



MODULARITY IN THE APPLICATION OF LCA: STANDARDIZATION REQUIREMENTS AND SUPPORTING TOOLS

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Abstract

Modularity managing is growing in importance in LCA ambit, thanks to the increasing number of subjects using this methodology and to the consequent rising of different requirements. The following requirements have to be granted:

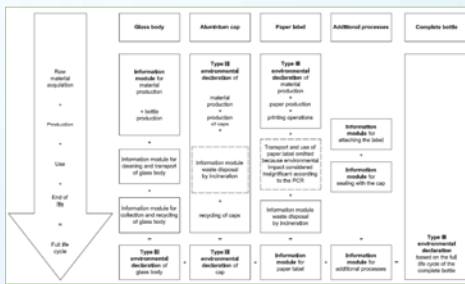
- comparisons among a large number of products/services in the same product category;
- information flow through supply chains in a easy but quality-verified way;
- a wide access to LCA method;
- a wide access to LCA methodology for SMEs, that have a few resources for specific data researches.

These requirements are particularly evident when LCA has a rule of control tool for the products comparison on the market as concerns their environmental quality. An example is given by the Environmental Product Declarations. EPDs use LCA as a tool both for product analysis and the quantification of the environmental impacts to be communicated in the declarations. The effective use of information modules allows an effective application of comparability principle, that is fundamental for a correct use of EPDs. The standard ISO/FDIS 14025 gives a wide prominence to the concept of "Information Modules".

INTRODUCTION

INFORMATION MODULES

ISO/FDIS 14025: compilation of data to be used as a basis for a Type III environmental declaration, covering a unit process or a combination of unit processes that are part of the life cycle of a product.



Diagrammatic simplified representation of the development of a Type III environmental declaration from information modules

INFORMATION MODULES MAY BE USED TO DEVELOP A TYPE III ENVIRONMENTAL DECLARATION.

LCA-based data for materials, parts and other inputs that are used in the manufacture or assembly of other products may be used to contribute to Type III environmental declarations for those other products.

In such circumstances, **the LCA-based data for the materials, parts and other inputs shall be referred to as information modules and may represent the whole or a portion of the life cycle for those materials or parts.**

Information modules have to respect **COMPARABILITY PRINCIPLES** in order to be useful for the carrying out of Type III Environmental Declarations. In fact, Type III environmental declarations are intended to allow a purchaser or user to compare the environmental performance of products on a life cycle basis.

In order to compare Type III environmental declarations based on information modules, instructions for producing **the data required to create the declaration** (LCA, LCI, information modules and additional environmental information) **shall be equivalent**. Moreover, either the environmental impacts of omitted life cycle stages of the products shall not be significant, or the data of omitted life cycle stages shall be identical within the accepted uncertainty of the data.

MATERIALS & METHODS

Modularity Concept and the Information Modules can be promoted by extending Type III environmental declarations, and in particular the EPD tool, to different levels of the **SUPPLY CHAINS**. This objective could be achieved by:

- A better understanding of the EPD modularity issue.
- The involvement of some supply-chains in specific pilot studies, in order to clarify how to use information modules in the EPD preparation.
- Improvement of the capability of the EPD tool to guarantee a thorough and effective information flow within the supply-chain.



RESULTS & DISCUSSIONS

The INTEND project (ref. LIFE 03 ENV/IT/000324, www.intendproject.net) focused on the definition of an EPD system to be applied at international level and its implementation in two pilot countries (Sweden and Italy). The final result of the Intend project is the development of a suggested framework for an EPD programme for an international application (The International System). The objective of future studies builds on the result of the Intend project and aims at **STRENGTHENING THE INTERNATIONAL SYSTEM** enabling its full implementation in other EU member states, pursuing the reduction of the environmental impacts throughout the life-cycle of products and services through innovative design and **improvement of the information flow within the supply-chain**.

Specific activities and pilot projects will be focused in order to achieve a very clear and transparent use of the issue concerning modularity and comparability.

TRADE ASSOCIATIONS will be involved for comparability in order to develop different EPDs for the same products groups. Same case of **SUPPLY CHAIN** will be analyzed for the comprehension of the use of the information modules along the supply chain.

In detail, the following activities will be performed:

1. **Development of some supply-chains pilot projects.**
 - The whole implementation process of the EPD should be structured and carried out taking into account the information modules that are made available in the "upstream" phases of the same production chain, as well as the need to provide a meaningful and usable information flow to the "downstream" phases.
 - Each involved company (or Association) should be requested to use and assess the effectiveness of the available information modules in the preparation of its EPD. These activities will led to a series of EPDs drafted by the different companies (or Associations) involved in the participating supply-chains.
2. **Modification of the requirements of the system.** According to the results emerging from the pilot-experiences, the requirements of the system will be consistently modified in order to better define and explicate the principle of "modularity".

The International EPD System shall be fostered in several dimensions:

- **GEOGRAPHICAL**
- **SECTORIAL**
- **SUPPLY-CHAIN**
- **ENTERPRISE SIZE**
- **INTEGRATION WITH EU POLICIES**
- **MARKET**

CONCLUSIONS

A specific experimentation focused on "modularity" has been planned. This project aims to **start pilot projects focused on modularity, involving European trade association and product supply chains**. The project will also give the opportunity to expand the International System in new Countries.

CE.SI.S.P. is an Interuniversity Centre for the Development of Products Sustainability, coming from the interaction among different specialized abilities, Academic Seats and Advanced Research Centres. The constituent universities are: University of Genoa (Administrative seat), Polytechnic of Turin, Sant'Anna Advanced School of Pisa (Italy). CE.SI.S.P. aims to be the promoter of the described future activities.



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