

THE INTERNATIONAL EPD®SYSTEM



PCR BASIC MODULE

CPC Division 23

**GRAIN MILL PRODUCTS, STARCHES AND
STARCH PRODUCTS; OTHER FOOD**

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HOW TO USE PCR BASIC MODULES BASED ON THE UN CPC STRUCTURE

CPC is a complete product classification scheme covering goods and services. It is based on the physical characteristics of goods or on the nature of the services rendered. Each type of good or service distinguished in the CPC is defined in such a way that it is normally produced by only one activity as defined in the International Standard Industrial Classification of all economic activities (ISIC Rev. 3). This PCR basic module is based on CPC ver. 2.0, for more information see <http://unstats.un.org/unsd/cr/registry>.

The use of the CPC system leads to a structure for PCR documents in two dimensions:

- a “horizontal” dimension describing the product’s value chain divided according to business sectors, i.e. building on CPC-coded information modules, and
- a “vertical” dimension defining each information module (with a further delineation of each such section into subclasses).

The CPC concept forms the basis for a PCR structure to:

- provide a structure for industry specific PCR core modules, or rather the PCR core module and up-streams modules as well as down-streams modules within the product group system boundary, and
- open up for differentiated, but defined levels of requirements in the PCR document, i.e. part of the requirements may be applicable on a generic product group level, part of the requirements may be limited to selected individual products.

PCR Basic Modules make use of this option provided by the CPC concept, and are close to ready-made draft PCR documents with some information still lacking, but the lacking information is identified in the document.

The PCR Basic Module document includes:

1. Text which is common for all full PCR documents regardless of product group, e.g. the introduction section
2. Text including requirements which are common for all products which belong to the specified product group on UN CPC code two digit level, e.g. CPC Division 01: Products of agriculture, horticulture and market gardening. PCR requirements valid on two digit level are specified (marked with CPC XX).
3. Identified specific requirements or information, written in *italic*, which must be decided upon on a more detailed level than the CPC Division level. In the final PCR document this detailed level could be anything from CPC three digit level to five digit level dependent on the level of the final PCR document. Thus, the information requested in *italic* shall be replaced by the relevant text, e.g. instead of the text “product group” in the PCR Basic Module document the final PCR document may read “transformers” in a PCR for transformers.

The PCR Basic Module document provides a close to ready-made PCR document. Just decide upon and add the relevant information requested in *italic*.

DIVISION: 23 – GRAIN MILL PRODUCTS, STARCHES AND STARCH PRODUCTS; OTHER FOOD

This Division is divided into the following groups (three digits) and classes (four digits):

- 231 Grain mill products
 - 2311 Wheat and meslin flour
 - 2312 Other cereal flours
 - 2313 Groats, meal and pellets of wheat and other cereals
 - 2314 Other cereal grain products (including corn flakes)
 - 2316 Rice, semi- or wholly milled, or husked
 - 2317 Other vegetable flours and meals
 - 2318 Mixes and doughs for the preparation of bakers' wares
- 232 Starches and starch products; sugars and sugar syrups n.e.c.
 - 2321 Glucose and glucose syrup; fructose and fructose syrup; lactose and lactose syrup; invert sugar; sugars and sugar syrups n.e.c.; artificial honey; caramel
 - 2322 Starches; inulin; wheat gluten; dextrans and other modified starches
 - 2323 Tapioca and substitutes therefor prepared from starch, in the form of flakes, grains, siftings or similar forms
- 233 Preparations used in animal feeding
 - 2331 Preparations used in animal feeding n.e.c.
 - 2332 Lucerne (alfalfa) meal and pellets
- 234 Bakery products
 - 2341 Crispbread; rusks, toasted bread and similar toasted products
 - 2342 Gingerbread and the like; sweet biscuits; waffles and wafers
 - 2343 Pastry goods and cakes, fresh or preserved
 - 2349 Other bread and other bakers' wares
- 235 Sugar
 - 2351 Raw cane or beet sugar
 - 2352 Refined sugar
 - 2353 Refined cane or beet sugar, in solid form, containing added flavouring or colouring matter; maple sugar and maple syrup
 - 2354 Molasses
- 236 Cocoa, chocolate and sugar confectionery
 - 2361 Cocoa paste, whether or not defatted
 - 2362 Cocoa butter, fat and oil

