

Conference Reports

Dissemination, Application and Assessment of LCA in Industry

25th LCA Discussion Forum at ETH Zürich, Switzerland

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30 Years of LCA – Searching for its Impact on Industry

Traditionally focused on key issues of LCA research, the 25th holding of the discussion forum was looking into the current dissemination and application of LCA methods in industry. It strived for a review of the impact of LCA research and provided a stakeholder platform formulating expectations towards the planned creating of a Swiss Life Cycle Centre.

Setting the stage, NOBUYUKI MIYAZAKI, Int. Christian University and CLAUDE PATRICK SIEGENTHALER, Hosei University, presented their recent research on the advancement of LCA practice in Japan. With more than 10% of all stock market quoted companies running LCA activities – some of them claiming to apply LCA to all of their thousands of products – and more than 35% of all Environmental Product Declarations (EPD) for Type III Eco-Labels the speakers granted the global leadership in LCA practice to Japan. Furthermore, the diffusion of LCA methods into corporate environmental accounting were illustrated by the activities of the JEPIX FORUM, where some 40 major companies are implementing a distance-to-target-based single-score LCIA method for the monitoring of corporate eco-efficiency and eco-productivity. The presentations revealed a high concertation of activities by industrial and research bodies under guidance of the Ministry of Economy, Trade and Industry, revealing LCA as being high on the agenda of industrial policy in Japan.

The Business Case for LCA and Ecobalancing

A comprehensive assessment of the situation in Switzerland conducted by CLAUDE PATRICK SIEGENTHALER suggests that LCA dissemination has not gained much momentum in Swiss industry – despite the pioneering and leading role of Swiss research. Comparing the findings of previous investigations, his survey among 500 ISO14001-certified and the 169 stock market traded companies showed the number of LCA practitioners around 60 companies – the number of corporate Ecobalancing practitioners at 181. The survey revealed that only a few practitioners refer to the ISO14040 series as being of relevance to their work and the majority takes a differing stance towards key elements of the guidelines as they usually do not make use of impact assessment categories beyond Global Warming Potential, but many of them believe in weighting methods. Respondents recognised LCA and Ecobalancing

as complex, nevertheless they demonstrated a high level of confidence in the method and it's results: credibility, objectification of evaluations and new insights or ideas were recognised by most users. Just a few confirmed typical arguments against LCA such as fuzzy results, low data quality or low acceptance. Although explicit monitoring of the costs and expenditures for LCA studies is rarely carried out, most respondents found the overall cost-benefit-ratio to be attractive.

Case Studies from 5 Major Swiss Companies

Further insights in today's industrial practice were introduced by a series of case studies: ROLAND HOEGGER, introduced findings from the almost 15 years of LCA and Corporate Ecobalancing at GEBERIT, the leading Swiss manufacturer of supply, water and drainage systems. He confirmed the benefits found by the survey and stressed the positive impact of LCA on corporate trust as well as a reduction in product related risks as the company would learn to know the life cycle of its products. Due to the high complexity and specific language of LCA research he drew a line between full LCA as being a task that requires the company to rely on collaboration with research bodies and on the other hand simplified tools for daily use by their engineers. Similar findings were presented by THOMAS MUELLER from SCHINDLER, a world leading provider of elevator systems, who shared his experience applying LCA in the R&D department introducing their inhouse PEcoPIT toolbox for eco-design, which integrates LCA. Illustrative examples of LCA application in the sales process as for finding sales arguments, creating value added for the customer or supporting lobbying activities in legislative processes were provided by KURT BUXMANN from aluminium technology leader ALCAN. Examples were shown where LCA was enabled to identify proper trade-offs between the life cycle stages of products, such as transport distance versus production phase in beverage packaging. Acting as the head of the Swiss ISO technical committee covering LCA, he furthermore elaborated on the life-cycle thinking requirement stipulated by the revised ISO14001 EMS standards, which he found is rarely taken into account appropriately. The impact of living up to this life-cycle thinking was the focal point of VERENA GOTTHARD's presentation on SWISSCOM, the major Swiss telecom provider. The case study carried out by EPF

Lausanne made clear, that the integration of upstream and downstream processes results tremendous impacts on the perception of environmental performance realigning priorities of the EMS, especially towards procurement policies and measures. LCA on a company basis is therefore a useful tool for a strategic EMS enabling the decision maker identifying the right priorities, which could also be outside the classical company burdens.

