



Environmental Product Declarations (EPD) in openLCA

A short overview

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Why we integrated an EPD Editor in openLCA

In LCA there is no predetermined path to take for conducting a study and the practitioner has many options and decisions to take concerning for example the scope, data sources or impact indicators. When it comes to publishing the environmental performance of a product in a condensed form, i.e. creating environmental labels, comparability is essential. There are different types of such labels; a distinction is made between labels that are awarded by the producers themselves (type II) and labels that are awarded by third parties (type I and III). Environmental Product Declarations, short EPDs, belong to the group of type III declarations.

To ensure that EPDs are created the same way, experts and stakeholders (e.g. producers) have defined so-called Product Category Rules (PCRs) for different kinds of products. ISO 14025 and DIN EN 15804 state that the application of those PCRs is mandatory for the creation of EPDs and their assessment [1], [2].

In openLCA, a free and open source Life Cycle Assessment (LCA) and footprint software [<http://www.openlca.org>], there is now an EPD Editor which makes it possible for the user to create EPD datasets according to the international and European standards, to edit EPDs and to upload them onto a server [3]. The Editor was financed through a project with the Federal Institute for Research on Building, Urban Affairs and Spatial Development (BBSR). The EPD Editor is particularly interesting for manufacturers in the building and construction industry. The EPD datasets are built slightly different than usual LCA datasets. They typically do not contain material flows, but only the impact indicators (e.g. no CO₂-Emissions, but contribution to Climate Change). Additionally, EN 15804 breaks down the product's life cycle into modules (A1-A3, B1-B6, C1-C4 and D) where A1 contains for example the extraction and processing of raw materials and therefore belongs to the production phase. This structure can also be found in the EPD Editor and the datasets.

For working with EPDs, the Ökobaumat database provides datasets that comply with the specific standards [4]. Those data are already available in EPD format and can be used for the creation and for editing EPDs. For the impact assessment GreenDelta has developed a compatible LCIA method that is available for openLCA [<https://nexus.openlca.org/database/Ökobaumat>]. GaBi databases – which are prescribed in the PCRs to be used for working with EPDs – are also available for openLCA [<https://nexus.openlca.org/database/GaBi>].

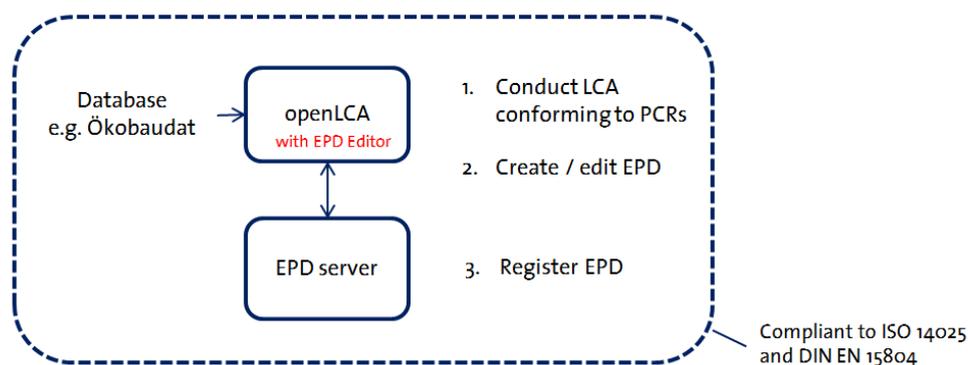


Figure 1. Concept of the EPD Editor in openLCA

How it looks like in openLCA

The EPD Editor is available as Plugin for openLCA² and can then be added to the navigation bar [5]. Go to File -> Manage Plugins (Figure 2) and choose and install the EPD Plugin (Figure 3). After restarting openLCA the Plugin will be active (Figure 4).

