# Literature Study:
# The State of EMAS in the EU

Brussels – 26/27 June 2002

**European Conference:**
**„The EU Eco-Management and Audit Scheme –**
**Benefits and Challenges of EMAS II“**

# The State of EMAS in the EU

## Eco-Management as a Tool for Sustainable Development

**Literature Study**


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# 1 Preface

The European Union (EU) Eco-Management and Audit Scheme (EMAS) is a management tool for companies and other organisations to evaluate, report and improve their environmental performance. This scheme has been available for participation by companies since 1995 and was originally restricted to companies in industrial sectors.

Since 2001 EMAS has been open to all economic sectors including public and private services. In addition, EMAS was strengthened by the integration of EN/ISO 14001 as the environmental management system required by EMAS, by adopting an attractive EMAS logo for demonstrating EMAS registration to the outside world, and by considering indirect effects such as those related to financial services or administrative and planning decisions in a stronger sense.

Furthermore, Member States and the EU are now asked to create new benefits and incentives for registered organisations, for example in the areas of public procurement and by reducing unnecessary duplication of efforts in relation to other environmental legislation .

Therefore, the European Commission's Directorate-General Environment asked Ecologic – Institute for International and European Environmental Policy in partnership with the Institute for Ecological Economy Research (IÖW) to prepare a Conference as an important step in the promotion and development of EMAS.

The European Conference on EMAS in June 2002 serves as a platform for exchanging views and best practices of EMAS in all sectors. The main objective is to identify the necessary benefits for organisations to implement EMAS and to discuss the associated challenges and actions. A key consideration will be how to implement further incentives and regulatory benefits in different sectors and settings.

Furthermore it is intended to exchange experiences with accession countries and regional/local actors. Finally, the conference will be an important platform to exchange views and best practices for EMAS marketing activities.

As a preparatory task for the conference, this Literature Study has been drawn up to summarise the state of and developments around EMAS. Approximately 75% of EMAS-registered organisations are based in Germany, therefore much experience, knowledge and political positions stem from German sources. Consequently, this literature study is based upon approximately 50% of German sources and 50% of non-German sources.

# 2 Summary

This literature study aims at giving an overview over the state of EMAS in the EU. It is based on studies from 11 Member States and other European countries as well as on publications of multiple international organisations.

Chapter three describes what an environmental management system (EMS) is and is targeted at persons who are not familiar with that term.Information on the diffusion of EMAS in the different Member States and sectors of business activity as well as in public administration is provides in chapter four.

EMAS I and its implementation in industry have been studied in different Member States. A range of research activities covers motivations and expectations of participants, cost, duration and problems of implementation, status of implementation of organisational and technical measures as well as environmental targets and the environmental statement, environmental and economic results. Special regard is given to the implementation of EMAS in SMEs and to differences between the implementation of EMAS and ISO 14 001. Chapter five outlines the most relevant findings of the studies.

Since EMAS II was put in force in 2001, the service sector as well as the public administration could participate in EMAS. For both sectors, mainly guides to assist implementation and environmental statements of participants have been published. To through at least some light on public administration a set of environmental statements of public administration bodies have been collected to have some first hand evidence. Chapter six documents some first findings on EMAS II implementation in public administration.

In the context of the revision of EMAS I incentives to participate in EMAS have played a critical role for industry. Chapter seven gives an overview over the regulatory and monetary incentives as well as about the status of EMAS as a demand in public procurement.

Stakeholders positions to EMAS mostly focus on the environmental impact it has and on the question, how participation in EMAS can be enhanced. Chapter eight summarises the findings.

Chapter nine positions EMAS in the context of the current debate on sustainability.

# 3 Introduction: What is an Environmental Management System?

To understand the impact an environmental management system (EMS) can have on the environment it is necessary to clearly understand what an EMS is and the impacts it can have within the organisation which has implemented it . An EMS is defined in EMAS II to be *"the part of the overall management system that includes the organisational structure, planning activities, responsibilities, practices, procedures, processes and resources for developing, implementing, achieving, reviewing and maintaining the environmental policy."* In a continuous process, organisations have to evaluate their environmental impact and to set targets for improvement.

The European Foundation for Quality Management (EFQM) has developed a general model to describe and evaluate a management system (see fig. 3.1). The EFQM model divides elements of a management system into enablers and results. The ultimate goal of each management system is clearly to improve results, including environmental results as a part of society results. Therefore, to achieve excellence, each organisation must figure out what results they can achieve, and organise their management system, innovation and learning accordingly. The parts of the management system are summarised by EFQM as "enablers".

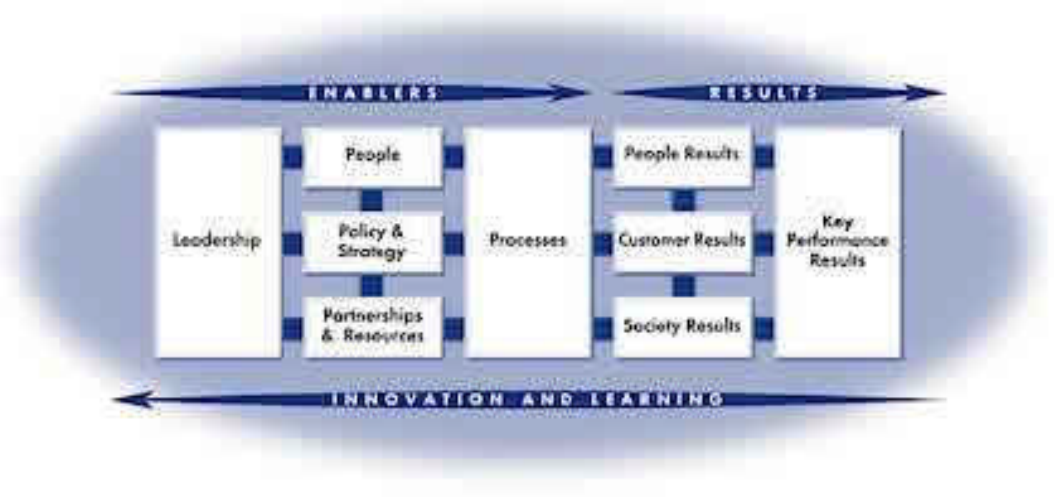


*Fig. 3.1: EFQM-Model of Excellence (www.efqm.org)*

It must be understood that standards such as EMAS or ISO 14 001 can only prescribe details of enabling elements. They cannot define the possible results, which the participating organisations are free to define , set as a target and achieve.

If a regulator prescribes a certain technology, e.g. for improving energy efficiency, a clear assessment can be made as to the amount of $CO_2$-emissions that might be avoided if this technology is successfully introduced in its achievable applications. This is not the case with EMAS. A widespread participation of organisations in EMAS will:

- improve organisations' capability to apply organisational as well as technical innovations to improve environmental performance, and also the probability of their application,
- lead to multiple different organisational and technical solutions due to the individual character of the organisation, and
- lead to a continuous process of searching, in which the EMAS-participants will screen the market for better solutions in order to put together a financially viable environmental programme for the next audit period.

This view can guide stakeholders of EMAS when they look for criteria to measure the success of the EMAS regulation:

1. The number of participating organisations is a direct measure of the number of organisations which decide to start a continuous process of improvement of their environmental performance (but says nothing about their success). Information is given in figure 4.1.
2. Obviously, a widespread application of EMAS by firms in high-pollutant industries has a higher impact than in other sectors. Hence, the sector of business activity of the participants is of importance. Information is given in figure 4.2.
3. The size of the participating organisations (measured by number of employees or turnover) is a possible measure of the potential scale of the overall environmental impact of the EMAS-regulation. Information is given in chapter 4.2.
4. To better understand what effect can be expected, it is important to examine which kind of organisational or technical initiative is implemented and which targets are set by the participants. Information is given in chapters 5.2, 5.5 and 5.6.
5. And finally, it is important which information is available concerning the improvement of the environmental and economic performance in the view of the participants. Information is given in chapters 5.8 and 5.9.

The following chapters 4, 5 and 6 try to describe the implementation status of EMAS in participating organisations of business and public administration. As was expected, no data on quantifiable overall environmental results could be found. But the high number of participating organisations and the creativity to develop environmental programmes within each single organisation makes it probable, that EMAS already creates important contributions to the reduction of environmental impacts.

# 4 Participation in EMAS since 1995

## 4.1 Number of registered organisations

Overall participation in EMAS has continuously risen since the first participants were registered in 1995 (see fig 4.1). It is well known that Germany, Austria, Sweden and Denmark are the best performing member states measured in terms of the number of participants. It is less well known that Spain and Italy have shown rapidly rising numbers of participating organisations since the year 2000. EMAS registrations amounted to 3,910 organisations in September 2001.

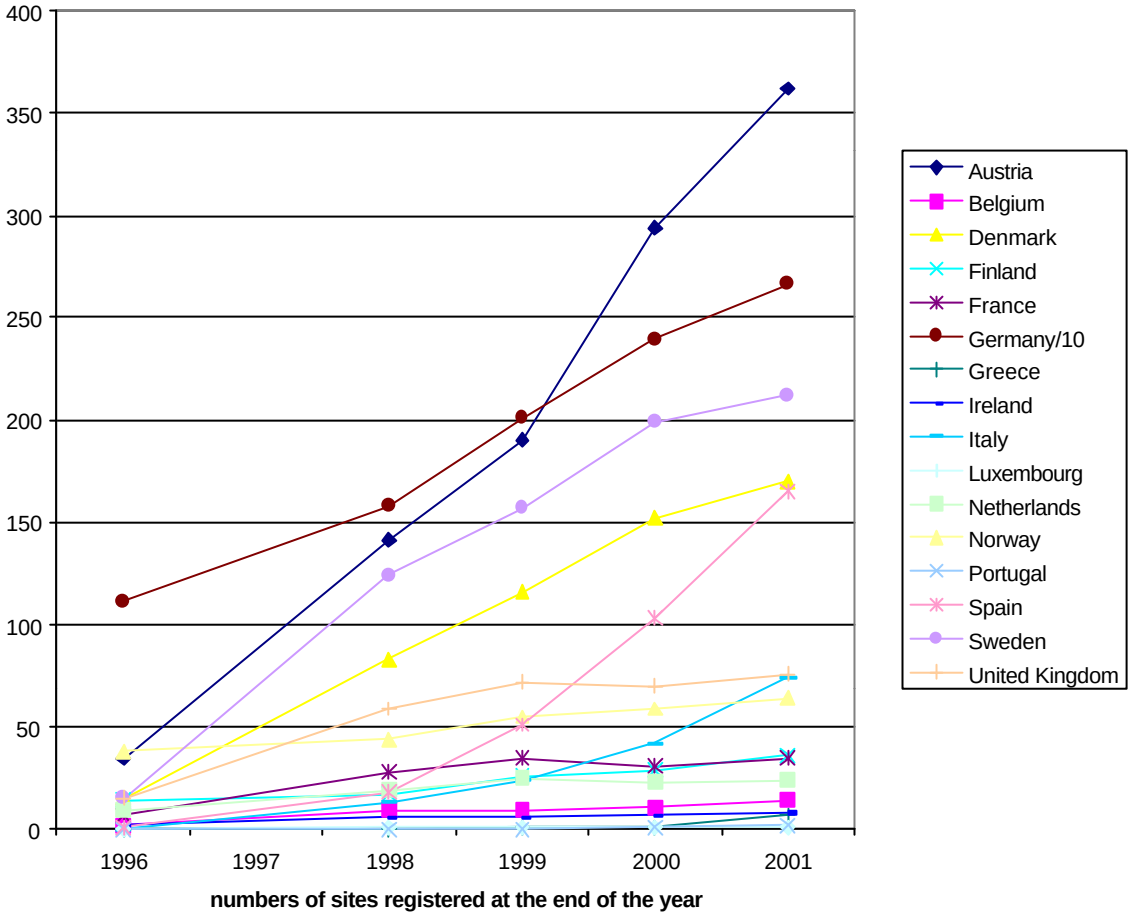


*Fig. 4.1: EMAS-Registrations per member state (German number divided by 10) (Source: EMAS Helpdesk 31.1.2002).*

There was a slight decrease to 3,850 organisations until May 2nd 2002: a net reduction of registrations from industry has nearly been compensated by an increasing number of participating public administrations and publicly owned companies. Nevertheless, until today, most of the participants belong to sectors which are considered to be highly relevant for environmental policy. The 16 sectors with the highest number of participants are shown in figure 4.2 and include 74,5% of the participating organisations.

