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Dear reader,

With this report we present the findings of an extensive survey among German organisations concerning their usage of the European environmental management system, EMAS (Eco-Management and Audit Scheme). The survey was commissioned by the German Federal Environment Ministry and the German Federal Environment Agency. The experiences of EMAS users detailed here are important for recognising possible areas for optimisation, and for forming suggestions of improvements to be considered in negotiations for the next amendment of the EMAS Regulation.

This report summarises the results of the survey, and gives an overview of problems encountered in using EMAS in day-to-day operations. Even though a need for improvement is seen by the EMAS users, for example by raising public awareness of EMAS, the overall findings show that EMAS is now an established instrument for voluntary environmental protection – and one that is highly regarded. The vast majority of respondents consider EMAS to be an excellent or good system. The distinctive key elements emphasised by the European Commission of transparency, credibility and environmental performance were confirmed by the EMAS participants. Once again it has been shown that EMAS organisations are motivated to achieve the high level environmental protection required by EMAS by their own convictions and high standards.

Many participants in the survey have submitted further extensive comments, such as on the issue of biodiversity, on using EMAS as an instrument for resource management, or on key figures. These comments provide helpful suggestions for our further considerations.

We would like to thank all participants as well as all who provided their support for the survey, in particular DAU – Deutsche Akkreditierungs- und Zulassungsgesellschaft GmbH, the German Chamber of Commerce and Industry (DIHK), all EMAS registration authorities and the German EMAS Advisory Board (UGA).

An extensive overview of the EMAS system is available on the website of the German EMAS Advisory Board www.emas.de.

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Abbreviations

BImSchG	Federal Emission Control Act (Bundesimmissionsschutzgesetz)
BMU	Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit)
BRC	British Retail Consortium
BS OHSAS 18001	Occupational Health and Safety Management *(standard)*
CAP	Common Agricultural Policy
CAWI	Computer Assisted Web Interviewing
CC	Cross Compliance
CLP	Classification, Labelling and Packaging of Substances and Mixtures
CSR	Corporate Social Responsibility
DIHK	German Chamber of Commerce and Industry (Deutscher Industrie- und Handelskammertag)
DIN	German Institute for Standardization (Deutsches Institut für Normung)
DIN 77200	Static Guarding and Mobile Patrol Services *(standard)*
DIN EN 13980	Potentially Explosive Atmospheres - Application of Quality Systems *(standard)*
DIN EN 15593	Management of Hygiene in the Production of Packaging for Foodstuffs *(standard)*
DIN EN 16001	Energy Management Systems *(standard)*
(DIN EN) ISO 14001	Environmental Management Systems *(standard)*
(DIN EN) ISO 13485	Medical Devices - Quality Management Systems *(standard)*
(DIN EN) ISO 9001	Quality Management Systems *(standard)*
DIN EN 50001	Energy Management Systems *(standard)*
DRG	Diagnosis Related Groups
EEG	German Renewable Energy Sources Act (Erneuerbare-Energien-Gesetz)
ELIA	Employer's Liability Insurance Association
EMAS	Eco-Management and Audit Scheme
EMO	Environmental Management Officer
EU	European Union
FFH	Fauna, Flora, Habitat
FSC	Forest Stewardship Council
GHS	Globally Harmonised System
GMP	Good Manufacturing Practices

GRI	Global Reporting Initiative
HACCP	Hazard Analysis and Critical Control Points
I/O	Input-Output
ISO	International Organization for Standardization
ISO 12647	Offset Printing Process *(standard)*
ISO/IEC 17025	Testing and Calibration Laboratories *(standard)*
ISO/IEC 20000	IT Service Management *(standard)*
ISO/TS 16949	Quality Management Systems for Automotive Production *(standard)*
IT	Information Technology
KPI	Key Performance Indicator
KTQ	Cooperation for Transparency and Quality in Hospitals (Kooperation für Transparenz und Qualität im Krankenhaus)*)*
LCC	Life Cycle Cost
LQW	Learner-Orientated Quality Certification for Further Education Organisations (Lernerorientierte Qualität in der Weiterbildung)
Mod.EEM	Modular Energy Efficiency Model from EnergyAgency.NRW (German website: www.modeem.de)
MSC	Marine Stewardship Council
NABU	Nature and Biodiversity Conservation Union (Naturschutzbund Deutschland)
NACE	Nomenclature Générale des Activités Économiques dans les Communautés Européennes *(Statistical Classification of Economic Activities in the European Community)*
NGO	Non Governmental Organisation
NLF/ILO-OSH2001	Occupational Safety and Health Management System *(standard)*
OHRIS	Occupational Health and Risk Management System *(standard)*
OSHMS	Occupational Safety and Health Management System
ÖKOPROFIT	Ecological Project for Integrated Environmental Protection (Ökologisches Projekt Für Integrierte Umwelt-Technik)
PEFC	Pan-European Forest Certification
QM	Quality Management
R (EU)	Regulation of the European Union
R1	Energy efficiency formula for incineration facilities
REACH	Register, Evaluation and Authorization of Chemicals
SA 8000	Social Accountability Standard 8000
SCC	Safety Certificate Contractors

SME	Small and Medium-Sized Enterprises
TCO	Total Cost of Ownership
tCO_2	Tons of Carbon Dioxide
TRBF	Technical Regulations for Combustible Liquids
TRGS	Technical Regulations for Hazardous Substances
TSM	Technical Safety Management
UAG	Environmental Audit Act (Umweltauditgesetz)
UBA	Federal Environment Agency (Umweltbundesamt)
UFOPLAN	Environmental Research Plan (Umweltforschungsplan)
VAwS	Ordinance on Facilities for Storage, Filling and Handling of Substances Hazardous to Water (Verordnung über Anlagen zum Lagern, Abfüllen und Umschlagen wassergefährdender Stoffe)
WHG	Federal Water Act (Wasserhaushaltsgesetz)
WMC	Waste Management Company
WWF	World Wildlife Fund

Note on the use of the term "Land / Länder" in this report

In this report the term "Land / Länder" is occasionally applied. Germany is made up of 16 Länder (singular: Land, colloquially called Bundesland, for "federated state"), which are partly sovereign, constituent states of the Federal Republic of Germany. Land literally translates as "country", and constitutionally speaking, they are constituent countries.

The sixteen Länder of the Federal Republic of Germany are:

Baden-Württemberg
Bavaria
Berlin
Brandenburg
Bremen
Hamburg
Hesse
Lower Saxony
Mecklenburg-Western Pomerania
North Rhine-Westphalia
Rhineland-Palatinate
Saarland
Saxony
Saxony-Anhalt
Schleswig-Holstein
Thuringia

1 Background information on the study

The Eco-Management and Audit Scheme ("EMAS", Regulation (EU) No. 1221/2009), also known as the EU Eco Audit, is an environmental management system in the EU established in the mid 1990s. The "Regulation allowing voluntary participation by companies in the industrial sector in a Community eco-management and audit scheme" was first adopted by the European Council on 29 June 1993. In two amendments since that date, the EMAS Regulation has been opened up to the non-productive sector (EMAS II, 2001) and extended to business locations outside of the EU (EMAS III, 2009).

A central constituent of the EMAS Regulation is the international environmental management standard ISO 14001. Beyond the standard's core content on the implementation of an environmental management system, the EMAS Regulation focuses primarily on measurable improvements in operational environmental protection and on the publication of the users' environmental performance.

Since the adoption of the EMAS Regulation, German companies have excelled as pioneers in the EU through a high number of participants. However, the number of EMAS users in the EU and Germany has stagnated in recent years. The European Commission and the German Federal Government are therefore committed to increasing the number of participants in the EMAS system with the help of targeted incentives and support activities. It is planned to establish EMAS as the most ambitious reference framework in the field of environmental management.

In order to organise EMAS support activities in a target-orientated way and improve participation in the EMAS system, national and European environmental policy requires a solid basis of data and experiences from the range of EMAS users. Information on the everyday experiences of EMAS organisations is essential for gaining a reliable overview of the costs and benefits associated with EMAS for the organisations, as well as the improvements they wish to see in the EMAS system.

For this purpose, a survey among the EMAS validated organisations in Germany was carried out in the period of March to July 2012. The results of this survey entitled "EMAS in Germany – Evaluation 2012" are summarised in this report. Of all EMAS organisations invited to participate, some 57% chose to take part. A similar survey of German EMAS organisations was already conducted by the Federal Environment Agency in 1999. [1] The results of that survey are summarised in the report "EG-Umweltaudit in Deutschland – Erfahrungsbericht 1995-1998" (EMAS in Germany – Report on Experience 1995-1998). The present report will draw on these findings where appropriate for the purposes of comparison.[2]

[1] Federal Environment Agency (Pub.): EG-Umweltaudit in Deutschland. Erfahrungsbericht 1995 bis 1998, Berlin 1999

[2] The survey of 1999 was based on a different questionnaire to the present survey. Additionally, the methodology of the earlier survey is different to that used here. The comparability of the two surveys is therefore limited.

2 Aim, design and representative nature of the study

The aim of the survey "EMAS in Germany – Evaluation 2012" was to gain a deeper insight into the current practice of EMAS in German organisation, and to identify potentials for the future structuring of the EMAS system. The project group consisting of Arqum GmbH and Infratest dimap was commissioned to carry out the survey. Arqum GmbH has an established background as one of Germany's leading environmental management consultancies and has assisted many companies and organisations in implementing and practicing EMAS. Infratest dimap is one of the leading research institutes in Germany with a focus on electoral and political research.

The survey was conducted in the period from mid March 2012 to the end of July 2012. Data collection was completed via online interviews (CAWI).[3] The EMAS organisations were first invited to participate in the survey in a letter from the Federal Environment Minister. This was followed at intervals by two reminder emails and a telephone "follow-up round" where organisations that had not yet participated were contacted by telephone.

A total of 1,007 EMAS organisations were invited to complete the survey. This involved all organisations in the whole of the German Federal Republic with an active EMAS registration, and whose registration offices had agreed to the DIHK's request in November 2011 of data forwarding for specific purposes. For data protection reasons, individual registration offices did not grant permission for the use of the data for the purposes of the survey. A double-digit number of EMAS organisations were therefore not invited to participate.

The invitation to the survey was sent to the environmental management officer of each organisation who was listed as a contact partner in the EMAS Register. As only one contact partner is listed in the EMAS Register even for organisations with several locations holding an EMAS registration, only one invitation was sent per organisation. However, the letter did request that other employees in the organisation concerned with EMAS (in particular local site representatives) be involved in the survey. This opportunity to include other staff members responsible for EMAS within the organisation was used in particular by a number of large organisations with broader EMAS structures.

A total of 573 EMAS organisations took part in the survey. The response rate therefore amounted to 56.9%. The telephone follow-up round made it possible to discover why certain EMAS organisations were unable or did not wish to take part. For example, 10% of the organisations reported they were unable to take part in the survey because of time constraints. Other reasons for non-participation included company-internal reasons (1.3%) or a planned exit from EMAS (2.6%).

[3] The survey in question made use of CAWI – Computer Assisted Web Interviewing, an online data collection method.

The level of representation of sectors, Länder[4] and organisation sizes in the survey is detailed in Chapter 4. As an initial summary: the individual sectors of the survey participants largely correspond with the sector classifications of all organisations in the EMAS Register.

The individual Länder were also well represented: In Länder with a strong EMAS focus a corresponding high number of participating organisations took part in the survey.

Comparisons of the size of participating organisations with EMAS statistics reveal that large organisations were somewhat over-represented. Medium-sized organisations are relatively well represented, while smaller organisations were somewhat under-represented.[5]

The survey comprised a total of 45 – mostly closed-ended – questions and required approx. 25 minutes to complete. The questionnaire contained questions on the following topics:

- Company's and organisation's reasons for participating in the EMAS system
- Cost-benefit ratio of EMAS at the site
- Experiences with environmental statements
- Experiences since the last EMAS amendment (EMAS III)
- Experiences with the environmental verifier and the validation process
- Decisions on continuing with the EMAS system
- Wishes in terms of environmental policy

[4] For further explanation see page VIII

[5] Where appropriate, the survey results (Chapter 4) are differentiated and presented according to organisation size in order to reveal the differences in response levels between small, medium-sized and large organisations.

3 Summary of results from the study

The following provides a summary of the most important results from the survey.

Participant structure

- Around half of the organisations that participated in the survey (49%) come from the productive sector. Organisations from the non-productive sector are not as strongly represented (42%).
- While large organisations show an above average readiness to participate, small organisations are under-represented in the survey. Medium-sized organisations are well represented in the survey, i.e. participation is in proportion to their actual number.

Reasons for choosing EMAS

- The most important reasons for implementing EMAS are transparency of environment-relevant consumption rates, improvement of operational environmental protection and (increasing) energy and resource efficiency. The least important reasons for the respondents are financial advantages (e.g. reduction of fees and tax relief) and the differentiation from ISO 14001.

Costs and benefits of implementing EMAS

- The organisations surveyed require an average of 15 months to implement EMAS. In the productive sector, implementation was completed faster (∅ 12.7 months) than in the non-productive sector (∅ 17.3 months).
- The personnel cost of implementing EMAS amounts to an average of around 10 person-months. Small organisations require ∅ 4.9 person-months, medium-sized organisations ∅ 9.7 and large organisations ∅ 14.1 person-months.
- The participants recorded the greatest cost saving through the implementation of EMAS in the area of energy. Lowest cost savings are recorded in the area of material goods and raw materials.

Costs and benefits of EMAS in practice

- The majority (59%) of organisations surveyed report that the running (internal and external) costs of maintaining the EMAS system amount to less than € 10,000 per year.[6] 37% of small organisations report a cost of less than € 2,500 per year, while the figure for 48% of large organisations was at least € 10,000 per year. The most significant benefit of implementing EMAS for the respondents is the improvement in operational environmental protection (81%), followed by legal compliance (64%) and employee participation (59%). However, most organisations rate the financial benefits of implementing EMAS as (very) low or nonexistent.

[6] Including verifier and registration costs

- 68% of respondents are unable to specify the average savings per year. Responses from the 32% of participants who were able to specify show an average annual saving of € 10,678. Significant differences exist between the various organisation sizes: While small organisations save on average € 1,276, medium-sized organisations are able to save as much as € 7,207, and large organisations € 21,312.
- The vast majority of respondents (75%) find the cost-benefit ratio of their participation in the EMAS system to be positive or in balance. 17% of respondents find it negative. This is more often the conclusion of small (27%) rather than large organisations (13%).

Energy and resource efficiency in EMAS practice

- Energy and resource efficiency already form an important part of organisational strategy for four out of five respondents, while nine out of ten respondents believe the issue will be of importance in the future.
- Eight out of ten respondents believe EMAS III to be suitable as an instrument of sustainable resource management; five out of ten respondents find this only to be true to an extent.

Environmental statements

- Environmental associations, NGOs and employees are, according to the respondents, the most interested readers of environmental statements, followed by relevant authorities and customers. Respondents believe banks, insurance companies, residents and suppliers to have the least interest.

Cooperation with the environmental verifier

- The respondents find the cooperation between their organisation and the environmental verifier to be particularly successful: Nine out of ten respondents are very satisfied or satisfied with their current environmental verifier.[7] Only a very small number of organisations are not very satisfied or not at all satisfied.[8]

Advantages for responding to invitations to tender

- Three quarters of respondents see no advantage in EMAS for private of public tendering procedures.

[7] 54% of respondents are very satisfied, 37% are satisfied.

[8] A total of 4% of respondents are not very satisfied or not at all satisfied.

Assessment of the EMAS system

- Overall the participants give a very positive assessment of the EMAS system: 86% of respondents consider EMAS to be an excellent or good system. 71% however see potential for improvements.
- The respondents find the main necessary improvement is a higher level of awareness of EMAS: Nearly nine out of ten respondents find "public awareness about the EMAS system" to be an area that must be improved.
- The practical suitability of the core indicators is mainly considered to be (very) good. The core indicators for energy efficiency, water and waste are the most suitable in practice for the respondents. However, the organisations experience difficulties with the core indicator for biological diversity.
- One third of respondents rate the cost-benefit ratio since the last amendment of the EMAS Regulation in 2009 (EMAS III) as unchanged, while one seventh complain of increased costs. The smaller the organisation, the less favourable the change in cost-benefit ratio as a result of the EMAS III amendment.
- As regards the future structuring of EMAS, the respondents would like to see improvements in EMAS recognition in the form of fee reductions and tax relief. Financial advantages therefore play a large role when organisations consider the future. Participants were also particularly interested in relaxations in reporting obligations, the authorisation procedure and monitoring obligations.

Future participation

- Nine out of ten participants will continue using the EMAS system (probably or definitely). Only 6% of participants report that they will probably or definitely withdraw from EMAS.
- For the organisations that wish to continue using EMAS (probably or definitely), the continual improvement of environmental protection is the most important argument. Second and third most important are the company philosophy and legal compliance. Market pressure, corporate registration and differentiation from ISO 14001 are of lesser significance.
- Respondents who do not intend to continue using EMAS (probably or definitely) name the cost-benefit ratio as the most important factor. Other important reasons include (insufficient) funding instruments, regulatory relief and other privileges, the administrative and / or financial burden, the (lack of) public interest in environmental statements and the (low) level of awareness of EMAS.

4 The results in detail

Notes on the analysis:

- The results in the figures and tables are given in (rounded) percentages. Because of the option of multiple selections, the total of the percentage values may amount to over 100 percent.
- The questions were aimed at the environmental management officers of the organisations as well as other persons involved in EMAS (e.g. local site representatives). Some questions were intentionally only put to the central representatives as in some cases a perspective was required from across all locations and for the organisation as a whole (questions 9, 10, 11, 14).
- As far as possible and where relevant, a comparison is made with the results of the EMAS survey from 1999, which was published by the Federal Environment Agency under the title "EG-Umweltaudit in Deutschland – Erfahrungsbericht 1995-1998" (EMAS in Germany – Report on Experience 1995-1998), and which can be downloaded from the website of the Federal Environment Agency (www.umweltbundesamt.de).

4.1 Structural information on the participating organisations

4.1.1 Industry classification

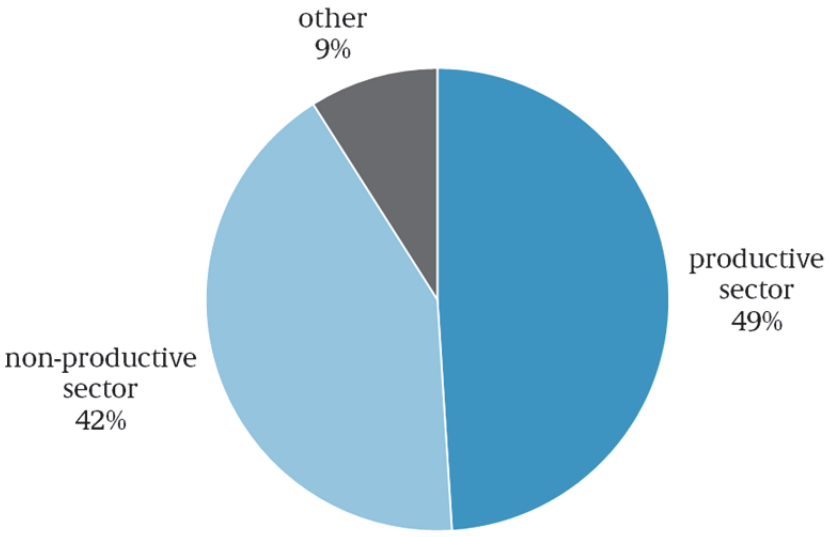


Fig. 1: Industry classification of the participants (divided into productive and non-productive sectors)[9]

Around half of the organisations to participate in the survey (49%) come from the productive sector. Slightly fewer organisations (42%) belong to the non-productive sector.

