

An introduction to EPDs (Environmental Product Declaration)

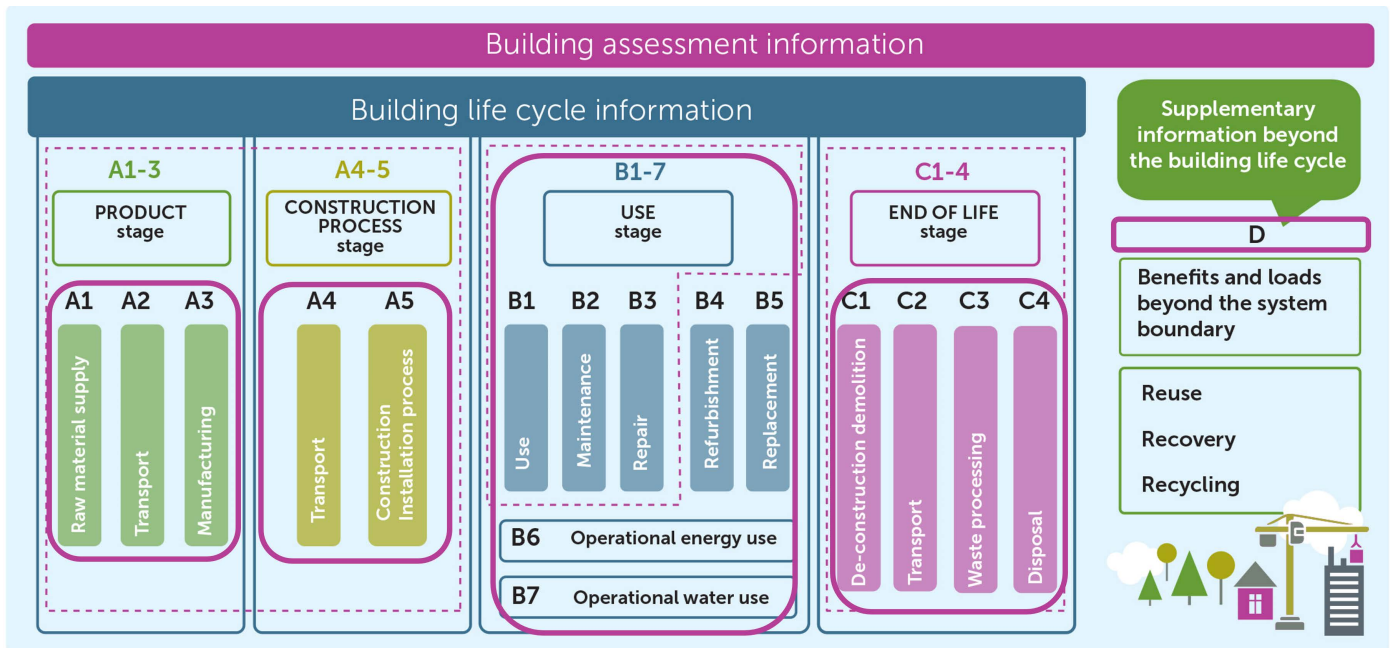
An **ENVIRONMENTAL PRODUCT DECLARATION (EPD)** is a comprehensive report that quantifies environmental information on the life cycle of a product to enable comparisons between products fulfilling the same function.

EPDs are based on life cycle assessment methodologies. This allows for an evaluation of the environmental impacts associated with all the stages of a product's life, typically described as 'cradle to grave'. The lifecycle stages typically include data on the product's raw material extraction, manufacturing processes, transportation, use, and disposal or recycling.

EPDs are considered as Type III Environmental Declarations. This means that they are 3rd party verified in compliance with the ISO 14025 standard, to ensure both consistency and reliability.

EPDs can be developed for a wide range of products across various industries including building materials, consumer products, food & beverages however there are very few EPDs for electrical, electronic and HVAC-R equipment

An EPD is divided into the following stages : A1, A2, A3, A4, A5, B1-B7 C1-C4 , D



Generally, an EPD will be requested to answer questions regarding embodied carbon. Whereby an EPD is usually product specific, the PEP methodology allows for a system-based PEP.

