

How to make an

ENVIRONMENTAL PRODUCT DECLARATION

AND HOW IT HELPS YOUR BUSINESS

A Guide for Construction Product Manufacturers



INTRODUCTION

The construction sector is changing. Carbon efficiency and transparency increasingly drive investment and procurement choices, with Environmental Product Declarations (EPDs) often supporting decision-making. As a construction product manufacturer, having an EPD will help you stand out from the competition: this guide will show you how.

EPDs use life-cycle assessment (LCA) to quantify and then communicate the lifetime environmental impact of a product. They are third party verified and based on international standards, so provide an objective, credible and neutral assessment. In creating an EPD, a manufacturer is not making claims of low impact, but rather showing a commitment to measure and transparently declare environmental impact in an accessible format.

If you have been thinking about investing in EPDs but are not sure where to start or are confused by some of the terminology, this guide is for you. It starts with an overview of EPDs: covering the concepts you need to know to get started. It then takes you through the EPD creation process and ends with a section on how to use EPDs to gain a competitive edge. Along the way it includes essential supporting information and ends with a glossary.

This guide is prepared and brought to you by One Click LCA Ltd, the developer of One Click LCA.



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ABOUT ONE CLICK LCA

One Click LCA is the world-leading construction sector life-cycle assessment and EPD generation software. It is used to decarbonize building and infrastructure projects, to create Environmental Product Declarations and to design low-carbon products and to manage and create corporate or real estate portfolio greenhouse gas reports.

It is used in more than 70 countries, includes the world's largest construction sector database, integrates with over a dozen design tools and supports over 40 standards and certifications. For more visit: www.oneclicklca.com.

One Click LCA Ltd is the developer of One Click LCA. Founded in 2001 as a consulting firm, One Click LCA Ltd launched One Click LCA in 2016 and now employs over 35 professionals in six countries.



Section 1

What are EPDs and why are they important?



WHAT IS AN ENVIRONMENTAL PRODUCT DECLARATION?

An Environmental Product Declaration (or EPD) provides an independently verified summary of the environmental impact of a product throughout its life-cycle, calculated via a life-cycle assessment (or LCA).

The LCA allows you to evaluate a product's effect on the environment over its entire life-cycle. It takes into consideration all the steps that lead from material extraction through to manufactured product, and end of life. (Read more on LCA on [page 22.](#))

In physical terms, an EPD consists of two key documents:

- The **public EPD document**, which summarizes the findings of the LCA.
- And an accompanying **private background report**, (sometimes called an LCA report) which is used to verify the EPD by the appointed third-party verifier and the program operator.

The background report contains information about how this LCA has been conducted, its assumptions and parameters, and any limitations of the data. The background report is not publicly available.

It is a common misconception that an EPD will expose sensitive commercial information, such as details of your manufacturing process or supply chain. This is not the case. It is only life-cycle analysis results, in the form of the EPD document, that is published and not any specific details.

Generating an EPD could be likened to an organic bread company gaining certification. The certification reassures consumers that they have followed organic practices but does not reveal ingredients to competitors.

An EPD will usually remain valid for five years – unless there are major changes to your production practices.



Public EPD document



Private LCA background report

How to read an EPD

Every EPD contains the following core information:

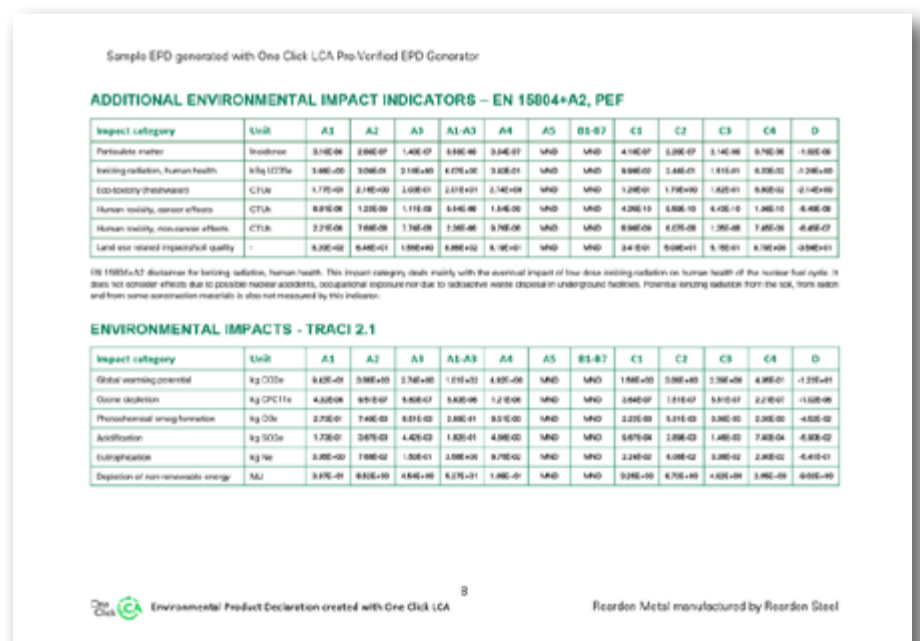
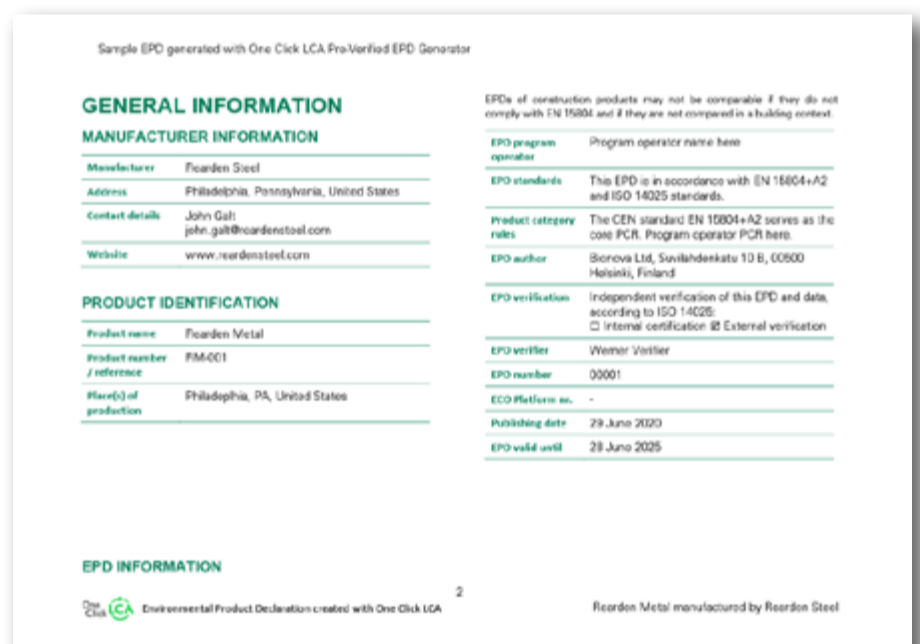
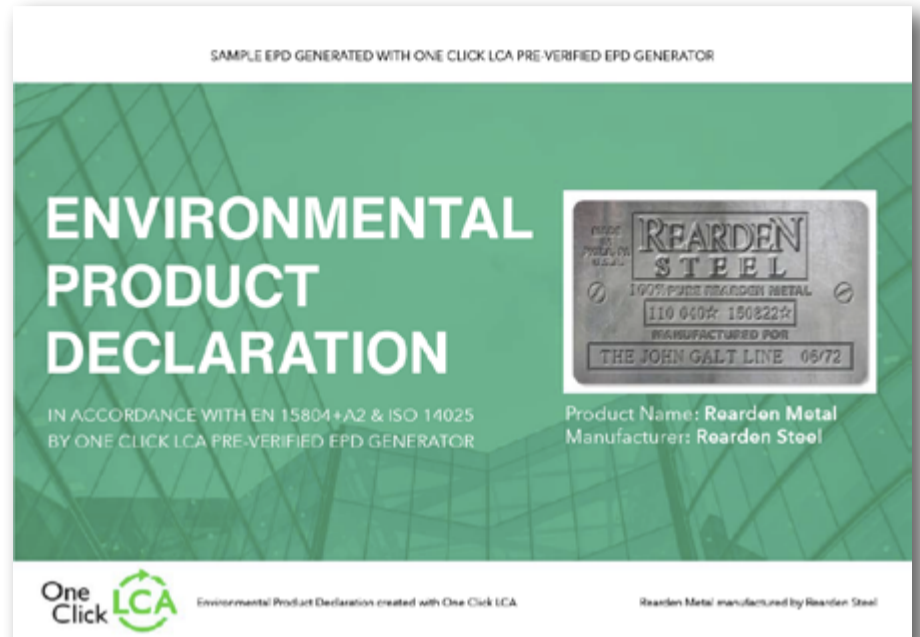
- 1. General information:** Identifying the manufacturer and product being assessed. As well as the EPD program operator, PCR and standards, and its expiry date, verification status and details of the verifier.
- 2. Product information:** A summary of the product's characteristics. Typically covering its function, technical specifications, raw material composition and product life cycle.
- 3. Life-cycle assessment information:** Details of the LCA methodology used, including:
 - Declared unit: quantity of the product included in the assessment.
 - System boundary: the life-cycle stages covered, e.g. cradle-to-gate.
 - Cut-off criteria: any factors omitted from the LCA, in line with the PCR and standard.
 - Allocation: how data for elements such as energy consumption has been allocated to the declared unit.
 - Estimates and assumptions: for areas where accurate data is not available, such as transport or end-of-life scenarios, it is important to be transparent about the estimates or assumptions included.

4. LCA results

The core part of the EPD is usually presented in table format with a column for each life cycle stage, and a row for each environmental impact assessed: e.g. Global Warming Potential (GWP), Eutrophication etc.

Here are pages of an EPD created using the One Click LCA EPD Generator for Rearden Steel, a fictitious metals company.

The first LCA results table shows the impact categories assessed under EN 15804 +A1; the second shows the EN 15804 +A2 impact categories. In the latter, GWP is separated into four different categories under the heading Climate change.



Standards governing EPDs

In order to be approved and published, an EPD must comply with international LCA and EPD standards, as well as Product Category Rules (PCR), they also need to be verified in line with the international verification standard.

The European standard, EN 15804+A2 is the most widely-used EPD standard. But others apply beyond the EU and are summarized below.

MARKET	EPD STANDARD AND CORE PRODUCT CATEGORY RULES	LCA STANDARD	INDEPENDENT VERIFICATION STANDARD
International	ISO 21930 (compatible with EN 15804+A1)	ISOs 14040 and 14044	ISO 14025
EU and EEA	EN 15804+A1 (to be phased out in July 2022) and EN 15804+A2		
North America	ISO 21930 with TRACI 2.1		

EPD publishing systems

Construction product EPDs are published by EPD program operators on a number of different platforms. There is no central EPD repository, however, almost all EPDs can be found in the One Click LCA database.

EPDs are recognised according to the standards they comply with, rather than where

they are published, so can be published by virtually any program operator that supports the relevant standards for the same validity.

However, as a caveat, it is important to note that French, Dutch, Belgian and Californian regulations stipulate specific EPD program operators for certain cases.

One Click LCA EPD Generator provides results compatible with EN 15804+A1, EN 15804+A2 and TRACI 2.1. This enables all needs to be served by the same EPD that is valid 5 years from the date of publishing.

WHY ARE EPDS CRUCIAL TO EMBODIED CARBON REDUCTION?