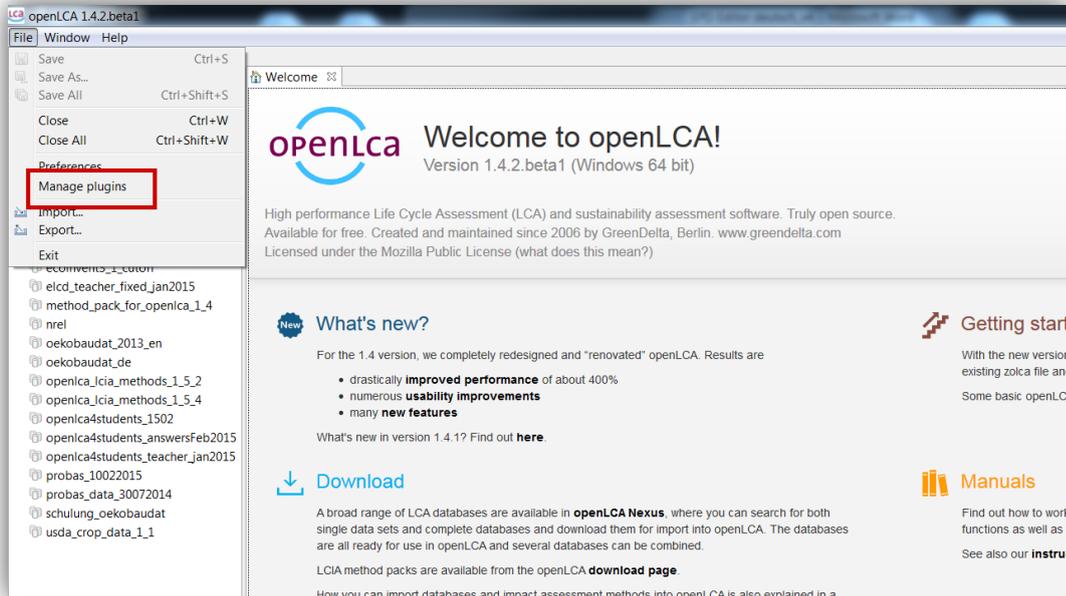


Figure 2. Opening the Plugin Manager in openLCA

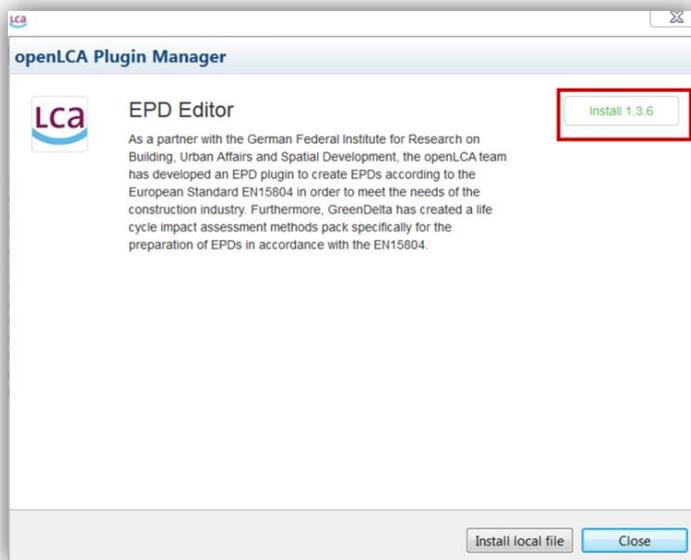


Figure 3. Installation of the EPD Editors from Plugin Manager

² For version 1.4.2

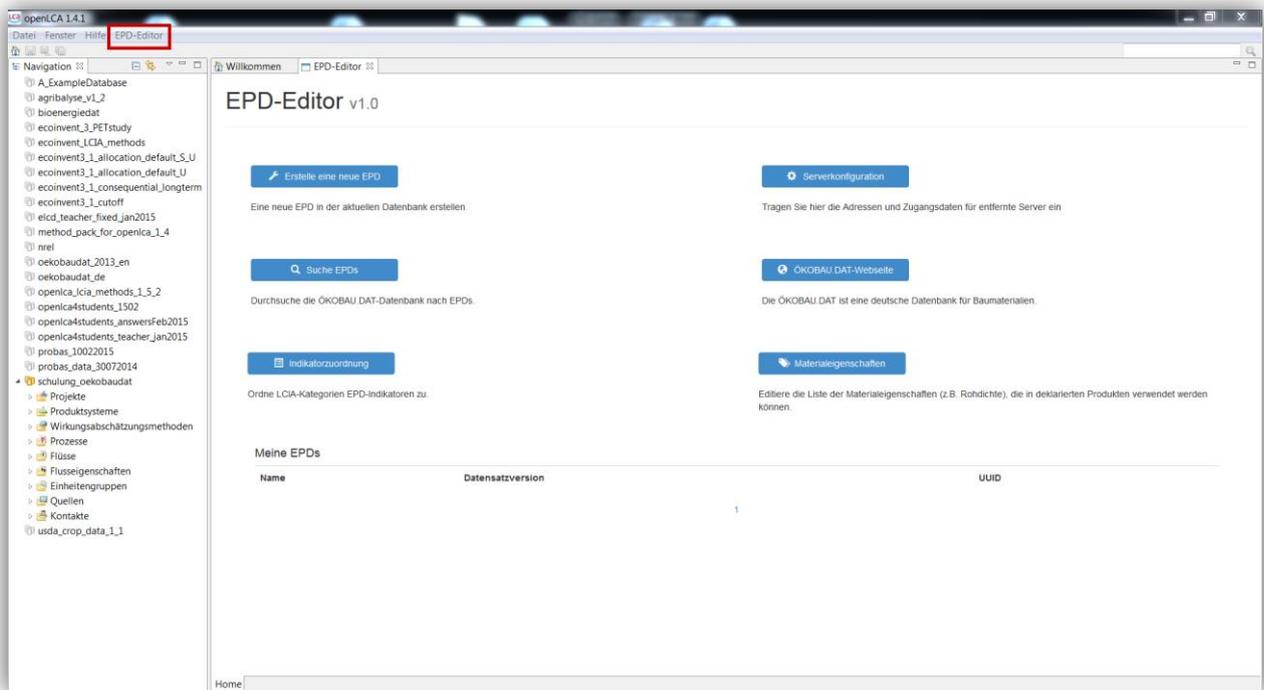


Figure 4. EPD Editor in openLCA

Using a simple example it is shown here how to create a new EPD with the Editor. For this purpose the product system „Brick wall“ was created in advance.

