

ASHRAE
Hellenic Chapter

TEE

ENERGY IN BUILDINGS

EMEA 2024

Europe, the Middle East & Africa

FRIDAY - SATURDAY

NOVEMBER 22-23, 2024

@ 9:00-18:00

SESSIONS:

- SUSTAINABILITY
- HEALTH & SAFETY
- DECARBONIZATION
- TECHNICAL SOLUTIONS
- DIGITAL ENVIRONMENT
- POLICIES & LEGISLATION
- ENERGY EFFICIENCY FIRST
- RESILIENCE TO CLIMATE CRISIS

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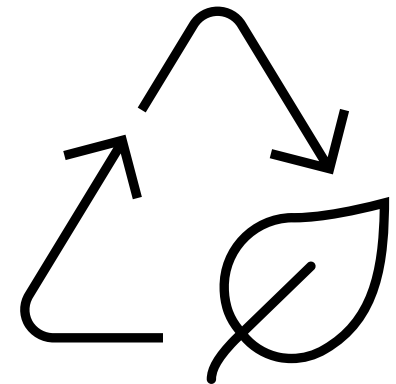
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Reporting First, Sustainability Second?:

Ensuring Accurate, Verifiable EPDs and LCAs for HVAC Products

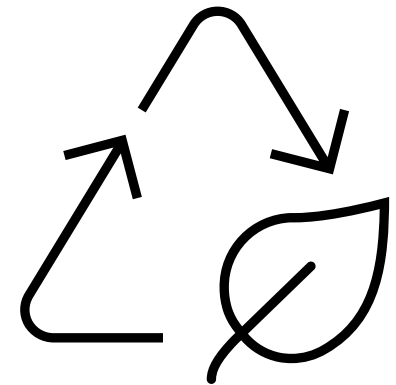
Today's content

- 1) Why do we need Environmental Product Declarations (EPDs)?
- 2) What are EPDs?
- 3) What are their pitfalls?
- 4) How can we ensure the right application of EPDs?
- 5) Q&A



Today's content

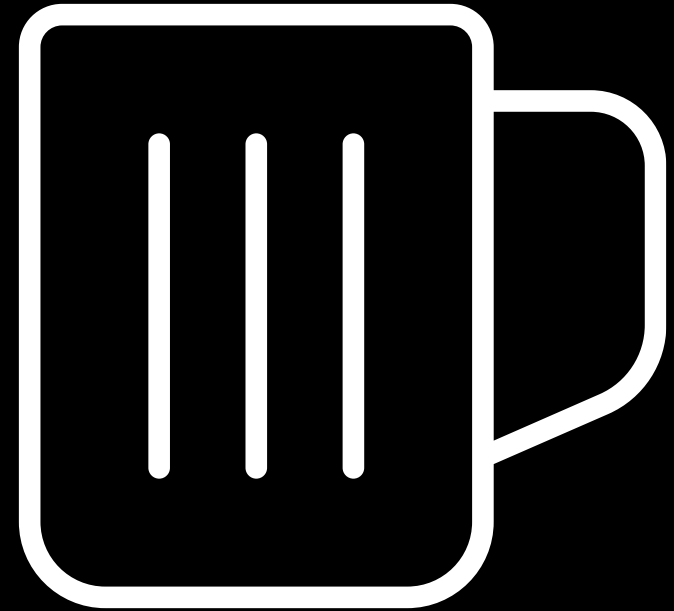
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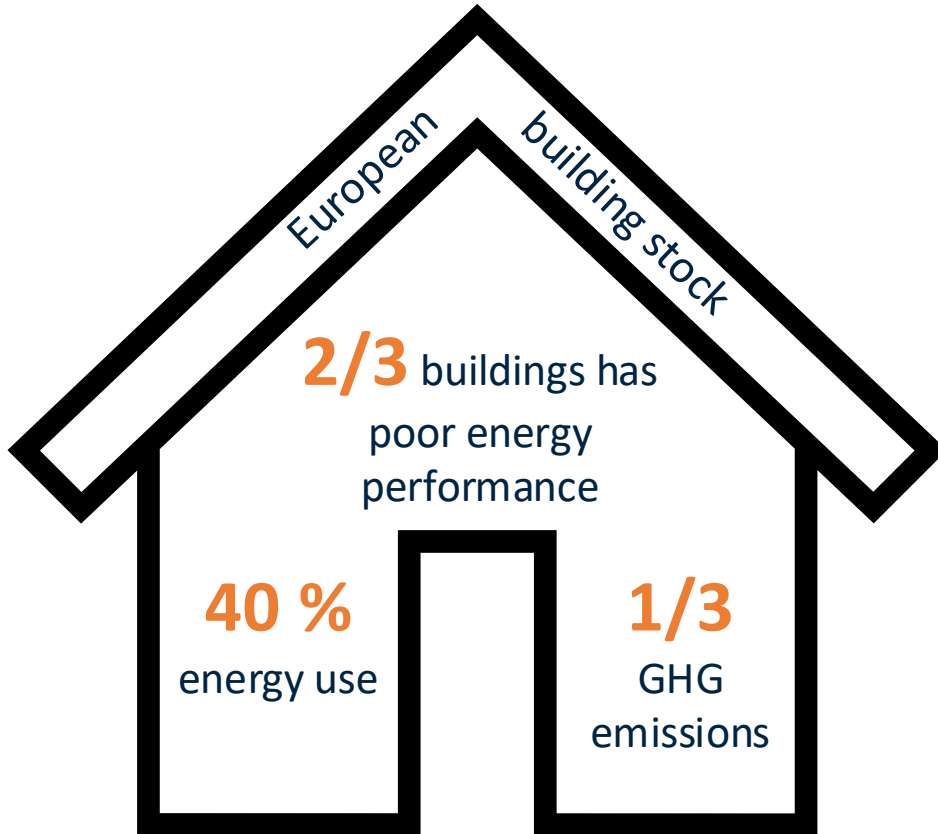
You are what you breath