Buildings and construction are responsible for around 39% of the world's annual CO₂ emissions. Of this figure, 11% comes from embodied carbon – the emissions from the extraction and manufacture of products.

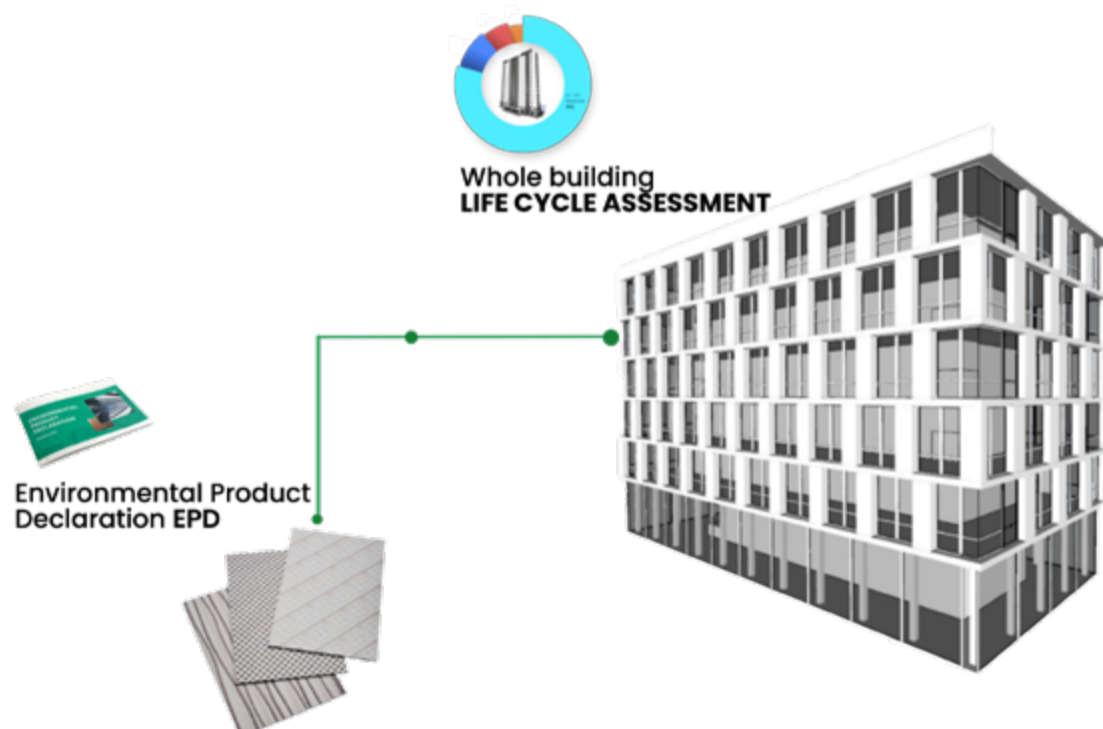
Green building efforts have long focused on cutting operational emissions, such as the energy required to heat, light, or cool a building. But in 2019, the World Green Building Council signaled the need to also drastically reduce embodied carbon. Thereby placing a heightened emphasis on the environmental impact of construction products and materials.

In their 2019 report, [Bringing Embodied Carbon Upfront](#), the World Green Building Council set two bold targets:

- By 2030, all new buildings, including infrastructure and renovation projects will have at least 40% less embodied carbon.
- By 2050, new buildings, infrastructure and renovations will have net zero embodied carbon.

Buildings and construction are responsible for around 39% of the world's annual CO₂ emissions. Of this figure, 11% comes from embodied carbon – the emissions from the extraction and manufacture of products.

EPDs aim to support the embodied carbon challenge by making the environmental impact of products and materials more visible so that steps can be taken to reduce the impact. Their status as independently verified documents, governed by international rules and standards means that they are widely recognized throughout the construction sector and viewed with confidence and credibility.



HOW DO EPDS BRING A COMPETITIVE ADVANTAGE TO YOUR BUSINESS?

According to customer research by Saint-Gobain, the top three client expectations for choosing a construction product supplier includes:

76%

of construction product clients
want suppliers to be transparent about environmental impacts of their products.

72%

of construction product clients
want manufacturers to provide them with sustainable or green products.

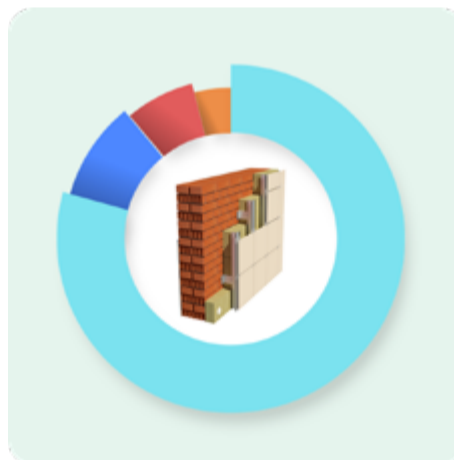
(Source: Saint-Gobain customer research, 2019)

EPDs are an open and objective way to demonstrate your commitment to environmental impact transparency. As well as helping to meet your clients' needs (listed on page 11) investing in EPDs brings other specific benefits for manufacturers, including:



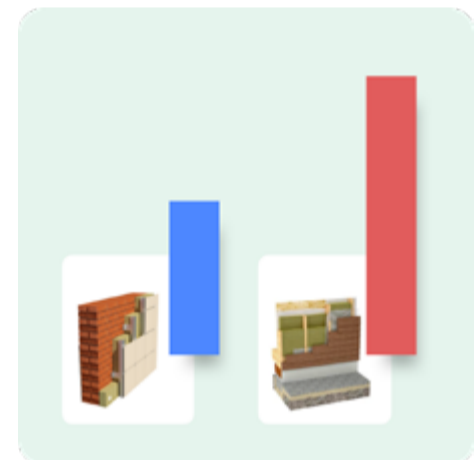
WIN BUSINESS AND DIFFERENTIATE ON THE MARKET

Having an EPD could determine whether or not your product is selected for large-scale projects. Creating an EPD ensures that your product will feature in construction sector environmental databases.



MEASURE AND REDUCE YOUR IMPACT

The data provided by your EPD enables you to better understand your product's whole-life impacts. It also allows you to identify ways to optimize your manufacturing processes, and improve the sustainability of the wider value chain.



BENCHMARK YOUR PERFORMANCE

Measuring your own environmental performance allows you to see how you compare to your competitors, so you can showcase areas where your product excels. It also leaves you better prepared to meet growing market demands for product sustainability.

The business case for EPDs

Tens of thousands of construction products are now covered by EPDs, in Europe alone, and this number is only expected to continue to rise. However, developing an EPD comes with significant initial costs, how do you know you will see a return on this investment?

01 REGULATORY REQUIREMENTS

Life-cycle carbon limits for new buildings will soon be mandatory in countries including France, Sweden, Finland, and the UK, with many others expected to follow suit. As a result, your clients are likely to prioritise suppliers who can disclose the environmental footprint of their materials via an EPD.

02 GREEN BUILDING CERTIFICATIONS

Around 70% of international and European green building standards offer credits for the use of materials labeled by an EPD. Often, there is no carbon performance target for the products, the use of EPDs is enough to gain credits. So your clients looking to gain accreditation for LEED, BREEAM, DGNB or others, will look for products with EPDs.

03 CHOOSING LOW CARBON PRODUCTS

According to Saint-Gobain, 72% of construction product clients want sustainable or green products. By developing an EPD, your product will feature in environmental databases and be seen by clients looking for low carbon products. Without an EPD, you effectively remove your product from a valuable 'shop window', making it harder for potential clients to find and choose your product over others on the market.

04 MARKET DIFFERENTIATION

Investing in an EPD makes it clear that you are committed to measuring and reporting your impact. The benchmarking offered by an EPD helps you showcase areas where your product excels in your marketing as well as helping you prepare to meet market demands for product sustainability.

05 CUTTING CARBON TO CUT COSTS

Where there is carbon, there is cost, particularly in an industry increasingly exposed to carbon requirements. An LCA allows you to see a comprehensive inventory of all the components used in your product. It can highlight the choices you have, as well as supporting communication with the rest of your business and supply chain.

06 FUTURE-PROOFING YOUR PRODUCT DEVELOPMENT

New rules and requirements are coming into force all the time. By identifying where and how to reduce your impact, you are ready to meet changing sustainability requirements – putting low-carbon and eco-design principles at the heart of future R&D and innovation.

Forthcoming legislation driving EPD demand

As governments mobilize to address the embodied carbon challenge, whole-life carbon (WLC) assessments are increasingly being included in building regulations.

To comply, developers, architects and project specifiers need to conduct project-level life-cycle assessments (LCAs) that include the impacts from the extraction, manufacture and transportation of building materials.

As a result they are starting to prioritise materials which can support the LCA with independently-verified impact data via an EPD.

In addition, much of the new legislation includes phased carbon reduction targets. EPDs enable manufacturers to benchmark and then reduce their impacts to ensure that they remain competitive as these limits come into force.

COUNTRY	WHAT IT MEANS IN PRACTICE
DENMARK National strategy for sustainable construction Carbon calculation requirements expected by 2023 with carbon limit values for all buildings due in 2025.	Denmark has agreed to introduce carbon calculation requirements for new buildings by 2023, and a threshold of 12kgCO ₂ e/m ² /yr for buildings over 1000 m ² by 2023, expanding to all buildings by 2025.
FINLAND Maankäyttö- ja rakennuslain (MJR) <i>In English: Reformed Land Use & Building Act.</i> MJR expected 2022, building carbon footprint limit values expected by 2025	EPDs will become even more critical as whole-life carbon (WLC) assessments will be required for all new buildings from around 2025, with strict limits on embodied carbon emissions set by building type.
SWEDEN Klimatdeklaration för byggnader <i>In English: Climate declaration for buildings</i> Expected 2022	A climate declaration, including product stage impacts, will be mandatory for all new buildings. It is preferred that EPDs are used for product impact data. Any generic data used must be sourced via the national climate declarations database.
FRANCE Réglementation Environnementale or RE 2020 <i>In English: Environmental Regulation 2020</i> Expected 2022	Whole-life carbon measurement will become mandatory for all new buildings with strict limits expected to be brought in by 2024 and gradually reduced, until it reaches a 30-40% reduction by 2030.
THE UK The New London Plan from the Greater London Authority (GLA) In force since March 2021	WLC assessments are mandatory for major developments, however the GLA encourages them for all new projects GLA guidance also makes it clear that impacts are expected to be estimated using EPDs where possible.

Table: Overview of forthcoming European legislation on embodied carbon in construction

EPDs in green building certification schemes



In One Click LCA’s 2018 study, the [Embodied Carbon Review](#), we discovered that, of schemes directly addressing embodied carbon, 89% required use of EPDs. These schemes generally requested EPDs to fulfil one of three roles, as shown below.

In the same report we also showed a breakdown of these requirements by geography. Whilst use of EPDs is still less common in some areas, like the Middle East and Africa, the growing importance of EPDs for manufacturers supplying international or European markets is clear.

