

CURRENT STATUS OF ENVIRONMENTAL MANAGEMENT SYSTEMS AND FUTURE OUTLOOK REGARDING LCA IN ESTONIAN ENTERPRISES

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Abstract

The main aim of the survey was to study the readiness of enterprises to use modern environmental management tools including Life Cycle Assessment that are common in most EU countries, USA and several Asian/Pacific Region countries. Such survey on environmental policy and tools used in Estonian companies has not been done before as the establishing of Environmental Management System has started only some years ago and the number of involved enterprises is still quite small. Their opinion and experiences of enterprises on ten different tools were asked and analyzed.

The main conclusion of the survey about the use of environmental management tools in Estonia was that the enterprises, which want to export their products, have observed the growing attention of foreign markets on the environmental aspects of the product. This serves generally as the main reason for initiation of environmental work in Estonian companies. At the same time most of the important players on internal market are taking just first steps in using modern environmental management tools.

Introduction

The new and perspective approach towards achieving sustainability in industry is the principle that product-related LCA and organization-related Environmental Management Systems (EMS) should both be adopted. The symbiosis created by relating LCA activities to the policies and instruments of ISO 14001 (that is nowadays more widely applied) guides to new Life Cycle Management approach. Finkbeiner et al. [1] advise a company with a wide product spectrum to integrate LCA elements into their EMS, while companies with fewer or single products might stress LCA supplemented by EMS elements.

Results of the Survey on the Use of Environmental Management Tools in the Estonian Enterprises

Background

Along with the development of methodology and discussion of case studies, LCA status, implementation objectives and linkage to EMS in different regions and specific countries, belong to important LCA research fields.

This field is studied especially widely in Nordic countries in general [2] and also separately in different countries [3; 4; 5]. In the early 1990's really active use and development of LCA started in Nordic countries. Nowadays, according to Hanssen [2], LCA studies are well integrated in the business activities of many large Nordic corporations, and the most common areas of the application are strategy, product and process development and, to some extent, marketing. In Denmark expectations of future market pressure to supply more environmentally friendly products is the most important incentive for the enterprises to engage in LCA activities [3]. All the reported reasons for carrying out a LCA are listed below accordingly to their significance:

- A wish to be in the forefront;
- Environmental advantages;
- Image/marketing;
- Market demands;
- Customer demands;
- Logical step after EMS;
- Potential demands from authorities;
- Economy;
- Eco-labeling;

- Public financial support;
- Benefit from environmental approval;
- Corporate demands;
- Demands from authorities.

The questionnaire surveys about the use of LCA are made also in Japan [1] and Germany [6]. Additionally a survey covering chemical industry of Europe was done by Olsen [7].

Such survey on environmental policy and tools used has not been done in Estonia before. However, earlier surveys, asking numeric data about environmental emissions, made for Estonian report to Helsinki Commission – Baltic Marine Environment Protection Commission have provided the background knowledge for the current survey. These surveys covered all main industrial branches of Estonia. Enterprises were asked to provide the data about their emission flows. Each three years all HELCOM member states should present a report on industrial pollution from branches about which the recommendation for improving the environmental performance is agreed on the level of member states. The experiences gained in 1996 and 1999 [8] show that the environmental awareness of companies did not raise remarkably during three years. The emissions are not monitored properly; it was especially hard is to get the data about properties of wastewater discharged to municipal wastewater treatment plants and about specific air emissions like volatile organic compounds (VOC).

The reason why in Estonia surveys on implementation of different Environmental Management tools in enterprises were not done before this project might lie in the fact that the establishing of EMS has started only some years ago and the number of involved enterprises is still small.

The main recognition to established management systems in an enterprise is international certification. The first ISO 14001 certificates in Estonia were issued in the middle of the year 1998, but the first certificates on Quality Management System (QMS) already in the beginning of 1994. In 2001, thirteen Estonian enterprises had the EMS certified accordingly to ISO 14001, by now the number is 56.

The main aim of the survey was to study the readiness of enterprises to use modern environmental management tools including LCA that are common in most EU countries, USA and several Asian/Pacific Region countries.

Identification of Relevant Enterprises

The enterprises having at least one of the following features were selected to participate in the survey:

- Presence of implemented QMS;
- Presence of implemented EMS;
- Being among the biggest ones in their sector and well known on the Estonian market.

70% of Estonian enterprises having ISO 14001 in 2001 participated in the survey.

All the twenty participating enterprises were contacted by phone, and after that the questionnaire was sent via e-mail to an appointed contact person. The answers were received from nineteen enterprises; i. e. the answering per cent was 95%. The survey was made in February 2001.

In 47% of the enterprises the number of employees was between 50 and 250, 32% employed more than 500 persons. 16% of the participants belonged to the group of enterprises with 250 – 500 members of staff and only 5% of participants, to the group with less than 50 employees.

