Environmental Product Declarations and Life Cycle Assessments

A Comparative Analysis

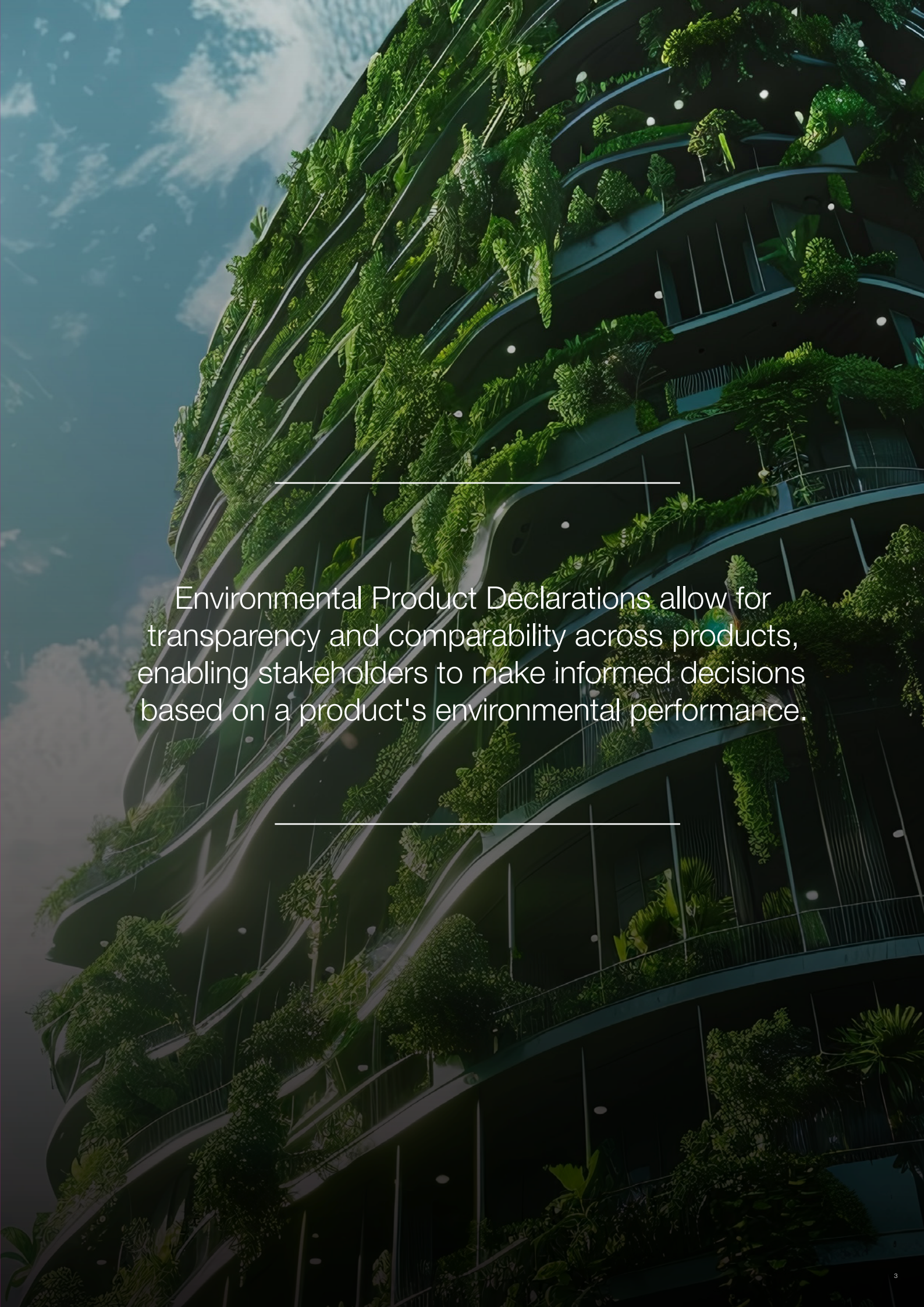
siniat

INTRODUCTION

In the pursuit of sustainability, industry professionals frequently encounter a variety of complex terms and frameworks, among which Environmental Product Declarations (EPDs) and Life Cycle Assessments (LCAs) are essential. These tools are fundamental to understanding and communicating the environmental impacts associated with products and services. However, despite their widespread use, the nuances and distinctions between them can often be overlooked or misunderstood.

