

Conference Reports

Life Cycle Approaches for Sustainable Consumption

24th LCA Swiss Discussion Forum

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The 24th LCA Swiss Discussion Forum on Life Cycle Assessment took place on December 2nd, 2004 and developed the topic of sustainable consumption. The forum aimed at determining and illustrating how life cycle approaches can be used in the area of sustainable consumption. It addressed in particular the following questions:

- How can LCA be used for sustainable consumption?
- What is the environmental impact of an average citizen?
- What is the potential of sustainable consumption for impact reductions?
- How to measure sustainability (state of nature, social and economical performance)? What are acceptable levels of damages and time horizons for sustainable consumption?
- How to promote sustainable consumption?
- How concerned are private companies?

The forum featured seven plenary speakers as well as three short presentations. The diversity of orators and participants favoured the emergence of interesting and pertinent discussions. In attendance were people from public authorities, universities and private companies. This shows that the topic is gaining in importance.

In the introduction, OLIVIER JOLLIET outlined the importance of the emerging theme of sustainable consumption and the role that LCA will have to play. Rebounds and indirect effects appear to be more and more important, obliging LCA to widen the boundaries of the assessed systems. One crucial issue is the consequential effect, which must consider how people will reinvest the money or the time they save. LCA is a powerful tool to address this issue.

1 Plenary Sessions

1.1 Environmental impact of Swiss consumption and potential improvements per capita

The session was opened by JOSEF KAENZIG who presented a project being performed for the Swiss EPA (BUWAL). A comparison of different studies revealed that housing and mobility present high environmental impacts in the use stage. Consumer goods and services are responsible for high impacts through the whole life cycle, while the main impact of nutrition is to be found in the production stage. The government and above all consumers are key actors for all consumption domains as far as the environmental impact is concerned. In a comparative analysis using the concept of E2 vectors (environmental indicator versus expenses) KAENZIG compared graphically a dozen of scenarios of environmentally sound consumption patterns to reference scenarios (average consumption scenarios). Examples of key decisions concern the distance travelled per year, the insulation of houses, the source of energy for electricity and heating, the quantity of meat consumed, etc. One conclusion was that more than a forth of the non-renewable primary energy consumption, per capita could be saved with a few realistic scenarios. The personal balance can be further improved if the money saved due to energy consumption reductions is reinvested in green products such as renewable energy. KAENZIG stated that there is a need for suitable communication of sustainable consumption alternatives utilizing appealing images and positive terms.

1.2 Consumer's difficulties in evaluating the environmentally-friendliness

The environmental judgment of a product by the consumers has been developed by CARMEN TANNER. Various parameters explain why people's preferences and judgments are highly context-dependent and unstable. These include the multiple dimensions consumers have to deal with, the time pressure and the mood or the feelings. TANNER performed a study where consumers had to evaluate one product in two evaluation modes. In the separate evaluation mode, people made comparisons between a given product and some sort of standard they had in their memory. In the joint evaluation mode, people evaluated one product by comparing it to others and then focused more on the alternatives available. The first conclusion of TANNER's study was that the environmental friendliness of a product can be judged very differently whether it is compared to a more or a less environmentally-friendly product. The second conclusion was that consumers may erroneously consider a product to be environmentally-friendly while it isn't (and vice versa), even if they had the necessary information to make the 'right' choice. In other words, non-environmentally sound consumption is not a problem of lack of knowledge, but rather the result of human information processing patterns. Therefore providing the right information (e.g. LCA results) is not enough to support sustainable consumption. This indicates that there's a need for better product labels, which integrate environmentally significant information in one logo.

1.3 Sustainable food products, a company perspective

COOP is one of the two main distributors for food and non-food products in Switzerland and has the 3rd highest number of employees in the country. For some years now, this company has developed its own label for sustainable products. The four main labels by COOP are Naturaplan, for the food sector, Naturaline for textiles and cosmetics, Oecoplan for environmentally-friendly non-food products and services and Max Havelaar, the well known fair trade label. SYBIL ANWANDER showed that the evolution of the sales were impressive, CHF 21 million in 1993 and CHF 1339 million in 2003, indicating that consumers indeed rely on these labels. In addition, intensive marketing for sustainable products is one of the company priorities. To select the products that obtain these labels, LCA is not commonly used, although the production phase has been assessed to select priorities. For example, for the food sector local production, the used criteria are 'limited transportation', 'organic food', etc. As often as possible the company relied on other well-known labels such as bio, natureplus and FSC to select the products that will be sold under their labels. The traceability of the product is also an essential point.

1.4 LCA and the European integrated product policy

The Integrated Product Policy is a "public policy which aims at or is suitable for continuous improvement in the environmental performance of products and services within a life cycle context". It aims at encouraging consumer demand for more ecological products, encouraging industry to increase its supply of more ecological

products and to use pricing mechanisms. YANNICK LE GUERN presented a study that evaluated the environmental impacts linked with an average consumption per capita. The statistics shows that the average European consumes, in one year: 14 kg of textile, 4 pairs of shoes, 5 kg of soap and toiletries, 155 kg of packaging, 2'630 kg of building materials, 59 m³ of water, 491 kg of vegetable food, 97 kg of non-vegetable food, 18 kg of electric and electronic equipment, 26 kg of paper and 2678 km of transport. In addition the average European generates 575 kg of waste per year. The results of the study show that for global warming, the building occupancy and the transport sector contribute the most, which is also true for primary energy. On the other hand, the production of vegetables is responsible for most of the impact due to eutrophication. Finally, the external costs linked to the impact in Europe, has been evaluated using external cost factors for an effect score. These costs were evaluated to be between 220 and 960 Euros per capita, mainly due to global warming and the human health effects due to dust.

