



# ENVIRONMENTAL PRODUCT DECLARATIONS: WHAT? WHY? HOW?

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## Environmental Product Declarations: What? Why? How?

A couple of decades ago a business management book entitled *Strategy of the Dolphin* encouraged the reader to “catch the wave”, meaning the next critical wave of change in any sector or industry. Today, a mounting wave in areas such as product development and building design is the application of Life Cycle Assessment (LCA), which focuses on a range of quantifiable environmental impacts that can be taken into account along with more traditional cost, functionality and aesthetic criteria. In the absence of LCA, the approximately 495 ‘green’ product labels in Asia, North America and Europe tend to do more to confuse than clarify, underscoring the ‘greenwashing’ metaphor. By focusing on a range of environmental performance measures such as fossil fuel depletion, global warming potential and ozone depletion potential, LCA provides a more holistic view of flows from and to nature and the resulting environmental effects. This is where the LCA-based Environmental Product Declaration (EPD) comes in, and organizations have to catch the wave or suffer the consequences.

The reality is that worldwide environmental concern is resulting in a demand from governments, businesses, and consumers for verifiable, credible information on the environmental impacts of products and services. Europe and Asia, in particular, have responded with infrastructure, standards and legislation that enable, and in some cases require, manufacturers to issue labels such as EPDs to address this concern. Such environmental labels identify the environmental impacts of a product or service throughout relevant stages of its life cycle. Increasingly, international business-to-business and business-to-consumer decisions are being made based on the environmental information provided in an EPD, carbon declaration and/or carbon footprint. This trend is likely to accelerate.

The first section of this report describes an EPD, and subsequent sections discuss why they are important and how they are developed and used. For many, it’s an alphabet soup of acronyms and abbreviations; the objective here is to help sort it out.

### What is an Environmental Product Declaration?

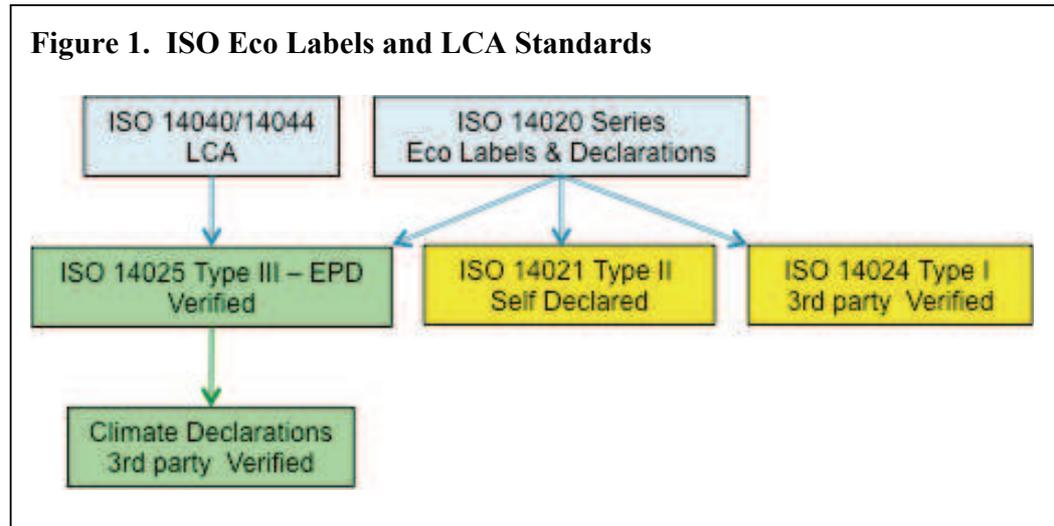
EPDs report environmental impacts occurring during the manufacture and life of a product based on ISO<sup>1</sup> LCA standards (ISO 14040 series).<sup>2,3</sup> Figure 1 illustrates the relationships between the ISO 14020 Eco Label standards and the ISO 14040 LCA standards. As shown in the Figure, there are three types of eco-labels, only one of which – the ISO 14025 Type III EPD – is solidly based on LCA. Another standard linked to ISO 14025 is ISO 21930, which deals specifically with EPDs for building products.