ROLE OF EPD WITHIN SCHEME	EXAMPLES OF SCHEMES REQUIRING THIS USE
<p>Documentation: To document that the project has purchased a minimum specified number of products with EPDs.</p>	<p>BREEAM (global) Green Building Index (Malaysia) Home Quality Mark (UK)</p>
<p>Use in LCA: To enable building level LCA through use of product EPDs.</p>	<p>DGNB International (Germany) Level(s) (Europe-wide) Zero Carbon Certification (global)</p>
<p>Buy low-carbon: Separate to an LCA, EPDs are used for product comparison to support low carbon choices.</p>	<p>LEED v4 (global) HQE International (global) BREEAM NOR (Norway)</p>

Table: Use of EPDs in global carbon reduction schemes and legislation

Why are EPDs important to your clients?

For your clients, choosing a product with an EPD is valuable for several reasons:

- To fulfil compliance and procurement requirements including government regulations at a national or city level.
- To help designers and specifiers choose low carbon options.
- To enable building level LCA – which may be required by specifiers.
- To gain certification credits for green building schemes like BREEAM and LEED.
- To allow them to buy products with improved carbon transparency and lower carbon impacts.

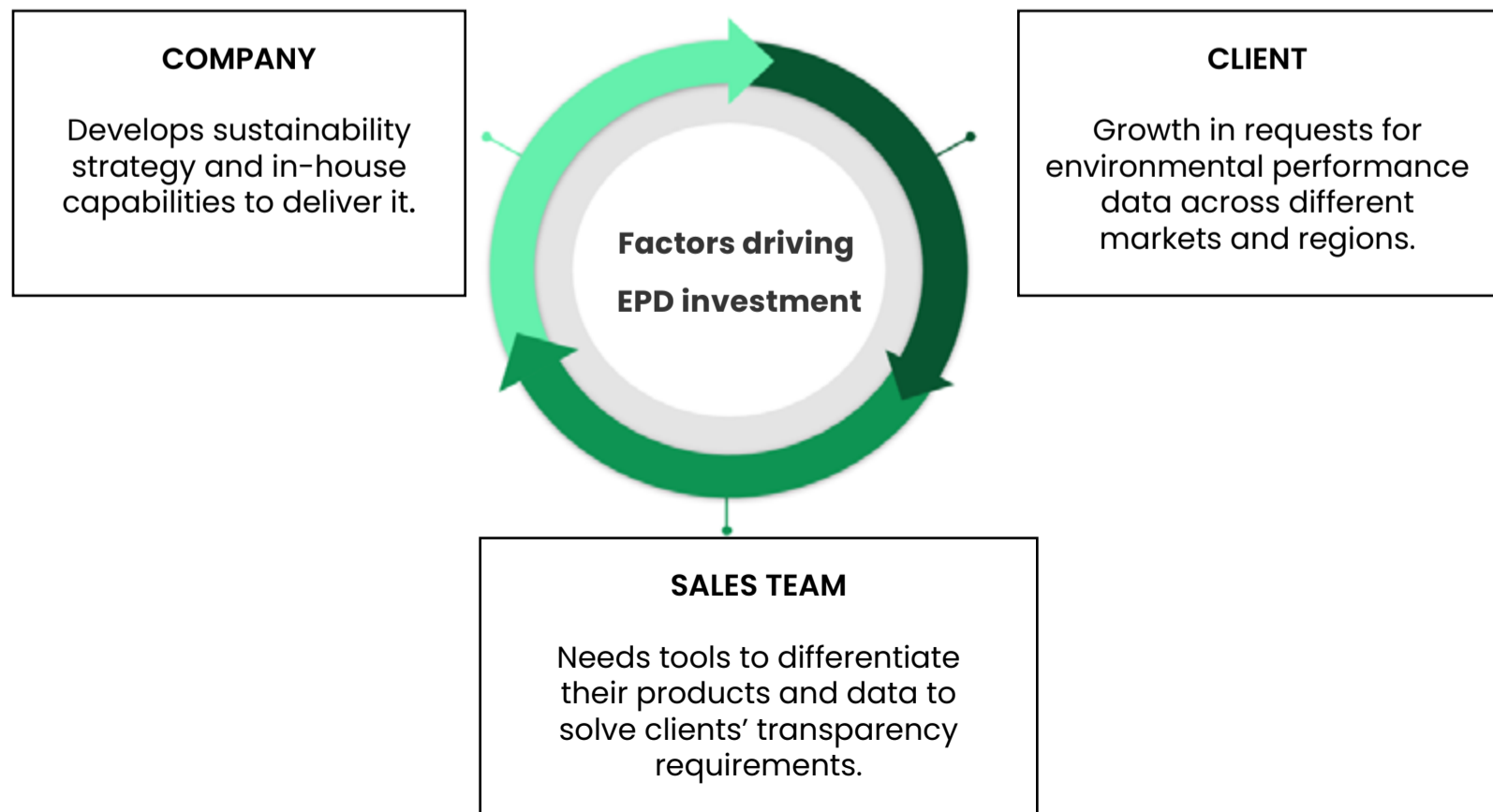
Common factors driving investment in EPDs

From speaking to our manufacturer customers, we have identified some common factors driving investment in EPDs among global construction product manufacturers.

Growing client demand for EPDs – especially from clients seeking certification credits – leaves sales teams increasingly



unable to meet their needs. In response the company realises the need to take a stance on sustainability, including developing in-house skills to be able to give informed responses to clients and to create EPDs themselves.



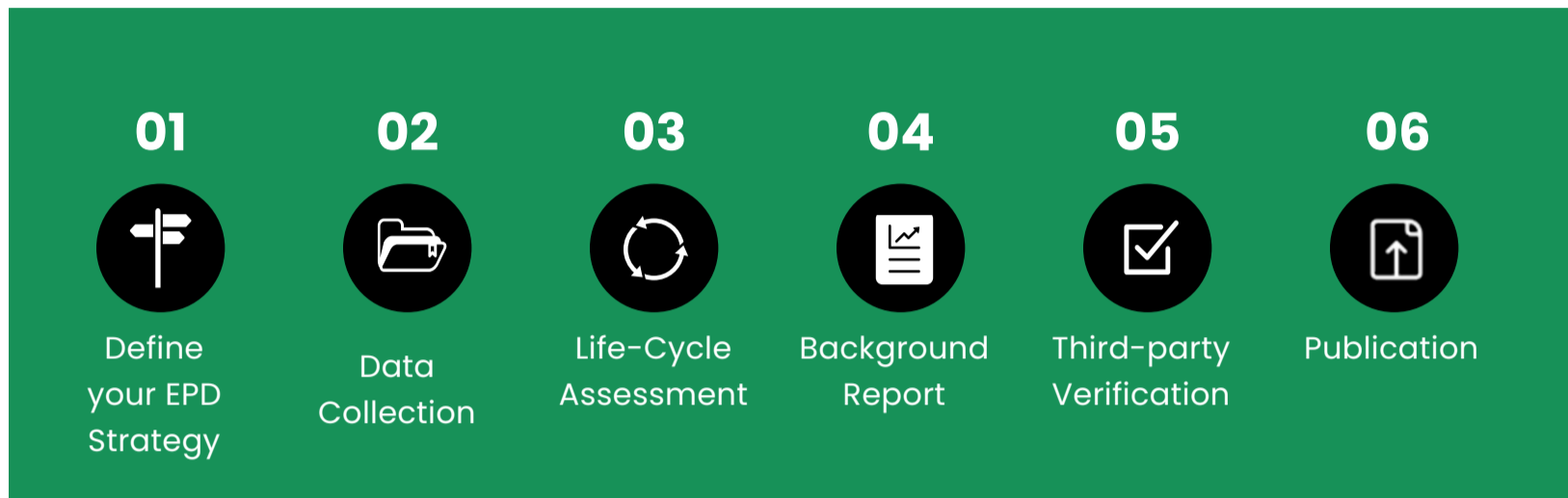
Section 2

How to make an EPD



6 STEPS TO CREATING AN EPD

We've identified six key steps needed to make an EPD. This section will cover each one in turn, focusing on what you need to know, as well as some tips on how to navigate the stages more smoothly.



01 DEFINE YOUR EPD STRATEGY

From type of EPD, to whether to invest in-house or hire a consultant, you need to make some important decisions before you can get started.

02 DATA COLLECTION

The next step is to collect product life-cycle data, usually covering material extraction, manufacture, transport and end-of-life.

03 LIFE-CYCLE ASSESSMENT

Life-cycle assessment (LCA) is the basis of all EPDs. Life-cycle data is translated into a series of environmental impacts, eg. ozone depletion.

04 BACKGROUND REPORT

Providing further details about the LCA methodology, assumptions and approach employed to support third-party verification.

05 THIRD-PARTY VERIFICATION

An EPD needs to be verified by an independent third-party before it can be published. To ensure accuracy, reliability and consistency.

06 PUBLICATION

Once verified, your EPD will be ready to be made public. It will be registered and published by the relevant program operator.



Step 01

DEFINE YOUR EPD STRATEGY

As with any project, it is important to have a well defined strategy before starting, to make sure your approach, and the resulting EPD, is right for you and your clients.

This section covers some of the main factors to take into account at this stage and, in doing so, explains some more of the core concepts underpinning EPDs.

- What type of EPD do you need? Should it cover a single product or a group of products?
- Should you hire an EPD consultant or invest in LCA software so you can develop the capacity to create EPDs in-house?
- Which Product Category Rules (PCR) and Program Operator is right for you?

Types of EPD

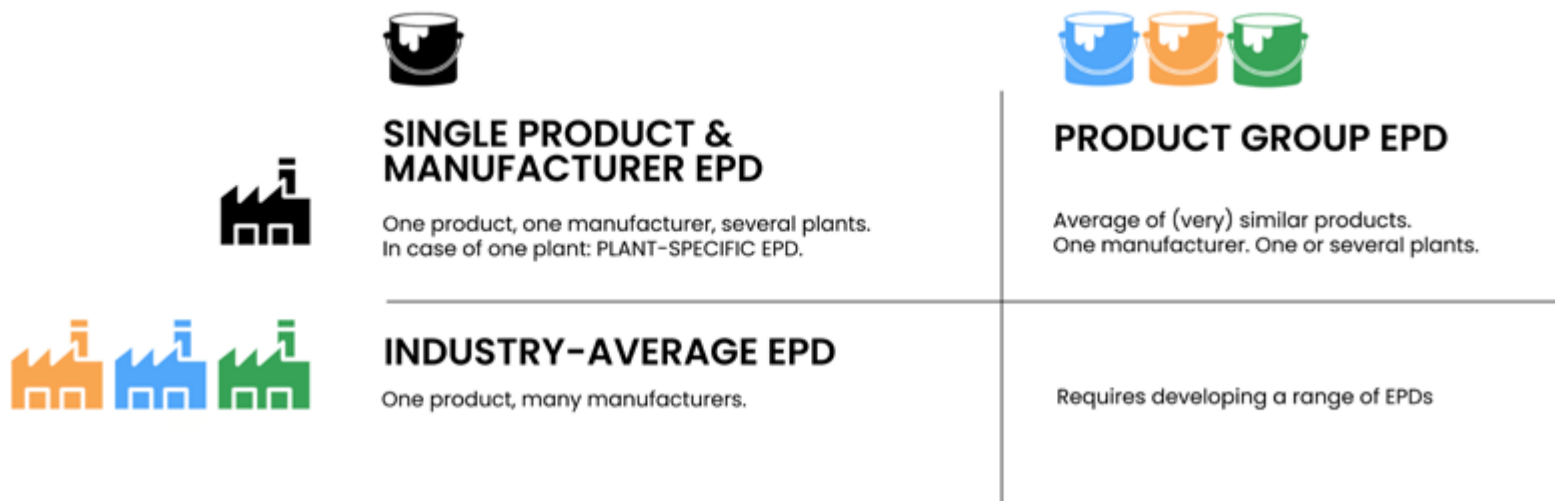
The most common type of EPD covers one product, manufactured by one company. However, it is possible to combine very similar products from one company, or one product made by different manufactures under one EPD, and there are obvious cost savings to be gained from doing so.

