



Final Report

Supporting the Evaluation of the Implementation of EMAS



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Supporting the Evaluation of the Implementation of EMAS

TABLE OF CONTENTS

1.	EXECUTIVE SUMMARY	20
2.	INTRODUCTION	32
2.1.	Remarks from the authors of this study	32
2.2.	Objectives and scope of study	32
2.3.	Structure of the evaluation study	33
2.4.	EMAS in a nutshell	35
2.5.	Context of the EMAS evaluation study	37
2.6.	Disclaimer	37
2.7.	Acknowledgements	37
3.	METHODOLOGICAL APPROACH – THE EX POST AND EX ANTE PARTS OF THE EVALUATION	39
3.1.	Introduction to analytical frameworks	39
3.2.	Analytical framework for the ex-post analysis	40
3.3.	Analytical framework for the ex-ante analysis	43
3.3.1.	Overview of selection and assessment process	43
3.3.2.	Step 1: Selection of policy options	44
3.3.3.	Step 2: Scoping of policy options	44
3.3.4.	Step 3: Description of the assessment method	45
3.4.	Research tools	50
3.5.	Desk research	51
3.6.	Survey of EMAS registered organisations	52
3.6.1.	Questionnaire	52
3.6.2.	Description of the survey sample	53
3.6.3.	Summary	60
3.7.	Survey of Member States	61
3.7.1.	Questionnaire	61
3.7.2.	Description of sample	61
3.8.	Methodology of case studies/interviews	62
3.9.	Feedback from organisations leaving EMAS or not part of EMAS	65
3.10.	Environmental statement analysis	65
3.10.1.	Overview	65
3.10.2.	Choice of indicators	67
3.10.3.	Data sets and selection	67
3.10.4.	Scope of analysis	70
3.10.5.	Limitations	71
3.11.	Workshops	73
3.12.	Technical working group	74
4.	ASSESSMENT OF THE PERFORMANCE OF EMAS (EX-POST EVALUATION)	76

4.1.	EMAS in numbers	76
4.1.1.	EMAS registration data	76
4.1.2.	Comparison with other management and reporting schemes	85
4.1.2.1.	ISO 14001	86
4.1.2.2.	ISO 50001	89
4.1.2.3.	Non-formal Environmental Management Systems	90
4.1.2.4.	Global Reporting Initiative	92
4.1.3.	Main findings	93
4.2.	Public image and stakeholders	94
4.2.1.	Background and research aims	94
4.2.2.	Previous research	95
4.2.2.1.	Stakeholders, public image and the decision to implement an EMS	95
4.2.2.2.	Stakeholders, public image and the decision to implement EMAS	96
4.2.2.3.	Awareness and reputation of EMAS among stakeholders	97
4.2.2.4.	EMAS's reputation in comparison to that of other environmental management instruments	98
4.2.3.	Results	98
4.2.3.1.	Stakeholders and the decision to implement EMAS	99
4.2.3.2.	EMAS image	100
4.2.4.	Main findings	102
4.3.	Costs & benefits and drivers & barriers	104
4.3.1.	Background and research aims	104
4.3.2.	Drivers	106
4.3.2.1.	Previous research	106
4.3.2.1.1.	Internal motivations	107
4.3.2.1.2.	Improvement of the corporate image and reputation among external stakeholders	108
4.3.2.1.3.	Market-based drivers	110
4.3.2.2.	Results	111
4.3.2.3.	Main findings	118
4.3.3.	Barriers	119
4.3.3.1.	Previous research on EMAS barriers	119
4.3.3.1.1.	External barriers	119
4.3.3.1.2.	Internal barriers	120
4.3.3.2.	Previous research on costs	121
4.3.3.3.	Results	123
4.3.3.4.	Main findings	128
4.3.4.	Benefits	129
4.3.4.1.	Previous research	129
4.3.4.1.1.	External benefits	129
4.3.4.1.2.	Internal benefits	130
4.3.4.2.	Results	132

4.3.4.3.	Does it pay to have EMAS?	139
4.3.4.4.	Main findings	142
4.3.5.	Incentives	143
4.3.5.1.	Previous research	143
4.3.5.2.	Results	147
4.3.5.3.	Main findings	149
4.4.	Performance - contribution to reducing negative environmental impacts	150
4.4.1.	Background and research aims	150
4.4.2.	Previous research	151
4.4.2.1.	Influence of environmental management instruments on environmental performance of organisations	151
4.4.2.2.	Influence of EMAS on environmental performance	152
4.4.3.	Results	153
4.4.3.1.	Results of the environmental statement analysis	153
4.4.3.2.	Results from the survey of EMAS registered organisations	164
4.4.3.3.	Results from interviews	171
4.4.3.4.	Additional findings	172
4.4.4.	Main findings	172
4.5.	Added value of EMAS with regard to other policy tools	174
4.5.1.	Background and research aims	174
4.5.2.	Previous research	176
4.5.3.	Results	176
4.5.4.	Summary EMAS-ISO 14001	188
4.5.5.	Main findings	193
4.6.	The relationship between EMAS and competitiveness	195
4.6.1.	Background and research aims	195
4.6.2.	Previous research	196
4.6.2.1.	Environmental policies and competitiveness	196
4.6.2.2.	Nexus between environmental management and competitiveness at the company level	198
4.6.3.	EMAS and Green Public Procurement	199
4.6.4.	Results	201
4.6.5.	Some interpretation keys through statistical modelling	210
4.6.6.	Main findings	211
4.7.	The relationship between EMAS and innovation	212
4.7.1.	Background and research aims	212
4.7.2.	Previous research	214
4.7.3.	Results	216
4.7.4.	Interpretation keys through statistical modelling	223
4.7.5.	Main findings	224
5.	ANALYSIS OF THE EMAS MANAGEMENT APPROACH AND ORGANISATIONAL STRUCTURE (EX-POST ANALYSIS)	225
5.1.	Analysis of the cost and benefits of implementing and running the scheme at EU level and Member State level	225

5.1.1.	Background and research aims	225
5.1.2.	Previous Research	226
5.1.3.	Results	227
	5.1.3.1. Costs	227
	5.1.3.2. Benefits	233
5.1.4.	Main findings	238
5.2.	Analysis of means invested appropriate in quantity and quality to achieve the defined objectives of this policy	239
5.2.1.	Background and research aims	239
5.2.2.	The role of the European Commission	240
5.2.3.	The role of Member States	242
	5.2.3.1. Financial support	244
	5.2.3.2. Administrative support	248
	5.2.3.3. Promotional and policy support	248
5.2.4.	The role of environmental verifiers	256
	5.2.4.1. Previous research	256
	5.2.4.2. Results	259
5.2.5.	Main findings	266
5.3.	Analysis of the effectiveness of the most recent revision to EMAS	267
5.3.1.	Background and research aims	267
5.3.2.	Main changes introduced by the EMAS Regulation 1221/2009 (EMAS III)	267
5.3.3.	EMAS registered organisations' attitudes towards the changes introduced by EMAS III	269
5.3.4.	Time needed by EMAS III reforms to show effects	274
5.3.5.	Main findings	275
6.	CONCLUSION EX-POST ANALYSIS	276
7.	POLICY OPTIONS FOR EMAS (EX-ANTE ANALYSIS)	279
7.1.	Path I - Business-as-Usual option: Keeping EMAS as it is (baseline)	279
7.2.	Path II – Modifications (internal dimensions of EMAS)	284
	7.2.1. Strengthening the requirements of indirect aspects in the environmental review or within the EMS	284
	7.2.2. Environmental reporting – make the environmental statement more usable and available	289
	7.2.3. Facilitated conditions for SMEs	293
	7.2.3.1. Extend the period foreseen in Article 7, further reducing the audit frequency for SMEs with no significant environmental risk	293
	7.2.3.2. Include criteria in Article 7 to enable a clear preliminary identification of the organisations entitled to reduced audit frequency.	295
	7.2.3.3. Enhance the application of EMAS in industrial clusters, better specifying the rules of application and simplifications for SMEs.	295
	7.2.3.4. Provide technical/legal support for SMEs (e.g. specifically targeted information via the official	

European EMAS website or Member States' EMAS websites)	297
7.2.3.5. Summary of potential impact	297
7.2.4. Revise EMAS logo provisions (Art. 10 of the EMAS Regulation)	300
7.2.5. Revising the multi-site registration approach	304
7.2.6. Role of Sectoral Reference Documents	309
7.2.6.1. Stopping SRDs: sudden death	310
7.2.6.2. Stopping SRDs: transferring SRDs elements to BREFs	310
7.2.6.3. Improve the relevance of SRDs	311
7.2.6.4. Summary of potential impact	312
7.2.7. Promotion and information activities	315
7.2.7.1. Requiring Member States to define and carry out a yearly EMAS Communication Plan	315
7.2.7.2. Increasing best practice sharing (beyond the activities of the Forum) by creating an online platform	317
7.2.7.3. Making registration fees publicly available and promoting the spread of this information, and providing a price comparison on the EMAS Helpdesk website	318
7.2.7.4. More promotion activities under the competency of the European Commission	319
7.2.7.5. Boosting networks and pan-European activities in the EMAS community	320
7.2.7.6. Summary of potential impact	322
7.2.8. Provide more regulatory relief and incentives	325
7.2.8.1. Introduce tax breaks for registered organisations	326
7.2.8.2. Favoured access to public funds for EMAS registered organisations (to encourage innovative behaviour)	327
7.2.8.3. Fast-track administrative procedures and/or simplify control activities and inspections related to environmental issues	328
7.2.8.4. Include requirements for EMAS in GPP	330
7.2.8.5. Financial guarantee	331
7.2.8.6. Summary of impact	331
7.2.9. Revise EMAS Global provisions	335
7.3. Path III – modifications (external dimensions of EMAS)	340
7.3.1. EMAS as an umbrella system (including optional elements like CSR or climate adaptation)	340
7.3.2. Enhance the integration and mutual recognition of EMAS with ISO 50001	346
7.3.3. EMAS as a CSR instrument	351
7.3.3.1. Strengthen and highlight existing links between EMAS and CSR	351
7.3.3.2. Expand EMAS's scope to include all CSR criteria	353
7.3.3.3. Summary of potential impact	354
7.3.4. Mandatory use of the scheme	357
7.3.4.1. Making the demonstration of a management system with the characteristics of EMAS a mandatory	

requirement in legislative acts such as the IED Directive, the SEVESO Directive or other EU legislations aimed at organisations with high environmental impacts	358
7.3.4.2. Making EMAS mandatory for any organisations obtaining European funds for research and development projects which exceed a certain threshold	359
7.3.4.3. Making EMAS mandatory for public organisations: leading by example	360
7.3.4.4. Summary of potential impact	360
7.3.5. EMAS and a revised ISO 14001	364
7.3.5.1. Technical alignment of EMAS with a revised ISO 14001	371
7.3.5.2. Strategic: Develop new EMAS elements as a reaction to a revised ISO 14001 (to reinforce EMAS's position as the most stringent environmental management instrument)	371
7.4. Path IV – Phasing out EMAS	372
7.4.1. “Sudden death”	373
7.4.2. Transferring EMAS elements to other instruments	375
7.4.2.1. Transferring EMAS elements to other SCP tools of the European Commission	375
7.4.2.2. Transferring EMAS elements to a (European) ISO 14001 PLUS standard	376
7.4.3. Summary of potential impact	377
8. RANKING OF OPTIONS	383
8.1. Approach	383
8.2. Summary of assessment of options	383
8.2.1. Path I – Keeping EMAS as it is	383
8.2.2. Path II & III – Modifications – internal and external dimensions	384
8.2.3. Path IV – Phasing out EMAS	387
8.3. Assessment of synergies between the options focused on modifying EMAS	388
8.4. Setting up the final ranking	390
9. BIBLIOGRAPHY	393
10. ANNEXES	405
10.1. ANNEX I: EVALUATION STUDY QUESTIONNAIRE FOR EMAS ORGANISATIONS	406
10.2. ANNEX II: QUESTIONNAIRE FOR MEMBER STATE REPRESENTATIVES	421
10.3. ANNEX III: CASE STUDIES	427
10.4. ANNEX IV: CO ₂ EMISSIONS INVENTORY STUDY – METHODOLOGY	434
10.5. ANNEX V: ANALYTICAL APPROACH TO ENVIRONMENTAL STATEMENT ANALYSIS (CHAPTER 3.10.5)	436

10.6. ANNEX VI: EMAS EVALUATION STUDY WORKSHOP REPORT	438
10.7. ANNEX VII: WORKSHOP "PERSPECTIVES OF AN EMAS REVISION"	452
10.8. ANNEX VIII: COMPLETE LIST OF REGISTRATION DATA	455
10.9. ANNEX IX: REASONS GIVEN FOR LEAVING EMAS – ANONYMIZED FEEDBACK FROM	
10.10. ANNEX X: REGRESSION ANALYSIS	462
10.11. ANNEX XI: THE OPINION OF EMAS REGISTERED ORGANISATIONS ON POLICY OPTIONS	466

LIST OF FIGURES

Figure 1: Distribution of the survey sample by country	55
Figure 2: Distribution of survey sample by type of sector	58
Figure 3: Manufacturing sectors as represented in the sample	60
Figure 4: Distribution of survey sample among countries	62
Figure 5: Origin of environmental statements by country	69
Figure 6: Environmental statement sample by year of registration	70
Figure 7: Percentage of environmental statement records determined to be outliers and excluded from analysis	73
Figure 8: EMAS registered organisations and sites over time	78
Figure 9: EMAS registered organisations and sites. April 2014	79
Figure 10: Number of EMAS registered organisations per million inhabitants. May 2014.	80
Figure 11: Number of EMAS registered organisations in countries with high and medium number of organisations, from 2005 to 2014	81
Figure 12: Number of EMAS registered organisations in countries with medium number of organisations, from 2005 to 2014 (zoom in from Figure 11)	81
Figure 13: Percentage of EMAS registered organisations by size. April 2014	83
Figure 14: Leading industrial sectors over time	84
Figure 15: Leading service sectors over time	85
Figure 16: Number of EMAS/ISO 14001 worldwide registered organisations 2005-2012*	86
Figure 17: Number of EMAS registered and ISO 50001 certified organisations in Europe	90
Figure 18: GRI reports and EMAS registrations from 2005-2013	93
Figure 19: Perceptions of EMAS awareness among stakeholders	101
Figure 20: To what extent do EMAS registered organisations serve as a monitoring benchmark for government authorities (e.g. a best practice example, a standard on which to base regulations)?	102
Figure 21: The role of regulatory relief with respect to all other motivations/incentives	145
Figure 22: Types of regulatory relief utilised	146

Figure 23: Types of regulatory relief that would be appreciated (in addition to currently existing ones)	147
Figure 24: Did your organisation benefit from any of the following incentives for implementing EMAS?	147
Figure 25: Did your organisation benefit from any of the following incentives for implementing EMAS? Analysis per geographical coverage	148
Figure 26: Did your organisation benefit from any of the following incentives for implementing EMAS? Analysis according to size of organisation	149
Figure 27: Performance in EMAS Core Indicators - per cent of organisations showing improvement, worsening, and no change in EMAS core indicators (whole sample)	155
Figure 28: Organisations' average improvement: average improvement per organisation in the EMAS core indicators (whole sample)	155
Figure 29: Average performance improvement per organisation by length of organisations' registration	156
Figure 30: Percentage of organisations showing improvement in the EMAS core indicators according to length of organisations' registration	156
Figure 31: Indirect effects of EMAS	170
Figure 32: Theoretical scheme on the positive influence of EMAS on resource efficiency and competitive performance	197
Figure 33: Is an EMAS registration helping your organisation tackle the current economic crisis? Analysis according geographical coverage of registrations.	209
Figure 34: Is an EMAS registration helping your organisation tackle the current economic crisis? Analysis per size of organisations	210
Figure 35: Approach followed in the study of the relationship between EMAS and Innovation	213
Figure 36: Which of the following environmental instruments are also included in these information and promotion activities?	232
Figure 37: Budget evolution over the last 5 years	243
Figure 38: Did you have a higher or lower overall annual budget for the following policy instruments when compared with the EMAS budget?	244
Figure 39: What kinds of activities are carried out in your Member State under Articles 33 and 34 of the EMAS Regulation?	250
Figure 40: Number of EMAS registered organisations in countries with high and medium number of organisations, from 2005 to 2014	251
Figure 41: Satisfaction of interviewed EMAS registered organisation with environmental verifiers' work	259

Figure 42: Contribution and appropriateness of costs of environmental verifiers	261
Figure 43: Contribution and appropriateness of costs of environmental verifiers	263
Figure 44: Request from environmental verifier on the length of the environmental statement	265
Figure 45: Do you think that the reforms in the EMAS III Regulation have been in place long enough to show effects?	275

LIST OF TABLES

Table 1: Assessment method ex-ante analysis	48
Table 2: Response rate by country, grouped by total number of registrations	53
Table 3: Response rate by country and EMAS population	54
Table 4: Response rate by organisation size	56
Table 5: Distribution of survey sample by turnover	56
Table 6: Distribution of sample by length of registration	57
Table 7: Sources of information about EMAS	57
Table 8: Response rate in the leading industrial sectors	59
Table 9: Response rate in the leading service sectors	59
Table 10: Type of interviewees and countries of origin	63
Table 11: Number of registered organisations per selected NACE codes	68
Table 12: Number of records obtained from environmental statements (after elimination of outliers)	72
Table 13: List of participants of technical working group, core group	74
Table 14: List of participants of technical working group, wider group	75
Table 15: Countries in which few organisations leaving causing a large drop in the number of sites	82
Table 16: EMAS/ISO 14001 registered/certified organisations in Europe by country in 2012	87
Table 17: Results related to EMAS and drivers	111
Table 18: Drivers for EMAS implementation: analysis per geographical coverage	114
Table 19: Drivers for EMAS implementation: analysis per size of organisations	116
Table 20: Results related to barriers on EMAS implementation	123
Table 21: Barriers on EMAS implementation: analysis per size of organisations	127
Table 22: Results related to benefits and EMAS implementation	132
Table 23: Benefits and EMAS implementation: analysis per geographical coverage	135
Table 24: Benefits and EMAS implementation: analysis per size of organisation	137
Table 25: Economic savings achieved in the energy consumption of EMAS registered organisations	140

