

# State of the art of environmental management

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## Abstract

Enterprises are confronted more and more with environmental issues of increasing complexity, environmental regulation and public pressure which they have to manage in a new way. An environmental management system is an appropriate instrument which may be certified and accepted internationally and offers answers to the new challenges in a cost efficient manner.

Environmental management systems are assigned to the “third” way of environmental policy instruments. The main feature is the voluntary participation of enterprises to such measures. There are many advantages in participating in an international systematic certified system like EMAS in Europe. Participation is voluntary, but the organisation must meet minimum standards to be EMAS registered.

Due to the fact that environmental management systems can make an important contribution to a sustainable economic development as well as to reach the Kyoto targets, the European Union should enforce the promotion of EMAS registration especially concerning small and medium-sized enterprises.

*Keywords: environmental management system, state of the art, EMAS, environmental policy instruments, voluntary measures, environmental performance, SMEs.*

## 1 Introduction

Environmental regulation measures and the public sensitivity concerning environmental issues constitute growing challenges for the business world. An important tool for taking on these challenges is the implementation of an environmental management system (EMS) in the organisation.

Thereby the organisation is on the one hand able to demonstrate its willingness for an improved environmental performance to the public and to the



authorities and on the other hand able to manage the environmental challenges in a cost efficient way.

The paper shows the motivations for and the benefits of an EMS from the government's point of view as well as from the point of view of the organisation which implements the system.

It makes sense to decide for an international systematic certified approach of an EMS, because of its international acceptance and because of the controls carried out by the authority. So we bring a synopsis of the EMS in the European Union, called EMAS.

EMSs make an important contribution to the improvement of the environmental performance of an organisation, a country and the world. By the voluntary approach of these systems it corresponds to public policies on cooperation and consensus with reaching the environmental goals in an economic efficient way. International systematic certified approaches like EMAS should be promoted by the authorities in an intensified way.

## **2 Environmental management systems**

### **2.1 Economic background**

Almost all good productions, activities and services by organisations effect negative externalities - effects of production and activities not directly reflected in the market. Because externalities are an important reason of market failure and produce economic inefficiencies, policy measures are required. Systematic EMS which are certified by an authority are assigned to voluntary agreements as the "new" way in environmental policies.

### **2.2 Benefits for organisations**

Due to asymmetric information between authorities, consumer and organisation about its environmental performance, a participation in an international systematic certified environmental management system can help to reduce problems concerning this asymmetry. With such participation an organisation signals to the public its importance of improvement of the environmental performance.

The implementation of an EMS is a suitable method to recognize financial inefficiencies representing inefficient use of resources. So an international systematic certified EMS is able to bring out, in addition to indirect cost effects with an improved environmental performance on the market, a direct cost reduction due to elimination of economic inefficiencies.

### **2.3 Advantages for policy-makers**

EMSs are assigned to voluntary agreements as a "third" way in environmental policies in addition to the classical policy instruments command-and-control and market-based measures.



### 2.3.1 Command-and-control

This legislative policy mainly consists of enforcements and restrictions. Harmful environmental impacts are controlled through environmental permits, limits on emissions, prohibitions of the use of certain substances, the limitation of certain activities in special areas or the enforcement of certain technical standards. Command-and-control measures still play an important role in environmental policies, however they should be limited as much as possible because of their low economic efficiency.

### 2.3.2 Market-based measures

Such environmental economic instruments can provide positive financial incentives to promote a more sustainable business world. Market-based measures include taxes and user charges for products with negative environmental impacts, insurance/liability schemes and tradable permits, as well as various kinds of subsidies for improved environmental performances.

The advantage of this approach in comparison to the command-and-control policy is that the organisation has, according to its cost structure, the choice, for example, of either paying the fee or reducing the emissions, which is what it should do if its marginal costs of abatement are less than the emission fee.

