

Life Cycle-Based Sustainability — Standards & Guidelines



Numerous standards and guidelines have recently been developed by public and private organizations in order to meet society's needs for credible and comparable environmental metrics at the product and organization level. Many initiatives follow a life cycle approach which means that environmental impacts are assessed from the acquisition of raw materials through to manufacturing, distribution, use and end-of-life. The concept is well-known for products, which is generally termed a life cycle assessment (LCA), but is lately also applied to organizations, also called a value chain or scope 3 analysis, for example.

A centralized overview of standards can help companies to better understand the developments of global and regional reporting standards and guidelines, which are applicable to their company or products. By being better informed, companies can determine the most appropriate standards and guidelines to follow and how to meet the requirements of the individual efforts. This knowledge will enable companies to maximize the benefit of their sustainability investment. Below we present several well-known, and some lesser known life cycle-based protocols and standards that are in use today. Website links to these documents are provided at the end of this document.

Product

• ISO 14040	• ISO 14025	• PAS 2050
• ISO 14033	• ISO 14067	• BPX 30-323
• ISO 14024	• GHG Protocol (Product)	• Carbon Footprints, Japan
• ISO 14021	• ILCD	• Carbon Footprints, South Korea

Corporate

• ISO 14064	• DEFRA
• GHG Protocol (Value Chain)	• Bilan Carbone

Combined

• ISO 14046	• Water Footprint Network
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Product Standards and Guidelines

ISO 14040 and ISO 14044

The leading standards for Life Cycle Assessment (LCA) are ISO 14040 and ISO 14044. These international standards focus mainly on the process of performing an LCA. Requirements and guidelines are given for:

- Definition of the goal and scope of the LCA
- Life cycle inventory analysis (LCI) phase
- Life cycle impact assessment (LCIA) phase
- Interpretation phase
- Reporting and critical review of the LCA

[ISO 14040:2006 - Environmental management -- Life cycle assessment -- Principles and framework](#)

[ISO 14044:2006 - Environmental management -- Life cycle assessment -- Requirements and guidelines](#)



ISO 14024 (Type I label)

Voluntary, multiple-criteria based, third party program developed for a specific product or products. Examples include the [EU ecolabel](#), [Blue angel](#), [Ecologo](#), etc.
[ISO 14024 - Type I Label](#)

ISO 14021 (Type II label)

Type II is for any written or spoken environmental statement or claim. There are no fixed criteria, manufacturers simply declare the information they wish to communicate about the environmental attributes of their products.
[ISO 14021 - Type II Label](#)

ISO 14025 (Type III label)

ISO 14025 is based on ISO 14040/44 and introduces two concepts: Product Category Rules (PCRs) and Environmental Product Declarations (EPDs). PCRs are specific guidelines for the calculation of the environmental impact of products with similar characteristics. By following the requirements in the PCR, a company can develop an EPD, which is concise document containing relevant environmental information about a product.

PCRs are subject to administration of a program operator. Examples of program operators are Environdec (located in Sweden, with international focus), PlasticsEurope (the Association of Plastics Manufacturers in Europe), Institut Bauen und Umwelt (Germany), EPD-norge (Norway) UL Environment (United States) and JEMAI (Japan). An overview of PCRs from various program operators can be found at: <http://pcr-library.edf.org.tw/index.asp>. The site of program operator [Environdec \(http://www.environdec.com\)](http://www.environdec.com) also provides PCRs and in addition EPDs.

[ISO 14025:2006 - Environmental labels and declarations -- Type III environmental declarations -- Principles and procedures](#)

Draft ISO 14067: Carbon Footprint of Product

This standard is based on ISO 14040/44 and ISO 14025, but focuses on climate change only. Quantification of the carbon footprint of a product (CFP) is largely based on ISO 14040/44, but includes requirements on specific issues relevant for carbon footprints, including land-use change, carbon uptake, biogenic carbon emissions and soil carbon change. The standard also provides specific requirements on communication with or without the intention to be publicly available.
Expected publication of this International Standard is the end of 2012.

