QUANTIFYING THE GREENHOUSE GAS EMISSIONS OF PRODUCTS
PAS 2050 & the GHG Protocol Product Standard

A short guide to their purpose, similarities and differences

Why are there two different standards available on product carbon footprinting?

PAS 2050 was introduced in 2008 (revised in 2011) with the aim of providing a consistent internationally applicable **method for quantifying product carbon footprints**. The GHG Protocol Product Standard was released in 2011 and in addition to providing requirements to quantify the GHG inventories of products, also includes requirements for **public reporting**. Both standards are broadly consistent in their quantification methods, but their differing purpose and standard development processes has lead to two different documents.

How are these two standards aligned?

The GHG Protocol built on the initial PAS 2050 method in development of its Product Standard. In turn, the PAS 2050 drew upon lessons learned during the Product Standard's development process in its 2011 revision. As a result of this cross collaboration, the key methodological rules underpinning quantification in both standards are consistent. In particular, key topics that have been brought into alignment include consistent approaches to:

- Sector or product rules
- Inclusion of biogenic carbon
- Recycling
- Land use change
- Delayed emissions

Will I get a different result if I use one versus the other?

While both PAS 2050 and the Product Standard provide requirements for quantifying the GHG impact of a product over its lifetime, the PAS includes requirements for *recording* while the Product Standard includes requirements for *public reporting*. Additionally, while harmonization on all qualification methodologies was sought during the development of both standards, some minor differences do remain. The table below provides detail on each aspect of the methodologies, the differences between them, and estimates on whether the difference may affect the final result.

Importantly, both standards provide a consistent approach to promoting the use and development of sector specific rules – known as 'product rules' in the Product Standard and 'supplementary requirements' in PAS 2050. This approach recognises the importance that sector/product specific rules have in aiding consistent application of the standards within sectors. As further sector specific rules are developed, we hope that the same rules may be applied to either standard to bring further consistency in product carbon assessments internationally.

NOTE: The International Standards Organisation is also developing a standard for the carbon footprint of products (ISO 14067) with whom collaboration is on-going. This factsheet is intended to be revised when ISO 14067 is published.

BSI

Publicly Available Specification (PAS) 2050 - Specification for the assessment of the life cycle greenhouse gas emissions of goods and services *was developed by the British Standards Institution in 2008. PAS 2050 is the first consensus-based and internationally applicable standard on product carbon footprinting that has been used as the basis for the development of other standards internationally. The 2011 revision to PAS 2050 was developed through extensive consultation with international stakeholders, and in particular, through significant engagement with the wide PAS 2050 user community.*

www.bsigroup.com/PAS2050

GREENHOUSE GAS PROTOCOL

The Greenhouse Gas Protocol, a collaboration of the World Resources Institute and the World Business Council for Sustainable Development, provides the foundation for sustainable climate strategies and more efficient, resilient and profitable organizations. ***The GHG Protocol Product Standard*** *is one of a suite of accounting tools developed by the GHG Protocol to encourage users to understand, quantify, and manage greenhouse gas emissions. The standards follow an inclusive, consensus based multi-stakeholder process with balanced participation from businesses, government agencies, non- governmental organizations, and academic institutions around the world.*

http://www.ghgprotocol.org/standards

Topic	Summary of the PAS 2050 and the Product Standard methodologies (Note: this summary is not sufficient to complete an assessment/inventory – for full descriptions of the requirements of each standard please see the respective documents)	Implications for difference in assessment results (None = green; minor chance = yellow; some = pink)
Goal, scope and principles		
Goal	Same goals to provide consistent method e.g. to identify, understand and manage (e.g. reduce) emissions.	None expected
	Some difference in that the PAS 2050 focuses on providing a "*consistent method for assessment",* while the Product Standard enables organisations to "*account for and publicly report GHG inventories of products*".	None expected
Principles	Essentially the same drawing on two sources: ISO 14044 (PAS 2050) and the GHG Protocol Corporate Standard (Product Standard).	None expected
Product sector rules	PAS 2050 review has introduced 'supplementary requirements' (SRs) that include sector guidance/rules /Product Category Rules. The Product Standard refers to 'product rules' to enable comparisons. Both documents require sector approaches to be consistent with the overarching standard.	Some chance - if different SRs and/or product rules are used. But it is expected that the same rules should apply to either standard.
	PAS 2050 sets out principles that SRs must adhere to i.e. to be applicable to the PAS. The Product Standard provides guidance on the development of product rules.	None expected – guidance and principles convey the same meaning.
Treatment of specific emissions and removals		
Biogenic carbon	Both require biogenic emissions and removals to be included in the assessment.	None expected
	PAS 2050 excludes biogenic carbon for food and feed. This is on the grounds that they are short cycle products so the emissions & removals are likely to cancel each other out (and avoids the need to include CO_2 emissions from animal digestion). The Product Standard includes biogenic carbon in the inventory for all products and requires separate reporting for additional transparency.	None expected - The exclusion of food and feed is optional in the PAS but if it is excluded the outcome of the assessment is likely to be the same.
Aircraft emissions	Neither standard require the use of a multiplier or other correction to emissions from aircraft transport. The Product Standard allows the use of a multiplier in the inventory results, but if so the multiplier must also be disclosed in the inventory report. If a multiplier is used for PAS 2050, it needs to be recorded separately from the main inventory result.	Minor chance - the inclusion of a multiplier is optional in the Product Standard but if included would cause different results for air travel emissions.
Time period for assess-ment	PAS 2050 specifies 100 year assessment period, unless otherwise provided for in supplementary requirements. The Product Standard allows companies to specify the appropriate time-frame. But if known science, sector guidance, or product rules do not exist, the Product Standard suggests companies should assume a minimum time period of 100 years including the end-of-life stage.	Minor chance – If a longer time period is used following the Product Standard. However, both standards allow flexibility for certain products/sectors.
Stored carbon	In both standards, carbon stored beyond the assessment period is treated as stored carbon. In the Product Standard, stored carbon is also reported separately.	Minor chance - if time / assessment period is different.

