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EMAS in local authorities: Suitable indicators in adopting environmental management systems

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ABSTRACT

In the context of new tools suitable for making local authorities more pro-active in terms of effectiveness in environmental management, this paper analyzes the case of the application of EMAS (Eco-Management and Audit Scheme) to local authorities in Italy. EMAS is a European tool that was revised in 2009 with Regulation (EC) N. 1221/2009, named EMAS III. This paper has two goals. The first goal is to analyze how the local authorities, with an environmental management system registered under EMAS, evaluate the environmental aspects related to their activities. The second goal is to propose a set of specific indicators to be monitored, which would fulfill the EMAS III compulsory core-set of indicators. To do this all the EMAS registered public authorities in Italy have been contacted to obtain a copy of their most recent validated environmental statements. Then, for each environmental aspect considered, a matrix has been processed, reporting on related activities, environmental significance, indicators, and environmental targets to improve the performance of the EMS. The analysed environmental statements (75% response rate) deal with a high number of environmental aspects and refer to a wide range of activities carried out by the local authorities. The set of indicators demonstrates that registered local authorities have already enough information for the purpose of complying with the new EMAS III core indicators. On the contrary, EMAS III does not properly cover the several environmental issues and impacts faced by local authorities, so that a different, wider and more specific framework is needed for their environmental performance evaluation. As a result of this study, a set of 13 indicators has been proposed, based on those already in use by local authorities and on those used by the European Environment Agency for environmental assessments. Therefore, this paper can represent a first step towards the definition of sectorial reference guidelines that will be developed at the European level by the European Commission.

1. Introduction

A considerable number of new tools are now available for the purpose of making local authorities more environmentally pro-active and effective. Among them are the strategic environmental assessment (European Directive 2001/42/EC; European Commission, 2001a), environmental impact assessment (85/337/EEC; European Commission, 1985), life cycle assessment (LCA), and standardized environmental management systems (EMSs).

ISO 14001 is the dominant international reference for assessing environmental management processes, while in Europe many companies are also registering their EMSs according to the Eco-Management and Audit Scheme (EMAS, Regulation (EC) N. 761/2001 (European Commission, 2001b)), which was updated in 2009 with the introduction of Regulation (EC) N. 1221/2009, named EMAS III (European Commission, 2009).

An EMS of an organization is broadly defined as a transparent, systematic corporate-wide process, with the purpose of prescribing and implementing environmental goals, policies, and responsibilities, as well as regular auditing of its elements (Steger, 2000). Standardized EMSs can provide organizations with relevant information about the state of the environment and improve the structure of environmental work. In addition, EMSs can assist the decision-making process by the use of suitable indicators that helps the monitoring program carried out in the organization (Emilsson and Hjelm, 2002).

The first aim of this paper is to analyze how local authorities, with an EMS registered under EMAS, have addressed the evaluation of the environmental aspects related to their activities. The second aim is to investigate whether the new core-set of indicators,

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introduced by EMAS III, can be fulfilled by using the old set of indicators. Whenever this is not possible, we propose a set of alternative more specific indicators to be monitored, taking into account both EMAS III requirements and the list of related indicators already tested by the European Environment Agency to monitor the different environmental aspects.

The paper is organized as follows: in Section 1.1 the international standard ISO 14001 and the European standard EMAS are briefly described and compared in terms of requirements and applications. Section 1.2 describes the different suitable indicators for the implementation of an EMS according to EMAS requirements. The implementation of EMAS in the public sector, in particular for local authorities, is reported in Section 1.3. In Section 2 the local authorities involved and the materials and methods are detailed. Results are illustrated and discussed in Section 3, while the main conclusions are found in Section 4.

1.1. ISO 14001 and EMAS

The two main reference schemes for EMS design and certification are the international standard ISO 14001 and the European standard EMAS (Eco-Management and Audit Scheme).

ISO 14001 provides guidelines by which corporations or other organizations design and implement an EMS that supports (Jackson, 1997): (1) their environmental policy; (2) the environmental aspects related to their activities; and (3) their environmental management programs with a clear structure of responsibility for environmental management.

ISO 14001 is based on a Deming Cycle (or PDCA cycle) with four steps (Langley et al., 2009): the "Plan" step consists of the planning of actions to achieve the improved management goals; the "Do" step implements the change decided during the plan phase; the "Check" step verifies whether the goals have been achieved and, if not, during the "Act" step the planning is reviewed and the cycle re-starts. Through the reiteration of this cycle, the EMS can achieve a continuous improvement over time, which is a basic idea behind this standard (Marazza et al., 2010).