GHG Protocol Product Standard: Product Life Cycle Accounting and Reporting Standard

The GHG Protocol product standard has been developed by the World Resources Institute (WRI) and the World Business Council on Sustainable Development (WBCSD) and was road tested by 60 companies in 2010. Like ISO 14067, this standard is largely in compliance with ISO 14040/44, but is specifically focused on greenhouse gas accounting. The standard includes many practical examples. The GHG Protocol product standard was launched in October 2011 and has been adopted as a basis for various industry driven initiatives, including, The Sustainability Consortium¹.

[GHG Protocol - Product Life Cycle Accounting and Reporting Standard](#)

¹ [The Sustainability Consortium](#) (TSC) drives scientific research and the development of standards and IT tools, through a collaborative process, to enhance the ability to understand and address the environmental, social, and economic implications of products. The Sustainability Measurement and Reporting System (SMRS) under development will deliver actionable sustainability information through Category Sustainability Profiles (Level 1), and deliver a large-scale system supporting standardization and harmonization of product LCAs over time (Level 2).

ILCD: International Reference Life Cycle Data System

In response to the commitments in the Integrated Product Policy (IPP) communication of the European Commission, the Joint Research Centre prepared the ILCD handbook to meet commitments which were made by the European Commission in the Integrated Product Policy (IPP) communication. The ILCD Handbook was published in 2010. It is based on ISO 14040/44, but provides much more detailed technical guidance. The ILCD Handbook contains over 400 pages, whereas ISO 14040/44 jointly contains about 60 pages. The ILCD Handbook contains detailed descriptions and requirements in order to reduce flexibility in choices and to support consistency and quality assurance of LCA results.

At the moment, the Environment Directorate General and the Joint Research Center (JRC) are developing a harmonized methodology for the calculation of the environmental footprint of products and organizations. Both methods are based on the ILCD Handbook; PCRs are developed in parallel.

[International Reference Life Cycle Data System Handbook](#)

PAS 2050: UK's Product Carbon Footprint Standard

PAS 2050 was published by British Standards Institution (BSI) in 2008 and revised in October 2011. PAS 2050 was the first carbon footprint standard and has been applied by many companies worldwide. The 2011 revision resulted in a standard that is largely aligned with the GHG Protocol product standard.

[PAS 2050 - Life cycle greenhouse gas emissions of goods and services](#)

BPX 30-323: French Environmental Footprint Guidance

In BPX 30-323, the French law Grenelle laid the framework and general methodology for French environmental product labeling. Beyond requiring a carbon footprint for each product category, BPX 30-323 provides general guidelines for product-specific communication and is in line with ISO 14040/44. Additionally, BPX 30-323 includes guides for certain PCRs, and the Agency for Environment and Energy Management (ADEME) has begun development of a public database containing generic data.

France is currently conducting national research on consumer product environmental information that started on 1 July 2011, and will last one year with 168 participating companies. The pilot covers the quantification of environmental impacts and the communication of environmental footprints to the consumer.

[BPX30-323: French Environmental Footprint Guidance](#)

Carbon Footprint of Products, Japan

Founded in 2008 by the Japanese Ministry of Economy, Trade and Industry, The Carbon Footprint of Products (CFP) Project sought to develop a national system for the calculation of carbon footprint of products. A pilot program was conducted from 2009 to 2011 and over 250 products have been evaluated so far. In April 2012, the Japan Environmental Management Association for Industry took control of the project and will continue to expand the program.

[Japan: Carbon Footprints of Products](#)

Carbon Footprint of Products, South Korea

After a pilot program in 2009 by the Korean Environmental Industry and Technology Institute, a carbon label was introduced in South Korea. The label is based on the UK labeling scheme and intends to adopt ISO 14067 when that standard is published, and a low-carbon label is being developed to allow for companies to further differentiate their products. Thus far over 350 products and services have been evaluated and have this label.