- 2363 Cocoa powder, not sweetened
- 2364 Cocoa powder, sweetened
- 2365 Chocolate and other food preparations containing cocoa (except sweetened cocoa powder), in bulk forms
- 2366 Chocolate and other food preparations containing cocoa (except sweetened cocoa powder), other than in bulk forms
- 2367 Sugar confectionery (including white chocolate), not containing cocoa; vegetables, fruit, nuts, fruit-peel and other parts of plants, preserved by sugar
- 237 Macaroni, noodles, couscous and similar farinaceous products
 - 2371 Uncooked pasta, not stuffed or otherwise prepared
 - 2372 Pasta, cooked, stuffed or otherwise prepared; couscous
- 239 Food products n.e.c.
 - 2391 Coffee and tea
 - 2392 Spices and aromatics, processed
 - 2399 Other food products

Important! PCR requirements valid on level CPC division 23 are specified (marked with CPC 23). Certain requirements are dependent on the choice of specific product group, and need to be defined on lower, more specific levels (Group, Class, or Subclass). These requirements, written in *italic*, are only identified in general terms in this document. All text written in italic shall be replaced by sharp requirements or deleted as appropriate in the final PCR document.

GENERAL INTRODUCTION

(This section shall be included in all PCR- documents)

The international EPD® system is based on a hierarchic approach following the international standards:

- ISO 9001, Quality management systems
- ISO 14001, Environmental management systems
- ISO 14040, LCA - Principles and procedures
- ISO 14044, LCA - Requirements and guidelines
- ISO 14025, Type III environmental declarations
- ISO 21930, Environmental declaration of building products.

The General Programme Instructions are based on these standards, as well as instructions for developing Product Category Rules (PCR).

The documentation to the International EPD® system includes three separate parts (www.environdec.com):

- Introduction, intended uses and key programme elements
- General Programme Instructions
- Supporting annexes

This PCR-document specifies further and additional minimum requirements on EPDs of the product group defined below complementary to the above mentioned general requirement documents.

Principle programme elements concerning the Product Category Rules (PCR) included in International EPD® system are presented below.

Purpose	Element identification and principal approach
Complying with principles set in ISO 14025 on modularity and comparability	1. "Book-keeping LCA approach" 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

Secure international participation in PCR work	5. Global PCR Forum for open and transparent EPD stakeholder consultation
Facilitating, identification and collection of LCA-based information	6. Selective data quality approach for specific and generic data

Product Category Rules (PCR) are specified for specified information modules “gate-to-gate”, so called core modules. The structure and aggregation level of the core modules is defined by the United Nation Statistics Division - Classification Registry CPC codes (<http://unstats.un.org>). The PCR also provides rules for which methodology and data to use in the full LCA, i.e. life cycle parts up-streams and down-streams the core module. The PCR also has requirements on the information given in the EPD, e.g. additional environmental information. A general requirement on the information in the EPD is that all information given in the EPD, mandatory and voluntary, shall be verifiable.

In the EPD, the environmental performance associated with each of the three life-cycle stages mentioned above are reported separately:

1 GENERAL INFORMATION

(This section shall after editing be included in all PCR document)

Date and registration no:	<i>date and registration number of the PCR</i>
This PCR was prepared by:	<i>names of organisations</i>
Appointed PCR moderator:	<i>Name, organisation,, e-mail address</i>
Open consultation period:	<i>date until date.</i>
Valid within the following geographical representativeness:	<i>Describe the geographical representativeness of the PCR.</i>
Valid until:	<i>date</i>

This document provides Product Category Rules (PCR) for the assessment of the environmental performance of UN CPC 23 XXX (*define product group*) and the declaration of this performance by an EPD. (CPC 23)

This PCR is based on the requirements and guidelines given in “PCR Basic Module, CPC Division 23: Grain mill products, starches and starch products; other food”, version 1.1, dated August 05 2009. (CPC 23)

Any comments to this PCR document may be given on the Global PCR Forum or directly to the PCR moderator during the period of validity. (CPC 23)

The PCR document is a living document. If relevant changes in the LCA methodology or in the technology for the product category occur, the document will be revised and any changes will be published on the international website: www.environdec.com. (CPC 23)

The EPD shall refer to a specific PCR version number. The production of new PCR versions does not affect the EPD certification period. (CPC 23)

2 DEFINITION OF THE PRODUCT GROUP

The products and services included in the product group shall be described. Examples on products included and not included may be given for assistance to the EPD developer.