[9] Question 1

Overall, the participants can be divided into the following industries:

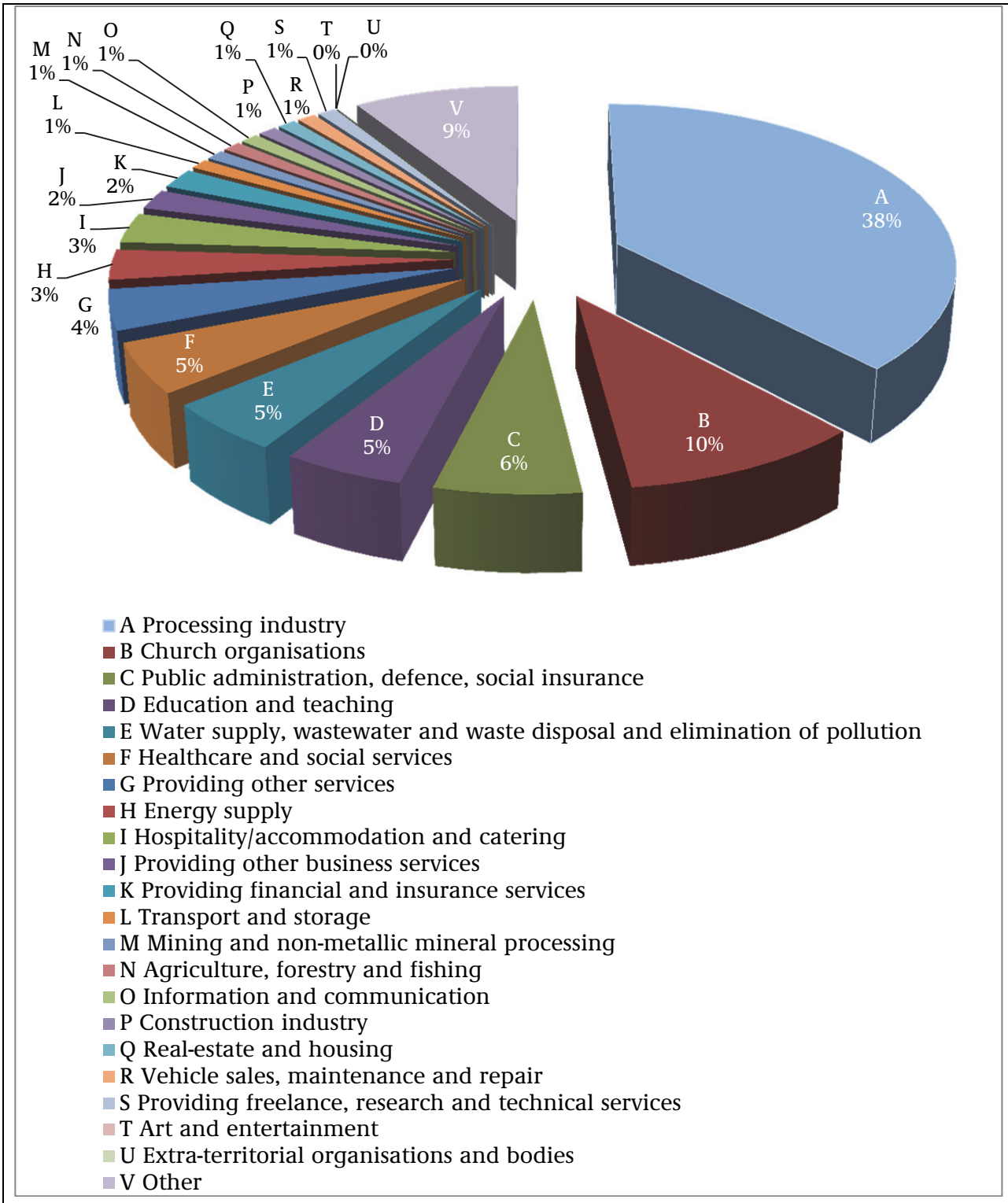


Fig. 2: Industry classification of the participants (divided into individual industries)[10]

[10] Question 1

A comparison of the industry classifications of the organisations that participated in this survey with *all* registered EMAS organisations in Germany (basis: EMAS Register) allows only the following limited conclusion on industry representation in the survey:[11]

The individual industries in the productive sector are very well represented in the survey. This is also largely true for the organisations in the non-productive sector. There are a few deviations here, though these are only in the single-digit range. Because of the differences in the industry classification system these will not be further evaluated.

[11] The number of industry entries in the EMAS Register (1621, as of May 2012) can not be equated with the number of EMAS organisations (1248, as of 2012). An organisation in the EMAS Register can select several industry entries (so-called NACE codes) if their activities span various industries. As this option of multiple selection was not permitted in the present survey, the number of industry entries corresponds with the number of participants. For this reason, a direct comparison (i.e. 1:1) with the industry statistics of the EMAS Register is not possible.

4.1.2 Regional distribution

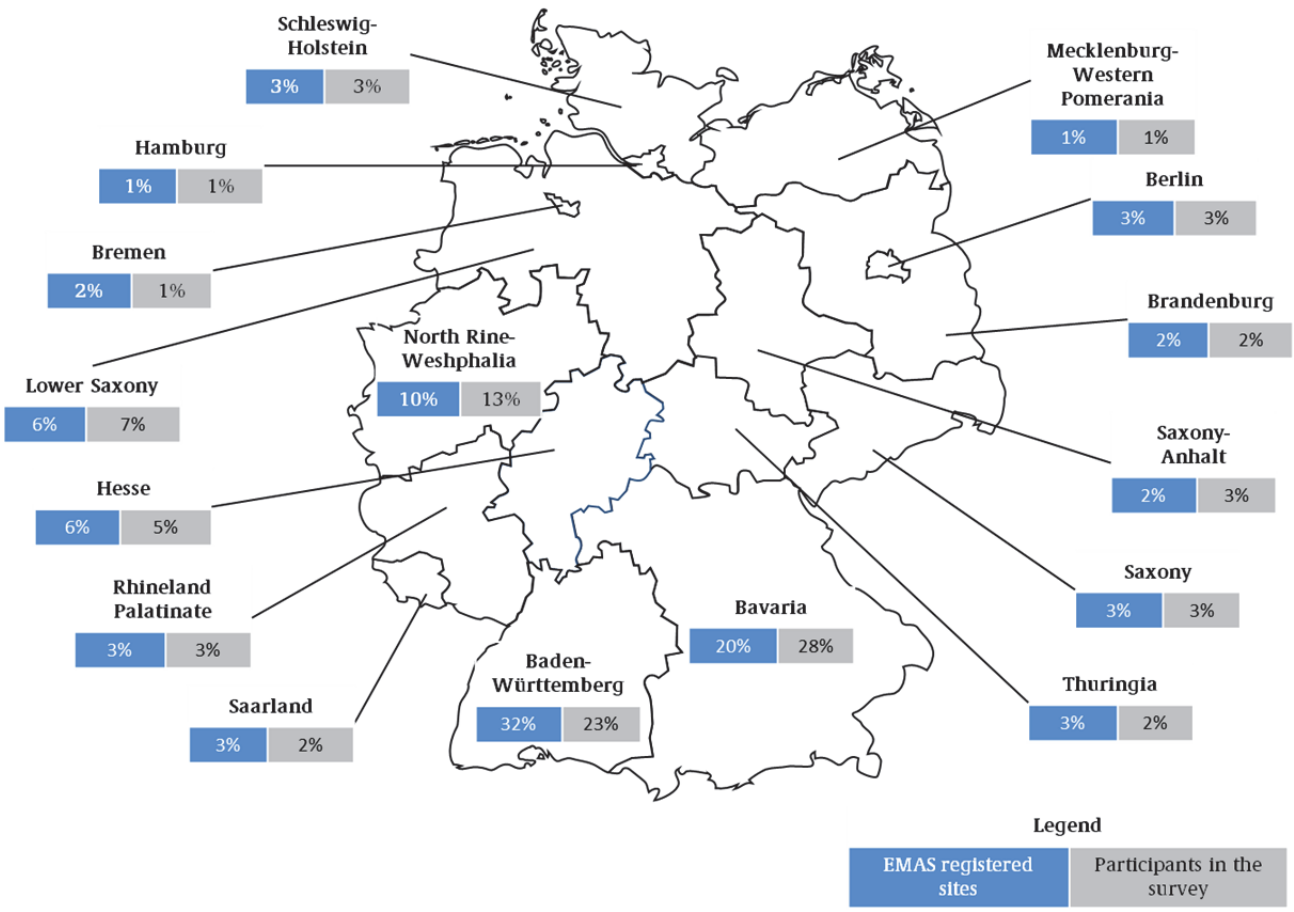


Fig. 3: Company location of the EMAS validated sites by Länder[12]

The representation of the Länder in the survey is very good overall. Länder with high numbers of EMAS participants are represented in the survey at a corresponding high rate. To evaluate this (see Fig. 5) the percentage of EMAS registered sites in the individual Länder ("EMAS registered sites") was compared with the percentage of survey participants from the Länder ("survey participants"). Differences in the percentage values may result from over-proportionate or under-proportionate readiness to participate in each Land. Or they may also result from the fact that in some Länder not all EMAS organisations were invited to the survey[13] and therefore the population of the survey varies from the EMAS statistic.

Deviations resulting from the reasons given can be seen most clearly in two Länder with a strong EMAS focus: Bavaria and Baden-Württemberg (Bavaria + 8%, Baden-Württemberg - 9%). Länder with a low number of EMAS registrations contribute only a small number of participants to the survey, although at a very high representation level. These include Bremen,

[12] Question 3

[13] See Chapter 2 for an explanation

Schleswig-Holstein and Mecklenburg-Western Pomerania (each 1%), followed by Brandenburg, Hamburg, Saarland and Thuringia (each 2%).

4.1.3 Organisation size

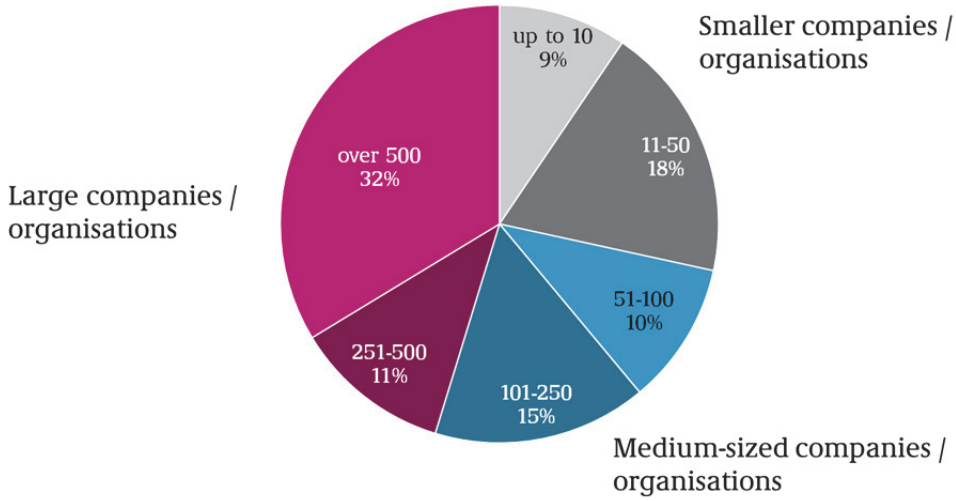


Fig. 4: Answers to the question "Please state how many staff members are employed at your company / organisation in Germany."[14]

The organisations that participated in the EMAS survey revealed the following size structure: 43% of respondents belong to large organisations, a quarter come from medium-sized (25%) and a further quarter from small organisations (27%). [15] A comparison with all EMAS registered organisations in Germany shows: [16] Large EMAS organisations are represented in the survey by an above average number, while the figure for small EMAS organisations is below average. Medium organisation sizes are relatively well represented. A possible reason for this distribution of sizes is that there is less available time for EMAS in smaller organisations than in large organisations. In the following evaluation, variations between the response levels of large, medium-sized and small organisations are differentiated.

[14] Question 44; Missing data: Not specified

[15] Definition of organisation size according to the European Union's classification system: (<50 employees: small organisation; <250 employees: medium-sized organisation; over 250 employees: large organisation)

[16] Size structure of EMAS organisations in Germany according to the EMAS Register (as of: March 2013): Small organisations (up to 50 employees): 43%, medium-sized organisations (51-250 employees): 27.4%, large organisations (over 251 employees): 29.6%.

4.1.4 Year of initial certification

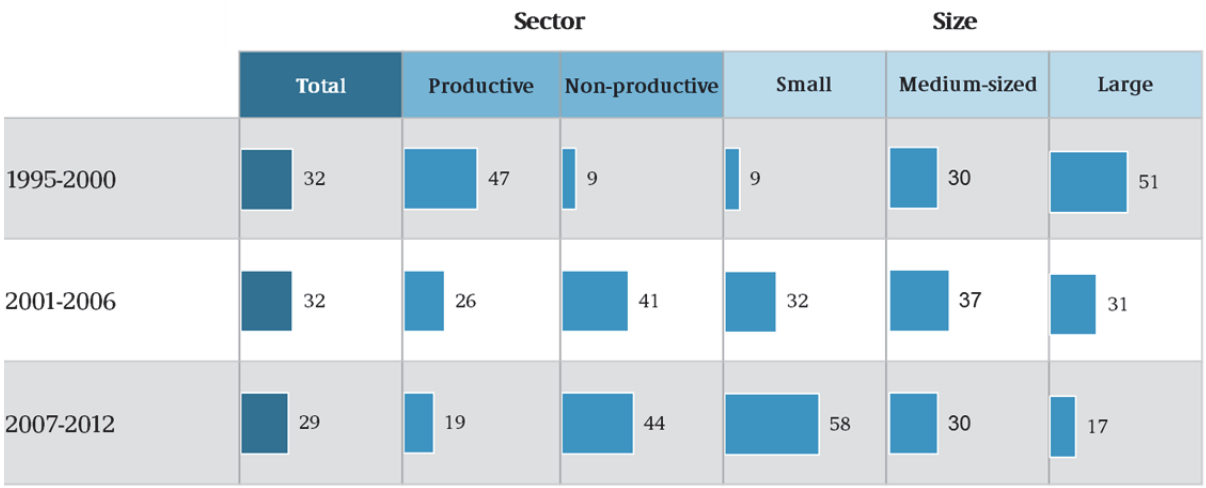


Fig. 5: Answers to the question "In which year did your company first obtain EMAS certification?"[17]

Roughly one third of the organisations surveyed (32%) were among the pioneers of EMAS and first obtained validation in the period of 1995 - 2000. A further third of the organisations surveyed (32%) joined the EMAS system in the period of 2001 - 2006, with another 29% following between 2007 and 2012. Therefore both organisations with many years of experiences as well as newly validated participants are well represented in the survey.

The results of the survey also show that since the application of the EMAS Regulation in 1995, a significant shift towards the non-productive sector can be detected in initial validations. While in the period of 1995 - 2000 non-productive organisations formed a minority of only 9% of EMAS newcomers, the figure rose to 44% in the period of 2007 - 2012. Non-producing organisations have in the meantime become the largest group in terms of initial validations. At the same time, the percentage of newcomers from the productive sector declined from 47% in the period of 1995 - 2000 to 19% in the period of 2007 - 2012. However, it should be noted that until 1998 only the productive sector was eligible to receive EMAS validation. Only once the expansion regulation came into force on 03.02.1998 was EMAS partially open to non-productive organisations, with full admission coming in 2001 (EMAS II).

A further trend in the survey can be seen in terms of organisation sizes among initial validations. While large organisations still formed the majority of EMAS newcomers (51%) in the period of 1995 - 2000, this figure decreased to 17% in the period of 2007 - 2012. Since 2007, it is clearly small organisations that form the majority of initial validations at 58%.

[17] Question 43; Missing data: Don't know / Not specified

4.1.5 Further management systems in use

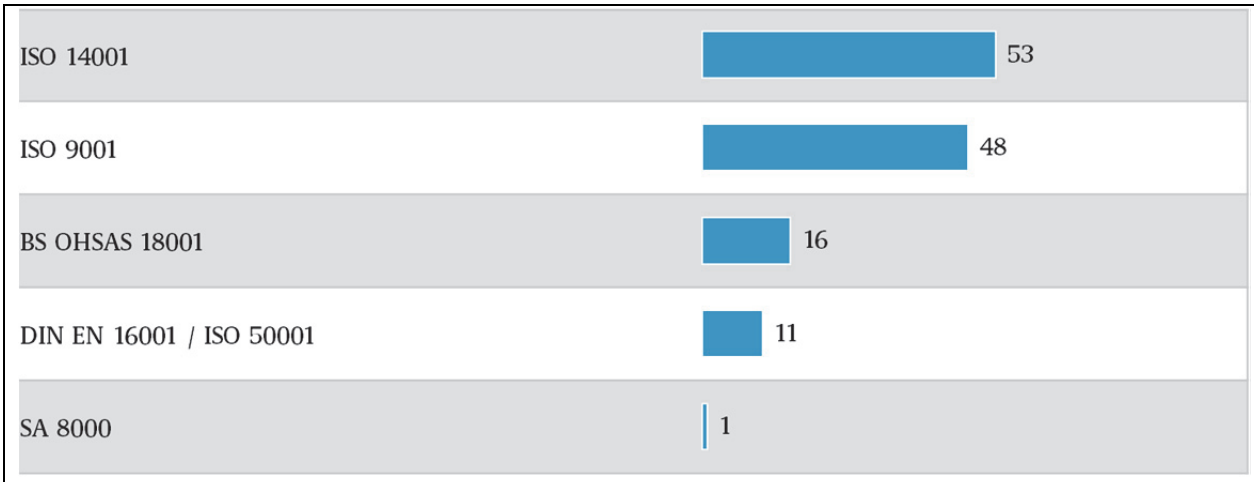


Fig. 6: Answers to the question "Which management systems do you use in your company / organisation?"[18]

In addition to EMAS, the majority of organisations surveyed (53%) have obtained certification in accordance with the environmental management standard (DIN EN) **ISO 14001**. Almost just as many organisations have obtained quality management certification in accordance with (DIN EN) **ISO 9001** (48%). 16% of participants declared having certification in accordance with **BS OHSAS 18001** (occupational health and safety), and 11% in accordance with **DIN EN 16001 / ISO 50001** (energy management). The aforementioned management systems are most commonly used in organisations in the productive sector (ISO 14001: 67%; ISO 9001: 62%, BS OHSAS 18001: 24%; DIN EN 16001 / ISO 50001: 17%) and in large organisations (ISO 14001: 75%; ISO 9001: 65%; BS OHSAS 18001: 30%; DIN EN 16001 / ISO 50001: 23%). Only 1% of respondents report certification in accordance with the standard **SA 8000** (social accountability) – these respondents were exclusively in the productive sector (1%), and either medium-sized (2%) or large (1%) organisations.

Other management systems adopted by participants in individual cases are ISO / TS 16949 (quality management for automotive production), OHRIS, TSM, Grüner Gockel and ÖKOPROFIT. In addition, participants also named the following systems: ISO/IEC 20000, ISO 12647, DIN EN ISO 13485, DIN EN 13980, DIN EN 15593, ISO/IEC 17025, DIN 77200, GMP, KTQ, WMC, "Audit Beruf und Familie", SCC, BRC, HACCP, PEFC, FSC, "Sicher mit System" by ELIA (BG), OSHMS (AMS) by BG-BAU, WHG-Fachbetrieb, risk management, LQW, occupational safety in accordance with NLF/ILO-OSH2001 and EMAS easy / EMAS plus.