LCAs provide a comprehensive analysis of a product's environmental impact across its entire life cycle—from raw material extraction to disposal. In comparison, EPDs, while typically based on LCAs, serve as standardised, third-party-verified documents that summarise a product's environmental performance.

Though they both provide valuable insights, EPDs and LCAs differ and complement each other in several key ways, including how they can be used by architects and specifiers. This paper will explore the distinctions, similarities, and roles of both tools in sustainable building design.



Environmental Product Declarations allow for transparency and comparability across products, enabling stakeholders to make informed decisions based on a product's environmental performance.

WHAT IS AN EPD?

An EPD is a verified and registered document that presents transparent, comparable data regarding the environmental impact of a product throughout its life cycle. It provides essential information on the product's environmental performance in a standardised format, allowing for easy comparison with similar products. This transparency helps stakeholders make informed decisions based on reliable, third-party validated data.

EPDs include various datasets such as raw material consumption and the use of energy, water, and renewable resources, along with emissions to air, water, and soil. These are aggregated into multiple environmental impact categories, including contributions to climate change, pollution, and resource depletion. Additional information, like product performance and environmental certifications, may also be included. EPDs follow the ISO 14025 standard, classifying them as "Type III environmental declarations" created within a program framework, such as EPD Australasia.

In recent years, EPDs have seen significant growth, with around 17,000 published globally by early 2023.[1]

WHAT IS AN LCA?

An LCA is a method used to evaluate the environmental impacts of a product, process, or service throughout its entire life cycle, from raw material extraction through production, use, and disposal. ISO-compliant LCAs offer a comprehensive evaluation of environmental impacts conducted in accordance with ISO 14040 and ISO 14044. They may also align with additional applicable standards depending on requirements.

LCAs provide "cradle-to-grave" analysis and help map out the complex interactions within industrial production systems. The process involves modelling various scenarios and conducting sensitivity analyses to contribute to the interpretation of results, which together offer a granular understanding of the origins and causes of environmental impacts.[2]

They can be carried out either by in-house teams or independent experts, using tools such as GABI or SimaPro, which facilitate detailed modelling of a product's life cycle and environmental impacts.

UNDERSTANDING THE DIFFERENCES

Purpose

LCAs and EPDs serve different but related purposes within the context of environmental sustainability. EPDs are designed to communicate the results of LCAs in a standardised, easy-to-understand format. While LCAs focus on the process of data collection and analysis, EPDs summarise this information for stakeholders, such as consumers, architects, and procurement teams.

While LCAs attempt to achieve a level of consistency across products and services, there is sometimes a lack of uniformity due to different methodological decisions during the process.[3] In contrast, EPDs place an emphasis on following a strict set of standards to allow for transparency and comparability across products, enabling stakeholders to make informed product decisions.[4]

Importantly, an EPD cannot exist without an underlying LCA. The LCA provides the in-depth environmental data that forms the foundation of an EPD, while the EPD serves as a concise, structured way to present this information. In this sense, LCAs are the analytical backbone, and EPDs act as the communication tool that conveys these findings to the broader market.

International standards and guidelines

All EPDs registered with EPD Australasia undergo independent verification to comply with ISO 14025, relevant Product Category Rules (PCRs), and the Programme's General Programme Instructions (GPIs). For building and construction products, the PCR is aligned with EN 15804 to ensure the data is suitable for inclusion in a whole-building life cycle assessment under EN 15879.

