



The 6th International Conference on Life Cycle Management in Gothenburg 2013

BARILLA EPD PROCESS SYSTEM TO INCREASE RELIABILITY, COMPARABILITY AND COMMUNICABILITY OF LCA STUDIES

Luca Ruini¹, Laura Marchelli¹, Massimo Marino², Assunta Filareto^{2,}*

¹ *Barilla G. R. Fratelli S.p.A*

² *Life Cycle Engineering*

**Corresponding author. Tel. +39 (0) 11 22 57 311; Fax +39 (0) 11 22 57 319.
E-mail address: filareto@studiolce.it. Postal address: Life Cycle Engineering c/o
Environment Park – 60, via Livorno, I-10144 Torino (TO).*

Keywords: PCR (Product Category Rules); EPD (Environmental Product Declaration); EPD Process System; LCA for food; verified database.

ABSTRACT

The aim of this work is to show how a large company integrates the life cycle approach into its policies. In February 2011 Barilla certified in compliance with the Process Certification Clarifications guidelines for International EPD® System to perform environmental impact calculation in an easy, quick and reliable way and to provide certified and published results. Barilla's EPD internal process is based on the LCA database, the Product System and the Product Specific data. They are used together as a funnel process: data from the database and from product specific information are processed by the product system tool to have the specific LCA data sheet results. The reliability of the system is guaranteed by both internal and external verification.

INTRODUCTION

Barilla, one of the top Italian food groups, produces more than 100 products in about 50 plants around the world. The company has been using the LCA for more than a decade. Since 2008, life cycle thinking made its way into company strategy, as an instrument to thoroughly study the production chain and localize the most substantial environmental impacts.

Barilla decides to join the International EPD System for several reasons: the System acts following the International Standards (ISO 14025); the reliability of the LCA is assured by the Product Category Rules (PCR); the System allows the comparability among the same product group, each document with a public interest (such as Product Category Rules (PCR) and General Program Instruction (GPI)) is published; public register on PCR and EPD is regularly updated; EPDs and LCAs must cover all the environmental issues not merely focusing on greenhouse gases emissions; the System gives the possibility to develop an EPD Process Certification.

Barilla's aim is to develop the EPDs for the major part of its product and the only way to make it in an easy, simple and reliable manner is to use an EPD Process System; for this reason, during 2010, it was developed and certified by Bureau Veritas in 2011. The scope of

the Process System is to prepare, verify and publish EPDs for Barilla's products related to the following Product Category Rules:

- Product Category Rules 2010:01 (CPC 2371): Uncooked pasta, not stuffed or otherwise prepared;
- Product Category Rules 2012:06 (CPC 234): Bakery Products;
- Product Category Rules 2010:09 (CPC 23995): sauces; mixed condiments; mustard flour and meal; prepared mustard
- Product Category Rules 2011:07 (CPC 2372): pasta, cooked, stuffed or otherwise prepared; couscous

MATERIALS AND/OR METHODS

All EPDs coming from the Barilla's EPD Process System are based on the Life Cycle Assessment methodology; using the following three main elements:

1. The Product Specific data
2. The LCA dBase
3. The Product System

The system works like a "funnel process", as showed in figure 1: product specific information are collected and elaborated by the product system using the LCA dBase, then results are collected in a specific LCA data sheet, that is then used for the preparation of the EPD.

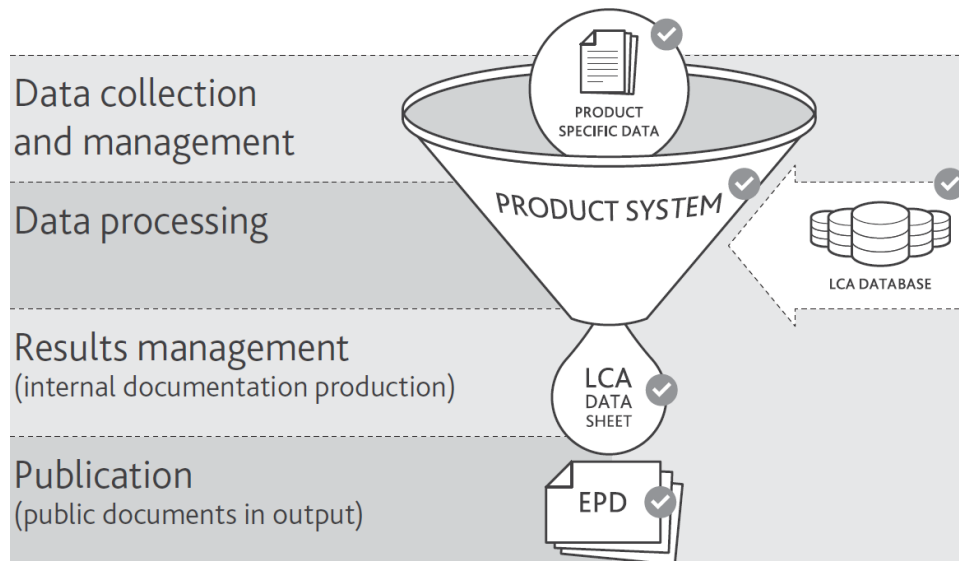


Figure 1. Scheme of the Barilla EPD Process System ("funnel process")

Product specific data represent all the specific information related to the product that has to be analyzed, they have to be collected for each EPD and include the following specific information: product recipe, bill of materials packaging list, production plants where the product is manufacturing, production volume per each plant involved, finished product logistic distribution data and other relevant environmental aspects.