[18] Question 42

4.2 Experiences in implementing EMAS

4.2.1 Reasons for participating

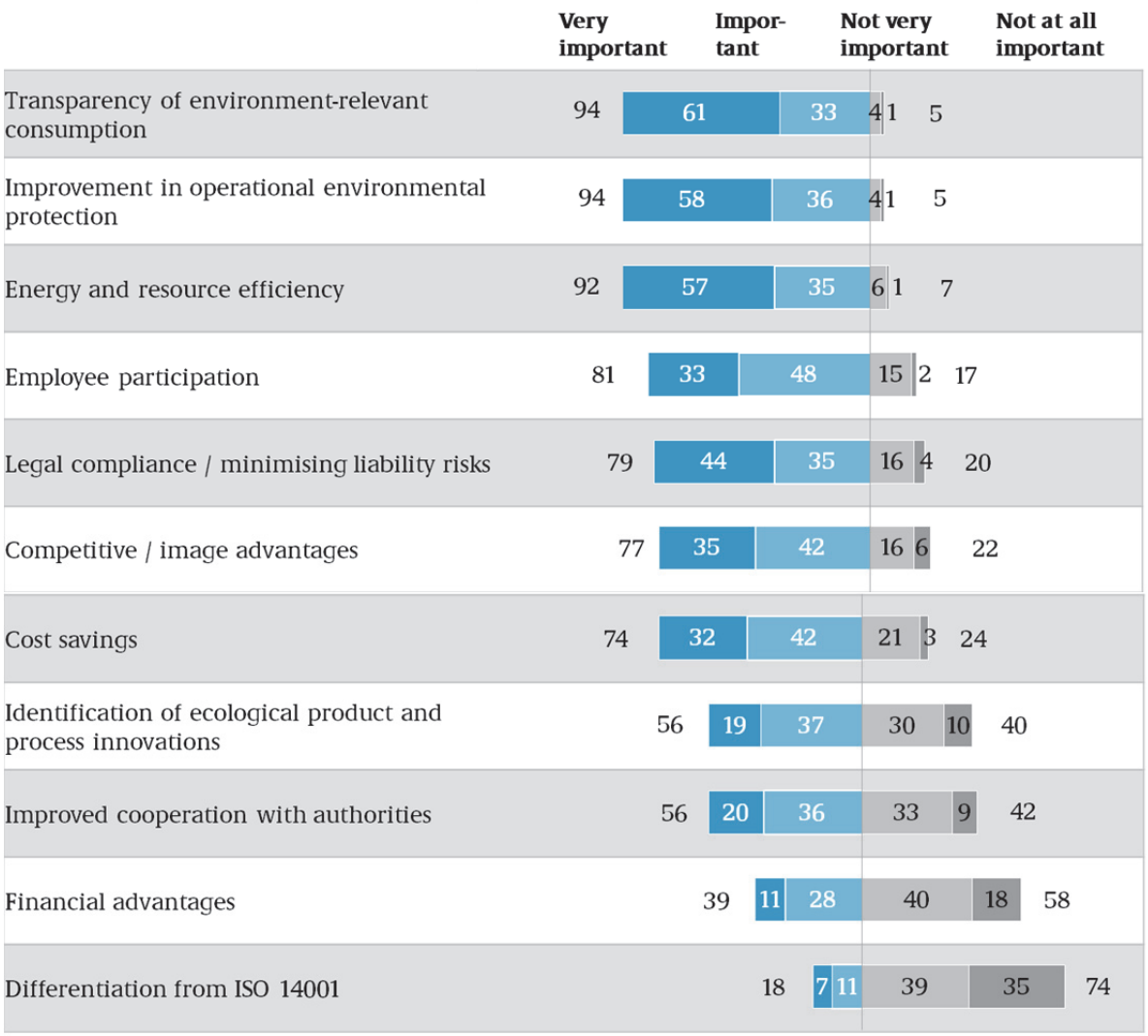


Fig. 7: Answers to the question "Please state how relevant each of the following aspects was in your company's / organisation's decision to implement EMAS."[19]

The most important reasons[20] for implementing EMAS are **transparency of environment-relevant consumption rates** (94%), **improvement of operational environmental protection** (94%) and **energy and resource efficiency** (92%). This applies both to the organisations in the productive and non-productive segments, as well as to small, medium-sized and large organisations. The "continual improvement of environmental protection" was already given as the most important reason for participating in EMAS in the survey by the Federal Environment Agency in 1999.[21]

[19] Question 6; Missing data: Don't know / Not specified

[20] The following are percentages for answers in both the categories "very important" and "important".

[21] Federal Environment Agency: EG-Umweltaudit in Deutschland, page 29.

The **significance of employee participation** is slightly more decision-relevant in the non-productive sector (88%) than in the productive sector (77%).

In contrast, **legal compliance or minimising liability risks** have a significantly greater influence on the decision to adopt EMAS in the productive sector (90%) than in the non-productive sector (64%), and are more important for large organisations (87%) than medium-sized (77%) and small organisations (69%).

The **competition and image factor** is a more important decision criterion for organisations in the productive sector (82%) than in the non-productive sector (71%). For small organisations, this aspect is slightly less decision-relevant (71%) than for large organisations (81%).

The decision criterion of **cost savings** is significantly more important at 74% in the current survey than in the company survey of 1999: At that time only 47% of respondents stated cost savings as a reason for participating in EMAS.[22]

The criterion of **ecological product and process innovations** has equally become more significant: While in the survey of 1999 this was the criterion with the lowest decision-relevance, it is now important for the majority of participants (56%).[23]

Improved cooperation with authorities also plays a role in the implementation of EMAS for the majority of respondents (56%). For productive organisations, this is considerably more important (69%) than for non-productive organisations (35%).

However, **financial advantages** such as tax relief and reductions in fees only play a role for 39% of respondents, and for 58% they are less important or not important at all.

Differentiation from ISO 14001 had the least decision-relevance for the respondents (18%): For 74% of the organisations it is not very important or not at all important. This criterion plays more of a role for productive organisations (23% against 11% in the non-productive sector). The aspect of "differentiation from ISO 14001" signifies a voluntarily adopted, higher level of organisational environmental performance that goes beyond the requirements of the environmental management standard ISO 14001, and which thereby enables the EMAS organisation to distinguish themselves from other organisations that are merely certified in accordance with ISO 14001.

[22] Federal Environment Agency: EG-Umweltaudit in Deutschland, page 30.

[23] Federal Environment Agency: EG-Umweltaudit in Deutschland, page 29.

Further **reasons for implementing** EMAS cited by the participants are:

- Setting an example and credibility
- Customer wishes, wishes of shareholders
- Company philosophy and group / company environmental guidelines
- Rating points or stock evaluation
- Educational aspect, raising awareness among children and pupils, and using the multiplier effect
- Condition of order placement
- Conservation of creation and social responsibility
- Involving the public / neighbourhood via the environmental statement
- Improving the structure of the existing environmental management system
- Improved corporate communication and awareness of all employees with regard to their responsibility for environmental protection
- Improving cooperation and overall management in the organisation (shared goals, motivational instrument, structure)

4.2.2 Time required for implementation

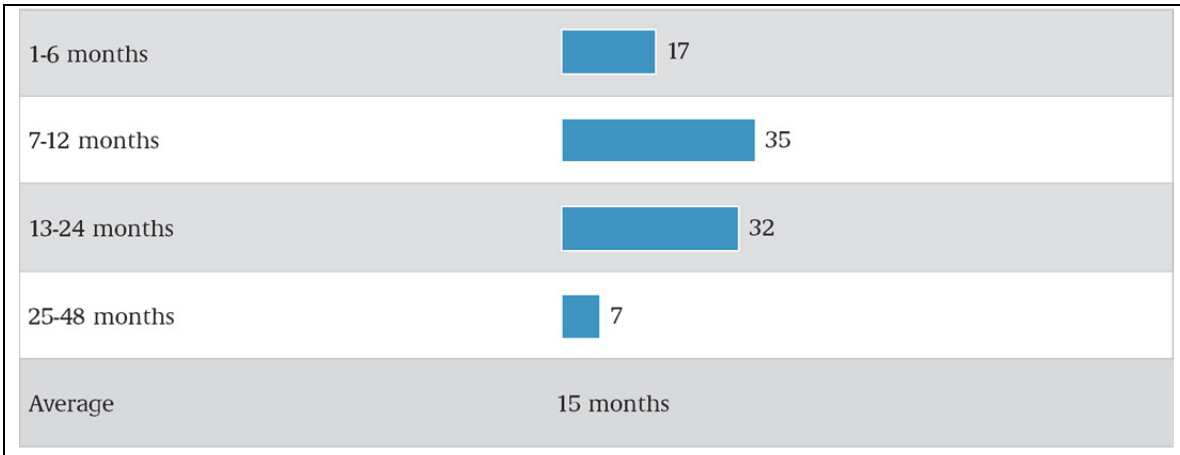


Fig. 8: Answers to the question "How long did it take to implement EMAS – from deciding to participate to completing registration?"[24]

The organisations surveyed required **∅ 15 months**[25] to implement EMAS, and therefore longer than the participants in the survey of 1999: Then, the reported length of time required for implementation was ∅ 13.8 months.[26]

Approximately two thirds of organisations surveyed (67%) completed implementation in a period of 7 to 24 months. In the productive sector, implementation was completed faster on average (∅ 12.7 months) than in the non-productive sector (∅ 17.3 months). 22% of productive and 9% of non-productive organisations achieve registration within 6 months. 38% of productive and 29% of non-productive organisations required 7 - 12 months for implementation, while 3% of productive and 12% of non-productive organisations achieved this in a period of 25 - 48 months.

Organisations that only recently implemented the EMAS system, i.e. in the period of 2005 - 2012, required longer for implementation (∅ 16.2 months) compared to organisations that completed initial validation before 2005 (∅ 13.5 months). Small organisations require approximately the same amount of time (∅ 14.5 months) as medium-sized (∅ 14.8 months) and large organisations (∅ 14.7 months). In the EMAS survey of 1999, slight differences to these statistics can be detected: Medium-sized and large enterprises had spent more time on implementation, at ∅ 14.8 and ∅ 14.4 months respectively, than smaller sites (∅ 13.2 months).[27]

[24] Question 7; Don't know: 8 / Not specified: 1

[25] Time required for implementation = period from decision to completing registration

[26] Federal Environment Agency: EG-Umweltaudit in Deutschland, page 32.

[27] Federal Environment Agency: EG-Umweltaudit in Deutschland, page 32.

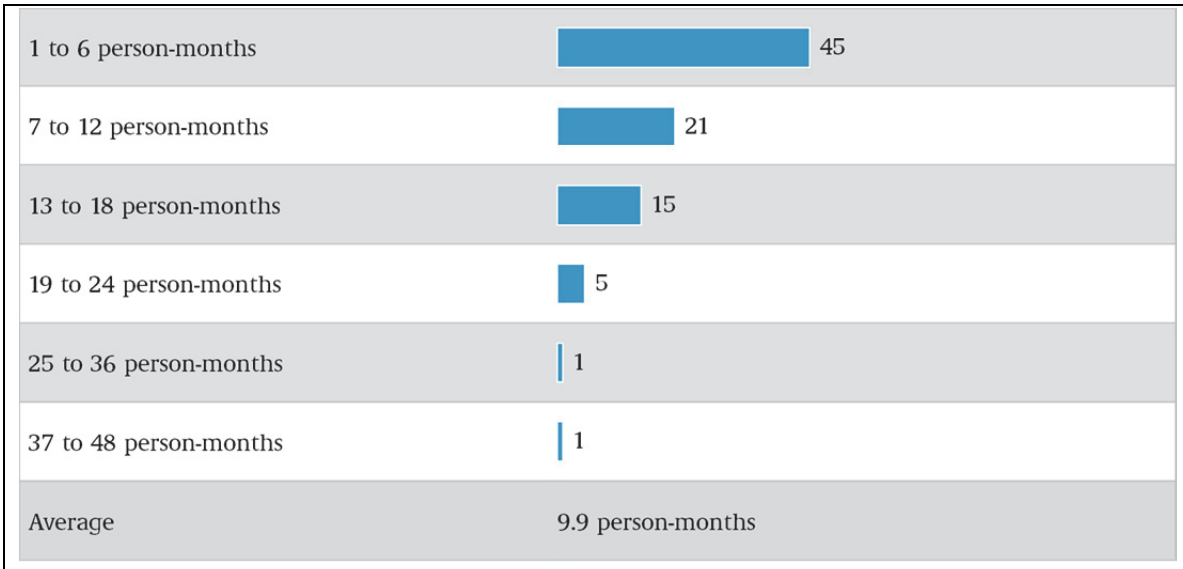


Fig. 9: Answers to the question "How high in your estimation was the total personnel cost for your company / organisation for the initial implementation of the EMAS system in person-months?"[28]

The personnel cost for implementing EMAS varies widely from organisation to organisation. On average it amounts to approximately 10 person-months, and therefore less than the amount stated in the survey of 1999: At that time, the respondents cited an average of 12 person-months.[29] Today, the implementation of EMAS seems to be completed with less human-resource allocation than in 1999, even though organisations require more time in total, i.e. from the decision to participate to completing registration (Fig. 8).

At ∅ 9.4 person-months, EMAS implementation is slightly less time-consuming for organisations in the productive sector; for non-productive organisations the figure amounts to ∅ 10.5 person-months. The differences are more significant between the various size groups: A small organisation requires ∅ 4.9 person-months, a medium-sized organisation ∅ 9.7, and a large organisation ∅ 14.1 person-months. In the survey of 1999, large organisations reported a value of as much as ∅ 20 person-months.[30] It would therefore appear that EMAS can now be implemented with less human-resource allocation.

Organisations that obtained initial validation in the period before 2005 required ∅ 11.4 person-months for the task. Since 2005, the workload has decreased to ∅ 8.4 person-months. By comparing the workload involved in implementation with the duration of implementation stated in the earlier survey (from decision to participate to completing registration), it can be seen that the implementation period has increased against that of 1999, yet the time required in person-months has decreased.

[28] Question 9; Don't know / Not specified: 11

[29] Federal Environment Agency: EG-Umweltaudit in Deutschland, page 34.

[30] Federal Environment Agency: EG-Umweltaudit in Deutschland, page 34.

Fig. 10: Answers to the question "Please place the following activities in order according to the time required for implementing the EMAS system."[31]

In the build-up to EMAS validation, the tasks of data collection and compiling the documentation were the most time-consuming. These tasks were given approximately the same rankings by the organisations surveyed irrespective of the industry and size group.

However, non-productive organisations estimate slightly more time required for data collection than productive organisations. This also applies to preparing environmental policy, environmental targets and environmental programmes. Productive organisations, however, report more time required for compiling the relevant legal provisions than non-productive organisations.

Consulting the results from the survey of 1999 reveals that producing documentation and the environmental management manual was reported by almost 80% of participants as being a high or very high cost-factor in terms of time.[32]

[31] Question 8; The participants were asked to place the activities in order from 1 to 7 (1 = lowest workload, 7 = highest workload). The individual values are derived from the average order in which the participants ranked the activities. For example, in the responses the average ranking for data collection was 5.5.

[32] Federal Environment Agency: EG-Umweltaudit in Deutschland, page 33.

4.2.3 Financial cost for implementation

Implementing EMAS entails costs that vary according to organisation size and industry, and which depend on internal and external factors. To gain a more precise overview of which financial costs organisations face when implementing EMAS, the survey distinguished between validation costs, external expenses and internal expenses.

Costs for validation:

		Sector		Organisation size		
Costs in €	Total	Productive	Non-productive	Small	Medium-sized	Large
Less than 2,500	14	5	25	33	14	3
2,500 to less than 5,000	30	31	28	38	37	21
5,000 to less than 10,000	25	28	21	15	23	36
10,000 to less than 15,000	8	10	6	3	6	13
15,000 to less than 20,000	3	4	1	1	0	6
20,000 to less than 30,000	2	2	2	0	1	4
More than 30,000	2	4	1	0	1	4
No costs	1	0	1	2	0	0

Fig. 11: Answers to the question "How high was the overall financial cost for "validation" at the time of implementing the EMAS system?"[33]

Around two thirds of the organisations surveyed (69%) report that the cost of initial validation amounted to < € 10,000. In line with expectations, the cost of validation increases with the organisation's size group, and tends to be higher for the productive sector. In isolated cases, organisations reported validation costs of > € 30,000, in particular among the large organisations in the productive sector.

[33] Question 10; Missing data: Don't know / Not specified; Registration costs were disregarded

Costs for external consulting:

		Sector		Organisation size		
Costs in €	Total	Productive	Non-productive	Small	Medium-sized	Large
Less than 2,500	19	13	27	33	17	14
2,500 to less than 5,000	16	17	15	25	20	9
5,000 to less than 10,000	20	26	11	19	20	21
10,000 to less than 15,000	8	10	7	5	8	11
15,000 to less than 20,000	4	3	4	1	1	9
20,000 to less than 30,000	3	3	2	1	4	4
30,000 to less than 50,000	4	4	5	0	7	4
50,000 to less than 75,000	1	0	2	0	0	2
75,000 to less than 100,000	1	0	1	0	0	1
More than 100,000	0	0	1	0	0	0
No ext. consulting costs	10	8	13	10	8	13

Fig. 12: Answers to the question "How high was the total financial cost for "external consulting" at the time of implementing the EMAS system?"[34]

The majority of respondents (76%) availed of external consulting for implementing EMAS. The costs of this amounted for the majority (55%) to < € 10,000. The productive sector reports higher consulting costs compared to non-productive organisations. Consulting costs also rise with the size of the organisation.

[34] Question 10; Missing data: Don't know / Not specified

Internal expenses:

		Sector		Organisation size		
Costs in €	Total	Productive	Non-productive	Small	Medium-sized	Large
Less than 2,500	14	7	22	32	12	4
2,500 to less than 5,000	13	13	10	20	15	5
5,000 to less than 10,000	15	19	13	19	20	12
10,000 to less than 15,000	5	6	5	4	6	7
15,000 to less than 20,000	5	7	1	2	7	4
20,000 to less than 30,000	7	7	7	3	8	10
30,000 to less than 50,000	10	10	9	4	6	16
50,000 to less than 75,000	6	9	4	1	2	14
75,000 to less than 100,000	1	0	1	0	1	2
More than 100,000	2	1	3	0	1	4
No costs	4	1	9	9	4	1

Fig. 13: Answers to the question "How high was the total financial cost of "internal expenses" at the time of implementing the EMAS system?"[35]

A broad range of internal expenses[36] was reported, ranging from less than € 2,500 to over € 100,000. The larger the organisation, the higher the internal expenses. Larger organisations were also less able to give a cost estimate ("Don't know"). The internal expenses in the non-productive sector are slightly lower than in the productive sector.

[35] Question 10; Missing data: Don't know / Not specified

[36] Internal expenses include in particular: costs for environmental management officers, environmental management representatives, environment training and environmental statements.

4.2.4 Running costs for maintaining EMAS

Even after the implementation phase, costs for maintaining the environmental management system arise in everyday EMAS practice. These include a variety of running costs, in particular internal expenses for training, environmental management officers and environmental statements, consulting costs, costs for validation and registration. The survey asked for total costs, with the following results:

		Sector		Organisation size		
Costs in €	Total	Productive	Non-productive	Small	Medium-sized	Large
Less than 2,500	15	9	24	37	17	1
2,500 to less than 5,000	22	22	20	28	28	16
5,000 to less than 10,000	22	24	21	16	19	31
10,000 to less than 15,000	10	12	8	5	19	8
15,000 to less than 20,000	7	9	5	3	9	5
20,000 to less than 30,000	6	7	6	1	2	14
30,000 to less than 50,000	5	5	4	0	2	10
50,000 to less than 75,000	3	3	1	0	1	7
75,000 to less than 100,000	1	2	0	0	0	3
More than 100,000	1	1	0	0	0	1
No costs	1	0	2	3	0	0

Fig. 14: Answers to the question "How high are your total average costs per year for maintaining the system (including verifier and registration costs)?[37]

The majority (59%) of organisations surveyed report that the running costs amount to < € 10,000 per year. This figure increases with organisation size and tends to be lower in the non-productive sector than in productive organisations.

5% of the respondents are unable to estimate the annual costs of maintaining the system ("Don't know"). Compared with the survey of 1999, this is a marked improvement: In that survey, some "(...) 55% of respondents say that they are scarcely able to forecast the average annual costs (...). Those who attempted to quantify the costs put them at an average of DM 31,000 per annum (...)".[38]

[37] Question 11; Missing data: Don't know / Not specified

[38] Federal Environment Agency: EG-Umweltaudit in Deutschland, page 35.