There is no requirement, or need, to provide other types of environmental declarations if there is an EPD available to cover the product. Overall, an EPD can help enhance brand reputation by allowing for transparency in reporting environmental impacts of a company's products.



There are many benefits involved in producing EPDs, including:

General:

- **Provision of relevant and reliable data** on the environmental impacts of the equipment throughout its life cycle
- **3rd party verified process**, based on transparent and scientifically-validated methods to help clients choose between products
- **Leverage Competitive Advantage** by assessing and communicating the environmental performance of your products which can help to enhance brand reputation and customer loyalty
- **Improvement of Environmental Performance** offers insight into 'problem areas' which can help target strategies to optimise resource use and minimise waste and energy generation
- **Support compliance with upcoming regulatory requirements** for environmental declarations or environmental product labelling
- **Supply Chain Management** can encourage the demand for products with lesser impact on the environment

There are also limitations to an EPD, including:

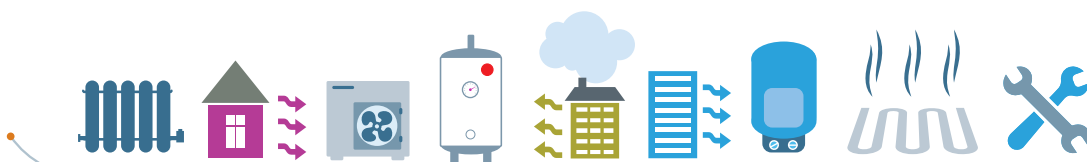
General

- **There is a very limited amount of EPDs available** for electrical, electronic and HVAC-R equipment as the process is not best suited to these products, where a PEP is preferable
- **The amount of information** displayed in a published EPD can be extensive, with some EPDs running in excess of 50 pages
- **Display of information** can be problematical as there is no universal reporting template which can hinder comparison exercises
- **Cost and time** to implement EPDs within an organisation can be problematical
- **Raising awareness** of the value of EPDs and their position against other environmental declarations

Find out more

BEAMA and our members have joined forces to increase awareness of the complexities of embodied carbon data for MEP (mechanical, electrical, and plumbing) products.

For more information about the Product Carbon Initiative click here.



An introduction to PEPs (Product Environmental Profile)

A **PRODUCT ENVIRONMENTAL PROFILE** is a comprehensive environmental assessment that provides detailed information about the environmental impact of a particular product or product range throughout its entire life cycle.

The environmental information included in a PEP covers all the stages of the lifecycle, typically described as 'cradle to grave', with the lifecycle divided into specific stages ranging from the Manufacturing stage through to the End-of-life stage.

