Environmental Management need Environmental Indicators

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Abstract:

OECD countries are collectively the biggest users of natural resources in the world and the environmental, economic and social consequences of the production and consumption of these resources and of related economic activities extend far beyond their borders. Environmental indicators are powerful tools that serve many purposes, useful as tools for performance evaluation and public information. Together with its member countries, the OECD has established a common approach and framework for developing, measuring and using environmental indicators: the OECD Core Set and its core environmental indicators (CEI); several sets of sectoral environmental indicators (SEI) (e.g. transport, energy); a small set of key environmental indicators (KEI). The development of indicators is a dynamic process that is constantly subject to updating and improvement.

Key words: environment, environmental indicator, management, sustainable development

1 Introduction

OECD countries are collectively the biggest users of natural resources in the world and the environmental, economic and social consequences of the production and consumption of these resources and of related economic activities extend far beyond their borders. The issue of efficient management of natural resources has become part of sustainable development strategies and/or environmental plans of many OECD countries, and is supported with initiatives to promote waste prevention policies and integrated product policies. Reflecting country concerns, the OECD Environmental Strategy for the First Decade of the 21st Century includes two objectives closely related to the efficiency of resource management:

- Maintaining the integrity of ecosystems through the efficient management of natural resources
- Decoupling environmental pressure from economic growth

In addition, OECD work on material flows supports the implementation of the recommendation on material flows and resource productivity adopted by OECD Environment Ministers and the OECD Council in April 2004 as well as contributing to the organisation's horizontal programme on sustainable development [1]. Environmental indicators are powerful tools that serve many purposes, useful as tools for performance evaluation and public information. Together with its member countries, the OECD has established a common approach and framework for developing, measuring and using environmental indicators: the OECD Core Set and its core environmental indicators (CEI); several sets of sectoral environmental indicators (SEI) (e.g. transport, energy); a small set of key environmental indicators (KEI) [1]. High quality environmental information is indispensable for responsive and cost-effective policies. The OECD provides leadership in the development of indicators to measure countries' environmental performance and provides harmonised data on environmental progress in OECD countries. It advises on methodologies for environmental indicators and accounting systems; it issues recommendations that help countries improve their environmental information systems and produce reliable environmental data [1].
2 Environmental Management

Managing quality to achieve excellence means managing an organisation, business or unit so that every job, every process, is carried out right, first time, every time. To be successful this must be viewed as a holistic approach that affects, and involves, everyone – employees, customers, suppliers, shareholders and society. It must be driven from within the organisation, as it cannot be imposed from outside and is not a simply a cost-cutting or productivity improvement exercise [2]. The EFQM Excellence Model was introduced at the beginning of 1992 as the framework for assessing organisations for the European Quality Award. It is now the most widely used organisational framework in Europe and it has become the basis for the majority of national and regional Quality Awards. The EFQM Excellence Model is a practical tool that can be used in a number of different ways:

- As a tool for Self-Assessment
- As a way to Benchmark with other organisations
- As a guide to identify areas for Improvement
- As the basis for a common Vocabulary and a way of thinking
- As a Structure for the organisation's management system [3]

The Model, which recognises there are many approaches to achieving sustainable excellence in all aspects of performance, is based on the premise that:

Excellent results with respect to Performance, Customers, People and Society are achieved through Leadership driving Policy and Strategy, that is delivered through People, Partnerships and Resources, and Processes [4].

One of the most widely used voluntary environmental initiatives is the ISO 14001 environmental management standard. ISO 14001 is an international environmental management standard that offers a systematic approach to compliance and continual improvement while being flexible and widely applicable to a variety of organizations, such as manufacturers, service providers, and government agencies [11]. ISO 14001 was developed by the International Organization for Standardization to provide a template for environmental management systems. In order for facilities to obtain ISO certification they must:

- Develop a policy statement on the organization’s commitment to the environment.
- Identify the environmental impacts of products, activities and services.
- Make a commitment to compliance with applicable laws and regulations.
- Set environmental goals for the organization, and developing the means to achieve them
- Establish roles and environmental responsibilities within the organization.
- Maintain documents about the EMS and related procedures.
- Monitor key activities and track EMS performance to correct problems and prevent reoccurrences.
- Audit the EMS to verify that it is effective and achieving objectives and targets to ensure that it is still suitable and appropriate.
- Make a commitment to continual improvement of the EMS [9].

An EMS is the organizational structure and associated responsibilities and procedures to integrate environmental considerations and objectives into the ongoing management decision-making processes and operations of an organization. According to an EPA summary, an EMS is a continual cycle of planning, implementing, reviewing and improving the processes and actions that an organization undertakes to meet its business and environmental goals. Most EMSs are built on the "Plan, Do, Check, Act" model. This model leads to continual improvement based upon:

- Planning, including identifying environmental aspects and establishing goals [plan];
- Implementing, including training and operational controls [do];
- Checking, including monitoring and corrective action [check]; and
- Reviewing, including progress reviews and acting to make needed changes to the EMS [act] [12].

