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Position Paper
LCA – Life Cycle Assessment

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Background

Throughout the world, society is striving towards a more Sustainable future.

Sustainability by definition consists of three elements:

- Social,
- Financial
- Environmental

For these areas, goals have been set based on political priorities. However, because of the complexity of the task, the challenge is to define which issues should be addressed in order to achieve the goals and different measurement and management tools have been developed to achieve this.

In the environmental area one of the most important tools is *Life Cycle Assessment*, (LCA) and a successful attempt to combine different dimensions has been made through *Eco Efficiency methodology*, where Financial and Environmental aspects have been incorporated.

However, this has had limited success because of the scale of the task and the vast amount of information needed to reach meaningful results. As a result of this, simplified and more easily understandable tools like *carbon footprint* have been developed to support political decision-making even though these are unreliable. An in-depth knowledge of environmental systems can only be reached by a thorough Life Cycle Assessment.

Life Cycle Assessment

Life Cycle Assessment is standardized in the ISO framework in the ISO 14040-44 standards.

There are 3 parts to LCA

1. The first step of LCA is LCI, *life cycle inventory*. This is the complex part, since all the material and energy streams have to be quantified, from cradle to cradle or to grave. Performing this task the correct definition of the functional unit (e.g. one litre of water; 1 kg of product) and the boundaries are crucial.

   Having done this, the rest is a complex compilation of material and energy usage, and emissions to soil, water and air, calculated per functional unit. The environmental performance of two equivalent systems can as such then be compared on an inventory basis. However, the complexity of the compilation means this is a task for experts.

2. The second phase is the assessment. Depending on the assessment methodology, aspects such as, Resource depletion, Global Warming, Ozone depletion, Acidification, Eutrophication, Eco toxicity, Human toxicity, land usage and noise are set up, and the inventory coupled to these. This coupling and especially the weighting of the aspects with each other, is a political issue, depending on the priorities set by the user of LCA results and society generally. At present the main focus is on Climate change measured by global warming and simplified into Carbon footprint. Even so, the results are very difficult to interpret and subject to debate.

3. The third phase in the process is a peer review, where the methodology and results are verified by independent experts.

Eco Labelling

In an attempt to measure environmental performance of products within a category, *Eco labelling schemes* have been set up. Some of these use meaningful criteria, but due to the complexity of the true environmental behaviour of any system, many short cuts have been used. The use of qualitative criteria for the eco label gives biased results. Objective or quantitative criteria-setting can give an indication of the relative environmental performance within a product range.

Attempts to use eco labelling on packaging alone are doomed to failure, since a package cannot be studied apart from the rest of the product system.

Environmental performance of packaging

Product packaging has been subject to much environmental debate, mainly due to littering and recovery issues of used packaging. Packaging has been designed to serve a function in the most efficient way taking logistics, storing, handling, shelving, preservation, opening and usage into account. During the past 20 years, significant achievements in down - gauging packaging have been made and as a result, today's packaging is extremely efficient.

Several LCA studies have been made to measure the environmental impact of packaging as part of a product system. They all show that packaging only contributes 2-5 % of the overall environmental impact in the food chain and 25 % in beverages. This means that a good package preserves the environmental efforts put into the production of the foodstuff or other product.

LCA techniques have also been used to evaluate the effectiveness of different packaging waste management options. The results follow market demand: heavy duty transport packaging, clean beverage, metal and aluminium and other packaging is recycled as material, whilst contaminated, small consumer packaging is best suited for energy recovery. Excess money put into recovery schemes may channel some packaging in the waste stream from energy recovery or from landfill into recycling, but this is typically not supported by Eco Efficiency results, since only limited environmental benefits are gained, at high financial cost.

Environmental declarations

Environmental declarations of different kinds are made by consumer goods and other products. The claims used should be scientifically based, for example, as prescribed by the very important, but little used ISO 14021 standard on environmental claims. Terms like "environmentally sound" or "sustainable" should not be used without justification. Also in this respect, any claim shall be based on objective LCA studies.

Conclusion

WPO welcomes environmental measuring of different delivery systems including packaging on a LCA basis. The studies made should be scientifically sound and compare equivalent systems. Studies on packaging alone are misleading and should not be supported. Environmental labelling and claims should have a LCA base. Eco efficiency and tools including the social element should in the future be developed to assess the performance of whole product delivery systems.