Table 26: Economic savings on electric energy	141
Table 27: Economic savings on natural gas	142
Table 28: Overview of performance trends (in %) by length of registration	162
Table 29: Overview of performance trends (in %)	163
Table 30: With reference to the production unit, how has the environmental performance of your organisation changed over the last years in the following areas?	164
Table 31: How would you rate the following factors in terms of their importance for achieving environmental improvement?	166
Table 32: By geographic distribution: How would you rate the following factors in terms of their importance for achieving environmental improvement?	167
Table 33: By organisation size: How would you rate the following factors in terms of their importance for achieving environmental improvement?	168
Table 34: How would you rate individual EMAS requirements in terms of their importance for improving performance in practice?	169
Table 35: Actual level of integration with other voluntary tools	176
Table 36: EMAS added value with respect to ISO 14001	181
Table 37: EMAS added value in terms of marketing-targeted environmental communication	186
Table 38: EMAS added value in terms of marketing-targeted environmental communication – Breakdown per country	187
Table 39: EMAS added value in terms of marketing-targeted environmental communication – Breakdown per organisation size	188
Table 40: Formal Differences between EMAS and ISO 14001	189
Table 41: Level of agreement with the following statements on what kind of competitive advantage your organisation experiences as a result of participating in EMAS	202
Table 42: Level of agreement with the following statements on what kind of competitive advantage your organisation experiences by participating in EMAS: analysis according geographical coverage of registrations.	204
Table 43: Level of agreement with the following statements on what kind of competitive advantage your organisation experiences by participating in EMAS: analysis per size of organisations	206
Table 44: EMAS and process, product and organisational innovation – please indicate your level of agreement on the effect of EMAS on the three classes of innovation (top-five values)	216

Table 45: EMAS and process innovation– please indicate your level of agreement on the effect of EMAS on the three classes of innovation	217
Table 46: EMAS and product innovation– please indicate your level of agreement on the effect of EMAS on the three classes of innovation	218
Table 47: EMAS and organisational innovation– please indicate your level of agreement on the effect of EMAS on the three classes of innovation	219
Table 48: Process innovations: analysis by geographical coverage	220
Table 49: Process innovations: analysis by size of organisations	221
Table 50: Product innovations: analysis by geographical coverage	222
Table 51: Product innovations: analysis per size of organisations	222
Table 52: Organisational innovations: analysis by size of organisations	223
Table 53: Annual external costs for EMAS at the EU Level	227
Table 54: Administrative EMAS budget per Member State in 2014 (in Euro)	228
Table 55: Key data on Member States’ EMAS organisational setting	230
Table 56: How are Member States’ costs for inspection and monitoring affected when an organisation becomes EMAS registered?	233
Table 57: The three-year verification/validation cycle: large organisations	236
Table 58: The four-year verification/validation cycle: SMEs	236
Table 59: Estimated annual financial turnover of environmental verifiers	237
Table 60: Activities in which the European Commission should engage more strongly	240

LIST OF ABBREVIATIONS

AEL	Associated Emission Level
BAT	Best Available Techniques
BaU	Business-as-usual
BREF	Best Available Techniques Reference Document
CSR	Corporate Social Responsibility
EEA	European Economic Area
EMAS	EU Eco-Management and Audit Scheme
EMAS II	Regulation (EC) No 761/2001 of the European Parliament and of the Council of 19 March 2001 allowing voluntary participation by organisation in a Community eco-management and audit scheme (EMAS)
EMAS III	Regulation (EC) No 1221/2009 of the European Parliament and of the Council of 25 November 2009 on the voluntary participation by organisation in a Community eco-management and audit scheme (EMAS), repealing Regulation (EC) 761/2009 and Commission Decision 2001/681/EC and 2006/193/EC
EMS	Environmental Management System
EnMS	Energy Management System
EPD	Environmental Product Declarations
EU	European Union
EVER Study	Evaluation of EMAS and the Eco-label for their Revision Study
FALB	Forum of the Accreditation and Licensing Bodies
GDP	Gross Domestic Product
GPP	Green Public Procurement
ICT	Information and Communication Technologies
IED	Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control)
IMS	Integrated Management System
JRC	Joint Research Centre

LCA	Life-Cycle Analysis
MSS	Management system standards
NGO	Non-governmental organisation
OECD	Organisation for Economic Cooperation and Development
OEF	Organisation Environmental Footprint
PEF	Product Environmental Footprint
SCP	Sustainable Consumption and Production
SME	Small and medium-sized enterprises
SRD	Sectoral Reference Documents
WEEE	Waste of Electrical and Electronic Equipment
CESQA- ACCREDIA survey	Survey by the Centre for Study on Environmental Quality of Università degli studi di Padova-Italian National Accreditation Body

1. EXECUTIVE SUMMARY

The study Supporting the Evaluation of the Implementation of the EU Eco-Management and Audit Scheme (EMAS) Regulation 1221/2009 (Service contract No. 070307/2013/667137/SER/ENV.A1) was carried out for the European Commission by adelphi in partnership with S. Anna School of Advanced Studies (SSSUP) with the support of a Technical Working Group consisting of core experts Kamen Chipev, Marcel van Meesche, Harri Moora and Maria Passalacqua.

Objectives and main elements of the study

The EMAS Regulation is evaluated at regular intervals. Based on these evaluations, the European Commission and EU Member States decide whether a revision of the scheme is necessary. The last revision took place in 2009 and resulted in the entry into force of the current EMAS Regulation No 1221/2009 (EMAS III).

This study comprises both a backward and forward-looking exercise and its objectives are twofold: 1) to carry out an independent evaluation of the EMAS Regulation using the criteria of effectiveness, efficiency, coherence, relevance and EU added value (ex-post analysis); and 2) to develop and explore policy options for the future of the scheme and analyse their potential impacts with regard to the criteria mentioned above (ex-ante analysis).

This final report details the work undertaken for the evaluation of EMAS and the assessment of future policy options. To this end, an extensive review of academic and technical literature, surveys, interviews, case studies, environmental statement analysis and a workshop were conducted.

Key findings at a glance

Assessment category	Assessment
Effectiveness	<p>Effectiveness has been partly achieved. On the organisational level, our results show that EMAS can help organisations improve their environmental performance. However, the goal of increasing the number of EMAS organisations to enable the greatest possible positive impact on the global environment (EMAS on a global scale) has not been successful. Implementation problems are vital to understanding this lack of effectiveness.</p> <p>Factors <u>positively</u> influencing effectiveness:</p> <ul style="list-style-type: none"> • In the majority of analysed cases, EMAS helped organisations achieve performance improvement. The likelihood of improvement was, however, higher for certain environmental indicators than for others. <p>Factors <u>negatively</u> influencing effectiveness:</p> <ul style="list-style-type: none"> • Even though performance improvement can be achieved on the level of individual organisations, the objective of increasing the overall number of registered organisations has not been achieved. This lack of increase in EMAS numbers has a negative impact on the overall effectiveness of the scheme. • Lack of policy support (e.g. the absence of legislation at the EU and Member State levels recognising EMAS as the preferred

	<p>environmental management certification in the EU and/or providing financial or regulatory incentives to EMAS organisations) is seen as a key barrier to increasing the uptake of the scheme.</p>
<p>Efficiency</p>	<p>Efficiency is partly achieved; however, distortive factors exist, mainly a lack of regulatory and financial incentives.</p> <p>Factors <u>positively</u> influencing efficiency:</p> <ul style="list-style-type: none"> • EMAS can lead to cost efficiency that outweighs registration costs, though this efficiency is more prevalent among certain sectors and types of organisations. • As regards efficiency at Member State level, in most cases, complexity is relatively low and costs (proportionate to the activity level) are covered by the revenue from registrations. <p>Factors <u>negatively</u> influencing efficiency:</p> <ul style="list-style-type: none"> • For many organisations, relying solely on their efficiency improvements cannot create a convincing business case for EMAS adoption. • Efficiency thus depends on the external support of regulators, e.g. in the form of financial incentives or regulatory relief. • However, the survey results indicate that this regulatory support is insufficient in many cases. • Efficiency can also be analysed through the lens of Member States in that regulators have an opportunity to increase efficiency, as EMAS organisations' validated environmental reporting has the potential, when supported in environmental and reporting legislation, to reduce the burden of regulatory enforcement and contribute to achieving environmental policy goals. • However, our analysis shows that Member States are either unaware of EMAS's potential for regulatory relief or unconvinced that EMAS actually justifies reducing the burden of regulatory enforcement.
<p>Coherence</p>	<p>Coherence is not achieved in a convincing manner; whereas coherence with regard to other instruments is good, EMAS is not satisfactorily embedded in a policy mix of support measures on either EU or Member State level.</p> <p>Factors <u>positively</u> influencing coherence:</p> <ul style="list-style-type: none"> • There is a general coherence of the EMAS Regulation with similar instruments (e.g. ISO 14001, health and safety management systems). • No significant overlaps exist with the objectives of other EU policies. <p>Factors <u>negatively</u> influencing coherence:</p> <ul style="list-style-type: none"> • There is a lack of EMAS-related support policies and laws, e.g. with regard to Green Public Procurement – both on EU and Member State level. • One of the key barriers identified is a lack of recognition of EMAS by public institutions (including regulatory relief or other measures such as tax breaks), which has a serious impact on the effectiveness and

	<p>the efficiency of the scheme.</p> <ul style="list-style-type: none"> • This low level of recognition derives in part from a lack of coherence among the different regulation requirements (Art. 32-36) and from their uneven application by Member States.
<p>Relevance</p>	<p>EMAS is still relevant as a policy instrument with regard to its principles, objectives and features; nevertheless significantly higher ISO 14001 numbers and the uneven distribution of registration among Member States numbers pose challenges to its continued relevance.</p> <p>Factors <u>positively</u> influencing relevance:</p> <ul style="list-style-type: none"> • There is a general coherence of the EMAS Regulation with similar instruments and no significant overlaps with the objectives of other EU policies. • EMAS is the only environmental reporting instrument in Europe which delivers data validated by government authorities. <p>Factors <u>negatively</u> influencing relevance:</p> <ul style="list-style-type: none"> • EMAS is not relevant in global supply chains due to the extremely low uptake of EMAS Global. • When looking at uptake per EU Member State, EMAS has not evenly established itself as the environmental management instrument of choice across Europe; registrations are concentrated in just a few Member States.
<p>EU added value</p>	<p>EU added value proves the most puzzling aspect studied in that there are significant differences between Member States' perception of added value and also a lack of clarity on the EC level as to whether EMAS has an EU added value</p> <p>Factors <u>positively</u> influencing EU added value:</p> <ul style="list-style-type: none"> • EMAS leads to environmental performance improvements; according to previous studies slightly more than ISO 14001. • On the policy-making level, EMAS does have added value over ISO 14001 because organisations report government-verified data. • Based on the last ISO revision incorporating many EMAS features, EMAS has been proven to have a positive spill over effect on mainstream EMS. • The robustness of the ISO 14001 certification process was called into question in recent academic studies. <p>Factors <u>negatively</u> influencing EU added value:</p> <ul style="list-style-type: none"> • Our study indicates that the added value of EMAS compared to ISO 14001 often does not justify the additional efforts (requiring human and financial resources) needed for organisations to meet EMAS requirements. • Many Member States do not appear to see an added value to EMAS compared to ISO 14001, leading to a lack of sufficient policy support crucial to ensuring the cost efficiency of EMAS.

Key findings from the ex-post analysis

Effectiveness

The evaluation of the effectiveness of the EMAS Regulation indicates that the overall objective of reducing the environmental impact of companies and other organisations during their operations by promoting continuous improvements in the environmental performance of organisations has been partly attained.

The achievement of this objective is impacted by two drivers or second-order objectives: Firstly, the effectiveness of EMAS in helping organisations reach continuous environmental performance improvements (“organisational level”); secondly, to increase the number of organisations which use EMAS to achieve environmental performance improvements (“global level”).

As regards the first factor, our study reveals that the majority of organisations analysed have achieved effectiveness on the organisational level.

Our study investigated success factors for attaining environmental performance improvement. The surveyed EMAS-registered organisations viewed technological progress and the use of an Environmental Management System (EMS) as the most important elements in performance improvement. Several also cited compliance with environmental regulation as a related and important benefit. The first two factors cannot, however, be attributed to EMAS exclusively; both also come into play in the context of environmental management, for example, an EMS certified according to ISO 14001.

However, our analysis of studies comparing EMAS and ISO 14001 in terms of environmental performance improvements revealed that results achieved with EMAS were slightly more positive than with ISO 14001. In turn, our own results indicate that EMAS stakeholders do not see a lack of opportunity for improving performance as a major barrier to joining or keeping EMAS. Performance improvements - or lack thereof - thus do not appear to be a factor in EMAS’s falling short of the principal objective of increased numbers of registrations. In this context, the role of environmental verifiers must be emphasised. The organisations surveyed showed great satisfaction with the environmental verifier’s contribution to environmental performance improvements. This satisfaction also applies to the third key success factor, achieving regulatory compliance. Again, surveyed organisations linked their success in reaching compliance to the quality of the work of the environmental verifier.

When asked specifically about requirements in the EMAS Regulation that encouraged better environmental performance, registered organisations participating in the survey viewed objectives and targets, mandatory legal compliance and employee involvement as the most important EMAS performance requirements.

However, these environmental performance improvements do not apply equally to all kinds of EMAS registered organisations or to all core indicators described in the EMAS Regulation. Our findings are in line with previous research on this matter. According to our environmental analysis, the sampled organisations showed improvement in air and CO² emissions and energy efficiency, but stagnation in water consumption and largely negative performance trends in waste and material efficiency. Existing studies mainly attribute such differences to organisations’ different motivations for EMS adoption and their varying degree of EMS implementation. Our study results cast some light on the specifics of this difference in implementation; for example, survey respondents frequently cited a lack of commitment of staff as a reason why their organisation did not achieve environmental performance improvements.

Even though the effectiveness of the scheme has been achieved on the organisational level in the majority of cases analysed, EMAS's positive environmental effects cannot reach a satisfying scale on the global level due to the low total number of EMAS organisations. The second-order objective of increasing the number of EMAS registered organisations to 23,000 registered sites by 2015 was not met. Moreover, the registration trend in the past few years has been negative. The current EMAS Regulation (so called "EMAS III"), which came into force in 2010, established this objective of increasing registrations. Examining the time period from 2005 to 2014, the number of EMAS registered organisations and sites showed a slow but steady increase. In 2012, EMAS reached a peak of 4,473 registrations, 30% more than the 3,084 in 2005. After 2012, however, both the number of organisations and the number of sites started to decrease slightly, reaching 4,049 organisations and 7,556 sites in mid-2014. It is evident that the introduction of EMAS III in 2010 has not led to an increase in registration numbers; quite the contrary, as registration numbers – both of organisations and of sites – have begun to decrease since the introduction of the current Regulation.

The changes introduced with EMAS III thus did not contribute in an effective manner to making the scheme more attractive to companies and other organisations. In fact, despite a majority of organisations believing that EMAS III has been in place long enough to show its effects (about 60% of respondents believe this to be true), they largely state that these reforms (e.g. reduced frequency of audits for SMEs, EMAS Global) have not been very effective.

A significant difference exists between EMAS and ISO 14001 registration/certification numbers. In 2012, 105,534 organisations in Europe and 285,844 worldwide had ISO 14001 certification. The number of ISO 14001-certified organisations is increasing quickly, with high growth rates particularly in Asia. In Europe, a comparison of ISO certification numbers and EMAS registrations indicates that roughly up to 5% of the organisations with an EMS are willing to meet the additional requirements of EMAS. Hence, with regard to the wider environmental management context of ISO 14001 numbers and EMAS registration numbers per country, EMAS appears to be a "niche product". From a more positive perspective, one can argue that EMAS shows the typical characteristics of a front-runner scheme. In benchmarking exercises, the performance of the 5-10% best performing organisations are considered to be the benchmark of excellence set by environmental front-runners. However, it is not clear whether EMAS is understood in that way by the European Commission and Member States.

Our survey results indicate that the key barriers to EMAS uptake are all of an external nature, as they all relate to external stakeholders' lack of recognition of the scheme and of the organisations using it. The barrier which survey respondents see as most problematic is an overall lack of market recognition. Representatives of EMAS registered organisations in particular voiced the complaint that customers and other stakeholders are not familiar with the EMAS logo itself. In general, both EMAS registered organisations and Member State representatives indicate that the reforms introduced by EMAS III to improve EMAS uptake and effectiveness (e.g. fewer restrictions on the use of the EMAS logo, reduced frequency of audits for SMEs, EMAS Global) have not worked.