1.5 Review and outlook on studies on sustainable consumption and production (SusProNet, EIPRO and SCORE)

ARNOLD TUKKER began his presentation by recalling that sustainable consumption is about realising that consumers have needs and life styles that can be influenced by life context. Specialists often mention the necessity to decrease our environmental impact by a factor 4, or 10. How can sustainable consumption contribute? TUKKER classified the possibilities in three main levels and described the optimised system that can lead to marginal improvement, the redesigned system that can lead to a factor 2 and the innovating system, which can result in substantial changes. This can be illustrated in the transport sector by the car energy label, the car sharing systems and a low transport need environment. By describing the EIPRO and the SusProNet projects, TUKKER showed that a shift to a services economy is unlikely to result in a factor 10 reduction and that one should focus on three main sectors (transport, housing and food). The second project investigated the services and products and defined three intermediary stages between the two: product oriented, use oriented and result oriented services. The first is easy to implement, but has only an incremental potential for environmental reduction. The second has a potential of a factor 2, but needs a change in consumers behaviour and the third has even a higher potential. TUKKER's conclusion was that a more integrated 'system innovation' approach is needed, which will be developed in the SCORE project.

1.6 Happiness, the functional unit of sustainable consumption?

Should happiness be the functional unit of sustainable consumption? It is with this interrogation that PATRICK HOFSTETTER started his presentation. Traditionally, LCA compares different scenarios to fulfill one functional unit. The environmental impact of different alternatives are measured and compared, but in most cases, the time spent or the costs to fulfill one functional unit differs and therefore there are indirect effects associated with them. How are the saved time, money and energy re-invested? He also reminded the audience that on a world scale, although efficiency improvements are occurring, the ecological footprint is still increasing. It is at this stage of the reflexion that HOFSTETTER cited Diderot "The whole economy of human society is based on one general and simple principle: I want to be happy...". Referring to various studies, he then showed that the life satisfaction or the happiness of people is not directly linked to the material consumption. Although it is true that a high purchasing power in a country generally implies a quite high life satisfaction, a high degree of happiness does not require a high purchasing power. In addition, HOFSTETTER also noticed that people are not happier when they are performing a highly intensive activity. He proposed the definition of a new indicator, which would be the change in happiness per change in environmental impact that should be optimized. The conclusions of this presentation stated that increasing happiness should be a central point, the rebound effects have to be assessed (consequential analysis) and that life events should be used to shift to sustainable consumption patterns.

1.7 UNEP's vision of sustainable consumption

In his talk, GUIDO SONNEMANN presented UNEP's (United Nation Environmental Programme) vision of sustainable consumption. He re-called, that there is a big divide between the gross domestic product per capita and the population under the age of 15, on a world map. SONNEMANN described the mission and role of UNEP and the achievements accomplished in the last couple of years. Until now, the life cycle view of policy focuses on production and the end-of-life stages. That is one reason for the launch of the Marrakech process, which is an international bottom-up process to promote sustainable consumption and production worldwide. It has been initiated in Marrakech beginning in 2003 with the 1st international conference on sustainable consumption. UNEP's idea behind this is to promote a more efficient way to consume and produce (with less environmental impacts) and to share resources between the rich and the poor. To move in the right direction, the UNEP sustainable program will edit UN guidelines on consumer production and national indicators. It will also support sustainable procurement, eco-design of products and services as well as the well known life-cycle initiative. The UNEP wants to use life cycle information for sustainable innovation of products and services and sustainable procurement to transform the market place. For more information, the reader can refer to their website: <http://www.uneptie.org>.

2 Short Presentations

2.1 Prioritizing with LCA studies

ARI NISSINEN presented a current project in Finland that aims at developing benchmarks for LCA-based environmental information on consumer products, services and consumption patterns. It develops quality descriptions and criteria for suitable LCA studies and tries to understand how consumers comprehend the benchmarks. Some of the LCA studies used have been modified and updated to Finnish conditions. The presentation to the consumer is important, different formats have been developed to transmit the information efficiently.

2.2 Sustainable product innovation at Unilever

The people are happy consumers before good citizens claimed TONY TAYLOR. Therefore the market provides products that satisfy consumer needs first. To reach sustainability, the industry role is to improve the consumer benefits whilst reducing environmental impact. TAYLOR illustrated this approach with the example of a washing machine. Its main impacts are at the production and the consumer phase. Optimising the powder consumption is one measure that was introduced to decrease the environmental impact, while satisfying consumers need. This was done by introducing a unit dosing (tablets). In addition, companies in this sector have initiated the Washright campaign to promote sustainable consumption.

2.3 Time matters ...

The last presentation of the day was given by KRISTIAN JURIC. He presented an on-going study that tries to compare two different activities: going to a play and drinking beers in a pub. The first activity does not imply direct material use but consists of an important infrastructure and employees, while the second implies material consumption (beer) as well as infrastructure and employees. JURIC defined time, as the functional unit for this study. He identified that an average consumer drinks about 1.5 liter of beer during the time another person is at a play. Which one has the largest environmental impact? JURIC will reply in a near future.

More material, including all presentations given at the conference, can be found at <http://www.texma.org/LCA-Forum/lca-forum.html>. The next Discussion Forums on LCA are: Life Cycle Approaches for Green Investment, 7th of June in Lausanne and LCA in Industry: Challenges and Approaches to make it more practical, 17th November in Zürich. For more information please contact LCAforum@epfl.ch.