



**ENVIRONMENTAL PRODUCT DECLARATIONS  
(EPDs) ARE COMING**  
*Is Your Business Ready?*

DR. JIM BOWYER

DR. JEFF HOWE  
KATHRYN FERNHOLZ  
DR. STEVE BRATKOVICH  
DR. SARAH STAI

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**DOVETAIL PARTNERS INC.**

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## EPDs are Coming – Is Your Business Ready?

### Introduction

The private sector in the United States tends to pay less attention to environmental initiatives than its counterpart in Europe. It may, then, come as a surprise to many US manufacturers that international protocols for science-based environmental labeling of products are well advanced. The near-term likelihood of requirements for environmental labeling of exported products may also be surprising. Central to recent developments is something known as Environmental Product Declarations, or EPDs – the increasing focus of governments and, in some cases, agencies that regulate international trade. It is a situation that warrants immediate attention.

An Environmental Product Declaration, or EPD, is *a standardized report of environmental impacts linked to a product or service*. An EPD is based on life cycle assessment, which provides a basis for comparing environmental performance and substantiating marketing claims. Until recently, EPD development was limited to organizations associated with the 14000 series of standards within the International Organization for Standardization (ISO) and the government agencies of several European countries. Now, the EPD concept is moving rapidly into the mainstream. As described recently by a leading authority on environmental labels and declarations, “The use of environmental product declarations is sweeping the globe and will create a legal barrier to trade unless the US develops its own EPD structure” (Schenck 2009).

#### Abbreviations Used in this Report:

- ASTM - American Society for Testing of Materials
- EPA – US Environmental Protection Agency
- EPD - Environmental Product Declaration
- ISO - International Organization for Standardization
- LCA - Life Cycle Assessment
- LCI - Life Cycle Inventory
- PCR - Product Category Rules

The EPD concept grew out of development of ISO standards focused on environmental management, life cycle assessment, and environmental labels and declarations. Environmental life cycle assessment, or LCA, provides a mechanism for systematically evaluating the environmental impacts linked to a product or process and for guiding process or product improvement efforts. Though governed by international protocols that guide how they are conducted, LCAs of different products may use different boundaries (i.e., may or may not include key steps in raw material procurement, product use, or end-of-life disposal), making comparisons of results difficult. ISO has addressed this problem by requiring that EPDs be based on a set of Product Category Rules that specify the parameters to be considered for a given family of products.

This report discusses EPDs and guidelines for their development and examines global and national developments that point toward greater use of this tool within the near future. Beneficial aspects of the EPD development process are also considered.

## Environmental Product Declarations – What, Why, and How

### The Nature of an EPD

As noted earlier, an EPD is a standardized report of environmental impacts linked to a product or service. To expand upon this definition, an EPD can be more explicitly described as *a standardized, third-party verified, and LCA-based label that communicates the environmental performance of a product and that is applicable worldwide*. In ISO terminology an EPD is a Type III environmental declaration.<sup>1</sup> An EPD includes information about both product attributes and production impacts (Table 1) and provides consistent and comparable information to industrial customers and end-use consumers regarding environmental impacts. The nature of EPDs also allows summation of environmental impacts along a product's supply chain – a powerful feature that greatly enhances the utility of LCA-based information.

Product declarations follow a standardized format and include a statement regarding life cycle stages considered, and sections describing the process, the product, and environmental impacts as determined by ISO-compliant LCAs. The LCAs, in turn, are prepared in accordance with a set of Product Category Rules (PCRs) that govern development of EPDs for groups of products that can fulfill equivalent functions (Schenck 2009).

Table 1  
Examples of Information Contained Within an EPD

<u>Production Impacts</u>	<u>Product Attributes</u>
Resource depletion	Material content
Energy consumption	Recycled content
Global warming potential	Emissions
Water consumption	Toxicity
Emissions to air and water	Service life
Waste generation	
Acidification	
Eutrophication	
Ozone depletion potential	
Photochemical oxidant production	
Respiratory effects	
Smog production potential	

<sup>1</sup> Type I declarations are used to designate environmentally preferable products with respect to one or more product attributes and involve verification by a third party; Type II declarations are self-declarations by product manufacturers; and Type III declarations are third-party verified and based on full life cycle assessment performed in accordance with international protocols.

## Why EPDs?

Today there are hundreds of labels intended to signify environmental attributes of various products. Many of these labels focus on one or two product attributes. Others are more comprehensive but lack commonality in scope or evaluation methods to allow straightforward comparisons of products. Some have no science behind them at all.

