Moving Forward on Product Carbon Footprint Standards

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Life cycle assessment (LCA) has come a long way, evolving from a niche activity carried out by academics and a few forward-thinking businesses to a mainstream practice talked about publicly by Fortune 500 companies. During this evolution, the focus has shifted from multi-impact assessments to carbon footprints. Although other impacts are equally important, the world's focus on greenhouse gases—and their relative ease of calculation from an LCA perspective—will only increase the demand for product carbon footprints (PCFs) in the coming years (Weidema et al. 2008).

LCA experts need to accept that although ISO standards and similar academic work are extremely important, practitioners have issued a clear call for more practical guidance. Resisting this movement instead of providing constructive and helpful insight would lead to the creation of subpar standards and inaccurate PCFs.

This growth in PCF activity has fuelled a need for global standards that allow for greater reliability of footprints. Although the ISO 14040/44 standards[1] remain foundational for LCA, they lack the prescriptiveness and carbon-specific accounting guidance needed to produce consistent PCFs. Furthermore, for practitioners who are not classically trained, these ISO standards are difficult to understand and correctly implement.

The ultimate aim of PCF is to identify and inform reduction opportunities for greenhouse gases (GHGs). But without equipping real-world practitioners with the right tools and guidance, we cannot facilitate measurable progress toward this goal. The result is an increased risk of leaked emissions and other unintentional accounting inaccuracies that limit the global ability to achieve real reductions—hence the need for PCF standards.

But what are these standards best suited to address? As organizations around the world revise and publish new PCF standards, we have identified two loosely defined types of issues whose solution requires interaction and understanding among standard developers, business practitioners, and the scientific community.

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Type I: Issues That Will Eventually Be Settled by More and Better Data and Science but Need Solutions to Be Temporarily Prescribed by Standards

Some rules in LCA have yet to be codified because more prescriptiveness was not necessary when ISO standards were developed. This could have been due to the fact that a scientific or academic consensus did not exist or because public demand was lacking (or both). Nonetheless, companies faced with these issues when performing PCF assessments are looking for ways to address them, even if the solution is a temporary one.

A prominent example of such a Type I issue is allocation. Clearly, if product-specific resource metering in manufacturing becomes available, practitioners will have less need for physical or economic allocation. Similarly, once the complete life cycle of recycled materials can be traced from product to product, more pragmatic cutoff solutions that allocate respective emissions to either material acquisition or the disposal stage (but not both) might be obsolete. But what are practitioners to do in the meantime? ISO 14044 already provides a hierarchy of several proposed allocation methods, of which the most preferable is to avoid allocation altogether. During the road-testing of the draft GHG Protocol Product Standard,[2] however, companies provided feedback that having options makes performing PCF more difficult, reemphasizing the need for greater prescriptiveness (e.g., clear guidelines as to which allocation approach ought to be preferred in certain scenarios given various data constraints).

Another instance in which we believe standards can provide guidance is uncertainty. Traditionally, practical rules on how to treat it have been lacking. Uncertainty in LCA usually includes two broad questions, however—how to account for it, and how to report it. The second question can be answered by a standard if the first can be solved with a workable solution. Once again—until enough empirical data are collected and the "perfect" methodology found, PCF standards can stipulate a compromise to bridge both gaps.

Type II: Issues That Will Require Standards to Choose a Solution From Multiple, Equally Justifiable Options

An example of a Type II issue is the time horizon. Regardless of whether GHGs reach the atmosphere at the time of production (e.g., carbon dioxide [CO_2] from diesel-powered machinery) or decades later (e.g., methane [CH_4] from landfills), we still need to know over how many years to integrate the equivalent global warming potentials of the various GHGs in the atmosphere: 20, 100, or 500 years? Socioeconomic arguments and atmospheric chemistry measurements may provide some guidance (decades or centuries?). But unless standards prescribe a single, specific number of years, to be used by all practitioners, PCFs will lack consistency.

"Purists" may dislike the idea of settling such methodology issues by decree. But fortunately, not all Type II issues have significant impacts on PCFs: for example, whether to include capital goods, employee travel, or even product transportation from stores to homes may make for interesting methodological discussions, but their numerical contribution to PCFs is often smaller than PCFs' inherent error margin. In other words, some issues simply get lost in the noise. In these cases, standards may create "outs" for practitioners on the basis of "justifiable exclusions" or immateriality—and thus avoid overprescribing where stricter standards would render PCFs neither more accurate nor more useful as a decision support tool for reductions strategies.

Final Thoughts

Whether we are ready for it or not, LCAs in general and PCFs in particular are becoming mainstream business practice. This increase in activity presents us with a unique opportunity: More PCFs, performed more consistently and following new standards, will generate more data. This proliferation of data can assist the LCA community in progressing (and reaching resolution) on data-driven issues, such as uncertainty and allocation. So it is beneficial to everyone—standard developers, LCA experts, and businesses—to have new standards in place that reflect broad, multistakeholder alignment and consistent methodologies.

The question becomes "What can academics and businesses do to help standard developers solve problems?" In many cases, the objective is straightforward (if not necessarily easy)—a consistent time horizon, an easy-to-use uncertainty tool, and so on. But the science behind those solutions can be complex, so it may be a while before consensus is reached. Fortunately, there are clear ways for all three stakeholder groups to achieve their goals.

Businesses can help to advance LCA science by developing product category rules and sector-specific guidance as well as sharing best practices and (nonproprietary components of) data and in-house tools. All of these would benefit LCA experts and standard developers as they drive toward consistency.

LCA experts need to accept that although ISO standards and similar academic work are extremely important, practitioners have issued a clear call for more practical guidance. Resisting this movement instead of providing constructive and helpful insight would lead to the creation of subpar standards and inaccurate PCFs. In other words, we all need to accept that on the path to perfection there are compromises to be made.

Finally, standard developers can provide a bridge for communication between LCA experts and business practitioners, facilitate consensus-building, and provide workable interim solutions while simultaneously identifying areas for further academic research (as well as "field-testing" by practitioners).

This is an exciting time for all involved in LCA—with several standards set to be released this year and with more and more business practitioners emerging each day, there has never been more activity. But without consensus on best practices and methodologies—even when they are less than perfect—we risk unnecessary division between key players, prolonged confusion in the marketplace, and further delay in collecting the very data that will enable continued improvement of standards and accelerated emissions reductions.

Notes

1. For more info on these standards, see www.iso.org/iso/catalogue_detail.htm? csnumber=37456 and www.iso.org/iso/iso_catalogue/catalogue_tc/catalogue_detail.htm?csnumber=38498
2. For more detail on the road-testing, see http://www.ghgprotocol.org/standards/product-and-supply-chain-standard

Reference

Weidema, B. P., M. Thrane, P. Christensen, J. Schmidt, and S. Løkke. 2008. Carbon footprint: A catalyst for life cycle assessment? *Journal of Industrial Ecology* 12(1): 3–6.

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