For creating a new EPD, the reference product must already exist in the current database. Once it is created (here: Brick wall), the respective EPD can be created by clicking on  in the Editor. You are then requested to name the EPD (e.g. Brick wall) and select the reference product (Figure 5).

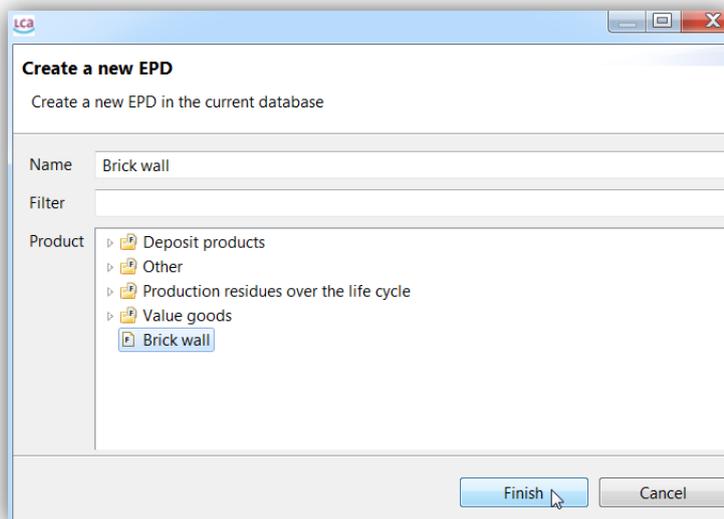


Figure 5. Creating a new EPD

Click on “Finish” and a new window will open up with the newly generated EPD. Here you can document all relevant information about the EPD in the different tabs at the bottom of the window (Figure 6).

