vaayu

Master the PEFCR for Apparel & Footwear

VERSION 3.1

The next evolution of product environmental footprinting

What is the PEF Methodology?

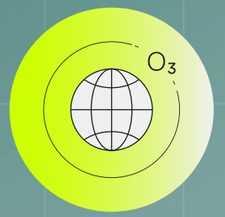
Product Environmental Footprint (PEF)

The Product Environmental Footprint (PEF) Methodology is the officially *recommended method from the European Commission* for measuring the potential environmental impact of a product across its full life cycle, from raw material extraction to disposal.

Introduced in 2013 and officially adopted in 2021, PEF enables measurement of the environmental impact of products through a multi-criteria, life cycle assessment (LCA) lens that extends well beyond climate change, accounting for 16 standardized impact categories simultaneously.

PEF's 16 Environmental Impact Categories

Climate Change



Ozone Depletion

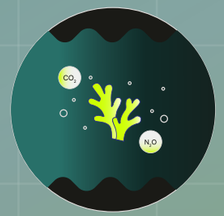
Human Toxicity, Cancer

Human Toxicity, Non Cancer

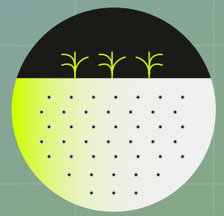
Particulate Matter

Ionising Radiation, Human Health

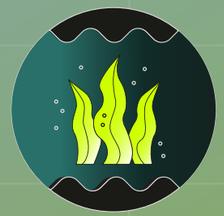
Photochemical Ozone Formation, Human Health



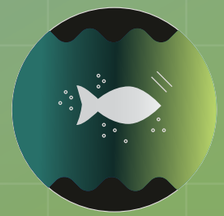
Acidification



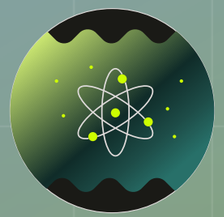
Eutrophication, Terrestrial



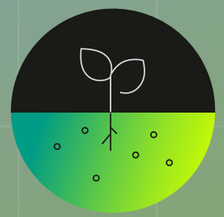
Eutrophication, Freshwater



Eutrophication, Marine



Ecotoxicity, Freshwater



Land Use

Water Consumption

Resource Use, Minerals and Metals

Resource Use, Fossils

PEF Category Rules

The PEF Methodology is a framework method for product footprint calculation. To function correctly, even more specific rules are needed that are narrowly tailored to the **product category**, given the wide variation that exists in composition, construction and use of products across different categories (e.g., from potted plants to batteries).

These “category rules” are then followed when preparing PEF studies for all relevant products within the category, enabling **more straightforward** calculation and **greater comparability** of results.

Category rules are developed by a body known as a Technical Secretariat, which is constituted for the specific purpose of creating a given set of category rules. Each Technical Secretariat must represent at least **51% of the EU market** for the product category.

Once work on the relevant set of category rules is complete, the Technical Secretariat transmits it to the European Commission for final approval.

What is the PEFCR for Apparel and Footwear?

The PEFCR for Apparel & Footwear is the specific set of category rules applicable to **garment and footwear** products.

Developed by the Technical Secretariat since December 2019, the PEFCR for Apparel and Footwear was completed and approved by the European Commission in April 2025 as **Version 3.1**.

The PEFCR includes detailed calculation rules, data requirements, and default assumptions across **13 unique product subcategories**.

The 13 product sub-categories covered by the PEFCR for Apparel and Footwear:

Key objectives of the PEFCR

Having a standardized method in place for apparel and footwear products serves a variety of objectives.

Creates a common language for environmental impact:

- Helps align **companies' communications** around their product footprints.
- **Standardizes measurement** and **reporting** to ease confusion and minimize greenwashing.

Ensures product comparisons are more fair and credible:

- Clear rules ensure environmental comparisons between similar products are on equal terms.

Supports smarter and more sustainable design choices:

- Rewards products that last longer, are repairable, while also championing recycled materials and recyclability, encouraging brands to design for **circularity**, **durability** and **lower environmental impact.**

Makes environmental footprinting more accessible and scalable:

- Provides a single, standardized framework to *lower cost* and *complexity* in life cycle assessments, especially for SMEs, and focuses data collection on the most impactful stages.

PEFCR regulatory timeline

2013

European Commission issues PEF guidance-based method and launches pilot phase

2014 2015 2016 2017

2018

Pilot Phase proceeds with testing of method

2019

Development of PEFCR A&F commences

Transition Phase follows with further testing and development of PEFCRs

2020

2021

DECEMBER

PEF methodology is adopted as official EU recommendation

2022 2023 2024

2025

MAY

Final PEFCR v3.1 for Apparel & Footwear is officially confirmed by the European Commission

2026 2027

2028

PEF may be referenced as a compliance method for potential calculation requirements under the ESPR

Who does the PEFCR for Apparel & Footwear apply to?