4.3 Assessment of the benefit and cost factors

4.3.1 Benefits of implementing the scheme

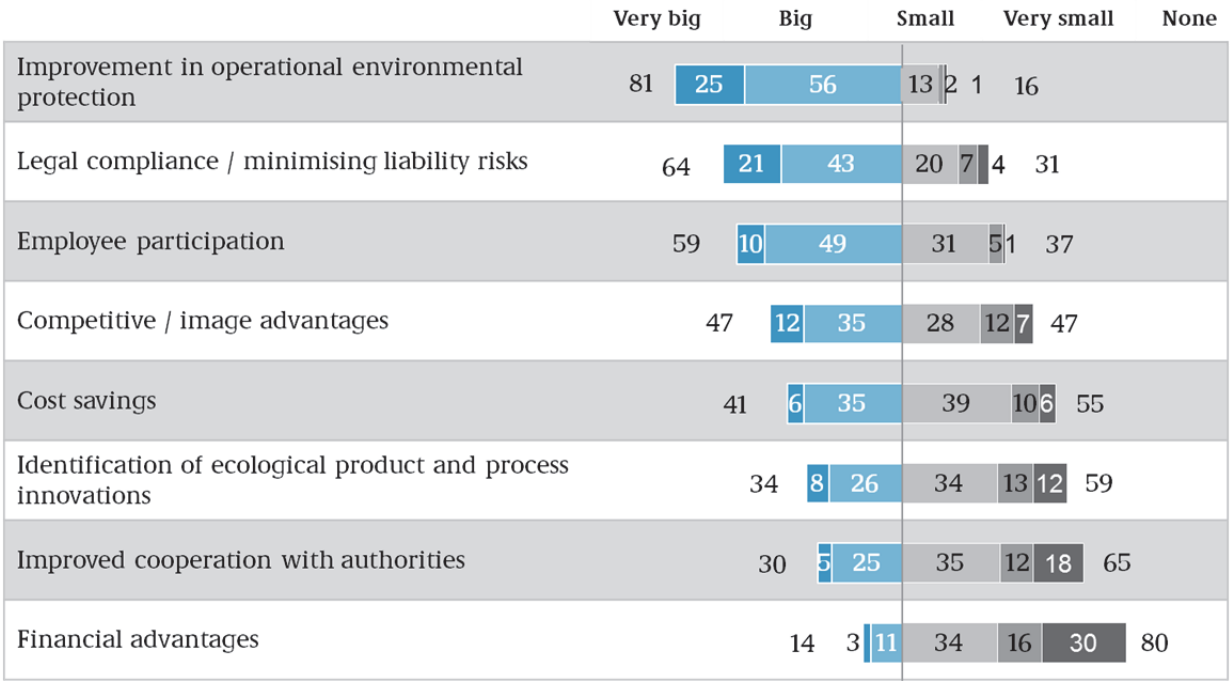


Fig. 15: Answers to the question "How big was the benefit of implementing the EMAS system for you?"[39]

The biggest benefit of implementing EMAS for the respondents is the **improvement in operational environmental protection** (81%)[40]. In second and third place follow the aspects of **legal compliance** (64%) and **employee participation** (59%), both of which are essential features that distinguish EMAS from ISO 14001. However, most organisations (80%) rate the financial benefits of implementing EMAS as (very) low or nonexistent.[41]

The evaluation also reveals the following differences between the various industries and organisation sizes: Slightly more appreciation for the legal compliance associated with EMAS is recorded by organisations in the productive sector: 74% report a big or very big benefit, while in the non-productive sector, the figure is "only" 50%. For small organisations, the benefit of legal compliance is also somewhat smaller (54%) than for medium-sized and large organisations (both 70%).[42]

[39] Question 12; Missing data: Don't know / Not specified

[40] Answers in the categories "very important" and "important"

[41] The following difference exists between the benefit aspects of "financial advantages" and "cost savings": Financial advantages refer in particular to allowances granted by external bodies, such as lower-priced insurance / credit, or public subsidies. In contrast, cost savings refer to savings mostly achieved internally, e.g. in energy, waste and wastewater costs.

[42] Answers in the categories "very important" and "important"

EMAS is equally important as a competitive and image factor for the productive and non-productive sectors, as well as for small, medium-sized and large organisations.

Consulting the results from the survey of 1999 reveals: The participants of that time period considered the improved environmental protection to be less important ("conserving resources" at position 5), but assigned similar benefits to the aspects of legal compliance (position 2), image improvement (position 3) and employee participation (position 4). As a further similarity, financial advantages ("cheaper insurance / credit", "using public subsidies") also ranked in the bottom positions.[43]

From these results it can be interpreted that the financial advantages of EMAS essentially carry little weight for the organisations, while company environmental protection – supported by employees – forms the greatest benefit.

Further beneficial aspects mentioned by the respondents in the current survey include among others:

- Credibility, function as a role-model, transparency for the public, strengthening trust from the neighbourhood
- Rating points, share prices, customer benefits
- Raising awareness among children, multiplier effect among schoolchildren, environmental education
- Improvement in data transparency and organisation of operating procedures
- Parallel effect with ISO 14001 certification
- Increasing environmental awareness in the company and strengthening the company structure and identification with the company
- Improving the procurement process
- Systematic and effective involvement of managers through the need to prove the actual improvement in environmental performance achieved

[43] cf. Federal Environment Agency: EG-Umweltaudit in Deutschland, page 37.

4.3.2 Savings through implementing the EMAS system

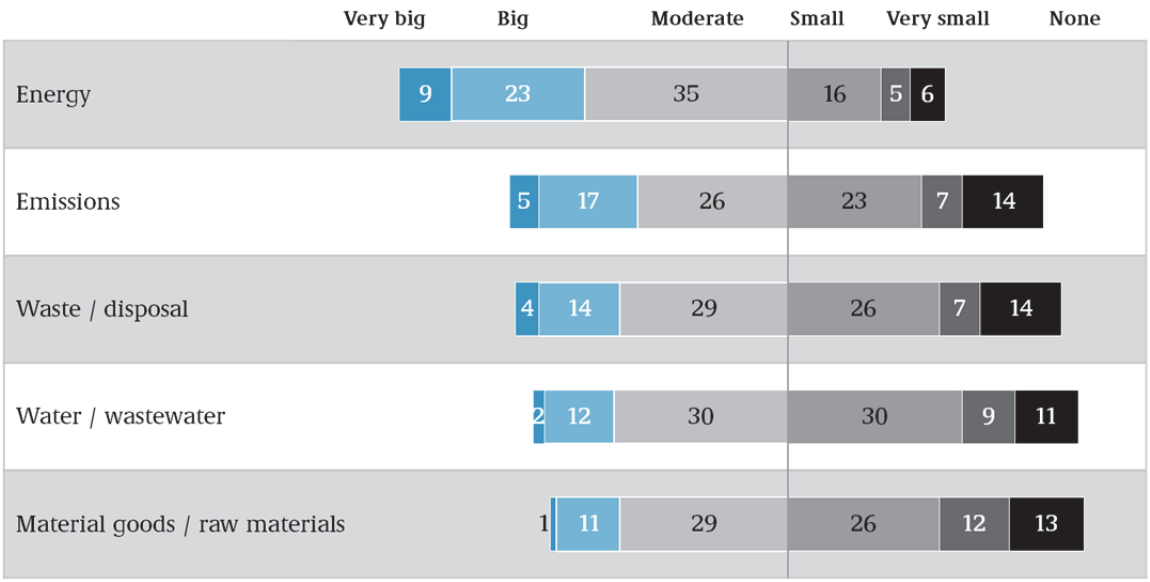


Fig. 16: Answers to the question "How high were the cost savings in the following areas?"[44]

The respondents recorded the greatest cost saving through the implementation of EMAS in the area of energy: 67% of organisations reported having achieved (very) high or medium energy cost savings. Emissions rank in second position among cost savings, followed by savings in the area of waste / disposal and water / wastewater. Cost savings in the area of emissions can be considered primarily as savings relevant to emissions trading or to emissions-related approvals (e.g. in accordance with BImSchG). However, it is not clear whether the (overall very high) cost savings from emissions reported here result entirely from the factors mentioned, or whether the respondents added other savings, such as in energy costs, to the area of emissions.

Lowest cost savings are recorded in the area of material goods and raw materials. The majority (51%) observed only low cost savings or none at all, although four out of ten respondents (41%) were in fact able to achieve (very) high or moderate savings. This may signify that resource management with EMAS for energy, water and waste is relatively successful, although there is still insufficient provision in the EMAS Regulation and in EMAS practice for the management of material goods and raw materials.

In the area of water / wastewater, medium-sized organisations report the highest savings (small organisations 38%, medium-sized 53%, large 44%). In the areas of waste / disposal (small organisations 34%, medium-sized 58%, large 55%[45]), energy (small organisations 64%, medium-sized 74%, large 71%[46]) and material goods / raw materials (small organisations 35%, medium-sized 44%, large 46%) there are no noticeable differences between medium-sized and large organisations.[47] Across all areas, small organisations report the lowest savings.

[44] Question 13

[45] The difference between medium-sized and large organisations is not significant (on a 95 % level).

[46] The difference between medium-sized and large organisations is not significant (on a 95 % level).

[47] Answers in the categories "very high", "high", "moderate"

Differing situations are portrayed in the productive and non-productive sectors. Savings in the areas of waste / disposal, water / wastewater and material goods / raw materials are somewhat higher in the productive sector. In contrast, organisations in the non-productive sector report higher savings in energy and emissions.

4.3.3 Running savings

Total	**€ 10,678**
Productive sector	€ 10,096
Non-productive sector	€ 11,412
Small companies / organisations up to 50 employees	€ 1,276
Medium-sized companies / organisations with 51 to 250 employees	€ 7,207
Large companies / organisations with over 250 employees	€ 21,312

Fig. 17: Answers to the question "In your estimation, how high were the total financial savings achieved per year by implementing EMAS?"[48]

When asked about the average savings per year, 68% of organisations were unable to specify. A similar response rate was experienced in the EMAS survey of 1999: in that report some 75% of respondents stated that "it was difficult to quote an exact figure for the costs saved".[49]

It is only possible to speculate why this might be. Experiences show that it is difficult to quantify the costs saved by environment-relevant measures. Many of these activities either do not entail savings that are measurable in concrete terms (e.g. raising employee awareness of resource-saving practices), or do not make it easy to ascertain the cost savings achieved. Furthermore, it is often not possible to differentiate between the measures instigated by EMAS and general technical measures.

One third of respondents (32%) are able to specify the annual savings. In this group, the average annual savings amount to € 10,678. Significant differences exist between the different organisation sizes: While small organisations save on average € 1,276, medium-sized organisations are able to save as much as € 7,207, and large organisations € 21,312.

However, there is little difference between the industry classifications: In the productive sector, the annual savings amount to an average of € 10,096; in the non-productive sector the figure is € 11,412.

[48] Question 14

[49] Federal Environment Agency: EG-Umweltaudit in Deutschland, page 39.

A further interesting difference is noted between the long-established EMAS organisations (initial validation before 2005) with average annual savings of € 15,879, and EMAS newcomers (initial validation after 2005) with average annual savings of € 5,547. A possible explanation is that in the period before 2005, large organisations formed the largest group of EMAS participants, while a particularly high number of small organisations joined EMAS since 2005. As described earlier, large organisations report significantly larger savings on average compared to small organisations.

4.3.4 Cost-benefit ratio

Fig. 18: Answers to the question "How would you assess the cost-benefit ratio of your participation in the EMAS system?"[50]

The vast majority (75%) of respondents find the cost-benefit ratio of EMAS to be positive or balanced. Here, the strongest group is formed by large organisations (83% find the ratio to be positive or balanced), followed by the medium-sized (77%) and small organisations (68%). In the non-productive and productive sectors the assessment is nearly the same, at 77% and 75% respectively.

A negative cost-benefit ratio can be found much more frequently in small (27%) organisations than in large (13%) organisations. Medium-sized organisations once again rank in the middle here (16%).

A comparison with the EMAS survey of 1999 shows that 29% of the respondents at that time were unable to assess the cost-benefit ratio (current survey: 5%). The remainder assessed the cost-benefit ratio much less positively than in the current survey: 42% of respondents reported a positive or balanced ratio, 29% found it negative.

[50] Question 16; Don't know: 5 / Not specified: 3

4.4 Energy and resource efficiency in EMAS practice

4.4.1 Importance of energy and resource efficiency

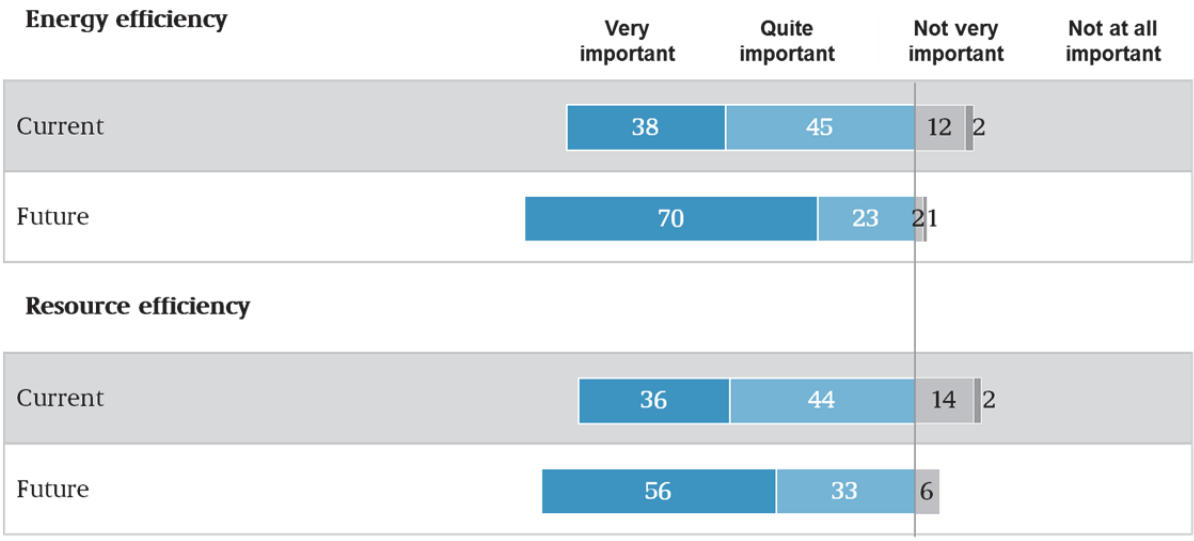


Fig. 19: Answers to the question "How important is energy efficiency / resource efficiency for your current and future company / organisational strategy?"[51]

Energy and resource efficiency as part of organisational strategy is already important today for four out of five respondents.[52] Nine out of ten respondents consider it relevant for the future, implying this aspect is of growing importance.[53]

The focus in this area is somewhat more on energy efficiency. Its importance also grows with the size of the organisation: For 78% of large organisations the issue will play a very important role in the future, for both medium-sized and small organisations this figure is 67%. For 76% of organisations from the productive sector, energy efficiency is very important for the future, while 62% of respondents in the non-productive sector believe this to be true.

Resource efficiency is also of particular importance for the future in the productive sector: For 66% of productive organisations and 41% of non-productive organisations, this area is very important for the future. Broken down into size groups, the figures are 64% among large, 51% among medium-sized and 52% among small organisations.

4.4.2 Measures for improving energy and resource efficiency

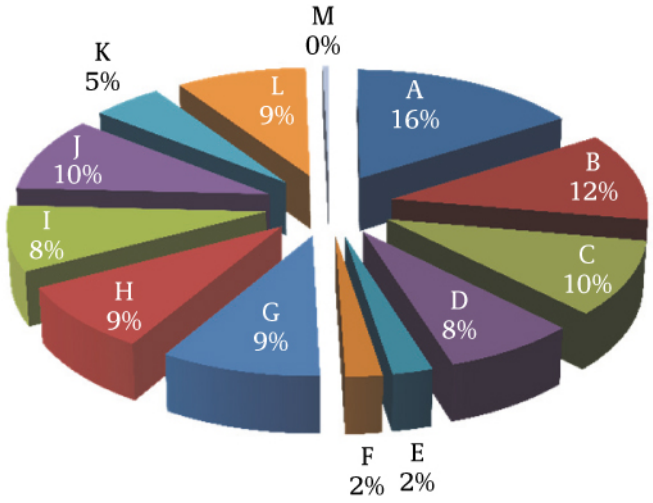
In order to improve energy and resource efficiency, the organisations make use of a broad variety of measures, both technological and non-technological. The participants were therefore asked to name the three most important measures – instigated by EMAS – that have been used in the areas of energy efficiency and resource efficiency (Question 19). The results are summarised according to categories and presented in Figures 22 and 23.

[51] Question 17/18; Missing data: Don't know / Not specified

[52] "very important" or "quite important"

[53] "very important" or "quite important"

Measures for improving energy efficiency in the productive sector



- A Process optimisation
- B Lighting
- C Building refurbishment
- D Optimising heating / cooling system
- E Green electricity
- F Green IT
- G Collecting/monitoring consumption data
- I Heat recovery
- J Own energy production
- K Replacing existing systems and appliances
- L Employee training
- M Cross-sectional technology
- N Central building control system

Fig. 20: Answers to the question "Please name the three most important measures you implemented through EMAS in the area of energy efficiency."[54]

[54] Question 19; answers summarised in categories A-L

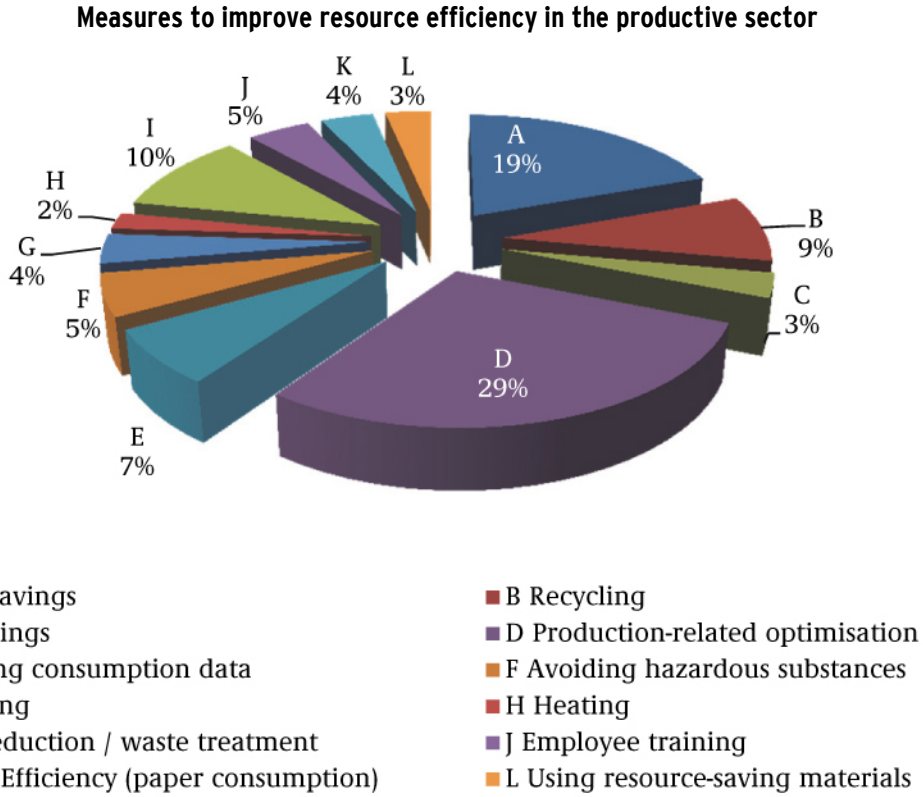


Fig. 21: Answers to the question "Please name the three most important measures you implemented through EMAS in the area of resource efficiency."[55]

[55] Question 19; answers summarised in categories A-L

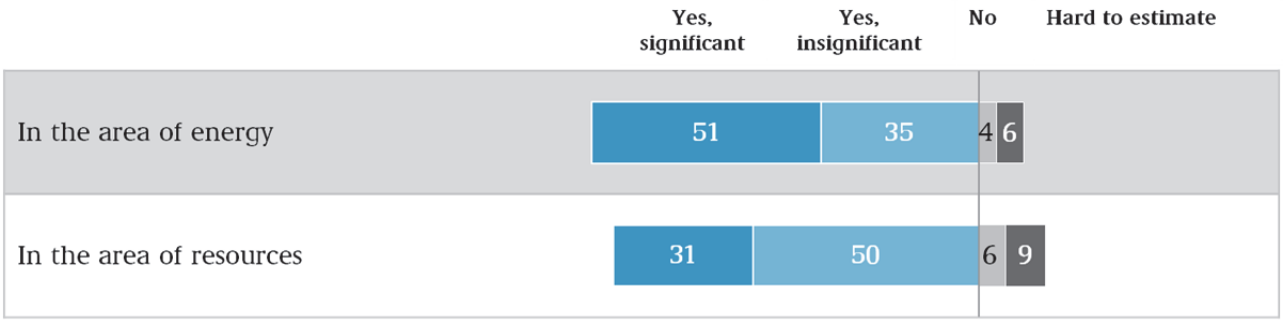


Fig. 22: Answers to the question "Did these measures enable you to improve your company's / organisation's environmental performance in the area of energy and resources?"[56]

A "significant" **improvement in environmental performance in the area of energy** using the above-mentioned measures is recorded in particular by large (59%) and medium-sized organisations (55%), as well as organisations in the productive sector (56%), compared to small organisations (41%) and organisations in the non-productive sector (46%). "Insignificant" improvements, however, are more often reported among small organisations (45% compared to 37% in medium-sized and 31% in large organisations), as well as in non-productive organisations (37% compared to 32% in productive organisations).

A similar picture is found for **improvements in environmental performance in the area of resources**: Here too, large organisations more frequently report a "significant" improvement (39% against 31% in medium-sized and 22% in small organisations), as do organisations in the productive sector (34% compared to 27% in non-productive organisations). In contrast, small organisations (60% compared to 55% in medium-sized and 47% in large organisations) and non-productive organisations (54% compared to 50% in productive organisations) more frequently experience "insignificant" improvements.