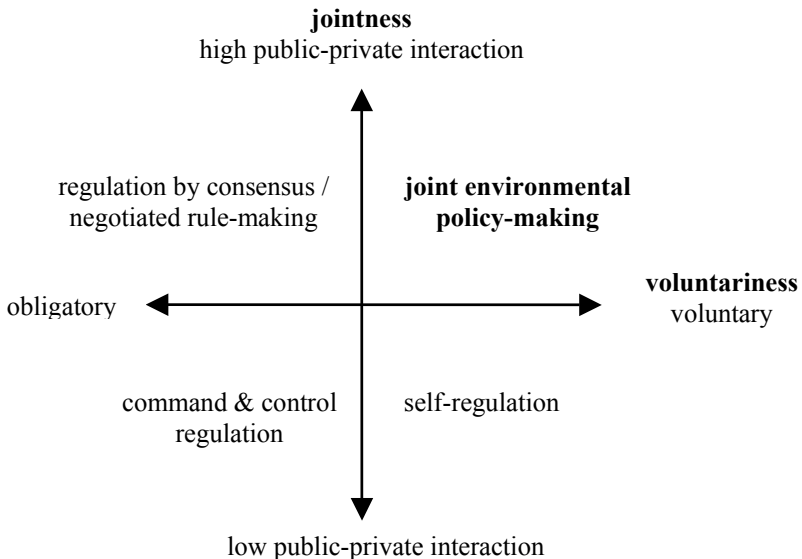


Figure 1: Placing joint approaches. Source Ingram (1999).

### 2.3.3 Voluntary measures

In addition to regulations and market-based measures, companies and other organisations may voluntarily improve their environmental performance by

participating in public programs which are usually negotiated between economy and authorities. Voluntary agreements should strengthen the commitment of organisations to environmental goals.

Due to the limits of regulation and a tendency towards environmental policy making on consensus and cooperation, instead of confrontation, between the authorities and the economy, voluntary measures are increasingly replacing or complementing other environmental policy instruments.

Voluntary agreements can be characterised as joint environmental policy-making. Figure 1 shows the placing of voluntary agreements in the area of environmental policies.

The political tendency to deregulation promotes the increasing application of voluntary approaches. They enable organisations to develop their own solutions in the most cost effective way. Corporate relations between the authorities and the economy often facilitate better results than traditional regulations.

The European Commission has a clear interest in developing and implementing voluntary approaches in its environmental policy. It takes an important step with the regulation for the environmental management system Eco-Management and Audit Scheme, called EMAS.

### **3 EMAS**

In our opinion organisations should choose an international systematic certified EMS rather than any other EMS. EMAS is the unique certified EMS in Europe, where the organisations commit themselves to improving their environmental performance, which is the main difference to other EMSs, especially to the international standard EN/ISO 14001. Therefore we show a synopsis of EMAS and its development.

#### **3.1 What is EMAS**

According to the regulation (EC) No 761/2001 of the European Parliament and of the Council, the environmental management system Eco-Management and Audit Scheme (EMAS) is a voluntary scheme designed for companies and other organisations that are willing to commit themselves to evaluate, manage and improve their environmental performance. EMAS is applied in all Member States of the European Union and the European Economic Area (Norway, Iceland and Liechtenstein).

EMAS was launched in 1993 and revised in 2001 by adding several new features such as the access for organisations in all public and private sectors, the integration of EN/ISO 14001 and the involvement of employees.

An environmental management system includes all economic targets, decisions and activities appropriate to minimize negative environmental impacts of an organisation as an independent goal and for supporting other organisation's goals. An EMS is an integrated part of a generic management system, where negative effects from activities of the organisation should be recognized, if possible be avoided and environmental impacts as low as possible should be



guaranteed. The employees of the organisation should be involved in the continual improvement of the organisation's environmental performance.

EMAS provides organisations, regulators and the public with an instrument to evaluate and manage the environmental impact of an organisation and is designed to benefit the environment. Because of the systematic approach it is possible to evaluate and compare different companies and organizations, which provides a basis for feasible promotion of environmental protection by the government.

It is important to recognize that an EMAS certification does not mean that all services and products of the organisation are ecologically produced or ecologically convenient, however the organisation commits itself to improving its environmental performance.

### **3.2 Stages for implementation**

In order to get the EMAS registration an organisation has to go through the following steps:

#### **3.2.1 Environmental review**

An environmental review means an initial analysis of all environmental issues, impacts concerning the products, services and activities of an organisation. Above this the legal and regulatory framework of the activities and the existing environmental management practices and procedures has to be considered.

#### **3.2.2 Environmental policy**

The environmental policy should provide the framework for all activities of the organisation concerning environmental objectives and targets. It has to become a part of the entire organisation's policy, which means that the overall aims and principles of action take into consideration and promote an improved environmental performance.

#### **3.2.3 Environmental management system**

On the basis of the results of the environmental review, the organisation has to implement an environmental management system. To do this the top management must define the environmental policy of the organisation, lay down environmental goals, responsibilities, means, communication systems, training needs etc.

#### **3.2.4 Environmental audit**

The organisation has to carry out an internal environmental audit to assess the implemented environmental management system and its conformity with the environmental goals of the organisation and with relevant environmental regulations.