- Assess what EPDs already exist within your product category.
- Speak to your clients to understand more about what they need. For example, if they are seeking certification credits, will any type of EPD be acceptable for these purposes?

To decide which type of EPD is right for you:

- Review your product range to see if there is potential to group more than one product together.

The table on the next page lists the different types of EPD to help you navigate the options.



Different types of EPDs

EPD TYPE	DESCRIPTION
SINGLE PRODUCT & MANUFACTURER EPD	Single EPDs provide data on one product made by one manufacturer but can encompass several factories. For example, if ACME manufactures wooden frames in several plants, but using the same processes, they can be covered by a single EPD.
PLANT-SPECIFIC EPD	A declaration for one product, manufactured at one plant.
GROUP EPD	<p>Similar products made by the same manufacture can be included in a group EPD. The rules governing how products can be grouped together into an EPD are generally as follows (Program Operators may have more detailed rules):</p> <ul style="list-style-type: none"> • They must all deliver or fulfil an equivalent function, for example, 'floor finishes', 'concrete blocks' or 'insulation'. • Have less than 10% variance in environmental impacts. • Any variance must be documented in the EPD. <p>To assess and document the levels of variance, you will need to conduct a separate LCA for each product in the potential group. Doing so might seem daunting but is a worthwhile investment of time and resources as you could dramatically reduce your costs by covering several products in one group EPD.</p>
INDUSTRY AVERAGE EPD	One product made by many manufacturers can be included in an industry average EPD, or a generic EPD. Note, a single EPD cannot represent several products and several manufacturers.
PROJECT OR PRIVATE EPDs	<p>Strictly speaking, NOT a type OF EPD as they are not third party verified and therefore do not comply with the ISO 14025 independent verification requirements. Similarly, the lack of third-party verification means that they cannot be used to support green building certification credits.</p> <p>Project or private EPDs are useful when a client requires specific data for an exact product and when that product is somehow different from one documented in a verified EPD. They are often used by concrete mix manufacturers.</p> <p>These documents can cause confusion, as they are in fact ISO 14021 Self-declared Environmental Claims and not ISO 14025 Verified Claims, but often presented as ISO 14025 compliant with notes about internal verification or self-declaration.</p>
PRODUCT CARBON FOOTPRINTS	<p>Again, NOT a type of EPD but worth covering here nonetheless as some companies only need to report on their product's greenhouse gas (GHG) emissions also described as global warming potential (GWP), rather than the full range of impacts covered by a full LCA. This is generally known as product carbon footprinting.</p> <p>Carbon footprinting is a subset of LCA, which only assesses GWP impact across all life stages of a product. In contrast, a full LCA takes a more holistic approach, assessing a comprehensive range of environmental impacts including natural resource depletion, ecosystem degradation and water consumption.</p>

Table: Different types of EPDs

Outsourcing or developing in-house

When specifiers first started requesting EPDs, many manufacturers chose to hire consultants to manage the process for them. However, as demand grows, more companies are choosing to develop EPD capacity in-house by investing in platforms such as One Click LCA.

In-house development makes delivering EPDs faster and more cost-efficient. One manufacturer told us that moving their EPD creation to an internal team made the data collection process in particular much faster as people had fewer concerns over releasing data to their colleagues rather than to a third party.

One Click LCA makes it easy for non-specialists to create EPDs via user-friendly tools and templates that support data input and report-generation. Our EPD Generator streamlines EPD production, saving you time, money, and effort. We also organise an approved third party verifier, so you do not need to spend time looking for the right one, and manage the publishing process for you.

In addition, our ecodesign capability supports carbon-aware product development, which is a huge benefit to any business exposed to competitive pressure regarding carbon performance or sustainability.



OUTSOURCING

**\$10,000–
30,000**

Typical costs for creating an EPD,
using traditional approach

(Source: [International Survey of the Costs of Assessment for EPDs, CIRP, 2017](#))

IN-HOUSE DEVELOPMENT

**In-house development
makes delivering EPDs
faster and more
cost-efficient.**

Product Category Rules (PCRs)

Product Category Rules or PCRs provide the rules and guidance for how to develop an EPD for a specific product category, as defined by the relevant program operator. They ensure that functionally similar products can be assessed in the same way.

Most significantly, the PCR guides how the life-cycle assessment should be conducted, considering a range of factors, including:

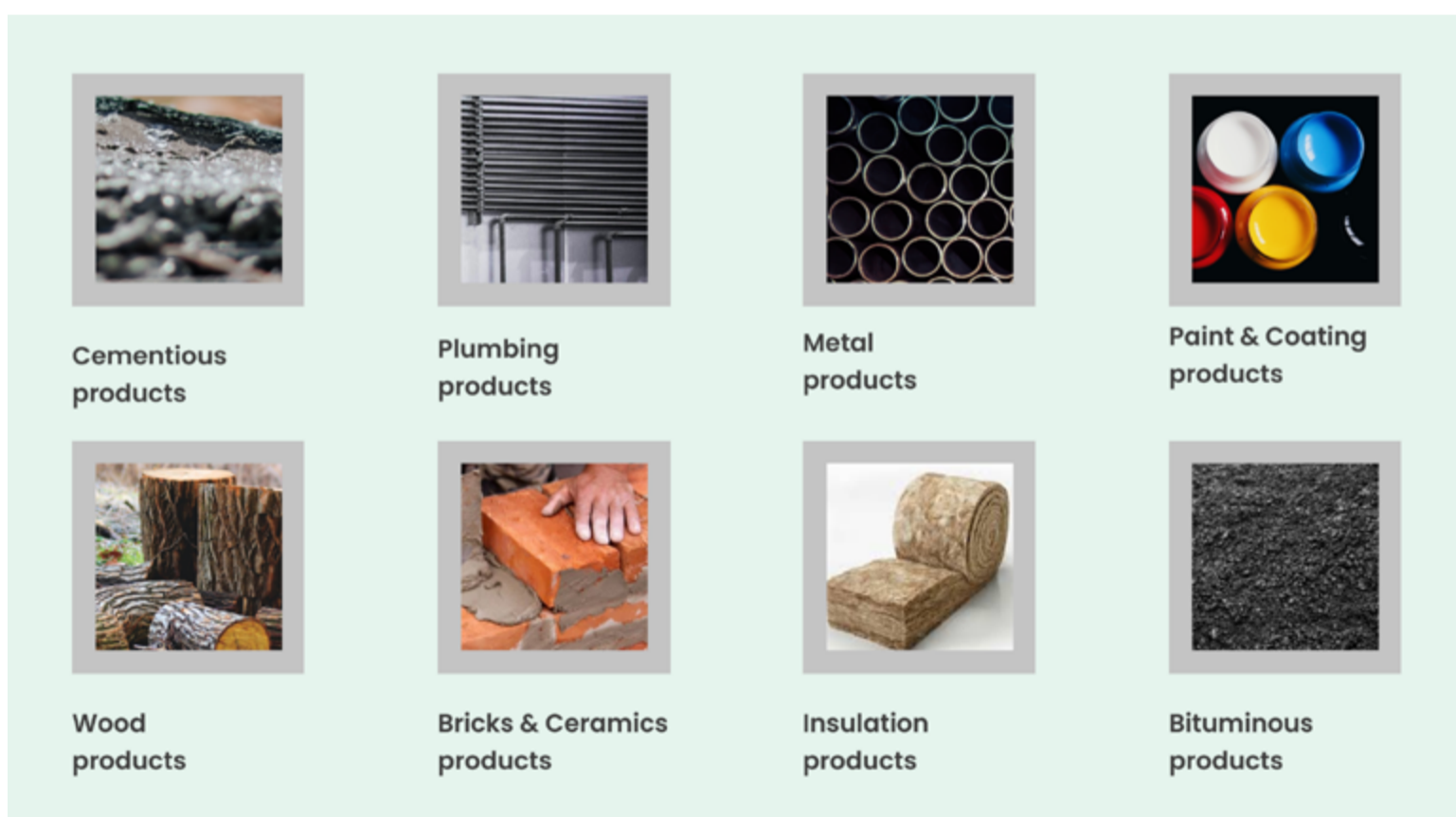
- Which processes in the product's life cycle will be included in the LCA, and which ones will not – known as the system boundary.
- How to define the use phase for the product category.
- Which impact categories should be assessed.
- Declared/functional unit: the amount, weight and service life of the product being assessed.

All PCRs must comply with ISO 14025's requirements for PCRs. Almost all European program operators' construction product PCRs also comply with EN 15804. Some program operators set additional requirements but, in general, the differences between EN 15804-compliant PCRs are relatively limited.

EN 15804 provides a core PCR for the Europe-wide generation of construction sector EPDs and can be used as such or with additional PCRs. Usually EPD publishing platforms, such as the International EPD System or RTS, have either one PCR as a set of additional rules for published EPDs, or a set of PCRs for different construction product categories.

New PCRs are developed in accordance with ISO 14025 which requires the formation of a steering group, representing the industry in question, backed by a third-party critical review.

Some of the product categories supported by One Click LCA EPD Generator



Program Operators

Program operators are responsible for supervising the EPD development process – from creating and maintaining PCRs to approving and publishing individual EPDs.

There is a common misconception that you must work with a program operator who is based in your country. In fact, there is no such requirement. For example, One Click LCA EPD Generator publishes EPDs on behalf of companies based around the world via its partner program operators, who provide high quality EPD verification processes and advance their mutual recognition through cooperation platforms such as Eco-Platform.

Our partners include for example the Building Information Foundation RTS, the Finnish EPD program operator.

The most important factor when choosing a PCR and program operator is to ensure that the resulting EPD will comply with the right standards for you and your customers. Therefore, if your EPD needs to comply with the European standard EN 15804, it is important to choose an operator whose PCR is complying with that standard.

There is no official central repository for all EPDs, however the [One Click LCA database](#) contains almost all published EPDs, with over 50,000 EPDs from all the different program operators.

All data in the One Click LCA database undergoes a rigorous ten-point verification using a process that has been reviewed by the Building Research Establishment (BRE).