Each EPD is grounded in an LCA that has been conducted in accordance with ISO 14040 and ISO 14044, which provide the principles, framework, and guidelines for conducting LCAs. The LCA is governed by the relevant PCR (note the specific PCR for building and construction products mentioned above), which offers specific guidance on how to assess and report environmental impacts, ensuring that all manufacturers adhere to the same criteria when creating their assessments.

Data and reporting

When it comes to reporting, LCAs and EPDs differ in how they handle functional units and life cycle stages.[5] In EPDs, the functional unit may be referred to as a declared unit, which allows flexibility for products that serve multiple purposes. Additionally, EPDs categorise life cycle stages into specific modules, providing a more standardised and consistent format for reporting. In contrast, LCAs may adopt a more flexible approach depending on the specific needs of the analysis.

Another key difference is in the reporting of environmental indicators. EPDs must include a predefined set of core indicators, such as global warming potential and resource depletion, which ensures consistency across products. LCAs, on the other hand, are more flexible and can select the environmental indicators most relevant to the study, depending on the goals and scope of the assessment.

Life Cycle Assessments provide a comprehensive analysis of a product's environmental impact across its entire life cycle—from raw material extraction to disposal.

HOW EPDS AND LCAS CAN BE USED

Broadly speaking, LCAs are used to support informed decision-making aimed at reducing environmental impacts. They have multiple applications, including conducting comparative analyses between products, identifying environmental hotspots, and validating external sustainability claims.[6] By providing a comprehensive view of a product's environmental footprint, LCAs help businesses and policymakers identify areas for improvement across a range of industries.[7]

In Australia, EPDs are primarily used within the construction sector to assist architects, consumers, and other stakeholders in selecting more sustainable products. EPDs allow for objective comparison of environmental performance between similar materials, offering transparent, third-party-verified data. This information is essential in an industry where many environmental claims are not independently validated.

In addition to providing comparable environmental performance data, EPDs help design and construction professionals understand the functional properties of a product and the materials used in its composition. They can also help earn points in sustainability rating systems such as Green Star, which is administered by the Green Building Council of Australia (GBCA), and the Infrastructure Sustainability (IS) rating scheme by the Infrastructure Sustainability Council (ISC), making them valuable for projects aiming to meet green building and infrastructure standards.

Both LCAs and EPDs play a critical role in promoting sustainability in the building industry. By providing verified data on the environmental performance of building products, they enable architects and specifiers to monitor and improve the sustainability of their projects.

SINIAT'S METAL AND PLASTERBOARD EPDS

Siniat's recent publication of EPDs for their plasterboard and metal products highlights the importance of transparent, verified environmental data in the building industry. Registered with EPD Australasia, these EPDs comply with ISO 14025 and the International EPD® System, ensuring they meet international standards. This provides customers with reliable, comparable environmental information about the life cycle impacts of Siniat's products.

There is growing demand for EPDs across all stages of the construction process, with customers seeking clear data to support sustainable building practices. Supported by in-depth Life Cycle Assessments (LCAs), these EPDs offer a detailed analysis of a product's environmental impact, providing transparency that goes beyond general sustainability claims.

Recognised by the GBCA and Green Building Council New Zealand, Siniat's EPDs also contribute to Green Star points in sustainable construction projects. Siniat's commitment to sustainability is further demonstrated by initiatives like the Opt2Act carbon neutral program, certified by Climate Active, which complements their EPDs in promoting greener building solutions.

Click **here** to download the plasterboard EPD and **here** to download the metal EPD.

REFERENCES

1 Eco Platform. “EPD Facts & Figures.” Eco Platform. https://www.eco-platform.org/epd-facts-figures.html (accessed 25 September 2024).

2 EPD Australasa. “A guide to understanding LCAs and EPDs.” EPD Australasa. https://epd-australasia.com/2024/03/a-guide-to-understanding-lcas-and-epds (accessed 25 September 2024).

3 Ibid.

4 Ibid.

5 Ibid.

6 Ibid.

7 Ibid.

All information provided correct as of Octobrt 2024