Conference Reports

Science and Application of Life Cycle Assessment

12th SETAC Europe Annual Meeting, 12-16 May 2002 in Vienna, Austria

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Life cycle assessment (LCA) keeps on growing in importance, as was clearly evident at this year's Annual Meeting of the Society of Environmental Toxicology and Chemistry Europe (SETAC, www.setac.org) in the beautiful city of Vienna. The mounting interest in the different stakeholder communities – research and academia, industry, government, and non-governmental organizations – was reflected by the size of the audience in the five LCA sessions, most sessions being attended by more than 150 persons and leaving standing room only in many cases. LCA was the key feature in more than 40 platform presentations, 60 poster presentations and in one keynote lecture of Helias Udo de Haes (see below). The five very successful and lively sessions addressed:

- The application of input-output analysis approaches in LCA
- Developments in life cycle inventory methodology and application
- Life cycle management and decision-making
- Life cycle impact assessment
- LCA, risk assessment, and related tools

More than in previous years, application of the LCA methodology to 'real-world' problems and decision-making was in the center of the presentations and discussions.

The first session focused on input-output analysis and its relation to LCA in its various forms. Specific applications, as well as approaches designed to complement so-called (traditional) process LCA, were presented and intensely discussed. It appears that input-output approaches can help resolve, or minimize, some of the problems of LCA in regards to system completeness - though this depends strongly on the area of application. Input-output approaches seem particularly promising in decisions related to policymaking or strategic technology and systems assessments, where the required specificity is low, or in providing background information to process LCA, reducing the effort for data collection.

In the session on life cycle inventory analysis, a big spectrum of topics were presented, ranging from how renewable resources and land use can be properly integrated and how agricultural systems can be assessed to LCA of a hydrogen production facility, scenario analysis in LCA, a case study on dairy products in a specific region, allocation issues, and simplifying life cycle assessment for design for environment (DfE) applications.

Use of LCA within life cycle management (LCM) provided the focus of the third session, covering topics such as user needs for life cycle decision support systems, multi-stakeholder approaches in the mining, minerals and metals industry, waste management policy, and process planning in the dairy industry. Other topics were the integration of LCA and operations research techniques, comparison of LCA interpretation methods, public sector decision-making, decision-making for planning of energy systems, communication of LCA results to the market, and challenges of the UNEP-SETAC Life Cycle Initiative (see below).

The last two sessions of the conference dealt with issues in life cycle impact assessment and the relation of LCA to risk assessment. Presenters discussed methodological issues in assessing agricultural systems (e.g., land use, biodiversity, soil quality), calculation of new equivalency factors with existing models, spatially differentiated fate and exposure modeling, uncertainty analysis for endpoint modeling in LCIA, new methodologies for the assessment of toxicological impacts, comparison of LCA and environmental risk assessment (ERA), monetarization of external effects, and dynamic LCAs as a means to include both technological advancements and consumer behavior in impact assessment. Multiple stakeholder interest was particularly evident in the EU OMNITOX project, presentations given by both industry and academic partners (www.omniitox.net), addressing the relationship of LCA and regulatory risk assessment, existing methods for screening and characterization in LCIA for (eco)toxicological effects, and trying to propose modeling improvements that encompass both practical as well as scientific insights.

A highlight of the conference was the keynote lecture of Helias Udo de Haes, who elaborated on the important position of LCA within SETAC. LCA has grown up in SETAC and has benefited, particularly in the impact assessment of toxic effects, from other SETAC communities. Udo de Haes pointed to many of the achievements in methodology development, but also to the lacking widespread application in practice to-date, a situation that may be changing, looking for instance at the attendance and composition of the LCA

sessions in this and other conferences. Udo de Haes explained how LCA is part of the toolbox of life cycle management (LCM) and emphasized that the interrelation and role of these tools should be examined more in depth in the future to proliferate the practical use of LCA and LCM. For this he recommended stronger links between the SETAC LCA branch and the Society for Industrial Ecology (www.yale.edu/is4ie).