The Eco-Management and Audit Scheme (EMAS) is similar to ISO 14001 in its components and requirements (Morrow and Rondinelli, 2002; Ridolfi et al., 2008). EMAS was introduced in 1993 with the EC Regulation N. 1836. After its revision in 2001 (EMAS II, EC Regulation N. 761) EMAS widened its scope to all types of organizations and it entirely adopted ISO 14001 requirements for EMS implementation (European Commission, 2010a).

Important distinctions between the two standards still remain. EMAS is more rigorous than ISO 14001 in the analysis of environmental aspects and requires organizations to issue an environmental statement with the aim of providing validated information to the public. Furthermore, during the registration phase, the organization is subject to an "institutional" control by a National Competent Body.

Recently, the third revision of this standard, called EMAS III, was published by the European Commission as Regulation N. 1221 (European Commission, 2009). EMAS III introduces some novelties in terms of core performance indicators, and environmental aspects that must be taken into account, such as energy efficiency, water use, waste production, air pollution and biodiversity.

During the past decade, the diffusion of EMAS in Europe has increased, reaching 7709 sites and 4507 organizations by June 2010 (European Commission, 2010b). Among the European member countries, the highest number of registrations is still held by Germany (1408), followed by Spain (1227) and Italy (1035) (Fig. 1).

The basis for the application of an EMS to an organization is the environmental review of its activities. Therefore, the organization has to identify and quantify the environmental aspects related to its activities, products or services, which it can control (direct aspects), and those over which it can have only an influence (indirect aspects). In this sense, EMAS Regulation provides a specific list of direct environmental aspects that must be taken into account in the review, and must be related to each activity carried out by the organization (European Commission, 2009):

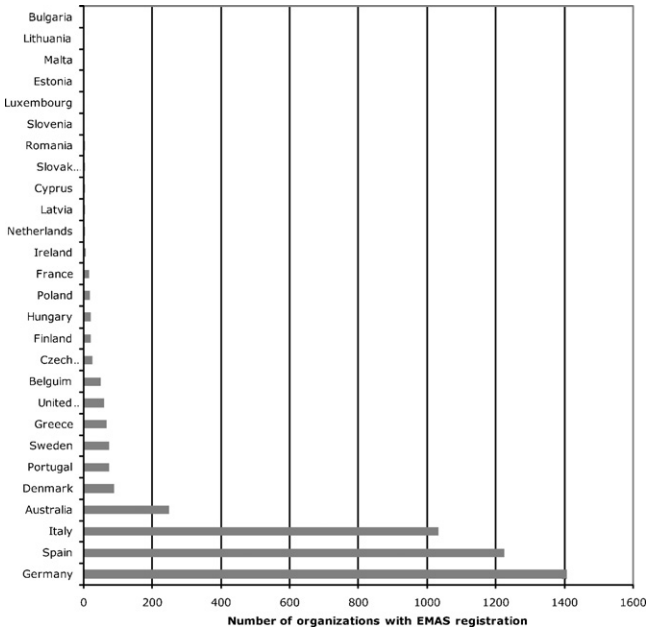

Fig. 1. Number of organizations registered according to EMAS in each European country.
Source of data: European Commission (2010b).

- emissions to air;
- releases to water;
- waste production and management;
- use and contamination of land;
- use of natural resources, energy and raw materials (including additives, auxiliaries and semi-manufactured goods);
- local issues (noise, vibration, odour, dust, visual appearance, etc.);
- transport issues (both for goods and services and employees);
- possible environmental risks related to incidents, accidents and potential emergency situations, and
- effects on biodiversity.

Each aspect must be described by specific indicators in order to allow the organization to assess their environmental significance in terms of environmental impact. For each significant environmental aspect the organization must define adequate objectives for improvement to be achieved through an environmental programme. This programme describes responsibilities, means and deadlines. The progress must be monitored and measured on a regular basis through documented procedures.

1.2. Suitable indicators for the implementation of an EMS under EMAS

In the context of EMAS, decision-makers, the public and all the possible readers of environmental statements should easily understand the environmental indicators (Kurtz et al., 2001). This requirement is explicitly highlighted by the European Commission Recommendation 2001/680/EC (European Commission, 2001c). The identification of appropriate indicators is, therefore, a crucial task. For this purpose a good reference is the international standard ISO 14031 (ISO, 1999), which gives guidance on the design and