As the second most prevalent barrier, survey respondents identified a lack of EMAS recognition by public institutions. This lack of recognition is strongly linked to the level of policy support from the Member States (including regulatory relief or other measures such as tax breaks). A lack of external incentives for the adoption of EMAS, the third most common barrier identified by respondents, relates closely to both the lack of public awareness and the absence of policy incentives for adoption. Because the three most important barriers to EMAS adoption relate directly to Member States and EC promotion of EMAS through policies and incentives, our survey results strongly suggest a

correlation between the level of policy support Member States provide and organisations' uptake of EMAS.

Interestingly, costs have lower importance for survey respondents in explaining why the uptake of EMAS is falling short of expectations. However, they can by no means be considered irrelevant, especially in the context of cost efficiency for smaller organisations (see below).

The study also addresses the question of whether the EMAS Regulation is effective in supporting Member States' environmental protection and monitoring policies. Our study results indicate that spill-over effects can strengthen the effectiveness of the scheme in supporting Member States' environmental policy. Several Member States remarked that EMAS registered organisations performed better with regard to compliance with other legislation than those without using EMAS. Another indirect benefit mentioned by several Member State representatives was the increase in transparency created by participating organisations' disclosure of environmental data in their environmental statements. Again, the direct financial benefits of increased transparency are impossible to determine. However, against the background of an increasing amount of legislation on this topic (e.g. Directive on disclosure of non-financial and diversity information by certain large companies, amending the 2013 Accounting Directive), the fact that EMAS provides an environmental reporting platform, including a validation process for published data, can be a benefit to government authorities.

Efficiency

Our study indicates that cost efficiency at the organisational level can be achieved based on savings through performance improvement, but, mainly due to a lack of support policies, efficiency has not been achieved in a satisfying manner.

One of the key benefits according to our survey results is cost savings through reuse, recycling or decreases in resource or energy use - even if these savings are not equally distributed among the different industrial sectors analysed in the study.

EMAS's overall impact on spurring innovation, thus contributing respectively to cost reduction and increased competitiveness, is inconclusive. Survey responses indicate that the relationship is clearer for some classes of innovation than for others. This finding is in line with those of previous studies. Our results indicate that EMAS mainly stimulates organisational and process innovations, while EMAS organisations adopt product innovations less frequently.

Our study also indicates that efficiency gains cannot make a convincing business case for EMAS adoption when isolated from other types of benefits (both intangible benefits and those created by policy incentives). This is especially the case when performance improvements are not significant enough to outweigh costs and when fixed costs are proportionally higher than efficiency gains. In that sense, costs turn into a barrier due to the absence of convincing benefits. Using EMAS on a voluntary basis is economically more disadvantageous than not using EMAS. Especially for smaller organisations, costs are still a significant factor in the decision to leave or to not adopt the scheme in the first place. This finding confirms that changes introduced with EMAS III addressing cost efficiency for smaller organisations did not lead to desired results and should be reviewed.

Furthermore, most of the benefits organisations receive from EMAS are intangible and therefore hard to quantify in cost-benefit terms. This holds true for all the benefits which received a high score in the survey of EMAS registered organisations,

such as the ability of EMAS to prevent the risk of non-compliance and/or of environmental accidents. The relative importance of intangible benefits, in turn, means the efficiency of the scheme depends on the external support of regulators, e.g. in the form of financial incentives or regulatory relief. However, our survey results indicate that organisations widely consider this support to be insufficient.

In addition to analysing the organisational level, the study also shed light on whether EMAS is cost efficient on the Member State level. One underlying idea of EMAS as a voluntary management instrument is that the government transfers inspections and monitoring duties to private (yet government-approved) actors. In terms of direct benefits – the reduction of inspection and monitoring costs and the use of EMAS as a monitoring benchmark for government authorities – no monetary value can be directly assigned. However, the majority of Member State representatives do not view EMAS as significantly reducing the costs and duration of inspection and monitoring activities. Furthermore, the majority of Member State representatives do not use EMAS registered organisations as a benchmark in their environmental activities. The failure to do so also contributes to the previously mentioned lack of regulatory relief; when EMAS is not recognized as a benchmark, it becomes more difficult to justify policy incentives for EMAS rather than general relief for all organisations with a certified EMS. A key question is thus whether and how the design of EMAS can be changed in order to justify policy incentives.

In addition, our results show that overall, the size of Member States' budgets correlates to their EMAS registration numbers. Member States with higher registration numbers have higher budgets. The survey data does not provide the means to identifying a clear correlation between specific policy measures and increasing cost effectiveness on the organisational level. The project team carried out interviews with Member State representatives in order to shed light on the impact of policy activities on registration numbers. Based on their own assessment, Member State representatives confirmed that for policy measures which were clearly defined in scope (e.g. regulatory relief or promotion in a specific sector), and thus amenable to analysis, a clear correlation between promotion effort and increase in registration numbers was observed. This correlation led to a cost effective application of the EMAS Regulation in those Member States.

Coherence

The EMAS Regulation possesses a general coherence with similar instruments and does not significantly overlap with the objectives of other EU policies. Rather, the key challenge is achieving coherence between EMAS and related support policies and laws.

The relationship between EMAS and ISO 14001 is somewhat ambiguous: on the one hand, the ISO 14001 environmental management requirements are an integral part of EMAS and form the basis of the EMS. In that sense, the relationship between both schemes can be seen as a stratification: ISO 14001 is a tool considered by companies as a "license to operate" while EMAS is a more demanding scheme, complementing ISO 14001 with additional features allowing environmental "frontrunners" to differentiate themselves. On the other hand, however, ISO 14001 is the international market leader and many organisations decide between EMAS or ISO 14001, with the latter winning out in the majority of cases. Due to the currently ongoing revision of ISO 14001 (including features which are already part of EMAS), EMAS will likely need to be adjusted, at least on a technical level, in order to maintain the integration of ISO 14001 management requirements in the EMAS Regulation.

Apart from ISO 14001 – whose certification is often obtained together with an EMAS registration – respondents confirm major opportunities for integration with management systems addressing quality and health and safety issues. On the other hand, EMAS registered organisations seem unwilling to link some form of third-party certification of their Corporate Social Responsibility (CSR) – namely the SA 8000 standard – to EMAS and to integrate it with the scheme. The link between EMAS and CSR proved controversial among the Member State representatives. Focusing on the relationship with product policy tools, results show little integration of EMAS with the EU Ecolabel, Energy labelling, Ecodesign and Green Public Procurement. Quite surprisingly, the majority of EMAS registered organisations participating in the survey reported that all three of these EU policy tools are currently less integrated with EMAS than private forms of product certification, such as the Environmental Product Declaration (EPD) or other kinds of third-party product certification as regards environmental, carbon or water footprints.

Changing the focus to the analysis of EMAS's coherence with EU-wide relevant support policies and laws, our findings show that the level of policy support varies considerably among Member States. Both EMAS users and policy makers see significant gaps and a need for improvement, showing resounding support (a value of 4.38 out of 5 in our survey) for an increased recognition of EMAS in national and European laws. The fact that four Member States account for 88% of all EMAS registrations reflects this Europe-wide incoherence. Fifteen Member States have fewer than 20 registrations, clearly demonstrating that EMAS has not evenly established itself as the environmental management instrument of choice across Europe.

One of the key barriers to a better effectiveness of the scheme is lack of recognition of EMAS by public institutions (including regulatory relief or other measures such as tax breaks), which has a serious impact on the effectiveness and the efficiency of the scheme. For example, the vast majority of the EMAS registered organisations surveyed emphasised that they do not experience better access to public funding or procurement procedures (including service contracts). In line with this barrier, one of the benefits less frequently experienced by surveyed registered organisations is obtaining administrative simplifications and regulatory relief (e.g. longer duration of permits, less frequent environmental inspections by authorities).

Relevance

EMAS has continued relevance with regard to its principles, objectives and key elements; however, in light of the numbers of users, ISO 14001 is more relevant as an environmental management standard, especially on the international level. ISO 14001's environmental performances requirements are, however, less rigorous than those of EMAS (no reporting, no government-approved independent environmental verifier). EMAS is also the only environmental management tool to offer the credibility that comes from being managed by a high level public institution such as the European Commission, with added support from national and local authorities.

General EMAS principles and objectives (voluntary approach; prevention of pollution, continuous improvement; legal compliance; transparent environmental reporting and communication and credible data) are very much valid and relevant in light of current EU policies.

Focusing on the question of how relevant environmental management schemes in general (and ISO 14001 and EMAS in particular) are for driving improvements in the environmental performance of organisations, most studies in the scientific literature note that environmental management schemes reduce organisations' environmental impacts. However, others have found little proof of such a connection. It appears that

environmental management schemes do offer a moderate level of environmental performance benefit, but this benefit differs widely among organisations and sectors. In sum, research has not proven entirely conclusive. Further strengthening the drivers for improvement within environmental management schemes remains a challenge.

The topic of environmental reporting is as relevant as ever, which is, *inter alia*, shown by the new rules on non-financial reporting established by the Directive 2014/95/EU on disclosure of non-financial and diversity information by certain large undertakings and groups. EMAS is one of the instruments referred to as a possible instrument for reporting (mainly through the core indicators). EMAS has significantly more organisations than reports registered in the Global Reporting Initiative both in Europe and worldwide. In fact, EMAS is the only environmental reporting instrument in Europe offering data validated by government authorities.

Recent EU policy initiatives like the 7th EAP and the Roadmap to a Resource efficient Europe emphasise the importance of environmental footprinting. However, for the time being, the pilot status of the footprinting policy initiatives make it impossible to assess EMAS's link to the European Commission policy instrument Organisation Environmental Footprint. It is therefore impossible to judge whether EMAS's ability to play an active role in contributing to achieving OEF requirements (e.g. through the role of environmental verifiers or indicators) contributes to the scheme's relevance.

EU Added Value

The question of EMAS's added value, particularly *vis-à-vis* the ISO environmental management standard, is directly linked to both the previously mentioned uneven distribution of EMAS across EU Member States and the imbalance between ISO 14001 and EMAS user numbers. The literature and our survey results show that EMAS tends to lead to better performance improvements. Research also shows that organisations in selected industries choose EMAS over ISO 14001 because their customers and stakeholders see it as more reliable and trustworthy, as EMAS is backed by the authority of the European Commission and also the national public bodies that administer the scheme. The independently verified environmental statement also provides additional transparency for EMAS organisations seeking to address the concerns of stakeholders and/or regulators.

However, for many organisations, this added value is not convincing enough to justify choosing EMAS over ISO 14001. Additionally, in some cases EMAS provides theoretical benefits over ISO 14001 (for example, advantages and regulatory relief for SMEs foreseen in the EMAS Regulation; use of the environmental statement to improve reputation), but the results of our study show that these benefits are not being implemented and/or realised. Nevertheless, on the policy-making level, EMAS seems to be an agenda-setter in the field of voluntary environmental management instruments, providing the European Commission and Member States with a capacity to steer the development of this policy instrument. In this same vein, EMAS produces a degree of added value for all organisations because the scheme's reporting elements in particular could be considered as a useful guideline for interested companies.

With regard to tangible benefits derived from performance improvements, our research revealed that when comparing EMAS and ISO 14001 in terms of environmental performance improvements, results achieved with EMAS were slightly more positive than with ISO 14001. The analysis of more than 120 environmental statements showed that the majority of organisations analysed have achieved environmental performance improvements – although not for the entire set of relevant performance indicators.

Furthermore, our analysis of studies comparing EMAS and ISO 14001 in terms of environmental performance improvements revealed that results achieved with EMAS were slightly more positive than with ISO 14001. When looking at the underlying drivers for this finding, our survey results also show that many EMAS registered organisations have an intrinsic motivation to improve environmental performance. In contrast, academic research indicates that motivations to implement ISO 14001 are more often external rather than internal. The motivations also appear to be more market driven than regulation driven, further suggesting the dominance of extrinsic motivation.

This difference in motivation is particularly relevant in light of studies looking at ISO 14001 companies in the US and in the OECD, which emphasised that companies' different motivations for EMS adoption and their varying degree of EMS implementation have an influence on the EMS's ability to improve environmental performance. The studies reported that organisations adopting EMS from internal motivations tend to perform better than those that adopted EMS to satisfy external stakeholders. However, the studies indicate that this difference is rather small and thus not able to support a better cost-benefit ratio of EMAS, especially when compared to the scheme's costs.

With regard to additional tangible (legal compliance) as well as intangible benefits (increased competitiveness and an improved image), the study produced mixed results. According to our survey results, environmental and legal compliance stands out as one of the most important advantages perceived by registered organisations. However, it is difficult for organisations to translate this into a tangible benefit, mainly because regulators do not seem to pick up this added value when designing support policies for voluntary environmental management schemes. Overall, the high standard deviation value (above 1) in our survey would indicate that although survey respondents were more likely to agree than to disagree with the statements mentioned here, views were in fact split. Furthermore, our interviews revealed that, in the absence of clearly defined examples in EU legislation, several Member States perceive no significant difference for the level of environmental and legal compliance between EMAS and ISO 14001. This finding is in line with results from a large survey on ISO certified companies, according to which one of the main benefits of an ISO14001 certification is the ability to meet legal requirements.

With regard to competitiveness, our study did not identify a clear added value for EMAS. In fact, ISO 14001 has established itself as a "license to operate", which leads to a better market positioning. EMAS cannot offer this advantage.

Feedback from EMAS's users also revealed that the capacity of EMAS to trigger competitive advantages on the market is weak. Study results indicate that this weakness is directly related to the strong position of ISO 14001. A key driver for the uptake of ISO 14001 – especially with regard to its global relevance – are customer requests. Results from academic research indicate that the adoption of the ISO 14001 certification represents a reactive strategic approach (the aforementioned "license to operate"), emphasising customer satisfaction as a key motivation. Additional EMAS elements, which focus on external stakeholder relations, including the EMAS logo and the environmental statement, are not effectively strengthening EMAS position on the market. Survey and interview results also indicate that EMAS is little known among consumers and the general public, reinforcing the lack of requests.

The analysis of benefits derived from policy support revealed that in most in most cases, regulators (e.g. with regard to GPP) do not differentiate between EMAS and ISO 14001. Hence, in the majority of cases, there is no added value for EMAS. According to our survey results, registered organisations do not perceive added value from EMAS in terms of targeted regulatory relief and/or fiscal benefits, or within public procurement, when compared to ISO 14001 certification. With regard to these findings, two Competent Body representatives remarked that "the absence [of incentives and regulatory relief] is the

main reason for the low number of EMAS registrations in our countries [...] as organisations would not have additional advantages passing from ISO 14001 to EMAS.”

With regard to costs of implementation, our results indicate that an EMAS implementation leads to higher costs, which turns into a better cost-benefit-ratio for ISO 14001. However, our results also reveal that costs are not seen as a key barrier for EMAS users. In any case, the better cost-benefit-ratio of an ISO 14001 certification can be primarily ascribed to the lower cost and effort necessary to implement and maintain certification. EMAS has higher costs for users mainly because of the creation, layout and printing of the environmental statement and the auditing process.

Focusing on benefits on the policy-making level, a key added value of EMAS derived from its front-runner approach, lies in its capacity to influence the mainstream tool toward more ambitious requirement. An analysis of the new provisions in the draft ISO 14001 standard shows that several key elements, including those focusing on engagement with interested parties or external communication, have been part of EMAS for a long time. Furthermore, interviews with Member State representatives revealed that EMAS was taken as a reference when developing national/regional non-formal environmental management standards. This indicates that EU and Member State policy makers are able to directly set and drive the agenda for the development of environmental management standards and the introduction of new elements. The European Commission and Member States would lose this steering capacity if EMAS were discontinued, especially with regard to national/regional non-formal environmental management standards. Despite national governments being involved in the ISO 14001 standard's revision process (and being able to exert some influence in that context), EMAS offers policy makers a much higher degree of influence.

Another indirect benefit mentioned by several Member State representatives was transparency created by participating organisations' disclosure of environmental data in the environmental statement. Again, it is impossible to assign a direct financial benefit to this transparency. Nevertheless, against the background of an increasing amount of legislation on this topic (e.g. Directive on disclosure of non-financial and diversity information by certain large companies, amending the 2013 Accounting Directive), the fact that EMAS provides an environmental reporting platform, including a validation process for published data, can be seen as a benefit to government authorities.

Recent studies also call the objective, rigorous and unambiguous nature of ISO 14001 certification into question, highlighting how empirical literature has not yet addressed the issue of the credibility and transparency of external audits within the ISO 14001 certification process. These studies indicate that the absence of EMAS would have a negative impact on shifting enforcement from government bodies to (private) auditors.

Analysis of policy options

Against the background of our findings from the ex-post analysis of EMAS, we suggest modifying EMAS instead of keeping the scheme as it is or phasing it out.

At this point, phasing out EMAS would be premature mainly for two reasons. Firstly, our study results clearly show that the key weaknesses of EMAS are related to a lack of policy support for and integration of the scheme in relevant EU and Member State policies. Secondly, our study indicated that EMAS does have an added value, which is discussed controversially though, compared to ISO 14001 – particularly with regard to transparency and standard-setting. Because of its unique status as a public instrument, EMAS gives policymakers the possibility to directly set and drive the agenda for the development of environmental management standards.

Although EMAS still appears to have potential as a benchmark, as a means of promoting legal compliance and as a reliable, transparent environmental management instrument, the scheme is currently struggling to remain relevant. Without increased policy support and stronger evidence of EMAS's added value, particularly when compared to ISO 14001, EMAS may well fail to bring the benefits necessary to continue attracting organisations. This situation may emerge particularly if EMAS's added value in practice compared to the revised ISO 14001 turn out to be low. Notably, the practical application of ISO 14001 in several Member States has shown that the added value of EMAS can be negligible – especially when in some Member State legal compliance procedures have been set up for ISO 14001 that are (nearly) as rigorous as those required for EMAS – making the situation described above a real possibility.

