

LOOKING BACK AT THE FRENCH ENVIRONMENTAL FOOTPRINTING EXPERIMENTATION: HOW INNOVATIVE LCA WEB TOOLS CAN FACILITATE THE INTEGRATION OF LIFE-CYCLE APPROACHES IN RETAILERS' DECISION MAKING

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ABSTRACT

Since 2010, the French government has initiated the experimentation for environmental footprinting of mass market products. The majority of retailers encountered real difficulties in the collection of primary data and all were facing the incompleteness of databases. Also, the use of external LCA consultants represented the largest share of the budget.

With the overall purpose of facilitating the use of Life Cycle Assessment (LCA) for companies, Cycleco developed innovative software allowing non-experts to carry out sector specific LCA for purposes of eco-design and/or environmental footprint labeling. This paper illustrates the methods in which such LCA Web tools can facilitate the integration of LCA in retailer's decision making and supply chain management by facilitating networking within and amongst companies.

INTRODUCTION

Life Cycle Assessment (LCA) aims at providing metrics to enable both companies and citizen to find the best way in order to keep quality of life while reducing environmental burdens.

The « Grenelle 2 » law of the French Republic n° 2010-788 (2010) provides that consumers will be informed through an environmental display about the environmental impacts of mass market products. The environmental footprint of products, calculated with methods that are defined by product category rules, will thereby become a new purchase criterion. Within firms with higher standards for performance, environmental requirements are no longer seen as a regulatory nuisance but as a competitive advantage in the long run.

Indeed, more than 168 firms have participated in the French experimentation for LCA-based mandatory environmental communication scheme governed by the BP X30-323-0 (Association Française de Normalisation [AFNOR], 2011). This paper will focus on the example of a clothing retailer, which voluntarily joined the French experimentation, and describes the steps they took towards the integration of life cycle approach in their decision making, providing examples of the difficulties faced by quality managers when trying to implement a life cycle approach and the solutions to overcome them.

METHODS

Looking back at the French environmental footprinting experimentation

During 2 years of the French experimentation, Cycleco has led a pilot project that involved 15 partners in a joint operation to test the feasibility of systematic LCA for textiles products. The project brought together representative of the entire industry: from spinners to distributors and textile institutions, thus ensuring representativeness of the distribution channels, in order to quantify the performance of production processes and identify key points to be dealt with.

The objective was to test the feasibility of a systematic life cycle approach and assessment of products. More than 50 attributional LCA studies were conducted using traditional LCA software Simapro. The following needs were identified:

- Sector specific data and methods should be accessible easily and integrated within a simplified environmental impact calculator adapted to the specific needs of the users: A mid sized fashion retailer would buy around 45 million garments per year, which represents 20-25K new models per year. Even in considering a steep learning curve, the task is far too big for a mid sized company to undertake. Furthermore the use of an external LCA consultant is of course out of the question.

- The reference database should provide *high range* default values to i) allow any firm, regardless of their knowledge of the supply chain to assess the impact of their product, ii) give a competitive advantage to the firm making the effort to collect specific data. Despite the mobilization of suppliers involved, the majority of retailers encountered real difficulties in the collection of primary data and all were facing the incompleteness of secondary databases. Thanks to a 5 year traceability policy, the quality managers were able to conduct survey of most finishing plants and clothing manufacturers in their supply chain but lacked data for yarn spinning and fabric manufacturing. Yet, they needed to conduct a full assessment of their product through its life cycle.

- Facilitate networking within and amongst companies enabling data exchange and collaborative work through an online platform: The supply chain in the textile industry is relatively complex, and the need for accurate data collection is crucial for the quality of LCA, and subsequently, for the pertinence of decision making based on LCA. Yet, great difficulties in getting and interpreting the results of data collection can occur, from cultural differences and personal ways to interpret and fill out excel sheets for example.

Methodology for the development of Innovative LCA web tools

The structure of specific LCA software developed by Cycleco is made of three parts; the methodology, which can be defined for one product or category of product (PCR) (International Organization for Standardization [ISO], 2006; AFNOR, BP X30-323-X, 2012); an inventory database specific to a given industry sector and finally, the user interface which is the programming part of the application and which ergonomic are defined on the basis of the needs and the constraints of the users.

The textile industry is complex and global, (Gereffi and Memedovic, 2003) many steps are necessary for the production of apparels, and they often occur in different countries. Cycleco



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has built up a network of industrial partners in order to better identify the needs of each sector and to check step by step the relevance of each solution proposed.

High range default values for common textile processes were developed with the participating companies and literature, and defined in order to provide enough information to make LCA possible, regardless of the degree of knowledge of the supply chain while ensuring that the high value would encourage the retailers to pursue data collection.

