

András POLGÁR

Institute of Environmental and Earth Sciences, The University of West Hungary Faculty of Forestry, Sopron, Hungary, apolgar@emk.nyme.hu, H-9400 Sopron, Bajcsy Zs. Str. 4.

1. PROBLEM POSING AND OBJECTIVE

Environmental Management System (EMS) is the part of the management system of an organisation with the task to formulate and introduce the organisation's environmental policy and handle the environmental aspects. The advantage of the systems standardised by international organisations is that they may be certified by specialised bodies of certification (e.g. ISO 14001, EMAS).

Standardized methods covering authoritative (certified) information for competitors and society are being applied worldwide today. At the same time it is observed, probably just on the ground of the market competition, that the processes are often individual, formal and defined by the self-interest of a company.

According to our engineering judgement, namely based on environmental impacts, improvement of environmental performance is socially useful if the efficiency of EMS-s is meant by the effective improvement of physical environmental performance, namely the positive influence of the environmental elements.

We have set ourselves the aim of the uniformly interpretable evaluation of the Hungarian processes, and the creation of an EMS development model concept which aimed the functional utilization of the research results.

2. MATERIAL AND METHOD

In the interest of the real environmental performance behind the system, during the 'Plan' phase (figure 1.) is a high priority to explore and analyse the environmental aspects and impacts and to select the relevant environmental aspects in the course of building of the EMS.

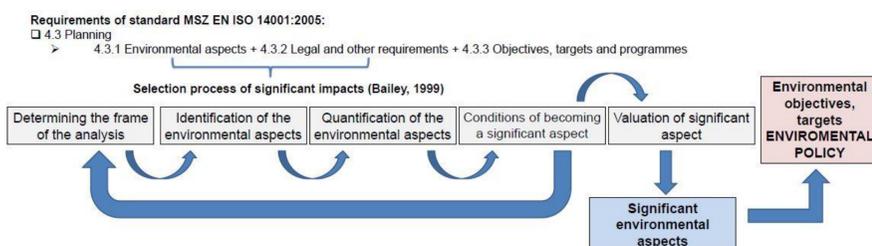


Figure 1. Requirements of the Plan phase and the process of selection of significant impacts (BALEY, 1999) (own construction)

The quantitative empirical research in reference to the 'Plan' phase (2010) has been conducted by using questionnaires within (114 pcs) home companies (sampling ratio: 9,89%) applying EMS according to the standard ISO 14001. The answers were controlled on the base of 10 home certification companies' (sampling ratio: 62,5%) opinion. The objective of the survey was to perform an evaluation of the state of affairs after 14 years of the first EMS certification in the form of descriptive statistics.

In the case of a few main differential factors (customized solutions and purposefulness of EMS, application of EMS in the future, attitude of the senior management, year of initiation etc.) the 'good practices' could be filtered out by the processes given for other parameters by strong organizations. Then besides the descriptive statistics we applied multivariable statistical evaluation (correlation analysis and factor analysis).

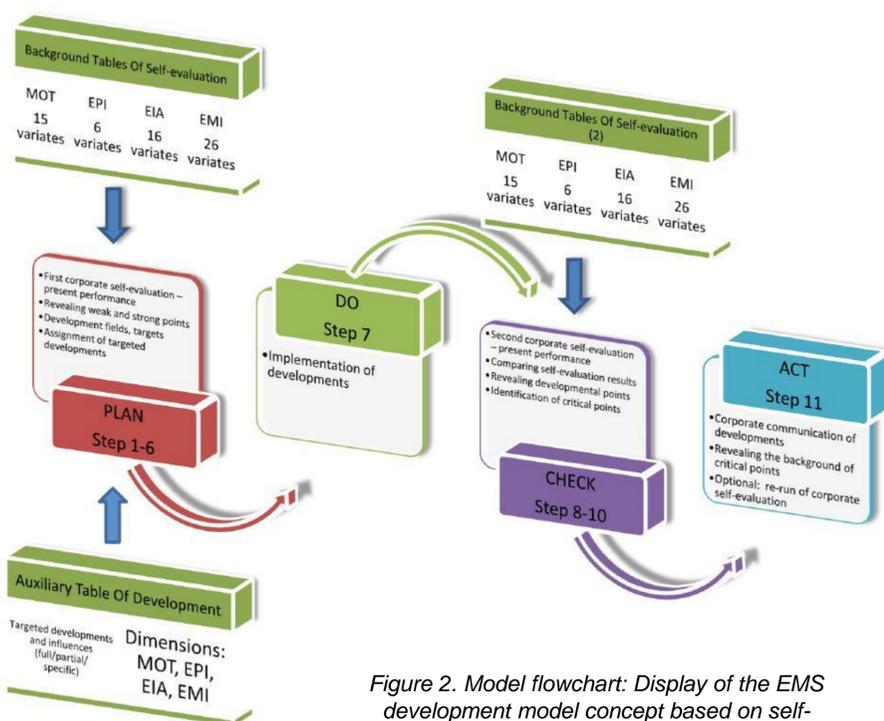


Figure 2. Model flowchart: Display of the EMS development model concept based on self-evaluation for the EMS's 'Plan' phase accordingly to the principle PDCA (own construction)

3. RESULTS

On the basis of the survey results we analysed the standard and motivations of the companies' general environmental management, the characteristics of the methodologies applied in environmental impact analysis as well as the frequency of their application, questions relating EMS application and environmental protection goals, and the efficiency of their realisation, the role of EMS in influencing the state of the elements of environment, main companies' efforts according to operating of EMS.

In order to form factors the reduced database of questionnaire survey was subjected to principal component analysis.

4. DEVELOPMENTS

Parameters which are influencing corporate environmental performance demonstrably: 4 corporate performance indexes (environmental motivation (MOT), performance (EPI), impact assessment (EIA) and management (EMI)) have been created on the grounds of the main topics of survey.

In the certain indexes we have involved those answers being typical of the subject with equal weight, which could definitely be graduated and assigned with point value (self-evaluation: 1-5 points). For those answers which were favourable regarding the optimisation of EMS we have assigned a higher score. The structure can be seen in the index back-end tables.

Through the created index values the corporate performance can be specified uniformly, in a relative, numerically definable way. The evaluation after developments and describing the specified level can be executed without intervention in the varied corporate processes.

Performance of organizations has been examined by sensitivity survey and histogram analysis depending on the main parameters (36 pcs) (answers: 'A' – unfavourable and 'B' – favourable group) In case of the created indexes.

The summary of the influences of the development opportunities (36 pcs) by dimensions can be found in 'Auxiliary Table 1'. Besides the totalized results, the order of influences by dimensions are summarized in 'Auxiliary Table 2'.

Assignment of influences has given the opportunity to the targeted development of performance and effectiveness of EMS's 'Plan' phase along these variates. Indirect development of physical environmental performance is being realized since the appropriated development efforts have affected those planning parameters, which pertained to the treatment of the environmental aspects and impacts.

The method ensures the uniform evaluation of different organisations, which does not require the modification of the varied corporate processes, additionally gives the opportunity to compare them.

Application of the explored results (the use of background and auxiliary tables) are detailed in the EMS development concept based on self-evaluation. We objected the practical utilization of the survey's results by forming the development model concept (figure 2.).

By applying the model, among the development proposals according to the meaning of variates in some cases the development policy can be set, in other cases exact actions can be taken.

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