For purposes of evaluating environmental impacts of products, the Product Category Rules (PCRs) associated with EPDs ensure that life cycle assessments are conducted in such a way as to yield a fair (apples to apples) comparison; a key requirement is that products compared serve equivalent functions. Thus, presentation of LCA results in ISO-compliant EPDs greatly increases the usefulness of LCA results.<sup>2</sup>

It should be noted that information contained in EPDs is both quantifiable and verifiable. Social and landscape-level impacts for which assessment is largely subjective are not reported in an EPD, meaning that EPDs remain only one of several reporting mechanisms for conveying environmental and social impacts. Product certification, such as forest and wood products certification, will continue to serve an important function as EPDs come into common use.

## Essential Steps in Preparing an EPD

### *Leadership Role*

A key decision in preparing an EPD is selecting which organization will play the lead role.<sup>3</sup> For products that are quite similar across an industry or industry sector, as in the case of commodities, the EPD is commonly prepared under the auspices of a trade or technical association. However, a single manufacturer may take on the task if products are unique or if environmental impacts linked to a business are believed to be significantly less than the industry average.

### *Product Category Rules*

The first step in preparing an EPD is development, in accordance with ISO 14025 (or with ISO 21930 if building products are involved), of a set of specific rules, requirements, and guidelines for conducting LCAs and producing and presenting data, for one or more product categories; these are known as Product Category Rules (PCRs). A PCR specifies allocation rules for products and co-products in the life cycle inventory aspect of an LCA, defines materials and substances and impact categories that must be reported, and establishes a time frame for data validity.

Because PCRs establish rules that apply to manufacturers of an entire product category, they must be developed in consultation with a wide range of stakeholders. Additionally, EPDs must be developed under the guidance of a Program Operator, an organization that coordinates engagement of stakeholders and ensures adherence to ISO standards and

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<sup>2</sup> Several industry-specific computer models, such as the Athena Eco-Calculator, play a similar role in that they are developed using consistent rules governing scope, inclusiveness, and calculation methods.

<sup>3</sup> As explained in subsequent paragraphs, this role must be fulfilled by a Program Operator.



transparency requirements. Third-party review of the final draft of the rules by stakeholder groups or by a designated review panel is also required. It is important to note that PCRs and associated LCAs need not be prepared from scratch, but instead should be based on previously completed PCRs and LCAs for similar industries nationally or globally. In any event, given the inclusive, deliberative nature of the process, the development of PCRs can be time consuming, a reality that should be considered in planning for preparation of an EPD.

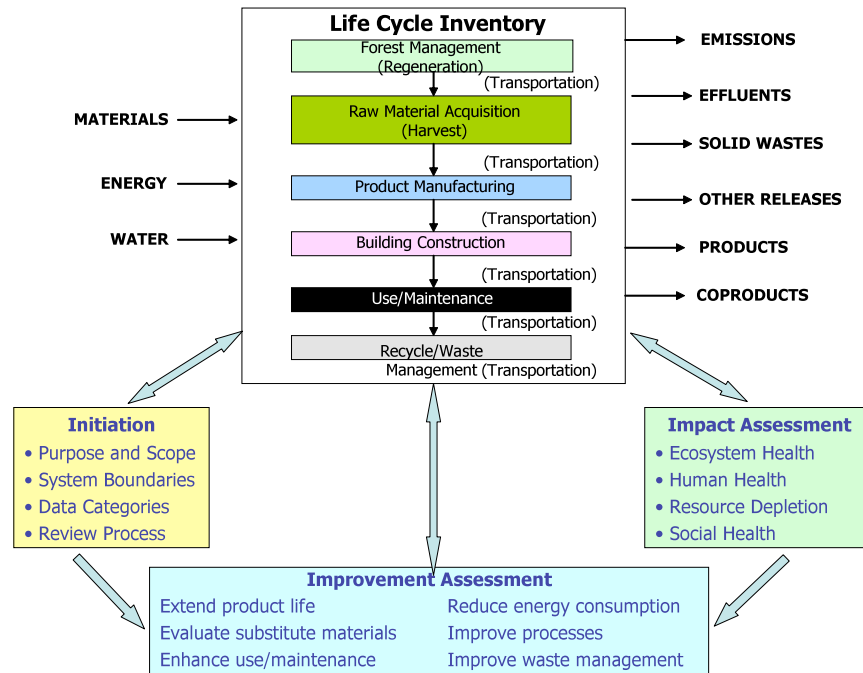
### *Conducting the Life Cycle Assessment*

The second step in preparing an EPD is conducting a full life cycle assessment according to the rules, boundaries, and reporting requirements specified in the PCR and in ISO standards 14040 and 14044. The assessment may be conducted internally or by a third-party practitioner, but regardless must be independently or third-party verified for a business-to-consumer EPD, with verification *recommended* for a business-to-business EPD.