[56] Question 20; Missing data: Not specified

4.4.3 EMAS III as an instrument for resource management

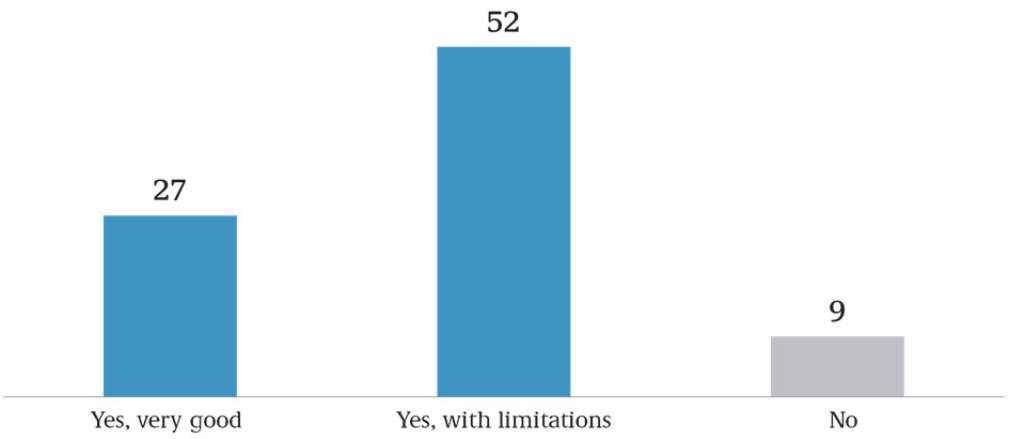


Fig. 23: Answers to the question "In your opinion, is EMAS III a suitable instrument for sustainable resource management?"[57]

Across all size groups and industries the assessment of EMAS III as an instrument of sustainable resource management is relatively unanimous: Eight out of ten respondents consider it to be suitable; five out of ten respondents find it suitable but only to an extent.

In response to the question of how EMAS could be established in practice as an instrument for sustainable resource management (Question 22), the following suggestions were made (summary of the most frequent entries):

- (Industry) benchmarks and key data for assessing resource management
- Training auditors, auditing resource management
- Integration in environmental programme and environmental targets
- Developing qualitative and quantitative minimum standards, boundary values and (legal) guidelines
- Visual representation of consumption data, input-output analysis, implementing a material flow management system, CO_2 balancing, analysis of actual and target status, checklist with "to do's", providing helpful tools
- Consciousness raising for employees

A few other opinions from the respondents:

"EMAS supports sustainable resource management, but even without EMAS this would be an increasingly important issue in the company from the point of view of costs and competitive strategy."

"More clarity in the use of the term 'resource management'."

"It would be helpful if EMAS would provide information and assistance for sustainable resource management, instead of just "enquiring about" resource management."

[57] Question 21; Don't know: 8 / Not specified: 4

"Not EMAS on its own. But in combination with systems like FSC, PEFC or 'Blauer Engel'."

"EMAS III would have to be combined with other processes for assessing LCC, TCO and production processes according to Kaizen (value stream mapping, material flow according to needs)."

4.5 Experiences with the environmental statement and the environmental verifier

4.5.1 Interest in the environmental statement

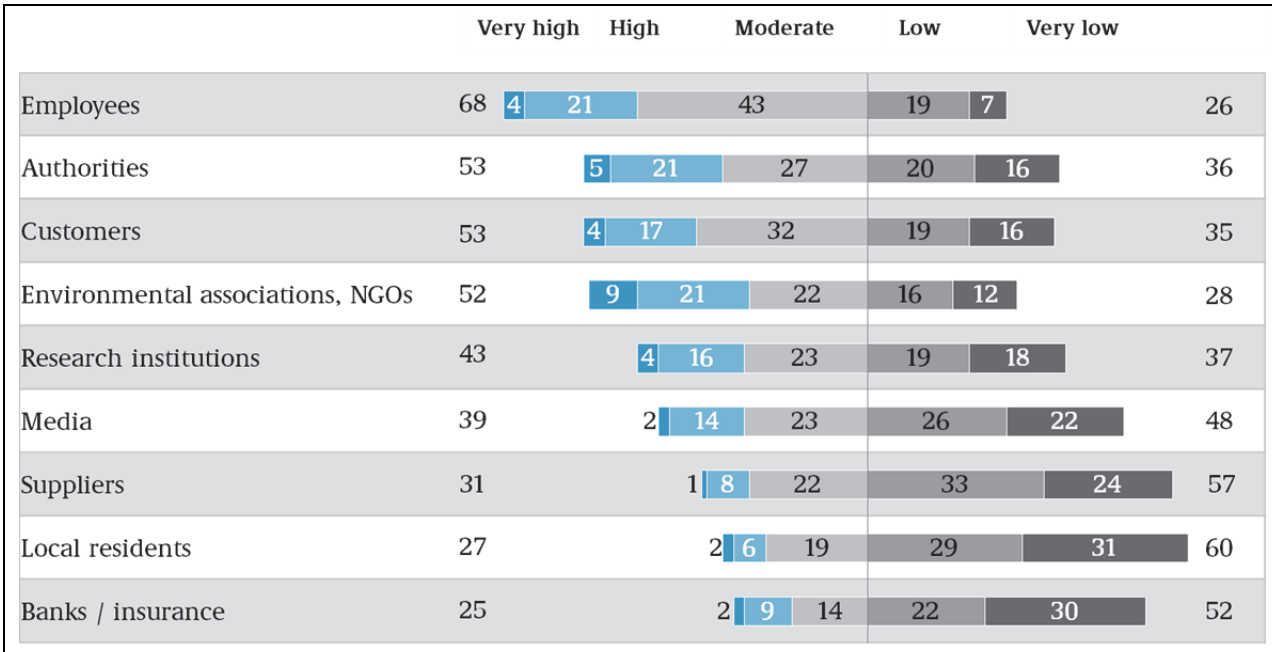


Fig. 24: Answers to the question "How would you rate interest levels in your environmental statement among the following groups of readers?"[58]

The environmental statement enables an EMAS organisation to inform internal and external parties about its environmental activities and its progress in environmental performance. The respondents gave very varied assessments of the level of interest in the environmental statement among the individual groups of readers. Overall, the respondents believe environmental associations, NGOs and employees to be the most interested groups of readers (very high or high level of interest). Authorities and customers also showed a (very) high level of interest in the respondents' environmental statement. The least interested groups were banks, insurance companies, local residents and suppliers.

The evaluation also reveals the following differences between the various industries and organisation sizes: Organisations in the non-productive sector and small organisations rate levels of interest among their employees at 29% and 31% respectively, while lower figures are stated by medium-sized (27%) and large (22%) organisations, as well by those in the productive sector (20%).[59]

[58] Question 23; Missing data: Don't know / Not specified

[59] Responses in the categories "very high" and "high"

A greater number of productive and large organisations report that authorities show very high or high levels of interest (productive sector 29%, non-productive sector 19%, large organisations 36%, medium-sized organisations 25%, small organisations 15%). A similar trend can be seen for the target groups banks and insurance companies, which were rated as showing low levels of interest (productive sector 12%, non-productive sector 6%, large organisations 17%, medium-sized organisations 9%, small organisations 4%).

A comparison with the survey of 1999 reveals a similar trend at that time: According to those respondents' estimations, employees ranked highest in terms of interest in the environmental statement, followed by research institutions, authorities and students.[60] The lowest level of interest was observed among local residents and banks / insurance companies. The EMAS organisations' estimations of interest among the individual groups of readers would seem still to be relatively consistent today with the levels of the earlier survey.

4.5.2 Biodiversity in the environmental statement

Many organisations address the aspects of biodiversity and ecosystems in their environmental statement. They do this in a wide variety of manners, as the survey reveals. The following is a summary of answers to the question "Aside from under the indicator on land consumption (in m^2 of built area), do you address the aspects of biodiversity and ecosystems (e.g. developing nature conservation plans) in your environmental statement?"[61]

- The use and development of open areas and green spaces e.g. as meadow orchards, installing beehives, sheep as biological lawn-mowers, creating a habitat for small animals and insects (e.g. nesting boxes) – generally improving the natural habitat for animals and plants on the organisation's own land is an activity that is readily outlined in environmental statements.
- A number of organisations cover the renaturation of disused areas in their environmental statements. In addition, nature conservation activities are described such as cultivation methods in organic farming (e.g. cultivating old varieties of cereals, using a proportion of seeds from biodynamic cultivation), ecological protection of drinking water, nesting and brooding aids for birds, and further projects to preserve biodiversity (bats, plantation, apple varieties etc.). Efforts to restore wetlands and in the area of sustainable and intensive conventional agriculture (not organic farming) are also mentioned.
- Measures to further increase biodiversity are frequently mentioned in organisations' environmental targets. These include measures to compensate for soil sealing, watershed management (water protection areas) and the sustainable handling of groundwater resources and discharges into water.
- A number of respondents also mentioned programmes for establishing protection zones, water areas and support schemes for nature conservation efforts, as well as biotope maintenance, voluntary contributions to nature conservation, and surveying and

[60] Federal Environment Agency: EG-Umweltaudit in Deutschland, page 41.

[61] A comprehensive collection of responses is available in an appendix.

assessing trees (tree registers) for carrying out treatment. An increase in vegetation / trees and basic measures in communal nature conservations are also reported.

- Schools and other educational facilities describe their (adventure-based learning) projects on the subject of nature conservation and plants. The topics of biodiversity and ecosystems are also addressed as part of teaching courses and science projects.
- In creation guidelines in their environmental statements, church organisations assert that environmental targets also include the preservation and promotion of healthy habitats for people, animals and plants.
- Further activities described in environmental statements include for example: ecological construction supervision and considering ecology / biodiversity in decisions on future building plans, managing and caring for grounds and buildings (cultivation, green roofs, infiltration areas) and refraining from spreading salt in winter service.

"We have a large meadow that is not mowed until the start of July. Mr (...) compiled a plant guidebook for our guests allowing them to identify over 100 plants in the meadow. We also mention our 35,000m^2 park with mature trees."

- Mention was also made of a "biodiversity check" to identify and assess the effects of an organisation's own actions on biodiversity. Using this as a basis, a catalogue was compiled containing recommended actions to improve the influence on biodiversity. This was then established as a future guideline for activities in the area of biodiversity.

4.5.3 Further uses of the environmental statement

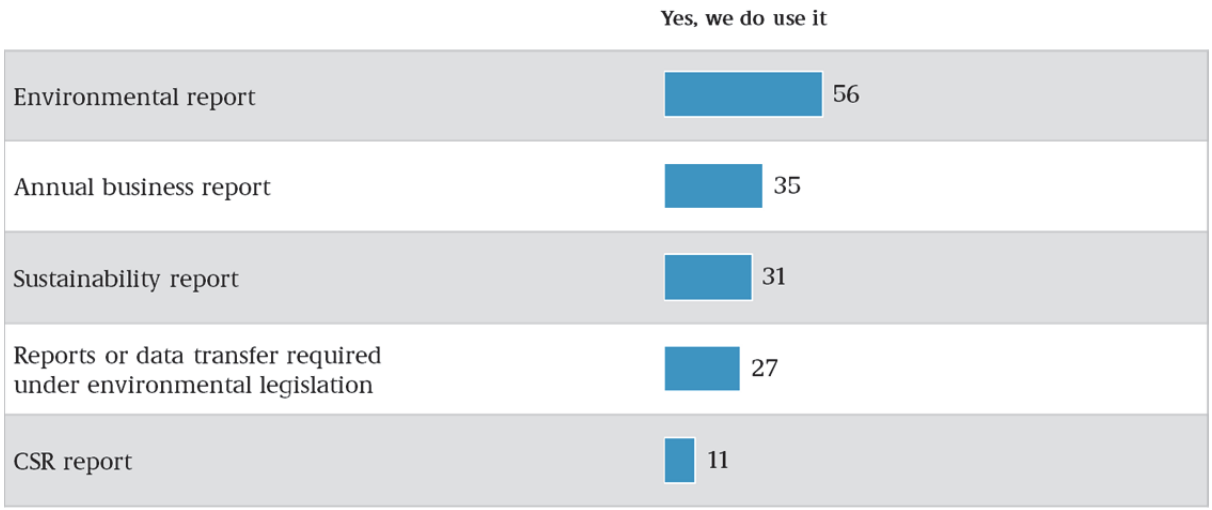


Fig. 25: Answers to the question "Do you also use your EMAS environmental statement as a basis for compiling the following reports?"[62]

Just over half of the organisations use the environmental statement as a basis for an environmental report. Approximately a third of respondents also use it for annual business reports and sustainability reports, in particular large organisations. For one in ten organisations the environmental statement is used for CSR reports, particularly in the productive sector. Productive and large organisations also use the environmental statement more often for reports required under environmental legislation.

[62] Question 24; Missing data: No, we do not use it / Don't know / Not specified

4.5.4 Satisfaction with the environmental verifier

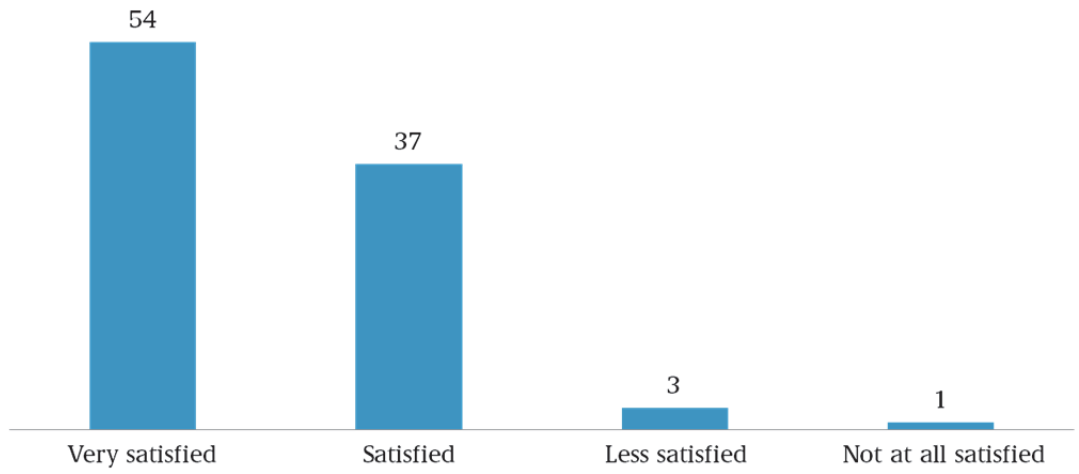


Fig. 26: Answers to the question "How satisfied are you with your current environmental verifier?"[63]

The EMAS organisations find the work of their environmental verifier to be very good: 91% of respondents are (very) satisfied or satisfied with their current environmental verifier. Only a very small number of organisations are not very satisfied or not at all satisfied (4%). This result proves a successful cooperation between EMAS organisations and environmental verifiers in Germany from the point of view of the organisations.

Further questions on the subject also give a positive image. Asked what points the respondents would give their environmental verifiers on a scale of one to six for their technical expertise and working methods (based on the grade system in German schools), on average only good to very good points were awarded. In this assessment there is no appreciable difference between the various organisation sizes and industries.

[63] Question 29; Don't know: 1 / Not specified: 4

Expertise	Average point	Working method	Average point
Ecological knowledge	1.6	Independence	1.4
Technical knowledge	1.6	Neutrality	1.4
Organisational knowledge	1.7	Reliability	1.5
Legal knowledge	1.7	Thoroughness	1.7
Industry knowledge	1.9	Intensity of inspection (time required)	1.7

Fig. 27: Answers to the question "How would you rate the expertise / working methods of your current environmental verifier with regard to the following aspects?"[64]

[64] Question 30/31

4.6 Advantages and incentives of EMAS

4.6.1 Advantages for responding to invitations to tender

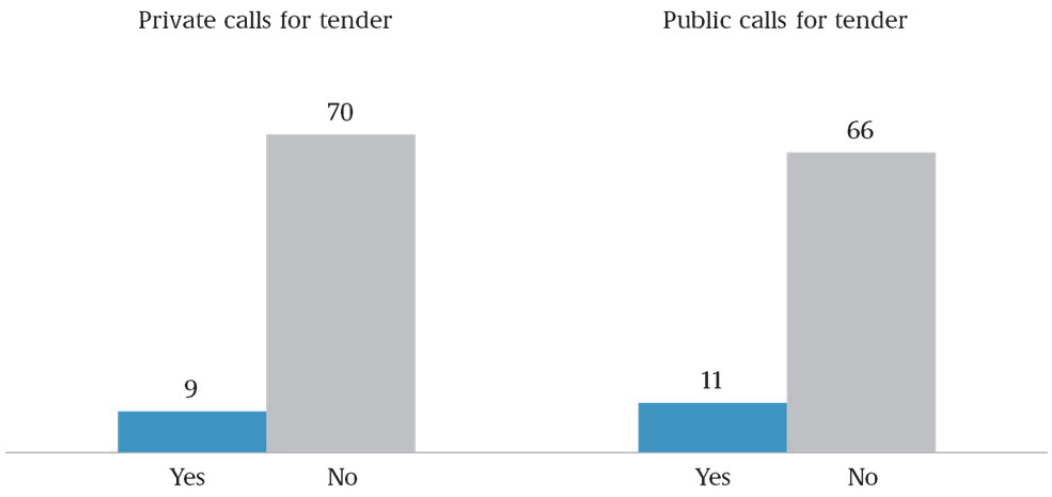


Fig. 28: Answers to the question "Does EMAS offer you an advantage when responding to invitations to tender?"[65]

Three quarters of respondents see no advantage in EMAS for tendering procedures. The situation is almost the same for both private and public tendering procedures. Productive organisations benefit slightly more than non-productive organisations: 14% of respondents from the productive sector see an advantage for private calls for tenders, and 12% for public procedures. In non-productive organisations these figures were only 5% and 8% respectively. For medium-sized and large organisations there are slightly more advantages than for small organisations: 10% of large, 14% of medium-sized and only 5% of small organisations see advantages in private calls for tender. For public tendering procedures, 14% of large, 11% of medium-sized and 6% of small organisations consider EMAS as an advantage.

Long-standing EMAS participants (validation before 2005) see more advantages for private (11%) and public (14%) calls for tenders than "younger" EMAS participants (validation since 2005) at 7% and 5% respectively. Once again, a possible explanation for this is the size structure of EMAS newcomers before and since 2005: Large organisations formed the majority of the initial validations before 2005, while this has shifted to small and medium-sized organisations since 2005. It can be assumed that large organisations take part in calls for tenders more often than small and medium-sized organisations, and are therefore better able to leverage the advantages EMAS offers for tendering procedures.

[65] Question 25; Missing data: Don't know / Not specified

4.6.2 Wishes for the structuring of EMAS recognition through environmental policy

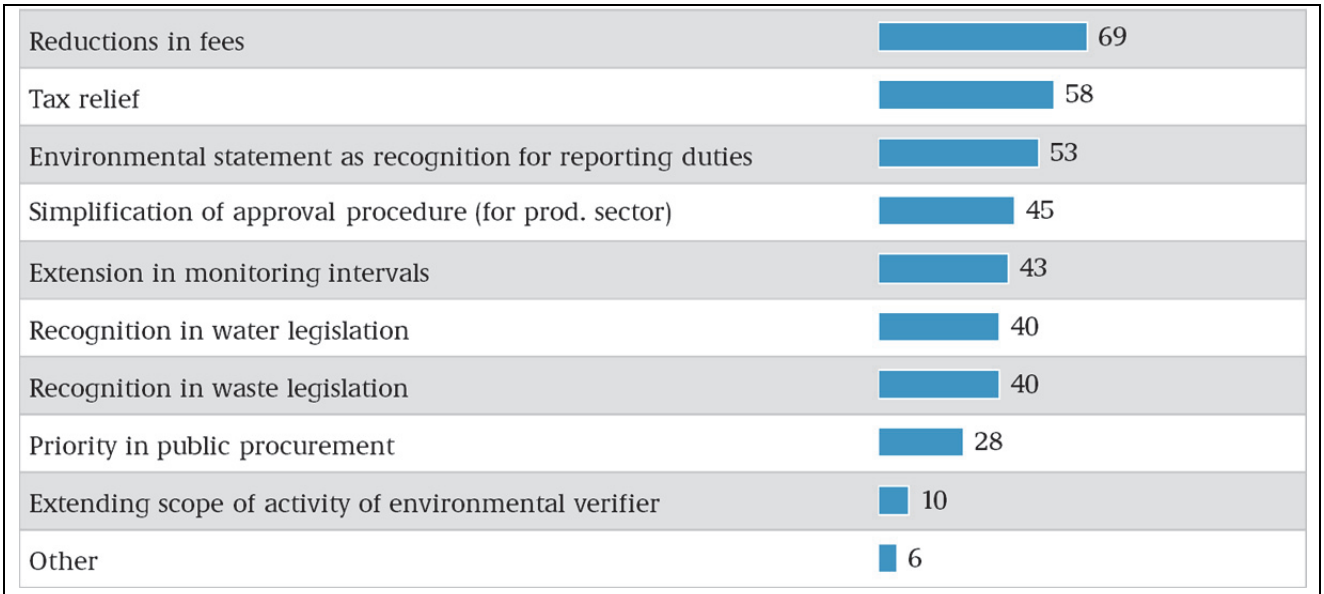


Fig. 29: Answers to the question "If EMAS recognition were to be extended, which incentives would be most relevant for you?"[66]

Which aspects have highest priority for the respondents for the future structuring of EMAS recognition? Reductions in fees is ranked first (relevant for 69% of respondents), followed by tax relief (relevant for 58%). Financial advantages therefore play an important role for the future structuring of EMAS recognition. Participants were also particularly interested in relaxations in reporting obligations, the authorisation procedure and monitoring obligations. As many as four out of ten respondents desire improved recognition for EMAS participation in water and waste legislation.