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<sup>1</sup> International Organization for Standardization

<sup>2</sup> For additional background on EPDs, please see Dovetail’s 2011 report “Environmental Product Declarations (EPDs) Are Coming – Is Your Business Ready?”, available at: <http://www.dovetailinc.org/files/DovetailEPD0111.pdf>

<sup>3</sup> For additional background on LCA, please see Dovetail’s 2012 report “The Toolkit Approach to Sustainability”, available at: <http://www.dovetailinc.org/files/DovetailToolkit0712.pdf>



An EPD details who owns it, under what program it was developed, and the Product Category Rules (PCR) under which it was developed (see the ‘How’ section for more details on this aspect). Although LCA results are the essence of an EPD it will also report LCA modeling details and information about the product and its use. For example, it will contain information such as the following:

- a product description and photos;
- details about the application of the product;
- how it is manufactured;
- auxiliary substances or additives;
- codes or standards that apply to its manufacture or use;
- environmental protection during manufacturing;
- health protection during installation;
- packaging;
- in-use environmental and health effects;
- the useful service life; and
- what happens at the end of life.

There are two types of EPDs: ‘business-to-business’ (B-2-B) and ‘business-to-consumer’ (B-2-C). The consumer is defined in ISO 14025 as an “individual member of the general public purchasing or using goods, property or services for private purposes”. As the standards note, B-2-C EPDs are not as common as B-2-Bs, and must meet more rigorous standards with regard to covering the full life cycle and undergoing independent verification by a competent third party. B-2-B declarations are sometimes termed ‘information modules’ and can be limited to only some of the life cycle stages, such as resource extraction to the plant gate ready for shipment (termed cradle-to-gate).

*Carbon Declarations*

While not the main subject of this article, it is worth noting that a Carbon Declaration (CD) is a label that can be generated as a subset of a full EPD and referred to as a ‘single issue EPD.’ A CD shows greenhouse gas emissions (GHG) for a product or service, expressed as CO<sub>2</sub> equivalents.<sup>4</sup> A CD can be based on the verified results from an LCA performed for an EPD in accordance with ISO 14025.<sup>5</sup>

**Why Should a Manufacturer Develop an EPD?**

Increasingly, industry associations and companies undertaking LCA for product improvement or marketing reasons are doing so in a manner that will facilitate the subsequent development of an EPD. In part this trend is driven by the marketing advantages that a formal label can convey, but more important is awareness of emerging requirements for EPD and CD labels in business-to-business transactions and international trade.

Five market implications may arise when manufacturers do not have timely, quantified, relevant and credible information about the environmental performance of their products and services.

1. Exporters can face non-tariff trade barriers should a country or a foreign customer require an EPD or CD as a condition of import.
2. Exporters may be shut out of local or export markets where there is an environmentally preferential purchasing (EPP) policy that requires EPDs.
3. Manufacturers may find it harder to credibly differentiate their products from an environmental point of view.
4. Manufacturers may be unable to respond in a cost effective way to climate change regulations.
5. Manufacturers may miss relevant information that could enable them to improve environmental performance while possibly reducing their input costs of production.

All of the above can translate directly into loss of markets, market share, revenue and jobs. Each of these points is expanded on in the material that follows.

*Non-Tariff Trade Barrier*

Europe, Asia and Australia have been the most advanced economies using environmental product declarations. Most countries in the European Union (EU) have all the components of an EPD infrastructure in place, with Sweden, Italy, France, Germany, and the United Kingdom leading the way. Japan, Korea, China and Australia also have the essential elements of their EPD infrastructures in place, and significant interest in EPDs is now being expressed in the United States and Canada.