Another possibility for EMAS's future, that of following the Business-as-Usual (BaU) option "Keeping EMAS as it is", would lead to one of two scenarios: in the best case, a "muddling-through" of EMAS, with stagnating or falling registration numbers and mixed results on performance improvements. The worst case scenario from this option would be falling registration numbers and a significant decline in the scheme's overall relevance. The latter could be the case if (potential) EMAS users perceive that the ISO 14001 standard, which is currently undergoing a revision, "closes the gap" to EMAS with regard to management requirements. This scenario would call the very existence of EMAS into question.

Overall, no real advantages appear to "Keeping EMAS as it is", particularly given that weaknesses have been identified within the scheme itself. In addition, changes to the Regulation in the near future are inevitable because of the ISO 14001 revision because EMAS integrates the requirements of ISO 14001 into the scheme itself, revisions will be necessary to keep EMAS compatible with the new ISO 14001 standard. In addition, to retain its EU-added value after the ISO 14001 revision, EMAS would have to further strengthen its requirements.

A third option, modifying the EMAS scheme, presents the clearest benefits in the current situation. Such modifications would address the way in which the European Commission, Member States and participating organisations acknowledge, support and use the scheme. They would also be in line with EMAS's original principals and objectives. Based on the results of this study, EMAS should be:

- better integrated within the EU and Member States' institutional and legislative frameworks (better enforcement of Article 38 of the EMAS Regulation)
- promoted and supported by administrative bodies
- communicated in a way that clearly highlights its added value
- strengthened with regard to its key distinguishing principles and features, such as continuous performance improvement and transparency

Further modifications should aim at strengthening the principle of continuous improvement, facilitate the uptake of the scheme, and improving EMAS's visibility (e.g. by changing Annex V's requirements for the use of the EMAS logo). When proceeding with such modifications, timing is an important consideration. The European Commission and the Member States should take into account the need for changes in EMAS created by the ongoing ISO 14001 revision process. Approval for the final version of the current DIS ISO 14001 is expected in 2015 and the transition phase for the implementation of the revised standard is anticipated to be three years.

2. INTRODUCTION

2.1. Remarks from the authors of this study

The European Commission mandated adelphi (Germany) and the Institute of Management at the S. Anna School of Advanced Studies (Italy) to undertake the contract “Supporting the Evaluation of the Implementation of the EU Eco-Management and Audit Scheme (EMAS) Regulation 1221/2009” (Contract number: 070307/2013/667137/SER/ENV.A1)

The report addresses the situation in 2014. In many cases, the year of the last revision, 2009, is used as a baseline. Wherever deemed necessary, the study covers the situation since 2005, when the last revision study was conducted.

All countries which are allowed to participate in EMAS (European Union (EU); European Economic Area (EEA); countries outside EU and EEA) have been either directly covered or taken into account in this report by means of different methodological approaches such as questionnaires, interviews or case studies.

All sectors allowed to participate in the scheme (industry and services in private and public organisations) are covered in the evaluation study by means of different methodological approaches such as questionnaires, interviews or case studies. However, some issues such as the concepts of competitiveness and innovation may be more relevant for private organisations.

2.2. Objectives and scope of study

EMAS is about to celebrate a milestone birthday. In 2015, the scheme turns 20. Currently, more than 4,000 organisations and more than 6,800 sites in Europe and globally have committed to EMAS. EMAS is a management instrument developed by the European Commission for companies and other organisations to evaluate, report, and improve their environmental performance. EMAS is open to every type of organisation eager to improve its environmental performance. It spans all economic and service sectors and is applicable worldwide. The scheme is part of the European Commission’s Sustainable Consumption and Production (SCP) Action Plan, contributing the European Commission’s ambitious goals of improving resource use patterns and reducing emissions in the EU. The SCP Action Plan (European Commission 2008) acknowledges that EMAS helps organisations optimise their production processes by reducing environmental impacts as well as making more effective use of resources.

The main aim of EMAS is to encourage continuous improvements in the environmental performance of companies and other organisations, via a management system that allows organisations to measure, evaluate, report and improve environmental performance. EMAS follows a systematic ‘Plan-Do-Check-Act’ approach, which is linked to the EMS of ISO 14001, but goes beyond this international standard, for example requiring proof of legal compliance and external communication. Benefits for registered organisations are efficiency improvements and better management of environmental issues and the provision of credible information on these issues. Thus, the key elements of EMAS can be summarised as performance, credibility and transparency. The scheme is open to all types of public and private organisations and applicable globally. The key actors in the administrative running of the scheme are the Competent Bodies, Accreditation and Licensing Bodies and environmental verifiers. Among other duties, the

Competent Bodies are responsible for registering organisations, for keeping an up-to-date register of participating organisations and for cancelling registrations. Should a Member State decide to participate in EMAS Global, a Competent Body can also be responsible for registrations outside of Europe. Accreditation and Licensing Bodies are responsible for the accreditation and supervision of environmental verifiers. Both Competent Bodies and Accreditation and Licensing Bodies have established forums that convene at least once a year with representatives from all Member States in order to ensure harmonisation of procedures, provide guidance and organise peer evaluations. The environmental verifiers' role is to assess the compliance of registered or newcomer organisations with the requirements of the Regulation and to validate any updated information in organisations' environmental statements at an interval of no more than 12 months.

The last revision of EMAS in 2009 introduced a number of changes to the scheme that were aimed at improving its applicability and credibility and strengthening EMAS's visibility and outreach. The two main objectives of the European Commission for the latest revision in 2009 was to increase the number of organisations participating in the scheme in order to achieve a greater overall impact of environmental improvements (European Commission 2009: 2). The European Commission stated that with EMAS III organisations, in particular small organisations, should be encouraged to participate in the scheme by gaining added value in terms of regulatory relief, cost savings and public image. Regarding the latter, the EMAS logo should be an appealing communication and marketing tool. Key actors – mainly the European Commission and Member States – play an important role in the promotion of the scheme by facilitating access to information as well as by providing access to funds and technical assistance measures. Furthermore, Member States should also reduce the administrative burden of registered organisations by way of deregulation or regulatory relief (European Commission 2009: 2).

The last revision and the use of the scheme by participating organisations in light of the European Commission's objectives outlined in the EMAS Regulation itself are the starting point of the EMAS evaluation study. This study is both a backwards and forwards-looking exercise and its objectives are twofold: 1) to carry out an independent evaluation of the EMAS Regulation using the criteria of effectiveness, efficiency, coherence, relevance and EU added value (ex-post analysis); and 2) to develop and explore policy options for the future of the scheme and analyse their potential impacts with regard to the criteria mentioned above (ex-ante analysis). This final report details the work undertaken for the evaluation and the assessment of policy options.

2.3. Structure of the evaluation study

In order to guide the reader, this section gives a brief overview of the report.

Chapter 2 provides the context to the study.

Chapter 3 – Methodological approach: The chapter outlines in detail all the research methods used as part of the evaluation of the EMAS tool. The project team has used various methodological approaches for the critical appraisal of EMAS, based on a combination of reviewing previous research and the involvement of stakeholders via questionnaires, interviews, and workshops. The aim was to integrate a diverse set of perspectives and thoughts to arrive at thorough and balanced findings and conclusions. For further guidance on the structure of this report the reader is advised to refer to the analytical frameworks outlined in Chapters 3.1, 3.2 and 3.3.

Furthermore, this report comprises both an ex-post analysis and an ex-ante analysis:

The ex-post part of the evaluation study was conducted from January to October 2014 and the resulting parts of the report comprise the following elements:

Chapter 4 – Assessment of the performance of EMAS: The task sheds light on the scheme's performance with regard to its objectives (as mentioned above) from various angles: EMAS in numbers (lead author: adelphi); public image and stakeholders (adelphi); costs & benefits and drivers and barriers (SSSUP); performance (adelphi); added value of EMAS with regard to other policy tools (SSSUP); EMAS and competitiveness (SSSUP); and EMAS and innovation (SSSUP).

Chapter 5 – Analysis of the EMAS management approach and organisational structure – drivers and barriers: The task addresses how the scheme is managed at EU and Member State level in terms of resources and procedures. The analysis should help identify which features of the current EMAS management approach are working well and which may be changed in order to improve the effectiveness of the scheme.

Each of the sub-chapters (numbered 4.1-4.7 and 5.1-5.3 respectively) include relevant background information and results from previous studies; a section on the results of this study; and a summary of the 'Main findings' at the end of each sub-chapter.

Chapter 6 – Conclusions of ex-post analysis: these draw the findings from Chapters 4 and 5 together and (inter alia) form the basis for the ex-ante analysis. This section will also feed into the Fitness Check of the EMAS and Ecolabel Regulations being undertaken by the European Commission.

The ex-ante part of the evaluation study largely bases itself on the results of the ex-post analysis and on the stakeholder workshops that were organised and attended by members of the project team (as described in Chapter 3.11). It comprises the following elements:

Chapter 7 – Policy options for EMAS: This chapter presents a preliminary analysis of the main policy options being debated for the future of EMAS. In order to adequately consider the more fundamental questions around EMAS, questions about its existence are addressed at a higher level. Consequently, all the options are grouped into the following paths:

- Path I – Business-as-Usual option: Keeping EMAS as it is (baseline)
- Path II – Modifications (internal dimensions of EMAS)
- Path III – Modifications (external dimensions of EMAS)
- Path IV – Phasing out EMAS

Summaries of the different potential impacts of options are provided at the end of each policy option sub-chapter, along with an 'impact profile', a matrix which rates the option (where applicable).

Chapter 8 – Ranking of options: Here the options from Chapter 7 are compared and checked for their compatibility.

Chapter 9 – Overall conclusions and recommendations: This chapter bases itself both on the ex-post and ex-ante analysis and provides policy recommendations regarding the future of EMAS.

Chapter 10 - Bibliography

Chapter 11 - Annexes:

- Annex I: EMAS Evaluation Study 2014: Questionnaire for EMAS Adopters
- Annex II: questionnaire for Member State representatives
- Annex III: Case Studies
- Annex IV: CO2 emissions inventory study – methodology
- Annex V: Analytical Approach to Environmental Statement Analysis (Chapter 3.5)
- Annex VI: EMAS evaluation workshop report
- Annex VII: Workshop “Perspectives of an EMAS Revision”
- Annex VIII: Complete list of EMAS registration data
- Annex IX: Some reasons for leaving EMAS – anonymized feedback from German organisations
- Annex X: Regression Analysis

2.4. EMAS in a nutshell

EMAS is a voluntary environmental management instrument designed to improve companies' and other organisations' environmental performance. It was initially established by European Regulation 136/93, which has since then been updated twice. The most recent Regulation (EC) No 1221/2009 came into force in January 2010.

Who can register?

Any type of organisation can apply to register to EMAS. Although the scheme was initially aimed at industrial sites, it now enables registration from all types of organisation from all economic sectors. As such, retailers, banks, airports, power companies, manufacturing companies, printers and local authorities can all participate in the same scheme. The scheme allows organisations that are a single site to register, or multi-sites and corporate organisations can apply.

Key implementation steps

1. Environmental review: considering all environmental aspects of activities, products and services, regulatory framework, assessment methods and environmental management practices
2. Environmental policy: containing commitment to comply with all relevant environmental legislation and to achieve continuous improvements in environmental performance
3. Environmental programme: tool to help the organisation in its everyday work when planning and implementing the improvements by specific environmental objectives and targets
4. Environmental management system (EMS): aimed at achieving the organisation's environmental policy and at improving the environmental performance

5. Environmental audit: assessing the management system in place, conformity with the organisation's policy and programme, compliance with environmental regulatory requirements
6. Environmental statement: lays down the results achieved against the environmental objectives as well as future steps to be undertaken to continuously improve environmental performance
7. EMAS logo: visual tool which demonstrates an organisation's commitment

How to register?

- Implement an EMS
- Undertake audit, including checks on legal compliance and environmental performance improvement
- Prepare an environmental statement
- Submit the application to an EMAS Competent Body (see below under "relevant actors")
- Make publicly the environmental statement
- Organisations will be entered onto the national register/EU EMAS Register

Relevant actors

- Development: the European Commission ensures the proper implementation of the EMAS Regulation and promotes the scheme at the EU level, while Member States are responsible for establishing EMAS-relevant structures in their country, providing information on implementation, launching support activities and promoting participation on a national level; the Article 49 Committee is the Steering Committee of supporting the EC in practical issues concerning the EMAS Regulation; the EMAS Helpdesk collects information on registered organisations and accredited environmental verifiers as well as provides promotional and information services
- Verification: environmental verifiers ensure that an organisation seeking registration is in compliance with the requirements of the EMAS Regulation; an Accreditation/Licensing Body is an independent, impartial institution or organisation responsible for the accreditation/issuing of licences to and supervision of environmental verifiers designated by Member States
- Registration: responsibilities of a national Competent Body are to issue registration numbers to organisations which have submitted a validated environmental statement, collect any payable registration fee, refuse, suspend and delete organisations from the national EMAS register and respond to enquiries concerning organisations on the register

Costs (vary for each individual organisation)¹

- Fixed costs: validation and verification fees, registration fees, capital IT costs, adding logo to stationary and producing publicity material and capital expenditure
- External costs: incurred by employing external expertise to support EMAS implementation and reporting
- Internal costs: incurred by organisations' personnel in implementing, administering and reporting on EMAS

2.5. Context of the EMAS evaluation study

The EMAS evaluation study is part of a wider European Commission exercise, namely REFIT, the Commission's Regulatory Fitness and Performance programme. It is foreseen by the European Commission that the results of this study will be used as input for the REFIT exercise for EMAS. Therefore, during the evaluation exercise, the project team seeks to address the following generic issues:

- Effectiveness: The extent to which objectives set are achieved
- Efficiency: The extent to which the desired effects are achieved at a reasonable cost
- Coherence: The extent to which the intervention logic is non-contradictory/the intervention does not contradict other interventions with similar objectives
- Relevance: The extent to which an intervention's objectives are pertinent to the needs, problems and issues to be addressed
- EU added value: The concept assesses the added value resulting from an EU intervention compared to what could be achieved by Member States alone

The issues will build the basis for both the ex-post and ex-ante analyses and will be integrated in the analytical frameworks.

2.6. Disclaimer

The authors have full responsibility for the content of this report, its conclusions, and recommendations. Opinions presented in this report reflect those of the consultants and do not necessarily reflect the opinion of the European Commission.

2.7. Acknowledgements

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¹ A more detailed description of the costs and benefits of implementing EMAS – particularly for SMEs – can be found here: http://ec.europa.eu/environment/emas/pdf/news/costs_and_benefits_of_emas.pdf
http://ec.europa.eu/environment/emas/pdf/factsheet/EMASBenefits_high.pdf

workshop participants; the Article 49 Committee Members and Member State representatives for providing their comments on the questionnaire among EMAS registered organisations.

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3. METHODOLOGICAL APPROACH – THE EX POST AND EX ANTE PARTS OF THE EVALUATION

The methodological approach is based on three key steps:

- Two analytical frameworks for the ex-post and ex-ante parts based on research questions were set up
- Data was collected by using several research tools (literature review, questionnaire, interviews, etc.)
- Data was analysed and key findings developed

3.1. Introduction to analytical frameworks

The analytical frameworks will be used to link guiding research questions to appropriate research tools and to formulate answers for both the ex-post and the ex-ante analyses in a structured way. Both frameworks take into account the REFIT concept introduced above to ensure that key findings of the ex-post analysis can be taken up in the design and analysis of policy options in the ex-ante part of the study.

The methodology was designed to ensure a comprehensive overview of EMAS with regard to a wide variety of analytic criteria specified in the contract, the EMAS Evaluation Study Terms of Reference and the criteria for the REFIT concept. The analytical frameworks incorporate research into the different key areas of EMAS mentioned in the Terms of Reference (e.g. competition, performance, drivers and barriers) and as such are to be understood as broad frameworks comprising a number of methods of data collection and analysis. They incorporate both quantitative data analysis (e.g. of the environmental statements) and qualitative evaluation based on feedback from EMAS stakeholders in surveys and interviews.

Because of the wide range of criteria involved and the qualitative nature of many of the main research tools, the framework of the ex-ante analysis in particular has a strong qualitative element designed to reflect the expert opinions of the contractors, EMAS stakeholders, and the work of previous researchers. In this context, the project team would like to disclose for purposes of transparency that one of the study's authors (adelphi) also leads the European EMAS Helpdesk (contract ending December 2016). The authors' objectivity was ensured in this case through cooperation with an independent partner (SSSUP), the use of clear methodology outlined in detail and containing whenever possible quantitative elements (e.g. the environmental statement analysis), and the commitment to European Commission quality criteria listed in the tender and the contract for the EMAS Evaluation Study.

The study methodology provided for the largest collection of data from EMAS registered organisations to date. In addition to a comprehensive review of existing research on the subject, the main components of the a survey of all EMAS registered organisations, a performance analysis based on data in 120 EMAS environmental statements, a survey of EMAS Member State representatives, and interviews with both EMAS stakeholders and with representatives of organisations that had either left EMAS or had chosen to adopt ISO 14001 and not EMAS. These instruments will be outlined in more detail in the following sections.

