Basic Concepts on Ecodesign

Unit 11: Environmental Product Declaration. Communication

Carmen Fernández Fernández. c.fernandez@cetem.es

On completion of this unit a learner will:

–Know what an Environmental Product Declaration is and its main characteristics and minimum content.
–Know what a Product Category Rule is and its use.

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11.1 What is an Environmental Product Declaration?

An Environmental Product Declaration (EPD) is a standardised document or report which provides quantified and verifiable data on the environmental performance of a product, material or service.

An EPD is regulated with the standard ISO 14025[1], according to which a Type III environmental declaration is:

"An environmental declaration providing quantified environmental data using parameters and, where relevant, additional environmental information". Defining "environmental declaration" as the expression of a product or service aspects.

The main difference between a Type III EPD Eco-label and the rest of Type I Eco-labels and Type II Green Claims is that an EPD defines neither environmental requirements nor minimums to meet, but displays the results of a LCA to provide data on the environmental behaviour of a product.

"An Environmental Product Declaration is a document which displays the results of a Life Cycle Assessment "

A product labelled with an EPD is not more environmentally friendly than another one without it, since the EPD objective is to inform about the environmental behaviour of a product and allow it to be compared with similar products.

Type III environmental declaration objectives:

- To provide data based on the LCA and additional data of environmental aspects of a product. It allows to assess environmental impacts along the entire LCA of a product.
- To help buyers and users to compare products with actual data: facilitate objective, comparable and credible communication of the environmental performance of products.
- To promote environmental performance improvement.

[1] ISO 14025:2006. Environmental labels and declarations. Type III environmental declarations. Principles and procedures.

An EPD must be carried out according to standard ISO 14025[2] and the required LCA according to standards ISO 14040[3] and ISO 14044[4]. The EPD must be verified by an independent third party to the LCA study. The term "third party" does not necessarily imply the involvement of a certification body.

Apart from the abovementioned standards, the European Commission Joint Research Centre launched an initiative 2013-2016 "Product Environmental Footprint Guide & Pilots" to establish a common methodology at a European level for the calculation and communication of the Product Environmental Footprint (PEF). In the framework of this initiative, concrete rules which affect different groups of products (PEFCR, Product Environmental Footprint Category Rules) are developed and piloted.

There is also a possibility for creating sectoral EPD when a concrete sector shows interest in promoting products.

Sectoral EPD:

- Sectoral EPD shows the "average" behaviour of a certain product and consider "average" environmental data of the product's life cycle provided by companies in representation of the specific sector which seeks to be verified.
- Specific details from each company are not published, which may be a disadvantage since no environmental profile of specific products is displayed, but an average of the claimed sector. Sectorial EPD are worse rated than a specific EPD of a certain product.
- The involvement of a significant and representative sample of companies is needed. The amount of data availability and collection must be enough to meet the requirements.
- It may be possible that a company is damaged by the results stated in the EPD, since the LCA study and the EPD drafting uses "average" information.

11.2 Development and Verification of an EPD

For the development of an EPD, certain stages must be followed according to the specified standards described in the 11.1 paragraph:

[2] ISO 14025:2006. Environmental labels and declarations. Type III environmental declarations. Principles and procedures.
[3] ISO 14040:2006. Environmental management. Life cycle assessment. Principles and framework.
[4] ISO 14044:2006. Environmental management. Life cycle assessment. Requirements and guidelines.

- For the LCA: ISO 14040 and 14044 and what is described in the standard ISO 14025 for the development of an EPD.
- Additionally, specific requirements established in the referenced PCR for this group of products will be applied.

The steps for the development and verification of an EPD are displayed in the following table:

Stage	Description
1	VERIFICATION OF EXISTENCE OF A REFERENCE PCR
2	DEVELOPMENT OF THE LCA
3	DRAFTING OF THE EPD
4	VERIFICATION AUDIT OF THE EPD

11.2.1 Stage 1. Verification of Existence of a Reference PCR

PCR (Product Category Rules) are documents which gather minimum necessary data to include in the LCA study, the impact methodology in use and the EPD content.