A more critical assessment of LCA closed the series of case studies: STEFAN BRAEUER introduced the experience of V-ZUG, the top supplier of kitchen and washing equipment in Switzerland. He recognised the benefit of LCA on a generic product level, but experienced difficulties when applying LCA to engineering tasks, such as the selection of a specific material due to a lack of accurate data. He also pointed out that different LCIA methods result in quite different priorities along the life cycle, which negatively affects the use of LCA in their industry. Preparing the ground for the following discussions, he argued that policy makers often issue legislation without considering LCA findings, which can lead to technical requirements that conflict with LCA results. As a current case he pointed at the lead-free soldering requirements imposed by the EU.

Does the Revised ISO14001 Foster Dissemination?

The role of ISO14001 certification for the dissemination of LCA was explored by two representatives of major Swiss ISO14001-certification bodies: SILVIO LEONARDI (SQS) shed light on the role of the auditors. LEONARDI made it clear, that LCA is not explicitly required by the standards and hence auditors have to take a neutral stance when it comes to certification. Based on his personal experience as a consultant GERY HUG (SGS) claimed some auditors actively discouraged companies from using LCA and Ecobalancing methods, sometimes due to their own low level of understanding those methods. Although a customized qualitative evaluation would be indispensable for running an EMS, he demonstrated by several case studies that LCA methods can well deliver on key requirements of ISO14001. But both speakers agreed, that among the more than 1000 certified Swiss companies, LCA and Ecobalancing is rarely encountered.

The Role of the Swiss Administration: Facilitation

From the perspective of the authorities, CHRISTOPH RENTSCH presented a review on the history of LCA research and practice. He elaborated the stance of the Swiss Environmental Protection Agency (BUWAL) identifying three focal points of their activities to foster LCA dissemination: first, to contribute to the availability of high-quality generic background data (pointing at the ecoinvent database). Second, to support diversity in LCIA methods such as Ecotoxicity, Ecoindicator and external costs. And finally by commissioning case studies on current and representative issues such as packaging, heating systems, renewable resources, etc. Beyond the scope of BUWAL, RENTSCH – also a member of the national procurement commission – positioned LCA in the framework of Integrated Product Policy IPP enacted by the Swiss Federal Government in 2002. There – among other measures – the creation of a Swiss competence centre for LCA was put forward to raise trust in and credibility of LCA and hence foster dissemination.

Towards a Swiss Life Cycle Centre

OLIVIER JOLLIET presented the current state on the way to such a national centre by introducing goals and structures of the recently launched ecoinvent Centre – a collaboration of 5 major Swiss research institutes providing inventory data on 400 inventory flows for 2500 unit processes: the ecoinvent database (www.ecoinvent.ch). Beyond ecoinvent, he outlined a future Swiss Life Cycle Centre mainly as a node for exchange of information: by providing training, international intelligence and coordination services as well as a platform for the exchange of experience, projects and job offers. He recommended to keep such an organisation as lean as possible by integrating existing initiatives such as the ecoinvent centre and the LCA Forum.

A concrete profile of such a network-structured platform on an international level was introduced by GUIDO SONNEMANN representing the UNEP-SETAC International Life Cycle Initiative. He shared findings from their extensive definition studies conducted by the international LCA community and stressed the requirement to involve stakeholders from the political authorities and industry alike. He extended the task list of an LCA Centre beyond the LCA methodology itself by putting an emphasis on delivering solutions to integrate LCA into political, engineering and management processes.

Needs and Expectations from a Business Perspective

The final plenary session revealed that the expressed wish of the authorities and the LCA community to establish a national Centre was not unanimously shared by the attending industry representatives: one claimed, that they did not expect any assistance from governmental bodies as they would already be capable of applying LCA. Another claimed that industry itself did already develop simplified tools, but those would not have been taken up by the authorities nor by the research community. However, representatives from small and medium sized companies called for support in capacity building, coaching of projects and peer-reviewing as well as the provision of easy to use tools. This could be one of the challenges that the LCA centre might address in priority.

That such tools can be successfully transferred from national LCA centres into industry was confirmed by the short presentation of ARTHUR BRAUNSCHWEIG: he introduced findings from the third edition of the LCA SOFTWARE GUIDE (2005), pointing at the successful dissemination of the NIRE-LCA Software developed by the Japanese National Research Center for LCA. Finally, the advocates of a national centre were confirmed by the results of a questionnaire based survey among the participants of the conference: a clear majority – from research and industry alike – expressed their high expectations towards the realisation of such an initiative.

As for the LCA Forum itself, it was concluded to put more emphasis on a dialogue between researchers and industry in the future, e.g. with the follow-up conference, DF27, scheduled for November 17, 2005, addressing the prominent issue of 'How to make LCA more practical'.

More material, including all presentations given at the conference, can be found at <http://www.texma.org/lcaforum>. The next Discussion Forum on LCA, DF27, is **LCA in Industry: Challenges and Approaches to make it more practical, 17th November in Zürich**. For more information please contact LCAforum@epfl.ch.