Allocation in ISO, GHG Protocol, and Environmental Footprints

<u>Tomas Ekvall</u>¹, Mats Berglund², Elias Hallack², Yulia Liu³, Sofia Poulikidou⁴, Lisa Rasmusson², and Ellen Riise⁵

¹Tomas Ekvall Research, Review & Assessment ²SKF ³Chalmers University of technology ⁴Höganäs ⁵Essity

E-mail contact: terra@tomasekvall.se

1. Introduction

The flora of ISO standards related to life cycle assessment (LCA) is growing organically. Meanwhile, the Greenhouse Gas (GHG) Protocol has become a de facto standard for many industrial companies, and the EU has established Environmental Footprint (EF) as the framework to use in Europe. Many other standards and guidelines for LCA and carbon-footprint have been developed in specific sectors and/or regions of the world. The standards have been developed by different working groups and, hence, diverge from each other. Even within ISO, the documents appear to contradict each other.

We initiated a project to identify the points of conflict between different ISO documents and between ISO and GHG Protocol. We also identify ambiguous points within the documents. Based on these findings, we aim to develop recommendations on how to improve the structure and content of the standards. This presentation focusses on the allocation rules in the documents. It goes beyond ISO and the GHG Protocol to include also the EF framework.

2. Materials and Methods

We analyse the documents to find conflicts in the allocation rules. We also present ambiguous points in the documents. We discuss the relevance of different allocation rules to decision-making. Finally, we discuss changes that can be made in the allocation allocation rules to make LCA a more effective tool in decision-making.

3. Results and Discussion

Tentative results indicate that the documents all refer to the allocation hierarchy in ISO 14044; however, they present a variety of interpretations and even deviations from this hierarchy. A line of conflict concerning the interpretation of system expansion is apparent. For example, Annex D in ISO 14044 interprets it to imply system expansion. The EF framework, in contrast, lists substitution as options for allocation in Step 2 or 3 of the allocation hierarchy.

The standards also diverge in the interpretation of allocation that reflects underlying physical relationships. Some of the documents allow for interpreting this to include simple allocation based on mass, or another suitable physical property. This makes economic allocation the main option for the third and final step in the allocation hierarchy.

Other documents keep the explanation that underlying physical relationships refers to how environmental outputs are affected by a change in a functional output. This excludes mass allocation in most cases, and places mass allocation together with economic allocation at the final step in the allocation hierarchy.

4. Conclusions

Clarifications are called for in the allocation hierarchy. Annex D in ISO 14044 attempts to do this but is not sufficient. More importantly, the same allocation approaches are not applicable in all LCAs or all decision contexts. It would be pertinent to distinguish, for example, between attributional LCAs used for, e.g., Environmental Product Declarations, and consequential LCAs used for strategic decision-making. Hence, the allocation hierarchy should ideally be deleted from ISO 14044 and replaced by guidance on allocation in standards for specific types or applications of LCA.

Acknowledgement - This research is funded by Vinnova through Net Zero Industries, a joint initiative by Vinnova, Formas, and the Swedish Energy Administration.