3 Environmental indicators

Environmental indicators are powerful tools that serve many purposes, useful as tools for performance evaluation and public information. Together with its member countries, the OECD has established a common approach and framework for developing, measuring and using environmental indicators: the OECD Core Set and its core environmental indicators (CEI); several sets of sectoral environmental indicators (SEI) (e.g. transport, energy); a small set of key environmental indicators (KEI) [5].
Environmental indicators are among the most applicable tools used for the purposes of environmental reporting. Based upon numerical data demonstrating the status, specific characteristic or development of a certain phenomenon, they can warn of specific issues. They help us measure and determine the quantity of diverse data constituting a complete data collection. The indicators are, in fact, data that have been collected and presented in an agreed manner, with the purpose of establishing the connection between the existent data and the targets of the environmental policy. Appropriately selected indicators that are based upon an adequately extended time series of data can provide a demonstration of key trends [4]. The basis for the composition of the indicator series is the assessment framework which helps to define the functions of respective indicators. A tripartite assessment framework (Driving forces – State – Responses) relating to indicators of sustainable development was first used by the UN Commission on Sustainable Development. The European Environment Agency further divided it into a five-partite, so-called DPSIR Assessment Framework including the following set of concepts: Driving forces – Pressures – State – Impact – Responses, where each individual set conveys its own meaning:

- **Driving forces** are a social and economic factors and activities that cause either the increase or mitigation of pressures on the environment. They may, for example, include the scope of economic, transport or tourist operations.
- **Pressures** are represented by direct anthropogenic pressures and impacts on the environment, such as pollutant emissions or the consumption of natural resources.
- **State** relates to the current state and trends of the environment that determine the level of air, water body and soil pollution, the biodiversity of species within individual geographical regions, the availability of natural resources, such as timber and fresh water.
- **Impacts** are the effects that the environmental changes have on human and non-human health status.
- **Responses** are society’s reactions to environmental issues. They may include specific State measures, such as taxes on the consumption of natural resources.

Decisions made by companies and individuals, such as corporate investments into pollution control or purchase of recycled goods by households are also important [6].

Each indicator is determined by a definition providing basic information on the methodology of conducted measurements and the manner of demonstrating the indicator in question. The indicators rely on internationally verified methodologies and are thus, as a rule, internationally comparable. In their preparation we have mostly used methodological sheets for indicators as drafted by the European Environmental Agency. Where so required by a certain phenomenon and the method of its monitoring, the accessibility of the data or any other technical factor, the EEA methodology has been adapted to conditions specific to Slovenia [6].

The development of indicators is a dynamic process that is constantly subject to updating and improvement. With regard to the experiences to date of other countries and international institutions we may claim that the indicators are sufficiently cost-effective and a useful tool for the monitoring of and reporting on the state and development of environmental policies. In the future, EARS will invest great effort into enhancing the quality of input data and information, as well as into achieving comparability of the selected set of indicators with its international counterparts. Slovenia will strive towards bringing its indicators in line with the national objective of environmental protection and also towards selecting those indicators which will reflect sustainability in environmental dimensions of Slovenia’s development. It is our hope and wish that the “Environmental Indicators” report will successfully contribute to a heightened awareness on the state of the environment in Slovenia, as well as to a more pro-active integration of the public into the decision-making processes concerning environmental issues. It is only in this way that we will be able to join our efforts and make an efficient contribution to an enhanced management of natural and non-renewable sources of environmental protection [6].

## 4 Renewable energy sources are becoming ever more important

The World Environment Day, June 5, is directly related to the establishment of the United Nations Environment Programme (UNEP) in 1972 and to promotion of environmental protection. With the slogan for this year’s World Environment Day – “CO2 – kick the habit! Towards a low carbon economy” – the United Nations directed attention towards the global problem of energy and climate change, and towards greenhouse gas emissions and their reduction.
The United Nations are trying to encourage a low carbon economy and better lifestyle by improving energy efficiency, introducing alternative energy sources and preserving wooded areas. By addressing every individual, the UN wants to emphasise the importance of every person as an active participant in a sustainable and equitable development [7].

Figure 1: Renewable energy [3].

In January 2007 the European Commission published a set of energy regulations with which it outlined the energy policy for Europe. The so-called energy package represents a vision of sustainable energy future for Europe, which should be based on renewable energy sources and highly efficient energy production and use. The aim of the mentioned regulations is to increase the share of renewable energy sources in final energy consumption to 20% by 2020. For Slovenia the target is a 9% increase in the share of renewable energy sources, which would bring the share of renewable energy sources to 25% of final energy consumption in 2020. At the same time in each EU member state the share of energy from renewable sources in transport should reach at least 10% of final energy consumption in transport in 2020. Slovenia can achieve this aim by increasing the use of its water potential, combined heat and power generation, the use of wood biomass and biogas, geothermal energy, wind energy, sun energy and biofuels. It is especially important to improve the efficiency of energy use and in this way reduce final energy consumption [8].

Figure 2: Electricity Consumption [6].

Figure 3: Renewable Energy in Slovenia [6].
5 Conclusion

Development of Environmental Management System is constantly improving. New environment issues dictate the redefining of The interest of customers, users, developers and others in the environmental aspects and impacts of products is increasing [10]. Because of this, EMS needs Environmental Indicators. The development of indicators is a dynamic process that is constantly subject to updating and improvement [6].

References:


[9] ISO 14062:2002(E) Environmental management - Integrating environmental aspects to product design and development