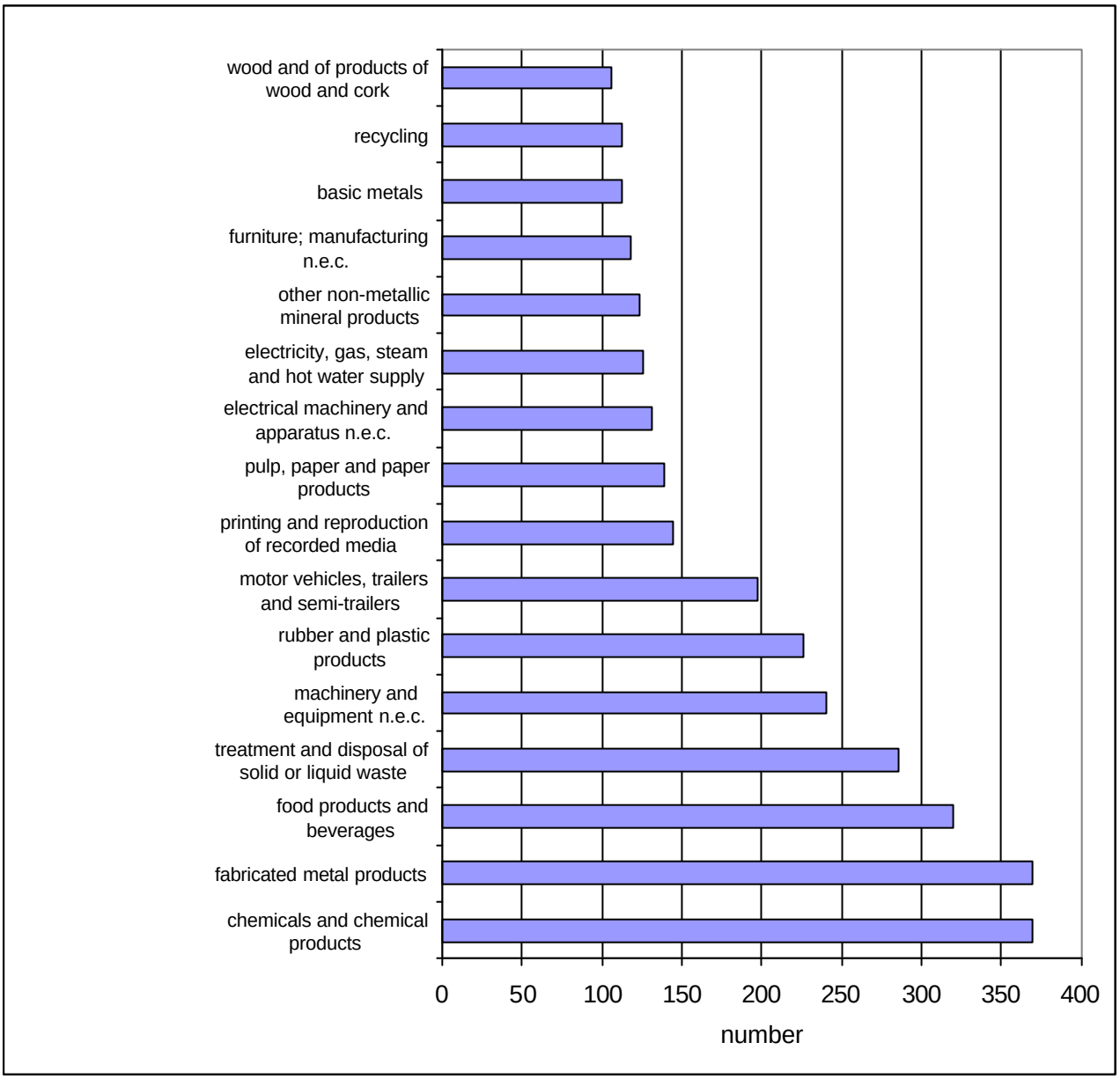


*Fig. 4.2: EMAS-Registrations per sector (Source: EMAS Helpdesk 31 January2002).*

## 4.2 The scale of EMAS-Participation in terms of employees

The size of the organisations are only partly included in the EMAS-Databank and are known in only 909 cases, with a total of 221.000 employees, from Austria (all), Denmark, Finland, Italy, Portugal, Sweden and Spain. Of these, 394 sites (43%) have up to 50 employees, 147 sites (16%) have between 50 and 100 employees, 270 sites (30%) between 101 and 499 employees and 97 sites (11%) have more than 500 employees. This is considerably less than Glatzner (2001) reports from Germany (see fig 4.3).

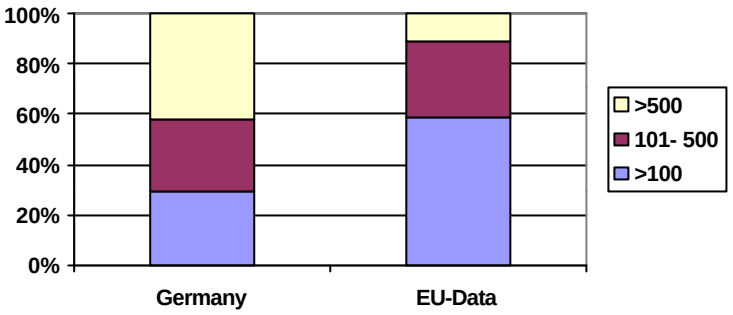


*Fig. 4.3: Number of employees of EMAS-sites (Source: EMAS Helpdesk 2002 and Glatzner 2001).*

The German UBA assumes, on the basis of empirical data (UBA 1999) that 1.173.000 people were employed in June 1999 in all 1,852 participating sites. Since then another net 810 sites have joined EMAS. It can be assumed that the average size of new sites was below 400 employees (UBA 1999: 26), which would result in about 300.000 additional employees in new sites since 1999. The overall scale would be such that between 1.4 to 1.5 million employees in German EMAS-sites comprise approximately 3,7% of the total German workforce. Since most (exact proportion unknown) organisations participating in EMAS are from industry, these 1.4 to 1.5 million employees represent between 10% to 12% of all employees working in the manufacturing sector.

This number would account for 2,662 of all European sites. Data for an additional 909 sites is contained in the database. Therefore, 3,571 sites out of 3,924 sites would account for about 1.6 to 1.7 million employees.

It is interesting that Bavaria has set a target of 50% of employees in manufacturing firms to work in sites which are registered under EMAS (or ISO 14 001). This has been agreed upon between government and industry to be achieved by 2005 (Bayerische Staatskanzlei 2000).

## 4.3 EMAS in the service sector and in public administration

Since EMAS II has been in force, a number of additional sectors from service and administration can participate in the scheme. In some member states participation of additional sectors was possible due to the provision of Article 14 EMAS I to allow participation from organisations of additional sectors. Most additional sectors under Article 14 were included since 1998. The number of sectors actively participating rose from 28 (from NACE 10 to NACE 37) to 61 sectors.

The sectors with the largest number of new participant organisations are shown in table 4.1.

| Sector | NACE Code | Number of participants | |
|---|---|---|---|
| | | 30.9.2001 | 31.1.2002 |
| Electricity, gas, steam and hot water supply | 40 | 121 | 126 |
| Sewage and refuse disposal, sanitation and similar activities | 90 | 84 | 87 |
| Public administration and defence; compulsory social security | 75 | 83 | 85 |
| Hotels and restaurants | 55 | 59 | 72 |
| Health and social work | 85 | 63 | 63 |
| Sale, maintenance and repair of motor vehicles and motorcycles | 51 | 59 | 61 |
| Supporting and auxiliary transport activities | 63 | 45 | 44 |
| Education | 80 | 33 | 37 |

*Tab. 4.1: Development of EMAS-Participation from the new sectors 30 September 2001 to 31 January 2002 (Source: EMAS Helpdesk Data)*

The relative changes are rather small since in all of these sectors participation in some member states has only been possible since 1998 or later, and documentation only began on 30 September 2001.

# 5 EMAS I and its Implementation in Industry

Many studies have been carried out in order to evaluate the environmental effectiveness of EMAS I and its economic effects on participating firms. This chapter performs a thorough analysis based on this literature. Nearly all of the studies available focus on industrial firms, since participation of firms from the service sector and the public administration sector has only been possible since a short time ago. Most studies for evaluation were carried out around 1998 in order to produce evidence for the revision of EMAS I. Subsequently, most of the studies are based on questionnaires or interviews which were filled in or answered by firms who were only just implementing EMAS I. Only some studies look at the long term effects of implementation, meaning that at least a three to five year period of working management systems is covered (HLUG 2000, Pfriem 1999, Baumast and Dyllick 2001).

Principally, most studies have tried to deliver information on the following subjects:

A. Motivations and expectations involved in the decision to implement EMAS,
B. Implementation status of EMAS-elements,
C. Cost of the implementation,
D. Environmental targets,
E. Technical measures implemented,
F. Environmental results,
G. Economic benefits,
H. Burdens and hindrances.

In most studies, questionnaires proposed a number of possible answers for the subjects A, B, E, G and H. The cost of implementation was asked for in economic terms, which was generally provided by a lot of firms. Environmental results as well as economic benefits were comparatively hard to measure and the answers contain in many cases a high degree of subjectivity. Generally, a clear question like: *"How many tonnes of $CO_2$-emissions have been reduced because of EMAS?"* could not be answered.

With a look at all available studies, a good picture of the dynamics of environmental management can be drawn. However, one problem is that information from different member states must be used together, but when put together they do not totally belong together. Therefore, attention must be paid to which information comes from which study and which member state.

## 5.1 Motivations and expectations involved in the decision to implement EMAS

On the basis of a survey yielding 1,228 responses from participating companies, the German UBA (1999) identified the following motives for participation in EMAS:

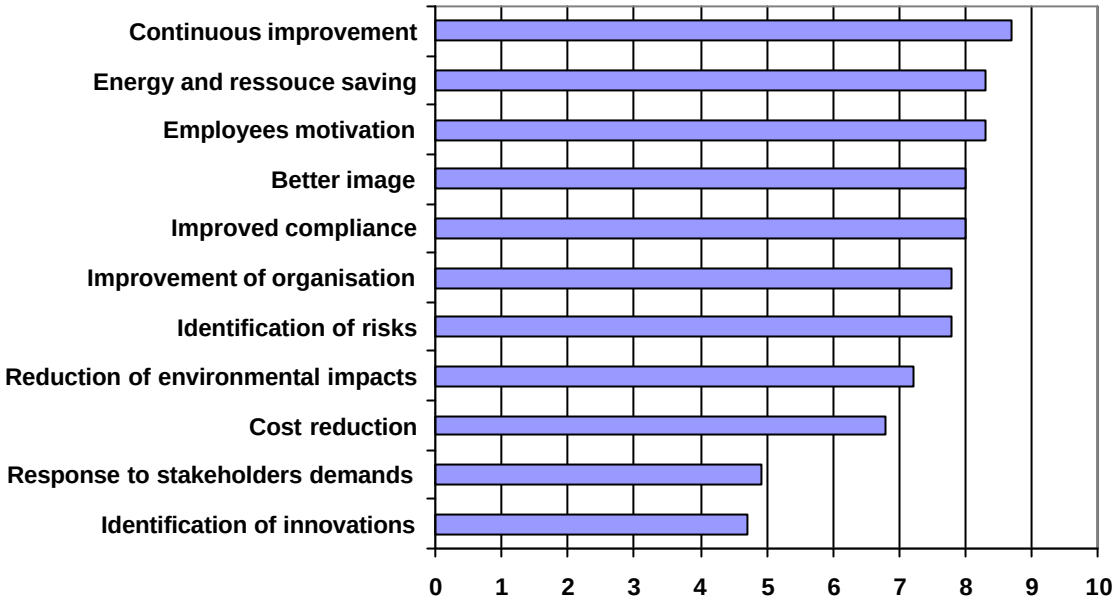


*Fig. 5.1: Motives for participating in EMAS (Important = 10, not important = 0) (Source: BMU/ UBA 1999).*

The reduction of environmental impacts is only found at the position number eigth while economic motivations are dominating. Based on 133 interviews, an Austrian study demonstrates the most important economic motives for EMAS and ISO participation:

| Priority | EMAS | ISO 14 001 |
|---|---|---|
| 1 | external communication | Cost reduction |
| 2 | cost reduction | Image |
| 3 | Image | Internal information |

*Tab. 5.1: Most important motives of managers for participating in EMAS or ISO 14 001 (Source: BMUJF 1999b: 29)*

EMAS seems to be more important for externally oriented companies, while ISO 14 001 focuses on internal management aspects.

Based on a Swiss survey of 158 companies, Dyllick and Hamschmidt (2000) found image improvement to be the most important driver. Systemising environmental measures, risk reduction and an improved market position also ranked high.

Based on 172 replies from EMAS as well as ISO participants in Sweden (IRIS 2000) competitive advantages (mentioned by 53% of the firms), owner requirements (47%) and customer requirements (31%) were the dominant reasons for implementing an EMS. Legislation as a driving force is only mentioned by 5%. In Sweden, market-related reasons seem to have a higher importance than in other member states. Kvistgaard et. al. (2001: 41) reported similar reasons from Denmark – economic and competitive advantages and a green image.

An interesting experience is described by Pilisi and Venturelli (2002) from Brescia. In an EMAS and ISO oriented promotion project, participating SMEs could only then be found when cost analysis of the management systems was enlarged to cover quality cost. An EMS alone, even when delivered for free, was not enough to embark on an implementation project.

Serafin et.al. (2000) reported from Polish SMEs that the implementation of EMS was sometimes an element of necessary change to adapt to a market economy: *"In both cases, the organisations were in the process of restructuring and cost reduction, including laying off staff, as they had to respond to increasing market competition and rapidly changing legislative framework."* (Serafin et.al. 2000 : 159)

## 5.2 Implementation status of EMAS-elements

The implementation of elements of an EMS is surveyed in only a few studies. Most of the studies probably assume that validation of the environmental statement by the verifier ensures that all necessary elements are put in place. However, it is of interest whether the implementation is carried out properly and in a workable way. And secondly, it is of interest to know if singular elements of an EMS are spread out further in the business community than formally verified or certified management systems.

In a panel survey in Hesse encompassing 16 EMAS participants (Loew, Wendt and Clausen 2000, Fig. 5.2 below), it can be shown that over the years the different elements of an environmental management system develop and companies reach a higher level of quality in environmental management. The involvement of top-management (clear responsibility, commitment, availability), the definition of an environmental policy and targets and the availability of resources (time, budget, data) have constantly risen throughout the duration of the survey (1997 to 2000). Subsequently, the process organisation rapidly became better (production processes, R&D, procurement, auditing). In the area of "enablers", only qualification and participation remained at the bottom[1]. Involvement and qualification of employees is obviously not an issue which is targeted in the first phase and is not paid attention to later on.

[1] Data on the development of results is given in figure 5.8.