Environmental life cycle analysis provides a mechanism for systematically evaluating the environmental impacts linked to a product or process and for guiding process or product improvement efforts. LCA-based information also provides insights into the environmental impacts of raw material and product choices as well as maintenance and end-of-product-life strategies. Because of the systematic nature of LCA and its power as an evaluative tool, the use of LCA is increasing as environmental performance becomes more important in society. It is likely that LCA will soon become widely used within American industry and by those involved in crafting national and regional environmental policy.

The first step in an LCA is development of a Life Cycle Inventory (Figure 1). The LCI involves a careful accounting of all the measurable raw material inputs (including energy), product and co-product outputs, and emissions to air, water, and land. Examination of energy use is particularly revealing, since a number of serious environmental problems are related to consumption of energy including acid deposition, oil spills, air pollution (SO<sub>2</sub>, NO<sub>x</sub>), and increasing concentrations of atmospheric carbon dioxide. An LCI may deal with product manufacture only, in which case it is called an Information Module, or the study boundaries may be defined more broadly to include product use, maintenance, and disposal. The PCR defines study boundaries for the product category involved and defines materials and substances and impact categories that must be reported. In the Impact Assessment stage of the LCA, inventory data is assessed to determine environmental impacts, such as effects of an industrial activity on the atmosphere (global warming potential, ozone depletion potential), water (eutrophication), or on landscape, flora, or fauna.

Figure 1  
A Schematic of a Life Cycle Analysis for a Wood-Based Building Material



### *Preparing the EPD Document*

As recently indicated by FP Innovations (2009), EPDs are usually structured according to a common layout and divided into separate parts, including program-related information, product-related information, LCA and other environmental information, and mandatory statements. Several examples of EPDs for wood-related products are provided below.

For biomass-derived energy (Axpo Kompogass Ltd.):

<http://www.environdec.com/reg/epd176.pdf>

For wood particleboard (SAIB): <http://www.environdec.com/reg/epd68.pdf>

For office paper (International Paper):

<http://internationalpaper.com/documents/EN/Sustainability/EMEASaPPOffice.pdf>

For paper products generally (Paper Profile):

<http://www.paperprofile.com/>

### **Drivers of EPDs in the Marketplace**

As outlined by EurActiv (2010), attention to systematic assessment of the environmental impact of products throughout their whole life cycle began to receive attention in the late 1990s. EPDs were brought into focus in 2002 with commissioning of a study by the European Union Director General for Environment to document and evaluate national and sectoral EPD initiatives (Bogeskär et al. 2002). Spurred by the launch of a European

platform on use of life cycle assessment in 2005, the development and use of EPDs has been growing slowly within the European community for a number of years, with Sweden leading the way. In recent years, however, activity has expanded significantly. An example is work by the German Institute for Construction and the Environment (IBU) to develop building product EPDs for use in Germany and the European Union. As reported by Tobias (2010), to date the IBU has developed EPDs for a number of product categories, including floor coverings, roofing, insulation materials, wood products, and more (<http://bau-umwelt.de/hp549/Wodden-materials.htm>).

Tobias also notes that new EU regulations have been proposed that would mandate the use of EPDs in the construction industry. France went a step further, announcing in 2009 that all large volume consumer products sold in that country after January 2011 must be accompanied by an EPD designed in accordance with the French standardization body AFNOR (Schenck 2009). The French government recently rescinded that deadline, taking the matter under study. Nonetheless it is widely speculated that all EU countries may soon adopt EPD requirements.

“At the moment there are no legal national EPD schemes in any of the [EU] Member States and therefore there are no legal barriers to trade yet. However, these barriers can be *expected* in a few years when national schemes become legal in Member States.”

Van Halen et al. (2002)

There is some concern that EPD requirements in the EU could soon become legal non-tariff barriers to trade for nations and companies that are not prepared. Trusty (2010) has noted that the forest products sector in the United States is currently not ready for the changes that are coming and that EPDs may soon come to the fore in the US. He indicated that the American Society for Testing of Materials (ASTM) Committee E-60 would soon issue Product Category Rules for building products and that ongoing discussions within the US Environmental Protection Agency (EPA) and elsewhere suggest that government procurement policies in the US could soon favor products accompanied by EPDs. Recent EPA webinars and workshops on this topic (Costello and Schenck 2009, Winters 2010) clearly point in this direction.

