Editorial

ALCAS: Australian LCA Society

New LCA Group to Promote Life Cycle Assessment in Australia

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With the establishment of the Australian LCA Society (ALCAS) in June 2001, Australia has achieved a milestone in its development of Life Cycle Assessment. ALCAS was incorporated to promote LCA and Sustainable Development, and to organise the growing LCA community in Australia.

LCA development in Australia began in the early 1990s with Australia's mining and steel company BHP undertaking environmental assessment work on their products and processes. Simultaneously, the Public Works Department in the state of New South Wales began to work in the area of buildings and public infrastructure. With the awarding of the 'Green' Olympics to Sydney in 1993, more building product suppliers, such as James Hardie and Pioneer, began to consider the life cycles of their products.

In 1993, the Federal Government established a National EcoReDesign Demonstration Project, which drew heavily on LCA for the redesign of products from 8 Australian manufacturers. Subsequently, the **First National Conference on LCA**, which highlighted the need for public data on LCA in Australia, was held in Melbourne in 1996. Around the same time, two Australian Cooperative Research Centres commenced LCA research and educational activities with the aim of encouraging the adoption of LCA practices on a broader scale.

A project to establish national LCA inventory data funded by environment departments from both the Federal Government and four state governments (Victoria, New South Wales, Queensland and South Australia), and the 'Cooperative Research Centre (CRC) for Waste Management and Pollution Control', started in 1997. The project focussed on basic building and packaging materials, transport and energy. As earlier attempts to develop public data projects jointly with industry were not successful, this project was based on a mix of public data sources in Australia and international LCA data. The developed data sets were forwarded to industry for comment. While some industries recommended improvements to the data sets, the overall response from most industry sectors was very poor. The data sets are updated as soon as new pieces of information become available[1].

Since this initial inventory work, data resources in Australia have been improving with publicly funded LCA projects and industry based initiatives. In the public arena, LCA work has been undertaken on paper and packaging waste management[2], residual waste management, organic waste management[3], alternative fuels for heavy vehicles[4], and management of waste oils. Industry based initiatives include inventories development for vinyls, steel, aluminium, cement and concrete. Today, LCA activity in Australia extends to a wide range of areas including waste management (landfill, material recycling, waste-to-energy), transport and fuels, packaging, buildings, raw materials, food and agriculture, process engineering, product design and Life Cycle Impact Assessment.

The **Second National Conference on LCA** was held in February 2000 with the focus shifting from data issues (in 1996) to impact assessment and characterisation of the Australian environment[5].

ALCAS grew out from an initiative of the 'Cooperative Research Centre for Waste Management and Pollution Control' in order to establish regular LCA roundtables with stakeholder participation from industry, government, academia and LCA practitioners. These roundtables have been running since 1996 and have provided a forum for presenting LCA results, but also for discussing critical issues in LCA

[1] The most recent release of data inventories can be found at http://www.cfd.rmit.edu.au/lca/Inventory.html
[2] The report on the Paper and Packaging Waste Management by Grant, James, Lundie and Sonneveld can be downloaded at http://www.cfd.rmit.edu.au/lca/wastelca.html
[3] The report 'Assessment of food disposal options in multi-unit dwellings in Sydney' can be downloaded at http://www.crcwmpc.com.au/publications.html
[4] The Alternative Fuel LCA report is available at http://www.dar.csiro.au/res/ggss
[5] See the Conference Report 'Moving from Problems to Solutions – 2nd National LCA Conference', Melbourne, Australia, 23rd to 24th February 2000. Int J LCA **5** (2) 2000, p 74

development and related topics. It was through these discussions, where the roundtable participants were asked for comments on LCA policy issues[6], that the group decided to formalise its structure and membership, and thus, ALCAS was created.

The **aim of ALCAS** is to promote and foster the responsible development and application of LCA methodology in Australia and internationally, with a view to contribute to 'Ecological Sustainable Development (ESD)' and to represent the Australian LCA community in the international arena.

This will be achieved through:

- Developing a national competence in LCA
- Fostering links with the international LCA community
- Organising a regular LCA Roundtable to facilitate information exchange and discussion on LCA amongst stakeholder groups
- Contributing to national policies, positions and approaches on LCA and its applications
- Increasing education and awareness of LCA among stakeholders including industry, academia, government, non-government organisations, LCA practitioners, end users and the general public.

Membership of ALCAS is open to individuals and organisations. The current membership includes academics, consultants and representatives from government and industry. Members are given free or discounted access to ALCAS events, including the regular roundtables, discounts on subscriptions to the International Journal of LCA (Int J LCA), and access to a network of LCA practitioners and users in Australia.

The initial challenge for the new society is to build up the membership base through different application areas of LCA. This is a difficult undertaking given that a lot of the LCA work is sector based (for example in the building sector, waste management sector, minerals sector); all these sectors, however, need to draw on many common methodologies and data resources.

Due to the geography of Australia, with large distances between the relevant centres, there are also state-based LCA activities not related to ALCAS, such as the LCA discussion group in Queensland which allows LCA advocates to share ideas and experiences in an informal setting. In Australia, LCA development and application face many challenges over the next few years. The impact assessment dilemma, as raised at the Second National Conference has not been resolved as yet, with many of the important aspects of the Australian environment, (i.e. biodiversity, salinity, land degradation) not usually being quantified or assessed in LCA.

The use of weighting and single point indicators, although limited by the international standards, is being undertaken by both public and internal projects, though with very little methodological support. This is indicative of the imbalance in Australia between the demands of LCA, which are high and increasing, and the supply of basic data and methodology development support.

Responses to this problem have seen the use of many streamlined and qualitative LCA techniques, such as:

- Checklist type approaches to life cycle issues
- The use of energy and/or greenhouse emissions as the main indicator
- The use of overseas data and or assessment models

These are valid approaches, however, in the long run they need to be sustained by fundamental research on LCA data and methodology applicable to the Australian situation.

Australia, like many countries, has some innovative economic input/output modellers producing data on buildings, transport and other commodities based upon the Australian input/output matrix of 116 sectors[7]. The challenge now for LCA practitioners is to understand how to use this information, and how to understand its benefits in terms of system boundary completeness, and limitations in terms of the resolution for specific products.

The other major challenge for LCA in Australia relates to greenhouse gas emissions. In Australia, much of the environmental agenda has focussed on reducing greenhouse gas emissions, and many projects have been committed to this area. However, from a life cycle perspective, there are many questions that relate to other environmental consequences of greenhouse gas emission reduction and sequestration measures.

ALCAS is currently organising an LCA roundtable on November 16th in Brisbane, Queensland; the **Third National Conference on LCA** is planned for July 2002 on the Gold Coast in Queensland, Australia. The conference will not only focus on the traditional LCA topics, such as inventory and impact assessment, but will include the interface of LCA with many related tools, such as life cycle costing, material flow analysis and decision-making theory. Abstracts are currently invited with the deadline of November 30th (see http://www.lca-conf.alcas.asn.au).

More details on ALCAS can be obtained

1. from the website at http://www.alcas.asn.au
2. by mail to info@alcas.asn.au
3. by post to ALCAS, PO Box 1392, Werribee Plaza, Victoria 3030, Australia.

[6] The specific issue under discussion, at the February 2000 roundtable, was the use of Life Cycle Energy Analysis for greenhouse gas reductions, and how other environmental issues may need to be included.

[7] See Graham Treloar's work at http://www.cfd.rmit.edu.au/lca/buildlca/menu9.html and Manfred Lenzen's recent article: Lenzen M (2001a): Errors in conventional and input-output-based life-cycle inventories. Journal of Industrial Ecology **4** (4) 127-148