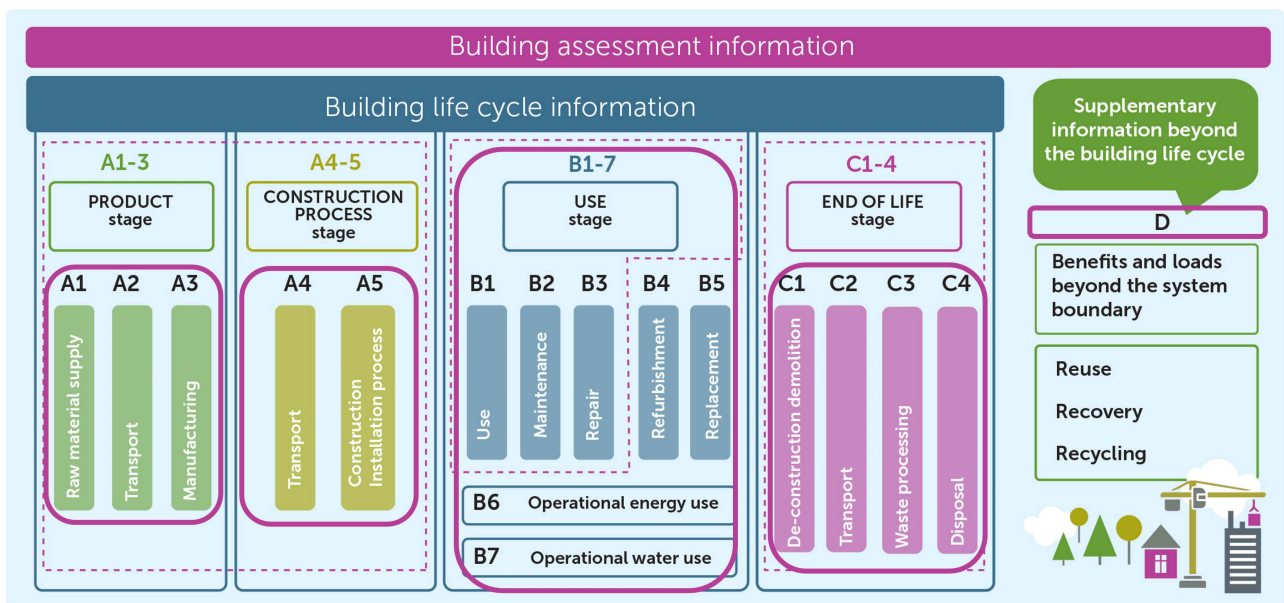
PEPs also include information relating to reuse, recovery and/or recycling, however the inclusion of this information is optional.

PEPs are considered as Type III Environmental Declarations. This means that they are 3rd party verified in compliance with the ISO 14025 standard, to ensure both consistency and reliability.

The PEP ecopassport® Program is specific to electrical, electronic and HVAC-R equipment used in the construction industry.

PEP ecopassport® is the international programme operator.

A PEP is divided into the following mandatory stages: A1, A2, A3, A4, A5, B1-B7 C1-C4, D



Generally, a PEP will be requested to answer questions regarding embodied carbon. Whereby an EPD is usually product specific, the PEP methodology allows for a system-based PEP.

There is no requirement, or need, to provide other types of environmental declarations if there is a PEP available to cover the product. Overall, a PEP can help enhance brand reputation by allowing for transparency in reporting environmental impacts of a company's products.



There are many benefits involved in producing PEPs, including:

General:

- **Provision of relevant and reliable data** on the environmental impacts of the equipment throughout its life cycle
- **3rd party verified process**, based on transparent and scientifically-validated methods to help clients choose between products
- **Leverage Competitive Advantage** by assessing and communicating the environmental performance of your products which can help to enhance brand reputation and customer loyalty
- **Improvement of Environmental Performance** offers insight into 'problem areas' which can help target strategies to optimise resource use and minimise waste and energy generation
- **Support compliance with upcoming regulatory requirements** for environmental declarations or environmental product labelling
- **Supply Chain Management** can encourage the demand for products with lesser impact on the environment

There are also limitations to a PEP, including:

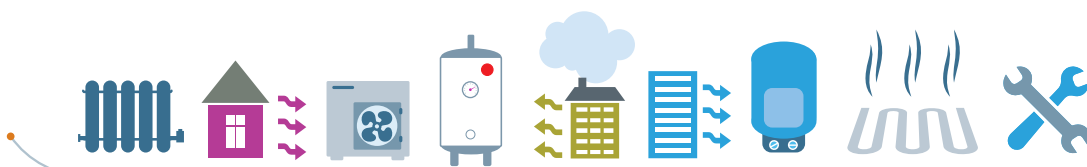
General:

- **The number of PEPs needs to grow** considerably in order to achieve environmental goals
- **Display of information** can be problematical as there is no universal reporting template which can hinder comparison exercises
- **Cost and time** to implement PEPs within an organisation can be problematical
- **Raising awareness** of the value of PEPs and their position against other environmental declarations

Find out more

BEAMA and our members have joined forces to increase awareness of the complexities of embodied carbon data for MEP (mechanical, electrical, and plumbing) products.

For more information about the Product Carbon Initiative click here.