It is very likely that environmental labeling will shift from a voluntary to a mandatory measure throughout Europe. Japan, Taiwan and other countries are moving in the same direction, in some cases with an emphasis on LCA-based climate change measures. As initiatives to require EPDs and related climate declarations unfold, it is likely that some countries will require such labels as a condition of entry of a product or service. The lack of a required label may then be a trade barrier that will not violate World Trade Organization (WTO) rules if the same requirements apply to domestic producers.

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<sup>4</sup> <http://www.environdec.com/pageID.asp?id=160&newsId=423>

<sup>5</sup> [www.environdec.com/reg/climate/epdc123e.pdf](http://www.environdec.com/reg/climate/epdc123e.pdf)

*Environmentally Preferential Purchasing (EPP)*

For those not directly involved in export markets, the domestic EPP aspect can be particularly important. Governments at all levels are major purchasers of goods and services and can leverage their buying power to improve environmental performance. As governments respond to heightened public awareness and pressure to minimize environmental impacts, a relatively straightforward public policy step is to link EPP policies to EPDs.

In general, environmentally preferential purchasing is becoming more common world wide, with many countries, U.S. states and private-sector companies having EPP policies.<sup>6</sup> The U.S. Environmental Protection Agency (EPA), states that: “EPP helps the federal government ‘buy green,’ and in doing so uses the federal government’s enormous buying power to stimulate market demand for green products and services.” Since 1999, the U.S. EPA has not only promoted EPP for federal government purchasers, it has also provided guidance to ‘green’ vendors, businesses large and small -- and consumers.<sup>7</sup>

The EPA’s five guiding principles are:

- Principle 1: Environment + Price + Performance = Environmentally Preferable Purchasing  
*Environmental considerations should become part of normal purchasing practice, consistent with such traditional factors as product safety, price, performance, and availability.*
- Principle 2: Pollution Prevention  
*Consideration of environmental preferability should begin early in the acquisition process and be rooted in the ethic of pollution prevention, which strives to eliminate or reduce, up-front, potential risks to human health and the environment*
- Principle 3: Life Cycle Perspective/Multiple Attributes  
*A product or service's environmental preferability is a function of multiple attributes from a life cycle perspective.*
- Principle 4: Comparison of Environmental Impacts  
*Determining environmental preferability might involve comparing environmental impacts. In comparing environmental impacts, Federal agencies should consider: the reversibility and geographic scale of the environmental impacts, the degree of difference among competing products or services, and the overriding importance of protecting human health.*
- Principle 5: Environmental Performance Information  
*Comprehensive, accurate, and meaningful information about the environmental performance of products or services is necessary in order to determine environmental preferability.*

EPDs satisfy these principles and, as noted earlier, requiring EPDs can represent a relatively easy policy step to further advance EPP. In that vein, the U.S. Green Building Council’s latest draft of its Leadership in Energy and Environmental Design rating system (LEED v.4) includes credit for EPDs in the ‘transparency’ credit in the Materials and Resources section (MR Credit: Material Disclosure and Optimization). It would also not be surprising to see EPDs in a future version of

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<sup>6</sup> For example, the U.S. EPA, Michigan, New York State, European Union, Taiwan, Korea, China, Home Depot, Pioneer Corporation.

<sup>7</sup> <http://www.epa.gov/epp/>

the International Green Construction Code (IgCC). Such initiatives add to the incentives for LCA-based labeling and related declarations to replace the proliferation of single or limited attribute labels such as recycled content and local purchasing.

### *Product Differentiation*

An EPD provides the basis for a fair comparison of the environmental performance of products, but it does not “judge” whether the product or service meets any environmental quality standard; users make that judgment based on the information presented. Nor does an EPD include comparisons between products or in reference to any environmental benchmark or baseline. But when properly structured and verified against the same PCR, the EPD for one brand or alternative can be compared against the EPD for another. The key is that the functional unit must be the same for realistic comparisons. A product’s function is usually the main reason a product is purchased. Using floor covering as an example, the functional unit used in a LCA and stated in an EPD quantifies a function such as square meters of commercial floor coverage for 10 years. This permits comparisons between quite different products that provide the same service (for example, carpeting versus floor tiles).