Why we need Environmental Product Declarations for our applications

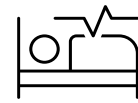
We inhale **half a litre**
of air with each breath.



The potential of current buildings



Leading to bad indoor air:



Sickness

→ 150,000 premature deaths



Absence & Productivity

→ € 260 B GDP loss



Energy

→ up to 26 % savings unutilised

Healthy buildings

What we aim for



Pleasant



Safe

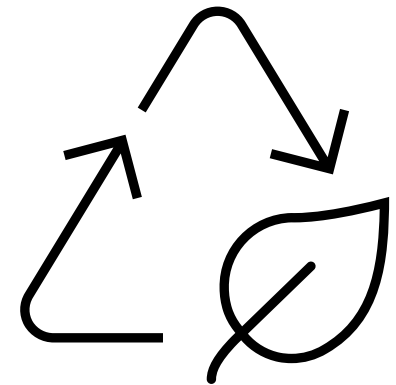


Energy Efficient

Supported by **Environmental Product Declarations**

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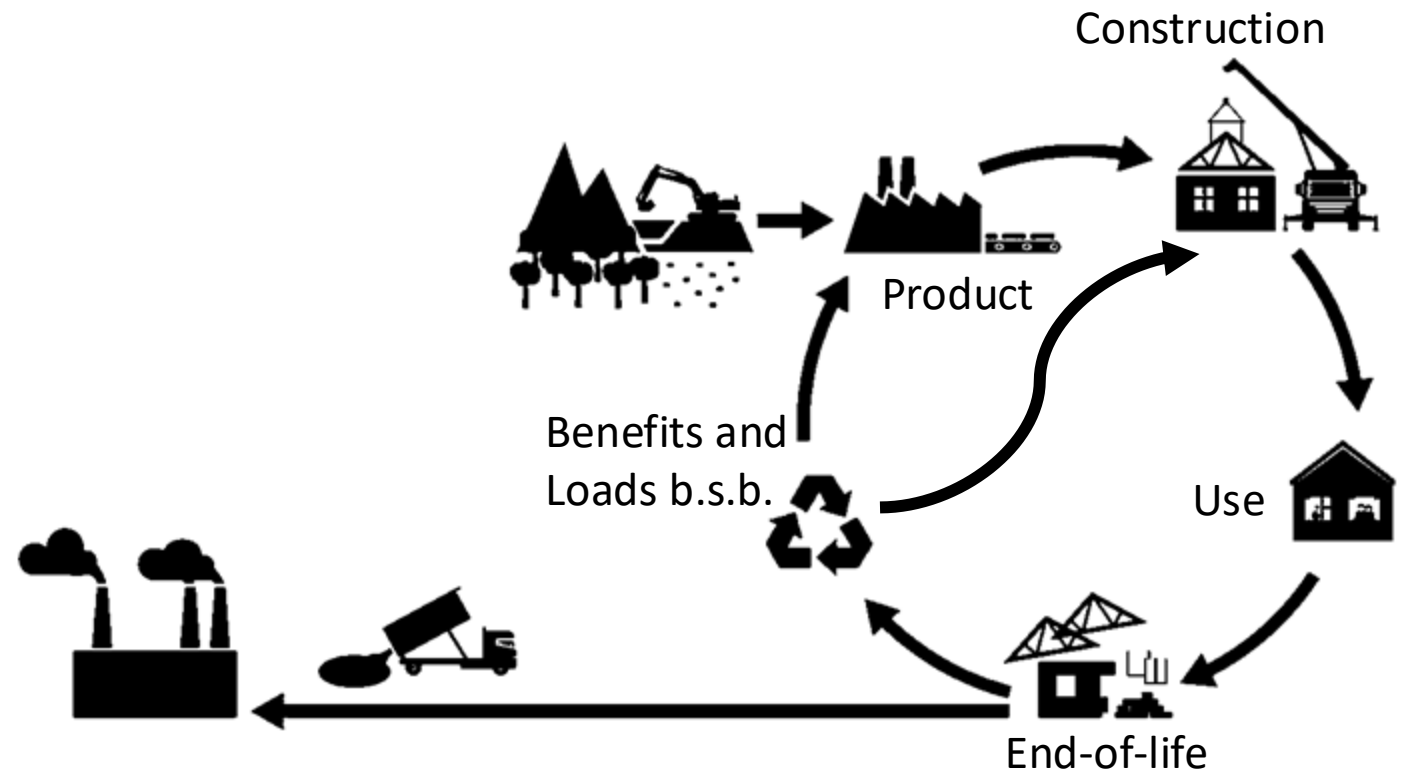
What are EPDs?

