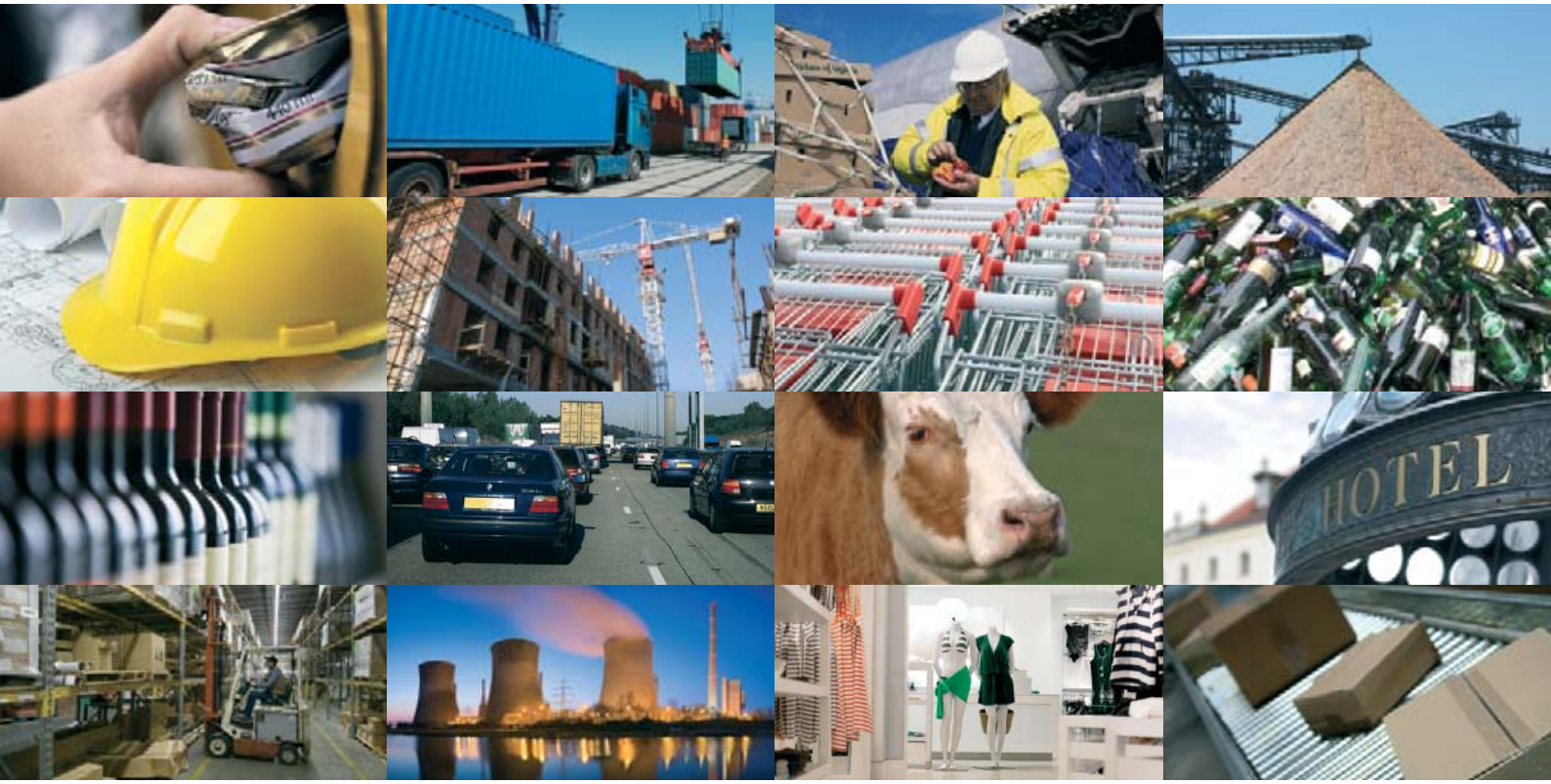
PUBLICLY AVAILABLE SPECIFICATION

PAS 2050:2011

Specification for the assessment of the life cycle greenhouse gas emissions of goods and services



