

March 2015

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Why Life Cycle Assessment?

LCA provides the most relevant framework to assess the environmental impacts of products. Over the last three decades, life cycle methodologies for products and systems have become well established and now provide the basis for many environmental policies around the world.

The main advantages of this approach are that it covers the whole supply chain, no burden shifting between the chain stages, which different stakeholders can be responsible for, and the easy identification of hotspots wherever they exist within the supply chain. Nevertheless, some important questions remain in communicating the results more broadly:

- Are the results of different studies, performed by different stakeholders, with different software tools, comparable?
- Are the impact assessment methods mature and adapted to the task?
- Which data or model expresses best the system under investigation?
- Do the results of a life cycle assessment (impacts) truly express environmental needs?
- Does the public correctly understand and interpret life cycle results?

The motivation for continued improvement within the life cycle community is based on the need to respond to these questions. There is also a growing demand from regulators and from the public to have representative and easy to understand tools which will allow them to understand whether a product or a system is environmentally friendly - so called "green" - or not.

However, independent of how assessments are finally presented and used, a fundamental issue is whether the underlying data is of good quality and representative for the system boundary being assessed. Ensuring this for copper is one of the core tasks of the European Life Cycle Centre.

This progress sheet reports on the current data situation for copper, various methodological issues, market needs and regulatory developments.

Update on Copper Data

Historical review

The first edition of our life cycle data was published in 2005. It was based on production years 2000 to 2002 and was representative for EU15. The second

edition, based on production years 2005 to 2009, was published in 2012 and representative for EU25. This seven year gap was due mainly to the global financial crisis which impacted the competence centre's budget and the ability of the membership to provide the required data.

The 2012 peer reviewed publication contains the most recent data on copper semi-fabricated sheet, tube and wire. On request, it can be provided to third parties interested in performing a life cycle study on products or systems where copper plays a role. The same data are included in the Life Cycle Database of the European Commission ELCD¹

Name	Type	Location	Classification	Reference year	Valid until	LCI method principle
Copper sheet; 0.6 mm thickness	LCI result	EU-25	Processes / Production / Material / Metal production	2011	2020	Attributional
		EU-15		2000	2009	Attributional
EU-25		2011		2020	Attributional	
EU-15		2000		2009	Attributional	
Copper tube; diameter 15 mm, 1 mm thickness		EU-25		2011	2020	Attributional
		EU-15		2000	2009	Attributional
Copper wire; cross section 1 mm ²	EU-25	2011	2020	Attributional		
	EU-15	2000	2009	Attributional		

What is important to note is that the data provided is for products, not for cathode. Therefore, we are able to incorporate the significant life cycle benefits from the use of scrap in the different products.

Update status

To maintain a five year update frequency and, in particular, to ensure compliance with recent methodology developments, directives and standards, an update is underway. This started in 2014, will be completed in 2015, and will be based on industry production for 2012 to 2013.

The data collection is web based via a collection tool called SOFI, developed by our third party advisor THINKSTEP (formerly PE-International) in Stuttgart. This collection method is efficient, helps with data consistency between companies and facilitates contacts with the life cycle centre. Any changes (e.g. an improvement in the production process) can automatically be implemented in the database.

The collection based on 2012 to 2103 is now close to completion and presentation of the draft results is foreseen in September. Currently, the database contains data for sheet, tube and wire made from copper from cradle (mine) to gate (product). This update will include a few key alloys and/or the semis/products made from them.

¹ <http://ep1ca.jrc.ec.europa.eu/ELCD3/processSearch.xhtml>

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Environmental Product Declarations

One of the most dynamic fields of use for LCA data and communication is the building sector. Type III environmental product declarations, or EPDs, play a fundamental role in building assessments. They are based on LCA data covering all life cycle stages, from raw materials, through construction, demolition and, finally, recycling or waste disposal.

The EPD concept is highly relevant since it is based on a life cycle approach in accordance with well-established EN and ISO rules. Furthermore, the fact that most EPD programs are voluntary in nature and, to a large extent, driven by market acceptance and business involvement, further strengthens their usefulness for stakeholders who need to manage and report their environmental performance.

Today, EPD programs/certification bodies exist in many countries:

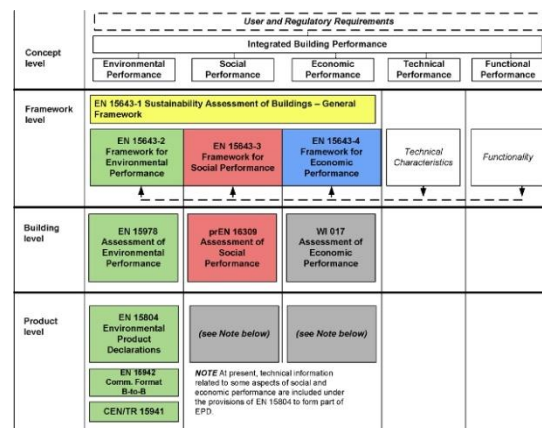
- Finland - RTS, Building Information Foundation
- France - AFNOR, French Standardisation Organisation, INIES
- Germany - German Building Materials Association (IBU)
- Japan - JEMAI, Japan Environmental Management Association for Industry
- The Netherlands - Milieu Relevante Product Informatie, MRPI
- Norway - NHO EPD programme
- Sweden - Environdec
- UK - Environmental Profiles for Construction Materials, Greenbooklive, BRE

Based on the standard ISO/DIS 21930, which provides general guidelines for EPDs, the above-mentioned national programs had, until recently, their own rules and standards. The EU therefore started a work program within CEN/TC 350 to provide a standardised voluntary approach. This covers the delivery of environmental information on construction products, guidelines on how to assess the environmental performance of buildings, and, more generally, the integrated performance of buildings within a single framework.