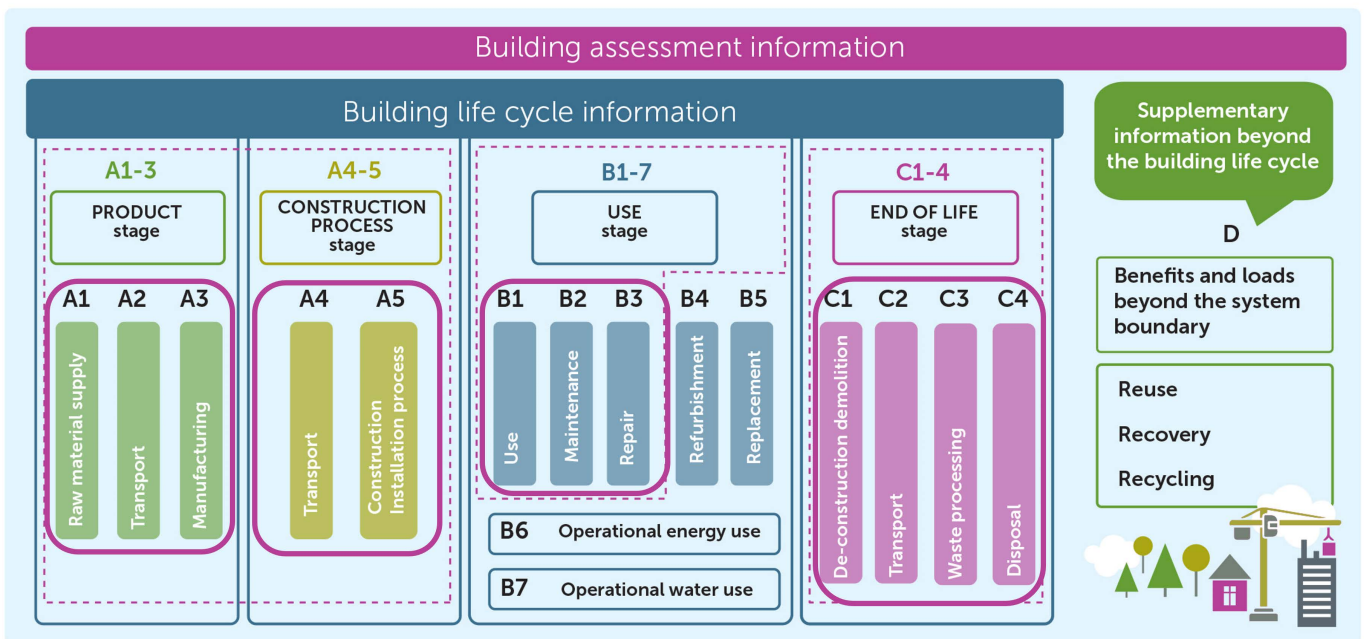
An introduction to TM65 ASSESSMENTS

CIBSE TM65 is a methodology offering basic or mid-level calculations designed to aid consultants, researchers, and manufacturers in evaluating the embodied carbon of building services equipment when an environmental product declaration (including PEP) is not available.

TM65 assessments can be considered as Type II environmental declarations which are classed as 'self-assessments' and are not 3rd party verified.

As clearly indicated in the methodology text, asking manufacturers for EPD/PEPs should be the first step to establishing the embodied carbon of MEP products. Requesting a TM65 should only occur when EPD/PEPs are not available from the manufacturer.

TM65 Assessments aim to cover the following LCA stages: A1, A2, A3, A4, A5, B1, B2, B3, C1, C2, C3, C4



The TM65 methodology document considers embodied carbon at an individual product level, not at a building level.

The TM65 methodology states that LCA stages B4 & B5 are not included at product level.