Lifecycle Assessments (LCAs) of products

Help selecting best product in construction/renovation projects

Certified (conditionally) by EPDs:

- Combinable: several elements with environmental info
- Third-party approved by Programme Operators
- Quality assessment: costly and time-consuming to produce



LCAs: a lifecycle on its own

LCAs can cover

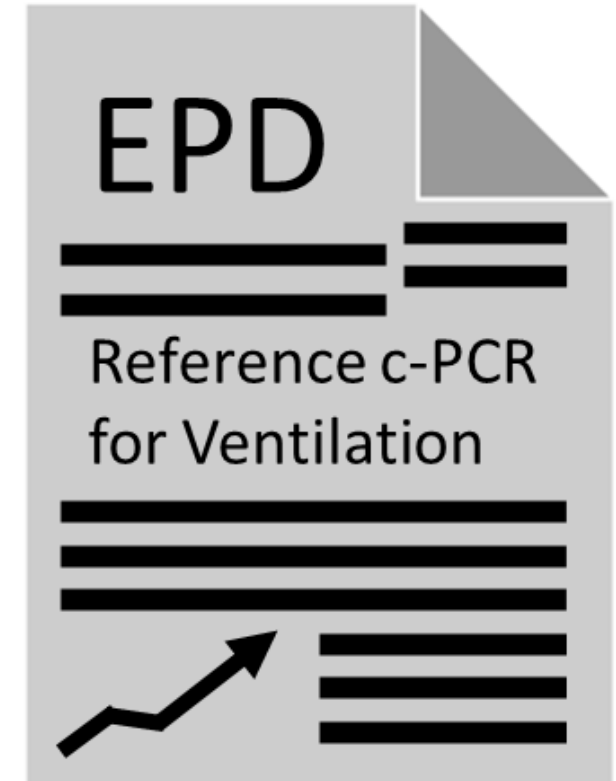
- **Production:** raw materials, transport, manufacturing
- **Construction:** transport, installation
- **Use:** use, maintenance, repair, replacement, refurbishment, energy use and water use
- **End-of-Life:** deconstruction, demolition, transport, waste processing, disposal
- **After-Life Benefits:** potential for reuse, recovery, recycling

This leads to three LCA types:

- **Cradle-to-gate:** covers Production and End-of-Life
- **Cradle-to-gate plus options:** includes additional Construction and Use stages
- **Cradle-to-grave:** covers all five stages

Who uses EPDs?