Utilization of Different EMS Tools in Estonian Enterprises

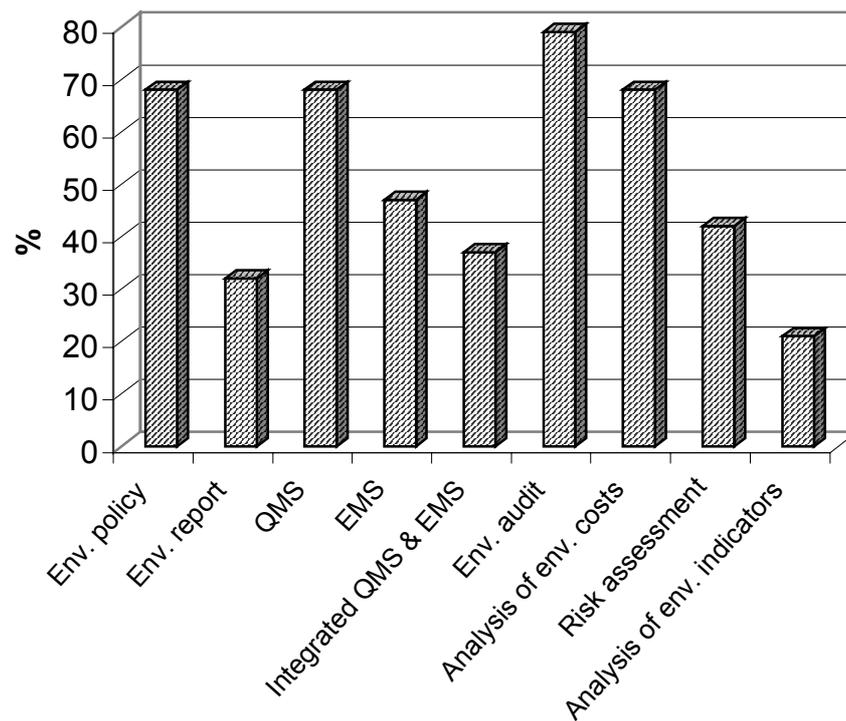
Different tools of EMS are listed in the questionnaire presented in the figures 1 and 2. The answerers were asked to indicate whether they use or plan to use them and what they think about usefulness of these tools. The results of survey concerning utilization of the different tools are presented in Figure 1.

The most common EMS tool used in Estonia was the environmental audit. All the participants know and appreciate the tool very much. This could be explained by the fact that the audit was the first tool implemented in Estonia, and until now it is the main prerequisite demanded for initiation of new projects, where environment is relevant.

QMS certified according to ISO 9001 or 9002 was the next common tool for answered enterprises. There seems to be tendency that at first the QMS and only then EMS are implemented. The enterprises having QMS have usually also their environmental policy of enterprise. In total 68% of answerers have introduced the environmental policy for the company, 5% plans to do that in future.

The only accepted EMS certificates in Estonia are those issued according to ISO 14001, none of the enterprises that reported to have the EMS certificate have any other certificate, such as, for example, EMAS or British Standard 7750. Majority of enterprises having both QMS and EMS certificates have integrated these systems. Often the Quality Manager of an enterprise is responsible for environmental management, too. It was interesting that the ranking of QMS (4.8 points out of 5) was remarkably higher than ranking of EMS (average score 4.1).

Figure 1. Utilization of common environmental management tools by Estonian companies.



Several enterprises are preparing applications for ISO 14001 certificate (32% of answerers), 26% want to introduce QMS, and the same percentage plans to implement integrated QMS and EMS.

The Risk Assessment tool was also utilized in many enterprises participating in this survey. It was highly appreciated where used, but other enterprises do not have enough information on this tool.

It came, as a surprise that 16% of answerers know nothing about environmental report well known in European countries. In other enterprises it is used mainly inside of the company for example to inform the administration once per year. This situation might be caused by the lack of the public demand for environmental reports of companies. Financial resources are also limited, and issuing of an attractive colorful environmental report for external use is quite expensive and time-consuming. The Estonians use to be pragmatic and in current economical situation try to exclude all activities not demanded by laws, publicity, consumers, etc. However, 11% of enterprises plan to compile the environmental report.

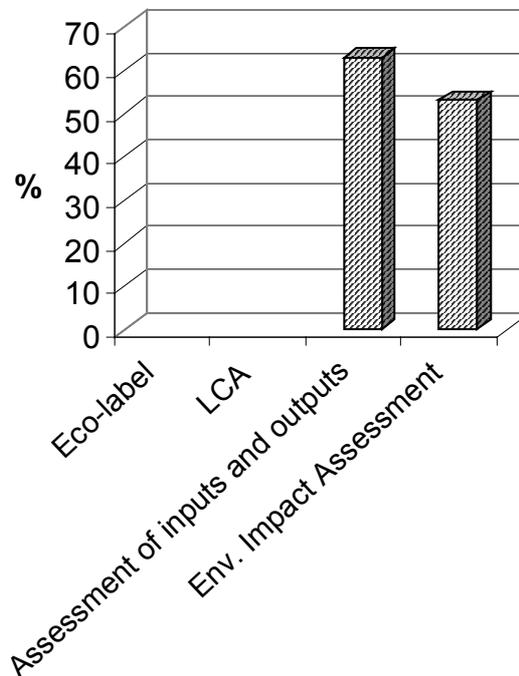
The term environmental indicator is unknown in Estonian enterprises. Although some enterprises report about using the Assessment of Environmental Indicators these are exceptional cases. Misunderstanding of the term was also possible.

