

# FAQs what is the difference between PEF and EPD?



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## Introduction

This document is intended to highlight the differences between EPD and PEF and the risk and benefits these pose to the timber industry.

The document contains:

- A glossary to remind the reader of the main terms used
- A brief summary of the differences and risks
- A more detailed discussion of the details of the scheme to provide a more technical background for the reader
- Presentation of Standards that cover the preparation stages of PEF and EPD

## Glossary

**Life Cycle Assessment (LCA)**, is a method of assessing the environmental impacts associated with some or all the stages of the life cycle of a product, process, or service. For an LCA to be valid it must be peer reviewed or verified and the results of which displayed in a scientific report, or now more commonly, as a carbon footprint or an EPD.

**An Environmental Product Declaration (EPD)** is an independently verified and registered document that communicates information about the life-cycle environmental impact of products in a transparent and comparable. The results displayed are based on an underlying LCA conducted following a set of rules for that product type (the Product Category Rules PCR).

**A Product Environmental Footprint (PEF)** is a new method for measuring sustainability performance currently being developed by the European Commission under their initiative called: “The Single Market for Green Products”. The results displayed are based on an underlying LCA conducted following a set of rules for that product type (the Product Environmental Footprint Category Rules PEFCR).

**Global Warming Potential (GWP)** of a “green-house gas” (GHG) indicates the amount of warming a gas causes over a given period of time (normally 100 years) compared to 1kg of CO<sub>2</sub> and presented in kgCO<sub>2</sub>e (where “e” refers to equivalents).

**Impact category or characterisation factors** is the name given to particular measurements of environmental impact. They include GWP, Acidification and Eutrophication potential as well as measurements of resource depletion.

## Summary

Both PEF and EPDs (and simple carbon footprints) are all based on LCAs, they are both intended to display the environmental impacts of a product and the calculations are performed in similar ways. Unfortunately, there are several subtle differences that result in the benefits of using wood being missed, or under-represented.

There are essentially three stages to the proposed PEF and the first two of them are equivalent to an EPD:

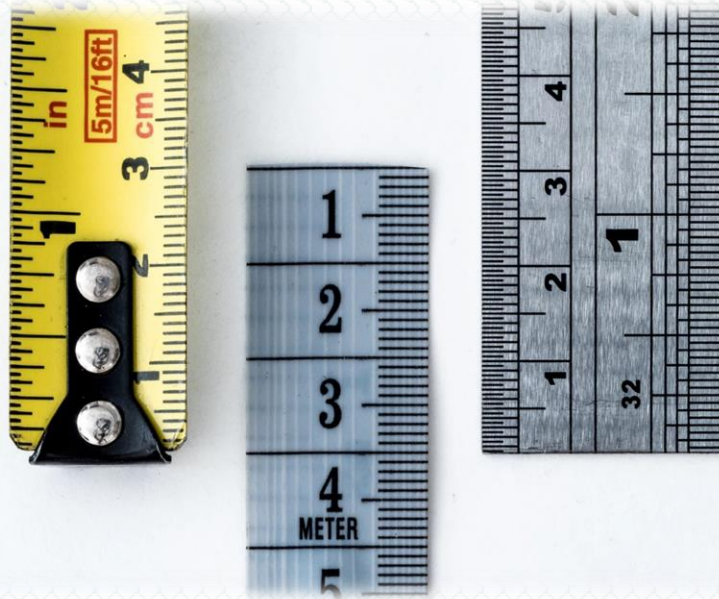
**1) The underlying LCA Calculations** - the LCA models needed and amount of work to do this is essentially the same;

**2) Reporting the results** - A published EPD is a roughly ten-page document presenting the LCA results and details of the product. In PEF a “Summary” is proposed to similar effect, but the results provided in PEF are greatly restricted and are governed by one set of assumptions e.g. one assumed recycling rate and that all biogenic carbon will be released at end of life;

**3) Additional manipulation of results and labelling** - EPDs do not require this stage but there are standards that can be followed to give an Environmental Label based on the LCA results, such as Nature Plus. This is proposed for PEF, and it requires the LCA results to be additionally normalised, weighted and then benchmarked against similar products in order to grade them. E.g. rated A-E or to pick out a best in class.

In general, there is a lack of confidence in many aspects of PEF, using untested impact indicators like water scarcity for example and oversimplified assumptions. This means that the results lack the detail required by many users of the data, such as an architect considering design options or for use in Building Information Modelling (BIM).

Additionally, each stage of the labelling process for PEF adds even greater uncertainty to the resulting single score.



*For example, the weighting given to the three of the most unreliable impact categories (Water scarcity, Abiotic depletion - elements and Abiotic depletion - fossil fuels), is more than is applied to  $GWP_{fossil}$ . In addition, zero weighting is applied to  $GWP_{biogenic}$ , which completely hides any benefit from carbon storage in timber.*

Given the enormity of the climate change emergency, to remove certain results from the view of the consumer seems somewhat irresponsible.

The very idea of these programmes is to incentivise using the lowest impacting product and so should greatly assist sales of timber, hence why it is so important for the timber industry to push for EPDs over PEF currently, unless it can be made more transparent.

The intention of this document is to explain some of the background and the specific differences between EPDs and PEF so that we are better informed on this important issue.

## Further Details and discussion

### 1) The underlying LCA Calculations (How is an LCA performed?)

A life Cycle Assessment is essentially a lot of calculations, that provide a list of environmental impacts that a product is responsible for. This is normally performed in a bespoke piece of software or on a spreadsheet. It examines how a product is made, covering aspects like the materials, transport and energy used and putting it into numbers. Once the process is quantified, then the LCA practitioner uses a database of “secondary data” to match up with this “Primary data”.

