-case).	Audit of primary data provided by the company
Safety	HACCP	Assertive	Description of food safety hot spot and related control systems	Hot spot shall be individuated and reported by the company. For each of these hot spot the company provide document or data that can demonstrate their attention or care.	Audit of data and document provided by the company and on site verification.

12 CONTENT OF THE EPD®

12.1 PROGRAMME-RELATED INFORMATION

The programme related part of the EPD shall include:

- Name of the programme and programme operator
- The reference PCR document
- Registration number
- Date of publication and validity
- Geographical scope of application of EPD
- Information about the year or reference period of the underlying data to the EPD
- Reference to the homepage – www.environdec.com – for more information

12.2 PRODUCT-RELATED INFORMATION

See 2.1

12.2.1 SPECIFICATION OF THE PRODUCTION COMPANY

See 2.1.

12.2.2 SPECIFICATION OF THE PRODUCT

See 2.2.

12.2.3 DECLARED UNIT

See 3.

12.2.4 CONTENT DECLARATION

See 4.

12.2.5 MANDATORY STATEMENTS

The following information is mandatory to include in the EPD:

- any omission of life cycle stages not making the EPD cover the full life cycle, with a justification of the omission
- means of obtaining explanatory materials, for example references to chosen methodologies.
- a statement that “EPDs within the same product category but from different programmes may not be comparable”

12.2.6 VALIDITY OF THE EPD®

The validity of the EPD shall be reported in the EPD.

12.3 ENVIRONMENTAL PERFORMANCE-RELATED INFORMATION

The environmental indicators used for the presentation of the environmental performance of milk should be organised in a table adopting the following framework. Colours and font styles are indicative.

Environmental indicators	Raw milk production	Other raw materials	Packaging	Process	Transports	Domestic conservation	Packaging end of life	Total
...	...	...	.....	...	...	...	...	...

The upstream core and downstream modules shall also be indicated.

12.3.1 ENVIRONMENTAL PERFORMANCE DECLARATION - MINIMUM SET OF PARAMETERS FROM THE LCA STUDY, REPORTED PER DECLARED UNIT

Upstream and core modules shall be reported separately for resource use, potential environmental impact and other indicators such as waste.

Downstream module results may be presented in a qualitative way (for example showing the end of life scenarios for the waste materials).

12.3.2 USE OF RESOURCES

The consumption of natural resources per functional unit shall be reported in this category.

See 10.1

12.3.3 POTENTIAL ENVIRONMENTAL IMPACT

The potential environmental impact per functional unit shall be reported in this category.

See 10.2

12.3.4 WASTE PRODUCTION

The relevant indicators per declared unit shall be reported in this category.

See 10.3

12.3.5 OTHER ENVIRONMENTAL INDICATORS

See 10.4

12.4 DIFFERENCES VERSUS PREVIOUS VERSIONS OF THE EPD®

The main causes for any changes in environmental performance in comparison with previous EPD versions shall be described shortly.

12.5 VERIFICATION

The EPD shall give the following information about the verification process:

Product Category Rules (PCR) review was conducted by: *The Technical Committee of the International EPD® System. Chair: Massimo Marino.* *Contact via info@environdec.com.*
Independent verification of the declaration and data, according to ISO 14025:2006: □ EPD process certification □ EPD verification
Third party verifier: *Name and contact information* Accredited or approved by: *Name of the accreditation body*

12.6 REFERENCES

The EPD shall, if relevant, refer to:

- the underlying LCA;
- the PCRs used;
- other documents that verify and complement the EPD;
- programme instructions;
- sources of additional information.

13 VALIDITY OF THE EPD®

The validity of the EPD is set at three years after which the declaration must necessarily be revised and reissued.

During the validity period surveillance follow up shall be agreed with the verifier in order to evaluate if the content are still consistent with the current situation. It is not necessary to perform a full LCA, only the monitoring of main parameters is requested. The surveillance verification could be organised as documental check aimed to the evaluation of the main environmental aspects relevant for the LCA calculation.

The EPD shall be updated if one of the environmental indicators has worsened for more than 10% compared with the data currently published.

14 CHANGES IN THIS PCR DOCUMENT

VERSION 1.0, 2013-09-17

Original version. The PCR was developed and published together with PCR for raw milk and PCR for processed liquid milk and cream.