Current Status and Future Outlook Regarding LCA in Estonian Enterprises

It can be seen from the Figure 2 that none of the companies have conducted the proper LCA of their products in Estonia, but a considerable amount of enterprises represented in the survey have

analyzed the inputs and outputs of their industrial processes, and about half of them try to assess the environmental effects of their activities. However, all the work is done only at the company level, and the materials, products and transports up or down the product chain are not considered.

Figure 2. Current using of LCA-related environmental management tools in Estonian enterprises



The other environmental management tool strongly related to LCA – eco-labeling – appeared to be the most unpopular one not used by any of the enterprises, and only one company plans to use it in the future. One reason for such a low interest in that tool could be the fact that several enterprises participating in the survey and being more developed in means of introduction of environmental management tools did not produce a final directly consumable product. The second reason could be that in Estonia there is no national eco-label, and information about other green labels is poor. There is no possibility to apply for the label in Estonia, although the regulation on nomination of Estonian green label is in force since the beginning of 1998. There is still also no market demand for green products, as the consumers are very price-sensitive.

However, 26% of answerers planned to implement the LCA study of their product in future. Generally all these enterprises have already implemented QMS and EMS and also use several other tools. The different reasons for initiating the LCA in the near future in the companies were as follows:

1. In the country to which the product is exported, law will make the producer responsible for his product until the end of product's life cycle;
2. High environmental awareness of the consumers in the countries where the products are sold (especially Denmark and Sweden);
3. The firm is participating in the Nordic co-operation of the same product-type producers, and within this co-operation a LCA project is initiated. They get information about the LCA tool, provide data for a consulting company abroad and get feedback about their product;
4. The wish to get the Environmental Product Declaration for their product;
5. The EMS is established and certificates are applied first in Estonian branch before implementing it in the main company situated in a Nordic country, as doing so is cheaper. The same principle will be used regarding to LCA – first the study will be held in Estonia and only after that in the main company;
6. Product development – implementation of Eco-design [9] principles.

Conclusions

The main conclusion of the survey about the use of environmental management tools in Estonia was that the enterprises, which want to export their products, have observed the growing attention of

foreign markets on the environmental aspects of the product. This serves generally as the main reason for initiation of environmental work in Estonian companies. Other conclusions concerning the situation of environmental work in Estonian enterprises are as follows:

1. Environmental engineers or managers are employed only at few enterprises. Normally if some projects require it, case-specific consultants are employed. Continuous environmental work is lacking in the majority of enterprises.
2. The main argument to initiate environmental work in companies that produce only for Estonian internal market is the legislation. In general there is no concern about environment and neither public demand non-voluntary work for improving environmental performance of company.
3. Eco-labels should be introduced and advertised, and then the publicity can demand environmentally friendly products and environmental awareness of both companies applying the label and consumers choosing between different products could rise.
4. Companies with better economical performance are more involved in the environmental work.
5. LCA is introduced later than QMS and EMS, but it is quite a logical step after the latter if an enterprise has employed the environmental specialists permanently.
6. The ISO standards on LCA have not been accepted as Estonian standards yet. ISO 14040 and ISO 14041 are already translated into Estonian and will probably be accepted during the current year. The standards ISO 14043 and ISO 14042 are not discussed in this context yet. The lack of description of the method and special literature on the subject in Estonian is also limiting factor for implementing LCA studies.

Comparing the reasons to start the LCA work in Estonia and the reasons of Danish companies, only some similarities could be marked. Environmental advantages or demands by the local market or authorities are not mentioned as reasons in Estonia. However, the market of the companies interested in LCA is abroad (mainly in Nordic countries), as a rule and the environmental awareness of this market is recognized even in Estonia.

So, the results clearly show that the market demand is the main force for industry in Estonia. The current status of Estonian market regarding life cycle thinking was studied by interviews with retailers. The main obstacle for providing environmentally more friendly products for Estonian consumers was the understanding that eco-labeled products would be considerably more expensive and so demand for them is lack in the price-sensitive Estonian market. In reality some available products marked with Nordic Swan have an acceptable price and are quite popular, but they are not advertised by their environmental friendliness. Also the label signs are not familiar to consumers and even retailers. Accordingly there exist the need for educating all interest groups.

However, the previous investigations show that some industries have begun to move towards environmental concern, and the need for EMS tools used in EU will grow within some years.

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