A fuller description of the methodology and its scope can be found within the CIBSE document: Embodied carbon in building services: a calculation methodology TM65: 2021





Benefits:

Manufacturer:	Customer:
<ul style="list-style-type: none"> • More cost effective than typical EPD/PEP process • Easier process • Good stepping stone into Embodied Carbon, provided EPD/PEP does not exist • Completing the DT65 (digital tool) helps to understand the EC values • Driving down carbon emissions based on the results • Established methodology from an industry recognised body • Basic or mid-level calculations 	<ul style="list-style-type: none"> • Good stepping stone into Embodied Carbon, provided EPD/PEP does not exist • Potentially quicker to get a TM65 than EPD/PEP if EPD/PEP do not exist • Established methodology from an industry recognised body to compare results

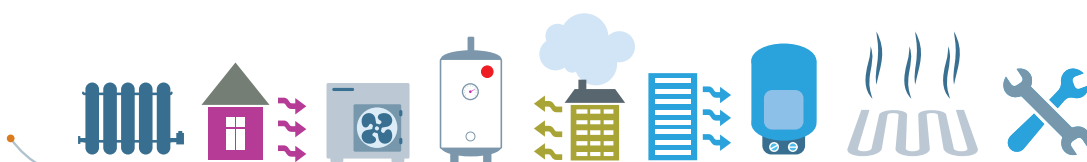
Limitations:

Manufacturer:	Customer:
<ul style="list-style-type: none"> • Threshold difference between basic / mid-level calculations • CIBSE need to maintain/update the methodology when new technologies occur • Not linked to any Standards • Not linked to the BEAMA definition of EC (A1 – A3) 	<ul style="list-style-type: none"> • Only for MEP products • Not as accurate as an EPD/PEP • CIBSE need to maintain/update the methodology when new technologies occur • Not linked to any Standards

Find out more

BEAMA and our members have joined forces to increase awareness of the complexities of embodied carbon data for MEP (mechanical, electrical, and plumbing) products.

For more information about the Product Carbon Initiative click here.





teamama

The trade association for energy
infrastructure & systems

EPDs, PEPs and TM65

Comparing Forms of Embodied Carbon Data

The embodied carbon in products

To achieve a **genuinely Net Zero built environment**, navigating the **various formats** in which **embodied carbon data** can be presented by the supply chain, and understanding the differences between them, is key to Net Zero delivery - but this can be complex.

When reviewing why this is the case, it is important to recognize that there is currently **no legal obligation** in the UK to provide embodied carbon data for electrical products within the scope of the UK Electrical Equipment (Safety) Regulations 2016 as amended or the EU Low Voltage Directive 2014/35/EU.

This absence of regulatory guidance creates a lack of standardised processes for product embodied carbon data which inhibits comparability between suppliers.



Nevertheless, with **growing demands** for **product embodied carbon information**, the supply chain is **actively working** to put processes and practices in place to rectify this.

The initial step involves supporting the market in **understanding the common formats** for presenting product embodied carbon data used today and the distinctions between them.

This document aims to provide a **basic overview of requirements** when creating **Environment Product Declarations (EPDs)**, **Product Environmental Profiles (PEPs)**, and **TM65 Assessments**.

You can find further insight into each of these formats, including their advantages and limitations, within [BEAMA's Product Carbon Initiative](#).





**A table comparison of EPDs,
PEPs and TM65 Assessments**

	Environmental Product Declaration	Product Environmental Profile	TM65 Embodied carbon in building services
Commonly known as	EPD	PEP	TM65
Applicable Standard(s)	ISO 14025:2010 EN 15804:2012 + A2:2019	ISO 14025:2010 EN 15804:2012 + A2:2019	None
Type of declaration	Type III environmental declaration	Type III environmental declaration	Estimation of embodied carbon
Verification	3 rd party verified	3 rd party verified	Self-certified
Owned by	Non-specific	PEP Ecopassport	CIBSE
Product scope	Unlimited	Electrical, electronic & HVAC equipment	Building services equipment
When to request	First	First	If EPD/PEP not available
Coverage	By product or range	By product or range	By product (individual type)
LCA	Yes	Yes	Yes
Validity	5 years	5 years	NA



Comparing the process for creating EPDs, PEPs and TM65 Assessments

EPDs

The process for creating an EPD can be broken down into **five general steps**:

1. Define the relevant product by using the appropriate **Product Category Rules (PCR)**.
2. Conduct a **Life Cycle Assessment (LCA)** study - LCA Stage A1 – A3 are mandatory.
3. Report the gathered information in an **EPD template**.
4. Submit the information for **3rd party verification**.
5. Publish **EPD**.