When the objective is to carry out an EPD, the first step to take is to check the existence of Product Category Rules.

More information about PCR may be found in subsection 11.3 of this unit.

11.2.2 Stage 2. Development of the LCA

The Life Cycle Analysis (LCA) is studied in Unit 4 of this course. A brief summary of the stages of a LCA is displayed below as a reminder.

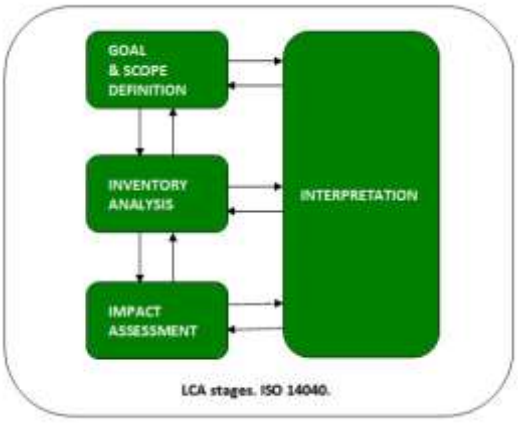

Figure 1. Life cycle assessment stages chart

1. GOAL AND SCOPE DEFINITION

   - Definition of objectives, scope, system boundaries and functional unit of the LCA study.

2. INVENTORY ANALYSIS

   - Elaboration of the inventory of the system's life cycle.

3. ENVIRONMENTAL IMPACT ASSESSMENT

   - The inventory is translated into indicators of environmental impact.

4. INTERPRETATION

   - Interpretation of results.
   - Drafting of the LCA report.

11.2.3 Stage 3. Drafting of the EPD

According to standard ISO 14025[5], a type III environmental declaration of a product category must be carried out under a specific format and include a series of parameters as it is showed in the Product Category Rules (PCR) provided by the programme manager.

The EPD content may generally consist of:

- Identification and description of the organisation that drafts the declaration.
- Product description and identification (e.g. model number).
- Programme number, programme manager address and, if relevant, logotype and website.
- PCR ID.
- Date of issue and period of validity.
- LCA, LCI data or information modules.
- Additional environmental data.
- Declaration content including materials and substances to declare, and those that may adversely affect human health or the environment throughout the entirety of the LCA. On proper justification, such requirement does not apply to private information related to intellectual property rights or similar legal restrictions.
- Data on the not considered stages.

[5] ISO 14025:2006. Labels and environmental declarations. Type III environmental declarations. Principles and procedures.

- Mention that different programmes environmental declarations may not be comparable.
- Information to locate the explanatory material.
- Information of the PCR reviewer and the PCR.
- Information of the verifier of the third party when communication goes between business and consumer. If communication occurs between businesses, this is optional.

The PCR applied must be checked for requirements of the EPD contents. In that case, the rules of the PCR must be followed.

Practical example: product EPD content:

Section of "general information":	- Name and address of the manufacturer. - Used PCR. - Date of issue of the declaration and period of validity: 5 years.
Section: "product description":	- Product description, use and technical characteristics. - Product identification by name (including code and product). - Product main components and/or materials description.
Section: "data for calculation of LCA":	- Reference functional unit and mandatory stages of LCA. - Product category rules. - Assigned geographic coverage. - Reference shelf life.
Section: "life cycle stages":	- Simple flow chart of processes included in LCA. - Flow chart of the manufacturing process. - Description of the four stages of the product's life cycle.
Section: "LCA results"	- Indication of the used programme to calculate the results included in the following pages in table format.

11.2.4 Stage 4. Verification audit of the EPD

The verification of an EPD, as already mentioned, must be carried out by an independent and recognised third party, i.e., a body accredited by the corresponding Verification Programme Administrator.