For the respondents from the productive sector, the most important incentives are reductions in fees (73%), simplification of the approval procedure (73 %) and tax relief (70%). In the non-productive sector, the list is topped by reductions in fees (60%), tax relief (42%) and the environmental statement as recognition for reporting duties (39%). It can be observed that the aspects are ranked in a similar order in both the productive and non-productive sectors. However, financial advantages and recognition from authorities are a greater priority overall for the productive sector than for non-productive industries. Equally, relief from financial and regulatory obligations are generally more important for large and medium-sized organisations than for small organisations. As an exception to this trend: Preferential treatment in public procurement is more important for small organisations (34%) than for medium-sized (25%) and large (28%) organisations.

[66] Question 26; Not specified: 8

Further entries suggested by the respondents ("Other") include:

- Lowering of energy prices
- Reducing environmental inspections and general reduction of workload for official inspections
- Longer inspection intervals for administration, sites and occupational health and safety
- Fewer cross compliance checks (particularly in agriculture)
- Greater consideration of EMAS in environmental impact assessments
- Financial support and incentives in the form of investment grants (e.g. as 50/50 schemes)

4.6.3 Using existing advantages through EMAS

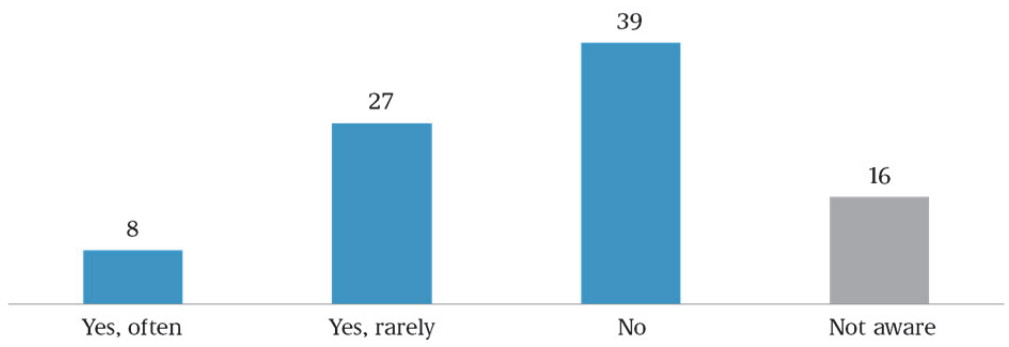


Fig. 30: Answers to the question "Do you make use of fee reductions and / or relief from monitoring requirements under environmental legislation?"[67]

35% of respondents avail (regularly or rarely) of reductions in fees and relief from requirements under environmental legislation. However, 39% of respondents do not take advantage of relief from monitoring requirements or fees.

[67] Question 27; Don't know: 6 / Not specified: 4

4.6.4 Requirements of suppliers

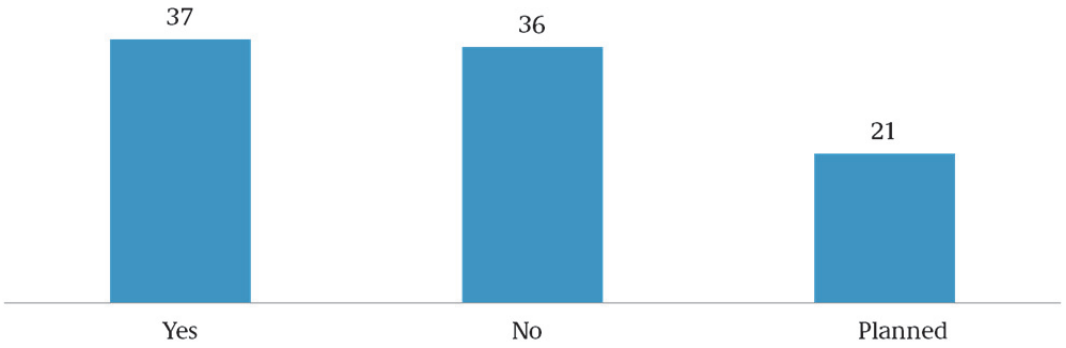


Fig. 31: Answers to the question "Do you require your suppliers to use an environmental management system?"[68]

Almost four out of ten organisations require their suppliers to have an environmental management system, while two out of ten organisations are planning to do so. An appreciable difference can be detected between productive and non-productive organisations (see Fig. 32): Many more productive organisations than non-productive organisations currently require their suppliers to have an environmental management system in place. There is therefore a considerable need for action in non-productive industries such as administration and public authorities. At least 30% of non-productive organisations intend to stipulate an environmental management system in future ("planned").

[68] Question 28; Don't know: 2 / Not specified: 4

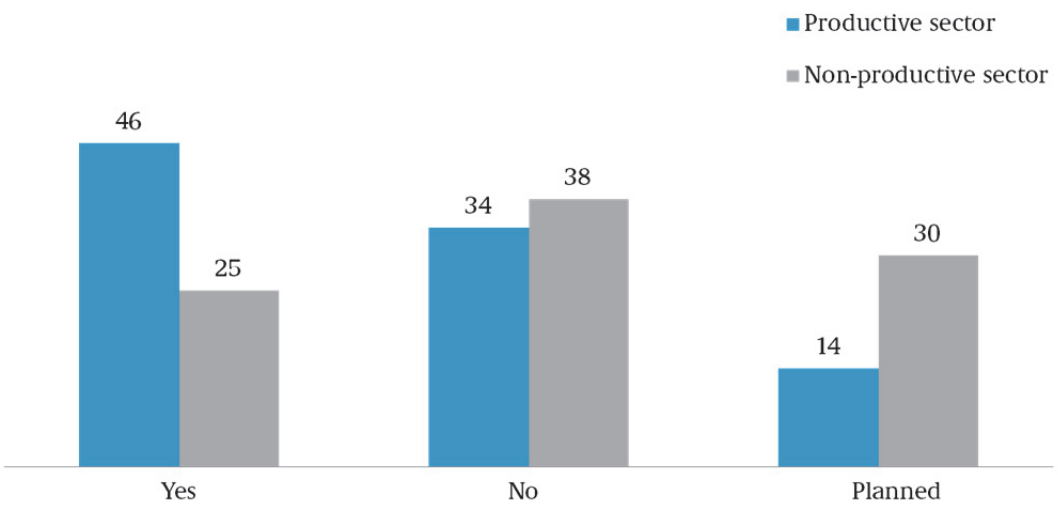


Fig. 32: Answers to the question "Do you require your suppliers to use an environmental management system?" given separately for the productive and non-productive sectors.[69]

It is also interesting to observe the differences between the size groups: While 50% of large organisations require their suppliers to have an environmental management system, only 38% of medium-sized and 22% of small organisations do so. However, 32% of small organisations plan to introduce this requirement in future ("planned"). In comparison, 19% of medium-sized and 16% of large organisations plan to request suppliers to have an environmental management system in future.

[69] Question 28

4.7 Assessment of EMAS

4.7.1 Overall assessment

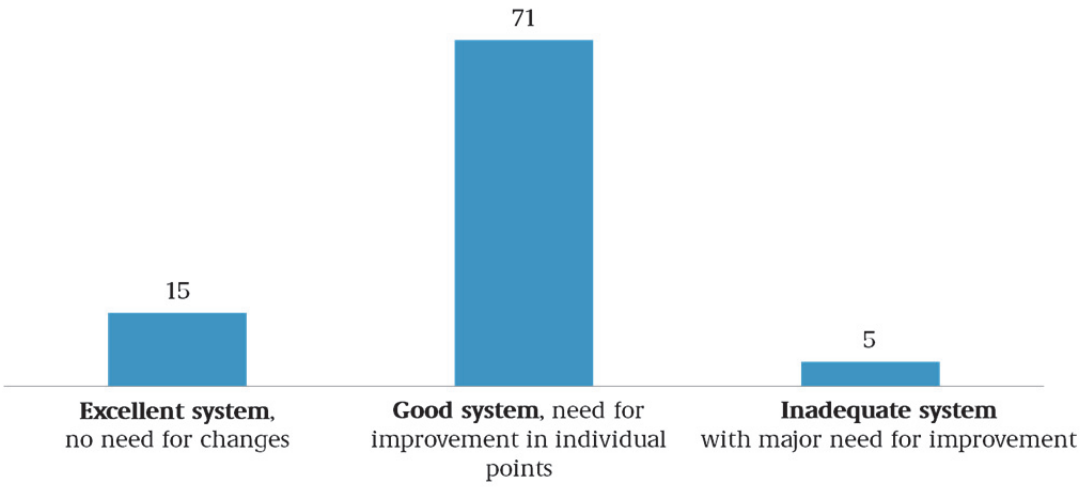


Fig. 33: Answers to the question "What is your overall assessment of EMAS?"[70]

Overall, the respondents' appraisal of the EMAS systems is very positive. Seven out of ten respondents evaluate it as a good system, despite the need for improvements in certain areas. The appraisals are approximately the same in the productive and non-productive sectors. Similarly, there is no significant difference in assessment between the organisation size groups.

[70] Question 32; Don't know: 4 / Not specified: 5

4.8 Future structuring of EMAS

4.8.1 Need for improvement

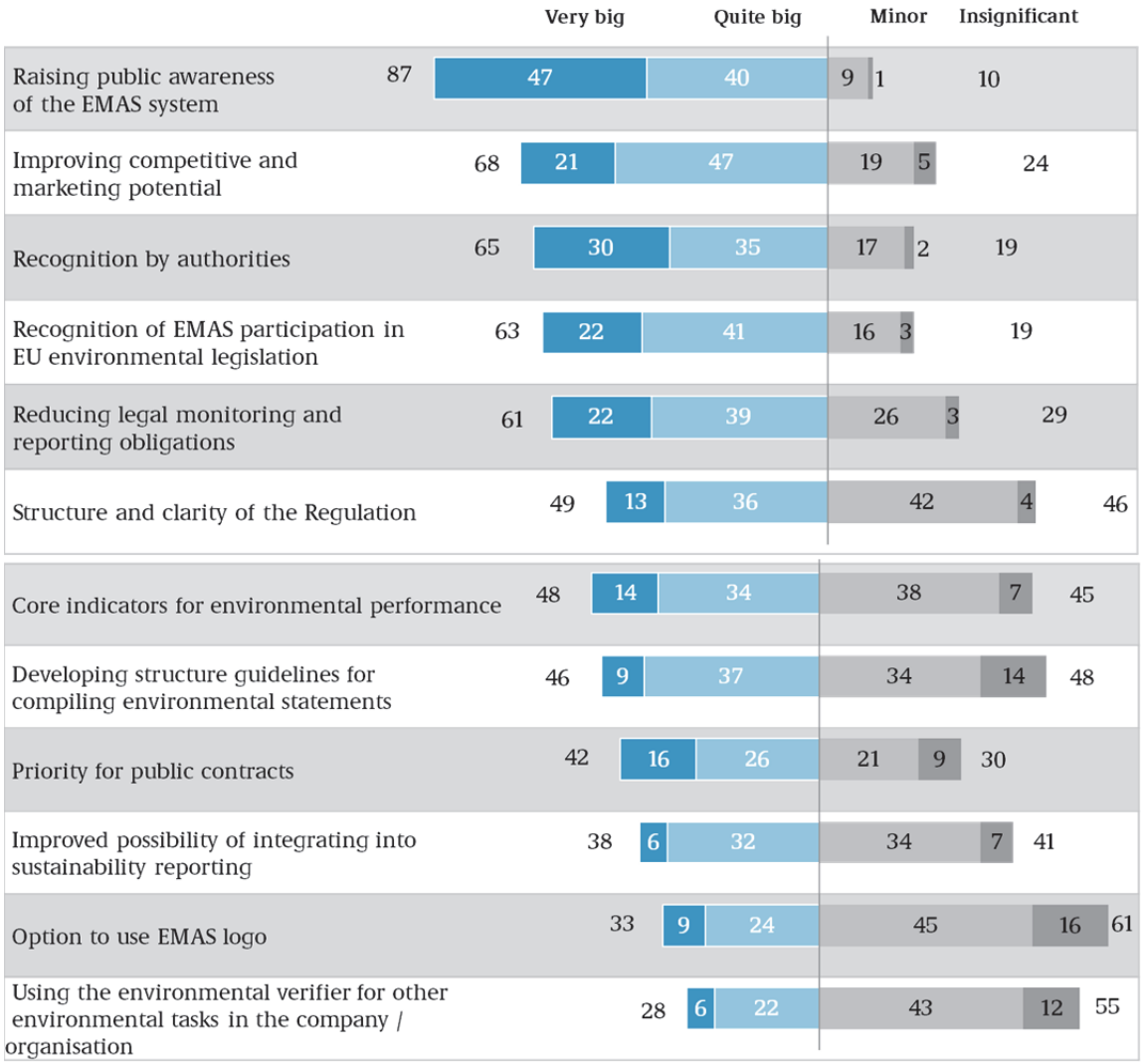


Fig. 34: Answers to the question "In your opinion, how big is the need for improvement to the EMAS system in the following areas?"[71]

The respondents find the main necessary improvement is a higher level of awareness of EMAS: Nearly nine out of ten respondents find "**public awareness of the EMAS system**" to be an area that must be improved (need for improvement "very big" and "quite big"). Respondents across all industries and size groups were relatively unanimous in this assessment.

[71] Question 33; Missing data: Don't know

Differing assessments are given from productive and non-productive organisations and from the various size groups concerning the need for improvement of:

- **Structure and clarity of the Regulation**: An improvement of this aspect tends to be more important for non-productive (54%) and small organisations (58%) than for productive (45%) as well as medium-sized (51%) and large organisations (42%).[72]
- **Core indicators of environmental performance**: Large (51%) and medium-sized (50%) as well as productive (52%) organisations see a greater need for improvement than small (43%) and non-productive (44%) organisations.[73]
- **Recognition by authorities in relation to administration**: Productive organisations see considerably greater need for improvement (78%) than non-productive organisations (46%). The demand for official recognition increases with organisation size: 57% of small, 64% of medium-sized and 71% of large organisations express this wish. [74]
- **Recognition for EMAS participation in other EU legislation**: Here again, respondents in the productive sector (73%) report a greater need for improvement than respondents in the non-productive sector (47%).[75] The importance of this aspect also increased with the size of the organisations: 51% of small, 61% of medium-sized and 71% of large organisations see a "very big" or "quite big" need for improvement.
- **Reducing legal monitoring and reporting obligations**: While 69% of respondents from productive organisations see a "very big" or "quite big" need for improvement, this figure is only 48% in the non-productive sector. A less noticeable difference is found between small (57%), medium-sized (57%) and large organisations (66%).

Other areas for improvement named by the participants are:[76]

- Relaxed conditions for SMEs: Extending inspection periods, reducing workload, and simplifying documentation, the environmental statement and audits, among others.
- Simplifying use: Reducing burden of maintaining the system, simplifying reporting obligations, reducing formality, more flexible structuring of EMAS, improved usability for all industries and organisation sizes.
- Cooperation with authorities: More reductions in fees (also for water legislation), simplification of the authorisation and planning procedures, (financial) incentives for revalidation.
- Complete integration and automatic certification for ISO14001 and ISO 50001 through EMAS validation, recognition of EMAS energy management system.

[72] Answers in the categories "very big" or "big"

[73] Answers in the categories "very big" or "big"

[74] Answers in the categories "very big" or "big"

[75] Answers in the categories "very big" or "big"

[76] As clarification of the response "EMAS is a good system, but there are a few areas where improvements are required." (Question 32)

- Improvement in the worldwide application of EMAS.
- Means of illustrating EMAS, so that all employees understand what is behind it.

4.8.2 Practical suitability of the core indicators

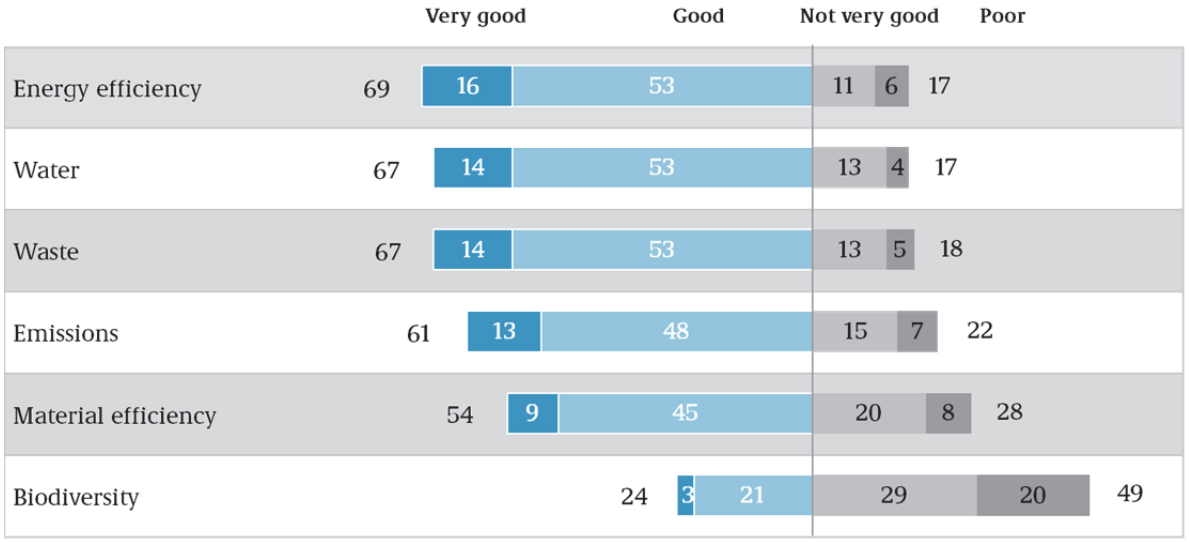


Fig. 35: Answers to the question "How would you rate the practical suitability of the new core indicators according to EMAS III?"[77]

The core indicators introduced with the most recent EMAS amendment (EMAS III) are predominantly assessed as "very good" and "good" in terms of practical suitability. According to the respondents, the core indicators for energy efficiency, water and waste are the most suitable in practice. However, the organisations experienced difficulties with the core indicator for biological diversity (in the form of "sealed surface in m^2"). There are no significant differences in the response patterns in the productive and non-productive sectors, or between the various organisation size groups.

4.8.3 Further core indicators

The participants were asked for further suitable core indicators based on their experience. Very often respondents answered that no further core indicators should be put in place, as the existing core indicators alone require substantial effort, beyond that there would be doubt over usability and comparability. It was reported that industry and company specific issues were often not considered in the core indicators. Some organisations even informed that publishing core indicators resulted in disadvantages compared to competitors. One participant writes: "Small companies are at a massive competitive handicap if they have to publish important calculations such as material usage, electricity consumption, manufactured goods, defective goods and waste! The customer and the competitor can follow up calculations and work out what might result in discounts and price reductions. (...)" The organisations would prefer to see a reworking and not an expansion of the existing portfolio of core indicators. In particular, the core indicator for biodiversity is in need of revision.

[77] Question 39; Missing data: Don't know / Not specified

The organisations frequently expressed a desire for greater flexibility in the selection of reference values. Suitable reference values would require greater recognition of the specific organisation structures. For example, "for an energy and water supplier, the number of employees is not always appropriate as Figure B, a better option here would be an energy parameter".