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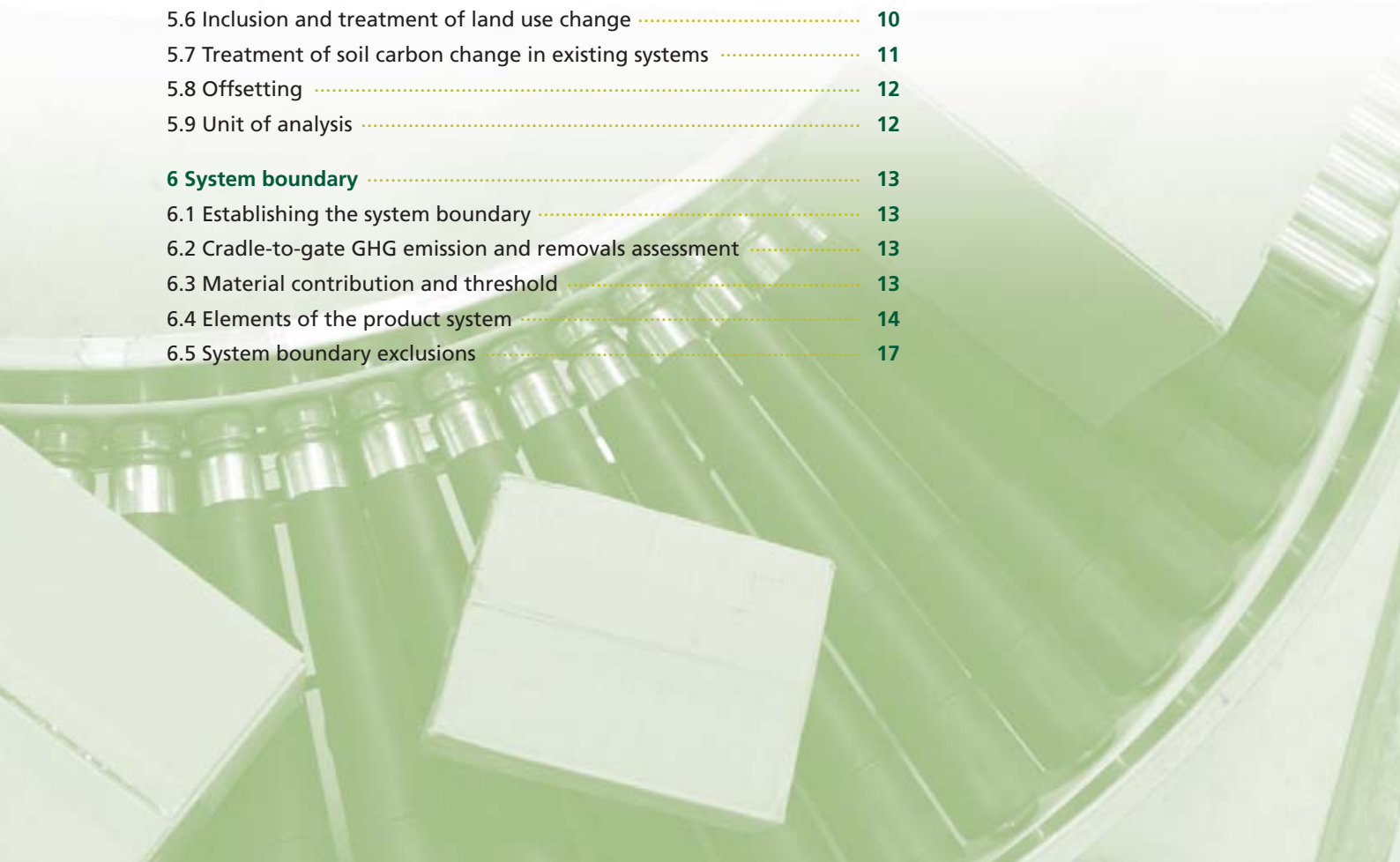

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Foreword

The revision of this Publicly Available Specification (PAS) has been undertaken by BSI to update the specification for quantifying the life cycle greenhouse gas (GHG) emissions of goods and services in line with the latest technical advances and current experience.

The development of this PAS was co-sponsored by:

- Defra (Department for Environment, Food and Rural Affairs, UK);
- DECC (Department of Energy and Climate Change, UK);
- BIS (Department for Business, Innovation and Skills, UK).