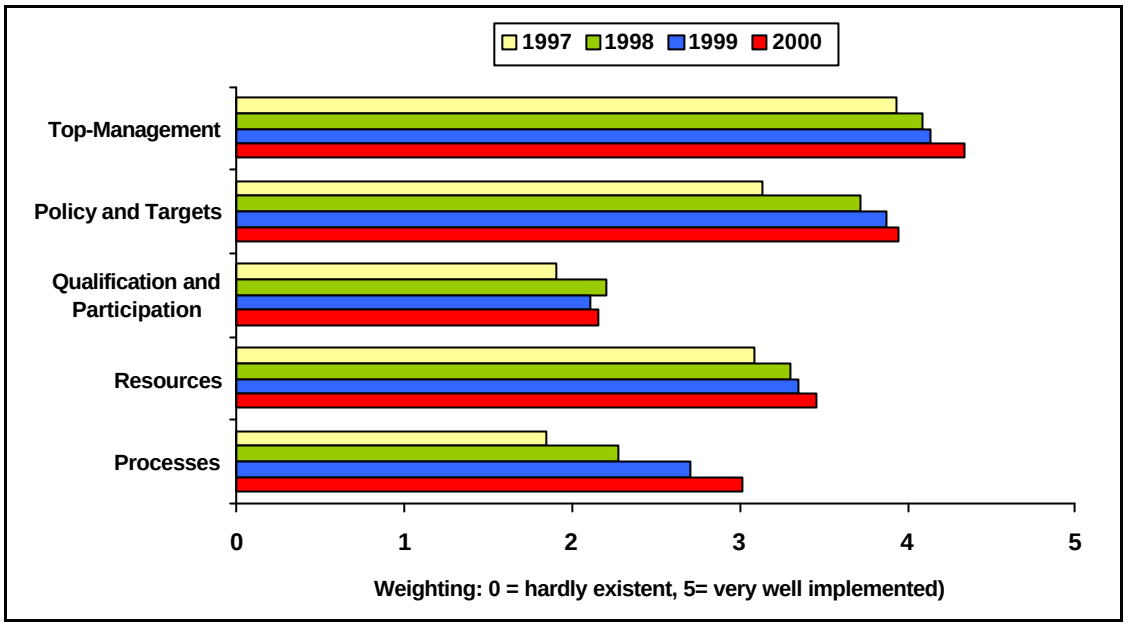


*Fig. 5.2: Development of EMS elements in Hessian EMAS-Participants from 1997 to 2000 (Source: Loew, Wendt and Clausen 2001).*

The Swiss Environmental Management Barometer 2001 was based on 181 returned questionnaires from a mailing to 1341 companies encompassing all ISO 14 001 certified companies. It compared the implementation status of management elements in Swiss industry between 1997 and 2001. The results are rather interesting:

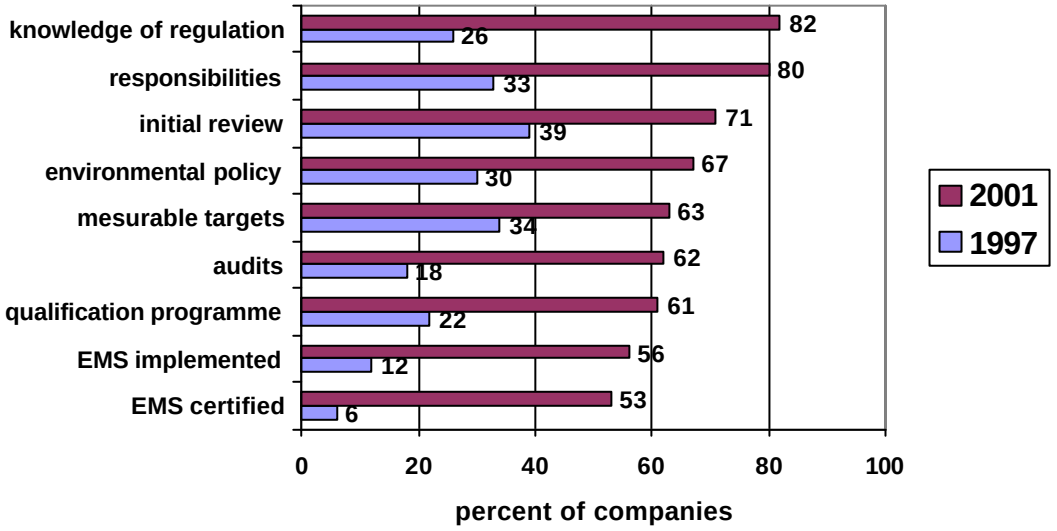


*Fig. 5.3: Dissipation of EMS elements in Swiss companies 2001 and 1997 (Source: Baumast and Dyllick 2001).*

Even when taken into consideration that the returned questionnaires are obviously strongly biased towards certified companies, they show that in connection with EMAS and ISO 14 001, the knowledge and application of organisational elements of an EMS in industry has also risen in uncertified companies. A similar effect is reported by a Danish study (Kvistgaard et.al. 2001): *"Among Danish enterprises in general, more than one*

*third have a qualified knowledge of environmental management, although the level of knowledge is far more widespread among medium-sized and larger manufacturing and industrial enterprises."* They also found high levels of knowledge in companies that did not target certification against one of the standards. Kvistgaard summarises that a *"formalized EMS does not always represent the solution to environmental problems in **all** enterprises".*

Overall, there is some evidence that the different elements of an EMS are not only used in companies who participate in EMAS or ISO 14 001, but today there is widespread knowledge of central elements of environmental management in a high percentage of companies, in some member states. In comparison to 1990, it can be assumed that the efforts of EMAS and ISO 14 001 have strongly promoted a high organisational standard of environmental protection in medium and large enterprises, irrespective of whether they have implemented an EMS or not.

## 5.3 Cost of the implementation

The costs of implementation varies with the size of the company. Data is available from some Member States and other European countries :

| Size<br>Member States | Small<br>< 100 emp. | Medium<br>< 500 emp. | Large<br>> 500 emp. | Average |
|---|---|---|---|---|
| Austria (BMUJF 1999)[2] | 109.000 € | 225.000 € | 153.000 € | - |
| Denmark (Kvistgaard 2001)[2] | - | - | - | 62.000 € |
| Germany (UBA 1999) [2] | 37.000 € | 84.000 € | 85.000 € | 59.000 € |
| Other Countries | | | | |
| Switzerland (Dyllick, Hamschmidt 2000) | 56.000 € | 93.000 € | 322.000 € | 172.000 € |
| Hungary (INEM 2001) [2] | 3.200 € up to 6.200 € | 5.800 € up to 11.000 € | more than 11.000 € | - |

*Tab. 5.2: Cost of EMAS implementation in different countries*

These numbers reveal considerable differences. Since the highest numbers of cases are is contained in the German data, which is quite similar to the data from Denmark, the German data might give the best idea of the cost of implementation. It can be split up into the following categories:

[2] only external cost

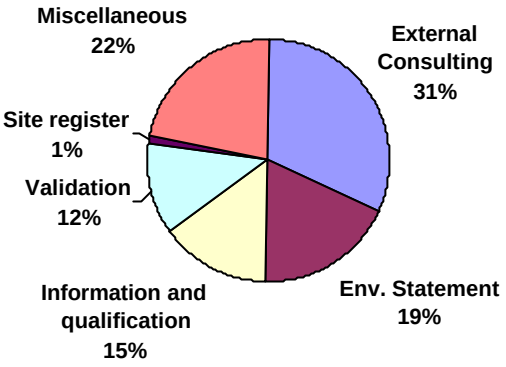


*Fig. 5.4: Cost categories for EMAS implementation[3] (Source: BMU/ UBA 1999).*

It is important to recognise that the environmental statement is comparatively expensive. In many cases, the main argument for avoiding EMAS by companies who apply ISO 14 001 is that this cost can be better spent for improved information and communication within businesses as well as between business and the public.

## 5.4 Timescales for implementation

It is noteworthy that implementation time varies considerably from firm to firm. Hillary (1998) gives the following overview[4], which also seems valid in the light of other studies:

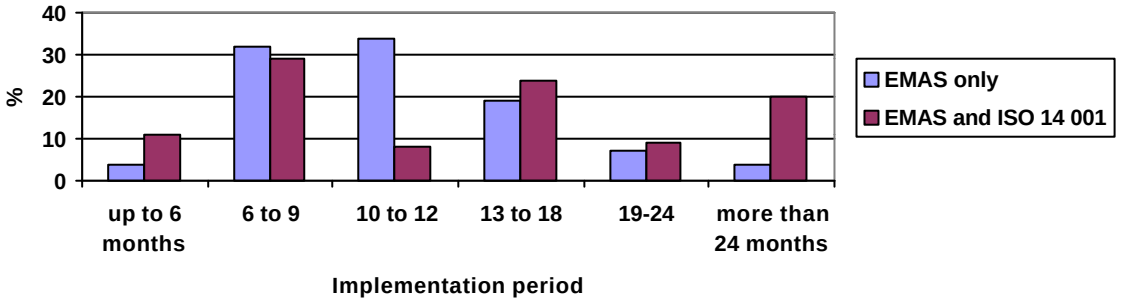


*Fig. 5.5: Timescales for EMAS implementation (Source: Hillary 1998).*

The longer time for the combined implementation may be explained by the fact that ISO certification requires the organisational handbook to be put in place a couple of months prior to certification. Hillary also found that EMS put in place in 1997 needed a longer implementation time than those put in place in 1995. Elements needing the most time for implementation are the EMS itself (which requires the most work) and the environmental review (which comes last).

The German survey (UBA 1999) mentions an average implementation time around 13

[3] The cost for the environmental statement is an approximation based on 52 cases.

[4] based on 140 representative EMAS sites in 12 Member States

to 15 months with a range of 2 to 48 months.

In light of the fact that even a fully implemented EMS needs time to mature (see Fig. 5.2), it is interesting to note that in the Swedish study, half of the EMS evaluated are less than 1.6 years old and such cannot be expected to be fully working. For other studies, a similar situation can be expected, but is not documented.

## 5.5 Environmental targets

Clausen, Petschow and Behnsen (1997) found that the targets in EMAS-participating food companies focussed mainly on resources. Most of the targets were closely linked to energy, waste and water. Hillary (1998) reported the main environmental objectives of European EMAS sites[5]. Only 1% of the sites had no targets at all:

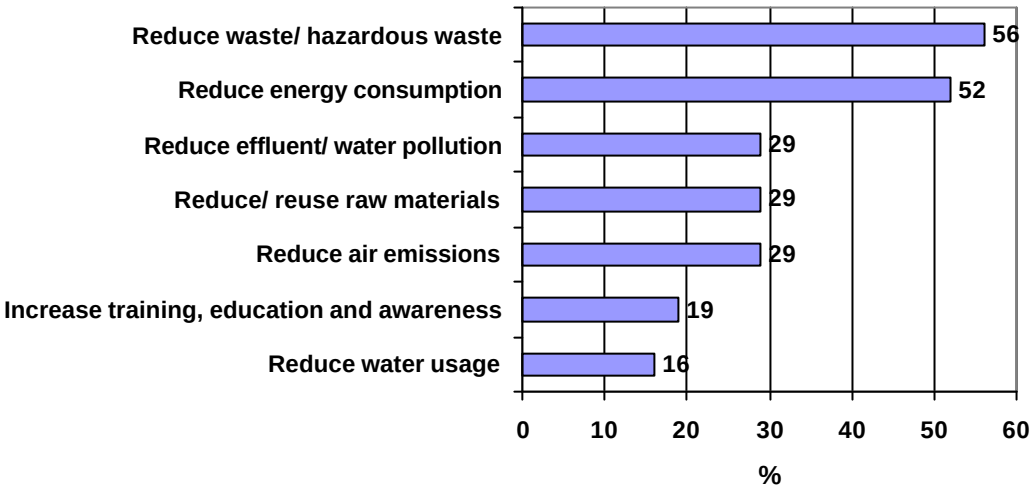


*Fig. 5.6: Percentage of all registered sites' main environmental objectives (Source: Hillary 1998).*

The more recent Swedish IRIS study (2000) demonstrated that the most common area (78% of companies) for environmental objectives and targets is waste: not only sorting it but also reducing it, which means more efficient use of resources. Overall, IRIS concludes that most actions in connection with environmental targets and objectives deal with the sources of environmental problems rather than the symptoms. Companies would have achieved about half of the targets without an EMS (IRIS 2000).

Hillary (1998) did not find (and probably did not ask for) any objectives in connection with products. IRIS (2000) found such targets in only 16% of companies. Loew/ Wendt/ Clausen (2001) find in a four-year panel study that no relevant changes occurred and the number of companies dealing with products environmental aspects remained low. Therefore, it will be interesting to monitor which product-related targets become more common because of EMAS II and the guideline on direct and indirect environmental aspects.

[5] based on 140 representative EMAS sites in 12 Member States

## 5.6 Technical measures implemented

Targets and environmental programmes should ultimately lead to the implementation of technical and organisational measures. The most technical measures are reported from the same environmental aspects as the targets: energy, waste, water and raw material use. An EMS project in Estonia reports the main focus on reduction of emissions (Randmer 2000).

The report from Baumast and Dyllick (2001) is the only one to show tendencies over several years (see fig. 5.7). Regrettably, the number of measures undertaken in 2001 is somewhat lower than four years earlier. The IÖW experience suggests the following explanation:

- after several years, many measures have already been undertaken and only a limited number of possible new measures remain,
- the experience gained by a couple of years of a working EMS makes it possible for the firm to concentrate on core measures which will very likely be successful,
- the experience with unsuccessful measures prevents environmental managers from setting too many targets and planning too many new measures.

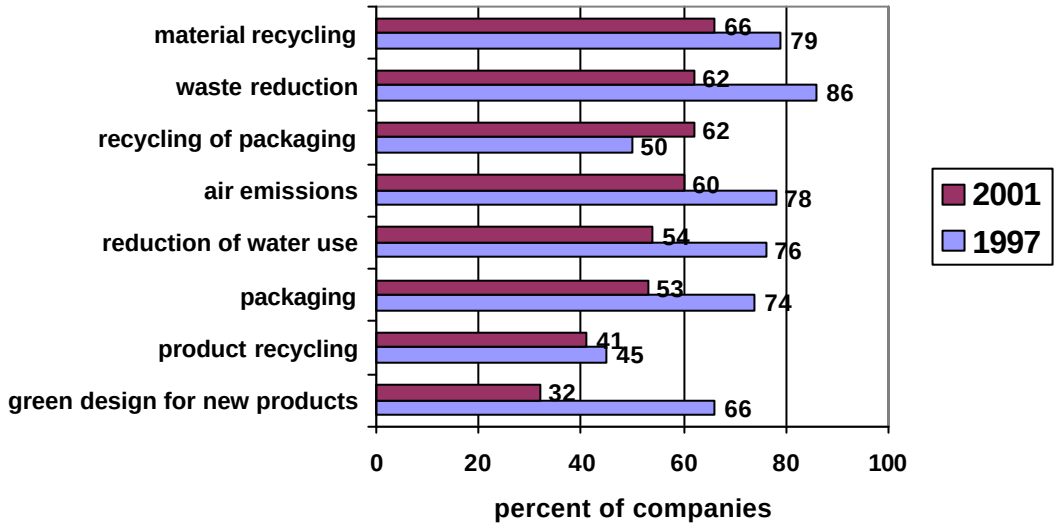


*Fig. 5.7: Technical environmental measures in Swiss companies 2001 and 1997 (Source: Baumast and Dyllick 2001).*

The lower number of measures does not mean that lower effort is invested or smaller results will be achieved. It might simply be an effect of experience gained and a general pressure to act efficiently which in turn leads to concentration on the most relevant projects.

Baumast and Dyllick are quite disappointed that the product related activity has diminished significantly. The use of eco-labels went down from 20% (1997) to 17% (2001), LCA are conducted by only 25% instead of 27% of the firms, green market research sank from 40% to 13% and environmental information for consumers is only given by 32% of the firms instead of 48%.

