

UN CPC 322
BOOKS, IN PRINT

2011:24
VERSION 1.02



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GENERAL INTRODUCTION

This is a document developed in the framework of the International EPD® System (www.environdec.com). The International EPD® System is a system of environmental declarations 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*

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

In the case of building products 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*) are also used as underlying standards, if relevant. The compliance with these standards shall be defined in each PCR.

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.

The principle programme elements concerning the Product Category Rules (PCR) included in International EPD® System are presented below. More information is available in the General Programme Instructions.

PURPOSE	ELEMENT IDENTIFICATION AND PRINCIPAL APPROACH
Complying with principles set in ISO 14025 on modularity and comparability	1. "Book-keeping LCA approach" (attributorial 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"

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.

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1 GENERAL INFORMATION

Name:	Books, in print
Programme operator:	The International EPD® System, www.environdec.com . E-mail: info@environdec.com
Date:	Version 1.02: 2013-10-24 (Version 1.0: 2011-12-21)
Registration no:	2011:24
This PCR was prepared by:	Life+ Ecoedicion Office Environmental Department. Junta de Andalucia
Appointed PCR moderator:	Mónica de la Cruz, monicadelacruz@ecoedicion.eu
Open consultation period:	2011-04-28 until 2011-06-09
Valid within the following geographical representativeness:	Global
Valid until:	2014-12-21
More information on this PCR's website:	http://environdec.com/en/Product-Category-Rules/Detail/?Pcr=7927 

This document provides Product Category Rules (PCR) for the assessment of the environmental performance of UN CPC 322 (Books, in print) and the declaration of this performance by an EPD.

This PCR is based on the requirements and guidelines given in PCR Basic Module, CPC Division 32: "Pulp, paper and paper products; printed matter and related articles", version 1.0, dated November 30, 2010.

This PCR document is publically available on www.environdec.com. 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 website.

Any comments to this PCR document may be given on the PCR Forum on www.environdec.com or directly to the PCR moderator during the period of validity. The PCR Moderator should initiate a revision process before the validity time expires to give due time for announcing and collecting comments.

EPDs shall be based on the latest version of the PCR, and refer to the version number and date of the PCR used. The production of new PCR versions does not affect the certification period of EPDs that are already published.

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2 DEFINITION OF THE PRODUCT GROUP

The product group covered by this PCR is “Books, in print” as defined in the UN CPC system. This CPC Group includes the following underlying CPC Classes:

- **Group: 322 – Books, in print**
 - 3221 – Educational textbooks, in print
 - 3222 – General reference books, in print
 - 3223 – Directories, in print
 - 3229 – Other books, in print

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

2.1 SPECIFICATION OF MANUFACTURING COMPANY

The EPD shall include the following information about the printing office (mandatory information):

- Name of the company
- Information on environmental management system
- Production site(s)
- Issuer and contacts

It is voluntary to include other information about the printing office, such as:

- Specific aspects regarding the production
- Environmental policy
- Company logotype

2.2 SPECIFICATION OF THE PRODUCT

The EPD shall include a description of the product:

- Weight of the product
- Number of pages
- Size of the page (according to ISO 216 code: A0, A1, A2, ... if possible)
- Kind of paper (virgin fibre paper, recycled paper, coated, uncoated...)
- Environmental product certifications, if any. (PCF, TCF, FSC...)
- Grammage of the paper (weight per unit area, e.g. g/m²)
- Type of book binding (hardcover, soft cover,...; dust jacket., if relevant)
- Used printing process (offset, CTP, digital printing...)
- Print run
- Number of used inks
- Type of ink (acrylic based, aqueous based...)

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Also it shall be included its intended use and its classification number according to the UN CPC classification system (<http://unstats.un.org>).

- Section: 3 – Other transportable goods, except metal products, machinery and equipment
 - Division: 32 – Pulp, paper and paper products; printed matter and related articles
 - Group: 322 – Books, in print

3 FUNCTIONAL UNIT

The functional unit (F.U.) shall be a 100-page book with a page size of 24x17 cm.

The printed box is 21.25 x14. 25 cm²; so the printed surface of the 100 pages will be 3 m² using Times New Roman font, size 10 points and a spacing of 12 points. This means an average of 4,000 characters per page and 400.000 characters per 100-page book.