One Click LCA includes over 50,000 EPDs from all program operators.
More at [One Click LCA database](#)



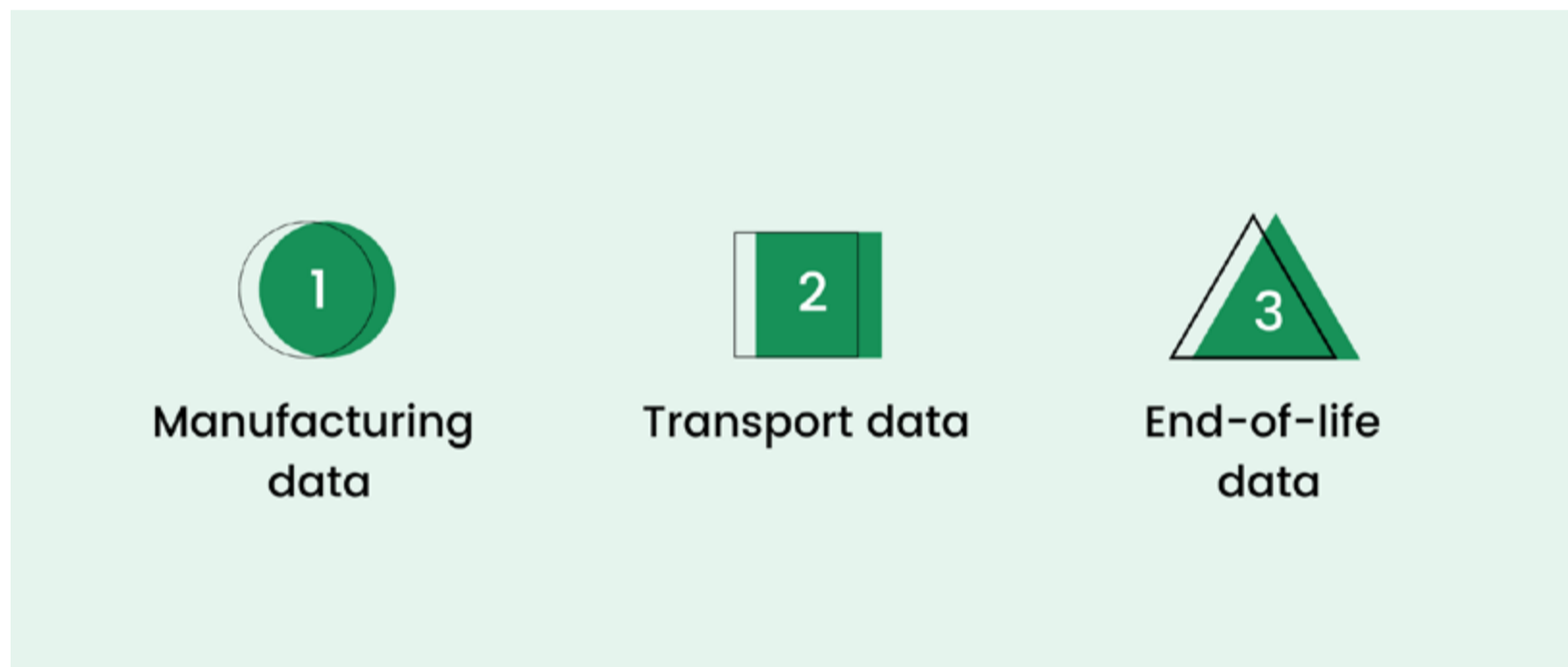
Step 02

DATA COLLECTION

The data collection phase of LCA is sometimes seen as a hurdle. Companies worry that they will need to spend lots of time tracking down hard-to-find details from their suppliers. In fact, the information required for LCA is usually already available as part of your process management system. However, in some cases you will need to complete the data with average data.

Your choice of program operator and PCR will determine the specific data to collect, based on which product life cycle stages your LCA needs to assess. The main ones are listed here.

(Read more on product life-cycle stages and impact categories on [page 23](#).)



01 Manufacturing data

Manufacturing data must be recent, representative, and reliable. It should consist of historical (as opposed to forecast) data covering a recent 12-month period in the last five years – preferably the most recent period for which data is available.

Data should include real figures and cover wastage, materials, and energy impacts as well as process emissions and waste handling.

02 Transport data

It can be hard to accurately capture transport data, so is collected on a best-efforts basis, looking at typical routes and vehicles. Fortunately, it's usually not a significant source of impacts.

Transport data is divided into two categories:

1. Transport of material to factory (module A2): based on actual data.
2. Transport of product to client (module A4): scenario based. Loading factors and empty returns (in other words the vehicle returning to the factory once the load has been delivered) are also taken into account here.

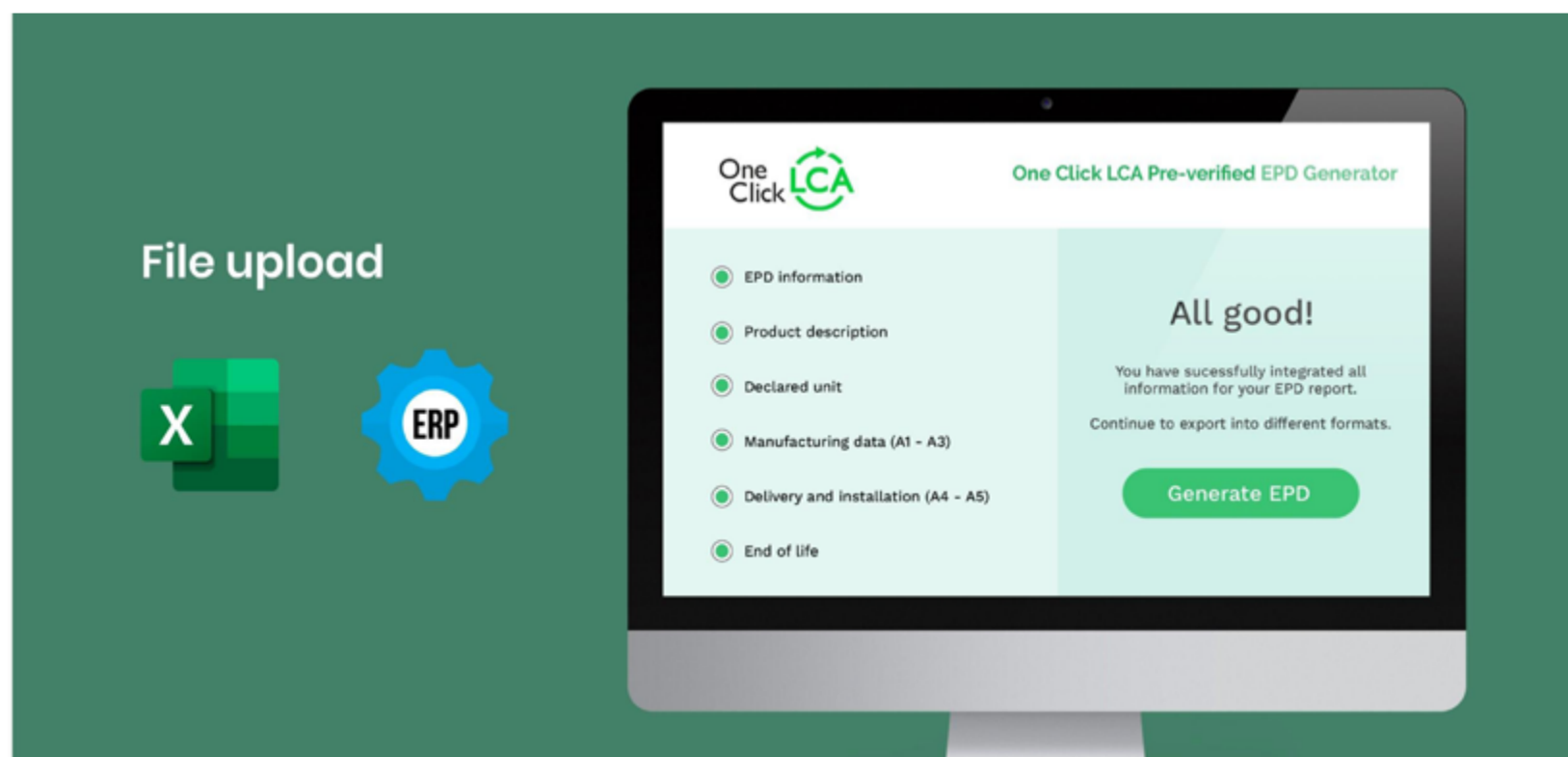
If there is no fixed final delivery destination, you can use data for your most significant market area – either a province or city or an international port or distribution point, depending on where most of your customers are based. However, your program operator can provide further advice on how transport data should be calculated.



03 End-of-life data

End-of-life data is based on scenarios, with some program operators and PCRs defining the end-of-life scenarios to be used. The scenario must be based on the most probable distribution of end of life processing methods, using currently available and applied technology. Assumptions must be well documented and justified.

One Click LCA EPD Generator offers templates and data import tools to make data collection more straightforward. We also offer training and support to guide users through the process.



File upload

X ERP

One Click LCA Pre-verified EPD Generator

- EPD information
- Product description
- Declared unit
- Manufacturing data (A1 - A3)
- Delivery and installation (A4 - A5)
- End of life

All good!

You have successfully integrated all information for your EPD report.
Continue to export into different formats.

Generate EPD

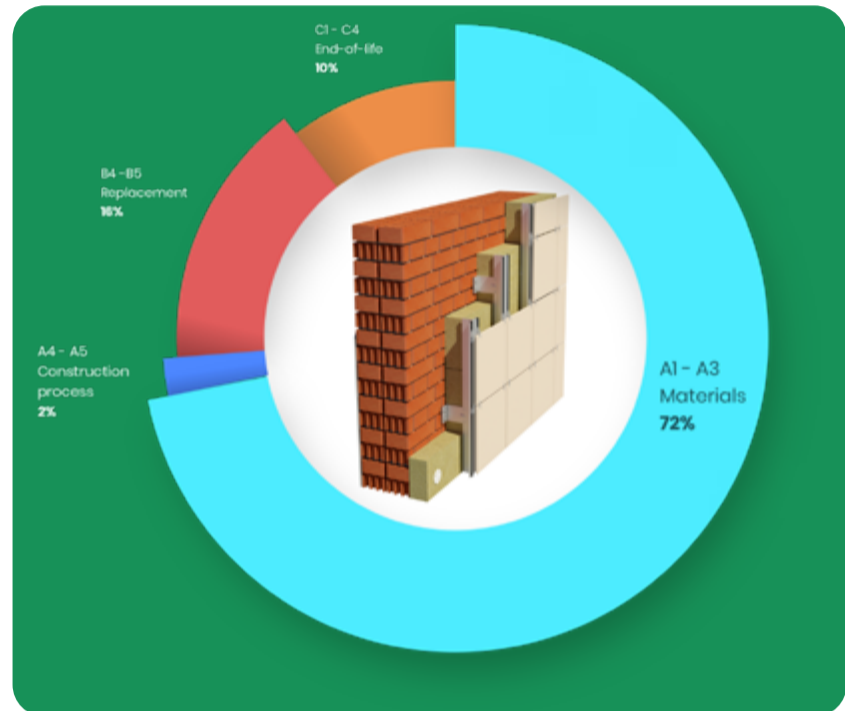


Step 03

LIFE-CYCLE ASSESSMENT

Life-cycle assessment is the foundation of all EPDs. Whether you choose to hire a consultant or use automated software, like One Click LCA, to conduct your LCA, you will need to understand how they work. This section provides a whistle-stop guide to LCA concepts and terminology.

There are five life-cycle stages for construction products, each containing several information modules (from A1-D). It's useful to become familiar with these information module labels as they are frequently mentioned as shorthand for the life-cycle stages.



LCA scopes and product life cycles

Cradle-to-gate A product LCA which only examines what happens before a product leaves the factory gate is known as cradle-to-gate. It covers modules A1-A3 or the product stage.

Cradle-to-gate is the minimum scope needed for a product LCA and, although some PCRs allow cradle-to-gate EPDs, the eligibility of this type of EPD is increasingly restricted. Indeed, to comply with EN 15804 +A2, most EPDs now need to report on modules C1-C4 and D too, regardless of the requirements of their PCR.

Cradle-to-grave A product LCA which encompasses the entire life cycle: from manufacture and installation (A1-A5), through use (modules B1-B7), and all the way up to demolition (C1-C4), benefits and loads beyond the system boundary (D) is called cradle-to-grave.