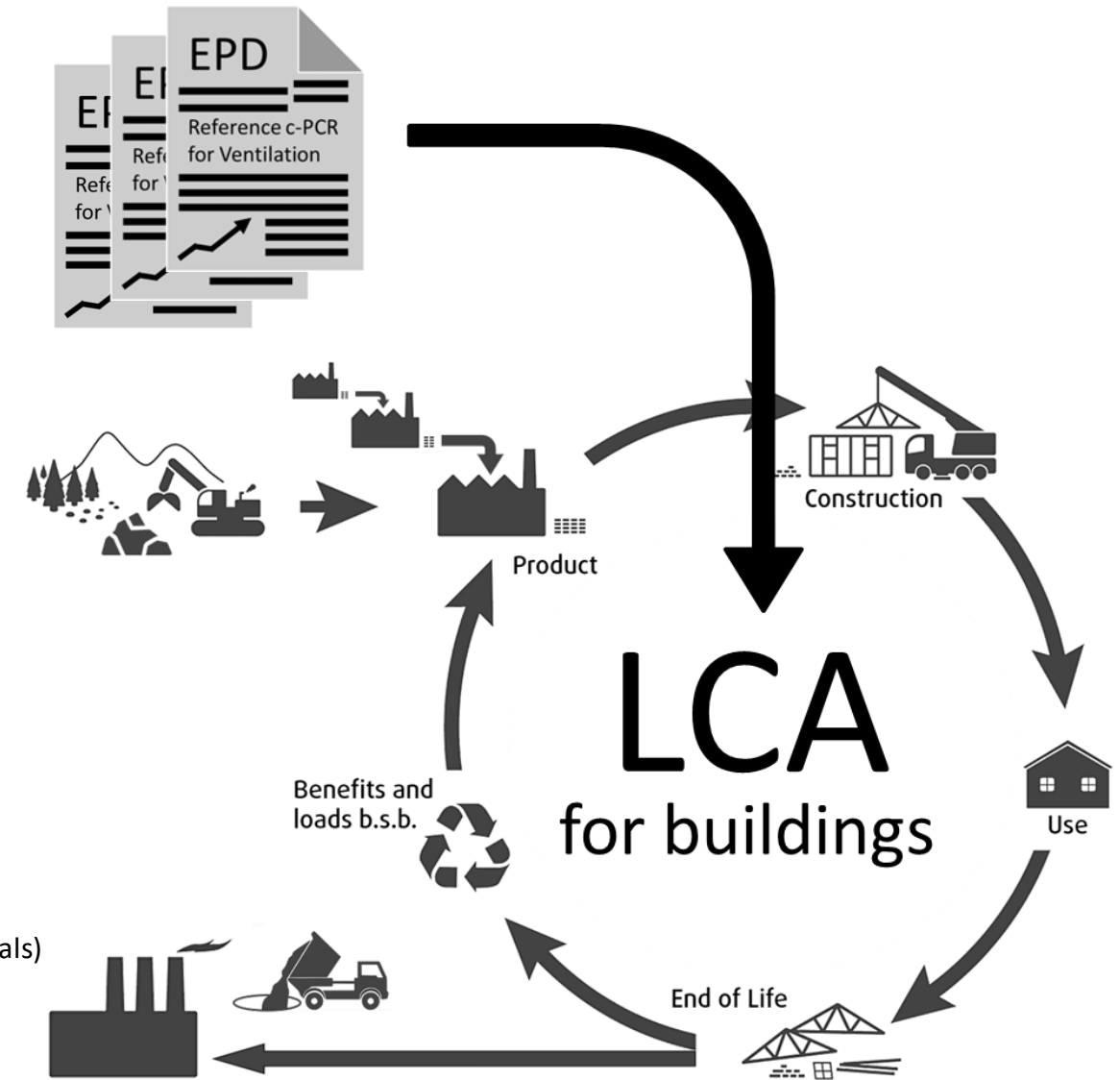
- **Environmental consultants:**
to conduct building LCAs
 - **Building owners:**
providing a solid basis for assessing a product or service environmental impact
 - **Manufacturers:**
providing key data for product development and sustainability efforts
- Increased demand:** mandatory through building codes, part of green building programmes (BREEAM, LEED), etc.



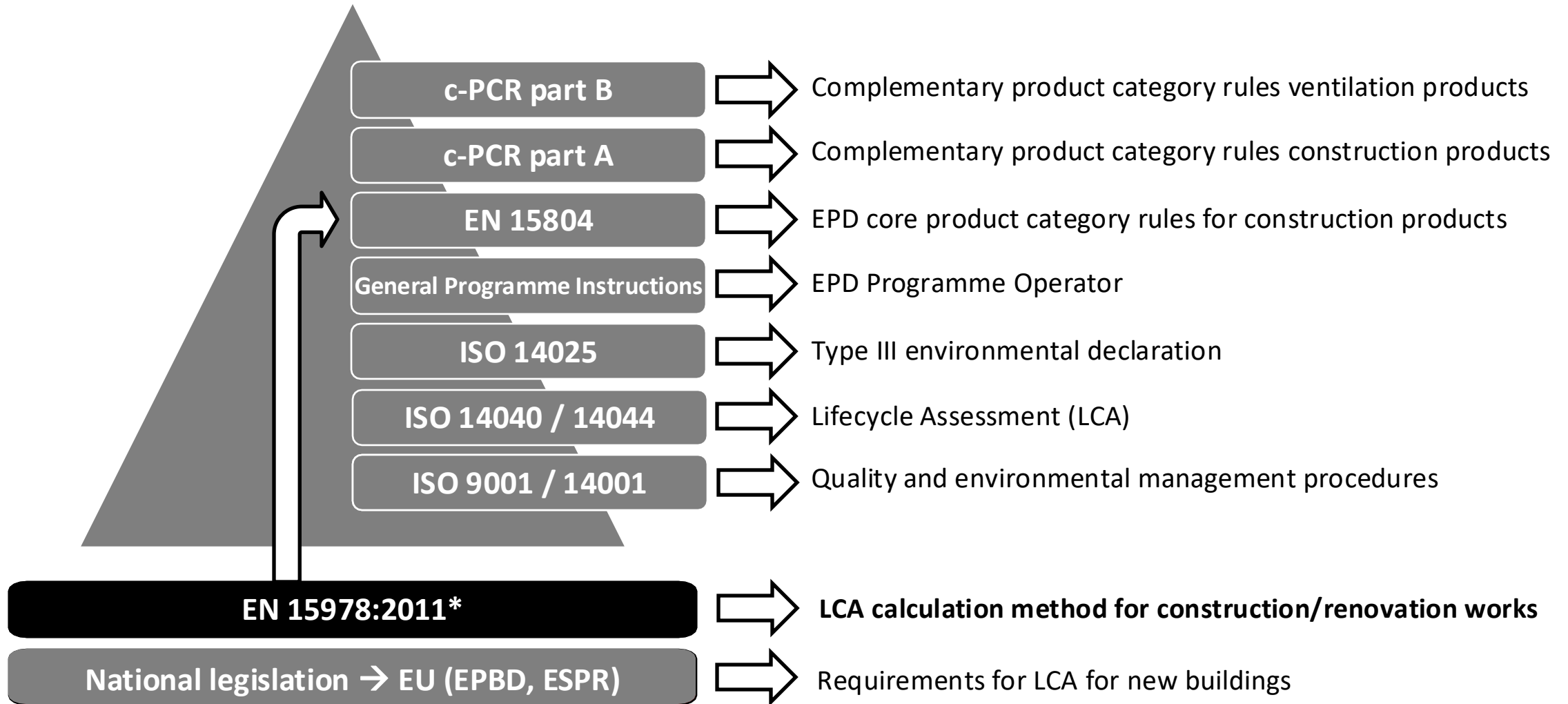
What do EPDs contain?