The product group and CPC code shall be specified in the EPD. (CPC 23)

2.1 SPECIFICATION OF MANUFACTURING COMPANY

The PCR shall specify the information on the manufacturing/producing company that is required in the EPD, separated into mandatory and voluntary information.

Example:

Mandatory information:

- *Manufacturing company*
- *Manufacturing site*
- *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

The product group includes grain mill products (e.g. wheat, corn, rice), starches and starch products, animal feeding, bakery, sugar, cocoa, macaroni products and coffee and tea and spices. (CPC 23)

The PCR shall specify the information on the product required in the EPD.

3 FUNCTIONAL UNIT

The functional unit shall be one product unit including packaging from the shelf at the retailer, at the gate or at the market place. In the system boundaries secondary packaging also is included. The secondary packaging does not need to be stated in the functional unit. However it needs to be included within the system boundaries. (CPC 23)

If relevant the functional unit shall be defined at a more detailed CPC level.

The functional unit shall be declared in the EPD. The product weight shall be specified in the EPD. The environmental impact shall be given per functional unit (see paragraph 10 below). The volume is voluntary. (CPC 23)

4 CONTENT OF MATERIALS AND CHEMICAL SUBSTANCES

The ingredients shall be declared in the EPD at a minimum of 99% of one product unit, but also in line with the regional/local food legislation. (CPC 23) *Deviations from this requirement shall be justified at a more detailed CPC level.*

As an example, in Sweden the ingredients shall be declared in a decreasing order. Also, ingredients crucial for the consumer's choice need to be declared in weight or share of content.

5 UNITS AND QUANTITIES

SI units shall be used. A maximum of three value numbers shall be used when reporting LCA results. (CPC 23)

Other units may be regulated on a more detailed CPC level, if relevant.