Learn more about the EN standard change, via our article: [Getting ready for EN 15804+A2](#)



PRODUCT STAGE			ASSEMBLY STAGE		USE STAGE							END OF LIFE STAGE				BEYOND THE SYSTEM BOUNDARIES		
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D	D	D
Materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demotion	Transport	Waste processing	Disposal	Reuse	Recovery	Recycling

Mandatory modules according to EN 15804+A2
 Non mandatory modules

Table: Product life-stages

Environmental impact indicators and categories

To understand what is measured during an LCA, it may be useful to think of a carbon footprint, which assesses lifetime global warming potential (GWP). An LCA goes further, assessing a wider range of impact, such as ozone depletion, impact on human health, water use, etc, to provide a holistic picture of lifetime environmental impacts.

The impacts are expressed as midpoint impacts, that is to say, as equivalent quantities of matter, for example, CO₂, that has the potential to cause such impacts. But they do not represent the actual harm (final impact, e.g. endpoint) eventually caused. For instance, global warming potential represents the amount of GHG gases released. But the final

impact is the acceleration to the polar melt, for instance.

During the LCA, a large amount of very different data is collected: covering material extraction, manufacture, waste by-products etc. To make reporting more manageable, this data is grouped into impact categories. Characterization factors convert this data into a common unit that translates into one indicator of potential impact.

Your PCR and relevant EPD standard will define which categories you need to include in your LCA. The most common impact categories are summarized below.

IMPACT CATEGORY	DESCRIPTION
CLIMATE CHANGE OR GLOBAL WARMING POTENTIAL	Climate change or global warming potential due to emissions of greenhouse gases (GHG). EN 15804+A2 includes climate change subcategories of fossil, biogenic, and land use and land use change (LULUC).
OZONE DEPLETION POTENTIAL	Emissions to air that cause the destruction of the stratospheric ozone layer.
ACIDIFICATION POTENTIAL	Acidification of soils and water due to the release of gases such as nitrogen oxides and sulphur oxides.
EUTROPHICATION POTENTIAL	Emissions of Nitrogen and Phosphorus increasing the flow of nutrients to ecosystems, which can lead to damage such as excessive algae growth. EN 15804+A2, includes sub categories of aquatic freshwater, aquatic marine and terrestrial.
PHOTOCHEMICAL OZONE FORMATION POTENTIAL	Indicator of emissions of gases that affect the creation of photochemical ozone in the lower atmospheric ozone (commonly known as smog).
DEPLETION OF FOSSIL RESOURCES	The use of non-renewable fossil resources in an unsustainable way (e.g. from materials to waste).
ABIOTIC DEPLETION	The use of non-renewable resources in an unsustainable way. In EN 15804+A2, the category is divided into fossil resources and minerals and metals.

Table: LCA environmental impact categories



Step 04

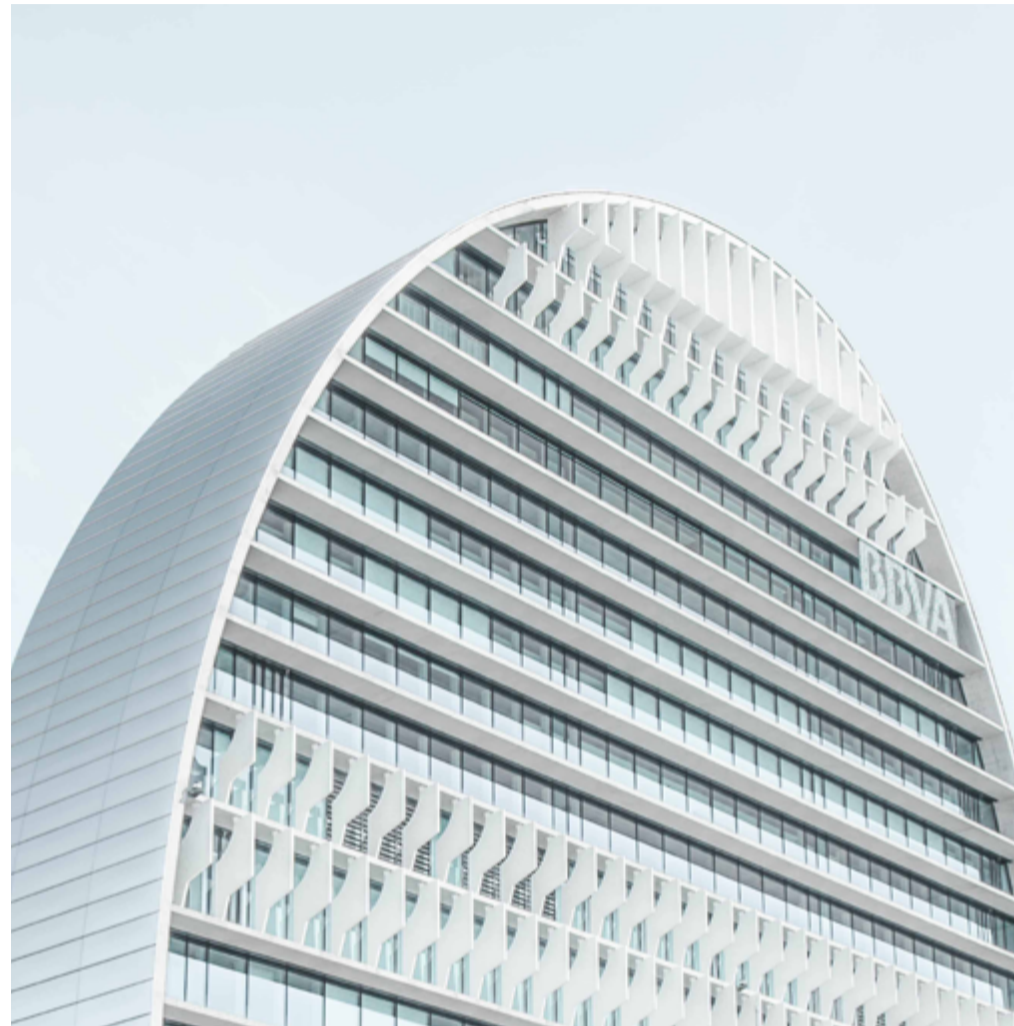
LCA BACKGROUND REPORT

The background report (known as an LCA report in the United States) is a vital accompaniment to your public EPD. It supports verification by providing further details about the relevant standards, LCA methodology and approach and any assumptions made.

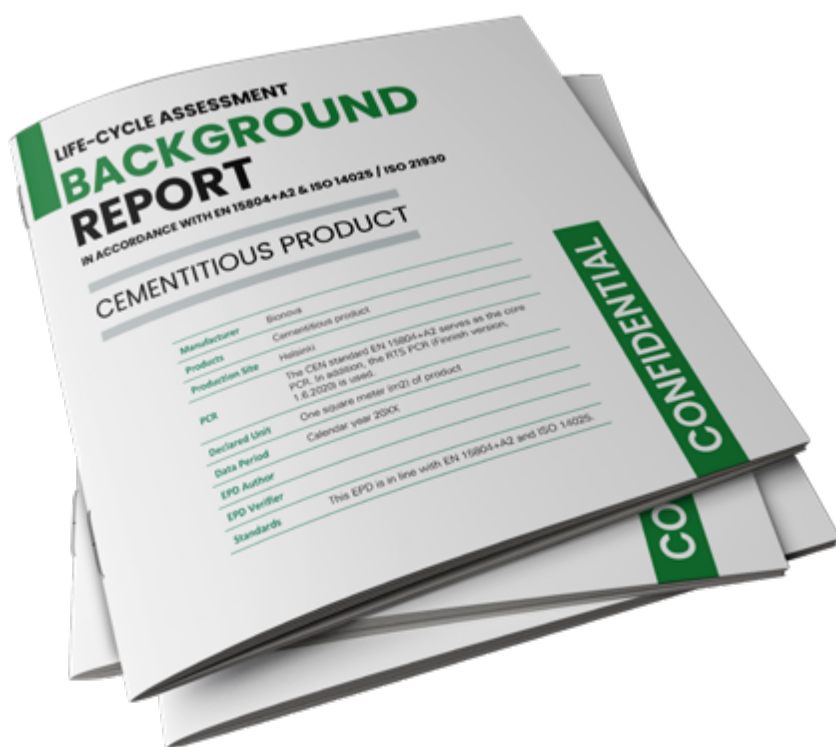
Unlike the EPD, the background report is not published. However, in some cases a version of the background report detailing elements of methodology but not revealing the specific data can be published.

Some of the most important topics to keep in mind are:

- The essential details and values concerning the life-cycle stages and the life-cycle inventory (LCI).
- Key concepts like co-product allocation, end-of-life assumptions, etc. and where they should be explained in the report.
- The selection, validation, and quality of data, and, if required, a sensitivity analysis.



One Click LCA EPD Generator uses templates that meet the reporting requirements of our approved PCRs to speed up this phase. As a user you just need to edit certain fields and check the inputted data. We also review your report before it is passed to the third-party verifier, to minimize errors and make the verification process smoother.





Step 05

THIRD-PARTY VERIFICATION

Every EPD needs to be verified by an independent third-party before it can be published. This ensures accuracy, reliability, and that the EPD conforms to the requirements of the relevant PCR.

The program operator can recommend the third party verifiers they work with. Alternatively, if you have opted to work with an LCA/EPD consultant, they will know of relevant accredited verifiers who they can work with.

With One Click LCA EPD Generator, our team reviews your EPD before passing it to an approved third party verifier to correct any obvious mistakes. This reduces the number of errors early on in the process, making the overall process more efficient.

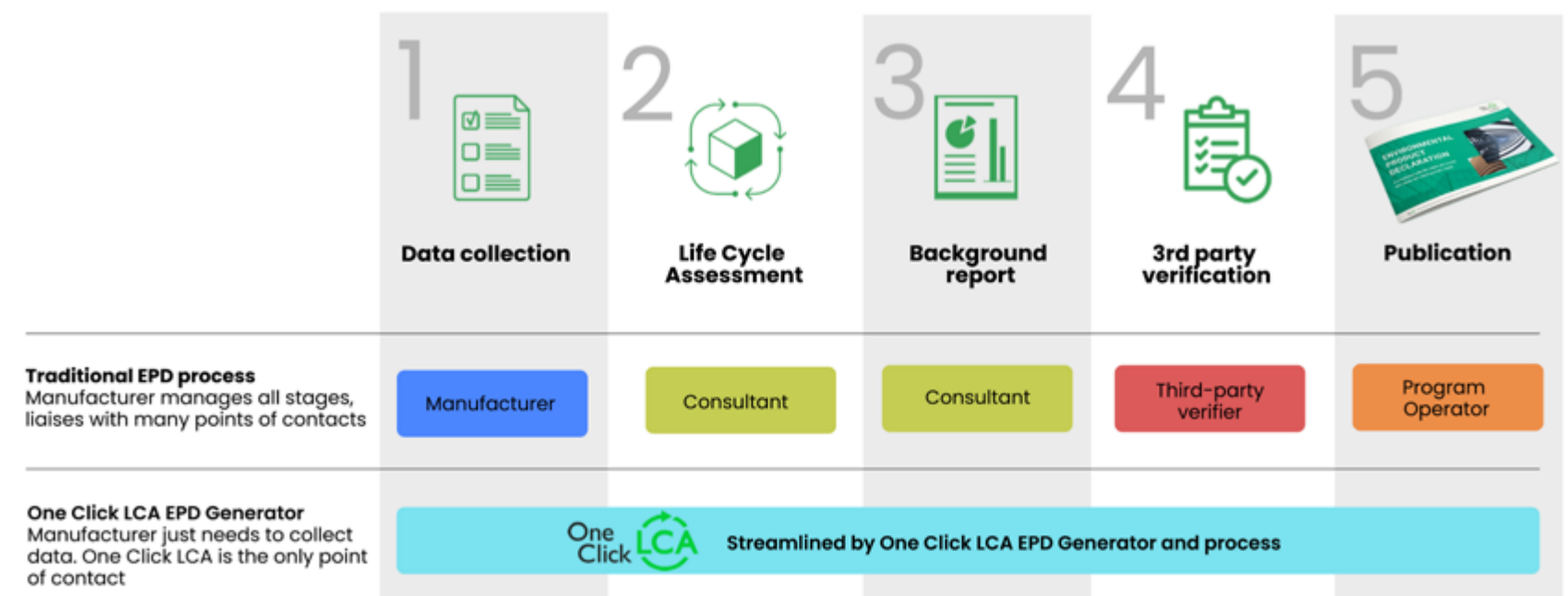
What is meant by pre-verification?