13 environmental indicators for 17 lifecycle modules in products (<221 distinct values)

Indicator	Meaning
1 GWP-total	Global Warming Potential - total (sum of 2, 3, and 4)
2 GWP-f	Global Warming Potential - fossil
3 GWP-b	Global Warming Potential - biogenic
4 GWP-luluc	Global Warming Potential – land use and land use change
5 ODP	Ozone Depletion Potential
6 AP	Acidification Potential
7 EP-fw	Eutrophication Potential aquatic – fresh water
8 EP-m	Eutrophication Potential aquatic – marine
9 EP-T	Eutrophication Potential - terrestrial
10 POCP	Formation potential of tropospheric ozone
11 ADP-mm	Abiotic Depletion Potential for non-fossil resources (minerals & metals)
12 ADP-f	Abiotic Depletion Potential for fossil resources
13 WDP	Water Deprivation Potential (water usage)



How are EPDs standardised? (1/2)



How are EPDs standardised? (2/2)

EN 15804 further adds:



An EPD communicates:

verifiable, accurate, non-misleading environmental information for products and their applications,

thereby **supporting scientifically based, fair choices**

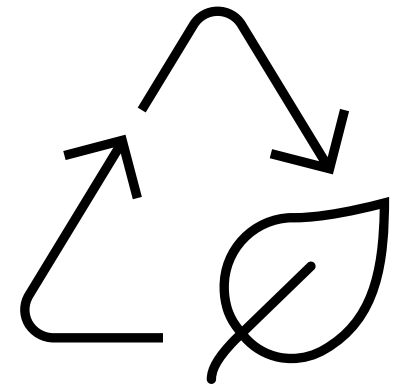
and stimulating the potential for market-driven **continuous environmental improvement.**