Previous to the verification audit by a third party, the organisation must issue a report summarising the declared product. This will provide the verifier with systematic and thorough data on the fulfilment of the "LCA study documents" and the "additional data".

This report of "Verification of an EPD" will be subject to confidentiality requirements established, and not part of the public communication.

Verification consists generally of two steps:

- Documental review.
- Verification audit.

Documental review

Objective: determine compliance with the reference standards and PCR requirements of the reference applicable.

This review may be distance-performed. The organisation sends the documents to the audit team for its review and the team issues a pre-verification report.

Documental review of a verification of an EPD

- Check the structure and layout of the data included in the LCA and EPD.
- Data assessment that explains input data and data included in the LCA.

The audit team issues a pre-verification report, in which they comment or indicate whether there are non-conformities.

Verification audit

Objective: assess "in situ" the quality, traceability, veracity and reliability of the LCA and EPD data, as well as the concurrence with the requirements of the reference PCR.

The audit team, most commonly, visits the production facilities to check the production flows and to prove the data provided by the organisation.

Once the audit has ended and the non-conformities -which may have been previously found- have been solved, the audit team issues a report of final verification, which is sent to a verification programme, where they proceed to register and issue the certificate.

Period of validity and update of an already verified EPD

- The period of validity of an EPD once verified may vary from one verification programme to another. Normally the period lasts between 3 and 5 years. After that period, the EPD must be verified once again.
- If changes occur in the product or production processes during the period of validity, the information must be updated: LCA assessed, EPD and verified anew. The organisation is obliged to communicate the changes to the EPD programme administrator to verify the updated EPD, and the verification certificate.
- Although the certification period of validity is still legitimate, some verification programmes are implementing mandatory procedures and requirements to carry out a brief verification annually and to ensure that the declared data is still valid.

11.3 Product Category Rules (PCR)

11.3.1 General Picture

Some EPD verification programmes specify, for different groups of products, the most detailed way to carry out a LCA and an EPD, granting the use of a symbol added to the report, which works as an environmental certificate.

Such programmes are created according to the requirements established by the standard ISO 14025[6]. Working rules and procedures are developed and written down in documents called Product Category Rules (PCR). ISO 14027:2017[7] is another standard

[6] ISO 14025:2006. Environmental labels and declarations. Type III envieronmental declarations. Principles and procedures.
[7] ISO/TS 14027:2017. Environmental labels and declarations. Development of product category rules.

which provides the principles, requirements and guidelines for the development of product category rules.

PCR gather minimum necessary data to include in the LCA study, the impact methodology in use and the EPD content.

To verify an EPD, a PCR applicable to the product is needed in the first place. If there is not such a PCR, the verification programme could be developed in conjunction with the manufacturer and interested third parties.

The existence of such rules (PCR) allows comparison between different products based on the established requirements.

When an EPD is verified, the auditor of the certification body reviews that PCR application is satisfied. LCA study and EPD are developed and drafted to fulfil the reference standard, PCR.

11.3.2 Developer bodies of PCR for EDP

PCR are developed by bodies to set common rules in the market for the elaboration and drafting of EPD.

Every verification programme provides its own PCRs. This kind of systems are suitable for data exchange between companies and their clients, not for the standard final consumer, since the information beared in the EPD, in its own nature, is very technique and detailed.

The following table shows the most known bodies.