The PEFCR is not a law and there are currently no mandatory requirements to use it.

However, it now constitutes the leading set of LCA category rules for apparel and footwear products. Though particularly suited to the European market, PEF's underlying assumptions regarding the fashion supply chain, product use and end of life should be considered highly informative for any apparel and footwear LCAs.

What's needed for data collection?

The PEFCR for Apparel and Footwear defines a list of mandatory company-specific data that must be collected. Without it, a compliant PEF study cannot be completed.

Further data requirements include mandatory "if available" data and mandatory secondary data assumptions.

A standardized set of background emission factor data, the EF 3.1 database, must also be used in most cases.

Key Data Types:

Mandatory company-specific data

Data that must be collected and used in all cases

Mandatory "if available" company-specific data:

This requires the user of the PEFCR to ask the relevant direct or indirect business partner for the data

Highly recommended but not mandatory

This data will improve the quality (and results) of the study, but is not required

Mandatory secondary data:

For certain aspects, like the use phase, you are required to use default values set in the PEFCR

Data requirements by life cycle stage

Here is a summary of the company-specific data that is mandatory to collect:

Life cycle stage (LCS)	Mandatory/mandatory (if available) company-specific data
LCS1 – Raw materials acquisition and pre-processing	• At least 95% of the product's Bill Of Materials (BOM) by weight, covering 100% of the main fabrics, lining, padding, and electronic parts and metals. If the BOM isn't available, product weight and reference size. • Raw materials mass transported. • If available, raw materials transport distances, modes, share of raw material mass transported for each transport leg, and utilisation rates for trucks.
LCS2 – Manufacturing	• If the BOM isn't available, assembly loss rate for the product studied. • If available, manufacturing technologies. • If available, other processing loss rates. • If available, energy mix of the manufacturing steps for the product studied (exempted for SMEs). • If available, intermediate product transport distances, modes, share of semi-finished product mass transported for each origin, and utilisation rates for trucks.
LCS3 – Distribution	• Air cargo distances at company level. • Air cargo share of product mass transported for each origin at company level.

continued...

Life cycle stage (LCS)	Mandatory/mandatory (if available) company-specific data
LCS3 – Distribution	• Product weight (if not collected in LCS1). • If available, product transport distances, modes, share of product mass transported for each origin and utilisation rates for trucks.
LCS4 – Use	• Apparel: Product type, if delicate product or sportswear. • Mandatory use of PEFCR secondary data and scenarios.
LCS5 – End of life	N/A
General	• Share (% product) of unsold consumer products at the product sub-category or product category (apparel and footwear) level. • Highly recommended but not mandatory – intrinsic durability tests and repairability information (product selling price in the EU, and repair documentation).

Table adapted from PEFCR for Apparel and Footwear V.3.1.

Tip: Check the full list of data requirements in Section 5.1 of the PEFCR for apparel and footwear here.

Why use PEFCR in LCA studies?

REGULATORY ALIGNMENT

SPECIFIC TO APPAREL & FOOTWEAR

IMPACT HOTSPOT ANALYSIS

ENHANCED DECISION-MAKING

PROMOTES ECO-DESIGN

Benefits include:

- Version 3.1 standardizes footprint-calculation rules across 13 product categories, eliminating inconsistent assumptions that previously plagued comparability between providers.
- Offers a clear, consistent lens for spotting impact hotspots and opportunities to improve product sustainability.
- Improves decision-making by establishing a standardized approach.
- Lays the foundation for embedding LCA data directly into Digital Product Passports under the ESPR.

Tip: Find out more about Digital Product Passports here.

PEFCR's key challenges and strategies

Main challenges:

- **Data-intensive requirements:** Meeting PEFCR standards demands granular, company-specific data and tight coordination across the supply chain.
- **Durability testing barriers:** While durability testing can improve the final score, they still require lab tests that must follow strict protocols–which are often costly and logistically complex.
- **Resource-intensive:** Conducting a full LCA can be particularly challenging for smaller-sized companies that lack in-house expertise or strong data infrastructure.

Strategies for companies:

- **Lay the data foundation:** Invest early in systems that capture and store product and supply chain data–tailored directly to the data expectations and formats the PEFCR expects.
- **Activate your suppliers:** Engage suppliers from the outset to ensure critical primary data are available, credible and on time.
- **Seek expert support:** Bring in LCA specialists or trusted external consultants to ensure PEF studies are accurate, verifiable and regulation-ready.

Get PEF-ready with Vaayu

Looking to explore your company's product impacts from a PEF perspective?

Get started by connecting with Vaayu's experts today at team@vaayu.tech.

At Vaayu, we:

- Help you measure, understand and improve your product footprints across all 16 impact categories through **an all-in-one, streamlined platform**.
- Grant access to **in-house LCA specialists** for expert support on PEF and life cycle methodology.
- Provide tools that are built to **simplify reporting** and keep you aligned with **evolving sustainability regulations**.