The work program took into account existing standards to develop:

- A set of standards for EPDs for building products and the development of a European Product Category Rule (PCR)
- A standard on the environmental performance of buildings
- A technical report describing processes and scenarios related to the building life cycle in order to complement the whole concept

The CEN-work program is shown here:

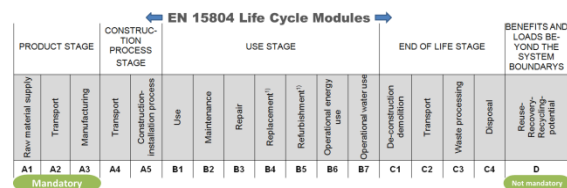


After many years of work, TC350² has been successful in delivering a set of standards on products as well as on the building level.

Copper is more affected by the product standards:

EN 15804 Sustainability of construction works - EPDs - core rules for the product category of construction products

This standard provides core product category rules for all construction products and services. It provides a structure to ensure that all EPDs for construction products, construction services and construction processes are derived, verified and presented in a harmonised way. Its modular structure makes it easy to use, as shown below.



² http://portailgroupe.afnor.fr/public_espacenormalisation/CENTC350/index.html

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The metals community was able to ensure that recycling is taken into account in "module D", which calculates the benefits of avoided burdens in accordance with the recycling content. The LCC supported this activity under the umbrella of Metals for Buildings (MFB³).

EN 15942 Sustainability of construction works - EPDs - communication format business-to-business

The standard is applicable to all construction products and services related to buildings and construction works. To ensure a common understanding, it specifies and describes the consistent format for business-to-business communication of the information defined in EN 15804.

CEN/TR 15941 Sustainability of construction works - EPDs - Methodology for selection and use of generic data

This Technical Report supports the development of EPDs. It assists in how to use generic data according to the core product category rules (EN 15804) during the preparation of EPD of construction products, processes and services in a consistent way. It also assists in the application of generic data in the environmental performance assessment of buildings according to EN 15978.

While many stakeholders, including the LCC, have been working hard to harmonise the approach on the building sector, the EU Commission started a new project, with a broader scope, aimed at harmonising all life cycle approaches for all products.

Product Environmental Footprint

What is PEF?

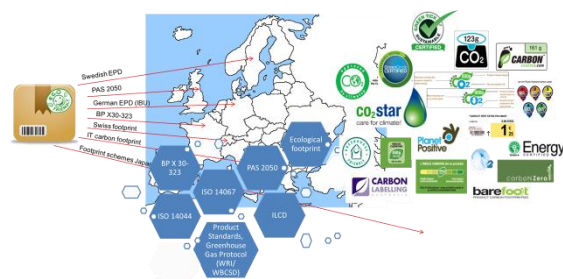
The EU Commission is currently developing a product environmental footprint (PEF) methodology which will provide specific rules on how to compare the relative environmental performance of different products.

The notion of "environmental footprint" relates to the more established term "carbon footprint" and denotes the various environmental impacts, or the aggregated environmental impact, of systems, instead of climate impact alone. For product

systems, "A Product Environmental Footprint is a measure of the absolute environmental impact(s) over the full life cycle of a product (good or service) in a specified application". Life cycle in this context denotes all value chain stages for making, using and disposing of a product over its full lifespan⁴.

Is PEF needed?

According to the EU Commission a huge number of claims and labels exist to characterise an environmentally friendly - so called "green" - product. Since all systems have their own methodology, consumers are unable to make informed decisions. With a harmonised approach one single green market can be achieved.



How is the metals community involved?

In an open consultation process, the JRC (Joint Research Centre) on behalf of the EU Commission, prepared a PEF Guideline document and proposed a voluntary, 3 year test period to all interested stakeholders worldwide.

The metals community, under the umbrella of Eurometaux, decided to take part in the test process with a project on metal sheet. The core goal is to ensure that the rules established will be relevant to metals. In addition, the copper community, represented by ECI, decided to take part in a second project on pipes for drinking water systems. This project was initiated by TEPPFA, the plastic pipe association.

Both projects are managed and supported by ECI HESD experts in Brussels and in the LCC.

A status will be covered in the next progress sheet.

³ <http://www.metalsforbuildings.eu/>

⁴ <http://www.pef-world-forum.org/about/product-environmental-footprint-faq/>

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