## 5.7 The impact of EMAS on innovation

Bradford et al. (2000) made a thorough analysis of the impact of EMAS on innovation in Italy, the U.K. and Germany. They pointed out that EMAS had raised the awareness of the need to innovate. They also mentioned an increased capacity to innovate because of the development of environmental responsibilities and qualifications. *"The growth of tacit understanding both of production processes and of improvement options appeared to be particularly important in this respect."* (Bradford et.al. 2000: 64). However, most of the companies stated that a lot of organisational changes and low-tech innovations were catalysed or stimulated by EMAS. But the Italian researchers think that since EMAS implementation is still at an early stage, more radical innovation may be observed in the medium and long term. A similar hope is also supported by Hitchens et.al. (2002) analysis of environmental performance in small and medium sized enterprises. Since high value machines are quite often used for more than 10 years, radical changes in production technology follow the investment cycle of these machines. Only when a window of opportunity opens (by breakdown of such machinery), the environmental manager might influence central parameters of production efficiency.

Ankele et.al. (2002) also supports this view. They argue that the depth of innovation will be deeper after a longer time and particularly innovation which needs co-operation within the product chain could be stimulated by better information and communication due to EMAS. In the long run, the development of an Integrated Product Policy within the EU may have some synergies with EMAS implementation.

## 5.8 Environmental results

Environmental results of EMAS (and other EMS) have been investigated with a lot of different methods. All of them lead to results that are interpretable, with answers that are not easy, clear and quantifiable.

The Austrian EMAS participants generally feel that the environmental results are high (4 on a 1 to 5 scale), which is also the view of their advisors (BMUJF 1999a: 49ff). But while most of the companies think that results could have been achieved without an EMS, the advisors in contrary think that this would not have been the case (33%) or severe difficulties would have been encountered (67%).

The Swedish study (IRIS 2000) asked for a subjective measure and received an interesting result: it seems that the longer the time of operation, the higher the impact the companies feel they have achieved (see fig. 5.8).

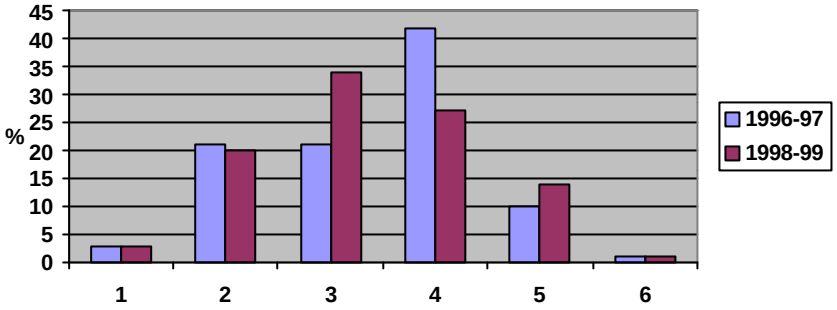


*Fig. 5.8: To what extent has the EMS reduced the environmental impact of your company (not at all = 0, to a very great extent = 6) for companies certified 96/97 and 98/99 (Source IRIS 2000)*

The idea that results are only achieved after a time of continuous work can also be derived from Loew, Wendt and Clausen. The following figure seeks to visualise economic as well as environmental results. Companies are asked for 46 pieces of data in eight categories of success (following a variation of the EFQM-quality excellence model), which are aggregated to form one indicator per category[6].

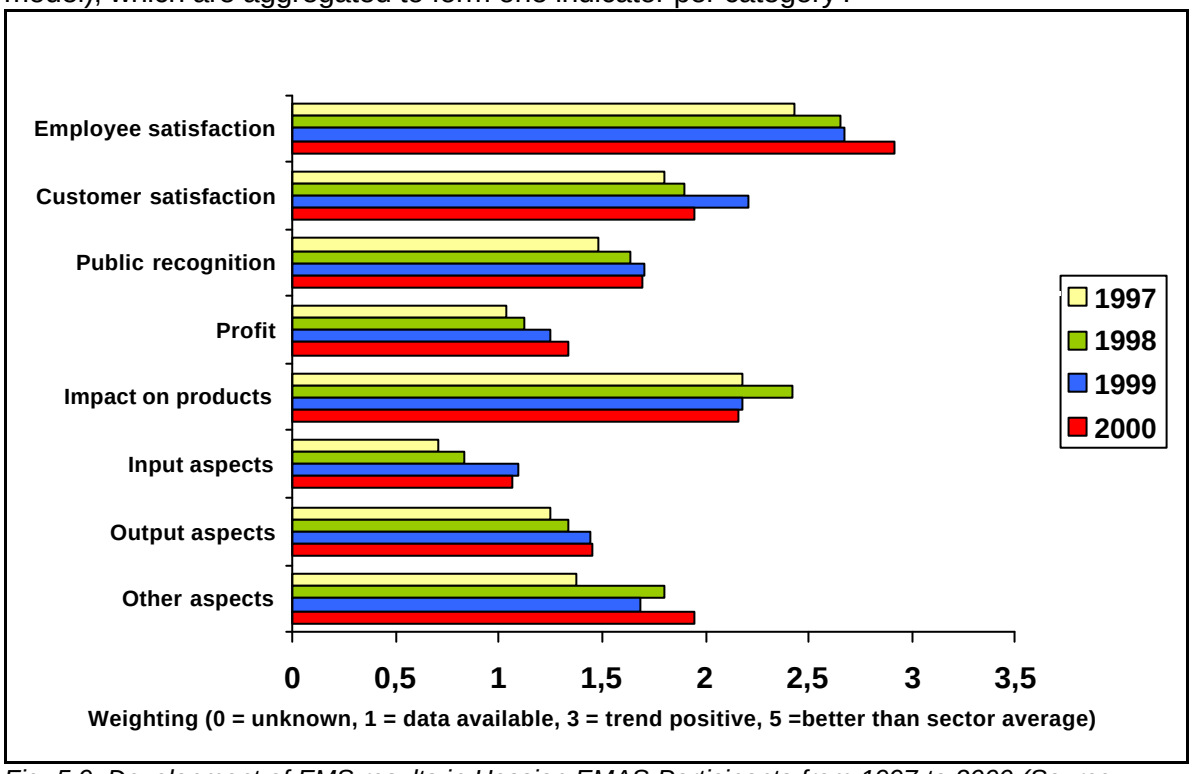


*Fig. 5.9: Development of EMS results in Hessian EMAS-Participants from 1997 to 2000 (Source: Loew, Wendt and Clausen 2001).*

[6] The input data (packaging, hazardous substances, use of secondary raw material, energy, regenerative energy, water, transport) and output data (waste, hazardous waste, air four types of emissions including $CO_2$, COD, BOD, heavy metals) is weighting according to the following scheme: 0 = unknown, 1 = we know the value, 3 = trend is positive, 5 = we are better than the average firm in the sector.

The research shows that for input and output aspects, the average EMAS firm is only in possession of data. After a few years, some firms have realised a positive trend in performance. Only very few firms have generaltrends of better performance or know that they are better than the sector average.

Many companies are still not in possession of data concerning their impact on the environment. The German Environmental Ministry (BMU/ UBA 2000: 36) argues that in many cases, knowledge is concentrated on material and energy flows through the company and does not include knowledge on the effects these flows might have on the environment. Subsequently, anecdotal evidence shows that companies sometimes target the highest energy consumption (which mostly is heating) and not the highest contributor to greenhouse gas emissions (which is often electricity).

The German (UBA 1999: 37) as well as the Danish (Kvistgaard 2001: 60) studies both mix economic and environmental benefits in one question. In both studies, a lower consumption of resources is mentioned as one of the core benefits, but this was also the only environmental result mentioned (and probably asked for).

## 5.9 Economic results

The reported information for economic EMAS results from all studies indicates in general a positive impact. IRIS 2000 summarises the economic benefits in the following way, which is typical for at least some of the studies:

- *"The expenses for introducing and operating an EMS are high but not unreasonably so, save in the case of very small companies. Expenses are expected to decrease in the future.*
- *A higher degree of co-ordination and integration of an EMS with other management systems is seen as a possible way to decrease cost.*
- *Half of all the environmental objectives and targets give payback within one year through cost savings and/ or increased revenue.*
- *The largest cost savings have been made through decreased expenditure on energy, waste treatment and raw materials.*
- *Most of the companies think that their position in the market has been strengthened through the EMS. One third of the companies report increasing revenue due to the EMS."*

Some market impact similar to that mentioned by IRIS was also found in other countries in the EMAS start-up phase up to 1998. Hillary found in an EU wide representative sample 41% of 140 sites which felt that the market had rewarded their EMAS participation. Later studies are more critical in this respect. Kvistgaard (2000) in Denmark found a *"lack of market pull – neither before the introduction in the form of requirements from customers and suppliers, nor after the introduction in the form of increasing demand."* In the case of ISO 14 001, Hughes and Kemp (2000) argue: *"Clearly, where there is a real risk of loss of business because customers require it* (an EMS)*, the case speaks for itself. Where there is no such requirement, the argument based on sales depends on the firm's appetite for risk and its reading of the market."* It is quite clear that a high level of market demand would foster EMAS as well as ISO 14

001 implementation. This is the reason for the high impact that an increasing inclusion of a demand for EMAS in public procurement tenders would have (see chapter 6).

Apart from the doubtful market impact, a couple of types of economic benefits appear in several studies. The following table summarises the main findings:

| Type of benefits | NL VROM 1997 | EU Hillary 1998 | GER UBA 1999 | AUS BMU 1999 | GER BMU 2000 | SWE IRIS 2000 | SWISS Baumast 2001 | DK Kvistg. 2001 |
|---|---|---|---|---|---|---|---|---|
| Reduced resource consumption | yes | | yes | Yes | yes | | | yes |
| Lower cost (several reasons) | yes | yes | small | Yes | yes | yes | yes | yes |
| Better working conditions | | | | | | | | yes |
| Better employee motivation and participation | | yes | yes | | yes | yes | yes | yes |
| Positive market response | | yes | small | | yes | yes | small | no |
| Better financial conditions in banking and insurance | | | | Yes | yes | | small | no |
| Better Image | yes | yes | yes | | yes | | yes | |
| Reduced risk of non-compliance | yes | small | yes | Yes | | | | |

*Tab. 5.3: Economic benefits of EMAS implementation found in different studies*[7]

The German UBA 1999 asked for cost-savings in more detail. Significant cost savings were reported by at least one third of the respondents in four areas of operation: waste, energy, water and sewage, and recycling (see fig 5.10). This finding is also typical for some quantitative and qualitative findings of other studies.

[7] Since the evaluation schemes of the studies are all different, “yes” means a high proportion of companies answering positive or ranking this aspect high, “no” means the contrary and “small” means that some effect was found, but was not mentioned by many firms or seen as having a high impact. If a box does not contain anything, the aspect is not answered by the respective study.

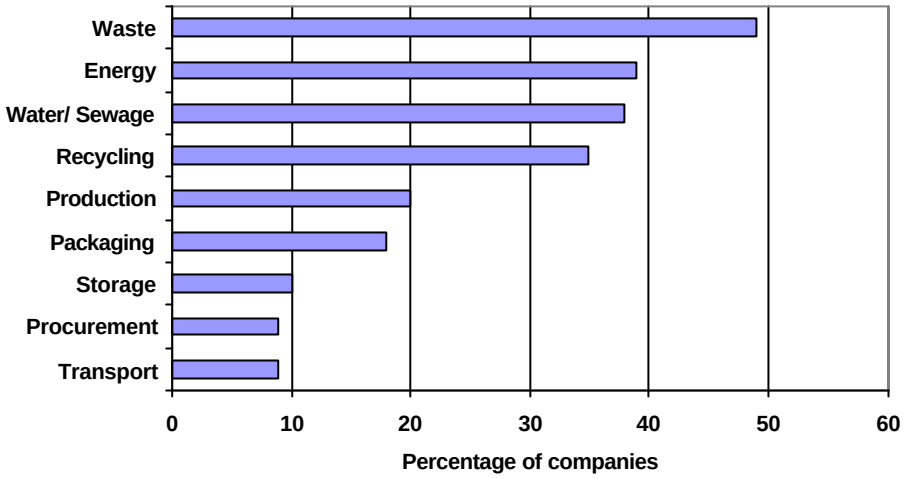


*Fig. 5.10: Areas of cost savings due to EMAS implementation (Source: BMU/ UBA 1999).*

Many respondents of the UBA questionnaire regretted that they were not able to give clear financial data. The reason for this might be that the majority of SMEs are not in possession of a developed controlling system, and even in large firms the controlling of small investments (which are typically for waste and recycling oriented measures) is scarce. Some information exists for energy related measures, which are indicated to typically have a medium or high payback (BMU/ UBA 2001a, Clausen et.al. 2002).

The overall cost-benefit relationship of EMAS participation as seen by the UBA 1999 respondents was weighted to be positive by 25% of the firms, break-even by 17% and negative by 29%. In the VROM 1997 study, *"about half of the companies believe that there are financial benefits associated with the adoption of an EMS. Only 30% of respondents from utility and public enterprises sector are of this opinion, however."* The HMUEJFG 1998 study found 46% of the companies felt they had a positive cost-benefit-relationship, 27% felt neutral and 15% had negative feelings , while 12% could not answer the question.

Some studies have tried to calculate a payback time for the investment in an EMS. UNI/ASU (1997) found on the basis of 80.000 € the average implementation cost and average savings were 50.000 € per year - a payback time of about one and a half years.

## 5.10 Difficulties, burdens and hindrances

For many companies, the implementation of some elements of an EMS was especially difficult. IRIS 2000 found the identification of significant environmental aspects difficult for 49% of the companies. Subsequently, IRIS found that 26% of the companies failed to identify some significant environmental aspect.

BMU/UBA 2000 found that only part of the companies, after compiling any type of material and energy data, evaluated the data with a reproducible method (mostly ABC-analysis or environmental indicators). Many other companies evaluated the significance

of the environmental aspects by “rule of thumb”. Two thirds of the interviewed companies thought that some kind of national environmental target planning would be helpful in guiding them in the evaluation and target setting process (BMU/ UBA 2000: 38).

Kvistgaard (2001: 64) sees the main barrier as a lack of time and resources within the enterprise. However, in Denmark the analysis also shows a lack of customer interest and a lack of flexibility in existing formalised schemes.

The data therefore demonstrates that SMEs face more challenges and special burdens.

## 5.11 EMAS in SMEs

For the implementation of EMAS in SMEs a number of special supporting instruments and guides have been developed. These take into account, that the complexity of management systems as known from transnational companies must be reduced to meet the needs of small enterprises.

One strategy of making the adoption of EMAS easier for SMEs are networks or groups of SMEs, in which a number of SMEs participate and co-operate during the process of implementation. An external advisor is acting on behalf of the whole group which reduces the cost of external advice significantly. In addition, arising problems may be discussed and solved with the other firms and certain documents may be developed for the use of all participants. This strategy is known to have been successfully applied in projects in Sweden and Germany (see e.g. Röpenack 1997).