6 GENERAL SYSTEM BOUNDARIES

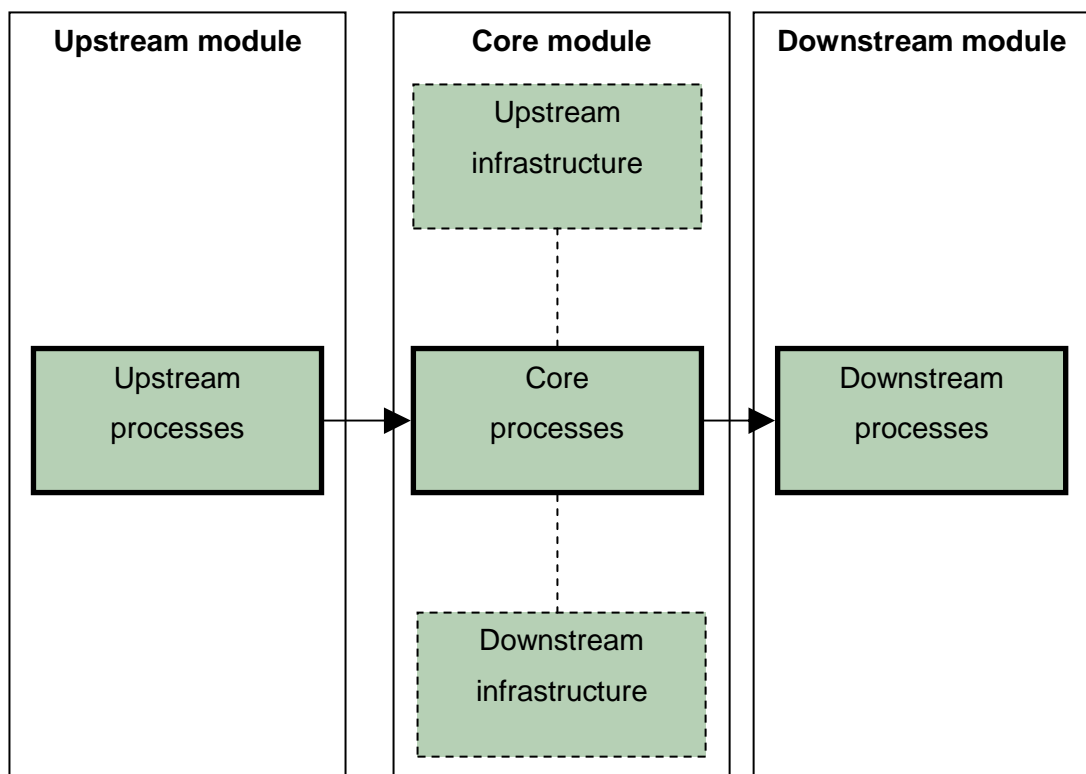


Figure 1. Presentation of Core Module (core process) and upstream and downstream processes. The figure illustrates that all relevant unit processes taking place in the upstream-, core- and downstream processes shall be included. To identify the relevance of including upstream and downstream infrastructure the commonly defined cut-off rules shall be applied

6.1 UPSTREAM PROCESSES

The upstream processes include the following inflow of raw materials and energy wares needed for the production of *the product*: (CPC 23)

- The agriculture. This includes e.g. air and water emissions and emissions from energy wares used in the agriculture as well as emissions of nitrous gases. The cradle for the agriculture is soil preparation and cultivation. (CPC 23)
- The production of seeds for the cultivation. (CPC 23)
- The production of *semiproducts* used in the core process (e.g. dough for bakery if the dough is produced by another company than the bakery company) at the farm(s) from the cradle. (CPC 23)
- Production of fertilizers used in the agriculture. (CPC 23)
- The production processes of energy wares used in agriculture, at the farm, and in manufacturing. (CPC 23)
- Production of other ingredients, spices, additives used in *the product*. (CPC 23)
- Production of auxiliary products used such as detergents for cleaning etc. (CPC 23)

6.2 CORE PROCESSES

The core processes include: (CPC 23)

- manufacturing of the final product (the mill or similar, filling and packing of the final product). (CPC 23)
- The manufacturing of the primary and secondary packaging is also included in the core process. (CPC 23)
- The core processes include external transportation of raw materials and energy wares to final manufacturing. (CPC 23)
- Transportation from final manufacturing to an average retailer/distribution platform within the geographical boundaries. (CPC 23)

6.3 DOWNSTREAM PROCESSES

The downstream processes include: (CPC 23)

- the customer or consumer use of the product. (CPC 23)
- recycling or handling of packaging waste/materials after use. (CPC 23)

In the EPD, the environmental performance associated with each of the three life-cycle stages above are reported separately. (CPC 23)

7 CORE MODULE

7.1 SYSTEM BOUNDARIES

7.1.1 TECHNICAL SYSTEM

The processes listed below for the production of the final product, including primary and secondary packaging, shall be included. The processes of the manufacturing sites for other product parts may be included. However, the production of the raw materials used for production of all product parts shall be included. (CPC 23)

Production processes which are mandatory to include:

- Energy use and emissions from the grain mill. (CPC 23)
- Production of energy wares. (CPC 23)
- *Other production processes maybe specified on a lower level.*

A minimum of 99% of the total weight of the declared product including packaging shall be included. (CPC 23)

Waste that is deposited in landfill shall not be included in the system boundaries. (CPC 22)

Waste that is deposited in landfill shall be declared as kg of waste (and kg of hazardous waste). (CPC 23)

The manufacturing of production equipment, buildings and other capital goods shall not be included. (CPC 23)

Business travel of personnel may be included. Travel to and from work by personnel should not be included. (CPC 23)

Recycling of secondary packaging may be included in a quantified way, however, in that case separate and not included in the total sum of the environmental impact of the core module.

Research and development activities may be included if relevant. This should be regulated on more detailed CPC levels.

