Draft version, not yet approved by the EC

Deliverable D2.6

Technical Sector Report on Data Models and Design Principles for Electronics

Grant Agreement number:	**265096**
Project Acronym:	**LCA to go**
Project title:	**Boosting Life Cycle Assessment Use in European Small and Medium-sized Enterprises**
Funding Scheme:	Small or medium-scale focused research project
Project starting date:	January 1, 2011
Project duration:	48 months
Delivery date:	June 30, 2012
Deliverable number:	D 2.6
Workpackage number:	2
Lead participant:	Fraunhofer IZM
Nature:	Report
Dissemination level:	RE
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Executive Summary

The analysis in WP1 confirmed the importance of **communicating key environmental data** for electronics products, to quantify likely effects of a **business strategy**, that targets at **prolonged product life** and to give the product developer some straight-forward guidance, how to **improve product design** and **servicing strategy**.

The methodological approach focuses on a simplified environmental assessment of **computer-like electronic devices**. The approach shall be suitable for **product managers and developers in SMEs** manufacturing computer-like devices, with limited insights in the actual supply chain and environmental parameters determined in these upstream processes. With this target group in mind, the methodology for electronics builds partly on the methodology for printed circuit boards, passive components and semiconductors, but tackles a later stage in the value chain.

The research explores **correlations of technical parameters**, which are familiar to the product developer, such as

- processor specification,
- mainboard size and type,
- display size and specified luminescence, and
- output rating of the power supply,

with environmental performance. Linking these technical parameters with carbon footprint data and resource usage data allows calculating relevant environmental parameters **without any background knowledge in environmental assessments**, nor does it require **any data mining among suppliers**, which would be time-consuming and does not lead to a satisfactory response frequently.

The **Key Environmental Performance Indicators** for the electronics sector cover **energy, GHG emissions, and resource consumption**. Whereas greenhouse gas emissions will be covered on a cradle-to-grave basis, energy aspects do cover only the use phase, as this is most relevant for the customer of any SME. Given the huge diversity of resources and substances used to build electronics devices, the visualisation of "resource efficiency" has to be limited to the quantification of **some selected key metals**.

The data model is largely based on background data and algorithms which have to be implemented in the later software tool of LCA to go. For upstream data some datasets are the same as those required for other sectors (e.g. energy grid

mixes), and some data models are derived in a simplified version from the research on electronics components (see upcoming Deliverable D2.3).

Remaining challenges to be resolved in the sectoral case study in WP4 are systematic coverage of component lifetime and how to establish data for benchmark products.