A second strategy is the staged implementation, which allows SMEs to fulfil EMAS requirements in a number of consecutive steps, but also enables them to establish less ambitious and less formal EMSs. Projects of this type are reported from Ireland, the UK, Germany, Spain and Hungary (Commission 2002)

In Austria and in some areas of Germany, a more informal EMS geared to the needs of SMEs has been developed and is supported in “Eco-Profit” programmes, one of the basic ideas of which is that environmental improvements have to pay off. A similar approach is followed by the Environmental Alliance Hesse, who plans to combine economic incentives with a more informal EMS to enhance diffusion in SMEs (Umweltallianz Hessen 2002).

Being developed by an international team, the EMAS Tool Kit for SMEs (INEM 1999) brings together a set of tools proven effective in helping small companies introduce an environmental management system and attain EMAS registration. It is the result of co-operation among 14 European organisations which have experience in working with SMEs and in implementing environmental management. To make the initial environmental review easier for SMEs, the tool kit provides the visual tool “ecomapping”. But still, SMEs face a lot of problems when implementing EMAS.

Lack of time, resources and qualified personnel (Hillary 1999, Glatzner 2001, Kvistgaard 2001, Pilisi and Venturelli 2002, Klemisch and Rohn 2002) are often mentioned as the main reasons why SMEs are prudent about investing in an EMS.

The major finding of Hillary´s 1999 analysis[8] is that internal barriers to EMS adoption are more important than external ones. These internal barriers of EMS adoption are:

- *"The lack of human resources rather than financial ones is the major internal barrier to EMS implementation and becomes increasingly important as the size of the company decreases.*
- *EMS implementation is an interrupted and interruptible process in SMEs.*
- *Practical problems with EMS implementation exists and includes how to determine environmental aspects and assign significance and how to achieve internal auditor independence in small and micro firms.*
- *SMEs are largely ill-informed about EMSs, how they work and what benefits can be gained from their implementation."*

Additionally, external barriers of EMS adoption are of importance:

- *"SMEs face inconsistencies in and barriers from the certification and verification systems and complain bitterly about the high costs associated with being certified to ISO 14001 and registered to EMAS.*
- *Many SMEs experience insufficient drivers for EMSs adoption and are uncertain about the market benefits of such systems.*
- *SMEs need support and guidance to implement EMSs but experience difficulties gaining consistent quality information and experienced consultants of good quality. The lack of sector specific guidance and material tailored to different sizes of firms is an added problem."*

Pilisi and Venturelli (2002) report about difficulties in finding SMEs for an EMS pilot project. In spite of great advantages offered[9], the SME-members of the Industrialists Association of Brescia refused to participate in the scheme. *"Part of this lack of interest by small and medium companies was due to their mentality against any organising system that restricts their freedom of action. Above all, they saw EMSs as an extra cost, without being balanced by measurable benefits."* The difficulty to find pilot firms could only be overcome by the additional offer to evaluate quality cost. The lack of controlling data within the firms, together with some curiosity concerning the cost of their certified quality management systems was enough motivation for SMEs to start an EMS.

An important finding is that EMS in SMEs tend to be relatively more expensive than in big companies. Dyllick and Hamschmidt (2000) deliver data for the following chart :

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[8] This study analysed 33 separate studies published between 1994 and 1999. The selected reports investigated the adoption of formal environmental management systems (EMSs) in small and medium-sized enterprises (SMEs) and SMEs' attitudes towards environmental performance. Twenty-two of the studies provided practical experience of SMEs' adoption of formal EMSs (BS 7750, ISO 14001 and EMAS). The majority (30%) of the studies were academic or research projects.

[9] Advantages offered were: work totally free of charge, involvement of well known experts, presence of scientific heavy weights from both local universities, guarantee of total assistance in the future running of the EMS.

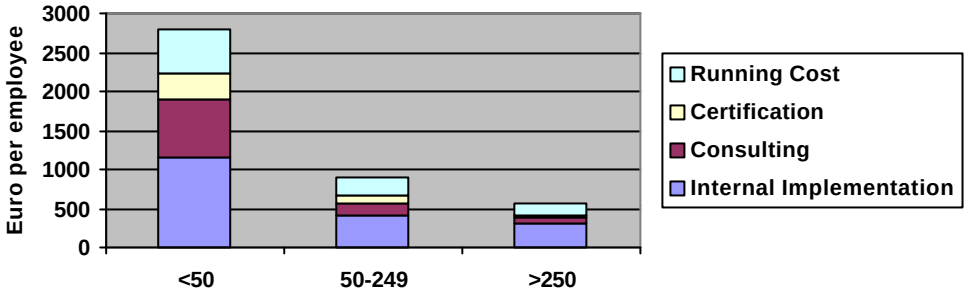


*Fig. 5.11: Cost of EMS implementation in Swiss companies (Source: Dyllick and Hamschmidt 2000).*

A look at table 5.2 identifies the Swiss Dyllick and Hamschmidt study as reporting about extremely expensive EMS. Nevertheless, the relative cost-size relationship for these firms seems to be plausible. On the basis of the UBA 1999 study it can be calculated (excluding internal implementation cost), that firms of up to 50 employees invest about 850 € per employee, firms with up to 500 employees invest about 350 € per employee and firms with more than 500 employees invest 25 € per employee.

Overall, it seems that theoretically, SMEs must aim for a much higher EMS-payback per employee but are much less likely to achieve it. It might therefore be easy to explain why 2001 was the first year when more German crafts companies left EMAS than registered[10]. In 2001, according to Wildförster (2001) 44% of craftsmen facing a revalidation left the scheme.

## 5.12 EMAS or ISO

IRIS 2000 finds that *"EMAS registered companies seem to achieve a better environmental performance than companies with only ISO 14 001."* In an environmental assessment parameter test performed by IRIS (using the parameter "target results physical") based on answered questionnaires, EMAS firms achieved on average 80% results while "ISO-only" firms achieved only 57% (IRIS 2000: 37). But some companies still do not strive for EMAS. The most common reason stated for not registering for EMAS is cost. All of the 42% of Swedish firms which do not have EMAS and answered the questionnaire cited this as the reason (IRIS 2000: 34).

BMU / UBA (2000: 36) did not find that EMAS participants defined higher targets than ISO-only firms. Subsequently BMU/ UBA assumed that the environmental impact of EMAS would not be higher. However, contrary to the Swedish study, they did not analyse target achievement.

The reason for fearing high EMAS cost might well be based on reporting cost which, according to BMU/ UBA 1999, accounts for about 19% of total implementation cost (see fig. 5.4). According to Hillary (1999: 15) the environmental statement *"frightens SMEs"*,

[10] The number of EMAS participants fall from about 310 (31.12.2000)to about 280 (31.12.2001).

who in general have no reporting practice in other fields. But in Austria, for 74% of "ISO-only-interviewees", the effort and cost to be invested in an environmental statement was not the main criterion for choosing ISO 14 001 instead of EMAS (BMUJF 1999b). Only 10% of "EMAS-only-interviewees" reported that the environmental statement was a matter of discussion when deciding to implement EMAS.

Site registering cost is comparatively small and should not be a reason against EMAS registration. Other reasons must subsequently exist

The geographical limitation of EMAS to the EU seems to have been of no real importance for deciding against EMAS. The degree of globalisation (outside EU) of firms did not vary between the EMAS and ISO 14 001 groups (BMUJF 1999b: 34). UBA (1999) in Germany found that "world wide validity" is the most important reason for an *additional* ISO 14 001 certificate. Other reasons mentioned were compatibility with ISO 9 001 and the possibility of certification of an organisation instead of a site.

One reason against EMAS which could clearly be identified in Austria was an existing quality management consistent with ISO 9 001. One third of the firms using ISO 9 001 said that compatibility was the decisive reason for ISO 14 001. Only 20% of ISO 9 001 firms implemented EMAS while about 55% of the firms without a quality management scheme decided in favour of EMAS. The reason for this behaviour is believed to be an easy integration of the management schemes (which certainly raises efficiency); this reason should be removed by the integration of elements of ISO 14 001 in EMAS II.

Another reason against EMAS is put forward by Hillary (1999:15), who argues that there is a *"fear of de-registration for minor breaches of legislation"*, which makes EMAS an unattractive proposition for many firms.

## 5.13 Phases of introduction and environmental strategy

One of the weak points of all types of environmental management systems seems to be the integration of environmental objectives into the strategy of the firms. Several studies complained about the low intensity with which product-related environmental issues have been dealt with up to now (see Chapters 5.5. and 5.6).

In the Netherlands, where the biggest effort to implement EMSs goes back before the time of EMAS, a telephone survey of 1000 companies revealed in 1997 that *"…the introduction of EMS is having very little effect on the strategies of companies."* (VROM 1997). The study identifies several phases of implementation:

| **Phase** | **What is done?** |
|---|---|
| defensive phase | focussing on operational and short term actions, responding to problems which arise from time to time, limiting damage |
| preventive phase | begin a systematic approach, EMS is designed and implemented |
| offensive phase | the environment is seen as an opportunity, environmental communication incorporated in commercial activities, no more focussing only on authorities |

*Tab. 5.4: Phases of EMS introduction found by VROM 1997*

According to VROM, only very few companies have reached the offensive phase.

Pfriem (1999) analysed cases of 11 EMAS validated firms that started environmental conscious management long before the introduction of EMAS. He found the same two main phases of EMAS-development (since he did not describe the pre-EMS-phase):

| **Phase** | **What is done?** |
|---|---|
| first phase | access to short term economic savings<br>single technical measures<br>assigning tasks to responsible persons |
| second phase | long-term environmental and economic balancing<br>integrated optimisation of processes<br>integrated environmental deployment of human resources |

*Tab. 5.5: Phases of EMAS introduction found by Pfriem 1999*

Pfriem finds that the general idea of the second phase is not (only) the collection of information but the effort is invested in a process of communication between different positions concerning the future development of the companies. A general capability of firm-deployment is seen as a prerequisite to general excellence – including environmental excellence. A similar view is shared by Hitchens et al. (2002), who in a study of 300 SMEs in Europe[11] found that environmental and economic excellence generally seem to be based on the same foundation, but not on each other. It can be confirmed from the results that environmental management (EMAS and ISO 14 001 as well as individually tailored systems) ensures that firms do not forget important environmental aspects. But EMS do not seem to create intrinsic motivation but are more likely to be introduced in firms whose top-managers are intrinsically motivated themselves.

It can be argued that it is necessary to create more environmental communication, since only the combination of general capability to develop the firm and a growth of environmental motivation will be able to shift environmental activities on the strategic level. The communication which is ensured by the EMAS provision to publish an environmental statement thus becomes central to push a growing number of firms into the second, strategic and far reaching phase of environmental management.

[11] 100 face to face interviews in three sectors in Italy, U.K. and Germany, additionally about 900 returned questionnaires. of the same sectors and 100 interviews of advisors.

## 5.14 Environmental statement

The environmental statement is the most discussed and most misunderstood element of EMAS. Most companies that published one (60%) actually answered that it was a useful communication tool (Hillary 1998: 92), while only 17% responded in the negative. A general misunderstanding of the usefulness arises from the following fact: most requests for environmental statements come from groups that the firm finds a burden to serve. For firms, it seems to be horrifying to hear that 79% of firms get requests from researchers, 34% from consultants and only 21% from customers (Hillary 1998). UBA 1999 found that the interest shown by stakeholder groups in the environmental statement exceeded expectations only in the groups of scientists, students and consultants. Accessing all other (commercially important) groups was behind expectations. James (2002) argues that nearly nobody reads an environmental statement or report and they do not influence strategic stakeholders. Regrettably, many arguments of this type are not based on data reporting the success of the communication but only on the numbers of requested statements.

Firms would very much like to inform the press, customers or shareholders, but these groups do not have to ask for an environmental statement: they mostly get it for free by active information. When 194 publishers of environmental statements (112) and reports (82) answered a questionnaire in Germany (HMWVL 1999) it was found that 26% of these went to employees, 19% to customers and only 12% to universities. All other groups received less than 8% each. This study also shows that universities do the most **requesting**, but they do not **get** the most statements. Regrettably there is not much information on the impact the statements have on stakeholders. When 115 questionnaires were returned to three medium-sized enterprises that had, on top of an EMS, published a sustainability report, they contributed the following data on reader behaviour (INEM et.al 2001):

- Customers, sales partners and employees: they each invest an average of one and a half to two hours of reading time; only the groups ‘press representatives’ and ‘capital investors’ stayed below the one hour threshold.
- 35% of the readers read the entire report, 45% parts of it, 15% look for specific information. A mere 5% only browsed through the report [12].

It is crucial to actively disseminate such a report and to integrate it into existing structures of company communication. Help from the media will be very limited. BMUJF (1999a) saw the only possibilities as being access to regional newspapers and sector specific magazines, since TV, radio and national press are largely not interested in the news of a validation or environmental statement. Bigger firms had a better chance for media interest than smaller firms. But experience from the pharmaceutical firm Weleda AG within the pilot project ‘Sustainability Reporting’ indicates high effectiveness of the

- [12] The feedback also revealed that 72% of the readers consider a printed version as the suitable means of reporting while the Internet gains 46% approval, that 72% of the readers prefer short reports of less than 30 pages; only 6% want more than 50 pages and that 50% of the readers favour annual reporting; only 10% would be satisfied with triennial intervals.

reports (IÖW and imug 2002). It is interesting that this company integrated a validated environmental statement into its sustainability report. Core stakeholders invested much time to read it and were very interested in the environmental statement. Figure 5.12 shows, that most interest was invested in environmental matters.

