PACT
PARTNERSHIP FOR
CARBON TRANSPARENCY

Scope 3 Problem Solving White Paper

Defining a practical and robust PCF validation approach

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Collaborators

WBCSD would like to thank the following companies and organizations that have supported and contributed to the development of this White Paper:

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Background

Scope 3 emissions often make up more than 90 % of a company's overall carbon footprint,[1] yet they are also the hardest to measure, leading to an overreliance on secondary databases. The difficulties in accurately quantifying Scope 3 emissions hinder targeted decarbonisation efforts, as lack of access to supplier-specific data has been identified as one of the key challenges for corporates in effectively delivering against their targets.[2]

To overcome this challenge, companies are increasingly requesting granular, supplier-specific product emissions data (i.e., Product Carbon Footprints, also known as PCFs) for the most material sources of emissions as a means of identifying where to intervene in their value chain to maximise decarbonisation impact and track the performance of their decarbonisation measures.

Challenge

Calculating a PCF from scratch is a complex process that currently demands significant time and expertise. For many suppliers, especially those with limited sustainability resources, refining a PCF calculation may take several iterations. While continuous improvement is an encouraged step in PCF calculation, companies requesting PCFs also need a minimum level of certainty regarding the representativeness and reliability of emissions data before using PCFs for decision-making. This process of reviewing and accepting PCFs is referred to in this white paper as "PCF Validation".
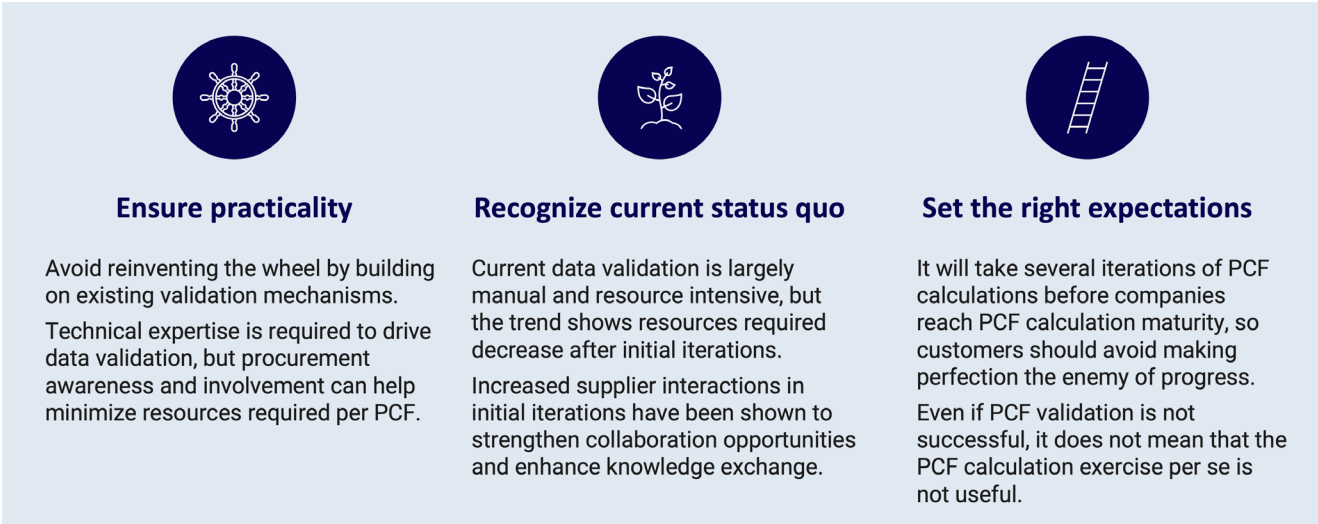
A wide range of tools are currently available for both suppliers and buyers to ensure that the PCF data exchanged is sufficiently trustworthy (see Table 1). However, the resources required and the nascent PCF calculation capabilities of many companies pose a significant challenge to undertaking PCF validation in a way that is both scientifically robust and scalable. As such, the PACT Community sought to define an approach that both enabled an efficient and pragmatic use of resources, and supported the implementation of a comprehensive validation process that mitigates data integrity risks.

This white paper presents the outcomes of this collaborative work, presenting a ready to use step-by-step PCF validation approach to support companies on their ambition to increase trust in the PCFs received.