### Sources of Information and Assistance

There are a number of sources of information regarding EPD development that can aid in getting started. Among these are the International Organization for Standardization, the Global Environmental Declarations Network, FP Innovations-Forintek Division, Green Standard, and the International EPD System. In addition, helpful background material is available from the FairRidge Group (2009), Folvik and Wærp (2008), Tardif (2009), O'Connor (2009), the Athena Sustainable Materials Institute (2010), and the Swedish Environmental Management Council (2000, 2004).

## Summary

Environmental Product Declarations (EPDs) are beginning to be required by governments as part of trade and purchasing program requirements. Activity is currently concentrated in the EU and parts of Asia – and especially Japan, but EPDs are receiving considerable attention in the international community. While there are indications that EPDs are gaining recognition in the US, a general lack of attention to environmental reporting, LCA, and related tools such as EPDs have raised concerns that unprepared firms and industry sectors may soon face legal non-tariff barriers to trade in attempting to export to the EU and elsewhere. The US forest products sector is seen as particularly unprepared.

Requirements governing the preparation of EPDs are strict. The process includes development of Product Category Rules for products serving equivalent functions. The preparation of EPDs also necessitates inclusive, open, deliberative involvement of a wide variety of stakeholders. In addition, an EPD is based on systematic life cycle assessment of environmental impacts linked to a product, a pursuit that can be both costly and time consuming. As a result, development of EPDs requires careful advance planning, consultation, attention to detail, and a significant investment of time. If your business isn't ready, now is the time to get started!

## References

Axpo Kompogass Ltd. 2009. Environmental Product Declaration – Otelfingen Kompogas Facility. (<http://www.environdec.com/reg/epd176.pdf>)

EurActiv. 2010. Towards a Global Life Cycle Economy? September. An update of original article Dec. 2009. (<http://www.euractiv.com/en/sustainability/towards-global-life-cycle-economy-links dossier-188522>)

Bogeskär, M., Carter, A., Nevén, C-O, Nuij, R., Schmincke, E., and Stranddorf, H. 2002. Evaluation of Environmental Product Declaration Schemes. European Commission – DG Environment. (<http://ec.europa.eu/environment/ipp/pdf/epdstudy.pdf>)

Costello, A. and Schenck, R. 2009. Environmental Product Declarations and Product Category Rules. U.S. Environmental Protection Agency Webinar, October 26. ([http://yosemite.epa.gov/R10/ECOCOMM.NSF/b8b7c39a103a235088256c3e007a4dd9/a55a96d2d0a3450c882576120074e531/\\$FILE/LCA%20EPD%20Webinar%203.pdf](http://yosemite.epa.gov/R10/ECOCOMM.NSF/b8b7c39a103a235088256c3e007a4dd9/a55a96d2d0a3450c882576120074e531/$FILE/LCA%20EPD%20Webinar%203.pdf))

FairRidge Group. 2009. How Green is My Product? Triple Pundit. (<http://www.triplepundit.com/2009/06/how-green-is-my-product/>)

Folvik, K. and Wærp, S. 2008. Development and Use of Environmental Product Declarations – Knowledge Based Choice of Building Materials for Sustainable Design. (<http://www.sintef.no/upload/Byggforsk/Bibliotek/Publikasjonsdatabasen/CIB14036.pdf>)

FP Innovations. 2009. Environmental Product Declarations – Overview. Forintek Division. ([http://www.solutionsforwood.ca/\\_docs/newsletters/straightwoods/oct2008/advisor.html](http://www.solutionsforwood.ca/_docs/newsletters/straightwoods/oct2008/advisor.html))



Global Environmental Declarations Network. 2010. What is an Environmental Product Declaration, EPD? ([http://www.gednet.org/?page\\_id=13](http://www.gednet.org/?page_id=13))

Green Standard. 2010a. The Green A.P. (Accredited Professional). ([http://www.thegreenstandard.org/Green\\_Purchasing.html](http://www.thegreenstandard.org/Green_Purchasing.html))

Green Standard. 2010b. The Way to Define Green. (<http://www.thegreenstandard.org>)

Institute for Construction and the Environment (IBU). 2010. Environmental Product Declarations. ([http://bau-umwelt.de/auctores/scs/imc/fdInf\\_ID=283b8aXf563a51e82XY7f01=l=96646193/Home.htm](http://bau-umwelt.de/auctores/scs/imc/fdInf_ID=283b8aXf563a51e82XY7f01=l=96646193/Home.htm))

International EPD Consortium. 2010a. EPD – Environmental Product Declaration. (<http://www.environdec.com/pageId.asp>)

International EPD Consortium. 2010b. The International EPD System – A Communication Tool for International Markets. (<http://www.environdec.com/pageId.asp?id=100>)