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Comments from other parties were also sought by BSI. The expert contributions from all the organizations and individuals consulted in the development this PAS are gratefully acknowledged.

Supersession

This Publicly Available Specification supersedes PAS 2050:2008, which is withdrawn.

Use of this document

It has been assumed in the preparation of this PAS that the execution of its provisions will be entrusted to appropriately qualified and experienced people, for whose use it has been produced.

This PAS has been prepared and published by BSI, which retains its ownership and copyright. BSI reserves the right to withdraw or amend this PAS on receipt of authoritative advice that it is appropriate to do so. This PAS will be reviewed at intervals not exceeding two years, and any amendments arising from the review will be published as an amended Publicly Available Specification and publicized in *Update Standards*.

This PAS is not to be regarded as a British Standard, European Standard or International Standard. In the event that this PAS is put forward to form the basis of a full British Standard, European Standard or International Standard, it will be withdrawn.

Presentational conventions

The provisions of this PAS are presented in roman (i.e. upright) type. Its requirements are expressed in sentences in which the principal auxiliary verb is "shall". Its recommendations are expressed in sentences in which the principal auxiliary verb is "should".

Commentary, explanation and general informative material (e.g. Notes) is presented in italic type, and does not constitute a normative element.

Contractual and legal considerations

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with this PAS does not in itself confer immunity from legal obligations.

0 Introduction

0.1 General information

Climate change continues to be one of the greatest challenges facing nations, governments, business and citizens and will influence the way we live and work in future decades (IPCC 2007 [1]). Past and current actions, including the release of carbon dioxide (CO_2) and other greenhouse gases through human activities such as the burning of fossil fuels, emissions from chemical processes and other sources of anthropogenic greenhouse gases, will have an effect on future global climate.

While greenhouse gas (GHG) emissions are often viewed at global, national, corporate or organizational levels, emissions within these groupings can arise from supply chains within business, between businesses and between nations. The GHG emissions associated with goods and services reflect the impact of processes, materials and decisions occurring throughout the life cycle of those goods and services.

PAS 2050 was developed in response to broad community and industry desire for a consistent method for assessing the life cycle GHG emissions of goods and services. Life cycle GHG emissions are the emissions that are released as part of the processes of creating, modifying, transporting, storing, using, providing, recycling or disposing of such goods and services. PAS 2050 offers organizations a method to deliver improved understanding of the GHG emissions arising from their supply chains, but the primary objective of this PAS is to provide a common basis for GHG emission quantification that will inform and enable meaningful GHG emission reduction programmes.

During the first two years of its use, this PAS has been shown to be generically applicable to a wide range of goods and services and therefore does not itself make provision for the special treatment of particular product sectors. However, it is recognized that the availability of supplementary requirements could aid consistent application of the PAS to products within specific product sectors by providing:

a) a sector or product group focus for aspects of the PAS 2050 assessment where options are permitted;
b) rules or calculation requirements that are directly relevant to the main sources of emissions for a specific sector or product group;
c) clarity on how to apply specific elements of the PAS 2050 assessment within a specific sector or product group.

To facilitate this, this new edition of PAS 2050 includes a set of principles (see **4.3**) governing the development of supplementary requirements for the application of PAS 2050 to particular product types. These principles are intended to ensure that such supplementary requirements are not in conflict with the requirements of this PAS.

Although there is no requirement for, or standardization of, communication techniques in this specification, this PAS supports the assessment of life cycle GHG emissions of goods and services in a manner that can be later disclosed. For this reason, great emphasis is given to proper recording of processes and outcomes. Where an organization implementing this PAS chooses to disclose all or part of the results of an assessment of GHG emissions, all relevant supporting information should also be made available.

Where communication is directed to the consumer, the user should refer to additional specifications or further guidance on environmental claims (e.g. ISO 14021 [1] or UK Department of Environment Food and Rural Affairs Green Claims Guidance [7] [2]).

Using PAS 2050 to quantify the life cycle GHG emissions from goods and services aids informed decision-making when considering reducing emissions for products and services.

This PAS is focused on a single environmental issue (i.e. GHG emissions and their contribution to climate change), but this is only one of a range of possible environmental impacts from specific goods or services. The relative importance of those impacts can vary significantly from product to product, and it is important to be aware that decisions taken on the basis of a "single issue" assessment could be detrimental to other environmental impacts potentially arising from the provision and use of the same product.