One outcome of the conference was the proposal of new SETAC LCA working groups. These two year working groups, provided that enough critical mass for each one can be mobilized, will be launched later in the year - possibly in conjunction with the SETAC Case Study Symposium and the meeting of the Society of Industrial Ecology in Barcelona from 2–4 December 2002. The proposed working group topics and the respective contact persons are listed in the following:

- LCA in waste management (Göran Finnveden, finnveden@fms.ecology.su.se)
- Input-output LCA (Gjalt Huppes, huppes@cml.leidenuniv.nl, and Sangwon Suh, suh@cml.leidenuniv.nl)
- Life cycle costing (David Hunkeler, David.Hunkeler@aquaplustech.ch, and Gerald Rebitzer, Gerald.Rebitzer@epfl.ch)
- LCA and electricity markets (Wolfram Krewitt, wolfram.krewitt@dlr.de)
- Life cycle product information schemes (ecolabeling, IPP, EPD, use phase) and LCM (Paolo Frankl, paolo.frankl@ecobilancio.com)

The working groups are open to anyone willing to contribute to the work. Interested persons should contact the respective contacts as soon as possible. Other topics for working groups are also under consideration and will be announced by SETAC, together with the final groups from the ones mentioned above.

The conference was complemented by a workshop of the recently launched UNEP-SETAC Life Cycle Initiative, an initiative aiming to spread the benefits of life cycle approaches, at initiating and improving the practice of life cycle management (LCM), where LCA plays a key role, and at fostering their application in all sectors of development, including consideration of countries with developing economies. Topics of the workshop were user needs in regards to LCI and LCIA, LCI database formats, and LCIA methodology. Specific LCM workshops of the initiative will be conducted later in 2002. More information on the UNEP-SETAC Life Cycle Initiative and how one can get actively involved as a contributor or sponsor can be found at www.uneptie.org/pc/sustain/lca/lca.htm.

Proceedings

Conference proceedings with the abstracts of the platform and poster presentations are available from SETAC Europe (Av. de la Toison d'Or 67, B-1060 Brussels, Belgium; Phone +32 2 772 72 81, Fax +32 2 770 53 86, email setac@setaceu.org) or can be ordered at www.setac.org.

Centre of Environmental Science (CML) – Annual Report 2001

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The Year 2001 in Retrospect

In the year 2001, CML has for the first time functioned as a formal University Institute. This involved the establishment of a board of directors, an internal scientific council (Instituutsraad), an internal employees' council (Dienstraad) and an external advisory council (Adviesraad). Also the first steps have been set regarding the agreements on future education and research activities between CML on the one hand and the faculties and university board on the other hand. The University board of Governors has agreed upon the financing of a number of 'central tasks' of CML. Each of three sections of CML has taken the responsibility for the preparation of one Masters curriculum. The section Ecosystems and Environmental Quality is partner for the Biology department in developing an MSc on Sustainability and Biodiversity. The section Substances and Products took the initiative for the establishment of an MSc on Industrial Ecology, together with faculties of Delft Technical University and Rotterdam Erasmus University; in Leiden the partner is the Chemistry department. The section Environment and Development works together with the department on Cultural Antropolgy in the development of an MA Environment and Development.

In the section Environment an Development not less than 3 PhD theses were succesfully defended. It becomes apparent that this section, with its field stations in North Cameroon and in the Philippines, has built an important and irreplaceable infrastructure which enables long lasting research programmes in developing countries. These field stations are not cheap in their management, but they have increasing potentials in the framework of international conventions and funds, such as the Biodiversity Convention, the Convention against Desertification and the Global Environmental Facility. The field station in Cameroon celebrated its 10th anniversary.

In the section Ecosystems and Environmental Quality one PhD thesis was defended. Furthermore, the second phase started of a research programme on the relationship between GMO's and pesticide use, commissioned by Aventis. The section guided a project group on the admission procedures of GMO's in Europe and the US; this project took place in the framework of the European Postgraduate Course in Environmental Management (EPCEM) (which is organised together with sister institutes in the two Amsterdam universities, Wageningen University, Debrecen University in Hungary and with the Ecole des Mines in Paris).

The section Substances and Products was quite successful in acquiring EU funds. The section is partner in three projects which are co-ordinated elsewhere, and is co-ordinating one project itself, dealing with computerised photo-identification of whale species. The section started the preparation of the Centre of Chain Analysis and Environment (CKM) together with TNO. An investment plan for this centre was set up, which will be implemented in the year 2002. The LCA guide, commissioned by the Dutch government, was finalised.

Regarding the finances, CML could close the year with a small credit balance. A point of attention concerns the fact that EU funding is more tight than usual research projects commissioned by industry. A start has been made with a shadow budget plan. This implies a plan, in which not the current revenues from the university board are included, but rather revenues which are to be expected if the future financial regime based on agreements with faculties will apply, i.e., starting from the year 2005. The first budget plan does balance, the second not yet, but the institute is well under way.

Professor Dr. Helias A. Udo de Haes
Scientific Director of CML