Despite its comprehensive nature, this approach does have certain limitations. The surveys and interviews outlined above do not include a public consultation or incorporate the opinions of stakeholders not directly involved with EMAS (with the exception of the interviews with non-EMAS registered organisations). The European Commission made

the decision to not to hold a public consultation because EMAS is a business-to-business (B2B) instrument not used by individuals. Additionally, although the analytical framework includes an evaluation of EMAS's relevance in relation to ISO 14001, organisations with ISO 14001 and not EMAS were invited to give input only in interviews and not in a general survey. Due to a lack of publicly available environmental information for ISO 14001 certified organisations, a direct comparison of environmental performance improvements between EMAS registered organisations and those with ISO 14001 only was not possible. Finally, as discussed above, through its nature as an exercise evaluating future policy options, the ex-ante analysis in particular includes a subjective evaluation of impacts based on the evidence collected in the study and on the expert opinions of the authors.

To address these limitations, the project team included extensive desk research covering the work of academics and other non-EMAS stakeholders. These documents helped to extend the range of opinion and analysis of EMAS from an "outside" perspective, including data on previous studies investigating ISO 14001's effect on environmental performance. The interviews with organisations which have chosen to be ISO 14001 certified but not EMAS registered also contributed to this perspective through interviews. Although it is beyond the scope of this study, the authors would recommend further research into this area to provide a more comprehensive comparison between EMAS and ISO 14001.

3.2. Analytical framework for the ex-post analysis

The analytical framework will be used to link guiding research questions to appropriate research tools and to formulate answers for the ex-post analysis in a structured manner. It includes the following elements:

- Research questions to address all relevant issues to evaluate the EMAS Regulation.
- Judgment criteria on the basis of which the project team builds its key findings and which it uses to reach conclusions. Judgment criteria are mostly formulated as specific questions covering the various dimensions of the main research questions and hence enabling the project team to formulate a judgement. These questions are posed at the beginning of each sub-chapter of Tasks 2 and 3. At the beginning of these sub-chapters, the project team frames the issue at hand, lists research questions to be investigated and clarifies which judgement criteria are used (e.g. in terms of effectiveness: do environmental verifiers contribute to registered organisations' environmental performance improvements?).
- Methodological approach used to collect information in order to address the research questions listed at the beginning of each chapter.

The evaluation study will address the following research questions:

Effectiveness: Policy effectiveness refers to the analysis and evaluation of the question whether the expected objectives and targets of the policy have been achieved in practice. The objectives of the scheme are laid out in the Regulation itself. The key objectives are to promote continuous improvements in the environmental performance of registered organisations and to create the greatest possible positive impact on the environment by increasing the number of registered organisations/sites. This item has two dimensions, as it focuses on both measures introduced since EMAS came into force

in 1995 and measures introduced since the latest EMAS Regulation (EMAS III) came into force in 2010. Key questions include²:

- What links can be made between measures implemented based on requirements/features introduced with EMAS and progress toward achieving their stated objectives (mainly, increasing registration numbers in order to achieve a greater overall impact of environmental improvements)?
- What are the main drivers and barriers to achieving the objectives?
- How are these drivers and barriers addressed by the EMAS Regulation?
- What, if any, additional changes (positive and negative) can be linked to the measures in the EMAS Regulation beyond what was intended?
- Does EMAS increase participating companies' competitiveness?
- Is EMAS a driver for innovation? If so, how did this specifically occur?
- What is the perception of EMAS among different stakeholders, including SMEs, concerning its effectiveness in supporting/ pushing registered organisations to improve their environmental performance?

Efficiency: Efficiency refers to how cost effective a policy is. In the EMAS context, this concept focuses on the costs to registered organisations (especially smaller organisations), as well as to Member States and the EU (administrative costs). The latter focuses on the current organisational structure, including Competent and Accreditation/Licensing Bodies. Key questions include:

- What are the costs and benefits of an EMAS registration?
- How are costs and benefits linked to drivers and barriers of an EMAS registration?
- Is EMAS leading to increased efficiency gains (e.g. energy and resource efficiency), and to what extent?
- Do efficiency gains translate into financial gains for registered organisations?
- What are the experiences of SMEs in participating in the schemes?
- What, if any, provisions in the EMAS Regulation can be identified that might make a cost-effective implementation more difficult and could possibly hamper the maximisation of benefits?
- What is the reputation/ image of EMAS among stakeholders in terms of its ability to increase registered organisations' efficiency?
- To what extent can the costs and benefits associated with the implementation in Member States and at EU level be linked to observed results and impacts?
- With reference to significant uptake versus no uptake, if any significant differences (including cost differences) in for example implementation, administration (including the costs for businesses), compliance or monitoring can be identified across sectors, what is causing them?
- What good practice in terms of cost-effective application of the EMAS Regulation in Member States can be identified?

² An exhaustive list of research questions can be found at the beginning of each chapter in Tasks 2 and 3 and are also reflected in the questionnaires included in Annexes I and II.

Coherence: Policy coherence is vital to ensure that policies are well-coordinated and complementary and do not contradict each other. In the EMAS context, the focus will be (inter alia) on linking the scheme to other policies/instruments at EU and national level aiming to ensure that EMAS is considered where appropriate. Another focus will be on analysing whether Member State activities creating the conditions for an effective application of, and promoting, the scheme are – if compared with one another – appropriate to achieve the defined objectives. Key questions include:

- To what extent does EMAS as a voluntary scheme satisfactorily complement other related SCP instruments?
- What, if any, inconsistencies and unjustified overlaps, obsolete provisions and/or gaps with regard to other pieces of EU legislation can be identified e.g. in terms of definitions, reporting and key concepts. If so, how are they affecting the performance of the EMAS Regulation? How in this case could possible obsolete provisions in the EMAS Regulation be explained?
- To what extent has the scope for policy integration with other policy instruments been exploited?
- To what extent does the EMAS Regulation support the EU internal market and the creation of a level playing field for economic operators?
- To what extent is EMAS registration being considered in other EU and Member State legislation, or used as a tool in its application and enforcement, or taken into account in public procurement or purchasing?
- To what extent are support policies (e.g. regulatory relief, financial support) used to promote EMAS?
- What can be observed concerning the appropriateness of means invested by the European Commission and Member States, in quantity and quality, to achieve defined objectives (as mentioned above) of the EMAS Regulation?
- Can differences between Member States be observed?
- What is the perception among stakeholders on the coherence of EMAS, particularly considering means invested by Member States and the European Commission?

Relevance: The study will assess whether EMAS is adequately capturing and addressing relevant challenges in the context of environmental management as well as SCP and circular economy. How far do the issues addressed by the EMAS Regulation still match the needs of companies and other organisations? How relevant is EMAS for driving improvements in the environmental performance of private and public organisations, making them more resource efficient? Key questions include:

- To what extent are the objectives of the EMAS Regulation still relevant and valid?
- How far do the issues addressed by the EMAS Regulation still match the needs of both registered organisations and policy makers?
- To what extent is the voluntary EMAS Regulation consistent with recent European Commission policies in this field, such as (but not limited to) resource and energy efficiency and waste reduction?

- How relevant is the EMAS Regulation for driving improvements in the environmental performance of products and public and private organisations, making them more resource efficient and reducing their environmental footprint?
- What is the perception of EMAS among different stakeholders, including SMEs about the relevance of the scheme, especially compared to other environmental management instruments like ISO 14001?

EU added value: The concept assesses the added value resulting from an EU intervention compared to what could be achieved by Member States alone. The study will address the issue in light of different factors such as complementarity (with national schemes), greater effectiveness and coordination gains. Key questions are:

- Is there an additional value resulting from EMAS (e.g. with regard to other existing environmental management instruments and in particular ISO 14001)?
- Do the issues addressed by the EMAS Regulation continue to require action at EU level?
- Do environmental management instruments comparable to EMAS (in terms of requirements) exist on national/regional level?
- What is the perception of EMAS among different stakeholders, including SMEs?

3.3. Analytical framework for the ex-ante analysis

3.3.1. Overview of selection and assessment process

In this section of the study, the approach for both selecting and assessing policy options will be described. The overall objective of this section is to make the entire selection and assessment process as transparent and robust as possible. Therefore, the process rests upon three key pillars:

- 1) All potential policy options which have been listed in the tender specifications and discussed/refined at the EMAS stakeholder workshop will be assessed. This is further enhanced by the evidence found in the ex-post analysis (e.g. desk research, interviews and questionnaire). It means that no option will be discarded without a thorough analysis.
- 2) The assessment process includes both a qualitative and a quantitative approach and be based on criteria used (effectiveness, efficiency, etc.) in the ex-post part of the study to ensure a profound and comparable analysis of options.
- 3) The assessment criteria take into account the need to evaluate the specific contribution of each option to achieve the objectives defined by the European Commission for EMAS, namely to help minimise the environmental impact of production and increase the efficient use of resources through actions to improve the environmental performance of organisations who voluntarily join the scheme.

The selection and assessment process is based on six steps:

- 1) Selection of policy options
- 2) Scoping of policy options

- 3) Description of the assessment method
- 4) Assessment of options against defined criteria
- 5) Assessment of potential synergies between policy options
- 6) Recommendations on most favourable policy options

The first three provide the (theoretical) groundwork for the actual assessment process, covered in steps 4 to 6 (chapter 7).

3.3.2. Step 1: Selection of policy options

Various sources were used to select policy options, including stakeholder feedback. The study's tender specifications provided the basis for choosing the policy options listed below. They were divided into four categories: phasing out EMAS, slight modifications, major modifications, EMAS mandatory. In a second step, the project team used evidence and views gathered from the evaluation and the workshop to reinforce and refine existing options included in the tender specifications and in certain cases to develop entirely new options or sub-options. A final scan of all options was conducted by the project team in order to ensure that no main line of thought has been left out.

1) Initial selection

- Sources: Tender specifications and the contractor's proposal

2) Refining of existing options and adjustment of selection (two parallel sub-steps)

- Sources:
 - Evaluation, including desk research, case studies, survey and interviews as research instruments
 - EMAS stakeholder workshop on discussion of findings (see Annex VI)
 - International EMAS workshop organised by the German EMAS Advisory Board (information is available in Annex VII)

3) Final plausibility check by the project team

- Source: Discussion among team members, validation by European Commission

3.3.3. Step 2: Scoping of policy options

In this step, the full list of policy options is presented. Policy options are listed below. Each policy option includes several key elements which will be evaluated as part of the option. The policy options are divided into three general paths. These paths each consider future possible developments of EMAS on a different level. Path II and III can both include options which lead to slight or major modifications:

Path I: Keeping EMAS as it is. The underlying rationale is that "Keeping EMAS as it is" can only be a viable option if it turns out that no significant barriers or insufficient drivers and unclear benefits exist which prevent achieving the two principal objectives of the EMAS Regulation: a) to improve the environmental

performance of registered organisations; and b) to create the greatest possible impact by increasing the number of registered organisations. The assessment of the option is drawing on the results of the ex-post analysis. The definition of the option is important for the assessment of modification options in that it serves as the baseline for path II & III options.

- Path II: Modifications. Barriers as well as weak drivers and unclear benefits were identified in the ex-post analysis of this study as causes for why the two objectives have either not been met or results are inconclusive. Against the background of the study's findings of the ex-post analysis of the scheme, which is reflected in the assessment of the potential impact of the path I option, path II & III policy options were developed or reaffirmed (as most of them have already been outlined in the terms of references) which directly address the identified weaknesses of the scheme. Two types of modifications exist:
 - Path II: Modifications – internal dimension of EMAS. This path examines internal modifications to EMAS. It addresses questions such as which specific EMAS elements should be modified or how the scheme can be improved as a tool for EU environmental policy.
 - Path III: Modifications – external dimension of EMAS. This path is based on the line of thought that further synergies could be sought (inter alia) between EMAS and other existing tools and schemes. These options go beyond EMAS and therefore tend to face further implementation challenges.

Path IV: Phasing out EMAS. This path deals with fundamental existential questions such as whether key EMAS objectives are being met and whether EMAS is providing true added value. The underlying rationale is that “phasing out EMAS” is the recommended choice if it turns out that following path I means the two principal objectives of the scheme cannot be achieved in a satisfying way and that path II & III options cannot solve weaknesses (e.g. insufficient drivers, barriers, unclear benefits) of the scheme identified in the ex-post analysis. Path IV stands out from options analysed under paths II & III in that the underlying rationale of path II is not to improve the scheme but to discontinue it. The option would be recommended if both keeping EMAS as it is and modifying the scheme are not considered as viable. The assessment will thus take into account findings of the path I assessment as well as the assessments of the path II & III options.

Scoping – including identifying and selecting key elements of each option – is based on the same iterative process as is the selection process described above.

3.3.4. Step 3: Description of the assessment method

The assessment includes both qualitative and quantitative elements. Apart from path I, all options are examined according to the headings below:

- 1) Rationale: discussion of findings, which support the option (or not)
- 2) Description and means of implementation: discussion of measures needed to implement the option
- 3) Potential impact of the policy option: assessment of the positive and negative impacts for the scheme and its key stakeholders

- 4) Impact profile: an assessment matrix, summarising and assessing the positive and negative impacts by way of quantified indicators
- 5) Synergy index: an assessment matrix, identifying possible synergies between the policy options considered

The first three headings make up the qualitative part of the analysis and are referred to as the first level assessment. All policy options are screened according to these three headings. Some may then be identified as unsuitable and not carried over to the second level assessment.

The fourth and fifth headings constitute the quantitative analysis and are referred to as the second level assessment. This is only carried out on options that pass the first level assessment. The methodology for the quantitative analysis is laid out in more detail below.

Qualitative analysis

Rationale

In this part the project team will provide the most relevant findings emerging from the ex-post part of the study and workshop that justify the choice of option (or not). In order to ensure comparability with the ex-post part of the study, the impact profile will follow its structure in the sense that findings from the literature review will be discussed first, followed by findings emerging from the survey, interviews respectively and case studies respectively.

Description and means of implementation

In this part, measures foreseen as well as the relevant recommendations for conceiving, planning and implementing these measures are described. A clear reference is made to the objectives specified in the ex-post part of the study (see chapter 2) to establish a link to the findings of the backward-looking analysis.

Potential impact

In this part, the potential impacts of the option will be reviewed, including an overview of the advantages, disadvantages and effort that would be required from the different actors.

Quantitative analysis

Impact profile

In order to interpret the qualitative information obtained from study, interviews and case studies in an easily accessible manner, the project team has employed a simple quantitative method to estimate the impact of various scenarios for the future of EMAS. This method consists of assigning numerical values to the impact each option would likely have on the various REFIT criteria listed below. The estimated impact in each case is based on the opinions of EMAS experts who participated in interviews and workshops and on the expert opinion of the study authors. The impact profile reflected here is not intended to be viewed as a formal impact assessment.

The assessment criteria selected for this second level assessment have been identified taking into account the following references:

- the tender of the EMAS Evaluation Study;
- the project proposal submitted by the contractors;
- the fitness check mandate for EU-EMAS and EU-Ecolabel Regulations

According to the aforementioned references, the contractors are proposing five different assessment criteria, along with the additional criterion of feasibility, as a check to what is realistically possible:

- Effectiveness: it aims to assess whether the policy option will improve the capability of EMAS to achieve its stated objectives
- Efficiency: it aims to assess whether the policy option will contribute to achieve EMAS objectives at reasonable costs
- Coherence: it aims to assess the extent to which the policy option does not contradict other interventions with similar objectives or contribute to align EMAS with other SCP policy instruments
- Relevance: it aims to assess the contribution of the policy option in increasing the relevance and validity of EMAS objectives
- EU added value: it aims to assess how the EU support to the instrument increases the added value of the option
- Feasibility: it aims to assess how realistic the implementation of a specific policy option is

Each “second-level” assessment aspect will be applied by attributing a score to each policy option, regarding the questions specified in the following table (Table 1). The individual policy options will be evaluated against the baseline scenario (“Keeping EMAS as it is”). A score will be assigned to each assessment aspect ranging from 1 to 3, where 1 represents a low impact, 2 medium impact and 3 high impact of the respective option.

Table 1: Assessment method ex-ante analysis

1 st level	2 nd level	Score
Assessment criterion	Assessment aspect	
Effectiveness	Increase in the number of registrations that the option is capable of producing (e.g. addressing the main drivers and barriers for EMAS adoption)	1: low impact – 3 high impact
	Improvement of participants' environmental performance in the areas targeted by the proposed changes	1: low impact – 3 high impact
	Increase in capability to spur eco-innovations and increase in competitiveness of the registered organisations	1: low impact – 3 high impact
	Beneficial consequences for actors other than the participants (suppliers, customers, civil society organisations, etc.) that are linked to the development of the option (indirect effect)	1: low impact – 3 high impact
Efficiency	Benefits are felt among all participants and across all sectors (EMAS registered organisations)	1: low impact – 3 high impact
	Improvement of economic performance of the participants in terms of reduction of costs or increase of competitiveness	1: low impact – 3 high impact
	Reduction of the challenges faced by SMEs participating in this scheme	1: low impact – 3 high impact
Coherence	Improvement of the consistency/ alignment of EMAS as a policy tool with the policy objectives of the Sustainable Consumption and Production and Sustainable Industrial Policy (SCP/SIP) Action Plan , the 7 th EAP, the Roadmap to a and the Resource efficient Europe	1: low impact – 3 high impact
	Contribution to overcoming unjustified overlaps, obsolete provisions and/or gaps with other pieces of EU legislation	1: low impact – 3 high impact
	Improvement of synergies with other (EMS) standards	1: low impact – 3 high impact
Relevance	Relevance in terms of driving improvements in the environmental performance of private and public organisations, making them more resource efficient and reducing their environmental impact	1: low impact – 3 high impact
	Contribution to increasing the relevance and validity of existing EMAS objectives or providing new relevant objectives for the scheme	1: low impact – 3 high impact
EU added value	The option increases the added value of EMAS (e.g. with regard to other environmental management instruments like ISO 14001) due to actions at EU-level	1: low impact – 3 high impact
Feasibility	Administrative and technical feasibility: organisational and coordination effort by the European Commission and Member States (e.g. Competent Bodies) is acceptable	1: low impact – 3 high impact

	Administrative feasibility of implementation for registered organisations/newly registering organisations	1: low impact – 3 high impact
	Budget feasibility: budget needed to implement the option is acceptable	1: low impact – 3 high impact
	Proportionality: the option leaves scope for national decisions as much as possible and does not go beyond what is necessary to satisfactorily achieve the set objectives	1: low impact – 3 high impact

As a last step, the significance of each option will be calculated with the arithmetic mean of each assessment criterion according to the following formula:

$$\sum_{i:1}^n \frac{\text{Effectiveness}_i + \text{Efficiency}_i + \text{Coherence}_i + \text{Relevance}_i + \text{EU added value}_i + \text{Feasibility}_i}{\text{Effectiveness}_n + \text{Efficiency}_n + \text{Coherence}_n + \text{Relevance}_n + \text{EU added value}_n + \text{Feasibility}_n} = \text{ex-ante option significance}$$

i: assessment criterion rating

n: total number of assessment aspects per assessment criterion

The application of the formula will give a result reflecting the significance of each ex-ante option that will range from a minimum of 1 to a maximum of 3.