The screenshot shows a software window titled "EPD: Brick wall". It contains several sections:

- General information:** Fields for UUID (2518d30b-ebd2-4270-b563-617c11194800), Name (Brick wall), Further properties, Synonyms, and Comment. A File field shows a path: ../processes/2518d30b-ebd2-4270-b563-617c11194800.xml.
- Classification:** A table with columns "Classification system" and "Category path".
- External documentation sources:** A table with a "Source" column.
- Safety margins:** Fields for "Safety margin (in %)" and "Description".

At the bottom, there is a tabbed interface with the following tabs: Dataset information, Modelling and validation, Administrative information, Environmental indicators, and Declared product. The "Environmental indicators" tab is currently selected and highlighted with a red border.

Figure 6. Information tabs for EPD "Brick wall"

In the „Environmental indicators“ tab the modules (A1, A2, etc.) to be declared in the EPD can be chosen. By right-clicking in the modules area or by clicking on the green plus (+) in the upper right corner, a new module for the product system is created (Figure 7). The subdivision into modules is an essential part of the PCRs in DIN EN 15804 and defines the system boundaries of the products. In this case the production phase module (A1-A3) and „Brick wall“ as product system were chosen. A description of the module (e.g. production phase) can be added optionally.

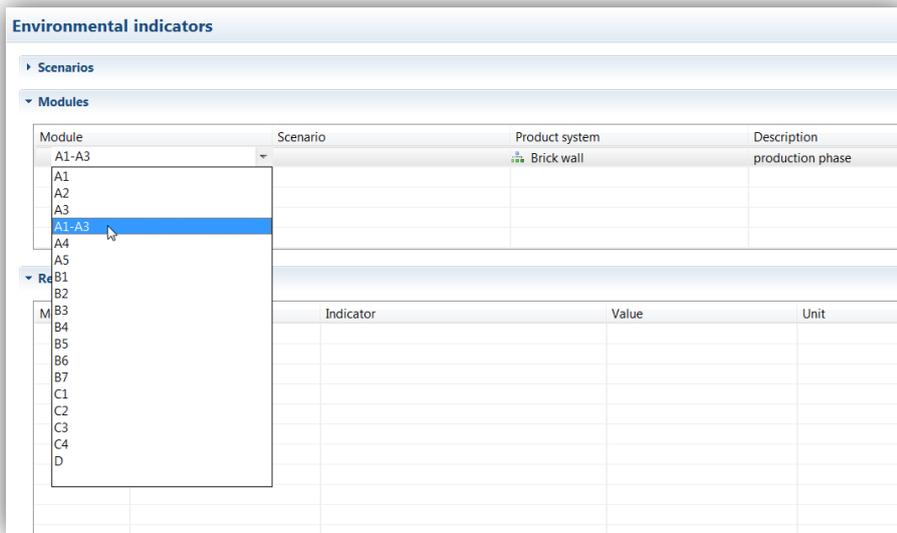


Figure 7. Selecting modules in the EPD Editor

For initiating the calculation hit the symbol  and the results for the brick wall are calculated (Figure 8).