One Click LCA offers pre-verified EPDs to reduce the time, cost and complexity of EPD development by streamlining the process. In brief, pre-verification means that One Click LCA's tool, data and calculation models have been checked and approved by the program operator, slashing the time needed for verification by the third party verifier and program operator.

This does not mean that the verification stage can be by-passed. There are no shortcuts: all

resulting EPDs still need to be verified by an independent third party, to ensure that the inputted data is right for the LCA model and the relevant PCR, etc. However, as the verifier does not need to check the core LCA model of the tool itself, the time and costs required are reduced.

Also, One Click LCA manages the practical verification and publishing process on behalf of its customers, process so there is no need to liaise with the lots of different third parties.





Step 06

PUBLICATION



Once your EPD has been verified by an independent third party, it is ready to be put into the public domain via publication. To do this, you need to submit the EPD document for publication to the program operator, who will process, register, and publish your EPD.

There is usually a one-off fee for registering and publishing the EPD to the program operator and sometimes publishing fees are paid on an annual basis.

With One Click LCA EPD Generator, we manage the EPD publishing process on your behalf. There are no annual fees to keep EPDs published, manufacturers pay a one-time fee for five year validity and publishing of their EPDs.

Section 3

How to use EPDs in your business



HOW CAN YOU USE YOUR EPD TO DEVELOP YOUR BUSINESS?

Creating an EPD signals a commitment to measuring and reducing the environmental impact of your product. In addition, your EPD tangibly supports business development in a number of ways.

- Market differentiation: making it easier for carbon-aware clients to find and choose your product over others on the market.
- Benchmarking your performance: to see how you compare to competitors.
- Product development: by identifying where and how to reduce impact you are ready to meet changing sustainability requirements.

Get your products in front of clients seeking low-carbon solutions

Creating an EPD ensures that your product will feature in construction sector environmental databases such as [Building Transparency's EC3](#), and [One Click LCA for Building & Infra projects](#).

Peikko, the Finnish concrete connection and composite beam manufacturer, used One Click LCA to produce an EPD for their DELTABEAM® Green product. In doing so they saw that its CO₂ emissions were 50% lower than other options on the market. They featured this data in their marketing and, most importantly, lightened their customers' buildings' environmental footprints.

This is increasingly important, with more and more designers and builders using these tools to specify low-carbon products to meet regulation and/or certification requirements as mentioned in Section 1.

In short, having an EPD could determine whether or not your product is selected for a large-scale project.

2. Vertical structures and facade

External walls and facade [Compare answers](#) [Create a group](#) [Move materials](#) [Add to compare](#)

Search by name, manufacturer, EPD nr

- Acoustic glass wool insulation panel for ceiling, 15 mm, 1.3 kg/m², 86.7 kg/m³, Ecophon GedinaTM /Tech (Saint-Gobain Ecophon AB) - International EPD System
- Acoustic glass wool insulation panel for ceiling, 15 mm, 1.326 kg/m², 86.4 kg/m³, Ecophon GedinaTM (Saint Gobain) [Copy name](#)
- Acoustic glass wool insulation panel for ceiling, 15 mm, 1.326 kg/m², 86.4 kg/m³
- Acoustic glass wool insulation panel for ceiling, 15 mm, 1.326 kg/m², 86.4 kg/m³
- Acoustic glass wool insulation panel for ceiling, 15 mm, 1.326 kg/m², 86.4 kg/m³
- Acoustic glass wool insulation panel for ceiling, 15 mm, 1.326 kg/m², 86.4 kg/m³
- Acoustic glass wool insulation panel for ceiling, 15 mm, 1.326 kg/m², 86.4 kg/m³
- Acoustic glass wool insulation panel for ceiling, 15 mm, 1.326 kg/m², 86.4 kg/m³
- Acoustic glass wool insulation panel for ceiling, 15 mm, 1.326 kg/m², 86.4 kg/m³
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- Acoustic glass wool insulation panel for ceiling, 15 mm, 1.326 kg/m², 86.4 kg/m³
- Acoustic glass wool insulation panel for ceiling, 15 mm, 1.326 kg/m², 86.4 kg/m³
- Acoustic glass wool insulation panel for ceiling, 15 mm, 1.326 kg/m², 86.4 kg/m³
- Acoustic glass wool insulation panel for ceiling, 15 mm, 1.326 kg/m², 86.4 kg/m³
- Acoustic glass wool insulation panel for ceiling, 15 mm, 1.326 kg/m², 86.4 kg/m³
- Acoustic glass wool insulation panel for ceiling, 15 mm, 1.326 kg/m², 86.4 kg/m³
- Acoustic glass wool insulation panel for ceiling, 15 mm, 1.326 kg/m², 86.4 kg/m³
- Concrete column - for con

Internal walls and non-bearing structures [Compare answers](#) [Create a group](#) [Move materials](#) [Add to compare](#)

Search by name, manufacturer, EPD nr

Full name: Acoustic glass wool insulation panel for ceiling, 15 mm, 1.326 kg/m², 86.4 kg/m³, Ecophon GedinaTM (Saint Gobain) [Copy name](#)

Technical specification: 15 mm, 1.326 kg/m², 86.4 kg/m³

Product: Ecophon GedinaTM

Manufacturer: Saint Gobain

EPD program: International EPD System

EPD number: S-P-00792

Environment Data Source: Environmental products Declaration: Ecophon GedinaTM

Standard: EN15804

Verification: verified

Year: 2015

Country: Sweden

Upstream database: ecoinvent

Product Category Rules (PCR): PCR 2012:01 Construction products and Construction services, ver. 2.0, 03/03/2015

Notes about PCR: Only with EN15804

[Add to input](#)

[Favorite](#)

[Add to compare](#)



[Download EPD](#)

How EPDs are included and used in One Click LCA for Building & Infra projects

Benchmarking your products

At the most simple level, you can compare and benchmark your products' cradle to gate impacts with comparable products of competitors using embodied carbon databases, including EC3. **EC3's Find & Compare materials** allows you to view your product in relation to all the EPDs in the same category matching your search criteria. This is also possible in One Click LCA.

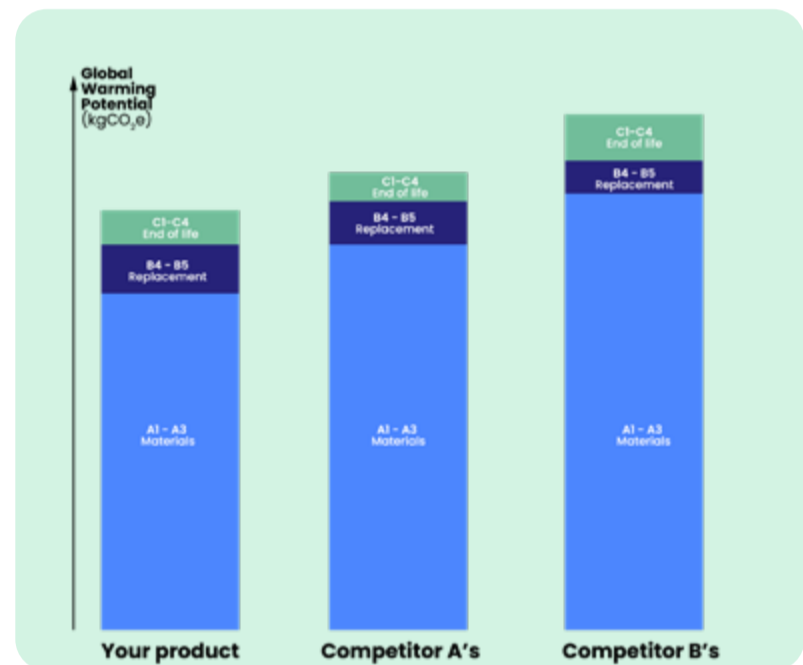
Product and material level comparison has, however, limitations when comparing low-carbon solutions. For example, a product may have lower manufacturing impacts but it may need more frequent replacements, or it can increase the use of energy, thus the overall lifetime impact is likely to be higher.

One Click LCA's Advanced Material Comparison feature enables you to compare your product in context of a specific construction project against actual alternatives. It shows how your product performs compared to competitors take in into account all the life cycle stages, in term of carbon footprint and other environmental impact categories, as well as possible ancillary materials.

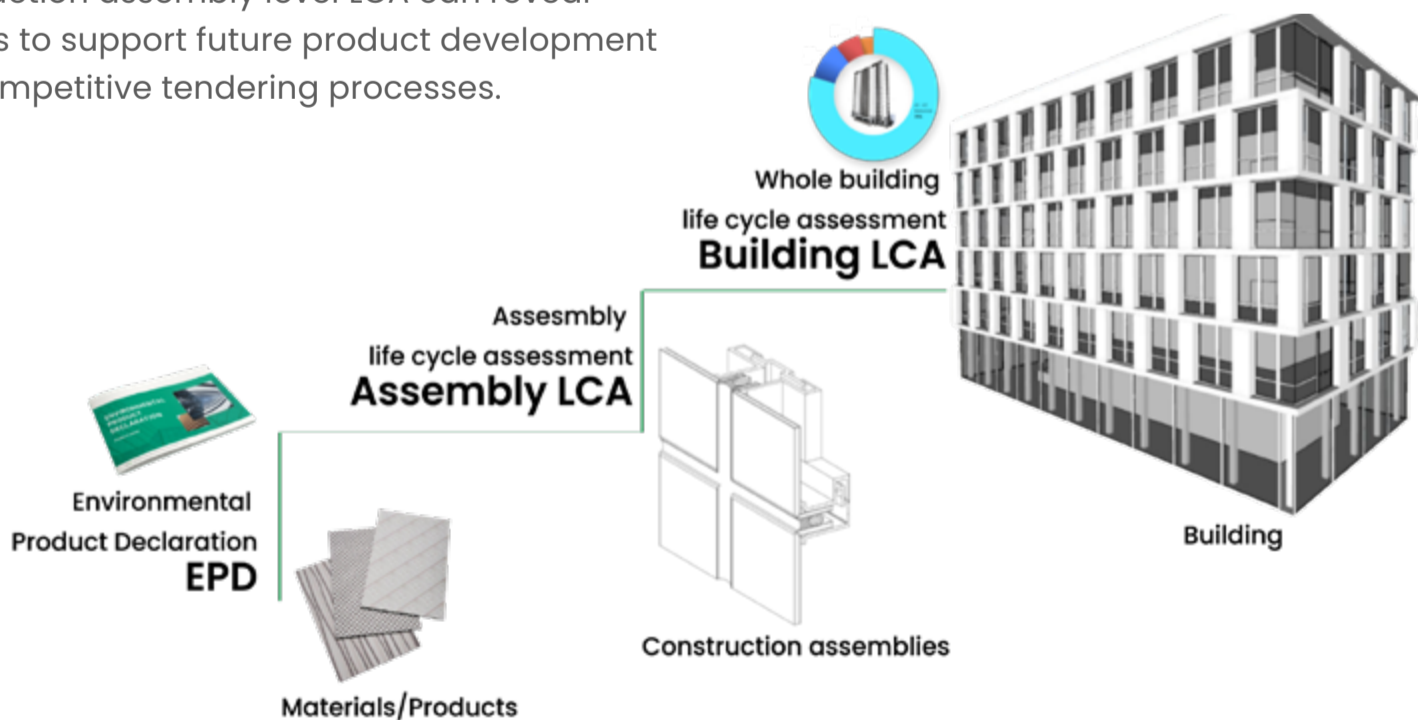
For manufacturers delivering low-carbon solutions, performing whole-building or construction assembly level LCA can reveal insights to support future product development and competitive tendering processes.