Guiding principles

An extensive literature review and expert discussions led to the definition of three guiding principles (Figure 1) to ensure the proposal to this challenge remained both practical and scientifically robust.

Figure 1: Guiding principles of the PCF Validation White Paper

Ensure practicality

Avoid reinventing the wheel by building on existing validation mechanisms.

Technical expertise is required to drive data validation, but procurement awareness and involvement can help minimize resources required per PCF.

Recognize current status quo

Current data validation is largely manual and resource intensive, but the trend shows resources required decrease after initial iterations.

Increased supplier interactions in initial iterations have been shown to strengthen collaboration opportunities and enhance knowledge exchange.

Set the right expectations

It will take several iterations of PCF calculations before companies reach PCF calculation maturity, so customers should avoid making perfection the enemy of progress.

Even if PCF validation is not successful, it does not mean that the PCF calculation exercise per se is not useful.

Solution

Step-by-step PCF validation

The first step towards developing the approach was to identify the set of validation instruments currently available for companies. Table 1 below presents a comprehensive range of tools being leveraged by companies nowadays to undergo validation.

These tools range widely both in terms of the confidence level they provide to companies and in terms of the resource requirements for the customer, supplier, or both.

In keeping with the need to strike a balance between practicality and robustness, this white paper acknowledges that the lack of scalability of the most resource intensive tools, and the current lack of expertise – and therefore confidence – in successfully delivering on some of the least resource intensive ones, render all tools insufficient standalone choices for PCF validation at present.

Table 1: PCF validation tools available for companies and associated challenges

Validation tools available	Confidence level	Challenges
Third party PCF verification	High	• Resources and time constraints for supliers — not yet scalable
Certified PCF system	Medium-high	• Initial resource and time constraints for suppliers • Scalable but system may not yet be in place and still reliant on input data checks
Data quality ratings (DQR)	Medium	• Requires trust in DQR being done adequately (or done at all) • Different understandings of what DQR thresholds could be acceptable
% variance to industry average	Medium-low	• Requires resources from customer • Variance arbitrary and may not reflect reality
Manual checks	High	• Requires significant resources from costumer

Higher supplier resources

Higher customer resources

This white paper proposes a step-by-step approach (Table 2) that combines different validation instruments, preceded by an optional shortlisting exercise based on the percentage variance to prior secondary data-based calculations. Please note that the approach follows the narrative of the customer in obtaining and validating PCFs, and is classified into three separate stages: "pre-validation" – taking place during the PCF request, "validation" – taking place once requested PCFs are received, and "post-validation" – taking place once the validation exercise is completed.

Table 2: **Step-by-step approach to PCF validation**

	Step	Detail	Useful resources
Pre-validation	**#1 Request PCFs and clarify use**	In collaboration with the procurement team, reach out to selected suppliers to request PCFs and clarify expectations.	• **PACT invitation letter** • Introductory webinar
Pre-validation	**#2 Map PCFs to products and ensure completeness**	Ensure all PCFs are linked to relevant purchased products and that all mandatory PACT fields have been filled.	• SPs automated check service • **PACT Tech Specs**
Validation	**#3 Check 3ʳᵈ party assurance**	Automatically accept PCFs which have been third party verified, ensuring clarity over what has been verified and checking that data has been adequately transferred.	• **PACT evidence pack**
Validation	**#4 Accept previously validated PCFs (Optional)**	For non-verified PCFs, automatically accept PCFs that have been previously validated by other customers if suppliers provide relevant information.	• PACT Validation Checklist (see 'Vision for the future' below)
Validation	**#5 Identify and shortlist PCFs above >20% variance (at a minimum) compared to prior Emission Factors (EFs)***	For the remaining PCFs, validation should be undertaken, at a minimum, for PCFs with a variance greater than 20% compared to prior EFs. This threshold is defined to minimize validation's resource requirements.	• Prior EFs • Secondary databases
Validation	**#6 Manual checks**	For PCFs not verified by 3rd parties, customers' technical team to undergo manual checks for all remaining PCFs to ensure reliability. Note iterations with suppliers may be required.	• **PACT Calculation Checklist** • **PACT simplifier Tech Specs Data model**
Post-validation	**#7 Supplier PCF validation mark [Optional]**	Companies to inform suppliers if they have successfully undergone PACT aligned validation and what elements were validated so they can include this information anonymously in future exchanges of given PCF.	• PACT Validation Checklist (see 'Vision for the future' below)

* Companies are free to select a lower threshold to determine their PCF validation shortlist should they wish to validate a greater number of PCFs

Vision for the future

While increased third-party verification requirements and PCF calculation capabilities will help the ecosystem mature and limit the effort required to undergo PCF validation, peer-to-peer validation checks are still expected to be required to facilitate continued trust in data exchange (e.g., to ensure third party verified PCFs do not have transcription errors).