The software's main characteristics are the following:

- The methodological guidelines and data including high range default values are integrated as calculation models in the on-line software.
- It is ergonomic and intuitive: even if user guidance is available, the users do not need it to understand how to use the tool; A basic knowledge of the manufacturing steps is enough to conduct the LCA of a clothing article in 5 minutes.
- It guides, encourages and makes it easy to collect more information, and analyse results to encourage ecodesign.
- It allows easy project sharing between retailers and their suppliers through a collaborative online interface that is customizable to ensure privacy.
- Results can be reported in PDF or Excel format.

RESULTS

Through the experimentation, it was clear that in order to allow distributors to conduct the LCA of their entire collection, they needed to be able to conduct such LCA not only independently from consultants but also with specific tools that will allow an easy repetition of the LCA.

Working together with textile quality managers, LCA specialists, and IT programmers, Cycleco developed Spin'IT®, a web application accessible online (SaaS) which allows non-LCA expert to carry out the LCA of their product independently. It allows fast calculation of environmental footprint of thousands of products, ensuring a reliable ranking of products. It takes into account specifics of the fashion industry such as restocking.

The following goals are achieved:

Independence of the actors is possible through a shift of knowledge:

- The use of an external LCA consultant becomes optional; the ability to conduct in-house compliant LCA is now available.
- Sector specific tailored interfaces give retailers the means to calculate and compare Life Cycle impacts for different supply chain scenarios. Eg: they can evaluate the environmental gain of alternative restocking scenarios.
- Suppliers can position their green products or processes through a widely used web tool.

Providing high range default values instead of mid range does establish steps towards LCM improvement in the company:

- Knowledge of the supply chain, including data collection, is a first step in a Life Cycle Approach, so knowing where something is made is already better than not, then knowing how it is made is the next step and finally the decision to buy from one supplier or the other can be based on quantitative measures. See figure 1 below:

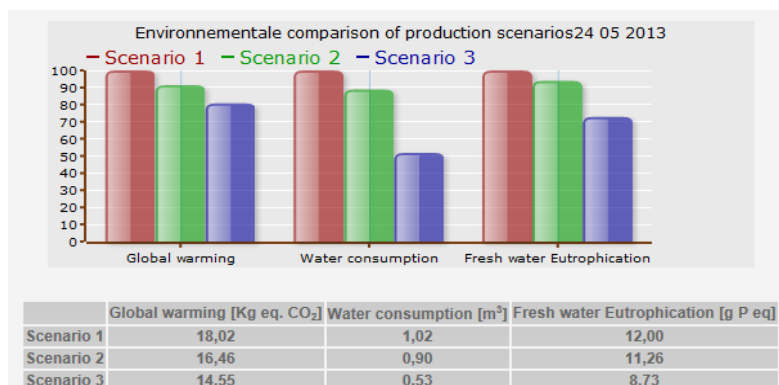


Figure 1. Illustrate a comparison between 3 scenarii made with Spin'it® (in about 5 minutes). Scenario 1 reflects the environmental impact of a Polyester shirt conducted with 1-no knowledge 2-some knowledge and 3-good knowledge of the supply chain. Another tab of the application gives a single result for Environmental Footprint labeling taking into account a percentage of each stocking and restocking scenario.

Collaboration is made possible through the whole supply chain, and within an organization:

- Online LCA tools are an-easy to access worldwide centralized point to collect data and access sector specific database.
- The modular system allows users (at every level of the supply chain) to create LCI that will be used to build a product oriented LCA for each of the retailer's products.
- Online sharing option allows the entire company to get involved in the evaluation of the products and assess the impact of each process.

CONCLUSIONS

In regards to technology system's dynamics, the spread of one enabling innovation pushes the use of related technologies. Therefore, we believe that the future of LCA should involve the entire supply chain. This shift can be enabled by adequate IT solution, associated with a pragmatic approach of the realities of LCA within specific sectors. With tools that fit them, SME's are empowered and can lead environmental change within their industry.

REFERENCES

Association Française de Normalisation (AFNOR). (2011) BP X30-323-0 General principles for an environmental communication on mass market products : part 0 : general principles and methodological framework. <http://www.boutique.afnor.org>

Association Française de Normalisation (AFNOR). (2012) BP X30-323-X General principles for an environmental communication on mass market products: part X : Methodology for an environmental impacts assessment of article of clothing , draft 2012

French Republic. (2010/July) Law No. 2010-788 of 12 July 2010 the national commitment to the environment: *Titre VI - Chapitre 1 - Article 228, Journal Officiel de la République Française (JORF) du 13 juillet 2010, version consolidée au 10 septembre*

International Organization for Standardization (ISO) (2006); Environmental labels and declarations –Type III environmental declarations- Principles and procedures. ISO 14025: 2006

Gereffi G., Memedovic O., (2003) The global apparel value chain: What Prospects for Upgrading by Developing Countries, *United Nation Industrial development Organization (UNIDO), Vienna*