### *Potential for Manufacturer Process Improvements*

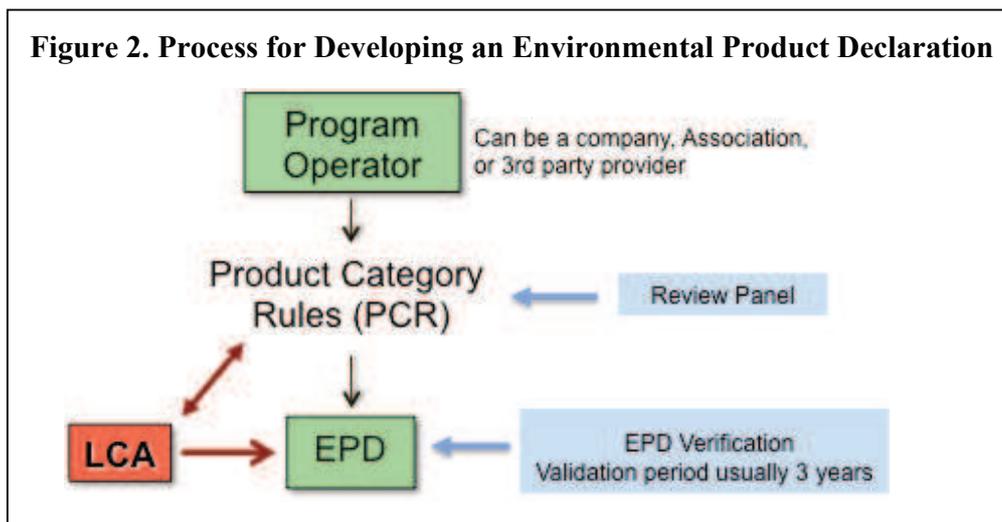
Experience with LCA in the manufacturing sector in the U.S. and elsewhere has frequently shown that environmental improvements can go hand-in-hand with cost reductions. LCA is key to identifying the opportunities and ensuring that environmental gains are in fact one of the results.

### **How are EPDs Developed?**

At this point, it’s important to set out a couple of key definitions from ISO 14025, the EPD standard:

- *Program Operator*: body or bodies that conduct a Type III environmental declaration programme
- *Product Category Rules (PCR)*: set of specific rules, requirements and guidelines for developing Type III environmental declarations for one or more product categories
- *Product Category*: group of products (3.1) that can fulfil (sic) equivalent functions

Figure 2 shows the basic process for developing an EPD. As stated in the standard, “a programme operator can be a company or a group of companies, industrial sector or trade association, public authorities or agencies, or an independent scientific body or other organization”. In North America we typically see three main types of program operators: trade associations, industry research organizations, or product-neutral certification bodies. In some cases, the company seeking the PCR and EPD assumes the role of program operator.



When an organization declares it to be a program operator, the organization must develop, maintain and publish program instructions or rules that it will follow. That process should be an open participatory one involving interested parties or stakeholders, but it is not a formal consensus process.

Once the program operator is established and/or selected by an organization seeking an EPD, it determines whether a relevant PCR already exists (perhaps in another country). If the answer is yes, then the international standards urge that the PCR be adopted or adapted. If there is no applicable PCR, or if an existing PCR cannot be realistically adapted, then the program operator initiates a process to develop a PCR.

If an existing PCR is adapted with substantive changes or a new PCR created, the program operator must identify and invite interested parties to participate in a review process. The operator has to ensure adequate time for the review, make relevant information readily available, and respond to reviewer comments. However, as in the case of the program instructions, it is not a formal consensus process. Depending on the program operator, a PCR may also be submitted to a more formal critical review panel after it has gone through the open consultation process.