To avoid duplication of these validation checks, this white paper proposes a collaborative approach across value chain actors that, anonymously, will allow future customers of a previously validated PCF to minimize the amount of time spent on these checks. While this information could be transmitted in a variety of tech-enabled formats, Table 3 below provides an overview of the information that could be shared across the network.

Table 3: PCF Validation Checklist

	Optional/ Mandatory	Attribute description	Accepted Value(s)	Example
PCF validation completed by another entity	Optional	Companies to confirm whether PCF validation was successfully achieved with another client	Yes; No; In progress	Yes
Elements covered by validation	Optional	Selection via a dropdown of all steps and processes reviewed for PACT alignment during the PCF validation: • 3rd party assurance at PCF level • 3rd party assurance at PCF system level • Boundary check (cradle-to-gate boundary) • Data input check (primary activity data) • Secondary data sources check (secondary EFs meeting PACT methodology requirements, characterization factors) • Declared unit check • Exempted emissions check • Allocation rules check • Biogenic accounting methodology check • Calculation check (incl. recycling and energy recovery) • Primary Data Share check • Data Quality Indicators check • Other	List including ticked values from previous column	Validation checks performed for: • PACT aligned 3rd party certification at PCF solution level • Boundary check (cradle-to-gate boundary) • Data input check (primary activity data) • Secondary data sources check (secondary EFs meeting PACT methodology requirements, characterization factors)
PCF validation remarks	Optional	If "Other" is selected, provide additional information providing further clarity on validation steps undertaken	Free text	Internal data collection processes and compilation in Tech solution also checked

This collaborative approach to sharing peer-validated PCF information requires a high degree of trust across members of the network. Fundamentally, the challenge regarding what data to trust and why remains. As the business criticality of sustainability data continues to increase, a number of cryptographic technologies are being developed to prevent fraud. Specifically, **Verifiable Credentials (VCs)** are digital credentials which can be leveraged to digitally sign information, making the information tamper-resistant and instantaneously verifiable.

Once a peer organization has conducted PCF Validation, it could enable a Verifiable Credential to be created, attesting to the integrity of the PCF information, and the supplier (i.e. data owner) may then share this credential with peers as a testament to the peer-conducted validation. As data sharing networks become more commonplace and robust, the PACT community will continue to monitor and consider how Verifiable Credentials and other similar technologies may bring increased trust to data shared across the PACT Network.

Endnotes

1. [GHG Protocol (2022) Scope 3 Frequently Asked Questions](#)

2. [Science Based Targets initiative (2023) Catalyzing Value Chain Decarbonization: Corporate Survey Results](#)

About WBCSD

The World Business Council for Sustainable Development (WBCSD) is a global community of over 225 of the world's leading businesses driving systems transformation for a better world in which 9+ billion people can live well, within planetary boundaries, by mid-century. Together, we transform the systems we work in to limit the impact of the climate crisis, restore nature and tackle inequality.

We accelerate value chain transformation across key sectors and reshape the financial system to reward sustainable leadership and action through a lower cost of capital. Through the exchange of best practices, improving performance, accessing education, forming partnerships, and shaping the policy agenda, we drive progress in businesses and sharpen the accountability of their performance.

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About PACT

PACT offers a streamlined methodology for calculating and exchanging product carbon footprints (PCFs) to promote decarbonization across value chains.

Powered by the World Business Council for Sustainable Development (WBCSD), PACT harmonizes the PCF calculation and exchange through a universal methodology, technical specifications for PCF exchange, and an ecosystem enriched by a network of committed, impact-driven companies.

With participation from more than 150 stakeholders, including businesses, policymakers, and standard setters, PACT collaborates with over 11 industry-specific initiatives. More than 2,500 companies have adopted PACT, striving to accelerate supply chain transparency and foster decarbonization within the private sector, driving sustainable and enduring business practices.

If you would like to find out more about PACT, please contact:

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