**So, we've got EPDs,
we're there now, right?...**

**Unless EPDs become a purpose on their own,
we lose track of the environmental objectives we want to achieve**

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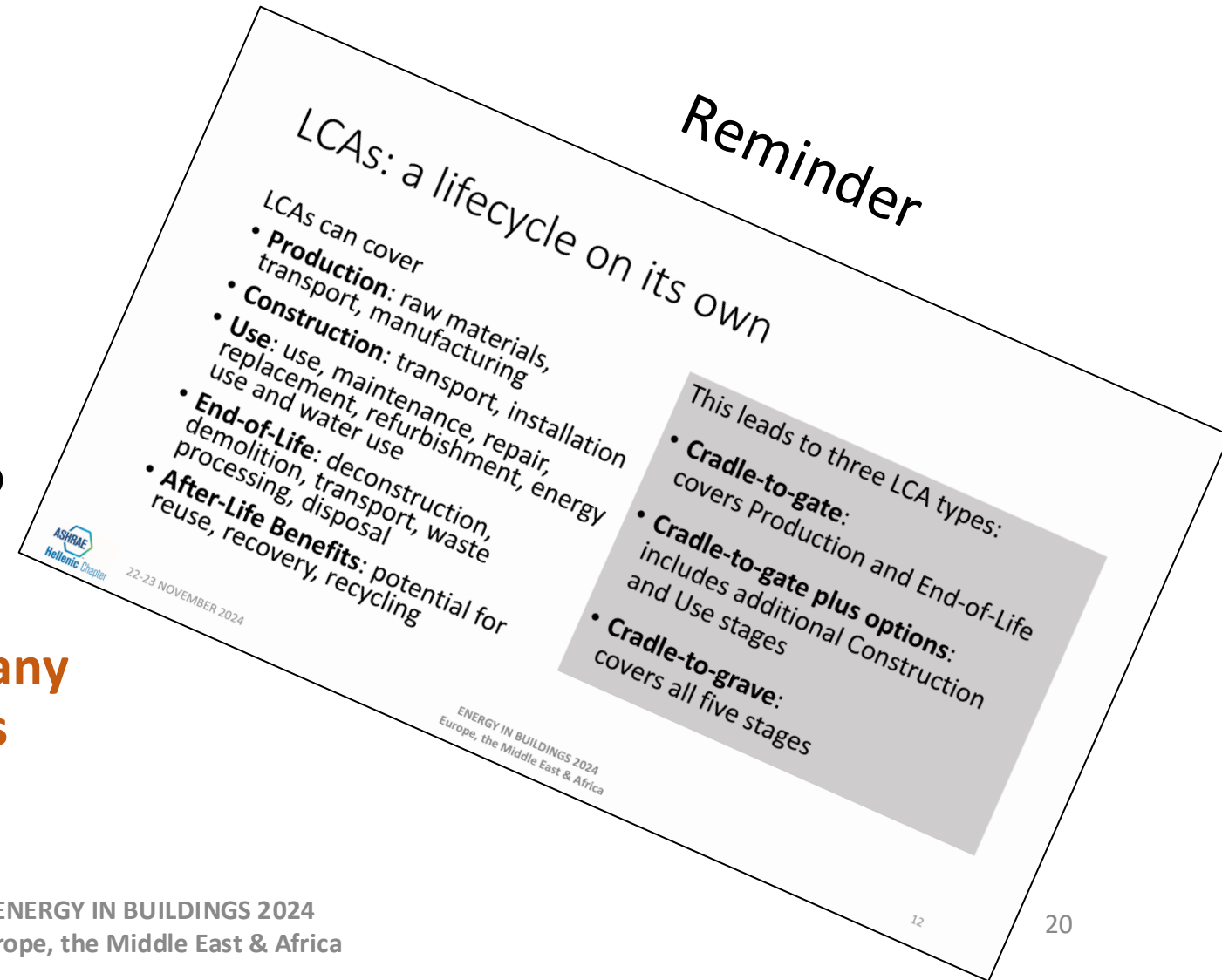
What are the pitfalls of EPDs?

Attraction of having an all-encompassing tool

Policy developers, NGOs, etc.:

- assume that EPDs are suitable to cover whole LCA
- believe that ‘Cradle-to-grave’ offers a comprehensive solution to environmental concerns

However, **manufacturers cannot in any way claim to know how a product is going to be used**



Reminder

LCAs: a lifecycle on its own

LCAs can cover

- **Production:** raw materials, transport, manufacturing
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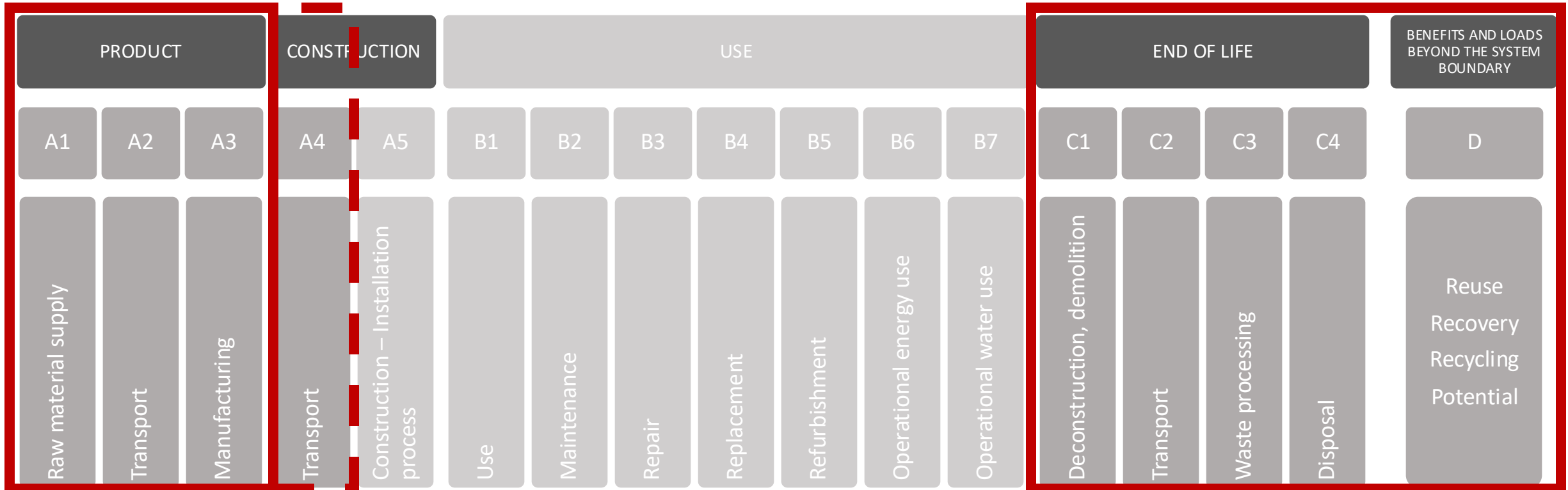
12

Ensuring verifiable, accurate, non-misleading information: Cradle-to-gate

CONSTRUCTION WORKS ASSESMENT INFORMATION

CONSTRUCTION WORKS LIFE CYCLE INFORMATION

Supplementary information



Three strikes and we're out!

