



LCA and Carbon Measurement

The Industry Council for Packaging and the Environment

What Lifecycle Assessment and Carbon measurement Can and Can't Do

Introduction

Many assumptions have to be made in carrying out a lifecycle assessment (LCA). The results are never precise or consistent enough to enable comparisons to be made between alternative products.

Carbon footprinting is a subset of a full LCA and has the same limitations. In addition, it measures only the greenhouse gas emissions and it can therefore mask or neglect other impacts which in some instances are more important.

LCAs and carbon measurement are however useful to companies for assessing the impact of changes to current operations.

A 2009 paper from a number of European consumer and environmental bodies provides a clear summary of the use and abuse of LCAs and carbon footprints:

"While the undisputed benefit of LCA is that it provides for an assessment of the environmental impacts throughout the life cycle, from cradle to grave, a typical major problem of LCAs is that they are limited to the availability of data, which means they cannot treat impacts such as toxicity and eco-toxicity often relating to chemicals.

In the case of a Product Carbon Footprint, the analysis is limited to a single impact category, namely greenhouse gases. However, a wide range of other sustainability criteria such as the use of chemicals, impacts on biodiversity, water usage and pollution, should be considered when measuring and comparing the environmental footprint of products and services.

Another potential negative impact would be to shift impacts from carbon-related elements to these other impacts, as a means of presenting products as more sustainable due to a lower CO2 footprint."
(Source: Joint Position Sizing up Product Carbon Footprint, ANEC, BEUC, ECOS, EEB, 2/12/09)

Misuses

Comparative studies

LCAs have often been used not as an internal tool for improved performance but as a guide to policymaking. Analysis of alternative types of pack is carried out to establish which is environmentally superior. The results can be interesting, but they should always be treated with caution as so much depends on the assumptions used at the outset of the study:

- What should the boundaries of the system be? Should the study include the energy needed to mine and process the raw materials, the energy needed to make the mining and processing equipment, the energy needed to generate the energy and so on? What about unmeasurable factors such as the different degrees of visual damage and loss of amenity resulting from different mining and processing operations?
- Should the study include only those parameters that can be directly measured, or should it include areas where the only data available may be old or suspect?
- Any decisions on apportionment will inevitably be arbitrary. Should LCAs include the energy used by the consumer to drive to the shop or recycling facility, and if it is reasonable to assume that the journey is also being made for other reasons, what proportion of the energy should be attributed to the activity being studied?
- Single issue or impact indicators, such as carbon footprint, for packaging should be avoided as the packaging system is designed to fulfil its function in relation to the contained product and the physical distribution system

Honest researchers can come to different decisions, all of which are equally valid – yet they all produce different answers.

Studies undertaken by neutral parties tend to show that:

- there is very little difference in the environmental performance of different packaging systems – there is often a bigger range between the best and worst performers undertaking the same operations than between one type of packaging system than another
- size of container matters more than the material it is made from.

If the results are at the mercy of the decisions made in designing the study, it is unsurprising that such assessments are used

more as a marketing tool than as a guide to decision making.

The waste management hierarchy

Some policymakers believe that LCAs and carbon measurement can be used to "prove" that reuse is better than recycling, or that energy recovery is better than landfilling or vice versa. Certainly there are optimum levels of reuse and recycling, but these vary according to time and place, and using LCAs to make judgements on alternative waste management methods is not valid.

Optimum levels vary over time because social behaviour, availability of infrastructure and technology change. Technological developments that expand the outlets for recycled materials raise the optimum recycling rate. But the optimum rate will vary from place to place.

Valid uses

Internal assessment of changes to current operations

Individual companies can collect data from each of their factories, production lines or products, and through comparative analysis can identify weaknesses to be addressed. Performance standards and targets can be established to guide investment decisions on new plant or on pack changes.

By extrapolating from existing data, the company can calculate whether a new pack is likely to improve or damage the company's overall environmental performance.

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