[1] http://www.iso.org/iso/catalogue_detail?csnumber=23146
[2] http://www.defra.gov.uk/publications/2011/06/03/pb13453-green-claims-guidance/

0.2 Background, benefits and context of PAS 2050

PAS 2050 builds on existing life cycle assessment methods established through BS EN ISO 14040 and BS EN ISO 14044 by giving requirements specifically for the assessment of GHG emissions within the life cycle of goods and services. These requirements further clarify the implementation of these standards in relation to the assessment of GHG emissions of goods and services, and establish particular principles and techniques, including:

a) cradle-to-gate and cradle-to-grave GHG emissions assessment data as part of the life cycle GHG emissions assessment of goods and services;

b) scope of greenhouse gases to be included (see **5.1**);

c) criteria for global warming potential (GWP) data (see **5.3**);

d) treatment of emissions and removals from land use change and biogenic and fossil carbon sources;

e) treatment of the impact of carbon storage in products and offsetting;

f) requirements for the treatment of GHG emissions arising from specific processes;

g) data requirements and accounting for emissions from renewable energy generation.

This PAS benefits organizations, businesses and other stakeholders by providing a clear and consistent method for the assessment of the life cycle GHG emissions associated with goods and services. Specifically, this PAS provides the following benefits:

a) for organizations that supply goods and services, this PAS:
   - allows internal assessment of the existing life cycle GHG emissions of goods and services;
   - facilitates the evaluation of alternative product configurations, sourcing and manufacturing methods, raw material choices and supplier selection on the basis of the life cycle GHG emissions associated with goods and is to be used as a basis for comparison of services;
   - provides a benchmark for programmes aimed at reducing GHG emissions;
   - allows for the quantification, management and potential comparison of GHG emissions from goods or services using a common, recognized and standardized approach to life cycle GHG emissions assessment; and
   - supports reporting (e.g. on corporate responsibility).

b) for consumers of goods and services, this PAS provides a common basis for understanding the assessment of life cycle GHG emissions when making purchasing decisions and using goods and services.

1 Scope

This Publicly Available Specification (PAS) specifies requirements for the assessment of the life cycle GHG emissions of goods and services (collectively referred to as "products") based on key life cycle assessment techniques and principles. This PAS is applicable to organizations assessing the GHG emissions of products across their life cycle, and to organizations assessing the cradle-to-gate GHG emissions of products.

Requirements are specified for identifying the system boundary, the sources of GHG emissions associated with products that fall inside the system boundary, the data requirements for carrying out the analysis, and the calculation of the results.

This PAS addresses the single impact category of global warming. It does not assess other potential social, economic and environmental impacts or issues arising from the provision of products or issues associated with the life cycle of products, such as non-GHG emissions, acidification, eutrophication, toxicity, biodiversity or labour standards. The life cycle GHG emissions of products, as calculated using this PAS, do not provide an indicator of the overall environmental impact of these products, such as may result from other types of life cycle assessment.

PAS 2050 is generically applicable to a wide range of goods and services. However, this revision includes principles for the preparation and use of supplementary requirements to provide a focused approach for specific industry sectors or product categories in a manner that will facilitate consistent application of PAS 2050 within the particular sector or product category.

This PAS does not specify requirements for the disclosure or communication of the results of a quantification of the life cycle GHG emissions of goods and services.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

BS EN ISO 14021, *Environmental labels and declarations – Self-declared environmental claims (Type II environmental labelling)*

BS EN ISO 14044:2006, *Environmental management – Life cycle assessment – Requirements and guidelines*

IPCC 2006, *Guidelines for National Greenhouse Gas Inventories*. National Greenhouse Gas Inventories Programme, Intergovernmental Panel on Climate Change

Note *Subsequent amendments to IPCC 2006 also apply.*

IPCC 2007, *Climate Change 2007: The Physical Science Basis.* Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Solomon S, Qin D, Manning M, Chen Z, Marquis M, Avery KB, Tignor M, Miller HL (editors)]. Cambridge, UK: Cambridge University Press, 996 pp.

Note *Subsequent amendments to IPCC 2007 also apply.*