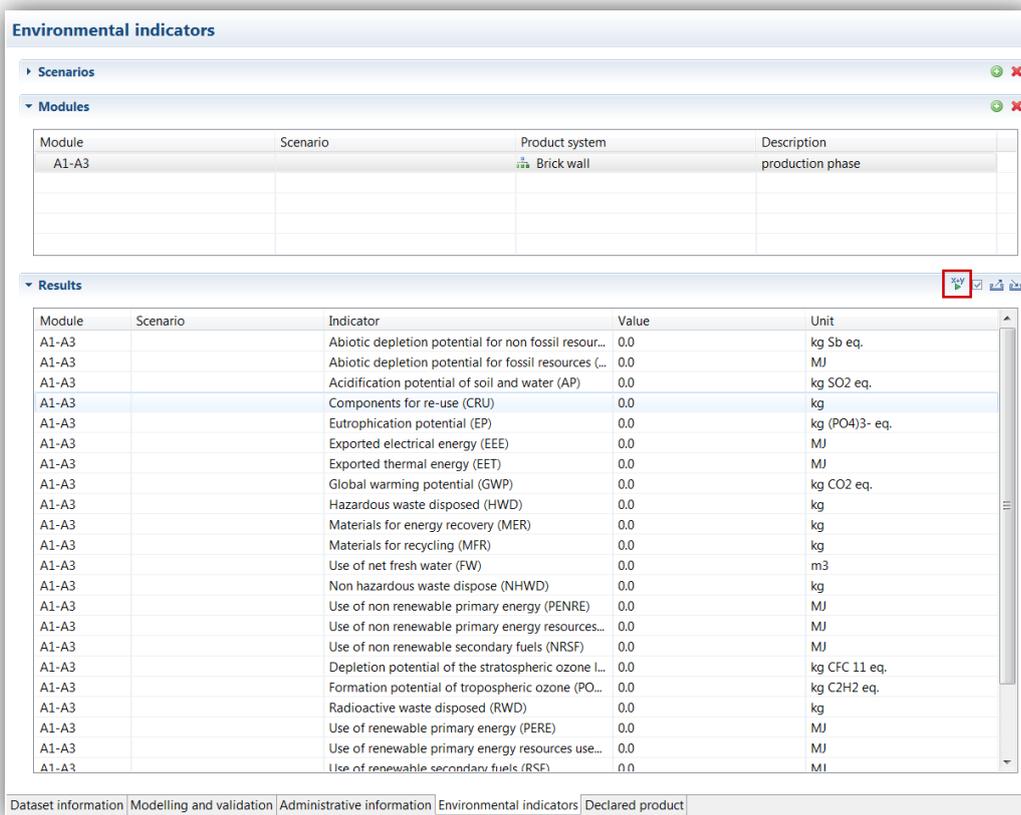


Figure 8. Initiating the calculation

For uploading the generated data to a server, click on the symbol  in the upper left corner (Figure 9) and confirm the pop up window. In advance, the URL address and data for the server need to be inserted under  in the Editor.

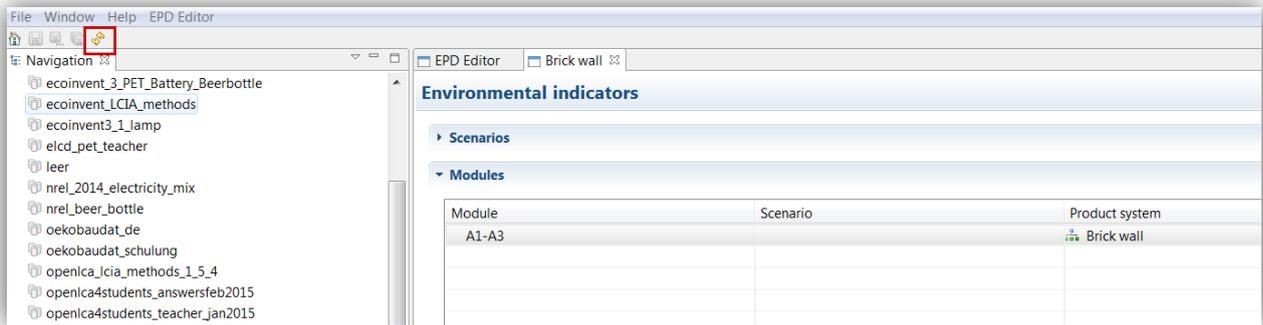


Figure 9. Uploading the dataset to a server

References:

[1] DIN EN 15804 (2012) Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products; German version EN 15804:2012

[2] ISO 14025 (2006) Environmental labels and declarations – Type III environmental declarations – Principles and procedures

[3] http://www.bbsr.bund.de/BBSR/DE/Service/Medieninfos/Ablage_RSSFeed/PM_oekobaudat.html
(German)

[4] <http://www.oekobaudat.de/en.html>

[5] <http://www.openlca.org/downloads> (Download here the newest version of openLCA)

For questions or comments:

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