EC3's Find & Compare Materials – Compare all materials that fits users' search criteria.



One Click LCA's Advanced Material Comparison Compare your product with those of specific competitors



Using your EPD in marketing

Through its very existence your EPD will ensure that your product features in construction sector environmental databases, so will be seen by clients, looking for carbon-transparent products and materials.

But you can go so much further than that.

Your EPD should feature in sales and marketing materials, ideally with a dedicated page on your corporate website and accompanied by a press release or blog post outlining your commitment to sustainability.

For many clients and investors, your carbon footprint or GWP will be the main information they seek, so should be clearly outlined.

Different product types require different areas of the EPD to be highlighted, for example, biogenic carbon for wood- or other plant-based products.

When marketing your EPD you should also reference your company's sustainability strategy and highlight any specific areas of focus. This can be particularly useful for areas where you currently have high impact but you have plans in place to optimise future performance.

You may also consider offering technical support and guidance to your clients, in the form of a webinar or training session, so they can understand more about how your product can help them to meet their own sustainability requirements.

One Click LCA offers training and support for your sales and marketing teams to help them understand and make the most of the EPD.



Optimising your product's performance through ecodesign

Codesign is a design and development approach which takes environmental impact into account to guide decision-making. It looks at factors such as the sustainability of raw materials, energy consumption and end-of-life re-usability or recyclability.

In an industry increasingly exposed to carbon requirements, incorporating ecodesign principles into future product development will keep you ahead of the competition.

The LCA data underpinning your EPD provides the comprehensive view of your product's impact needed for ecodesign. And One Click LCA's user-friendly ecodesign tools makes it easy to use this data to support carbon-informed design decisions.

One Click LCA allows you to create a baseline product design based on your LCA data. Using our copy and paste capability, you can then make modified versions so you can experiment with different adjustments to your process.

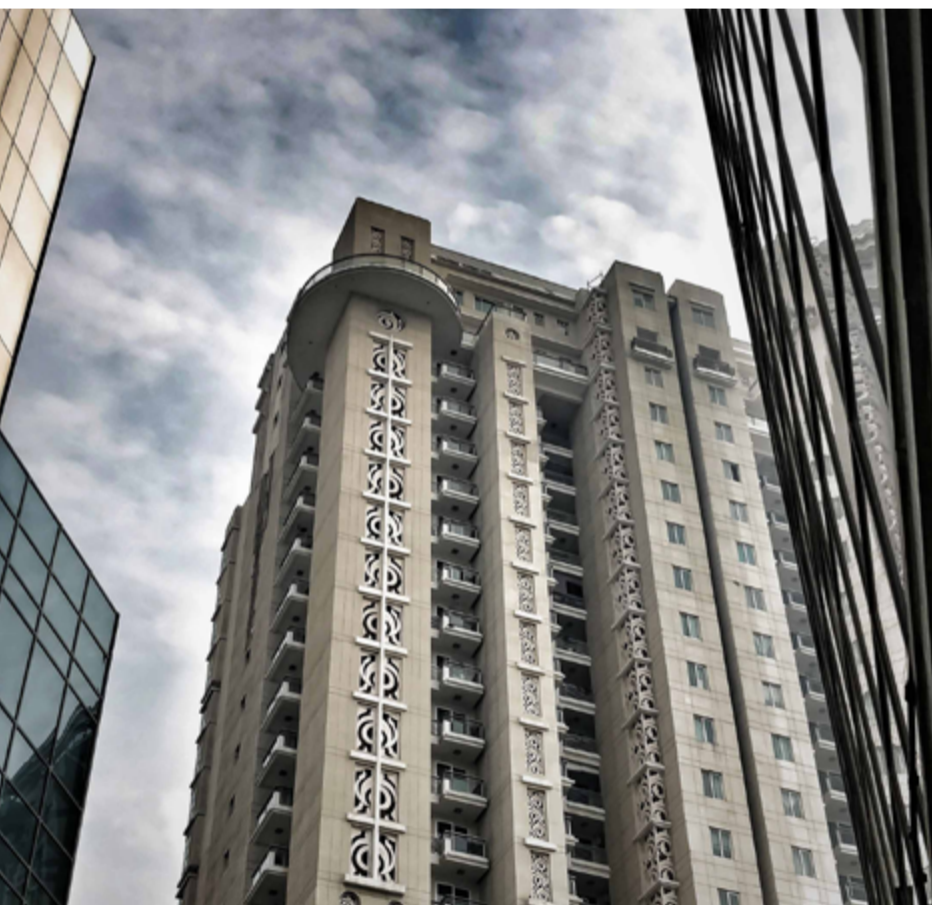
The goal is to see how your product's impacts would change if you optimized your process. Adjustments might be in the form of a different raw material or supplier or transport options or even moving to different energy sources.

With the changes in place, One Click LCA then allows you to conduct an LCA and compare its impact with your original design. Note: unlike our building level ecodesign tools, we do not provide visual models of the modifications at product level.

Once actionable potential improvements are identified within the model, the internal work then begins to incorporate the changes in future product development processes.

According to the business adage, "What you don't measure, you can't improve." Your EPD and One Click LCA's ecodesign tools can help you to do both.

Manufacturers report a lack of understanding of environmental impacts among their upstream suppliers. By quantifying and visualising impact and identifying hotspots, your EPD can help to raise supplier awareness and drive improvements. With carbon reduction a priority for construction product specifiers and buyers, improving environmental performance will increase overall competitiveness and boost your sales.



CHOOSING THE RIGHT EPD SOFTWARE

You're ready to move forward with creating your product EPD, but which platform should you choose? **One Click LCA EPD Generator** is an affordable, pre-verified tool to develop robust EPDs, complying with ISO 14040, ISO 14044, EN 15804+A1+A2 and ISO 21930 and ISO 14025

Here are five reasons to choose One Click LCA EPD Generator

- 1. Ease-of-use:** Intuitive interface and user-friendly templates, as well as exceptional integrations to import BOM swiftly.
- 2. Single point of contact:** Our EPD Generator streamlines pre-verified EPD production, saving you time, money, and effort. We also organise an approved third party verifier and manage the publishing process for you.

3. Accessible ecodesign: Stay ahead of market demands for sustainability by using our ecodesign capability to drive carbon-aware product development.

4. World's largest environmental construction database: One Click LCA's database has over 95,000 datapoints, including 50,000 existing market EPDs, available for you to use.

5. Outstanding support from our local experts: As well as providing technical support on our software, our team's deep knowledge of the sector enables them to support on issues like certification and regulation requirements.

We offer a subscription plan to fit all business needs from small and medium sized enterprises to large global manufacturers. Find out more below.

One Click LCA EPD Generator Subscription Plans

PLAN	STARTER	BUSINESS	EXPERT
SUMMARY	Easy solution for creating carbon & EPD data	Automate and streamline EPD delivery at scale	Differentiate and sell more with sustainability
WHO IS IT FOR?	Manufacturers requiring product carbon assessments and the ability to evaluate options, and/or create a limited amount of EPDs	Manufacturers requiring an automated way to create EPDs and/or to deliver project or tender specific EPDs or LCAs for their clients	Manufacturers requiring proprietary LCIA datasets in their assessments and the ability to benchmark products against existing market EPDs
BUSINESS BENEFITS	<ul style="list-style-type: none"> • Assess product impacts easily using templates • Generate alternatives to identify reductions • Use existing market EPDs in your products • Leverage pre-verified, robust LCA model • Outstanding customer support included • Option: Ecoinvent (comprehensive) 	<ul style="list-style-type: none"> • Save time by importing your bill of materials • Generate EPDs and LCA reports instantly • Send product LCA to designers • Create private EPDs for projects or tenders • Tailored EPD solution for your product category 	<ul style="list-style-type: none"> • Manage your private LCIA data flexibly • Generate EPDs in machine readable format • Manage your own EPD publishing process • Demonstrate your product credentials with EPD benchmarking and private solution libraries • Generate EPDs for any product category

Get more details at www.oneclicklca.com/pricing

GET A FREE CONSULTATION WITH OUR TEAM

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[Get in touch](#) and find out how we can help you today.



Extra resources for manufacturers & building material suppliers

ONE CLICK LCA EPD RESOURCE HUB

A one-stop hub for guides, webinars, articles, ebooks and more covering product and material life cycle assessment, EPDs and business cases around product sustainability.

Visit: www.oneclicklca.com/epd-hub



ANNEX: GLOSSARY

1. Carbon-dioxide equivalent (or CO₂e): Global warming that is caused by all greenhouse gases released by activity. As well as carbon dioxide (CO₂), it includes the impact of other gases.
2. Characterization: Within each environmental impact category the emissions are calculated to the same unit and summarized.
3. Eco-design: a design approach which takes into account the lifetime environmental impact of a product to guide decision-making. It looks at areas such as how to maximise the use of sustainable materials, how to reduce energy use and how to design a product so that it can be recycled or reused at the end of its life.
4. Environmental Product Declaration (EPD): a third-party verified report of Life Cycle Assessment (LCA) results.
5. Environmental impact: An impact on the environment, e.g. global warming, and acidification.
6. Functional unit: A quantitative description of the amount, weight and quality of the function fulfilled by the product system under assessment.
7. Impact categories: An impact category groups different emissions into one effect on the environment and converts them into one unit.
8. Life Cycle Assessment (or LCA) is a standardized method of assessing the potential environmental impacts associated with all the stages of a product's or building's life, from raw material extraction, processing and manufacture, through distribution, use, repair, maintenance, all the way through to end-of-life disposal or recycling. For buildings, this is also referred to as Whole-Building Life Cycle Assessment.
9. Product Category Rules (PCR) are documents that provide rules, requirements, and guidelines for developing an EPD for a specific product category.
10. Program Operator: organizations responsible for supervising EPD programs – from creating and maintaining PCRs to approving and publishing individual EPDs.
11. System boundaries: Boundaries for which processes in the product's life cycle will be included in the LCA.