The database is organized among different data modules groups: raw materials, packaging raw materials, energy, plants and transports. Each data module contains all the environmental aspects related to material or process, main hypothesis applied, as requested by the ISO 14040

series (functional unit, system boundaries, data quality, data collection and treatment, allocation and cut-off rules). All data modules are internally verified and are ready to be used for EPD purposes.

The Product System represents the product group model calculation tool. It is developed for each product group in a specific fashion following the Product Category Rule (PCR) and is internally vetted. Barilla's EPD Process System includes Product Systems for pasta, bakery and sauces products. The reliability of the EPDs is ensured by several verification levels done by Data Assessor, Process Assessor and Verification Body:

1. Product System and LCA Database verification is performed by the Data Assessor;
2. Product specific data, LCA data sheet and EPD Document verification is performed by the Data Assessor per each EPD realized;
3. EPD Process verification by means of internal audit, performed by the Process Assessor and external audit, performed by a Verification Body (accredited body certified for audit of management systems).

Barilla EPD Process System is organized in three main processes, under the control of the management activities: EPD project, database update and product system update. The first activity of the system is the EPD planning, it is performed each year to organize all the works related to the EPD Process System. The main process of the system is the EPD Project, which leads to the verification and publication of the EPD document, starting from the Product data collection and passing through data check and elaboration and EPD verification. Database update is performed each time data must be updated (e.g. for energy mix) and at least once a year. In addition, data is updated during the data check of the EPD Project when data is unavailable for the model. The product system update process allows to update the product system model when there is a change to its product category rules and compiles a new product system when a new product must be analyzed and inserted into the system. The Barilla EPD process performances are evaluated by mean of specific indicators. EPD Process management is guaranteed by the mutual works of different actors: EPD process owner (the EPD system process responsible), LCA developer (supported by an LCA team, that manages all the activities necessary for the EPD document preparation), data owners (in charge of providing data and information needed for LCA calculations) and data expert (personnel that could assist both specific data verification during LCA calculation and EPD preparation). The system reliability is guaranteed by several verifiers (data assessor, process assessor and verification body). Data assessor is personnel responsible for the verification of the LCA calculation and of the EPD document. Process assessor: is an internal verifier that regularly assesses the conformity of the EPD process. The Verification Body: represents an accredited body certified for audit of management systems that verifies the entire EPD process system.

RESULTS

Barilla is the first private company that has developed an EPD Process System. More than 50% of the products put on the market by Barilla during year 2012 are covered by an Environmental Product Declaration (EPD). At 30th April 2013, thirty-two EPDs were published on the website and about one thousand data modules were realized; the available data modules are over the 90% and validated data modules among the available ones are over the 75%. The use of the Barilla EPD Process System has shortened EPD publication timing, that now lasts about 8 - 10 weeks.

Table 1. Performance of the EPD Process System

Indicators	Unit	Data
Product volume covered by EPDs (year 2012)	%	58%
Planned projects (year 2013)	n°	38
Open Projects (point at 30/04/2013)	n°	16
Frozen Projects (point at 30/04/2013)	n°	0
Validated EPD (point at 30/04/2013)	n°	36
Published EPD (point at 30/04/2013)	n°	32
Product System (point at 30/04/2013)	n°	6
Product System validated (point at 30/04/2013)	%	80%
Total module (point at 30/04/2013)	n°	1000
Available data module (point at 30/04/2013)	%	91
Validated data module (point at 30/04/2013)	%	76

DISCUSSION

Table 1 shows the Barilla EPD Process System performances through the system indicators, from 2010 to April 2013. Looking at table 1, it's important to point out that there are 38 EPD projects planned for 2013; some of these contain more than one product to be analyzed because there are several recipe variants for some products. Furthermore there are no frozen projects because there were no problems with data availability and there is a higher number of validated EPDs respect to published EPD because it was decided to not publish three of the validated EPDs. From year 2010 to April 2013 more than forty verifications were performed: five external verifications made by Bureau Veritas, and the others made by data and process assessors for internal verifications.

CONCLUSIONS

Barilla's expectations from the EPD System are strong cooperation for the alignment of different systems, that have different rules and provide different results and actions for EPD system divulgation, such as seminars, working group.

REFERENCES

- International EPD Cooperation ; PCR 2010:01; CPC 2371: Uncooked pasta, not stuffed or otherwise prepared; version 1.1 of 18/06/2010.
- International EPD Cooperation ; PCR 2010:09; CPC 23995: Sauces; mixed condiments; mustard flour and meal; prepared mustard; version 1.1 of 9/11/2010.
- International EPD Cooperation; General Programme Instructions for Environmental Product Declaration; version 1 of 29/02/2008.
- International EPD Cooperation; PCR 2012:06; CPC 234: Bakery Products; version 1.0 of 17/04/2012.
- International EPD Cooperation; Process Certification Clarification (PCC) for the International EPD System; Guidelines; ver. 1.0 of 23/04/2010.
- International EPD Cooperation; Process certification clarification for the International EPD® system. Version 1.0 of 23/04/2010.
- ISO 14025- Environmental labels and declarations - Type III environmental declarations - Principles and procedures.
- ISO 14040 - Environmental management, Life cycle assessment, Principles and framework;
- ISO 14044 - Environmental management, Life cycle assessment, Requirements and guidelines;