Printed surface means the box containing the information (text and images) multiplied by the number of pages in the book. The box includes page numbering, headers and footers, if relevant.

The functional unit shall be declared in the EPD. The environmental impact shall be given per functional unit.

4 CONTENT DECLARATION

The EPD shall include a content declaration of the product covering relevant materials and substances. The gross weight of material shall be declared in the EPD at a minimum of 99% of one product unit.

5 UNITS AND QUANTITIES

The International System of Units (SI units) shall be used. A maximum of three significant digits shall be used when reporting LCA results. For energy, the preferred units are:

- kWh (kWh) for electricity
- MJ (GJ) for fuels

For power, the preferred units are:

- kW (MW)

6 GENERAL SYSTEM BOUNDARIES

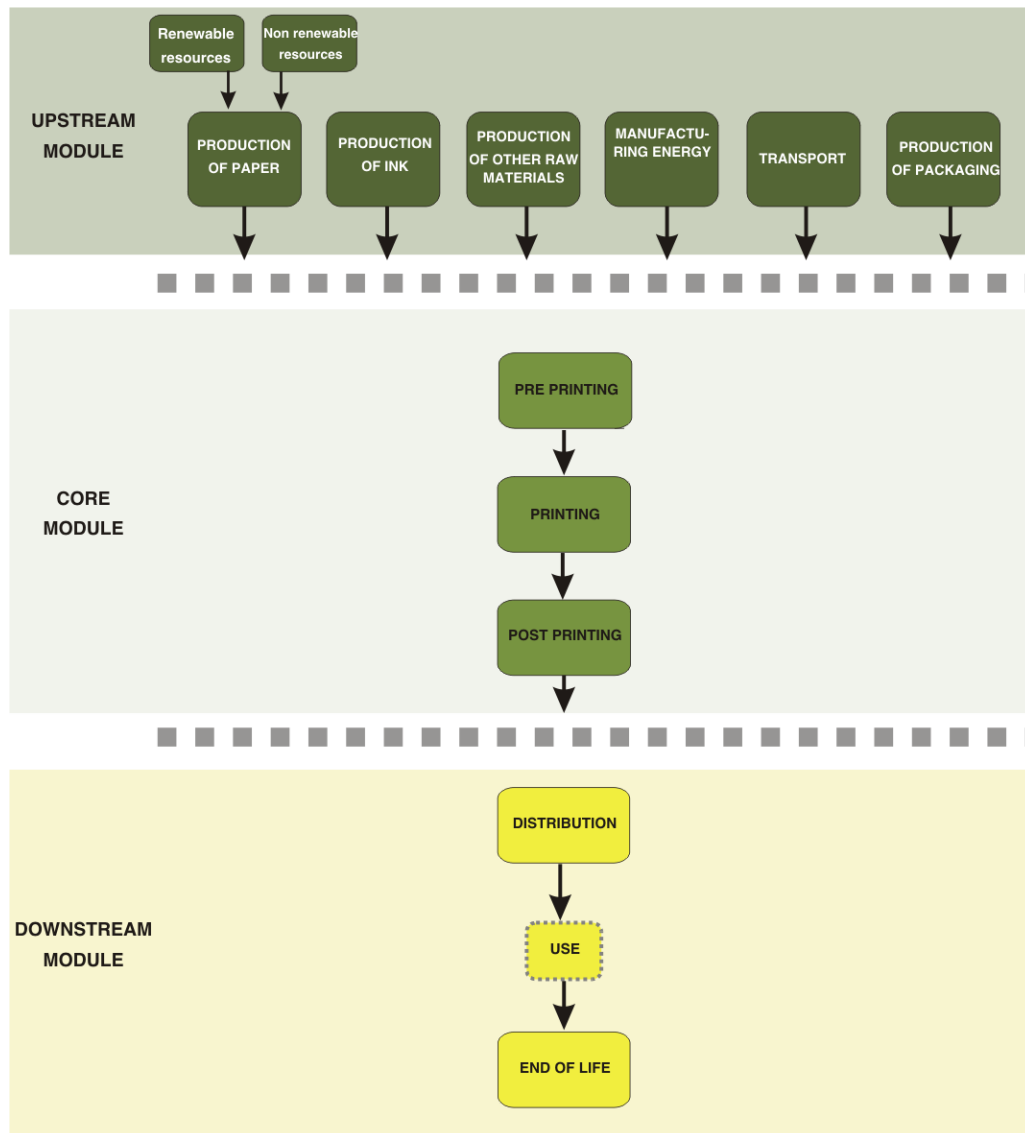


Figure 1 Illustration of the upstream, core and downstream modules and processes.