*For example: A Norwegian factory might use 8 kWh of electricity to produce a product (this might be an average figure for the whole factory divided by the number of products made in the same year), the LCA practitioner will consult a database to see what impact this electricity use might have. In this case it has an impact of 0.01 kgCO<sub>2</sub>e / kWh (very low as it uses lots of hydro), so the impact of the electricity to make the product contributes 0.08 kgCO<sub>2</sub>e to the carbon Footprint or Global Warming Potential (GWP). This will be added to the impacts from the materials and transport etc to create a total impact.*

The use phase may consider any materials or energy required to maintain the product (e.g. re-painting or replacement materials required while in use) and the way in which the product might be disposed or reused. Thus, the whole life cycle is assessed, but this is not always necessary in an LCA report. It is either up to the LCA practitioner to decide what to include, or if they are preparing a standardised assessment, such as a carbon footprint, an EPD or a PEF, it will be decided for them in the standards and rules they must follow.

Other impact categories (also known as Impact indicators) might also be considered such as Acidification or Ozone depletion Potential,

depending on the scope of the LCA, but they will be calculated in the same way using secondary data provided from a database, again these categories may be decided by the rules of a standardised assessment.

## 2) Reporting the results

Both PEF and EPD at this stage, are classed as **type III environmental declarations** and require the LCA practitioner to perform the LCA calculation and present them according to set rules. In accordance with ISO these rules must be developed by a Programme Operator.

EPDs have grown quite organically in various countries and have traditionally had quite notable differences in what was required and presented. An initiative called ECOplatform was formed to harmonise the different approaches and now there is also a new European standard to harmonise construction EPDs (EN15804).

Around the same time the idea of a single method to assess all products in Europe was developed by the European Commission called Product Environmental Footprints (PEF). This has subsequently been developed and trailed with various products, though none of the limited trials from the construction sector were completed. Despite this, a mandate was produced that instructed EN15804 to harmonise with the un-finished PEF methodology resulting in an amended standard, EN 15804:2012+A2:2019.



As such the results from a construction product EPD following EN 15804:2012+A2:2019 should in theory match those from a PEF of the same product. However, there are several differences:

- Only the totalled results from the whole life cycle are proposed to be shown in the PEF summary, whereas in construction EPD the impact of every stage is presented. This granularity is important for further calculations that could be performed in BIM systems or to assess alternative uses and recycling options.
- There is a ruling in PEF (which also had to be adopted in Construction EPDs) that assumes all biogenic carbon stored in a material will return to the atmosphere at some point, but will be accounted for at the end of life, regardless of whether or not it is likely to be recycled.
- Calculations showing the benefit of temporary storage of biogenic carbon over time are allowed in EPDs (not requested but not ruled out) they are not permitted in PEF.
- Many of the additional impact categories that had to be added to EN 15804:2012+A2:2019 to align with PEF carry disclaimers suggesting they should not be relied upon. This disclaimer is currently absent in PEF literature.
- A big difference is that along with the PEF summary the results can be made into a “Type I label” (rather than being left as a “Type III Environmental Declaration” like an EPD) this means the results can be further manipulated into a single score. These systems inevitably introduce bias due to:
  - 1) the normalisation method used to make all the different indicators into one common unit
  - 2) and when a weighting is applied, to promote what has been considered to be more important indicators.Although a “high” weighting is given to GWP were wood will score well, more weighting is given to the combined indicators that CEN state should not be compared.



## Standards involved with each declaration

Provided here is a table to display the specific standards required to complete the various stages of an EPD or PEF:

Component of declaration	Construction EPD	PEF	Match
<i>Underlying LCA</i>	Follows <b>ISO 14040</b> and <b>ISO 14044</b>	Follows <b>ISO 14040</b> and <b>ISO 14044</b>	<b>Yes</b>
<i>Product specific declaration standards (for type III declarations)</i>	<b>ISO 14020</b> (Environmental labels and declarations — General principles) and <b>ISO 14025</b> (Environmental labels and declarations — Type III environmental declarations — Principles and procedures)	<b>ISO 14020</b> (Environmental labels and declarations — General principles) and <b>ISO 14025</b> (Environmental labels and declarations — Type III environmental declarations — Principles and procedures)	<b>Yes</b>
<i>Does it have its own Specific Standard?</i>	<b>EN 15804: 2012+A2:2019</b> (Sustainability of construction works — Environmental product declarations — Core rules for the product category of construction products)	No (but in terms of construction products it in theory harmonised with <b>EN 15804: 2012+A2:2019</b> )	<b>No</b>
<i>Does it Follow a set of rules specific for each product type?</i>	Yes (Product Category Rules – a PCR)	Yes (Product Environmental Footprint Category Rules – a PEFCR)	<b>Yes</b> (but differences in display of results)
<i>Additional “Type I environmental labelling” (benchmarking and A-E type rating etc)</i>	Not currently required (but can be performed by an individual programme following <b>ISO 14024</b> ), CEN/TC 350 is however working on 3 further standards that would complement this sort of label: Business to Business communication (EN 15942) Business to Consumer benchmarking (No draft standard yet) and Data quality (taking over CEN/TR 15941)	Proposed to be implemented and will follow <b>ISO 14024</b> (Environmental labels and declarations — Type I environmental labelling — Principles and procedures)	<b>Potentially the same or similar</b>



#### About CEI-Bois:

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CEI-Bois represents 21 European and National organisations and is the body backing the interests of the whole industrial European wood sector: close to 180.000 companies generating an annual turnover of 142 billion euros and employing 1 million workers in the EU.

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