Synergy index

The aim of this step is to achieve the final ranking of the options assessing the mutual benefits that can be produced by hypothetical synergies among them.

This comparative assessment will focus on the possibility of implementing the options together by pursuing potential synergies. The proposed options should be evaluated and selected also on the basis of their capability to reinforce one another and to strengthen each other's effects through complementarities with other options. For this purpose, we propose a cross-analysis of the relationship between each option and all the others. The analysis is aimed at establishing if and how the options can be used in a mutually reinforcing way, or if instead they have to be considered as alternatives to one another.

The aim will be the calculation of a synergy index in order to highlight the complementarity of the options. Each option will be crossed with the others attributing the following scores:

- 2 : strong mutual reinforcement
- 1 : synergetic
- 0 : neutral
- -1 : non-compatible
- -2 : strong non-compatibility

The cross analysis will be performed with the help of an assessment matrix where the mentioned scores will be assigned. An example of this matrix is the following:

	Option 1	Option 2	Option 3	Option 4	Option 5	Option 6	Option 7	Synergy index
Option 1		1	0	-1	2	2	-2	2
Option 2	1		2	2	-1	1	2	7
Option 3	2	2		2	2	2	1	11
Option 4	...	...	...		...	...	...	...
Option 5	...	...	...	...		...	...	...
Option 6	...	...	...	...	...		...	...
Option 7	...	...	...	...	...	...		...

The synergy index will be calculated by the sum of the scores attributed in the assessment matrix.

To identify the final ranking of the ex-ante options the result of the impact profile and the synergy index will be considered together. Any option with a negative synergy index will be automatically excluded.

3.4. Research tools

A wide range of different stakeholders are involved in applying the EMAS Regulation. Identifying differing perspectives and involving a wide range of expertise from EMAS stakeholders are crucial in making this evaluation representative and valuable for future policy decisions.

Accordingly, stakeholders' opinions were gathered in order to uncover the drivers and barriers for EMAS registration, the costs and benefits of applying the scheme at EU, Member State and organisational level, as well as the general framework conditions which have an impact on the application of EMAS. The project team has carefully identified all stakeholders that would be directly affected by the different scenarios for EMAS's future and ensured their involvement in the evaluation process through representative surveys, interviews, a technical working group and an upcoming workshop. At this preliminary stage in the EMAS evaluation process (which may lead to a revision process), one focus is on direct EMAS stakeholders, meaning those which are directly affected by the scheme or play a direct role in the operation of the scheme:

Direct EMAS stakeholders:

- The European Commission - Directorate General for the Environment
- Competent Bodies
- Accreditation and Licensing Bodies
- Environmental verifiers

- EMAS registered organisations of different types (public/private, large/small, national/global, manufacturer/service provider)

In addition, the project team asked stakeholders for feedback which are not directly linked to the scheme but nevertheless have profound knowledge of the scheme. The focus was on stakeholders who are using a comparable scheme (ISO 14001 certified organisations) or organisations which have left EMAS in order to take in various view and arrive at balanced conclusions.

This study uses a combination of the following research tools, which are described in detail below: Desk research, online questionnaires to both registered organisations and Member States' representatives; case studies and interviews; feedback from organisations not part of EMAS; an analysis of environmental statements; data collected at workshops; and data collected from technical working group discussions. This host of methods was used in order to cross-check results and ensure the robustness of the findings.

3.5. Desk research

The literature review forms the basis of all analysis conducted as part of this EMAS evaluation study. The literature served two primary purposes. Firstly, the desk research contributed to the identification of key issues to discuss with administrators and stakeholders during the interviews. Secondly, this literature review supports, verifies and complements the analysis of the data gathered from the interviews and the online surveys.

A solid literature basis exists on environmental management instruments in general. In the case of EMAS specifically, however, certain aspects have not yet been much explored in the literature (e.g. the question of whether EMAS registered organisations improved their performance). Nonetheless, the results of studies focusing on other types of Environmental Management Systems (EMS) can often provide valuable insights in the case of the EMAS evaluation. Accordingly, a detailed list of scientific databases, books and articles in national and international journals and reviews, proceedings of conferences, project reports and previous studies carried out on behalf of public/private institutions was drafted. The investigation focused on Europe, but also covered global aspects when appropriate.

Apart from academic literature, the study also took into account grey literature that pertains to the evaluation of EMAS, such as organisations' environmental statements, or online articles concerning the costs and benefits of environmental management (e.g. from NGOs, ministries, or business associations).

Having defined the investigation's objectives and boundaries, search criteria was selected for research using search engines/tools, keywords, and for ranking sources (in terms of reliability, representativeness, verifiability, etc.).

The project team used a matrix approach to develop the research questions, first identifying, selecting, and critically appraising relevant issues. As a result, a central database of collected references was established. The references were organised into several categories: chronological, thematic, trend, methodological, current-situation, and questions-for-further-research.

In the individual chapters, studies on other EMS standards (e.g. ISO 14001) in European countries and (if present) in other non-EU countries are described first, followed by studies on EMAS. This structure was chosen to analyse whether differences exist

between other instruments (mainly ISO 14001) and EMAS with regard to the topics covered in the individual chapters.

3.6. Survey of EMAS registered organisations

3.6.1. Questionnaire

Feedback from EMAS registered organisations forms an essential source of information for evaluating EMAS. In order to investigate organisations' experiences with EMAS, a survey was designed that enquired about respondents' decisions to choose and implement the scheme, the results they have experienced, and their perceptions of EMAS and its future.

With these goals in mind, the project team drafted a questionnaire containing 40 questions grouped into 10 sections (the full questionnaire can be found under Annex I):

- Section 1: Organisation Details
- Section 2: EMAS and Future Policy Scenarios
- Section 3: EMAS Drivers, Barriers, Costs and Benefits
- Section 4: EMAS III (Regulation (EC) 1221/2009)
- Section 5: EMAS Performance
- Section 6: EMAS and Communication
- Section 7: EMAS and Competitiveness
- Section 8: EMAS and Innovation
- Section 9: Implementation of EMAS and other voluntary instruments
- Section 10: EMAS's Business Model

The questionnaire was sent for feedback to the Commission as well as to over 50 EMAS stakeholders and experts before achieving its final form.³ Although nearly all questions were multiple choice, comment boxes were also inserted to allow organisations to add information or detail. Most questions employed the 1-5 Likert scale, designed to reduce ambiguity in answers by providing respondents with a range of values to choose from (e.g. ranging from "1 = option is not effective at all" to "5 = option is very effective", or ranging from "1= strongly disagree with the option" to "5= strongly agree with the option"). In most cases, the overall results from these questions will be presented as the average value with a standard deviation. Any standard deviation value greater than 1 was interpreted as indicating split views among respondents. In order to reduce bias, respondents remained anonymous and could choose to skip any questions they could not or did not want to answer.

³ Stakeholders include all members of the Article 49 EMAS Steering Committee, and external EMAS and EMS experts from the Technical Working Group.

The questionnaire was translated from English into German, Italian and Spanish, thereby providing a national language version for the majority of organisations. All four versions of the questionnaire were uploaded onto an online survey platform. PDF versions were also made available for download via adelphi’s file-sharing platform.

The project team obtained e-mail contacts for all EMAS registered organisations from the EU EMAS Register and several EMAS Competent Bodies. All EMAS registered organisations received e-mails from the project team containing links to the online survey and PDF download and explaining the reasons behind the survey. EMAS Competent Bodies were also informed of the survey’s distribution and asked to encourage organisations in their countries to take part. The survey remained online and available from 5 June - 29 June 2014. During this time period, an additional reminder was sent to the organisations. By request, several participants were granted extensions until 4 July 2014, when the data collection phase officially closed.

3.6.2. Description of the survey sample

A total of 467 EMAS-registered organisations filled out the online questionnaire, giving an overall response rate of 11.5%. Compared to other Europe-wide surveys of EMAS registered organisations, this response rate is the highest achieved to date and can be considered to be broadly representative of the EMAS population.

The response rate in the four countries with the highest numbers of EMAS registrations (Austria, Germany, Italy, and Spain – all with over 200 registered organisations) ranged from 8% to 11%, mirroring the rate for the whole population. Although organisations in these four countries make up the vast majority of both the EMAS population and the total sample (approximately 80%), the proportional rate of response was actually slightly higher for countries with fewer registrations (see Table 2 below). Therefore, while the four “leading” countries produced the vast majority of the responses, they are not overrepresented in the sample as a whole.

Table 2: Response rate by country, grouped by total number of registrations

	Sample	EMAS Population	% responding
Countries with more than 200 EMAS Registrations (high numbers)	376	3566	10.5%
Countries with 20-200 EMAS Registrations (medium)	59	388	15.2%
Countries with fewer than 20 EMAS Registrations (low numbers)	12	74	16.2%

In a country-by-country comparison, the response rates span the complete range of 0-100% (see Table 3). However, all cases with extremely low or high rates appear in countries with low numbers of registrations (fewer than 20). In the group of medium registration countries (those with 20-200 registrations), the Czech Republic (32%), Greece (46%) and the United Kingdom (25%) had noticeably higher levels of participation, while very low response rates were noted in Cyprus and Poland (each 2%).

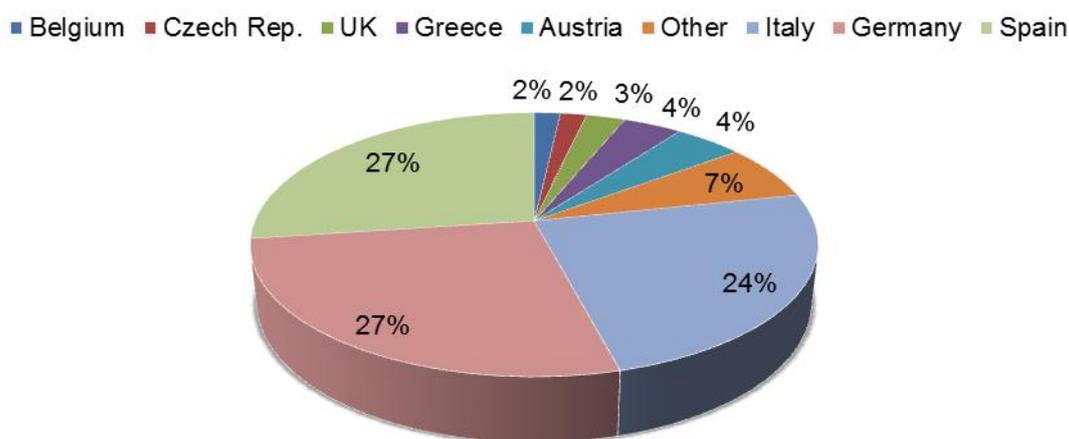
Table 3: Response rate by country and EMAS population

Country	EMAS Population ⁴	Sample	% responding
Austria	249	21	8%
Belgium	42	8	19%
Bulgaria	3	0	0%
Croatia	0	0	0%
Cyprus	51	1	2%
Czech Republic	25	8	32%
Denmark	54	6	11%
Estonia	6	1	17%
Finland	4	0	0%
France	19	1	5%
Germany	1228	122	10%
Greece	39	18	46%
Hungary	26	1	4%
Ireland	4	1	25%
Italy	1017	110	11%
Latvia	0	0	0%
Lithuania	8	0	0%
Luxembourg	2	0	0%
Malta	1	0	0%
Netherlands	5	1	20%
Norway	18	1	6%
Poland	45	1	2%
Portugal	58	4	7%

⁴ Sources: <http://ec.europa.eu/environment/emas/register>; <http://www.emas-register.de/> (both as of 1 June 2014)

Romania	5	2	40%
Slovenia	1	1	100%
Spain	1072	123	11%
Sweden	16	4	25%
United Kingdom	48	12	25%
Other ⁵		20	
Total	4048	467	11.5%

Figure 1: Distribution of the survey sample by country



Given the length and complexity of the questionnaire, language may account for part of the difference in participation rates. While organisations in Austria, Germany, Italy, Spain and the United Kingdom could participate in surveys in their national languages, all other countries received the link to the English version of the questionnaire.

Organisation size

As previous research indicates that the size of an organisation can affect its perception and experiences with EMS, the survey sample was also analysed according to this criteria. Large organisations (those with more than 250 employees⁶), who may be more

⁵ The category "Other" is comprised of the following two groups: 4 organisations that gave the non-EU country of their main headquarters (Korea, Singapore, USA and Mexico) and 16 organisations that did not indicate their location.

⁶ In this report, we separate organisations by size according to the EU's employee criteria for small and medium enterprises defined in 2003/361/EC (see: http://ec.europa.eu/enterprise/policies/sme/facts-figures-analysis/sme-definition/index_en.htm). Because public organisations cannot be considered enterprises with annual turnover, we instead refer to micro, small, medium and large organisations based only on the number of employees.

likely to have employees with a high degree of English fluency, contributed to the study in much higher numbers than small and medium (10-250 employees) and micro (less than 10 employees) organisations. Nearly 22% of large EMAS-registered organisations participated versus 10% of small and medium organisations and only 6% of micro organisations (see Table 4). 12 organisations did not report the number of employees. Because they form a much larger part of the total EMAS population, however, the highest absolute number of responses (262) came from small and medium organisations.

Table 4: Response rate by organisation size

Organisation size	Sample	EMAS population	% responding
Micro (<10 employees)	42	856	5.8
Small and Medium (>10 employees < 250)	262	2505	10.5
Large (employees >250)	151	687	22.0

When breaking responses down by the organisations' annual turnover (see Table 5), a similar pattern emerges. In general, the sample size decreases along with the annual turnover. At least among organisations that reported their turnover - public organisations, for example, were not asked to do so - the survey sample appears to have an overrepresentation of larger companies. The greater resources of large organisations offers an even stronger explanation of their high participation rates than language, as they are more likely to have employees dedicated solely to environmental management.

Table 5: Distribution of survey sample by turnover

Annual turnover	Sample
Less than 1,000,000 euro	7.7%
1,000,001- 2,000,000 euro	6.3%
2,000,001 - 10,000,000 euro	24.4%
10,000,001 – 50,000,000 euro	21.1%
Higher than 50,000,000 euro	40.6%

Length of EMAS Registration

The influence of EMAS on an organisation over time - including its ability to demonstrate EMAS's tenet of continual environmental improvement - forms another important aspect of this study. The study sample was therefore also broken down by the length of time

the respondents had been EMAS registered. Responses were split fairly evenly among the five groups (see Table 6).

Organisations that adopted EMAS before 2002 - the group that has been registered for more than 12 years and experienced at least four renewals of registration - comprise a slight plurality (26%). At 15%, the smallest share of the sample is represented by companies which registered after 2011 and thus have not yet had the opportunity to renew their EMAS registrations. However, the variation is relatively small and the total sample represents a good spread of both recent and long-time EMAS registered organisations.

Table 6: Distribution of sample by length of registration

Length of EMAS registration	Sample
Adoption in 2002 or before	26.3%
Between 1/2003 and 12/2005	17.3%
Between 1/2006 and 12/2008	21.9%
Between 1/2009 and 12/2011	19.4%
After 1/2012	15.2%

Discovering EMAS

Also analysed in this study are the reasons behind organisations' decisions to join EMAS. As part of this investigation, one of the first survey questions asked organisations how they came to find out about EMAS. By far the largest group of respondents, almost 40%, obtained the information from institutional channels such as Competent Bodies or other public institutions. Only a very small share of organisations reported that they had found out about EMAS through their customers (7%) or suppliers (6%) – see Table 7 for details.