Further suggestions from the respondents on the core indicators include:

- Industry-specific key data or industry benchmarks.
- Key data for administration / authorities, for the healthcare and services sectors.
- Key data on public relations, e.g. number of publications / articles per year.
- Key data on employee involvement, e.g. scope of environmental information and environmental training in hours per year and employees.
- Key data on mobility, e.g. energy expenditure for transport, CO_2 emissions and greenhouse gas emissions for business flights, fuel consumption for company car fleet, proportion of journeys made by public transport.
- Key data on procurement, e.g. observing environmentally-friendly criteria ("Blauer Engel", FSC etc.), capital expenditure by a company for environmental protection, environmental performance of suppliers.
- Key data on legal compliance e.g. proof of fulfilling legal requirements.
- Key data on sustainability, e.g. the company's sustainability performance.
- Key data on carbon footprint.
- Key data on packaging efficiency, e.g. ratio of non-returnable to reusable packaging, recycling quota, differentiation between waste for disposal and waste for recycling.
- Key data on environmental-friendliness of manufactured goods.
- Key data to represent social aspects e.g. further training, operational integration management, flexible working hours, compatibility of work life with family, semi-retirement or similar.

4.8.4 Future participation

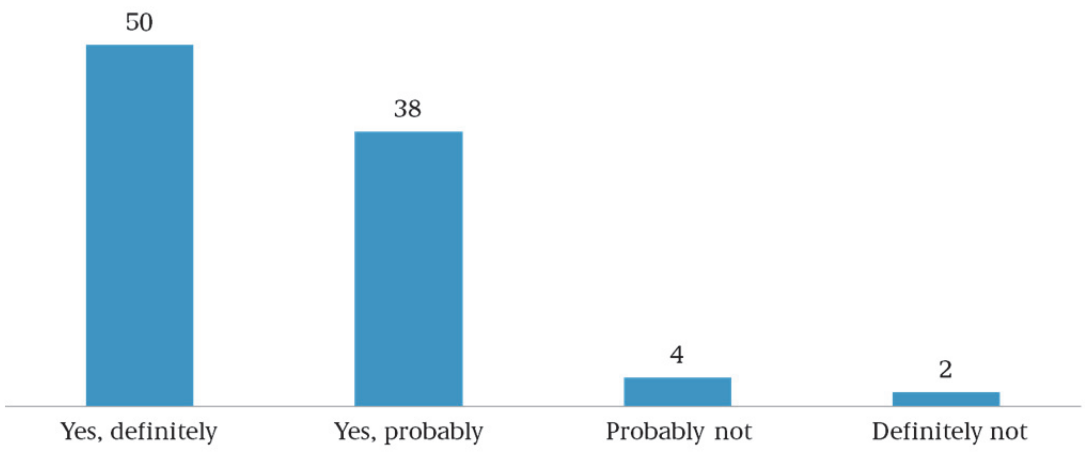


Fig. 36: Answers to the question "Will your company / organisation continue to use the EMAS system in future?"[78]

88% of participants will continue with the EMAS system (definitely or probably). 6% of participants report that they will probably or definitely withdraw from EMAS. An analysis of the answers among respondents who would (potentially) withdraw shows:[79]

- These organisations predominantly report low annual savings. Their savings are lower than those of organisations who plan or will definitely continue to use the EMAS system.
- 56% of respondents in this group see the cost-benefit ratio of EMAS as negative, compared to 9% in the group that would definitely continue to use EMAS.
- The organisations in this group attach a significantly lower importance to energy efficiency in the future compared to organisations that will (definitely or probably) continue using EMAS.
- On average, they consider levels of interest in their environmental statement to be significantly lower than organisations with definite plans to continue.
- They are markedly less satisfied with their environmental verifier. They give a less good assessment of the environmental verifier's working methods and expertise by awarding lower points.
- They see considerably fewer advantages in EMAS for private calls for tender and none at all for public procedures.

[78] Question 34; Don't know: 1 / Not specified: 5

[79] As these amount to only 30 organisations, the responses from this group are not statistically representative.

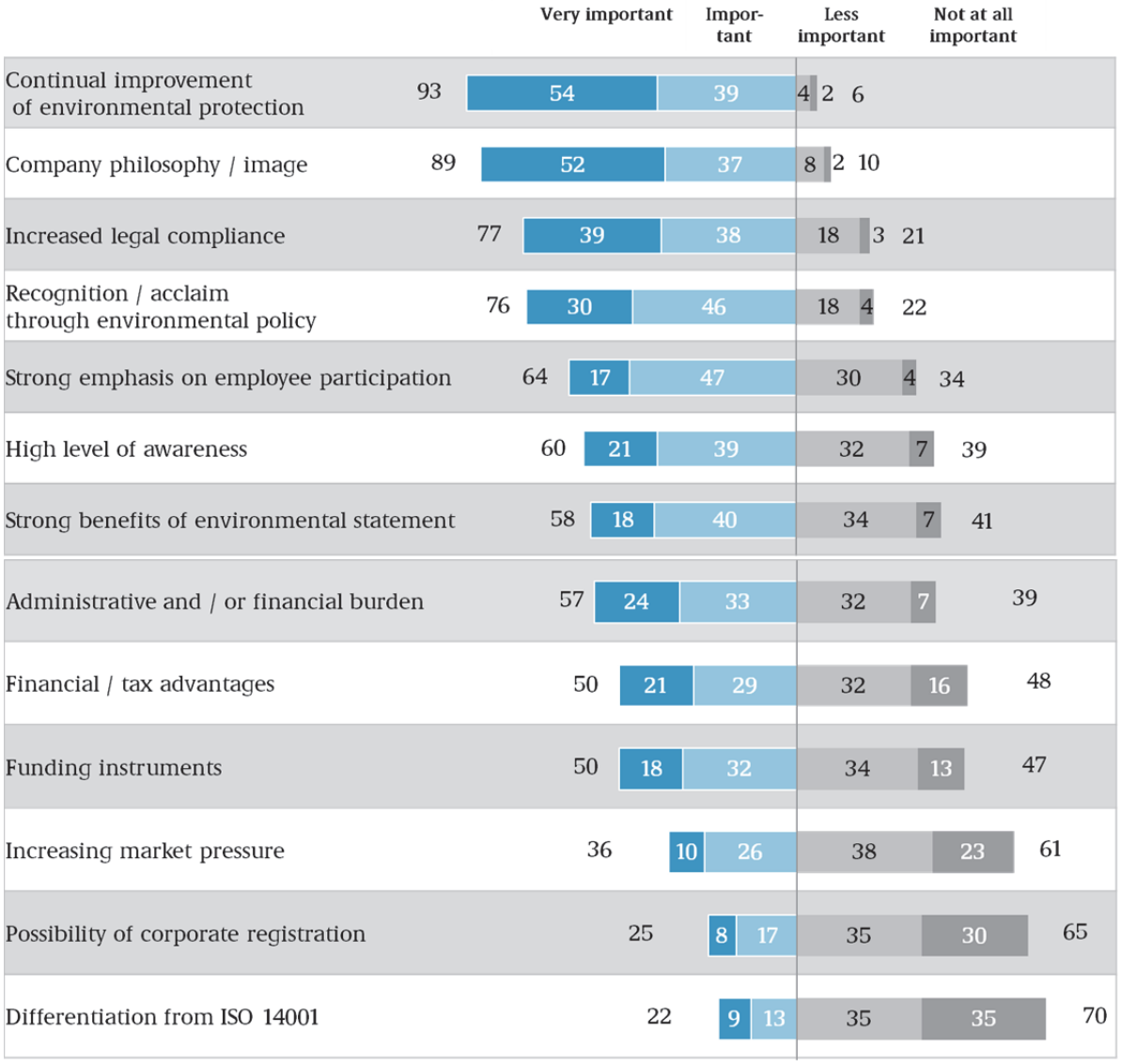


Fig. 37: Answers to the question "How important are the following reasons in your decision to continue / whether to continue using the EMAS system?"[80]

Surveying the group that would definitely or probably continue with EMAS reveals:

The continual improvement of environmental protection is the most important argument for continuing EMAS – irrespective of industry classification and organisation size. Second and third most important are the company philosophy / image, and legal compliance. Market pressure, corporate registration and differentiation from ISO 14001 are of lesser significance.

The strong emphasis on employee participation plays a somewhat larger role in the decision to continue using EMAS for the non-productive sector and for small organisations. In contrast, the increased legal compliance carries more weight for organisations in the productive sector as well as for large organisations. Funding instruments are particularly important for the

[80] Question 35; Missing data: Don't know

productive sector and for small organisations. Financial and / or tax benefits play a larger role in the productive sector. Their importance also increases with the size of the organisation.

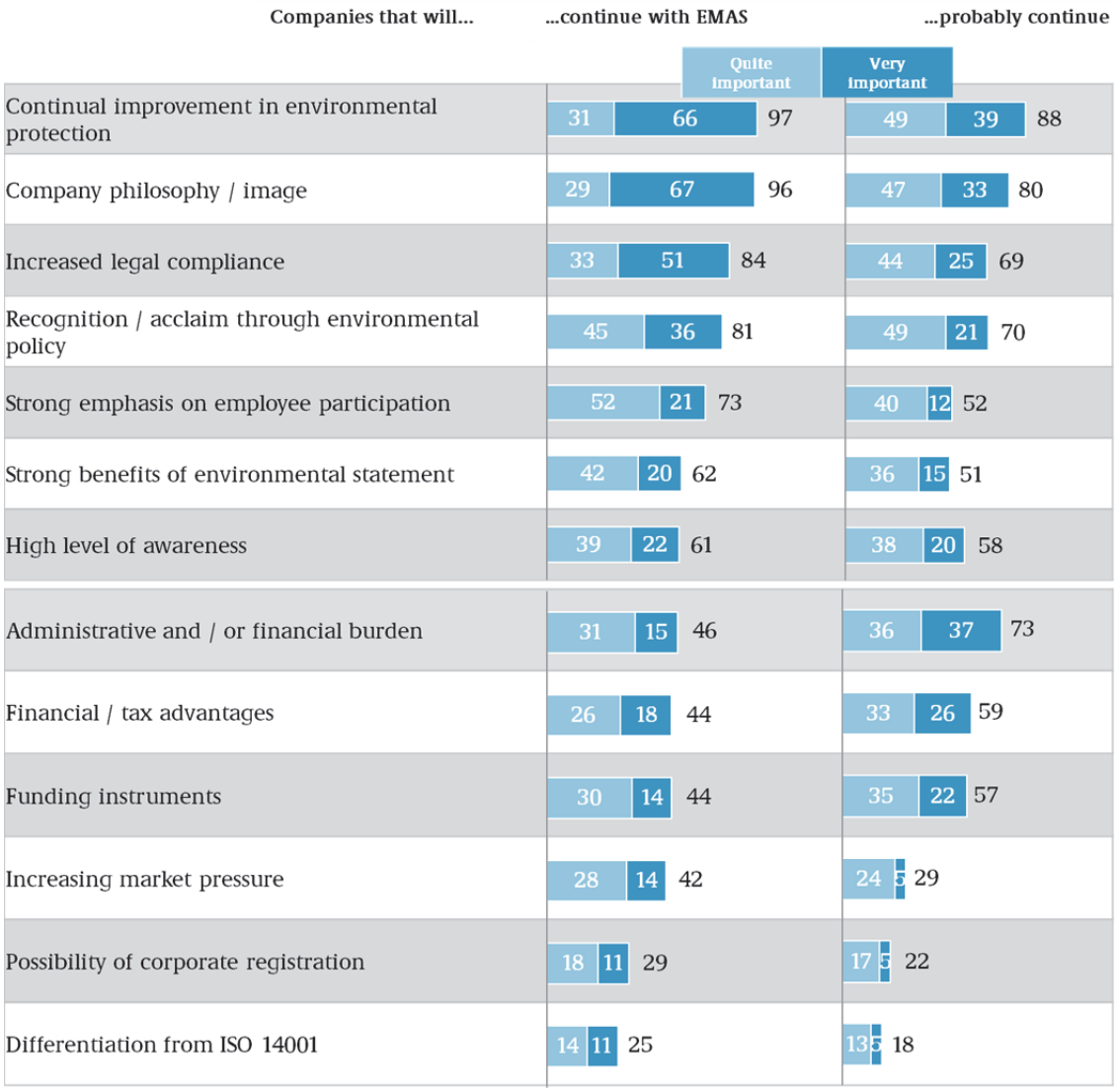


Fig. 38: Answers from the group that will definitely or probably continue using EMAS to the question "How important are the following reasons in your decision to continue / whether to continue using the EMAS system?"[81]

For organisations that have not yet made a final decision on further participation, the administrative and / or financial burden is an important criterion. Financial / tax benefits and funding instruments are also major influencing factors in the decision for or against EMAS.

[81] Question 35

In addition, the following important factors play a role in the decision-making process:

- Setting an example and credibility in public
- Retention of extended validation cycle for SMEs
- Corporate benchmark, customer requirement
- Recognition by the capital market, share price, rating points
- Inclusion of energy management and recognition of EMAS for tax caps ("Spitzensteuerausgleich" under the German electricity and energy law).
- Reduction in costs / time and effort for official obligations
- Staff capacities / staffing funds

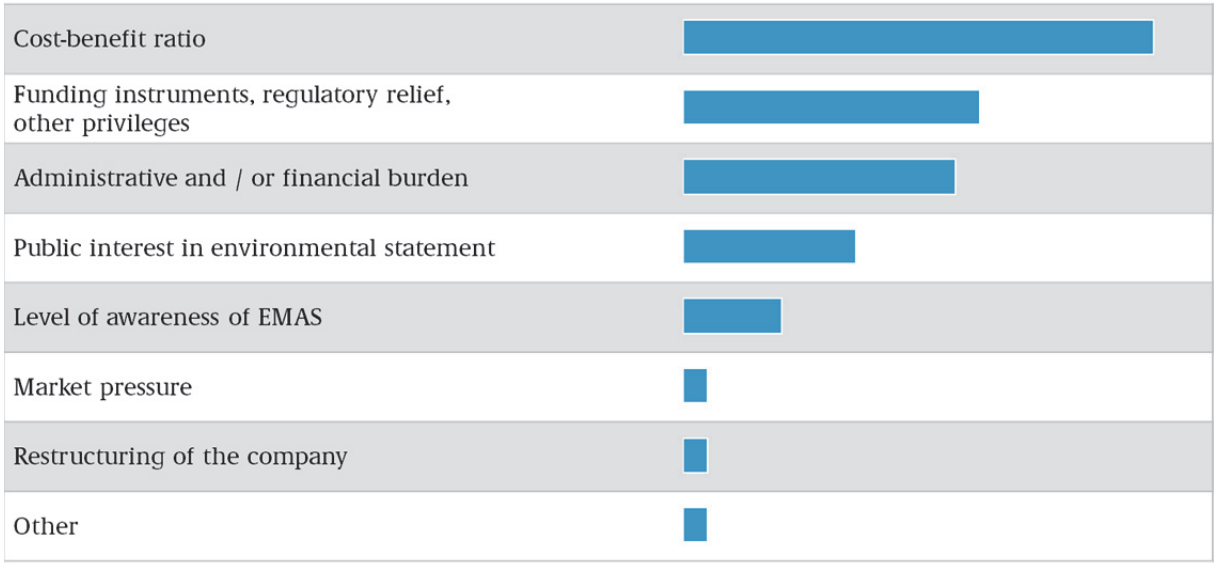


Fig. 39: Answers from the group that will probably not continue using EMAS to the question "What will be the main factors in your decision of whether to continue using the EMAS system?"[82]

Respondents who will probably not continue using EMAS name the cost-benefit ratio as the most important factor (Fig. 39). The least significant influences in the decision for or against continuing EMAS are market pressure and (internal) restructuring reasons.[83]

[82] Question 36; No percentage values are given because of sample size.

[83] Because of the low sample size, a detailed evaluation, e.g. by organisation size, is not possible here.

4.8.5 Assessment of the EMAS amendment

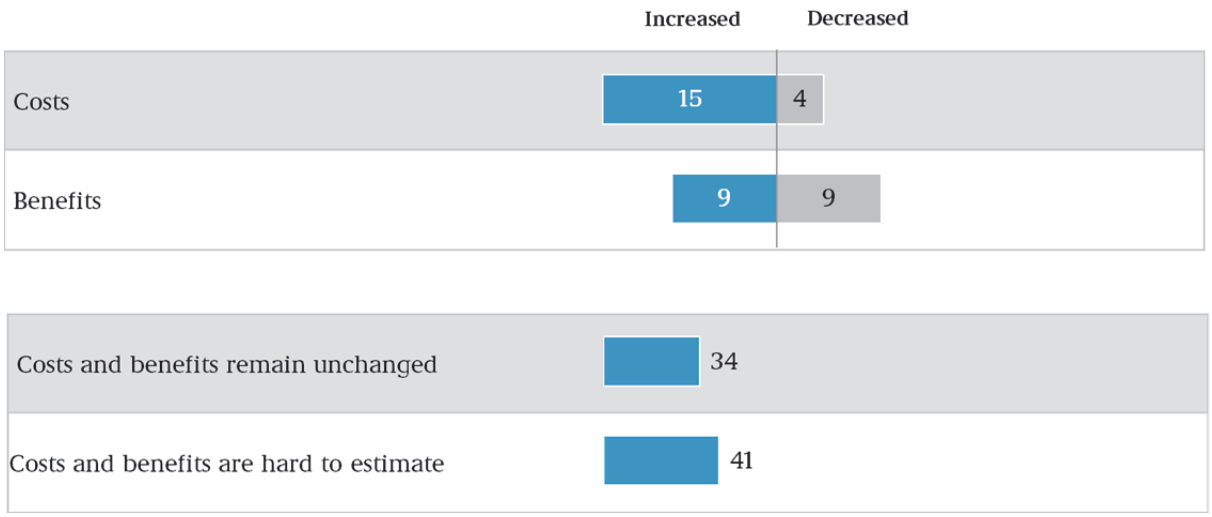


Fig. 40: Answers to the question "In your opinion, has the cost-benefit ratio changed since the amendment to the EMAS Regulation (EMAS III) entered into force in 2010?"[84]

34% of respondents rate the cost-benefit ratio since the last amendment of the EMAS Regulation (EMAS III) as unchanged, while 15% complain of increased costs. 41% of respondents had difficulties evaluating the costs and benefits. The smaller the organisation, the less successful these attempts were: 54% of small, 40% of medium-sized and 37% of large organisations report that the costs and benefits are difficult to evaluate. As well as the organisation size, industry classification also plays a role: 34% of non-productive organisations and 50% of productive organisations have difficulties evaluating the costs and benefits.

An **increase in costs** is declared by 22% of small, 11% of medium-sized and 16% of large organisations. **Reduced costs**, however, are recorded by 4% of small, 9% of medium-sized and 1% of large organisations.

An **increase in benefits** is recorded by 10% of small, 11% of medium-sized and 8% of large organisations. A **decrease in benefits** is reported by 14% of small, 9% of medium-sized and 8% of large organisations.

Overall, it can be observed that the smaller the organisation, the more appreciable the change in cost-benefit ratio as a result of the EMAS III amendment. For 18% of small organisations, the cost-benefit ratio has remained the same, while in medium-sized organisations this is true for 38%, and in large organisations for 45%. In addition, productive organisations report that the costs and benefits remain unchanged more frequently (41%) than non-productive organisations (25%).

[84] Question 38

5 Conclusion

With a response rate of nearly 60%, the German EMAS organisations demonstrated a very high readiness to offer the Federal Government and the public an insight into their practical experiences with EMAS. They provided answers to important questions concerning the future structuring of EMAS and portrayed a very positive image of the system: 86% of respondents consider EMAS to be an excellent or good system.

The survey has brought a variety of important findings to light. One of these is that financial benefits only play a secondary role for most EMAS participants. For EMAS organisations, it is much more important to meet their own demanding targets in the areas of environmental performance and employee participation. However, awareness of EMAS in the general public and authorities should be raised so that this strong commitment to organisational environmental protection receives greater recognition. The EMAS organisations also urgently wish for a broader appreciation of their dedicated efforts to increase environmental performance.

A positive result from the survey is that a very high proportion (nine out of ten respondents) intends to stand by the EMAS system in the future. However, this should not belie the fact that the cost-benefit ratio is the primary reason stated by the 6% of respondents who will definitely or probably withdraw from EMAS. EMAS clearly cannot be implemented without a factual assessment of costs and benefits – no matter how high an organisation's environmental standards are. A continual improvement of both cost and benefit aspects should therefore remain high on the agenda in environmental policy.

