SUMMARY

Product Environmental Footprint Method

The Product Environmental Footprint (PEF) is the European Commission's recommended method for measuring and communicating the environmental performance of products across their entire life cycle. It provides a harmonised, science-based framework that enables companies to quantify environmental impacts from raw material extraction, manufacturing and use, to end-of-life treatment. PEF is a multi-criteria measure of the environmental performance of a good or service throughout its life cycle.

Regarding the policy context, PEF was introduced under the Single Market for Green Products Initiative and strengthened by Commission Recommendation (EU) 2021/2279, which promotes the voluntary use of PEF and OEF (Organisation Environmental Footprint). The PEF method supports major EU sustainability policies, including the European Green Deal, the Circular Economy Action Plan, and the Ecodesign for Sustainable Products Regulation (ESPR). Its main objectives are to improve the comparability of environmental information across products and sectors, reduce greenwashing, support informed purchasing and policy decisions, and ensure consistent assessment across 16 environmental impact categories.

The core components of the PEF method are: goal and scope definition, life cycle inventory, life cycle impact assessment, interpretation, and verification. PEF covers 16 impact categories, including climate change, resource use, water use, toxicity, eutrophication, and acidification. PEF results are analysed to identify hotspots, uncertainties, and improvement opportunities. They support ecodesign, supply chain optimisation, and environmental management. Any PEF study used for external communication must undergo independent verification to ensure reliability and compliance with the method.

Product Environmental Footprint Category Rules (PEFCRs) translate the general PEF method into product-specific rules. They define modelling requirements for a given product category, specify data needs, ensure comparability between products, and provide benchmarks for performance grading. The main principles of PEF studies include relevance, completeness, consistency, accuracy, and transparency.

PEF provides a robust, transparent, and standardised method that helps companies comply with EU sustainability regulations, improve supply chain transparency, demonstrate environmental performance credibly, and prepare for future mandatory reporting requirements.

PEF is increasingly important in the automotive industry because it provides a standardised and transparent framework for assessing the environmental impacts of vehicles and components across their entire life cycle. It helps manufacturers quantify

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

carbon footprint, resource use, and waste generation from raw materials to end-of-life, ensuring compliance with EU sustainability regulations such as the Battery Regulation and the Ecodesign for Sustainable Products Regulation.

By applying PEF and related Product Environmental Footprint Category Rules (PEFCRs), automotive companies can compare products, identify hotspots, and improve ecodesign. PEF also plays a growing role in Environmental Product Declarations (EPD) and the Digital Product Passport (DPP), especially in sectors such as batteries and automotive. This method supports DPP and green procurement, enabling more sustainable supply chains and informed consumer choices.

PEF is essential for the automotive industry because it provides a harmonised, LCA-based method to evaluate the environmental performance of vehicles and transport fuels, supports compliance with EU sustainability and circular economy regulations, improves the reliability of ESG reporting, and enhances supply chain transparency and competitiveness. Product Environmental Footprint (PEF), Environmental Product Declarations (EPD), Carbon Footprints (CF), and Life Cycle Assessments (LCA) are important tools for achieving sustainable development in the automotive sector.

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.