

## INITIAL SPECIFICATION OF DATA QUALITY IN LCA: STATE OF THE ART, FEEDBACK AND GUIDANCE

### Summary

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SCORE LCA is an association that has been created to financially support collaborative research on LCA and related topics. It aims to promote and organize cooperation between companies, institutional and scientists in order to support the evolution of LCA methods and its practical implementation at European and international level.

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In LCA, data quality management is crucial at each step. At the beginning of a study it helps to estimate the required time and budget. It further allows to be more focused on the main contributing steps and to minimize the effort and the time of increasing quality of non-essential data.

Quality assessment tools are often designed for a post inventory evaluation and are fundamentally incomplete (only the intrinsic precision of the data is taken into account, not the appropriateness to the goal and scope).

SCORELCA asked RDC Environment to write a guide to help LCA practitioners to better assess initial requirements of data quality.

This guide is divided into 4 parts:

### **1. The definition of quality in LCA**

This part reminds the two main pillars for quality:

- Precision on raw and calculated data: generally assessed by the generator of the data and can be easily integrated into a database
- Appropriateness, i.e. consistency between the real system to be represented and the LCA model (accuracy): specific to each LCA study and has to be assessed by the practitioner

### **2. A summary on the way the reference texts deal with the specification of data quality at the beginning of a LCA study**

### **3. The steps to follow in order to define the initial specification**

As the goal of a LCA is to draw conclusions related to the comparison of environmental impacts of systems or auto-references, it is important to get a lower uncertainty than the difference between the systems. So the initial specification of data quality has to determine the quality level allowing to sufficiently reduce the uncertainty.

Two steps are therefore necessary:

- The **identification of the maximum acceptable uncertainty**: it is either the expressed requirement of the commissioner or derived from the goal of the study by the expert
- The **determination on how to limit this uncertainty**: This stage aims at minimizing efforts for data collection. The confidentiality or the willingness of the commissioner to collect data can favour or penalize this reduction of uncertainty. The reduction will focus on data that have high contributions to the results, are uncertain and are easily accessible.

Depending on the available time for this step two procedures are proposed: a light process and a full process. For the light process, the focus will be on the reduction of uncertainty through a better data representativeness and a good modelling of the hotspots.

#### 4. Tools that can help

- LCA database search to assess if the data quality is good enough or not
- Screening LCA to point out the hotspots of the LCA results
- Contribution analysis that will show both processes and flows that contribute the most to the environmental balance
- LCA literature analysis to point out main steps of the life cycle and key parameters
- Sectorial documents analysis to identify the kind of technologies, their representativeness...and by this way the key points analysis that will influence the environmental balance
- Sectorial and LCA expertise to define some processes, provide main trends, define some uncertainty range for some data
- Use of functionalities of LCA softwares, which provide some information on data quality and allow performing a contribution analysis.

This guide was tested by SCORELCA members.

This guide perspectives are:

- To provide a structured procedure that helps the practitioner with the initial definition of data quality
- To show that an external expertise can be used but that many of these steps rely as well on common sense
- To remind that up to now, nothing special is asked to be documented in LCA reports on this first step of initial specification of data quality
- To present some ways of improvements to better use data quality: interoperability of databases (that would avoid to use only one database) and the development of critical reviews at each step of LCA that would help to validate this first step of data quality assessment.