NOTE: Each of the above steps will have their own set of sub-steps/actions to complete the task. The process of completing EPDs is both complex and time consuming. There is no set template or database which is used for the creation of an EPD. These will vary depending on route to market.

PEPs

The process for creating a PEP can be broken down into **five general steps**:

1. Define the relevant product by using the appropriate **Product Category Rules (PCR)**
2. Conduct a **Life Cycle Assessment (LCA) study** - LCA Stages A1 – A3, A4, A5, B1 – B7, C1 - C4 are mandatory.
3. Report the gathered information in the set **PEP template**.
4. Submit the information for **3rd party verification**.
5. Publish **PEP**.

NOTE: Each of the above steps will have their own set of sub-steps/actions to complete the task. The process of completing PEPs is both complex and time consuming.

TM65 Assessments

The process for creating a TM65 Assessment basic/mid-level calculation is as follows:

1. Download the **TM65 documentation** from the **CIBSE website**.
2. Input the relevant company, product and additional environmental data into the **TM65 Manufacturer Form**.

There are also **additional optional processes**, as follows:

- a) Download the **DT65 calculator** from the **CIBSE website**.
- b) Copy the basic/mid-level **TM65 data** into the DT65.
- c) Generate **basic or mid-level report/chart** as required.

Manufacturers must follow the **CIBSE TM65 rules** on **data publication**.

NOTE: CIBSE publications may have associated costs. Some publications may be free to CIBSE members.



FAQs: EPDs, PEPs and TM65 Assessments

Is there a common definition for the embodied carbon of products?

The **determination of boundaries** for assessing **embodied carbon in products** presents a significant challenge due to the **absence of a universally accepted definition** of product embodied carbon within the industry.

Consequently, views on which stages of a **life cycle assessment (LCA)** constitute product embodied carbon can vary considerably.

BEAMA, the trade association representing a diverse range of manufacturers in the energy-related products and services sector for the built environment, has undertaken a **comprehensive review** of existing standards and policies. Through collective agreement among members, BEAMA has adopted a **common definition** for the embodied carbon of products. You can review this definition [here](#)

What embodied carbon information are suppliers obligated to provide to the market?

There is **currently no legal mandate** in the UK for product suppliers to provide embodied carbon data for products falling within the scope of the UK Electrical Equipment (Safety) Regulations 2016, and subsequent amendments, or the EU Low Voltage Directive 2014/35/EU.

Nonetheless, many manufacturers are undertaking the **commercial process of data collection and verification** to offer embodied carbon information for some or all their products.

This is in anticipation of **potential future regulatory mandates**, but primarily to fulfil the **commercial requirements of the market**, particularly with supplier procurement policies increasingly focussed on supply chain sustainability.



Why is there a distinction between product and project embodied carbon in the life cycle assessment of MEP products?

Product embodied carbon, also known as upfront carbon, is categorised by BEAMA members as **stages A1 – A3 within a life cycle assessment**. These are the stages where product information can be uniformly provided by manufacturers, unaffected by project-specific details.

However, the carbon emissions resulting from **subsequent LCA stages** are not fixed and can vary depending on **project-specific factors** such as delivery to site, maintenance schedule, and frequency of use.



What makes comparing embodied carbon information challenging?

The **complexity of supply chains** for products often requires collaborative effort to estimate embodied carbon accurately. This has led to the creation of various standards, programs, documents, accreditations, and commercial entities within the market.

However, each approach can lead to **significant differences affecting comparability**, including variations in calculation methodologies and embodied carbon databases for data assumptions and industry averages.

Selecting the **optimal commercial route** for gathering product embodied carbon data poses a considerable challenge for manufacturers, involving substantial resource and financial costs. There is widespread recognition that the **current fragmented approach needs to evolve**, and the industry is taking proactive steps in this direction.