The ISO 14025 standard also states that, “the PCR shall be based on one or more life cycle assessments (in accordance with the ISO 14040 series of standards) and other relevant studies to identify requirements for additional environmental information.” Once the PCR has been developed, an LCA is then completed or an existing LCA adopted and adjusted as necessary to conform to the PCR. That LCA is the foundation for developing the related EPD.

While there is no formal statement in the standard to the effect that the LCA must be submitted to a critical review panel, Section 8.1.3 of ISO 14025 sets the minimum requirements for independent verification of data. The verifier of the EPD could carry out that task, but the requirements are sufficiently rigorous that it makes sense to submit an LCA to a critical review panel. The EPD must be submitted to a competent verifier, with the minimum requirements for competence laid out in the standard. That verifier can be internal to the organization, in the case of B-2-B EPDs, but cannot have been involved in the LCA or development of the EPD. In the case of B-2-C EPDs, the verifier must be an independent third party.

## Registering an EPD

A program operator is responsible for maintaining publicly available lists and records of relevant PCR documents and EPDs developed within the program. Despite that requirement in the ISO standards, there is a degree of confusion with regard to EPD registration and related costs. Some argue for national repositories, which could be a useful step, but at this point there is no overarching internationally recognized EPD network that must be used. The same is true within North America. GEDnet<sup>8</sup> and the International EPD<sup>R</sup> System<sup>9</sup> are two linked European-based organizations that have a strong international presence, but these two systems still don't encompass all of the EU countries. For example, Germany, France and the United Kingdom are all pursuing individual national programs.

## A Few Concluding Thoughts

Despite the much longer history of EPDs elsewhere in the world, they have arrived on the North American scene only in the last few years. But for the reasons noted in the 'Why' section of this article, many organizations here are now scrambling to get on board. Unfortunately that is creating a degree of confusion that goes beyond the alphabet soup mentioned in the introduction.

One area of confusion is failure to adhere to the process and to the role of a program operator highlighted in Figure 2. As stated in ISO 14025, Section 6.3, "The programme operator shall be responsible for the administration of a Type III environmental declaration programme". Note that the role of the operator is not restricted to producing PCRs or simply verifying EPDs. Yet we see organizations setting up as PCR Program Operators while making it clear that they have no intention of undertaking the EPD part of the process. An entity wanting an EPD based on a PCR developed by such an organization will presumably then have to have the EPD verified and registered with another program operator. That is not necessarily a problem if the program operator requested to verify the EPD adopts the PCR as written. But if the program operator determines that the PCR requires substantive changes, which in turn may mean substantive changes to the LCA and the EPD, a significant problem can arise. Moreover, this limiting of the scope of a program operator's role and responsibility distorts the concept of a program operator as clearly defined in the standards.

Finally, a note of caution regarding the role of manufacturers, industry associations, and other organizations directly linked to a specific industry. In accordance with the ISO standards, any such organization can set up as a program operator as noted earlier in this article. However, there is then a risk that a resulting EPD can be characterized as biased even if it has been rigorously developed in accordance with the LCA and EPD standards. Of course, there is also the risk that an organization with a vested interest will in fact bias the PCR, the LCA, and the EPD, especially when the standards allow for verification by someone internal to the organization. This is not necessarily happening, or something that has happened, but this possibility should be avoided, and high standards must be maintained for such a valuable and badly needed environmental label.

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<sup>8</sup> <http://www.gednet.org/>

<sup>9</sup> <http://www.environdec.com/pageId.asp?id=100>

**Resources**

For additional background on EPDs, please see Dovetail's 2011 report "Environmental Product Declarations (EPDs) Are Coming – Is Your Business Ready?", available at:

<http://www.dovetailinc.org/files/DovetailEPD0111.pdf>

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