7.1.2 GEOGRAPHICAL BOUNDARIES

The data for the core module shall be representative for the actual production processes and representative for the site/region where the respective process is taking place. (CPC 23)

7.1.3 TIME BOUNDARIES

The data shall be representative for the year/time frame for which the EPD is valid (maximum three years). (CPC 23)

7.1.4 BOUNDARIES TO NATURE

Boundaries to nature are defined as flows of material and energy resources from nature into the system. Emissions to air, water and soil cross the system boundary when they are emitted from or leaving the product system. (CPC 23)

7.1.5 BOUNDARIES TO OTHER PRODUCT LIFE CYCLES

If there is an inflow of recycled material to the production system in the production/manufacturing phase, the recycling process and the transportation from the recycling process to where the material is used shall be included. If there is an outflow of material to recycling, the transportation of the material to the recycling process shall be included. The material going to recycling is then an outflow from the production system. (CPC 23) (See annex A.7.1)

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 23)

7.3 ALLOCATION RULES

Allocation between different products and co-products shall be based on economical allocation. (CPC 23)

As an alternative, allocation rules may be given at a more detailed level. The choice of functional unit may provide guidance.

7.4 DATA QUALITY RULES

Specific data (often called site specific data) shall be used for the Core Module. (CPC 23)

Specific data are gathered from the sites where specific processes are carried out. (CPC 23)

The requirement for specific data also include actual product weights, amounts of raw materials used and amounts of waste etc. (CPC 23)

Specific data for the generation of electricity bought shall be used if possible. The data should be verifiable by invoice or similar. (CPC 23)

If specific data are not available or if the electricity bought is not specified for parts of the Core Module, the electricity mix used in those parts shall be approximated as the official electricity mix in the country of manufacture. The mix of energy shall be documented. (CPC 23)

8 UPSTREAM MODULE

8.1 SYSTEM BOUNDARIES

All elementary flows at resource extraction shall be included, except for the flows that fall under the general 1% cut off rule. (CPC 23)

For example, agriculture including also N₂O emissions shall be included, the production and use of fertilizers as well as production of all raw materials (see paragraph 6). (CPC 23)

8.2 DATA QUALITY RULES

Specific data shall be used for operations at the mills or other production sites, e.g. consumption of energy wares, waste generation etc. (CPC 23)

Selected generic data shall be used for other parts of the LCI , such as the life-cycles of additives or fertilizers, i.e. data from commonly available data sources such as commercial databases and free databases, describing specific raw materials or processes usually referring to the system under study or to other systems equivalent from a technical point of view. (CPC 23)

For allowing the use of selected generic data, a number of pre-set characteristics must be fulfilled and demonstrated: (CPC 23)

- *Representativeness of the geographical area* should adhere to “Data deriving from areas with the same legislative framework and the same energetic mix”,
- *Technological equivalence* adhere to “Data deriving from the same chemical and physical processes or at least 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 nature* adhere to “Data shall report all the quantitative information (resources, solid, liquid, gaseous emissions; etc.) necessary for the EPD”, and
- *Boundaries towards technical systems* adhere to “The boundaries of the considered life cycle stage shall be equivalent”.

Recommendations for certain databases for selected generic data which describe material flows connected to a number of input materials may also be used. If recommendations are given to use such selected generic data, such data sources shall be listed in a table in the PCR document.

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. (CPC 23)

8.4 OTHER CALCULATION RULES

These shall be given at a more detailed level, e.g. defining default calculation rules for farming.

9 DOWNSTREAM MODULE

Distribution scenarios shall be defined at a more detailed CPC level. Specific distribution (e.g. a weighted average distribution mode and route) may be included. Also, an average retailer may be included.

9.1 USE PHASE SCENARIO

Use phase scenarios shall be defined in PCR for more detailed product CPC levels for product categories where there is an environmental impact from the use phase (e.g. for cooking).

9.2 RECYCLING DECLARATION AND WASTE TREATMENT

Recommendations for recycling of packaging materials shall be given, as well as recommendations for other waste treatment of product parts if relevant. The potential environmental impact and benefit of recycling and waste treatment shall be presented in the EPD.

10 ENVIRONMENTAL PERFORMANCE RELATED INFORMATION

10.1 USE OF RESOURCES

The consumption of the following natural resources and resources per functional unit shall be reported in the EPD, divided into core, upstream and, if relevant, downstream module. (CPC 23)

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)
- Water use
- Electricity consumption (electricity consumption during manufacturing).