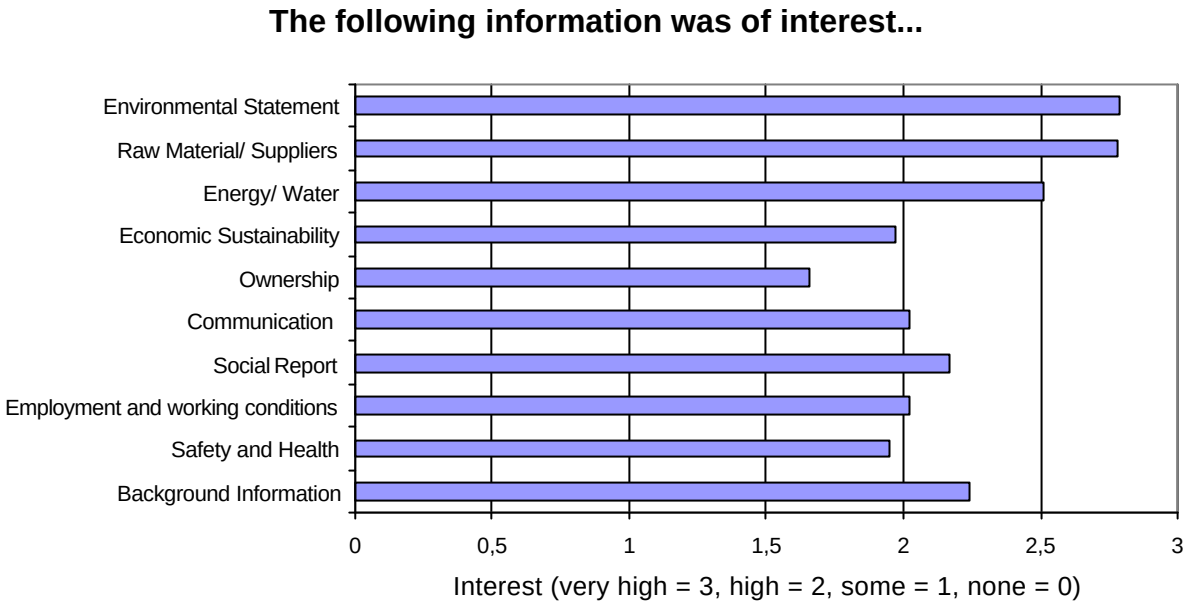


*Fig. 5.12: Interest in information contained in a sustainability report including an environmental validated statement (Source: IÖW and imug 2001).*

It thus seems quite probable that a positive impact of an environmental statement on the image of a company is possible. And a better image is one of the main motives for participating in EMAS (see figure 5.1). But regrettably, there are only a few studies which really try to analyse the impact the environmental statement has on stakeholder's views of the company.

# 6 EMAS II in public administration

The development of EMAS in public administrations throughout Europe is of special importance for EMAS as well as for its possible environmental impact. If we assume, that a proportion of about 50% of EMAS participants from gas and electricity supply, disposal and health (NACE 40, 90 and 85) are owned by public authorities, then about 50% of all non-production organisations belong to the public sector. 85 participants in public administration (NACE 75) and 37 participants in education (NACE 80) are the basis for the information given in this chapter.

It was not possible to compile a literature study, because nearly no literature is available to date. There are plenty of guides on how to implement EMAS in public authorities, but the first registrations were only made recently and no evaluative studies (like those for industry) were completed. In order to provide at least some insight on EMAS in public administration, information was drawn directly from participants. Based on the addresses contained in the register of EMAS participants, a sample of 55 organisations from Austria, Denmark, France, Germany, Italy, Sweden and the UK were contacted. The result was 43 gave official/useful information for this chapter. Most respondents completed the implementation of their EMS within the last two years:

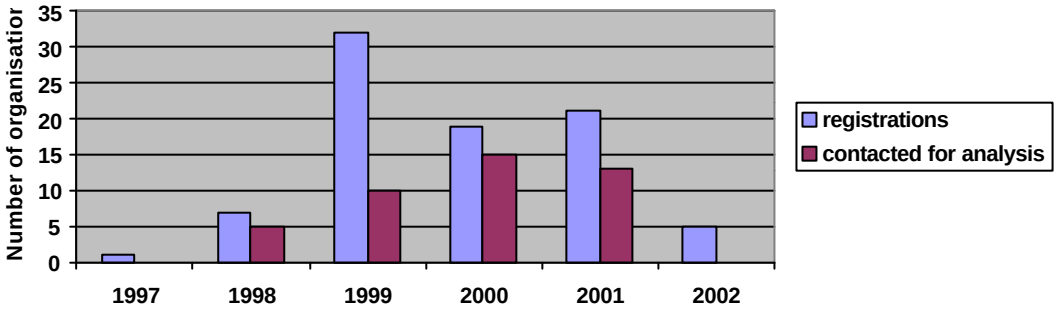


*Fig. 6.1: Date of registration of organisations of public administration (NACE 75) in EMAS as of 28 February 2002 (Source: EMAS helpdesk) and date of registration of contacted organisations*

In most cases environmental statements were received, some organisations sent additional information like a management handbook or press releases. Further questions were asked by phone, fax or email to get additional detailed information. All this information provides the basis of this chapter.

This chapter covers a whole range of organisations that have implemented EMAS. Some organisations have implemented EMAS for all departments, most of them have certified only some departments or units, often within a research or pilot project. There are a few organisations that are currently developing a tailor-made EMS for their needs or have tried to implement only parts of EMAS to certain parts of their organisation. The most prominent example is the Governmental Disaster Relief Organisation of the Federal Republic of Germany (THW). One of its local sites has implemented EMAS in 2001. This site serves as a model. In the following years all other 664 local sites will have to take over at least some of the EMS developed there.

Regarding the size of organisations that have implemented EMAS, there are big differences. There are organisations with several hundred employees like the London Borough of Sutton, the German Federal Environmental Agency or the City of Wuppertal. But there are also small organisations like the municipality of Plietzhausen with only a few employees, Borough of Lüchow-Dannenberg Roads Engineering Service with only 58 employees or the Voluntary Fire Brigade of the City of Rosenheim with only 10 full-time employees and a great number of voluntary fire fighters.

The organisations of public administration participating in EMAS cover a whole range of activities. There are organisations with pure administrative tasks, like the German Federal Environmental Agency, the Department for Environmental Services of the City of Hannover and the Regional Administrative Body of Krems in Austria. There are also activities that are entitled "service activities" like the Haderslev State Forestry Service, the Grounds Maintenance Service of the City of Dresden or the City of Jena Construction Service. The study also covers institutions of education like the 116$^{th}$ Secondary School Dresden and the University of Applied Sciences Zittau/Görlitz as well as Rescue Services like the Fire Brigade Malmö.

## 6.1 Motivations and expectations involved in the decision to implement EMAS

Although the motivations and expectations of each organisation implementing EMAS are different, there are some general trends. Eleven organisations took part in a pilot project. Three organisations co-operated with a university or a research institute, and seven received financial aid from the state to develop their EMAS. Others – especially at the beginning of the EMAS process in 1998/99 were asked or selected by the relevant authority to implement EMAS. These organisations usually had a good record of environmental activities already. 24 organisations started with EMAS after their responsible body, the county council or the city council, made a relevant decision.

All public organisations wanted to set an example for other organisations. Where only a unit of an organisation was certified, this unit was usually a prototype unit for the whole organisation. This has become most evident, e.g. in the cases of the City of Wuppertal (Stadt Wuppertal 2000), the City of Nuremberg (BMU/ UBA 2001b: 289) and the City of Hanover. The motivation of individual units is sometimes stimulated by the 50/50 rule: The 116$^{th}$ Dresden Secondary School and the Environmental Department of the City of Hanover may keep up to 50 % of the saved costs for the re-investment in projects. This idea fits well into the tendency to give financial "budgets" to administrative units.

A major motivation is in many cases higher efficiency leading to financial savings. Organisations want to use EMAS as a tool to find out where they can save money. They want to reduce their costs for water, energy, heating, fuel and stationery. The German Environmental Ministry assumes the following cost saving potentials for the complete German administration:

| | Resource use per year | Assumed saving potential |
|---|---|---|
| **Energy consumption** | 5 to 6 % of German energy consumption (ca. 480 PJ) | 5 to 15 % by organisational measures<br>25 to 60% of heating energy<br>more than 10% of electricity |
| **Water consumption** | 5 to 6 % of German water consumption (ca. 340 mil. $m^3$) | up to 45% cost reduction have been achieved in individual projects |
| **Waste disposal** | overall amount unknown<br>ca. 21 mil. tonnes building waste<br>1,67 mil. tonnes hospital waste | up to 50% cost reduction have been achieved in individual projects<br>2 to 5 % of building cost |

*Tab. 6.1: Resource consumption and potential savings in German public administration (BMU/ UBA 2001b: 20)*

In many EU countries EMAS implementation is considered to have synergies with the ongoing process to modernise public administration and to build profit centres, e.g. in road construction, grounds maintenance or removal. EMAS with its origin as an industry management system fits perfectly in the time period when public administration is seeking to learn from industry and many public organisations are under pressure of competition or are subject to discussions about privatisation.

Another important motivation was the Local Agenda 21 process. 19 organisations see EMAS as a part of their activities in the LA 21 process. EMAS implementation is something the public administration can actually do to show its willingness to deal with the challenge of sustainability.

Some institutions noticed a high interest in their EMAS activities. Some forerunners did a lot to promote EMAS by attending conferences, giving lectures or producing and selling brochures. The German Environmental Protection Agency sent its environmental statement to about 400 Federal Administration Bodies in Germany causing intensive feedback and many requests for help and information[13]. It seems quite evident, that within the community of public administration, EMAS pilots foster participation from additional organisations. But there is no evidence that the implementation of EMAS in public administration led to a higher number of EMAS participants in industry.

Some kinds of motivations were specific for the type of institution. The 116th Dresden Secondary School wanted to strengthen its profile with EMAS and develop an environmental education system / programme. Further, they wanted to involve the pupils in order to promote their environmental awareness. For the University of Applied

[13] In April 2000 a motion passed the German Bundestag which obliged all Federal Administration Bodies to implement an Environmental Controlling and Management System (EMAS and/ or ISO 14 001) with the aims of saving environmental as well as financial resources (Deutscher Bundestag 2000).

Sciences Zittau/Görlitz, EMAS is a part of their scientific profile since they have a department for environmental studies and their students were highly involved in this project.

## 6.2 Implementation status of EMAS-elements

No specific information on the implementation status of EMAS elements was contained in the verified environmental statements. Therefore, it can be assumed that everything has been implemented according to the regulation.

But interestingly, organisations that have undergone a re-evaluation, state that they have to improve their EMS or some elements of it in the future. It obviously takes some time for an organisation to recognise which elements are well implemented and which need some extra care. According to the results in industry (see Chapter 5.2) it seems necessary to evaluate sooner or later the effort invested in EMAS in public administration to ensure effectiveness.

One clear organisational result of EMAS is that all organisations collect data about their direct environmental impacts. This data collection is usually quite new for the institutions and it gives them the opportunity to notice for the first time the real consumption of goods and services. When there is data, then it is possible to identify targets and try to achieve them.

But often there are external influences that an organisation cannot control and therefore some targets are not achieved. Factors such as weather influence these targets i.e. in very cold winters, buildings need more heating energy or the road maintenance service needs more defrosting material. Many organisations complain about these influences which shows, that they are still busy to find out, which environmental effects they are able to control and influence.

## 6.3 Cost of implementation

Only very few organisations provide any figures of the costs of implementation at all. The data on external costs given ranges from 4.000 € (Landratsamt München) to 33.000 € (Stadt Riedstadt). Nuremberg reports that the whole project of implementing an EMS in the city administration (only the theatre was registered in EMAS) needed 1.5 work years costing 64.000 €. Additionally, 4 work years were funded by the Federal Employment Service and the State of Bavaria. The project led to savings of about 135.000 € per year. (Stadt Nürnberg 1999).

## 6.4 Timescales for implementation

24 organisations provided data describing the time from the beginning of EMAS activities up to the first certification:

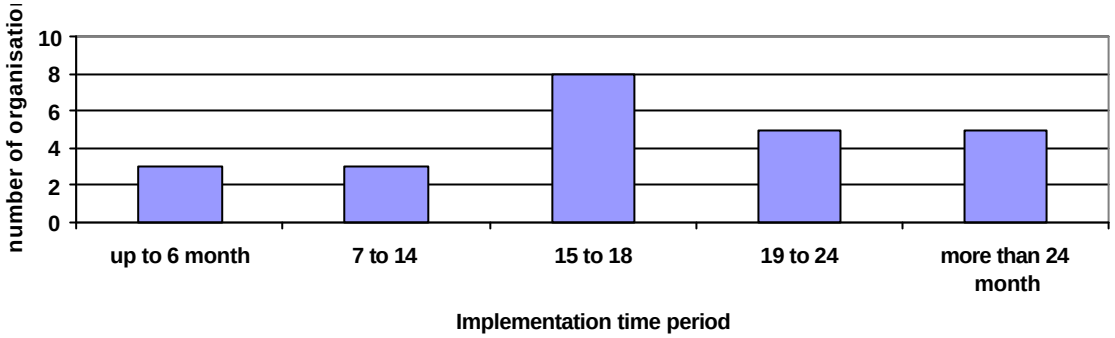


*Fig. 6.2: Time to implement EMAS in public administration until the first registration*

The longest time period mentioned was 4.5 years to implement EMAS. Compared to the implementation time of industry organisations, it seems that implementation takes longer in administration.

## 6.5 Environmental targets

Like industry, public administrations first concentrate on those targets that have a direct environmental impact (see fig. 6.3). Their focus is on reducing the organisations' consumption of resources.

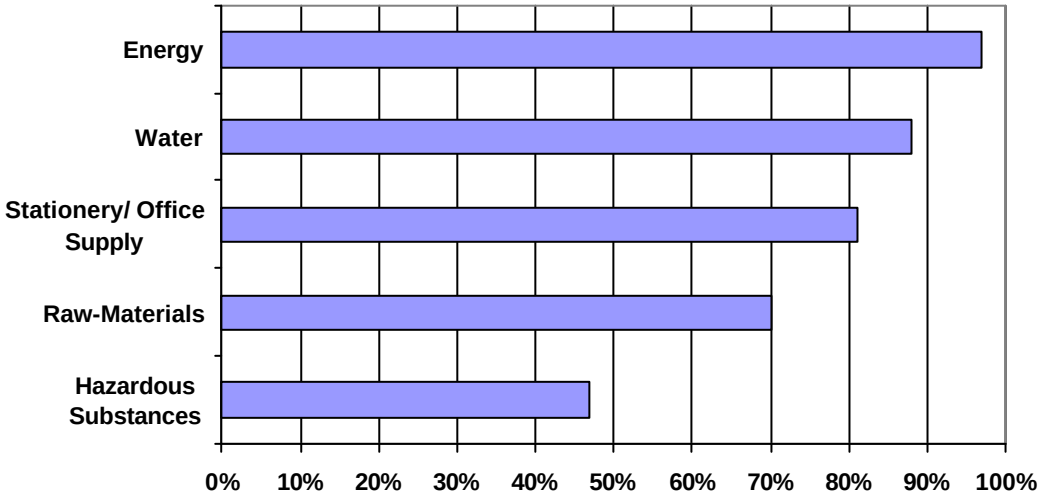


*Fig. 6.3: Resource-targets in environmental statements of public administration.*

The development of targets concerning indirect environmental impacts takes longer. Slightly more than half of the organisations examined mention targets of this kind:

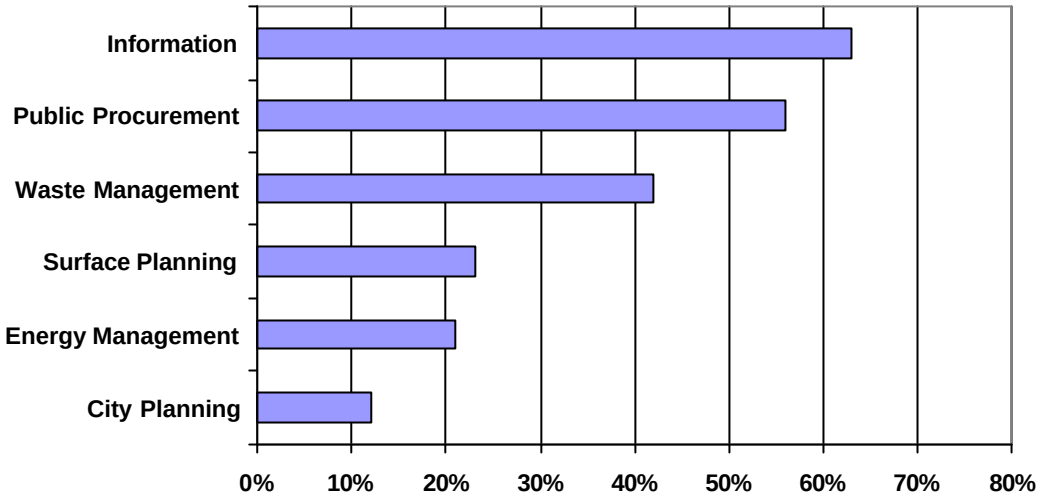


*Fig. 6.4: Management-targets in environmental statements of public administration.*

These organisations have either a lot of experience with environmental issues, like the German Environmental Protection Agency or have been using EMAS for quite some time.