Label	Definition
EPD	**"The international EPD Consortium"** is the Sweden-based system administrator. It was created with the aim of becoming the international system by default for development and certifying an EPD. Therefore, the EPD format is applicable worldwide. http://www.environdec.com
ECO LEAF 製品環境情報 / JEMAI	Founded by **"The Japan Environmental Management Association for Industry-JEMAI"**, this label consists of three different categories: - Product Environmental Aspect Declaration (PEAD). Fundamental product information including a summary of its life cycle environmental impacts. - Product Environmental Information Data Sheet (PEIDS). Data expressed in numbers about every life cycle environmental impact. - Product Data Sheet. Database for the collecting of LCA results about PEIDS. http://www.jemai.or.jp/english/ecoleaf/
EDP	Managed by the **"Korean Ecoproducts institute KOEKO" and the "Korean Ministry of Environment"**. This Korean programme has the objective of providing comparable, transparent and accurate environmental data about products. http://www.edp.or.kr
epd®	The Confederation of Norwegian Enterprise (NHO) established a programme for the development of EPD IN 2000. The system is nowadays managed by the **"Norwegian EPD Foundation"**. Norway collaborates with other Skandinavian countries for the development of EPD thanks to this confederation. http://epd-norge.no/
Institut Bauen und Umwelt e.V.	Managed by the German **"Institute Construction and Environment (IBU) e.V"**. It focuses on certifying construction products. For now, it provides the following PCR: building metals, PCR floor coverings, PCR glass Reinforcement mesh y PCR wood materials. http://bau-umwelt.de/hp481/Environmental-Product-Declarations-EPD.htm
dapc	**"Colegi d'aparelladors, arquitectes técnics i enginyers d'edificació de Barcelona"** is the system administrator with the Generalitat de Catalunya as support. They inform in an objective, verifiable and separate way about natural resources use (water, energy and renewable resources), discharges to air, water and land in the manufacturing process.
PEP ecopassport®	The **French association P.E.P.** develops internationally the Environmental declaration Programme PEP ecopassport® concerning electrical, electronic and HVAC (heating, ventilation, air-conditioning, regrigeration) products.

11.3.3 Content of a PCR

The content of a PCR is usually the following:

- Scope: detailed definition of the products within the scope.
- Functional unit: definition of functional unit of a LCA study.
- Boundaries of the system under study.

- Accepted cut-off criteria.
- Details on the chosen data to include and bear in mind in each stage of a product's life cycle.
- Selection of data to apply and use, compatible and accepted data sets for the study.
- Classification of environmental impact categories for displaying the results of the study.
- Other type of parameters and scenarios (use, end-of-life) to consider in the LCA study.
- Environmental data which must be depicted in the EPD.

11.3.4 Development of a PCR

Every EPD verification programme provides its own PCRs. It is possible that different verification programmes have PCRs for the same kind of products, and those PCRs may differ in the required parameters for the LCA (functional units, scopes, etc.). Content standards for these PCRs have arisen among different EPD verification programmes in order to achieve compatibility among PCR.

PCR development is carried out under internationally accepted methodology and based on an open, transparent and participatory process among:

- Firms and organisations in cooperation with other parties, as trade associations and organisations of interest.
- Bodies that collaborate with LCA/EPD experts in close collaboration with firms and professional associations and organisations of interest.
- Firms or individual organisations in case they present the necessary internal competition or decide to hire external experts in LCA/EPD. The audit team issues a pre-verification report, in which they comment or indicate whether there are non-conformities.

Stages for the validation of a PCR:

- Development of a proposal PCR by the declared technical committee.
- Consultation to interested parties to comment or discuss the proposed requirements, thus, ensuring a wide acceptation and later introduction of the PCR. Consultation in forums, meetings, etc.
- Completion of the PCR proposal by the team moderator and issuance of a report with the most important comments received, indicating the parties involved and how the information was handled.

- Final review of the PCR and formal validation by the corresponding Technical Committee.

11.3.5 Validity of a PCR document

A PCR document is valid for a specific period of time, usually five years.

When the PCR has expired, the document must be updated to be used again to generate new EPD or to register an update of an existing EPD with a prolonged validity. Before issuance of the update, the interested parties are consulted.

For example, the international EPD® system:

- Provides a data set for searching the available PCR documents inside the system framework, including those in a drafting stage, validated or subjected to review and update.
- Gives all interested parties the possibility to comment every development stage of the PCR during drafting -consultation and review and the update of documents.