[South Korea: Carbon Footprints of Products](#)

Corporate Standards and Guidelines

ISO 14064: Greenhouse Gases – Part 1, 2 and 3

ISO 14064 specifies principles and requirements for the reporting of greenhouse gas (GHG) emissions at the both the organization and more specifically at the project level. Part 1 focuses on the organisation level and part 2 at the project level. Part 3 provides guidance for those conducting or managing the validation and/or verification of GHG assertions.

[ISO 14064: Greenhouse Gases - Part 1](#)

[ISO 14064: Greenhouse Gases - Part 2](#)

[ISO 14064: Greenhouse Gases - Part 3](#)

GHG Protocol Corporate Standards: Corporate and Scope 3

The Corporate Value Chain (scope 3) standard was published in October 2011. The initial GHG Protocol Corporate Standard provides standards and guidance for companies and other types of organizations preparing a GHG inventory for scope 1, 2 and 3 emissions. The scope 3 standard is a supplement to the Corporate Standard and focuses on the indirect emissions of organizations (excluding scope 2 emissions; purchased electricity).

[GHG Protocol: Scope 3 Standard](#)

Department for Environment, Food and Rural Affairs (DEFRA) - Guidance on how to measure and report your greenhouse gas emissions

The UK's corporate GHG accounting guide assists organizations of all sizes in reporting their GHG emissions, either voluntarily or to satisfy the requirements the Companies Act 2006. The goal of this guide is to allow companies to be proactive in managing and reducing their carbon emissions. Based on the GHG protocol, it also serves as a complement to both PAS 2050 and ISO 14040, which are discussed previously in this overview and included extensive involvement with businesses. Minimum reporting recommendations are all scope 1 and 2 emissions, an intensity ratio, and a base year because factors annual adjustment factors are provided. While reporting of significant scope 3 emissions is not required, it is strongly encouraged. Beyond the reporting recommendations, the guidance contains additional information on setting reduction targets and how to report convey additional information about reductions.

[DEFRA - GHG Emissions Guidance](#)

Bilan Carbone

Constructed, by ADEME in France, Bilan Carbone is a GHG accounting guidance document and tool for any organization interested in their greenhouse gas emissions. Currently, there are three distinct modules: companies, communities and territories, which makes this tool applicable to a wide range of entities from private companies to communities interested in urban planning. All greenhouse gases are considered, rather than the six Kyoto Protocol GHGs considered in most guides, and indirect greenhouse gas emissions are also accounted for.

[Bilan Carbone](#) (in French)

Combined Standards & Guidelines: Products and Organizations

Draft ISO 14046: Water Footprint

Quantification of water footprints for products, processes and organizations is under development since 2009. This standard takes a life cycle approach as in ISO 14040/44 but focuses on water solely.

Expected publication of this International Standard is 2014.

Water Footprint Network

The Global Water Footprint Standard is the outcome of a joint effort between the Water Footprint Network, its associated partners, and the University of Twente in the Netherlands. The standard is contained in the Water Footprint Assessment Manual and has been recognized as an important step in addressing global water problems. Broad guidelines on the specific phases of water footprints ranging from individual processes and products to the national level are provided in the manual.

[Water Footprint Network](#)