#### **3.2.5 Environmental statement**

An organisation whose aim is the EMAS registration, has to provide an environmental statement to the public, to show the current environmental impact



and performance and the planned future steps to be undertaken in order to improve the organisation’s environmental performance.

**3.2.6 Environmental verification**

An accredited EMAS verifier has to approve the environmental review, environmental management system, the internal environmental audit and the environmental statement. After this procedure the validated statement must be provided to the EMAS Competent Body for registration and has to be made publicly available. Then an organisation is allowed to use the EMAS logo. In Europe there are currently 311 EMAS registered verifiers' organisations.

Table 1: Number of EMAS accredited verifiers in the EU Member States (last update of the list 13/01/2005). Source European Union.

Member State	Austria	Belgium	Czech Republic	Denmark	Finland	France	Germany	Greece	Italy	Luxembourg	The Netherlands	Norway	Portugal	Slovenia	Spain	Sweden	The UK
#	11	6	4	3	2	7	219	4	12	1	6	5	4	1	9	6	11

**3.3 EMAS logo**

EMAS registered organisations are allowed to use the EMAS logo to demonstrate their participation in this certified EMS and their commitment to improve the environmental performance.



Figure 2: EMAS logo Version 1 and Version 2. Source European Union.

Version 1 of the EMAS logo demonstrates the EMAS registration of the organisation, which means the implementation of an environmental management system conforming to the requirements of EMAS. This version of the logo can be used for example on letterheads, invitations, websites, posters, door signs, buildings and flags.

Version 2 of the EMAS logo can be used for example in combination with a particular piece of information the organisation wants to communicate to the public. By this the organisation can show its environmental performance in combination with their products, services or activities. Such information has to be especially validated by an EMAS verifier.

### **3.4 Costs and benefits of EMAS for an organisation**

For each organisation contemplating registration for EMAS, the costs and benefits concerning the implementation of this environmental management system are an important issue.

#### **3.4.1 Costs of EMAS**

On the one hand there will be external costs for the environmental verifier, the registration fees and possible additional external support, and on the other hand internal costs particularly for required internal resources to implement the EMS.

Environmental verifiers are independent private consultants who charge the normal market prices for consultancy. Registration fees can vary from zero to 1500 Euros in the case of large companies. The EMAS Regulation recommends reduced registration fees for small and medium-sized enterprises (SMEs) to encourage higher participation. Further external costs will arise by the publication of the environmental statement.

Internal costs are more difficult to quantify. They depend on the size of the organisation, the experience with environmental management systems and the complexity of environmental issues of the specific organisation. After the implementation and first registration of EMAS, the maintenance of the system won't require as many resources.

#### **3.4.2 Benefits of EMAS**

Most environmental impacts also have financial implications because they represent inefficient use of substances. An environmental management system like EMAS could help to show such inefficiencies and by doing this contribute to cost reductions.

The most common benefits of EMAS implementation are, for example, a quality environmental management due to the use of a highly developed scheme, resource savings and lower costs, reduction of financial burdens due to reactive management strategies, benefits through better control of the entire operations of the organisation, compliance checks with environmental legislation by EMAS verifier, improved quality of workplaces, marketplace advantages and improved stakeholder relations.

### **3.5 EMAS registered organisations**

Figure 3 shows the absolute numbers of registered sites and organisations in different European countries. Considering the relative numbers of registration, per one million inhabitants, Austria is first with 31.60 organisations, followed by Denmark with 23.35, Germany with 19.65, Spain with 11.24, Sweden with 11.13, Finland with 7.71 and Norway with 6.20.



The number of EMAS registered organisations has increased in recent years and this trend is expected to continue. Many registered organisations are also interested in the environmental management practices of their suppliers. It is usually more cost effective for an organisation to anticipate such expectations and work with foresight towards EMAS registration in a planned way.

