

From Cradle-to-Gate:

The Power of Data in Assessing
Product Carbon Footprints



What are Product Carbon Footprints and why are they needed

Product carbon footprints (PCFs) play a crucial role in understanding the environmental impact of products throughout their life cycle. According to ISO 14067:2018, a PCF represents the sum of greenhouse gas (GHG) emissions and removals in a product system, expressed as CO₂ equivalents. This assessment may cover all stages of the product's lifecycle - from raw material extraction and manufacturing to transportation, use, and disposal or in certain cases cover a portion of the lifecycle e.g., in the Chemical industry where Cradle-to-Gate is the accepted product category norm. PCFs provide valuable insights into the carbon emissions associated with a product, enabling companies to identify, track, and reduce Scope 3 GHG emissions, particularly by enabling quantitative measurement across a company's supplier base and including logistics providers. By following international standards and frameworks, such as ISO, GHG Protocol Product Standard and sector and process-specific guidelines such as Together for Sustainability (TfS), Environmental Product Declaration (EPD) and Global Logistics Emission Council (GLEC), PCF guidelines ensure consistent and comparable quality carbon footprint data, facilitating cross-industry comparisons and effective emissions management across all scopes.

Challenges in Producing Good Quality Product Carbon Footprint

Producing high-quality PCFs is a challenge for many organizations most of them arising from the fact that the underlying data is locked up in a wide range of enterprise systems or, in most cases, does not even reside within the enterprise. While there are several reasons, the critical ones are:



Data Quality

Most organizations struggle with a lack of sufficiently granular, accurate, and verified primary data produced from actual measurements of GHG source or sink activities. The use of spend-based factors or other proxies often leads to data gaps and averages that may produce misleading results. Product Carbon Footprint frameworks like Together for Sustainability (TfS) have defined detailed data quality assessment parameter declarations like Primary Data Share (PDS) and Data Quality Rating (DQR) which indicate the rigor applied to data collection and measurement.



Supplier Data Collaboration

PCF by nature involves a complex ecosystem of stakeholders –suppliers, intermediaries and buyers – adding to the challenges of data acquisition and access. Getting primary data from a huge base of supply chain partners is daunting if not impossible. Though initiatives like PACT's Pathfinder Network are a step in the right direction to define data exchange protocols, adoption needs to increase globally for it to be an effective mechanism.



Allocation of Emissions

Allocating emissions from shared processes or co-products can get complex. While Product Category Rules (PCR) exist for most industries inconsistencies in methods, standards, and protocols for allocations within an organization, lead to variations in data quality and reliability. Allocations especially get complex in scenarios like bulk shipping where a voyage might be chartered by multiple charterers and parcels of the cargo get delivered to multiple consignees, a very common scenario is represented in chemical parceling.



PCF Accounting Systems: Fit for Purpose but Flexible

The PCF universe lacks robust carbon accounting systems that mirror financial accounting. PCFs need large, complex, and distributed datasets but are still mostly managed in spreadsheets that are increasingly getting unwieldy. At the same time, any system needs to be flexible (like a spreadsheet!) as requirements for PCF are still evolving with regulations.

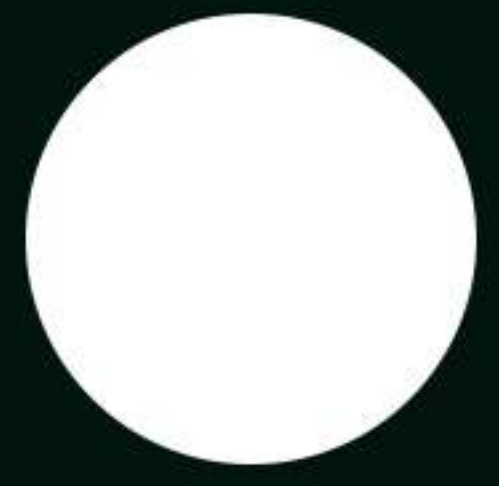
Data to the Rescue: The Vital Role of Data in PCF

We believe that a robust data-driven solution is vital to bringing rigor to PCF processes and can lift data quality and trust. And that should cover every aspect of the PCF process from data collection to allocations, calculations, and reporting.



Global Standards and Frameworks

While there are standards and frameworks, there are probably too many of them which need to be consolidated into sector-specific blueprints, or else it will be difficult to move from spreadsheets to more robust global solutions. Once again, to draw a parallel to the financial accounting world, regulations like US-GAAP, Sarbanes Oxley and Dodd Frank led to the crystallization of accounting practices and drove streamlining of data models and exchange. The same is required for emissions accounting.



Standardized Networks for Data Sharing

By aligning on shared methodologies and standards like TFS and Pathfinder Network, organizations can improve the comparability of product carbon footprint data, facilitating accurate measurement and reporting across industries as products move across system boundaries. Improved data management practices, supported by standardized data models and specifications, will accelerate the exchange of PCFs and other emissions-related data.



Reporting Standards

Taking another parallel from the food labeling industry of nutrition labels, a global standard Emission Label can be an easy way to communicate the embedded emissions of a functional unit of product a consumer is purchasing. The framework to do so already exists, it is only waiting for an FDA-type regulation and certification process.

Conclusion

PCFs are complex to build but are the most effective way to convey the impact of our production systems at a level that is easily understood by the consumer and hence gives them the tool to make informed choices. They need industry-wide and cross-industry collaboration which are hampered by the lack of a common language and units of measurement to exchange information. Decarbonization efforts will ultimately be driven by the markets and consumers and PCFs might be the food label that nudge them to make informed choices. By implementing robust data management strategies, companies can enhance data accuracy, transparency, and consistency, ultimately leading to more precise and trusted PCFs.



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