Websites for Further Information

Standard or Initiative	Website
Bilan Carbone	http://www.r-co2.com/Bilan-Carbone-ADEME--FRANCAIS
Blue Angel	http://www.blauer-engel.de/en/blauer_engel/index.php
BPX 30-323	http://affichage-environnemental.afnor.org/
Carbon Footprint, Japan	http://www.cfp-japan.jp/english
Carbon Footprint, South Korea	http://www.edp.or.kr/carbon/english/list/list.asp
DEFRA	http://www.defra.gov.uk/publications/2011/03/26/ghg_guidance-pb13309/
Ecologo	http://www.ecologo.org/en
Environdec	http://www.environdec.com
EU ecolabel	http://ec.europa.eu/environment/ecolabel/
GHG Protocol (Product)	http://www.ghgprotocol.org/standards/product-standard
GHG Protocol (Value Chain)	http://www.ghgprotocol.org/standards/scope-3-standard
ILCD	http://ict.jrc.ec.europa.eu/pdf-directory/ILCD-Handbook-General-guide-for-LCA-DETAIL-online-12March2010.pdf
ISO 14021	http://www.iso.org/iso/catalogue_detail?csnumber=23146
ISO 14024	http://www.iso.org/iso/catalogue_detail?csnumber=23145
ISO 14025	http://www.iso.org/iso/catalogue_detail?csnumber=38131
ISO 14040	http://www.iso.org/iso/catalogue_detail?csnumber=37456
ISO 14044	http://www.iso.org/iso/catalogue_detail?csnumber=38498
ISO 14064	http://www.iso.org/iso/catalogue_detail?csnumber=38381
PAS 2050	http://www.bsigroup.com/en/Standards-and-Publications/How-we-can-help-you/Professional-Standards-Service/PAS-2050/PAS-2050/
The Sustainability Consortium	http://www.sustainabilityconsortium.org/
Water Footprint Network	http://www.waterfootprint.org/?page=files/WaterFootprintAssessmentManual



The PRé Portfolio — Tools for Actionable Sustainability

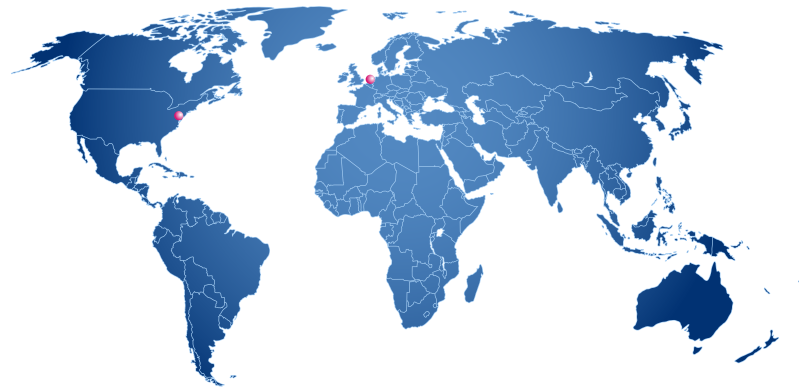
PRé has led the way in the sustainability arena for more than two decades, contributing greatly to the field of product and supply chain sustainability. PRé is a leader and innovator in conducting comprehensive sustainability analyses founded on measureable and meaningful metrics.

PRé offers a variety of services to guide you on the road to sustainability, from landscaping workshops and stakeholder engagement to sector trend analyses relevant to your industry. Depending on your needs, PRé can provide you with life cycle studies, from brief screening Life Cycle Assessments (LCA) to comprehensive and ISO compliant LCAs, supply chain impact scans, and product footprinting analyses.

PRé's team has extensive experience in the development of industry standards and initiatives such as the Greenhouse Gas Protocol, The Sustainability Consortium, ISO standards for carbon and water footprinting, United Nations Environment Programme (UNEP), and the Global Reporting Initiative (GRI). With our industry-specific knowledge, we provide our clients with the relevant metrics and tools to map out a clear path to success.

PRé is the developer of SimaPro, the world's leading LCA software. We also offer the product evaluation web tool SimaEasy, which provides quick insight into your product sustainability performance and can be deployed across teams and locations.

Internationally, leading businesses work with PRé to integrate sustainability into their product development procedures in order to create business value. PRé has offices in the United States and the Netherlands, plus a global partner network to support large international or multiclient projects.



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*We look forward to being your
partner in putting the metrics
behind sustainability.*

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Get in Touch with PRé

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Find out more about what we can do for your organization at pre-sustainability.com