Delayed emissions	For both standards weighting factors shall not be applied to the inventory results (but companies may include results with weighting factors separately).	None expected
Land use change	Direct land use change is included in both documents. The Product Standard includes land use change within the inventory results and requires separate reporting for transparency. For PAS 2050 it is included within the assessment and the type and timing of land use change must be recorded.	None expected
	The PAS 2050 no longer requires to the use of worst case scenario where previous land-use unknown, allowing for average statistical data to determine direct land use change impacts. The Product Standard provides guidance for estimating direct land use change using average statistical data but also allows for the worst case scenario to be assumed	None expected
	PAS 2050 provides some default values for land converted to cropland but reverts to IPCC for other types of land use change. The Product Standard provides guidance on how to calculate land use change emissions, following IPCC, but does not include specific default values.	None expected as they both follow IPCC
	Indirect land use change is not a requirement in the Product Standard, but can be reported separately from the inventory results. Indirect land use change is not included in PAS 2050.	None expected - neither include indirect land use change in the assessment results.
Soil carbon	In PAS 2050 soil carbon is excluded unless provided for in supplementary requirements. In the Product Standard including soil carbon is not a requirement, but it can be included in the inventory results if companies can reasonably measure it.	Minor chance - the default is not to include it in both standards. But both allow for soil carbon change in certain circumstances.
Unit of analysis	Both documents specify the functional unit. The Product Standard includes requirements for cradle-to-gate inventories to use reference flow as the unit of analysis. PAS 2050 does not address specifically but it can be assumed.	None expected
System boundary		
System boundary	PAS 2050 sets certain specific inclusions and exclusions for the system boundary as a default unless provided for in supplementary requirements (e.g., excludes capital goods). The Product Standard –requires all "attributable" processes to be included in the boundary. "Non-attributable" processes (i.e. not directly connected to the studied product like capital goods) are not required to be included (and if included must be disclosed). Inclusion or exclusion of either attributable or non-attributable processes can be disclosed and justified.	Minor chance - the default for both is to exclude processes that are not typically relevant to a product's life cycle. Differences may result where different assumptions or product rules/supplementary guidance are used. Use of the same SRs/product rules should bring consistency here.
Material-ity / Cut-off	Where a data gap exists, exclusions are allowed by the Product Standard on the basis of significance (a 1% insignificance threshold is given as a rule of thumb but not required). Justification and disclosure of exclusions from the assessment is required in the inventory report. PAS 2050 allows exclusions on the basis of materiality (<1%) but at least 95% of complete product life must be included. Revision has moved towards alignment with the Product Standard by removing requirements to apply the 95% rule to remaining sources where a single source is >50%, and not requiring scale up to account for 100%.	Some chance – if assessment under the Product Standard results in greater than a 5 % of total emissions excluded, this will cause different results than PAS 2050. Use of SRs / product rules may bring consistency here.

Data		
Data	Both standards have consistent data quality rules.	None expected
	Both standards have the same primary data requirement for all processes owned and controlled by the organisation.	None expected
	PAS 2050 has an additional requirement for organisations that own <10% of emissions to collect primary data from suppliers that contributes to >10%. GHG Protocol encourages primary data collection from suppliers.	None expected - both promote primary data collection, so unlikely to result in difference.
Non-CO_2 emissions from livestock	PAS 2050 is more specific on how non-CO_2 emissions from livestock are addressed by including a clause which follows the highest tier approach in the IPCC or country (whichever higher). The Product Standard does not provide specific guidance on this but the general data collection rules are generally consistent with the IPCC approach.	None expected
Electricity	PAS 2050 is more specific on how specific data sources shall be addressed e.g. for energy supply systems / stand-alone sources / electricity and heat from large energy transmission systems/ renewable energy factors. The Product Standard does not provide specific guidance but the general data collection rules are generally consistent.	None expected
Allocation		
Allocation	After avoiding allocation, the hierarchy within the Product Standard is physical allocation and then economic allocation. For PAS 2050, the hierarchy is supplementary requirements (SRs) and then economic allocation as the default approach except in some cases where specific requirements are given (i.e. transport/energy recovery/energy production using CHP).	Some chance - without SRs available it's possible that physical allocation is used for Product Standard & economic used for PAS 2050. Use of same SRs / product rules may bring consistency here.
	Waste – Both standards do not allow allocation of waste (e.g. co-product with no value)	None expected
	Re-use – PAS 2050 includes specific requirements on re-use as defined by the EU directive. The Product Standard does not provide this guidance but the general requirements of the standard are consistent.	None expected
	Recycling – PAS 2050 has moved into alignment with the Product Standard and both outline two approaches: the 'Closed Loop Approximation' (0-100) method and the Recycled Content or 'cut off' (100-0) method.	None expected
Claims of conformity and Uncertainty		
Claims of conformity	The Product Standard requires public reporting to claim conformance with the standard, and specifies each component that shall be reported. PAS 2050 includes requirements for recording information (not reporting) and requires information to be documented and made available if requested (e.g. verification). It includes some set lines if conformance is claimed with PAS 2050.	N/A - not applicable to differences in quantification
Uncertainty	The Product Standard requires a qualitative statement of uncertainty be included in the inventory report. Uncertainty is only covered in PAS 2050 as guidance.	N/A – not applicable to differences in quantification.