International Organization for Standardization (ISO). 2000. ISO 14020: Environmental labels and declarations – General principles. ([http://www.iisd.org/business/markets/eco\\_label\\_iso14020.aspx](http://www.iisd.org/business/markets/eco_label_iso14020.aspx))

International Organization for Standardization (ISO). 2006. ISO 14025: Environmental labels and declarations – Type III environmental declarations – principles and procedures. ([http://www.iso.org/iso/catalogue\\_detail.htm?csnumber=38131](http://www.iso.org/iso/catalogue_detail.htm?csnumber=38131))

International Organization for Standardization (ISO). 2006. ISO 14040: Environmental management – life cycle assessment – principles and framework. ([http://www.iso.org/iso/catalogue\\_detail.htm?csnumber=37456](http://www.iso.org/iso/catalogue_detail.htm?csnumber=37456))

International Organization for Standardization (ISO). 2007. ISO 21930: Sustainability in building construction – environmental declaration of building products. ([http://www.iso.org/iso/catalogue\\_detail?csnumber=40435](http://www.iso.org/iso/catalogue_detail?csnumber=40435))

Paper Profile. 2010. The Environmental Product Declaration for Professional Paper Buyers. (<http://www.paperprofile.com>)

SAIB. 2007. Environmental Product Declaration of Raw and Melamine Faced Wood Particleboard. SAIB EPD-2007-Rev.1.2. (<http://www.environdec.com/reg/epd68.pdf>)

Schenck, R. 2009. The Outlook and Opportunity for Type III Environmental Product Declarations in the United States of America. Institute for Environmental Research and Education. (<http://www.lcacenter.org/pdf/Outlook-for-Type-III-Ecolabels-in-the-USA.pdf>)

Schenck, R. 2010. A Roadmap to Environmental Product Declarations in the United States. American Center for Life Cycle Assessment, Institute for Environmental Research and Education. (<http://www.iere.org/documents/Roadmap-to-EPDs-in-the-USA.pdf>)

Swedish Environmental Management Council. 2000. Requirements for Environmental Product Declarations, EPD: An Application of ISO 14025 – Type III Environmental Declarations. ([http://www.environdec.com/documents/pdf/e\\_epd\\_msr19992.pdf](http://www.environdec.com/documents/pdf/e_epd_msr19992.pdf))

Swedish Environmental Management Council. 2004. Product-Specific Requirements (PSR) for Preparing an Environmental Product Declaration (EPD) for Product Group Wooden pallet - PSR 2004:0. ([http://www.environdec.com/pcr/pcr\\_draft05-01v1\\_e.pdf](http://www.environdec.com/pcr/pcr_draft05-01v1_e.pdf))

Tardif, P. and O'Connor, J. 2009. Selling Wood Products to the Green Building Market. FP Innovations, Forintek Division. ([http://www.solutionsforwood.ca/\\_docs/reports/LEED-GG24Mar09.pdf](http://www.solutionsforwood.ca/_docs/reports/LEED-GG24Mar09.pdf))

Tobias, L. 2010. Building the Next Big Thing: International Standards for Green Labels. GreenBiz.com, May 17. (<http://www.greenbiz.com/blog/2010/05/17/building-next-big-thing-intl-standards-green-labels>)

Trusty, W. 2010. Environmental Product Declarations and Implications for the Composite Panel Industry. Composite Panel Association Fall Meeting, Toronto, Sept. 27.

Van Halen, C., Vissers, P., Peereboom, E., Osset, P., Gaymard, S., and Schuumans, A. 2002. LCA Tools Study. European Commission, DG Enterprise, Construction Unit. ([http://ec.europa.eu/enterprise/sectors/construction/files/lca-tools\\_en.pdf](http://ec.europa.eu/enterprise/sectors/construction/files/lca-tools_en.pdf))

Winters, M. 2010. Product Category Rules and Environmental Product Declarations. EPA/Institute for Environmental Research and Education Workshop on Environmental Reporting, November. (<http://www.epa.gov/osw/rcc/resources/meetings/rcc-2010/winters.pdf>)

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**US AT:**

[INFO@DOVETAILINC.ORG](mailto:INFO@DOVETAILINC.ORG)

[WWW.DOVETAILINC.ORG](http://WWW.DOVETAILINC.ORG)

**612-333-0430**

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**DOVETAIL PARTNERS, INC.**

528 Hennepin Ave, Suite 202

Minneapolis, MN 55403

Phone: 612-333-0430

Fax: 612-333-0432

[www.dovetailinc.org](http://www.dovetailinc.org)