It is striking that an environmentally friendly public procurement programme is especially promoted in the UK. With the “Best Value-Programme” the government encourages organisations to consider a variety of aspects when buying products and services, and not only focus on the lowest price.

In many cases, the targets are relatively unambiguous, i.e. to reduce the energy consumption by 2 per cent in the next year or to keep the use of vehicles on the same level as the last year. These targets often do not need intensive changes in the behaviour of people but they show and foster a developing consciousness.

Organisations that have gone through the first re-evaluation process report that the longer they work with EMAS, the more complex the targets are that they have identified.

Other targets are staff training, involvement of the public, and trying to promote EMAS to industry.

## 6.6 Technical measures implemented

As all organisations try to reduce their consumption of energy, water and air emissions, they use different technical measures to reach those targets according to their situation. It is most common to improve the energy efficiency of offices and buildings with some construction work. This is done with older buildings or where repairs are necessary anyway. Some easy examples are: better insulation for buildings, replacing windows, repairing the central heating system, changing lightbulbs to energy efficient ones, using plug-ins with power save, installing toilets with a water saving flush, etc. Smaller repairs or reconstruction are usually done quite quickly, bigger ones take more time and need financial resources.

In the case of the City of Wuppertal Youth’s Division in Germany, the implementation of

EMAS and the data that were collected led to the closure and reconstruction of some buildings.

Some organisations have already renewed their vehicles in order to decrease their environmental output, especially regarding $CO_2$. These activities usually need a lot of financial resources and are therefore done slowly.

The variety of measures seems to be still a bit smaller than the measures reported for industry (see chapter 5.6).

## 6.7 Environmental results

Many organisations do not have any information on results because they have recently certified their EMS and data collection is at too early a stage to measure results.

It is evident that all organisations want to reduce their direct negative environmental impacts, i.e. their consumption of water, energy, petrol/diesel, paper, office needs, etc. Some information on the result of individual measures is contained in environmental statements (in connection with re-validations). They report that impressive results can be reached when buildings are modernised, i.e. the heating system. The 116$^{th}$ Dresden Secondary School was able to save 30 per cent of their annual heating energy consumption because they installed a new heating system when they implemented their EMAS program. The Environmental Department of the City of Hanover was able to reduce its heating energy consumption by more than 20 per cent within the last 5 years because they introduced a whole bundle of changes.

## 6.8 Economic results

There is surprisingly few data about economic results of the implementation of an EMS. But there are enormous potentials (see Chapter 6.1).

The majority of organisations are obviously not in possession of detailed financial data and subsequently do not give any information about economic results. Those organisations that have been working with EMAS for some time do provide information about the resources they have saved. But there is almost no information on how economically effective an EMS is. There can be several reasons for this:

- the organisations do not publish any economic results,
- to get positive economic results it often takes a longer period of time and a lot of organisations have only recently begun with an EMS.

## 6.9 Burdens and hindrances

Only some organisations specify the burdens and hindrances of EMAS implementation. Motivation of staff seems to be a problem in some cases. Many employees have to do more work and do not see a personal advantage in working with EMAS.

A second hindrance are external effects that can not be influenced by the administration itself which has at least an impact on motivation.

Limited financial resources are also of importance. Many EMAS projects in public administration seem to suffer from high work pressure arising from scarce financial resources. The City of Bad Dürkheim in Germany did not undergo a re-evaluation after three years because EMAS was viewed as too expensive and not effective.

## 6.10 Conclusion

Compared with industry, the use of an EMS in public administration is just at the beginning. In many cases, EMAS is part of the organisations' overall environmental strategy, often combined with activities to develop a Local Agenda 21. There are numerous organisations that have taken part in EMAS pilot projects.

The main focus in public administration (as is typical for the first phase in industry as well) is on collection of environmental sensitive data. In all cases, information is used to identify targets to reduce the direct environmental effects of the organisation. But in many cases there are still no visible results. This is especially true for indirect environmental effects, which will have to become more prominent in EMAS within the next years.

# 7 Incentives to participate in EMAS

## 7.1 Regulatory and monetary incentives

Stakeholders positions make clear that incentives to participate in EMAS were and are not strong enough to ensure a high level of participation over many years. The Bavarian example shows, however, that in the case of good participation between government and industry, a high level of participation may be achieved and EMAS may reach its point of achievement. But which incentives really motivate organisations to participate in EMAS? The following information on incentives has been collected:

| Member State | Regulatory relief | Monetary and tax relief | Other incentives |
|---|---|---|---|
| EU-Commission | The first draft directive on the impact of the environment of electrical and electronic equipment (EEE) includes a presumption of conformity for EEE designed by a company with an EMAS registration, provided that the design function is included within the scope of the registration.<br>A new taskforce on EMS in the IPPC context shall identify opportunities for harmonised EMS in the IPPC Brefs.<br>Emissions trading directive ??? | | An interpretative communication "on the community law applicable to public procurement and the possibilities for integrating environmental considerations into public procurement" (EU Commission 2001b) explains existing possibilities |
| Austria | Austrian Environmental Management Law offering some easier conditions for EMAS participants concerning permits for changes of plants, consolidated permits, reduced frequency of supervision and reduced informational duties. | | Funding programme<br>Eco-Audit Award |
| Denmark | EMAS statement can substitute the obligatory green account of 15000 firms | Low registration fees<br>50% reduction of supervision fees | Financial support for implementing an EMS<br>Public procurement asks for EMAS participation |
| Finland | The value of EMAS in regulation of industry will be assessed to streamline and support the regulatory process | 30% reduction of permit handling fees | |
| France | Firms with an obligatory economical, social and environmental report can substitute the environmental chapter by an EMAS statement<br>Regulation on auto monitoring supporting EMS firms | | |
| Germany | Several deregulation activities in | 30% reduction of | Financial support for EMS in |

| | | | |
|---|---|---|---|
| | some federal countries<br>National draft deregulation law of 2001 encompassing: informational and organisational duties, conducting of measurements and their intervals, security checks and reports | fees in Bavaria regarding permits for industrial sites | SMEs |
| Italy | EMAS registration might be considered by the competent authority<br>IPPC permit prolonged from five to eight years for EMAS participants, possibilities to substitute an authorisation by a self-certification in the fields of waste management, water and air pollution, “fast track-permit-process”<br>Some regional and local regulatory benefits | | Financial support for EMS in SMEs<br>EMAS registered firms preferably considered in public procurement for industrial water networks<br>Green procurement under study |
| Ireland | A study shall explore synergies between EMAS and IPPC | 25% reduction of supervision fees | |
| Netherlands | Outline-License for enlargement of plants of EMAS participants<br>EMAS statement can substitute the obligatory environmental report of the 300 biggest firms | | |
| Spain | | Reduced fees in Murcia Community | Financial support for implementing an EMS<br>Public procurement underlines EMAS |
| Sweden | Firms with an obligatory environmental report can substitute this report by an EMAS statement | | |
| United KIngdom | Integration of EMAS in reporting concerning a climate change voluntary agreement<br>EMAS documentation is accepted for IPPC permissions<br>The value of EMAS in regulation of industry will be assessed to streamline and support the regulatory process | | Financial support for implementing an EMS in SMEs |

*Tab. 7.1: Deregulation and financial incentives for EMAS participants in the EU*

The effect of deregulation seems still to be limited. National regulation concerning deregulation is still rather fresh (Austria 2001, France 2001 and 2002, Germany (probably) 2002, Italy 1999-2001), with most laws stemming from the last three years. Therefore, the impact on the numbers of participation is quite limited.

Monetary and tax relief is seldom found. Only some regions are experimenting. Until

now, companies did not think that monetary relief makes an EMS pay.

The situation in the German state of Bavaria is of special interest. Until the year 2000 firms representing about 15% of working places in industry have been EMAS validated (or certified according to ISO 14 001) and until 2005 firms representing 50% of the working places shall be. According to national statistics, in 2002 there are 5.9 million working places in Bavaria, of which 2.1 million were in industry. Bavarian EMAS participation does represent about 300.000 working places in 2000 and shall rise to about 1 million in 2005. This is more than fourfold than the 909 sites with in total 221.000 employees from Austria (all), Denmark, Finland, Italy, Portugal, Sweden and Spain which are included in the EMAS helpdesks database at the beginning of 2002. The participation of the biggest 2000 to 3000 Bavarian companies – this would be all with more than 100 employees – would benecessary until 2005 (IFM 1997). What might be the reason of the Bavarian confidence in the future success of implementing EMAS and ISO 14 001 in industry? Some structural foundations for a successful environmental policy of Bavaria may be described as follows :

- Bavaria changed from an agrarian to an industrial region in the last 40 years and has a comparatively young and competitive industry.
- Bavaria`s economy is comparatively successful and available funds in industry as well as government are comparatively well developed.
- A long lasting conservative government has good relationships with important parts of industry.
- Because of good terms between the partners the Bavarian industry really believes that the Bavarian government strives for effective deregulation.

Within a voluntary agreement called “Umweltpakt Bayern” (Environmental Pact Bavaria) a wide range of measures were agreed upon in 1995 encompassing not only EMAS participation of industry but also deregulation and co-operation of state and industry in the fields of contaminated sites and special waste disposal. Since a wide range of the agreed measures has been successfully completed, the agreement has been prolonged until 2005 and will now focus additionally on climate change, saving energy and resources, IPP, sustainable mobility, the service sector, regionalisation and international projects to enforce exporting Bavarian environmental technology. The Umweltpakt contains promises for deregulation and tax reduction for EMAS participants concerning:

- reduced work for environmental statistics of companies,
- development of advantages in the tax system,
- reduced fees for permits and supervision,
- reduced fees for wastewater,
- the idea of free use of groundwater will be evaluated by the state,
- harmonisation of management officers defined by law (for waste, air pollution etc.) with the EMAS organisation to make work more efficient,
- development of a “fast track” permit process,

- promotion of deregulation activities at the national and EU level, and
- substitution of duties for documentation and information by EMAS elements.

The “Umweltpakt” is seen as an example of a co-operative environmental policy and as a master plan for similar activities in other federal countries. The success of the Umweltpakt until 2005 will be an interesting test of the voluntary agreement as a political instrument. It could demonstrate ways in modern politics to further implement instruments that require voluntary participation.

## 7.2 EMAS in Public Procurement

The value of public procurement as a percent of the GNP has a range from 13% (Italy, Germany), over 15% (France) to 17% (UK) (OECD 1997). The main focus of environmental consciousness in public procurement is on environmental optimised products. Figure 6.4 illustrates that more than half of the public administration bodies registered in EMAS set targets to integrate environmental considerations into public procurement. A good overview of possibilities is given in the EMASSER-Handbook (City of Malmö 2001). But still, a demand for EMAS registration itself is generally not legal in a call for tender. But there are several possibilities discussed to integrate a demand for EMAS in the procurement process:

An informative question is legal. The deliverer might be asked whether he is operating management systems like EMAS or ISO 9 001. The Danish Procurement Guidelines (EPA 1999) advise to ask for EMAS, because *“If the manufacturer has introduced environmental management (e.g. EMAS or ISO 14 001) one can expect that serious efforts are being made to reduce the environmental impact of production.”*

The interpretative communication of the EU Commission (Commission of the EU 2001b) on public procurement sees a second possibility to ask for an environmental management system as a means of proof for technical capacity of the candidates. *“In order to be relevant as a means of proof of technical capacity, the system should have an impact on the quality of the supply or the capacity of the company (for example the equipment and technicians) to execute a contract with environmental requirements (for example a works contract for which the contractor has to deal with waste on the construction site). Therefore, whenever elements of a company`s or organisation`s environmental programme and management scheme could be regarded as one or more of the references that could be required for establishing a company`s technical capacity, the EMAS registration could serve as a means of proof.”* (Commission of the EU 2001b: 17) But at the same time, contracting authorities may not exclude other means of proof by accepting only an EMAS registration: any other certificate (e.g. ISO 14 001) or any other means of proof should also be accepted.

Some works and service contracts have considerable environmental implications, with the potential to create significant environmental problems if they go wrong, are done badly or the environmental consequences have not thoroughly been taken into account. One means of reducing the possibility of a problem in these circumstances is to require the potential contractor to put in place a specific environmental management system for

the specific site or contract. This way the contracting authority can be confident that the potential environmental impacts of the contract will have been reviewed and that the relevant environmental legislation will be complied with.

# 8 Evaluation of EMAS II by stakeholders

Overall, the interest in EMAS is focussed on business and government. Environmental NGOs were intensively concerned in the 1990s, but in 2002 the number of public statements dealing with EMAS have drastically diminished.

In 1997 the Earth Council (www.ecouncil.ac.cr) mentioned EMAS I on its Rio+5 forum site as a part of the "role of business". EMAS is seen as an instrument in the context of voluntary activities and the Earth Council puts forward that *"Negotiated agreements must include specific targets and timetables" set by government. The agreements should include indicators for progress and requirements with regard to transparency."* (Earth Council 1997). EMAS I as well as EMAS II fulfil the demand for transparency since the process and its results must be communicated by the environmental statement.