Learn more about the challenges of product embodied carbon data as part of [BEAMA's Product Carbon Initiative](#).

When should you ask for an EPD, PEP or TM65 Assessment?

Calculating **embodied carbon for MEP products** is a complex process. Some manufactures may have **independent** or **verified** embodied carbon data which is **not** an EPD, PEP or TM65 Assessment.

EPDs have broad applicability, but there are limited options available for electro-technical products. **PEPs** are tailored specifically to electrical, electronic, and HVAC equipment, but are primarily known within the EU.

TM65 Assessments were created by **CIBSE** to support the built environment for instances where a manufacturer does not already have embodied carbon data available, as clearly outlined in the TM65 guidance.

There are **varying formats** in which manufactures can provide embodied carbon data for products. Each manufacturer reviews which process is best for their companies and product ranges. When asking for embodied carbon data, markets should **ask for information based on LCA stages** rather than dictating a specific format.



Key recommendations to the market

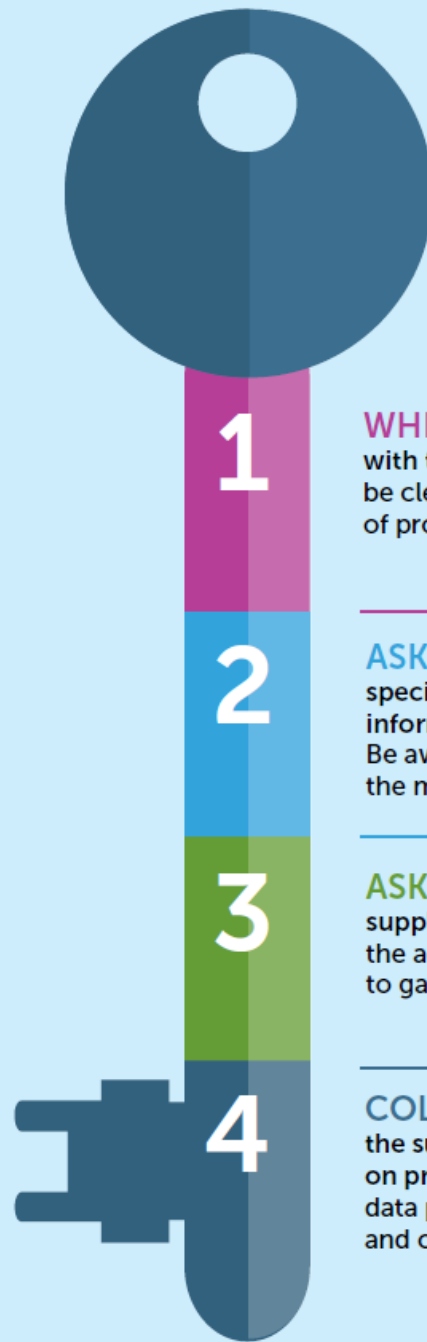
Moving forward with product embodied carbon

Being aware of the realities of the current landscape for product embodied carbon is a necessity in being able to move forward with accurate, up to date, reliable and comparable data which is freely available.

There are four key recommendations to the market which will enable us to do this.



What can I do to
support the
effective use of
embodied
carbon in my
project?



KEY POINTS

1

WHEN SPEAKING

with the supply chain and the wider market, always be clear on your definition and scoped boundaries of product-related embodied carbon.

2

ASK FOR

specific stages or boundaries of embodied carbon information rather than mandating particular formats. Be aware of assessments that exist for use only when the manufacturer does not have alternative information.

3

ASK YOUR

supplier for details of product data collection, including the adhered to standards and details of databases used, to gather a full picture of comparability.

4

COLLABORATE WITH

the supply chain and share collective understanding on product embodied carbon initiatives to help make data processes more accurate, up to date, reliable and comparable.



Find out more

BEAMA and our members have joined forces to increase awareness of the complexities of embodied carbon data for MEP (mechanical, electrical, and plumbing) products.

For more information about our [Product Carbon Initiative](#).