What happens if we include the Use Stage?

Suboptimisation: selecting products based on EPDs only, ignoring context
→ We should not make EPDs into something that they are not

- 1) **Misconception** that EPDs are for product comparison
- 2) **Policy failure:** belief that they can help protecting European Industry
- 3) **Administrative burden:** basic conditions are missing

1) EPD \neq suitable for product comparison

Cradle-to-gate

- Only $\pm 5\%$ difference in outcome depending on project
 - EPDs can be (re)used for multiple construction/renovation projects

Cradle-to-grave

- Use Stage can have **5 000 % difference** per building project for the same product model
 - for every single product model, for every single project, a new LCA with a new EPD is needed

EPDs are **no standalone tools**, but must be used in the correct context

2) Equal access: anyone can get EPDs



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国际EPD®体系是世界上第一个和领先全球的EPD计划，按照ISO14025、ISO/TS14027、ISO14040/44等标准运作。对于建筑和建材领域，我们的EPD也符合ISO 21930和EN 15804标准要求。

任何公司或组织，无论其规模大小、所处行业或其地位，都有权以合理且简单的方式发布EPD。

市场往往渴望得到关于特定产品包括其设计变化的一手的LCA数据（EPD），而不是通用的数据库数据。作为EPD的首创者，我们更希望成为产品低碳可持续发展的推动者，使产品和服务的具体环境性能信息能够更大规模、更加清晰地公开和获取，并以对市场具有吸引力的方式提供这些信息。

EPD作为经由第三方验证的LCA信息库，可应用于各类需求和场景，具有填补数据空白、数据缺乏以及满足环境声明信息数字化新需求等所有要素。

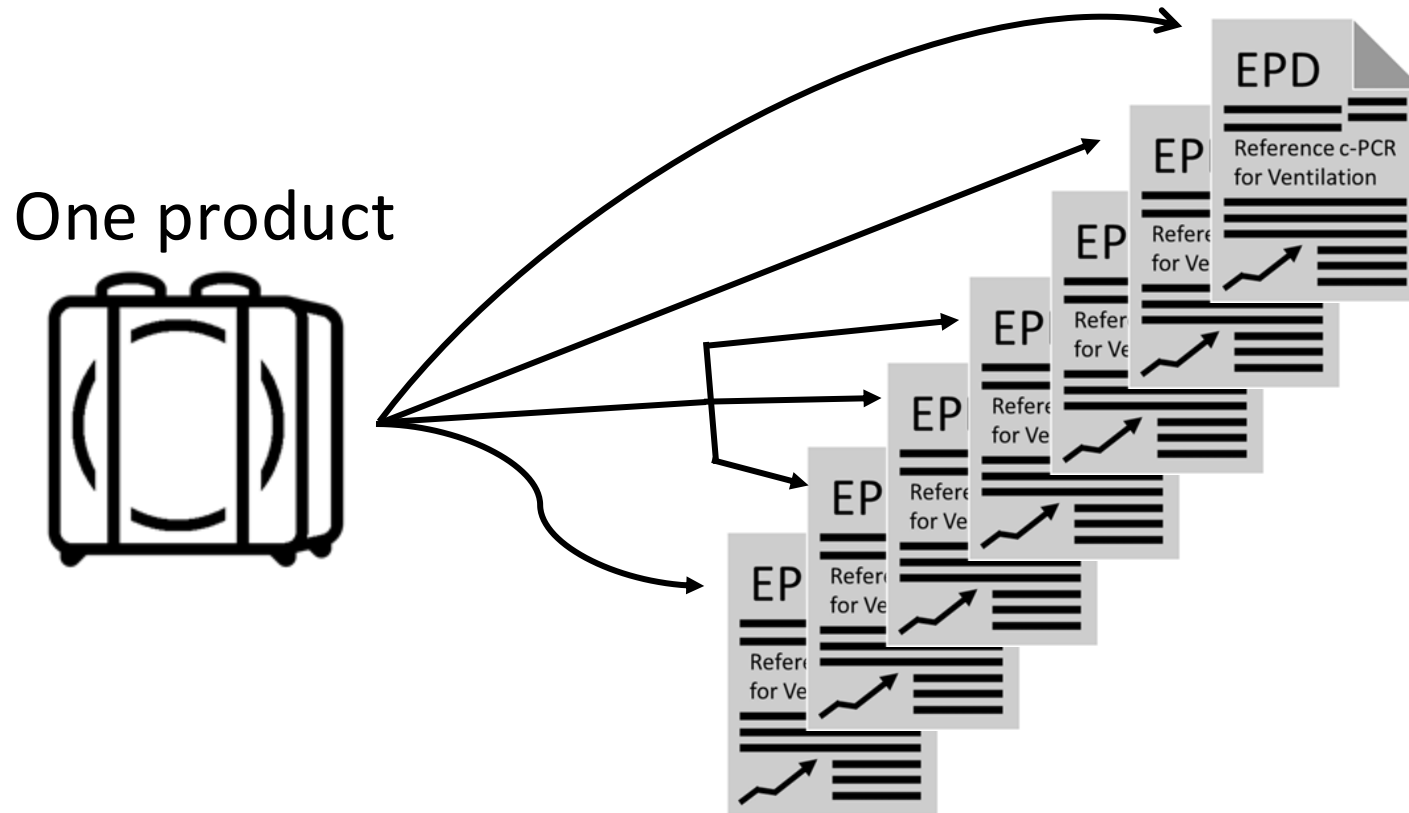
事实上，EPD将在更大的政策制定背景下发挥决定性的作用，例如欧盟绿色协议、欧美国家建筑和其他行业低碳政策和立法等。

