

Special Issue: Current LCA-ISO Activities

Environmental Management and ISO 14000

ISO/Swiss Government Regional Itinerant Training Seminar for Developing and Emerging Countries

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1 Introduction

The influence of human beings on the environment has risen drastically since the industrial revolution and has reached unprecedented levels of change. Extensive burning of fossil fuels, release of chemical pollutants into air, water and soil, clearing of forests and extensive utilisation of all natural resources are now threatening to destroy the very environment on which human existence depends.

In parallel to this exploitation, awareness of environmental problems is now growing in most countries of the world. A new approach to environmental protection is now available with the development of new international standards on environmental management as defined in the ISO 14000 series. These standards rely less on traditional command-and-control methods imposed by governments and more on the proactive efforts of companies themselves. Widespread implementation of environmental management systems can improve the environmental performance of industry and promote the concept of sustainable development in countries all over the world.

The ISO Programme for Developing Countries assists developing and emerging countries in their efforts to preserve the environment and through the provision of practical advice on the application of International Standards for environmental management and LCA. An integral part of this programme is the organisation of itinerant seminars in different regions of the developing world. The authors were invited as lecturers for these seminars which were held so far in Central America and the Caribbean (Mexico, Costa Rica and Jamaica) and in South America (Argentina, Colombia and Venezuela). Dr ANWAR EL-TAWIL, Director of the ISO Programme for Developing Countries organised these seminars with financial support from the Swiss Federal Office for Foreign Economic Affairs (FOFEA) and administrative help from the corresponding national standardisation offices.

In each country between 100 and 170 participants attended the seminars. They came mainly from industry, with environmental ministries, other public sectors, environmental consultants, certification bodies and academia also well represented. Participants were eager to receive detailed information on environmental management systems, life cycle assessment and eco-labelling. They actively participated and raised many interesting and critical questions.

This paper offers a brief description of the LCA lectures and the authors' impression of the situation in these countries regarding the use of LCA.

2 Lectures on LCA

The two day seminars included an introductory presentation on "man and the environment – why ISO 14000", four lessons on environmental management system, auditing and certification (ISO 14001, 14004, 14010-12), two lectures on LCA (ISO 14040-42) and two lectures on environmental labelling (ISO 14020-25). The objective was to provide participants with an introduction to the principles of the aforementioned standards, present case studies and discuss the needs of the countries concerned.

The LCA lectures covered the following topics:

- What is an LCA?
- What are the benefits of an LCA?
- LCA and ISO
- LCA in today's economy
- Application field of LCAs
- Technical framework
- Life cycle inventory (LCI)
- Life cycle impact assessment
- Interpretation

Presentation material was based on the current drafts of ISO 14040 and 14041. The structure of the lectures followed the different phases of an LCA. In addition, well known publications produced by SETAC (Society of Environmental Toxicology and Chemistry) and other LCA practitioners were taken into account. Simple case studies from the packaging sector (different milk containers) accompanied the presentations in order to provide participants with practical examples of the application of LCA. In addition to the packaging examples a brief overall view of BUWAL 250 'ecoinventories of packaging materials' was provided (BUWAL: Swiss Federal Office of Environment, Forest and Landscape, environmental series N° 250).

Many participants had heard of LCA but few had ever read an LCA report let alone carried out one themselves. During discussions it became obvious that there is a widespread opinion of LCAs being too expensive and time consuming. Therefore it was important not to describe the tool in too much detail or make it appear too complicated. This is why the main focus of the lectures were set on new and simpler approaches like a screening and streamlining LCA. It was important that participants grasp the basic principles of life cycle thinking and formulate some ideas about how to begin to use the instrument. One overhead transparency showed a few key words to remember when beginning to work with LCAs:

- Don't do everything at once! Start with a simple system.
- Try to consider the viewpoints of both – company and product.
- Use LCI / LCA software and "average database" values where appropriate to reduce time for data collection.
- Industrial associations can commission an LCI – obtaining useful average LCI results and cutting costs for each company.
- If necessary, get help from environmental/LCA experts.

In terms of improving environmental performance it is important for these countries not to do too much at the one time. It is easier for companies to think about environmental matters while tackling the next project which could involve a process change or the design of a new product. How is the decision going to effect the environment? Initially integrating aspects like energy or waste is a good start and helps to raise environmental awareness.

3 First Impression

The ISO 14040 series on LCA will play an important role in harmonising the use of this environmental tool and concept all over the world and create a common basis. This is why the early delivery of well-founded information to the

developing and emerging countries is of high importance. In the past lack of information, on issues such as these have been a factor which places organisations at a competitive disadvantage.

In addition to LCA methodology a second important aspect is the use of LCA data. Substantial information is available on the basis of European and US industry although there are few specific data sets obtainable. In this respect it was necessary to demonstrate to participants how to use existing databases and how to apply them in their own particular situation. Once they have acquired a certain "LCA-routine" they may then be able to collect country or company specific data. An example of a standard data collection sheet was distributed.

An understanding and utilisation of the two aspects can be facilitated through the application of LCA software. As an example the EMPA LCA-software EcoPro 1.4 was demonstrated and delegates were given the opportunity to order a demoversion. The information was intended to ensure that participants, no matter their previous knowledge, were able to understand the benefits of LCAs.

Case study material showed how organisations can profit economically from the application of LCA. It goes without saying that the profitable application of this tool generated a great amount of interest. No different to developed countries they want a decision making process that provides economic *and* environmental benefits. Examples of internal benchmarking exercises, product design or simple energy and waste minimisation programmes demonstrated to participants how powerful this instrument is.

4 Conclusions

The authors were impressed with the organisation of these seminars and the warm hospitality they received. The positive attitude of everyone concerned was extremely motivating. Events such as these are vital in disseminating know-how of LCA into these countries. It was and will be a big opportunity to introduce LCA together with environmental management systems and eco-labelling under the umbrella of the ISO 14000 series. In this respect organisations have the chance to choose from a number of tools to meet a variety of needs and situations. Further seminars and more detailed information are necessary. It is in everyone's best interests that organisations in developing countries have access to the management tools which allow them to operate in an environmentally responsible manner. For future activities it is believed that the principle "train the trainers" would be the most beneficial approach. To conclude it must be stated that these events were a great experience for all involved, both participants and lecturers.