6.1 UPSTREAM PROCESSES

The upstream processes include the following inflow of raw material and energy wares needed for the manufacture of the book in print:

- Forestry. The included activities are seedling production, silviculture, logging (thinning-final felling and extraction of timber), internal transports and new seedling production. Also production of fertilisers used in the forest.
- Production processes of the energy wares used in forestry and in manufacturing.
- Production of biopolymers.
- Production of paper:

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- Production of recycled paper.
- Production of fossil plastics
- Production of minerals.
- Production of chemicals.
- Production of printing ink.
- Production of other raw materials (e.g. aluminium sheets...)
- Production of transport packaging
- Used energy in raw materials manufacturing.

6.2 CORE PROCESSES

The core processes include:

- Transport of raw materials and packaging to manufacturing centre
- Pre-printing processes:
- Energy ware used in design and files preparation processes
- Preparation of printing forms, if applies.
- Production of printing proofs.
- Waste management.
- Printing processes:
- Production processes.
- Waste management.
- Post printing processes:
- Binding book
- Packaging for distribution
- Waste management
- Transport of materials to post printing centre, if relevant.

6.3 DOWNSTREAM PROCESSES

The downstream processes include:

- Transport of product from production centre (printing office) to distribution platform.
- Transport of product from distribution platform/s to sales centre.
- Use of product by consumer, if relevant.
- End of life. Management of packaging waste and product waste

7 CORE MODULE

7.1 SYSTEM BOUNDARIES

7.1.1 TECHNICAL SYSTEM

The processes listed in Section 6.2 for the production of the final product shall be included. Manufacturing processes not listed may be included. However, the production of the raw materials used for production of all ingredients shall be included in the upstream module.

- A minimum of 99% of the total weight of the declared product including packaging shall be included.
- The manufacturing of production equipment, buildings and other capital goods shall not be included.
- The paper waste management (i.e. the cuttings from postprinting) shall be included.
- Business travel of personnel should not be included. Travel to and from work by personnel should not be included.
- Research and development activities may be included if relevant.
- The printing systems (e.g. offset printing, CTP printing, digital printing...) shall be pointed at the processes of the core module.

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.

7.1.3 TIME BOUNDARIES

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

When using data specific to one year, it is important to ensure that this year is representative of the converting operation. By comparing the latest data with a three year average, any data points that are not representative can be identified and corrected.

All data may be a maximum of 4 years old.

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.

7.1.5 BOUNDARIES TO OTHER PRODUCT LIFE CYCLES

If there is an inflow of recycled paper or other 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 a sorting facility/recycling process shall be included. The material intended for recycling is then an outflow from the production system.

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.

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7.3 ALLOCATION RULES

Allocation between different products and co-products shall be based on mass allocation. Alternatively, allocation rules can be based on economical issues.

Allocation for energy consumption can be based on the technical features (e.g. power capacity) of the machineries used for the productive processes.

7.4 DATA QUALITY RULES

Specific data (often called site specific data), gathered from the printing offices, shall be used for the core module. The requirement for specific data also includes actual product weights, amounts of raw materials used and amounts of waste, etc. Specific data for the generation of electricity bought shall be used if possible. The data should be verifiable by invoice or similar.

If specific data are not available or if the purchased electricity 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 printing. The mix of electricity shall be documented.

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.

8.2 DATA QUALITY RULES

Specific data is recommended to use, if possible, for the following activities in forestry:

- Silviculture (cut over clearing, regeneration, cleaning and fertilisation)
- Logging (thinning/final felling and extraction of timber)

If relevant, data may be calculated as an average of multiple years. For activities taking place more than five years in the past or if data is not available, non-specific data from databases or literature may be used and documented.

Site-specific and selected generic data shall be used for other parts of the LCI, 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.

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

- 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.

9 DOWNSTREAM MODULE

9.1 DISTRIBUTION SCENARIO (MANDATORY)

Specific distribution data (e.g. a weighted average distribution mode and route) may be included. Also, an average retailer may be included.