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3) Missing level playing field in Europe

Different EPDs for Member State, region, etc.



And more...

Complex EPDs: not what Europe needs..

Europe is faced with a **need for increased competitiveness, economic & geopolitical challenges**, and an **energy & environmental transition**

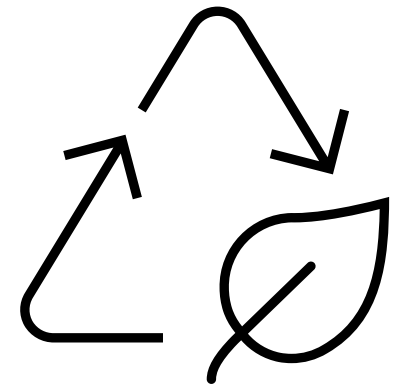
- EU's Apr 2024 Letta Report: we need a true Single Market
- EU's Sep 2024 Draghi Report: admin burdens are too high

What do we want: admin and reporting as an end in itself, or actually working towards higher sustainability in our products?

If the latter, **it's clear: Use Stage should be kept out of EPDs**

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Eurovent Recommendation 6/19

A separate methodology to calculate lifecycle energy consumption and costs (LCC) of Air Handling Units (AHUs)

What about the Use Stage?

- Use Stage has no place in EPDs
- What about the impact of Use?
 - Accounts for over **90 % of a product's total environmental impact?**



Eurovent Recommendation 6/19-1-2024

- Assesses LCC and energy consumption over lifetime of AHUs
- Based on LCA standards, considers energy demand in part load operation
- Easy to apply and implement

Eurovent Recommendation 6/19

Objectives of Part 1 (public)

- Reliable **comparison of products**
- Providing overview of all **lifetime costs** and **environmental impact**
- Support investment decisions

Objectives of Part 2

- Costs and frequency of **maintenance, repair, and replacement**



Eurovent 6/19-1 - 2024

Life Cycle Cost calculation for AHUs Part 1. Energy consumption

First Edition

Published on 20 March 2024 by
Eurovent, 80 Bd A. Reyers Ln, 1030 Brussels, Belgium
secretariat@eurovent.eu

Three pillars

- **Optimal usage of EPDs:** recognising what their purpose is and placing them in the right context
- **Aligned and harmonised market for EPDs,** avoiding unnecessary overhead and keeping the sustainability objectives in mind
- Calculate **Use Stage** outside EPDs, using **Eurovent's Recommendation for LCC assessment**

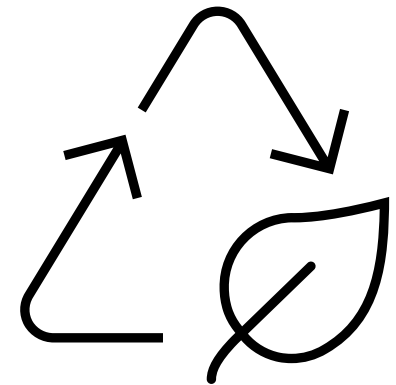


A woman with long brown hair, wearing a white sleeveless top, is sitting at a desk in an office, focused on her laptop. A light green mug is on the desk next to her. In the background, other office workers are visible, including a man in a blue shirt and another man in a grey shirt. The office has a modern, clean aesthetic with large windows and a bright, airy atmosphere.

Now we enable
Healthy Buildings

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Q&A

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THANK YOU! Q & A

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