Table 7: Sources of information about EMAS

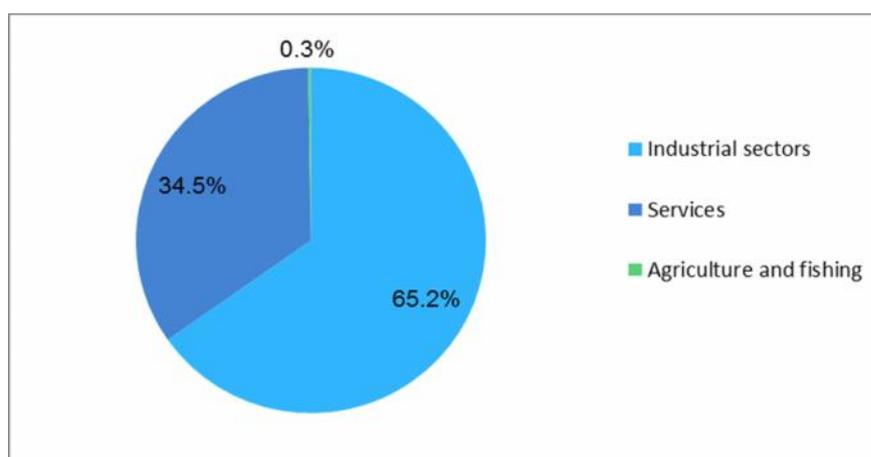
How organisations discovered EMAS	Sample
From institutional channels (e.g. Competent Bodies, other public institutions)	39.7%
From customers	6.6%
From suppliers	6.4%
From competitors	2.8%

From technical/scientific reports or conferences	13.9%
From the media (press, TV)	4.2%
From industrial associations	9.7%
Others	16.8%

Sectors

A final aspect important for analysing the representativeness of the sample is the sector (indicated by NACE code) to which the responding organisation primarily belongs. Breaking the survey sample down into industrial, service and agricultural sectors, nearly two thirds (65.2%) of respondents come from industry, while organisations from the service sector make up 34.5% of the sample (see Figure 2).

Figure 2: Distribution of survey sample by type of sector



Looking more closely at subcategories in the industrial and service sectors, the response rates are in general slightly lower than the overall response rate of 11.5% for the survey. Among the six leading industrial sectors (see Table 8), NACE 25 (fabricated metal products) and NACE 10 (manufacture of food products) were somewhat underrepresented, with only 7% and 8% of all organisations in those respective sectors participating in the survey. In contrast, with response rates around 14%, the chemicals (NACE 20) and paper (NACE 17) sectors each had slightly higher than average participation rates.

Table 8: Response rate in the leading industrial sectors

Leading industrial sectors	Sample	EMAS Population	% responding
'Waste and disposal': NACE code 38	40	438	9.1%
'Fabricated metal products': NACE code 25	13	188	6.9%
'Electricity, gas': NACE code 35	25	257	9.7%
'Chemicals': NACE code 20	25	178	14.0%
'Manufacture of food products': NACE code 10	12	156	7.7%
'Manufacture of paper and paper products': NACE code 17	11	80	13.8%

Among the six leading service sectors (see Table 9), participation rates were somewhat lower. The health care sector (NACE 86) had the highest rate, at approximately 13%. The other five sectors fell below the 11.5% overall participation rate for the survey, some significantly. These numbers indicate that service organisations may be slightly underrepresented in the survey as whole.

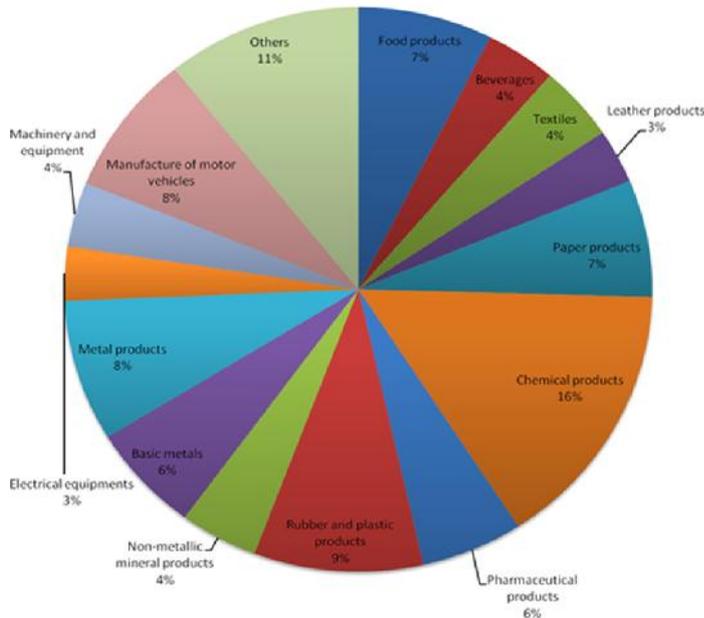
Table 9: Response rate in the leading service sectors

Leading service sectors	Sample	EMAS Population	% responding
'Public administration': NACE code 84	40	436	9.2%
'Accommodation': NACE code 55	11	229	4.8%
'Activities of membership organisations': NACE code 94	7	220	3.2%
'Education': NACE code 85	13	200	6.5%
'Architectural and engineering activities': NACE code 71	6	116	5.2%
'Human health activities': NACE code 86	8	61	13.1%

Within industry, a closer look at the different manufacturing sectors in the sample reveals that the highest number came from the chemical sector (16% of all manufacturing respondents). The four manufacturing sectors that are among the most

common industrial NACE codes for EMAS registered organisations (see Table 8) can also all be found among the survey sample's most common manufacturing sectors, as reflected in Figure 3 below.

Figure 3: Manufacturing sectors as represented in the sample



3.6.3. Summary

The 11.5% response rate across the EU-27 and Norway reflects both overall and in detail a very representative sample of EMAS registered organisations. Other surveys such as the BRAVE study (SSSUP 2013) which have contacted organisations throughout Europe - rather than just focusing on one country or region – have received reliable data but not such a high rate of response.

Furthermore, though large organisations are somewhat overrepresented and micro organisations and the leading service sectors slightly underrepresented, the overall sample achieved an excellent balance of responses. Micro, small, medium and large EMAS registered organisations from North, South, East and West Europe all participated, as did a sample from all the leading industry and service sectors. Countries with high numbers of registrations showed proportional participation rates, while the countries with the lowest participation rates each have fewer than 10 registered organisations.

The survey is representative of the EMAS population as a whole and thus provides a valuable and accurate tool for analysing the effectiveness of the EMAS scheme to date. The results will be discussed according to topic in Section 4 of this report.

3.7. Survey of Member States

3.7.1. Questionnaire

In order to include a more quantitative element in addition to the interviews conducted with Member State Representatives and Competent Bodies, a questionnaire was sent out to all Member States (the full questionnaire can be found in Annex II). The questionnaire was designed to obtain more information on the activities carried out by Member States in the context of EMAS.

This questionnaire included questions divided into the six following sections:

- Section 1: Member State Details
- Section 2: General Budget
- Section 3: Member State Promotion & Information Activities (Articles 33 & 34)
- Section 4: Compliance (Article 32)
- Section 5: Awareness/Image of EMAS
- Section 6: Future Scenarios for EMAS

Nearly all questions were multiple choice, and in some cases comment boxes were inserted to allow respondents to include additional information or detail. For certain questions, only one answer was possible; for others, respondents could select as many options as were applicable. Finally, some questions employed the 1-5 Likert scale, designed to reduce ambiguity in answers by providing respondents with a range of values to choose from (e.g. ranging from "1 = option is not effective at all" to "5 = option is very effective").

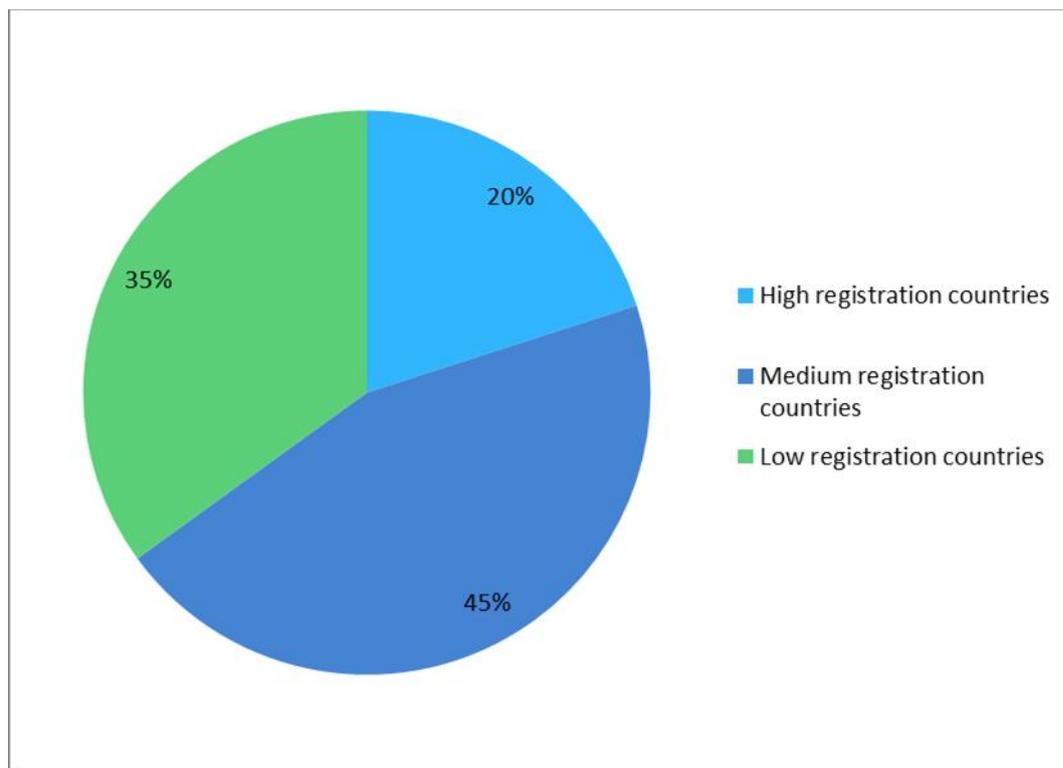
The survey was sent out to all participating countries (EU and EEA) on 20 June 2014 and participants were given until 9 July 2014 to complete the questionnaire. Since data collection took place during the summer months and many participants were on holiday, a total of three reminder emails were sent and late questionnaires were accepted until 18 August.

3.7.2. Description of sample

A total of 20 complete and 6 partial responses were received. Most of the Member States and Competent Bodies that also participated in interviews elected to answer the survey questions verbally rather than in writing, accounting for several of the partial responses.

The partial responses largely provided information on the fees to registered organisations set by the Competent Bodies. Of the respondents that provided complete responses, 20% were from countries with more than 200 registrations (high registrations), 45% from countries with 20-200 registrations (medium registrations), and 35% from countries with less than 20 registrations (low registrations). All of the high and medium registration countries responding provided complete answers, while only 44% of the respondents from low registration countries did so. This difference in response rates may be due to the fact that the respective countries do not have as much experience with EMAS on which to base their opinions, precisely because of their the low numbers of registered organisations (in many cases five or less).

Figure 4: Distribution of survey sample among countries



3.8. Methodology of case studies/interviews

With the aim of adding further insights to the results obtained from the EMAS evaluation study surveys, interviews and case studies with various kinds of stakeholders were carried out. The aim of these interviews was to obtain more specific information on EMAS, to expand on the aspects of the scheme investigated in the survey and to find out more EMAS's application in practice.

Interview partners were:

- Direct EMAS stakeholders: Environmental verifiers, Competent Bodies, EMAS registered organisations of different types (public/private, service provider/manufacturer, large/SME, etc.)
- Indirect stakeholders: Non-EMAS registered organisations, organisations that withdrew from EMAS, representatives of national ministries for the environment, representatives of standard-setting bodies (e.g. GRI, ISO)

Interviews were conducted by phone or face to face as part of on-site visits during the period from May to July 2014.

In the choice of potential interview respondents, care was given to contacting interviewees from a wide variety of Member States to ensure the inclusion of many different perspectives and experiences. Table 10 provides details on the distribution of conducted interviews. Because of their high registration numbers and thus proportionately higher numbers of EMAS stakeholders, more stakeholders from Austria, Germany, Italy and Spain (countries with high number of registrations) were interviewed compared to those from medium and low registration countries.

The interviewers followed set guidelines for conducting the interviews, including core questions. For each interview, the interviewer filled out a template document that included a summary of the main points emerging from the discussion.

Interviews addressed a number of topics related to EMAS. First of all, the interviewer collected details regarding the interviewee's organisation: name, year of foundation, number of employees, sector of activity, country, type of stakeholder (environmental verifier, Competent Body, Member State, EMAS registered organisation, non-EMAS registered organisation, organisation that withdrew from EMAS), role of the interviewee.

Then interviews aimed to collect information useful for ex-post evaluation: information related to the interviewees' evaluation of and/or the organisation's experience of EMAS costs and benefits, drivers and barriers; information on the organisation's environmental performance, interviewees' evaluation of and/or the organisation's experience of the links between EMAS and competitiveness; and the interviewee's evaluation of and/or the organisation's experience of the links between EMAS and innovations.

Another aspect investigated information relevant for the EMAS management approach and organisational structure: information related to the administrative functioning of the EMAS scheme at institutional level, i.e. the Member State, and Competent Body and Accreditation and Licensing Body level. This section also aimed to collect both descriptive information and opinions on the effectiveness and efficiency of the actual business model.

Data and information useful for the ex-post and the ex-ante evaluations were collected. With regard to ex-ante, these points included information related to the interviewees' evaluation of and/or the organisation's experience of the implementation of other voluntary environmental instruments and their possible future integration with EMAS. Where applicable, respondents were asked for information related to the relationship between EMAS and ISO 14001. Information obtained for the ex-post evaluation related to interviewees' evaluation of the effectiveness of the different options concerning the future of the EMAS scheme, its ability to guarantee continuous environmental performance improvement, and its contribution to the achievement of EU sustainable consumption and production objectives. Interviews thus also collected information on the possible extension of the EMAS core performance indicators.

In total, 2 case studies and 30 interviews were conducted. The case studies focused on the application of EMAS outside Europe (EMAS Global) and on an EMAS cluster approach. Information from the case studies helped to develop the analysis of Tasks 2 and 3. The full case studies are included in Annex III.

Table 10: Type of interviewees and countries of origin

Countries of origin of interviewees	
Environmental verifiers	Belgium
	Italy
Competent Bodies	Belgium
	Bulgaria
	Denmark
	Estonia
	Finland

	Italy
	Spain
	Spain (regional)
Member State Representatives	Poland
	United Kingdom
EMAS registered organisations	Austria (public organisation)
	Estonia (public organisation)
	Germany (small organisation)
	Italy (cluster case approach)
	Spain (cluster case approach)
	France
	Italy (public organisation)
	Spain (public organisation)
	United Kingdom (large organisation)
Non-EMAS registered organisations	Bulgaria
	Estonia
	Germany
	Italy
	Spain (3 companies)
Organisations that withdrew from EMAS	Italy
	Spain

Interviews were conducted with environmental verifiers from a high registration (Italy) and a medium registration country (Belgium).

The study included interviews with a number of Competent Bodies from different countries. Several have particular added value for the study. For example, the interview with the Danish Competent Body is especially relevant in view of Denmark's high numbers of ISO 14001 certifications. This interview thus enriched the study by providing an opportunity to compare EMAS with another kind of environmental management tool, as did the interview with a Member State representative from the United Kingdom, also a country with high ISO 14001 certifications. The sample of interviews also included Competent Bodies representing Member States such as Bulgaria and Estonia, which joined the EU comparatively recently. The Member State representative from Poland provided the additional perspective of a "new" Member State that has nonetheless had ten years of experience with EMAS.

Seven organisations and two cluster case approaches were included in the interviews with EMAS registered organisations. Among these, four organisations and both cluster cases represent high registration countries; the remaining three represent medium and

low registration countries, including a relatively new Member State, Estonia. Indeed, this aspect allowed for a comparison of the different experiences of countries with different levels of “EMAS maturity”.

3.9. Feedback from organisations leaving EMAS or not part of EMAS

As mentioned above, interviews were conducted with several organisations that either withdrew from EMAS or decided not to take part in EMAS in the first place. Details are provided below. In addition, the German Competent Body provided a summary of reasons organisations gave for withdrawing from EMAS.

Interviews with organisations

Seven interviews were conducted with companies engaged in environmental improvement but not EMAS registered. They belong to countries with a high number of EMAS certifications (Italy, Spain and Germany) and also to new European Member States, as Bulgaria and Estonia. Bulgaria is also a country with a high number of ISO 14001 registrations.

In addition, two interviews were conducted with representatives of organisations that had abandoned EMAS. Both belong to high registration countries.

Feedback from a Competent Body

This study also took into account information gathered by the Competent Body of Germany, a high registration country, on the reasons organisations have given for leaving EMAS since 2009. A large number of organisations of different sizes and from different sectors provided the comprehensive and wide-ranging list of reasons, making it likely that these reasons extend beyond Germany to EMAS registered organisations in other Member States. The information provided has mainly been used in Chapter 4.3 on costs & benefits and drivers & barriers. Annex IX presents the full list of reasons given.

3.10. Environmental statement analysis

3.10.1. Overview

The methodology in this section applies to the environmental statement analysis conducted for this study, the results of which are discussed in Chapter 4.4 on EMAS Performance.

As addressed in the EVER study (Iraldo et al. 2006) and also as reflected in other existing literature, demonstrating a connection between EMAS and the quantitative and qualitative environmental improvement of organisations is a task with considerable methodological difficulty. To begin with, assessing EMAS’s contribution to environmental performance improvement in registered organisations requires both a definition of “improvement” and adequate measures of “environmental performance”. Four types of improvement can be defined, the first two of which will be examined in the quantitative analysis in Chapter 4.5:

Absolute improvement: Do organisations improve their environmental performance at all when they adopt EMAS? When using EMAS core indicators, which are the primary indicators used in this study, improvement is measured relative to an organisation’s output, thereby focusing on efficiency.