VERSION 1.01, 2014-02-21

Minor changes by the Secretariat without any impact on the technical aspects or methodological guidance:

- Information added to cover page
- Information added to General Information
- General introduction changed to latest version
- Minor editorial changes

ANNEX 1 – ECOLOGICAL FOOTPRINT

The "**Ecological Footprint**" (EF) is a measure of the quantity of biologically productive land and water any individual, population or activity requires to produce all the resources it consumes and to absorb the waste it generates using prevailing technology and resource management practices.

The *Global Footprint Network*[6] has developed the "**Ecological Footprint Accounting**" (EFA) method. It is usually measured in global hectares (gha): by conversions and equivalence factors for different land use (*Energy up take land, Crop land, Grazing land, Forest, Built-up land, Fishing ground*) translated into a single unit.

Even if the EF have been designed for the calculation of the regions impacts rather than the products impacts, it is quite interesting and common to use this indicator to represent the "land use" due to the agricultural chain. For this reason, the life cycle assessment of arable crops could be integrated with a calculation of the ecological footprint based on the same system boundaries considered for the LCA. In order to have an EF estimation that is aligned to the LCA results as much as possible, the environmental aspects used for the EF calculation must originate from the same sources as used for the LCA inventory.

Total EF is calculated as the sum of the single 6 EF contributors (crop, forest, etc.) that for the purpose of this PCR could be calculated by multiplying the specific impact for the equivalence factors (Table A1.1) as indicated in the following specifications.

Table A1.1. Equivalence Factors used for the calculation – Source: Global Footprint Network

Component	Unit	Equivalence factor
Carbon up take land (energy land)	gha/ha	1,26
Cropland	gha/ha	2,51
Grazing Land	gha/ha	0,46
Forest	gha/ha	1,26
Built-up land	gha/ha	2,51
Fishing Ground	gha/ha	0,37

Note that for the arable crops production system forest land, fishing ground and grazing land are not applicable. Built-up land could be negligible.

In details, for each kind of land, the following hypotheses have been considered.

[6] www.footprintnetwork.org

A1.1 CARBON UP TAKE LAND (ENERGY LAND)

Carbon up take land represents the land needed to sequestrate the CO_2 (not CO_2 equivalent) generated by the system. The methodology does not take into account the emission of other greenhouse gases because only CO_2 undergoes a natural process of forest sequestration.

These figures shall be calculated by multiplying the specific CO_2 emissions related to each environmental aspect of the considered system by the EF conversion factors, which is 0,208 global hectares (per year) per t of CO_2, by the energy land equivalence factor. An example of this calculation is shown in Table A1.2.

Table A1.2. Calculation of the energy land for the main environmental aspects related to the operations included in the system boundaries.

Environmental aspect	Unit	g of CO_2 per unit	Land for CO_2 sequestration ha/t CO_2	EF energy land equivalence factor gha/ha	global m^2 per unit
Electricity (in Italy)	MJ	174,0	0,208	1,26	0,456
Natural gas (in Italy)	MJ	57,8			0,015
Oil (in Italy)	MJ	77,0			0,020
Transport by truck	t-km	55,3			0,014

A1.2 CROP LAND

This component shall be calculated by multiplying the inverses of specific yields considered for the feed cultivation by the EF equivalence factor of cropland. The source of this information could be the FAOSTAT web site (http://faostat.fao.org/).

An example is shown in Table A1.3.

Table A1.3. Example of the calculation of the cropland related to the feed cultivation

Region	Yield in t per ha	EF cropland equivalence factor gha/ha	global ha per t
Maize	9	2,51	0,28
Wheat	7,5		0,33

ANNEX 2 –WATER FOOTPRINT

The “Water footprint” measures the water consumption in terms of the volume of water consumed (directly and indirectly and evaporated). The main reference for the methodology is the *Water Footprint Network*[7], founded by Twente University, UNESCO-IHE Institute for Water Education and the World Business Council for Sustainable Development.

The total water footprint breaks down into three components:

- the blue water footprint is the volume of freshwater taken from the blue water resources (surface water and ground water) and used in the life cycle of the product;
- the green water footprint is the volume of water evaporated from the green water resources (rainwater stored in the soil as soil moisture);
- the grey water footprint is the volume of water required to dilute pollutants to an extent that the quality of the water remains above established water quality standards.

Data regarding water footprint could be calculated or taken from the databases available at http://www.waterfootprint.org/?page=files/WaterStat-ProductWaterFootprints according to the data quality rules.

[7] www.waterfootprint.org

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