The following processes shall be included:

- Transport from manufacturing site to distribution platform.
- Transport from distribution platform to sales centre.
- Transport due to returns from sales centre to distribution platform

Data can be provided in the EPD according to the average transport scenario inside the production country.

9.2 USE PHASE SCENARIO (OPTIONAL)

If the Use Phase is taken into account, the following processes shall be included:

- Movement of the consumer to the point of sale, such as transport by private car, public transport, ...
- Energy consumption due to the storage at libraries, bookstores, dwellings, ...

9.3 RECYCLING DECLARATION AND WASTE MANAGEMENT SCENARIOS (OPTIONAL)

Waste management of transport packaging shall be included in the downstream module, based on scenarios for the relevant market.

10 ENVIRONMENTAL PERFORMANCE-RELATED INFORMATION

10.1 USE OF RESOURCES

The consumption of natural resources and resources per functional unit shall be reported in the EPD. 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 (electricity consumption during manufacturing)

Resources which contribute for 5% or more should be listed for each category.

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:

- Emissions and removals of greenhouse gases (expressed in global warming potential, GWP, in 100 year perspective).
- Emissions of ozone-depleting gases (expressed as the sum of ozone-depleting potential in CFC-11-equivalents, 20 years).
- Emissions 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).
- Emissions of substances to water contributing to oxygen depletion (expressed as PO₄³⁻-equivalents).

The tables from General Programme Instructions, Annex B: Conversion and characterisation factors shall be used.

If included, net sequestration of biogenic carbon dioxide (CO₂) at forestry should always be presented separately from fossil CO₂ and other greenhouse gases (expressed in global warming potential, GWP, in a 100 year perspective).

10.3 OTHER INDICATORS

The following indicators shall also be reported in the EPD per functional unit:

- Material subject for recycling. Unit: kg.
- Hazardous waste (as defined by regional directives). Unit: kg.
- Other waste. Unit: kg
- Emissions of toxic substances. Unit: g.

11 CONTENT OF THE EPD[®]

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 the EPD if deviating from an international coverage
- 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 MANUFACTURING COMPANY

See Section 2.1.

11.2.2 SPECIFICATION OF THE PRODUCT

See Section 2.2.

11.2.3 FUNCTIONAL UNIT

See Section 3.

11.2.4 CONTENT DECLARATION

See Section 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”

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11.2.6 VALIDITY OF THE EPD

The geographical area and the time during which the EPD is valid 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 potential environmental impact.

11.3.2 USE OF RESOURCES

In this category the consumption of natural resources and resources per functional unit shall be reported
See Section 10.1.

11.3.3 POTENTIAL ENVIRONMENTAL IMPACT

In this category the potential environmental impact per functional unit shall be reported.
See Section 10.2.

11.3.4 OTHER INDICATORS

In this category relevant indicators shall be reported per functional unit.
See Section 10.3.

11.4 DIFFERENCES VERSUS PREVIOUS VERSIONS OF THE EPD

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

11.5 VERIFICATION

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

Product Category Rules (PCR) review was conducted by: <i>The Technical Committee of the International EPD® System. Chair: Massimo Marino</i> Contact via info@environdec.com .
Independent verification of the declaration and data, according to ISO 14025:2006: <input type="checkbox"/> EPD process certification <input type="checkbox"/> EPD verification
Third party verifier: <i>Name and contact information</i>
Accredited or approved by: <i>Name of the accreditation body. For individual verifiers: "The International EPD® System"</i>

11.6 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
- Sources of additional information
- Methodology for calculations of net sequestration of biogenic CO₂

12 VALIDITY OF THE EPD

If changes in any of the environmental impacts are larger than $\pm 5\%$ the EPD shall be adjusted. Regardless, the EPD shall be reviewed every three years.

13 CHANGES IN THIS DOCUMENT

VERSION 1.0, 2011-12-21

Original version

VERSION 1.01, 2013-07-17

- Minor editorial changes
- Use of PCR template
- Removed references to “may be defined on a more detailed CPC level” as this PCR is intended to cover UN CPC 322 and its underlying classes.

VERSION 1.02, 2013-10-24

- Updated introductory chapter and general information to latest version.
- Changed name of content declaration
- Updated verification box

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