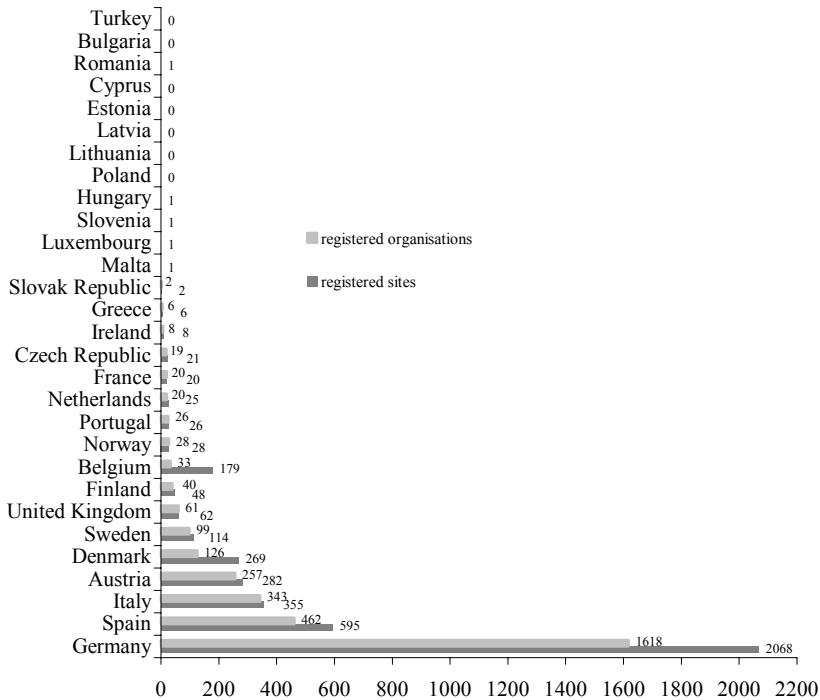


Figure 3: EMAS organisations and sites (as of 11/04/2005). Source European Union.

#### 4 Future and conclusions

European Member States should promote increasing participation in EMAS, because by the implementation of an EMS, organisations often fully recognize for the first time their environmental impacts and economic inefficiencies. Another important point is that registered organisations commit themselves to an improvement of their environmental performance.

Especially small and medium-sized enterprises (SMEs), enterprises with fewer than 250 employees, are often not fully aware of their environmental impacts, and they are not always well informed about their legal environmental obligations. Currently the participation of SMEs in EMAS is very low. However



SMEs are, with 99 per cent of all private enterprises, a very important part of the economy in the European Union.

Figure 4 shows the main driving forces, barriers and results especially for SMEs concerning the implementation of an EMS according to Nutek (2003).

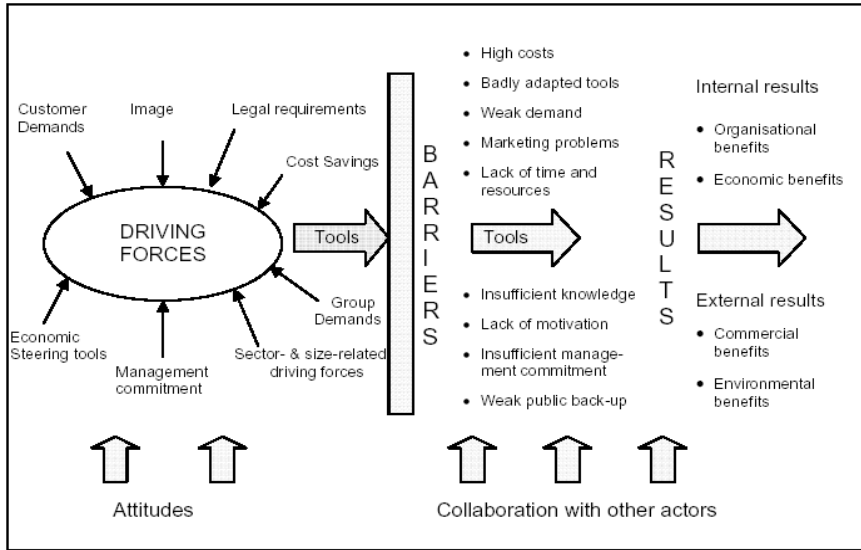


Figure 4: Driving forces, barriers and results for SMEs. Source Nutek (2003).

In future more innovative EMAS related subsidy schemes should be implemented, for example for promoting SME networks. Such schemes have already produced positive results for SMEs in different arrangements and countries and may be more successful than conventional schemes for small organisations. The funding for EMAS implementation could be linked more intensively to financial support for traditional investments. The future revision of EMAS should enforce an easier implementation for SMEs, possibly by the introduction of a staged approach. More information about the potential benefits and practical experiences should be provided to interested organisations and the public.

A crucial point for the further development of EMAS will be to take into consideration the adoption of environmental management accounting (EMA) by EMAS registered organisations. EMA provides a scheme to fully measure and identify the environmental costs of the organisation's activities, to evaluate the benefits of cleaner processes and to integrate environmental costs and benefits in the conventional accounting systems and thereby in the decision-making of an organisation.

Additionally to the traditional environmental policy instruments the enforced promotion of EMAS registration can make an important contribution to a development of the European Union to a more sustainable economy and environment.

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