The European Environmental Bureau (EEB) insisted during the process of review in some press releases on a *"demanding and credible system"* (EEB 1999, EEB 2000). Legal compliance and the application of Best Available Technology are benchmarks but also workers participation and public communication rank high. The same view was expressed by the German League for Nature Conservation and Environmental Protection (DNR) after the release of EMAS II. The missing of the demand for the Economically Viable Best Available Technology (EVABAT) in EMAS II is called "completely not understandable". DNR-official Röscheisen (2001) sees the extension of the system to all types of organisations as an important advantage but is concerned about the possibility of, for example, nuclear power plants to participate, since this could erode the credibility of EMAS II. The inclusion of indirect environmental aspects and the provision to include EMAS in public procurement is seen as an advantage. Some criticism is expressed due to some details of the environmental statement and the use of environmental indicators. DNR would obviously like environmental statements to provide data for public benchmarking.

Within the different homepages of Greenpeace and Friends of the Earth International, EMAS cannot be found. Friends of the Earth Germany (BUND 2002) comment on a regional programme "Companies for Resource Saving" of the state of Hamburg very critically. The programme aims at resource efficiency and wants to foster it by EMAS participation and an EMS-light called Ökoprofit. But since EMAS participation has not risen since 1999, the BUND is not confident about the environmental success of the programme. "Business does not voluntarily participate in the voluntary activity EMAS" summarises the BUND.

Trade unions also lament about lower standards due to the omitting of BAT in the new EMAS II regulation (Putzhammer 2001). They are not happy with employee participation being regulated in a non-imperative guide. Although Putzhammer argues that EMAS II is an improvement, he is not content with the role of employees in the EMAS II system.

In the view of industry organisations, the four areas of improvement of EMAS II are (Mittelbach 2001):

1. the structure is easier and more readable,

2. compatibility with ISO 14 001 is ensured,
3. additional requirements of EMAS compared to ISO 14 001 are easily recognisable, and
4. the new logo offers important possibilities for communicating EMAS participation.

Nevertheless, deficits also have to be considered, which limit obviously the number of participating organisations from industry (UNICE 1999a, Mittelbach 2001):

1. EMAS II is not sufficiently integrated in the development of policies on the EU level (e.g. IPPC; emissions trading, environmental liability),
2. the national deregulation activities are and will probably be less effective than they should be,
3. the activities of the states (e.g. in Germany) are not consistent, some states are not active enough concerning the creation of incentives.

Generally, EMAS is seen as a possible instrument to create more trust between administration and companies based on reliable information and communication. But still the position of the state is seen to be comparatively close to the classical "command and control" approach. The possibilities of EMAS II are not developed by the state.

The key issue therefore is regulatory relief. *"Therefore UNICE considers that a valid differentiation of EMAS Registration from ISO 14 001 certification should also be through the provision of some form of direct regulatory relief for EMAS-registered organisations"* (UNICE 1999b). UNICE identifies the most important point. Regulatory relief which is awarded to ISO 14 001 as well will most probably boost participation in ISO 14 001 and not EMAS, since EMAS is widely considered to be more expensive (see Chapter 5.12), and much regulatory relief is awarded to ISO 14 001 certified companies. The consequences are clear: Companies decide in favour of ISO 14 001. This view is principally shared by jurisprudence. Horneffer (2001) regrets that the weak spots of EMAS I have not been avoided by EMAS II. Knopp (2001) does not consider the effort of regulatory relief to be sufficient to motivate business to embark upon implementing EMAS. But considering the limitations of any regulatory relief, Knopp also emphasises the necessity to make EMAS publicly known and turn it into a recognised market advantage.

# 9 EMAS as a step to managing sustainability

## 9.1 Sustainable Development at company level

Companies in contested markets are the most efficient known instrument for the allocation of scarce resources under a given set of circumstances. They are notoriously well-adapted to managing scarcity as long as it is embodied in monetary prices of resources and products. Following this common assumption we propose that the economic dimension of sustainability is presently well represented and implemented.

In addition, most companies succeed to some degree in complying with most regulation enacted and enforced at their place of business. It is a matter of discussion whether regulations and their enforcement suffice. Yet in the areas covered by effectively enforced regulations, most companies will comply most of the time.

However, a large part of the information companies have to process in order to behave in a sustainable manner does not enter its sphere via the primary access routes of price signals and regulatory frameworks. It may come as a newspaper article, an increasingly aggressive neighbourhood or an NGO campaign. Often the information will be ambiguous, incomplete, ill-proven or subject to a combination of the three . Information on the social and ecological dimension of a company's behaviour is especially prone to fall into this category (Senn 1986).

The discussion over the last years illustrate that the social and ecological dimension is not sufficiently reflected in the behaviour of many companies. At least three documents of special importance have recently been produced (OECD 2000, UN Global Compact Office 2001, Commission of the EU 2001a).

The implementation of EMAS is a possible move for a company to initiate a process to integrate environmental objectives in daily operations as well as in strategic issues. Because of the compulsory declaration of an environmental strategy and policy and its focus on indirect environmental aspects, the development of environmental planning by the company is promoted by EMAS II. The presented strategy may be superficial or ill-adapted, but it will most certainly lead to some discussion of environmental issues by top level management, as any environmental strategy more or less has to fit the company's overall strategy. Any strategy is inherently future-oriented. Because the present may bifurcate into any of myriad futures, information about THE future is ultimately intangible. This special quality is often reflected in the proposed rules for sustainable companies. As a consequence, because of the requirement of some strategic environmental planning for EMAS, at least some of the less tangible environmental information will have to be discussed by top management. It is, however, not ensured that strategic environmental planning takes place in a structured manner and becomes effective in everyday business (see Chapter 5.7 and 5.13). Also, the contribution of primarily environmental measures to economic success is often not derived in a systematic manner.

This hinders a presumably more (cost-)efficient, systematic integration of environmental and social aspects and fails to offer incentives to expand measures beyond the regulated minimum and obviously cost reducing changes to the production

process (Figge et al. 2001: 2). EMAS has gone a long way in promoting environmental issues where it has been used. Yet by itself it may not promote company behaviour adapted to the triple bottom line in a sufficiently systematic manner. When it comes to decision making, economic arguments will often stand against the realisation of environmental or social measures. The often indirect but sometimes positives effects these measures may have on the ability of the firm to compete successfully are not acknowledged. The integration of the economic, social and environmental perspective into sustainability-oriented decision-making in the company seems to be a major challenge for the future development of management systems (Figge et.al. 2001). One of the first to propose the balanced scorecard as a helpful instrument in this dilemma was Epstein (1996).

The following chapter will discuss how EMAS can play a role in establishing an integrative sustainability perspective by companies if a Sustainability Balanced Scorecard (SBSC) is supplemented.

## 9.2 Decision-making and Sustainable Development

At present, EMS often are separate management systems. With respect to personnel and organisation, they are “satellites” with little connection to overall management (Dyllick und Hamschmidt 2000). A widespread perception is that a fundamental problem lies in the often qualitative nature of benefits from environmental initiatives. As for most parts of any company, prices and costs are the ultimate measure of success, initiatives that increase sourcing and/or production costs have little chance of implementation if they are not backed by substantial stakeholder pressure. Argumentative figures more complex than “The company will save money if it undertakes initiative X” or “The company will be subject to negative media coverage if it does not undertake initiative Y” are obviously at a considerable disadvantage compared to price and cost information that can be understood at a glance. In many cases, the wide spectrum of important environmental aspects and possible measures shrinks down to an eco-efficiency approach targeting cost efficient reduction of resource consumption.

It has been shown in Chapter 5 that EMAS fosters the development of competence with respect to environmental issues in companies. But in practical realisation strategic ideas arising from EMAS are only reflected in a few companies (see Chapter 5.13). But for sustainability management it is necessary to provide an efficient transmission mechanism for more strategic and complex ideas. This is not to say that today complex ideas do not circulate. But the point is, that they seem to melt into the background as soon as decisions are to be made.

The Sustainability Balanced Scorecard (SBSC) is a possible answer to this problem. The SBSC is an enhanced version of the Balanced Scorecard (BSC). The BSC is a management tool developed in the late 1980s and early 1990s (Johnson & Kaplan 1987; Kaplan & Norton 1992), which is now being introduced into companies as well as other institutional surroundings, such as public administrations. Its fundamental assumption is that financial key indicators, such as free cash flow or return on investment (ROI) are mere results of the management of a varying set of intangible assets, such as intellectual capital, knowledge, employee skills, efficient processes or excellent customer focus. In order to measure and manage the transformation of these intangible

assets into long-run financial success, a system of 4 perspectives is drawn up: financial, customer, internal processes, and learning and development perspectives. These different perspectives are to be connected via causal links from causes set in the customer, internal processes and learning and development perspectives to effects in the financial perspective. To meet this requirement, a strategy has to be formulated, where assumptions of how the elements of the strategy lead to its defined (financial) objective and are made explicit. The depicted relationships of cause and effect are allowed to be of a qualitative nature. The elements of the chosen strategy define a system of objectives, key indicators, target values and actions. In establishing this systematic view of a strategy, intangible assets receive substantial attention. In addition, strategy review becomes much easier. "The Balanced Scorecard provides a framework to describe and communicate strategy in a consistent and insightful way." (Kaplan & Norton 2001: 10) Complexity reduction is clearly a major achievement of the balanced scorecard concept. After a thorough discussion of what set of key indicators are best at measuring management of intangible assets and ultimate success, management can and will focus on verifying those key indicators match forecasted or target values. As the capacity of executives to include these problems into their strategy becomes an important bottleneck, the BSC can probably be used to implement sustainable corporate strategy. The inherent increase in complexity of problem dimensions is being set off by the BSC's ability to reduce complexity. A BSC that includes the ecological and social dimensions with the aim of promoting strategies that consistently and systematically pursue explicit economic, social and ecological objectives is called SBSC.

Three complementary ways of establishing an SBSC have been proposed (Figge et al 2001: 20-29; Hahn & Wagner 2001:3f):

- Ecological and social aspects can be included into the four existing perspectives. This is supposedly applicable to the extent that these aspects target performance criteria relevant to the market of the respective company. The advantage is the integrative approach to the management of social and ecological aspects. A disadvantage would be a need for rather more indicators than the 16-25 proposed by Kaplan and Norton.
- An additional social and ecological perspective can be integrated into the system. This addition is probably necessary if and where these aspects exert a non-market influence that can indirectly result in economic opportunities or obstacles. Regulatory pressure, high media profile and strong pressure from stakeholders which have a direct effect on the firm's strategy would be such a non-market influence that should probably be included into a fifth perspective. The advantage of a non-market perspective is the ability to address these aspects that would otherwise fall outside the BSC's scope. Yet the disadvantage is the disconnectedness to the objectives of line managers, which might reproduce the problems with satellite-EMS.
- An independent environmental or social balanced scorecard can be implemented. This would be a sub-BSC derived as an internal service unit's translation of the main BSC to their level and scope of action. No independent contents are to be drawn up. Along with the implicit establishment of internal service units promoting

environmental and social aspects, this is certainly an adequate organisational precaution for large companies.

An SBSC can make the development and implementation of sustainable business strategies more consistent and systematic. It certainly facilitates the pursuit of multi-dimensional strategies such as strategies targeting the maximisation of the triple bottom line. Yet neither the use of a BSC nor a SBSC is inherently sustainable. It does not promote the development of strategies which maximise the triple bottom line or internalise limits to development arising from the economic, social or ecological dimensions of a company's behaviour. Sustainable development is a matter of intense and indispensable debate. By entering this debate companies can not only shape the debate itself, but can employ the in-depth information they gather in the debate in the process of drawing up their business strategy.

Different ways of entering the debate on and the process to sustainable development will be presented in the following chapter.

## 9.3 Co-operation as a key issue in achieving Sustainable Development

In the past, regulation has been the dominant strategy for internalising non-economic boundaries into the sphere of business activity. For a number of reasons including globalisation and the development of global governance, the ability of policy makers to achieve sustainable development via regulatory mechanisms is limited. Non-regulative approaches like voluntary agreements or co-operative activities have therefore gained importance.

Politically initiated, voluntary initiatives that seek to influence the behaviour of companies on a global scale such as the UN Global Compact (UN Global Compact Office 2001), is one way of achieving the desired type of initiative without selectively harming business. A wide range of voluntary initiates by industry as well as governments have started in the last few years (for an overview see UNEP 1998 and OECD 2001). Among the initiatives surveyed by OECD (2001) is environmental reporting, which is practised by 42% of the "high environmental impact" firms of the OECD sample, but is found to be less common than policy statements (75%) and management systems (52%). In some member states (Denmark, The Netherlands, France), environmental reporting is mandatory for at least some big firms.

Environmental reporting, which has been strongly promoted by EMAS, is a major step towards transparent business. Apart from establishing an efficient and often constructive dialogue with stakeholders, the continuous improvement in the field of eco-efficiency innovations was supported (Clausen/Fichter 1996: 2f). The promotion of sustainability reporting seeks to recalibrate this instrument to the requirements of sustainable development (e.g. GRI 2001, INEM 2001).

Environmental and sustainability reporting connects business with stakeholders including other business up- and downstream existing value chains. The modern view on environmental policy sees co-operation within value chains as key to effective environmental optimisation and developed the approach of an Integrated Product Policy. This Integrated Product Policy (IPP) establishes a view on products that combine its economic and ecological life cycles (Commission of the EU 2001c). Besides other

strategy elements (e.g. creation of markets, sustainable consumption), ecological product innovation plays a key role in this policy approach (Rubik/Hoffmann/Simshäuser 2000: 32). An important method for the initiation of ecological product innovation is the establishment of communication along the value chain. EMAS provides both a developed environmental information system within participating firms as well as basic external information in environmental statements. EMAS participation may prove to be a cornerstone of the further development of an IPP, which in turn is seen as the most advanced political instrument towards sustainable products.

## 9.4 Future Directions

Environmental management with EMAS as well as environmental reporting are found to have some impact on company image (Hillary 1998, Clausen et.al. 2002). It is quite probable that these initiatives also have an impact on corporate culture. This impact could be supported by the involvement of the company in co-operative activities, e.g. IPP; which by way of periodic contacts of management to external persons in the context of important environmental aspects creates the possibility of social and cultural learning. Not only for management, but for humankind, sustainable development is a matter of learning. Values are changing and have to change, and information, communication and co-operation due to EMAS may have an important role to play for sustainable development of organisations.

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