10.2 POTENTIAL ENVIRONMENTAL IMPACT

The environmental impact per functional unit for the following environmental impact categories shall be reported in the EPD, divided into core, upstream and, if relevant, downstream module: (CPC 23)

- The emissions of greenhouse gases (expressed in global warming potential, GWP, in 100 year perspective).
- Emission of ozone-depleting gases (expressed as the sum of ozone-depleting potential in CFC 11-equivalents, 20 years).
- Emission of acidification gases (expressed as the sum of acidification potential expressed in SO₂- equivalents).

- Emissions of gases that contribute to the creation of ground level ozone (expressed as the sum of ozone-creating potential, ethene-equivalents).
- Emission of substances to water contributing to oxygen depletion (expressed as PO₄³⁻-equivalents).

The tables from General Programme Instructions, Annex B shall be used. (CPC 23)

10.3 OTHER INDICATORS

The following indicators shall be reported in the EPD, also per functional unit and divided into the two or three modules: (CPC 23)

- Material subject for recycling
- Hazardous waste, kg (*as defined by regional directives*)
- Other waste, kg
- Toxic emissions: *to be decided in more detailed PCRs*

10.4 ADDITIONAL ENVIRONMENTAL INFORMATION

The additional environmental information shall be specified at a more detailed CPC level. , e.g. field of application, impact on health, technical life length, maintenance, the final use of product, fire risks, risks at fire etc.

11 CONTENT OF THE EPD (CPC 23)

The requirements in this chapter are mandatory for all PCRs within CPC Division 23.

11.1 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

11.2 PRODUCT RELATED INFORMATION

11.2.1 SPECIFICATION OF THE PRODUCTION COMPANY

See 2.1

11.2.2 SPECIFICATION OF THE PRODUCT

See 2.2

11.2.3 FUNCTIONAL UNIT

See 3

11.2.4 CONTENT OF MATERIALS AND CHEMICAL SUBSTANCES

See 4

11.2.5 COMPARISONS OF EPDS WITHIN THIS PRODUCT CATEGORY

To be able to compare EPDs within this product category, they have to be based on this particular PCR. The user of the EPD information should be made aware of this by the inclusion of this statement in the EPD:

“EPDs from different programmes may not be comparable”

11.2.6 VALIDITY OF THE EPD

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

11.3 ENVIRONMENTAL PERFORMANCE-RELATED INFORMATION

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

Upstream module, Core module and downstream module shall be reported separately for the resource use, potential environmental impact and other indicators such as waste.

11.3.2 USE OF RESOURCES

In this category the consumption of natural resources and resources per functional unit shall be reported.

See 10.1

11.4 POTENTIAL ENVIRONMENTAL IMPACT

In this category the potential environmental impact per functional unit shall be reported.

See 10.2

11.4.1 OTHER INDICATORS

In this category relevant indicators shall be reported per functional unit.

See 10.3

11.4.2 ADDITIONAL ENVIRONMENTAL INFORMATION

See 10.4

11.5 DIFFERENCES VERSUS PREVIOUS VERSIONS OF THE EPD

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

11.6 VERIFICATION

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

PCR review conducted by:	<i>Name and organization of the chair, and information on how to contact the chair through the programme operator</i>
Independent verification of the declaration and data, according to ISO 14025:	<i>Internal (EPD process certificate) or external, if external name of the the third party verifier</i>
Accredited or approved by (if relevant):	<i>Name of the organisation</i>

11.7 REFERENCES

The EPD shall, if relevant, refer to:

- the underlying LCA,
- the PCRs used,
- other documents that verify and complement the EPD,
- instruction for recycling,
- programme instructions.

12 VALIDITY OF THE EPD

If changes in any of the environmental impacts are larger than $\pm 5\%$ the EPD shall be adjusted. (CPC 23)

Regardless, the EPD shall be reviewed every three years. (CPC 23)

13 CHANGES IN THIS DOCUMENT

VERSION 1.0, 2008-11-01

Original version.

VERSION 1.1,

Updated figure 1.

Chapter 7.3 changed to economic allocation.

Chapter 13 added.