The European Commission defines the EMAS environmental management system with the terms "**transparency, credibility** and **performance**". This survey demonstrates that the German EMAS organisations consistently meet these demands: "**Transparency** of environmental consumption" is the most frequent reason mentioned by EMAS organisations for implementing EMAS. Only slightly fewer organisations name **credibility** as a central motivation for adopting this high standard of environmental protection. The organisations also demonstrate a high level of **performance** by continually surpassing the legally required standard of environmental protection in their day-to-day operations. These achievements result from ideological conviction and involve considerable extra effort. Organisations' participation in this survey can also be considered an example of such commitment.

Special thanks therefore go to all EMAS organisations for taking part. Their participation has given valuable impetus to efforts to bring EMAS closer in line with users' needs. The results will enable EMAS organisations to maintain their pioneering role in operational environmental protection in the future.

6 Appendix

6.1 Further information on the profile of participating EMAS organisations

59% of participants report they are the central contact partner for all EMAS validation sites in their organisation. 41% of respondents are local representatives for one or more sites.[85]

81% of respondents state that their organisation's head office is EMAS validated. 17% of participants answer that the head office of their organisation is not EMAS validated.[86]

The majority (57%) of participating organisations only has one EMAS validated location in Germany. Yet nearly one tenth (9%) of respondents report having more than 10 EMAS validated sites throughout Germany.

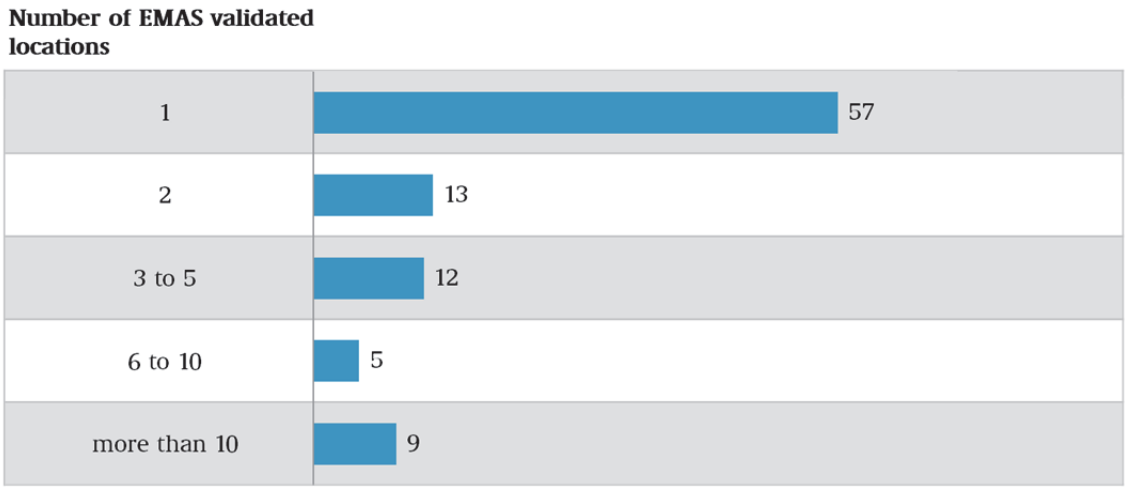


Fig. 41: Answers to the question "How many EMAS validated locations does your company / organisation have in Germany? Please also include the head office of your company / organisation"[87]

[85] Answers to the question "Are you the central contact partner for EMAS for all EMAS validated sites in your company or a local representative for one or more sites?" (Question 2)

[86] Answers to the question "Is the head office of your company / organisation EMAS validated?" (Question 4; Don't know: 2)

[87] Question 5; Don't know: 4

6.2 Differentiated representation of savings achieved through EMAS

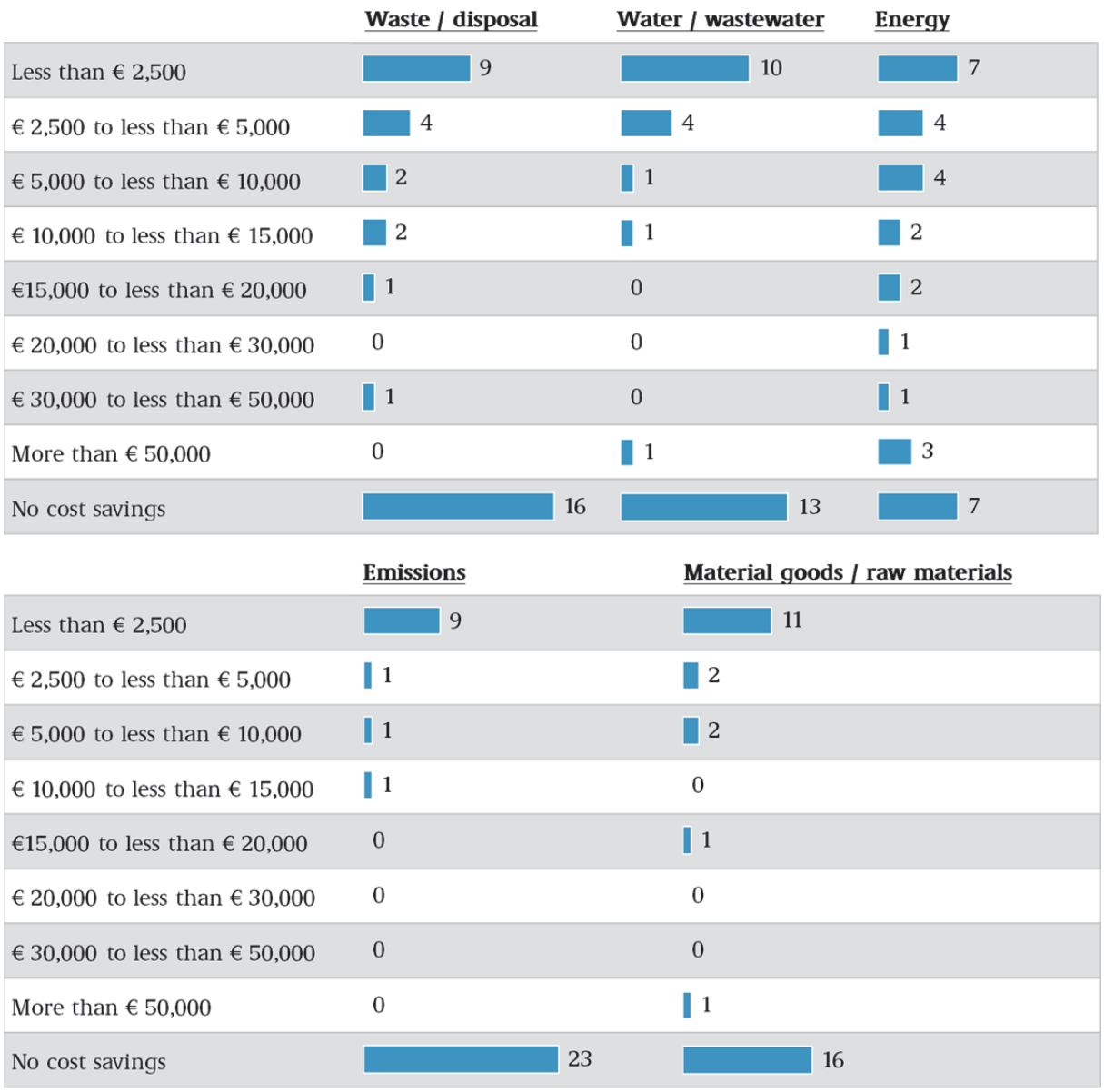


Fig. 42: Answers to the question "Please state approximately how high annual savings are for the following areas."[88]

The respondents record the highest annual savings in the area of energy, and the lowest in the area of emissions. Across all areas, savings of less than € 2,500 per year are most frequent. However, **65% of respondents were unable to specify the savings achieved**, meaning the data from the 35% of participants able to respond is only representative to a limited extent.

[88] Question 15; Missing data: Don't know / Not specified

6.3 Biodiversity in the environmental statement

Asked which activities in the area of biodiversity the organisations described in their environmental statements, the respondents named the following measures (Question 41, summary)[89]:

- Nature conservation and landscape management; renaturation of disused areas.
- Using or developing and designing open spaces; renting off-set areas.
- Evaluation of green areas and fallow land, creating green areas; creating eco-meadows; meadow orchards.
- Maintaining grounds, green spaces and parkland; designing open areas.
- Surveying and assessing trees (tree registers).
- Map of the areas used for agriculture with "Ecomap Umwelt".
- Creating ecological corners.
- Developing balcony and garden with beehives and other insect houses, wild flowers, etc.
- Managing vineyards and meadows, fields and forest areas.
- Land balance sheet; how we arrange our building compensation areas; CO_2 compensation by land procurement and increasing vegetation / trees.
- Arable land that is farmed organically due to the raw materials ordered; cultivating old varieties of cereals; proportion of non-hybrid seeds; proportion of seeds from biodynamic cultivation.
- Ecological construction supervision, developing green roofs.
- Developing a nature protection plan.
- Increasing the diversity of fruit varieties, planting, caring for and maintaining hedges and ecological compensation areas etc.
- Creating habitat for small animals and insects (e.g. nesting boxes).
- Effects of ecological agriculture for raw materials – environmental protection projects – biotope; the effects of land consumption are insignificant compared with the results achieved by cultivating raw materials and basic products.
- Watershed management (water protection areas). Sustainable handling of groundwater resources / discharges into water.
- Projects to protect biotopes and biodiversity.
- We are located in a nature conservation area and cooperate voluntarily for example with environmental associations on the ecological behaviour of our customers on the site.
- For new planting only native plants are used; suitability assessment of church tower for nesting boxes for kestrels and as a summer habitat for bats.
- Special measures for sites in Müritz national park.

[89] Question 41: "An analysis in 2008 of the annual reports of the top 100 companies worldwide according to sales revenues revealed that biodiversity and ecosystems were only mentioned by 18 companies. Aside from under the indicator on land consumption (in m^2 of built area), do you address the aspects of biodiversity and ecosystems (e.g. developing nature conservation plans) in your environmental statement?"

- Development and care for ecologically designed grounds, use of MSC and FSC certified products, green electricity etc.
- Through own programmes (green areas, protected zones, water areas, support programmes for nature protection efforts).
- Surface sealing plans are examined; protection and care for trees and hedges.
- Hedge planting, mature trees and meadow orchard on part of the site.
- Ecological drinking water protection; support for ecological agriculture.
- Nesting and brooding aids for birds, installing beehives, sheep as biological lawn-mowers.
- School project with adventure-based learning at Karpfsee Lake.
- Winter service (refraining from spreading salt); compensation measures, sponsoring; own activities through environmental foundation.
- Commitment to biodiversity and ecosystems is highly relevant for indirect environmental impact.
- Ecological significance of the premises; improvement in sustainability of food served in the casino.
- Preserving biodiversity with an ecological approach to raw material procurement.
- Projects serve to preserve biodiversity and to raise awareness (educational projects with children and young people).
- "Indirect environmental aspects" in reporting; new building project.
- As initial member of the initiative "Biodiversity in Good Company" and cooperation with NGOs (NABU, WWF etc.).
- Creating a biodiversity management system with targets, compiling nature protection plans, factoring in ecology / biodiversity.
- For the first time under a project supported by the European Union, all impacts of our activities on biodiversity were identified and evaluated in a "Biodiversity Check". (....) A catalogue was then compiled with recommendations for action for the improvement of our influence on biodiversity. This will serve in future as a guide for activities in the area of biodiversity.
- Homepage "Show your green soul".
- This is not a core indicator for us as we are obliged to make biologically active materials innocuous and inert through treatment – this means that diversity decreases accordingly by design.
- Harmony of economic, ecological and social development; open communication culture.

6.4 Improving EMAS as an instrument for resource management

In response to the question "How could EMAS be established in practice as an instrument for sustainable resource management?", the respondents gave the following answers (Question 22, summary):

- All procurement from and order placement with other validated companies.
- Adopting criteria for assessing resource management, possibly based on GRI criteria.
- Cost-sharing for originator; creating tax incentives for resource-saving work.
- Comprehensive employee identification with individual environmental targets arranged by the organisation.
- Consistent ecological orientation in procurement management, of mobility concepts, supply and disposal requirements.
- More effective procurement. Optimisation of planning processes; paper consumption and paper selection.
- The measures in the environmental programme are an instrument for sustainable resource management.
- Consolidation of I/O analysis of parameters that any person can work with; materials flow management; CO_2 energy balance.
- Consistent recording of energy and resource consumption. Developing innovative ideas to reduce consumption or find replacement resources.
- Through statistics and comparison across divisions and time periods; input/output analyses.
- Detailed guidelines from EMAS in core indicators and comparable benchmarks or key figures, setting concrete boundary values and guidelines.
- Reference values for core indicators (different reference values for each industry).
- Implementing a materials flow management system.
- Introducing CO_2 balancing; full ecobalance with CO_2 balance in all areas.
- Required resources are determined first and foremost by the pending orders.
- Cyclical revalidation requires regular monitoring of resource management.
- Resource and energy prices that increase in unison with efficiency levels would be effective.
- Resource management is independent of EMAS in our opinion. It depends on the company philosophy and not on external guidelines from standards / regulations.
- EMAS can only be a monitoring system for introducing measures or showing changes.
- EMAS supports sustainable resource management, but even without EMAS this would be an increasingly important issue in the company from the point of view of costs and competitive strategy.
- Not EMAS on its own. But in combination with systems like FSC, PEFC or "Blauer Engel".
- Greater comparability and communication of content by establishing circles, or similar; there is no possibility for comparison between companies.
- Simplification and standardisation. Legal guidelines for all resource suppliers, utility providers, waste disposal companies etc. for improving data handling.
- Requirement of a key figure for resource efficiency.

- Developing qualitative and quantitative minimum standards.
- Through greater freedom in interpreting the regulation.
- Through training activities, cost advantages; through legal requirements at an EU level.
- Demand-orientated features in certification, greater supervision of the processes by qualified specialists or institutions.
- Concrete examples for various areas of practice.
- By analysing the company-specific actual and target status (e.g. by a consultant / auditor) or using a checklist with "to do's".
- Effective external supervision for all formal documents, integration into educational training.
- Take on further measures for energy savings, including in the personal environment.
- Introduction into EMAS could be done via energy efficiency as financial advantages can be quickly achieved in that area.
- Greater obligation. The voluntary nature of the measures is the problem – each company chooses their own targets and measures.
- EMAS is a standardisation / standard for environmental management. In practice, resource management requires more specific instruments: handbook for procuring IT, paper, furnishings, energy etc., guidelines for energy management in practice e.g. webinars etc.
- Concrete requirements from EMAS; process optimisation.
- Reduce volume of traditional environmental protection areas and increase focus on energy and resource management while maintaining the same audit duration.
- Emphasises these points and train external auditors to be aware of them and audit them!
- It would be helpful if EMAS would provide information and assistance for sustainable resource management, instead of just "enquiring about" resource management.
- By encouraging employees to consider carefully when purchasing materials necessary for operations whether the goal can be achieved with fewer resources.
- EMAS III would have to be combined with other processes for assessing LCC, TCO and production processes according to Kaizen (value stream mapping, material flow according to needs).
- Emphasise economic advantages. Stress the responsibility each individual has for resource management. Emphasise responsibility for resources in exemplary companies / institutions.
- Through regular contact and discussion between EMO and the responsible colleagues.
- Through legal obligation for the environmental aspects.

6.5 Further suitable core indicators as suggested by the respondents

In response to the question "Which further core indicators or key figures do you believe would be suitable?", the respondents gave the following answers (Question 40, summary):

- Energy / CO_2 key figures
  - Specific key figures for energy, comparable key figures for energy consumption.
  - Energy savings, energy consumption.
  - CO_2 emission, CO_2 efficiency, CO_2 footprint; limiting to CO_2 in general is helpful.
  - Emissions / emissions reductions; CO_2 emission and greenhouse gas emission for business flights; energy consumption for transport (mobility).
  - Proportion of renewable energy in overall energy consumption; EEG indicator, logistics indicator.
  - Cut heating energy consumption according to daily temperature figures.
  - Energy consumption per product unit; individual indicators per energy source.
  - Energy consumption linked to employees or line system.
  - Energy efficiency for products, waste, water; use of energy flow diagrams.
- Resources / raw materials
  - Materials; resource consumption; energy, water / waste, raw materials.
  - With regard to sustainability: resource efficiency.
  - We have introduced annual consumption records for coffee powder.
  - Paper usage; water efficiency.
- Industry and company-specific issues
  - Instead of per employee: industry-relevant key figures; mandatory industry-specific key core indicators; comparability is required (industry comparisons).
  - Generalisations are not appropriate. Suggestion: Identify all core indicators relevant for the area of activity, which could be done using NACE codes. Water, energy, emissions, ground, waste, hazardous substances etc. should be strictly observed.
  - Indicators must be correlated with recorded comparative indicators in the industry so that it is clear how environmental performance compares with that of other EMAS certified companies, as well as average performance and performance of non-certified companies. There should therefore be a reporting obligation for all, with availability from the Statistical Office.
  - There should be more leeway in the gathering of core indicators. The industries should be considered in this.
  - The calculation process is in need of improvement. The overall output used (Figure B) should be better adapted to suit the individual circumstances of companies. For example for an energy and water supplier, the number of employees is not always suitable as Figure B – a better option here would be an energy parameter, for example.
  - Specific key figures appropriate to each individual business.
  - Indicators adapted to suit the business; certain key indicators such as production volume must be changed, as not every business produces in weight values.

- The specified value of the core indicator is not always practical in every industry; production-related key figures; unit per produced ton of finished products; data per capita and per revenue.

– Expansion / alternatives
  - Public relations; how many publications / articles per year?; public impact.
  - Key figures / indicators for the healthcare sector, e.g. DRG.
  - Indicators for service sector businesses; relation to administrative activities.
  - Land consumption; detailed statements on biodiversity.
  - Land utilisation / consumption; proportion of modes of transport.
  - Suppliers with environmental policy; food, food leftover.
  - Set more appropriate indicators for authorities in general! Include more qualitative procurement and material factors such as FSC, recycling, fair-trade products etc.!
  - Material yield, recycling levels, packaging volume.
  - Differentiate between waste for disposal and waste for recycling.
  - Packaging efficiency, ratio of non-returnable to reusable packaging.
  - Social indicators; environmental information, environmental education (e.g. in hours per year and employees); employee involvement and compliance; number of staff members.
  - Sustainability performance as corporate performance figure.
  - Social aspects (human resources) e.g. further training, company integration management, flexible working hours, compatibility of work life with family, semi-retirement or similar.
  - Environmental performance indicators (comparability); educational core indicators.
  - Environmental friendliness of products produced; measurements of a company's capital expenditure on environmental protection.
  - Compliance with limit values in wastewater management; legal compliance and incorporation of key figures on security.
  - Environmental expenses; evidence of meeting legal requirements.
  - Extent of sealing in building projects for our industry, as well as measures for desealing.

– Other
  - No further key figures.
  - Before introducing new key figures there should be an assessment of how much these will actually result in increased environmental performance. Consideration should be given to the fact that more key figures mean more reporting – this may be off-putting for companies contemplating implementing or continuing the system. Furthermore, a handbook or similar should be provided to the companies – something which was not done in the EMAS III amendment – so that each new key figure / core indicator is comparable in all companies.
  - Prioritise improving the existing key figures.
  - Eliminate existing figures rather than creating new ones!

- I personally find a change is urgently needed in the core indicators for service sector businesses. The current core indicators reveal nothing, they are confusing and can give a bad representation of the business even though it has improved.
- The necessity of publishing core indicators should be decided on and justified by auditors on an individual basis.
- Small companies are at a massive competitive disadvantage! The customer and the competitor can follow up calculations and work out what might result in discounts and price reductions. A very important aspect and a ruinous criterion. We are therefore considering changing to 14001!
- Not suitable for customer-orientated production with high volumes of various products as level of added value and customer structures vary.
- Core indicators are not helpful for the overall organisation due to the structure of company locations.
- The publication of required core indicators including required units makes it easier for third parties to access company-internal data.
- These key figures are only suitable for statistics. They have no practical significance.
- All except for material efficiency and biodiversity, unless mandatory presentation is explicitly specified. However, this would probably result in several organisations distancing themselves from EMAS.
- As before the amendment: KPI for energy; water, emissions; raw materials.
- For plant protection: numbers of treatments per hectare and year; for animals: treatment days per animal and year, simply stating total numbers is meaningless.
- In the hotel industry it is very difficult to find suitable indicators.
- Some businesses release their figures to their competitors. Competitors also use EMAS but do not release their environmental statement. That is not acceptable and will lead to the death of EMAS.