Continuous improvement: Can organisations sustain the positive improvement trend over time? However, given that the environmental statement analysis focuses on performance over a period of 2 years, the results may not be fully conclusive in this regard.

Relative improvement: Does the performance trend of EMAS registered organisations differ from the trend of organisations without EMS or with other types of EMS?

Target-led improvement: Are organisations able to attain the targets set in their environmental programme, or targets set by national and European environmental policy?

Establishing a reliable causal relationship between performance improvement and EMAS, and identifying suitable indicators to operationalise environmental performance is, practically and methodologically difficult. To sum up these difficulties lie in three main reasons:

- 1) Choosing indicators for environmental performance is both challenging in terms of scientific relevance and potentially controversial because it involves a judgment about the importance of certain environmental issues as opposed to others.
- 2) Because there is considerable inherent variability of environmental performance over time, often caused by factors external to the actual business operations, data sets of a considerable size are needed to guarantee the scientific robustness of results that would attribute improved performance to EMAS implementation. These data sets are often limited and time-consuming to analyse.
- 3) There is the question of “where to draw the line” when it comes to indirect effects that are created outside the individual registered organisation, for example by/for suppliers, customers or the local community. The study aims to uncover spill-over effects, e.g. when suppliers and other related stakeholders take on their own EMS encouraged by EMAS or organisations abandoning EMAS but keep the EMS features of EMAS (without the official registration).

While absolute and continuous improvement can be extrapolated from a sufficiently long-term sample of EMAS environmental statements, determining relative and target-led improvement present additional challenges. For relative improvement, it is difficult to obtain complete and comparable data sets because reporting formats still vary considerably and few organisations publish long time-series. For non-EMAS registered organisations, data availability is often poor, as not all countries require companies to disclose environmental information. For EMAS alone, target-led improvement would involve an extensive analysis of all European and national environmental policy goals and regulations as well as gathering non-obligatory data on targets from a reliable sample of organisations.

Likely for those reasons, the recent studies on EMAS performance (2005 and later) have nearly all focused on absolute improvement and have employed as methods either an analysis of interview and survey data collected from organisations (Iraldo et al. 2006; 2009) or of environmental indicators extracted from EMAS registered organisations' independently verified environmental statements (Daddi et al. 2011; Skouladis et al. 2013; Petrosillo et al. 2013). Testa et al.'s (2014) study also examined continuous and relative improvement, using data from the European Pollutant Emissions Register. Because the E-PRTR does not list the environmental statements of EMAS registered

organisations in a separate category, it is unclear which data from the E-PRTR the study analyses.

While this study's investigation in Chapter 4.4 examines only the first two aspects (absolute and continuous improvement), the literature referred to in the first section of that chapter also sheds light on EMAS's performance relative to other EMS. Testa et al (2014) show that EMAS registered organisations perform better in the longer term than companies with only ISO 14001, while Darnall et al. (2008b) indicate that organisations with certified EMS tend to perform better than those with uncertified or no EMS. The combined conclusion from the literature thus indicates that EMAS registered organisations demonstrate better performance in the long-term than their counterparts without an EMAS registration.

3.10.2. Choice of indicators

As described above, significant challenges exist when selecting reliable indicators of firms' environmental performance. In order to ensure that the indicators selected have both a clear and significant environmental impact and can also be compared among EMAS registered organisations, this study uses the seven EMAS III core indicators as its basis for analysis. They are as follows:

- total direct energy use (Mwh/unit of production)
- annual mass flow of different materials used (tonnes/unit of production)
- total annual water consumption (m³/unit of production)
- total annual generation of waste (tonnes/unit of production)
- biodiversity (m²of built-up area/unit of production)
- total annual emission of greenhouse gases (tonnes of CO₂ equivalent/unit of production)
- total air emissions, including at least emissions of SO_x, NO_x and particulate matter (PM) (tonnes/unit of production)

There are several advantages to this approach. In contrast to other standards such as ISO 14001, EMAS registered organisations have been required since 2010 to include most or all of these indicators in their environmental statements. The statements thus ensure accessibility to that particular data. Furthermore, an independent third party has validated the environmental statements and the indicators, lending additional credence to their accuracy. Finally, the indicators are presented in relation to the organisations' production units, allowing for a straightforward and methodologically reliable comparison between different years.

3.10.3. Data sets and selection

The majority of data used in the analysis of organisations' performance based on the EMAS III core indicators stems from a data collection round in June 2014 from the environmental statements of 122 EMAS registered organisations.

Description of environmental statements sample

The EMAS registered organisations' environmental statements were downloaded from the EU EMAS Register, the EMAS environmental statement collection of the Office of the German EMAS Advisory Board, and in some cases from the websites of EMAS registered organisations first identified through the European EMAS register.

The 122 environmental statements were selected according to the following criteria:

1) Sector, as expressed by NACE code. In order to ensure a broadly representative sample, statements were selected from the six most common sectors for EMAS registrations. Together, these NACE codes represent approximately 29% of total EMAS registrations (see Table 11).

Table 11: Number of registered organisations per selected NACE codes

Sector	NACE code	Number of registered organisations
Waste collection, treatment and disposal activities; materials recovery	38	426
Manufacture of fabricated metal products, except machinery and equipment	25	141
Electricity , gas, steam and air conditioning supply	35	253
Manufacture of chemicals and chemical products	20	154
Manufacture of food products	10	138
Manufacture of paper and paper products	17	72

Source: <http://ec.europa.eu/environment/emas/register/reports/reports.do>. As of: 1 February 2014.

In order to have a sufficiently large sample to reflect performance trends reliably, the goal was to analyse at least 120 statements, or slightly more than 10% of the total for these six sectors. This target was met and exceeded (122 statements were analysed).

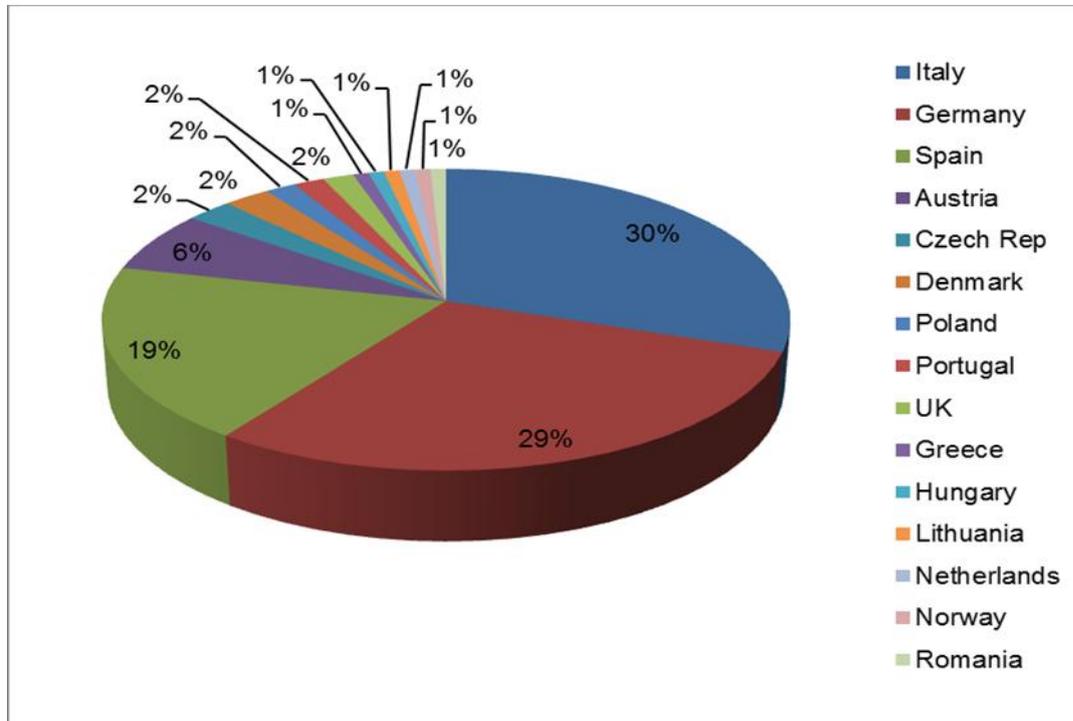
2) Country. The sample also broadly represents EMAS influence on performance throughout Europe⁷, including both “older” and “newer” Member States and countries with high and low numbers of EMAS registrations. A geographic distribution of statements was calculated based on the relative numbers of total EMAS registrations in the respective countries on 1 June 2014. The final distribution of the 122 statements is depicted in Figure 5 below.

Italy (30% of total EMAS registrations), Germany (29%) and Spain (23%) have by far the highest numbers of EMAS registrations and thus make up the majority of statements analysed. At approximately 6% of the sample (and 6% of all EMAS registrations), Austria also had more than five statements included in the data set. Most of the remaining countries had EMAS registration numbers that averaged out to one environmental statement or fewer in a sample of 122, with approximately two statements each for the United Kingdom, Denmark, Portugal, Cyprus and Belgium. In order to guarantee a fairly even distribution throughout Europe, some countries with five or fewer registrations

⁷ In this report, “Europe” refers to the European Union plus the participating countries in the European Economic Area. For EMAS purposes, this includes the 28 Member States plus Norway.

were also chosen according to availability of statements and geographic location. A small number of countries could not be included in this data because the environmental statement data did not match a majority of our criteria (incompleteness, unavailability or low quality of performance indicator values).

Figure 5: Origin of environmental statements by country

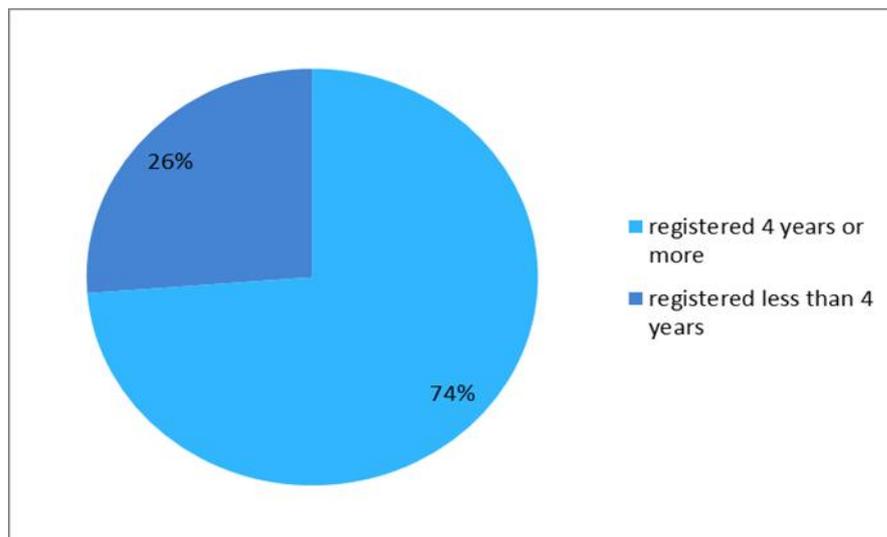


3) Year. In order to capture the effects of the EMAS III Regulation, to include the most recent environmental performance trends, and to ensure an adequate selection of statements with the current EMAS core indicators, the sample includes only environmental statements dated 2010 or later.

This data also enabled a division of the sample into companies that have been EMAS registered for more than four years (established EMAS registered organisations) and those that have been registered for four years or less (relatively new EMAS registered organisations). By comparing the two groups, the project team could thus identify trends in continual improvement. About three quarters of companies in the sample had been registered for longer than four years at the time of the statement analysis, while the remaining quarter were relative newcomers (see Figure 6).

The sample thus generally represents EMAS registered organisations, the majority of which have been registered for longer than four years. Regardless, it needs to be noted that the larger sample size for longer registered organisations could mean more robust results in this study for such organisations than those for more newly registered organisations. This holds particularly true for those indicators in which a relatively small number of companies reported data.

Figure 6: Environmental statement sample by year of registration



4) Reporting data from multiple years. So that improvement in performance (or lack thereof) could be identified, statements included environmental data and indicators from multiple years. Our analysis looked at years "n" (most recent) and "n-2", usually employing data from the same statement. In some cases, two environmental statements that lay two years apart were used from the same organisation to supply the data. Considering the performance improvement (or lack thereof) over a longer period of time would have provided a more accurate picture of performance trends. This was however not possible due to a lack of sufficiently high-quality data from existing environmental statements over a larger number of years.

5) Clarity of presentation. Although this was not an obligatory criterion for inclusion or exclusion, statements which included pre-calculated and independently verified core indicators were preferred. However, a number of statements included only raw data which the project team then calculated into indicators.

CO₂ emissions inventory

While data on the following six core indicators: energy use, material efficiency, water consumption, waste generation and air emissions was collected from the environmental statements, the information on greenhouse gas emissions stems from the carbon dioxide (CO₂) emission inventory carried out in 2013 by adelphi as the EMAS Helpdesk. This inventory involved the in-depth analysis of environmental statements from 129 EMAS-registered organisations from 40 sectors and analysed the trend in their CO₂ emissions between the years 2010 and 2011. As this data set is very recent and already available, it is used in this study to show the performance trend for the greenhouse gas core indicator. As for the other core indicators, performance values for two separate years were compared, the difference being the number of sectors (40 as opposed to 6) included and the gap between the years (one year, as opposed to two years apart). Further details of the inventory are provided in Annex IV.

3.10.4. Scope of analysis

The environmental statements analysis provides a comprehensive overview of performance trends for the six collected EMAS core indicators in the six most common industrial sectors among EMAS registered organisations. Going beyond previous studies that have limited their investigations to a few indicators and/or countries and smaller

data sets, this data shows trends of a representative sample of 122 organisations throughout Europe. Additionally, the sectors investigated are particularly energy-intensive, thus demonstrating the effect of EMAS in areas which have a high relevance for environmental protection overall.

The trends identified in this analysis will also inform recommendations on the future of the EMAS Regulation, which is the focus of Task 4 of the final study report. Using this data, the project team is able to draw links between EMAS and performance improvement and make a critical comparison of progress in different indicators and among longer-registered and newer EMAS registered organisations (see section 4.5). The results can help to identify areas in which EMAS has been successful in achieving its goal of environmental performance improvement and areas in which modification might be useful for the future development of the EMAS Regulation. As with previous research, however, the relatively small time frame (two years) and the lack of comparative data to non-EMAS firms somewhat limits the ability of this study to prove that the environmental performance trends are entirely the result of EMAS implementation. Yet, given the size and diversity of the sample and the use of multiple indicators, there is a very strong probability that the trends reported here indeed reflect EMAS's effect on the organisations' environmental performance.

The project team also experienced several other notable difficulties in the data collection phase. For instance, it proved a challenge to find statements of sufficient quality to be used in this study⁸, especially for companies in the sectors NACE 35 and NACE 38. In addition, many companies do not make their statements available online, and in certain cases (small companies in particular) they do not have any online presence at all.

When statements were found, in many cases the data provided was incomplete or unclear. Despite the requirements of EMAS III, many statements did not provide data on all or even most core indicators, possibly because Competent Bodies reported showing increased leniency and flexibility in reporting requirements during the period following the introduction of EMAS III. However, many statements from the years 2012 and later also failed to report core indicators. As a result, not all 122 statements analysed contained data for each individual indicator, leading to different sample sizes for the various indicators (see Table 12).

3.10.5. Limitations

When examining the results of the environmental analysis, several limitations should be taken into consideration. Environmental performance of registered organisations was analysed over a two-year period, and several stakeholders in interviews and during the workshop argued that this period of time was too short to identify a true performance trend. Certain initiatives for performance improvements may take place over a limited time period, hence not being captured by the two-year analysis. Moreover, a performance improvement for a given indicator is often closely linked to a specific initiative of an organisation. So a "jump" in environmental improvement may take place for one indicator in a given year, and then an improvement in another indicator takes place in another year as the organisation shifts its focus.

In addition, the transition period from EMAS II to EMAS III may have influenced the values reported in the environmental statements. As reported by one Competent Body,

⁸ On average, one in five statements considered for the analysis did not meet the criteria set up by the project team.

the values published in 2013 “based on environmental statements from previous years (most likely in 2011) are preliminary and not indicative of the present environmental statements and of the data and indicators they currently contain”. The Competent Body emphasised that many Competent Bodies “showed leniency and flexibility in the reporting requirements” after the introduction of EMAS III, with a view to giving suggestions for improvements in future environmental statements.

Finally, there is a chance that the financial crisis may have had a negative impact on core performance indicator values, since in the event of production decreases the consumption of the input materials would not decrease proportionally. Hence, the true potential of EMAS may be somewhat obscured in the data. Because similar data for ISO 14001 registered organisations does not exist, this report cannot compare the performance of ISO 14001 certified organisations with EMAS registered organisations from the same sector for the same core indicators during the same period. The authors of this study have thus put great emphasis on analysing and interpreting in light of previous research.

The lack of data available in the EMAS environmental statements also raises – but by no means confirms – the possibility that performance evaluations based only on environmental statements do not show representative performance trends. Because a substantial number of organisations were excluded either in the selection or analysis phase because of missing data, it is very difficult to estimate whether the performance trends analysed are representative of the wider trends of reporting organisations overall. The possibility exists that those organisations who reported the best data are also, for instance, better performers than the average EMAS organisation. More investigation should be undertaken in the future to assess the likelihood of this type of bias.

Further complications in the data input phase included language barriers and the variation in units used by different companies. This variation occasionally necessitated manual conversions. Similarly, manual conversions were also needed for the data from several companies which provided only absolute values rather than indicators.

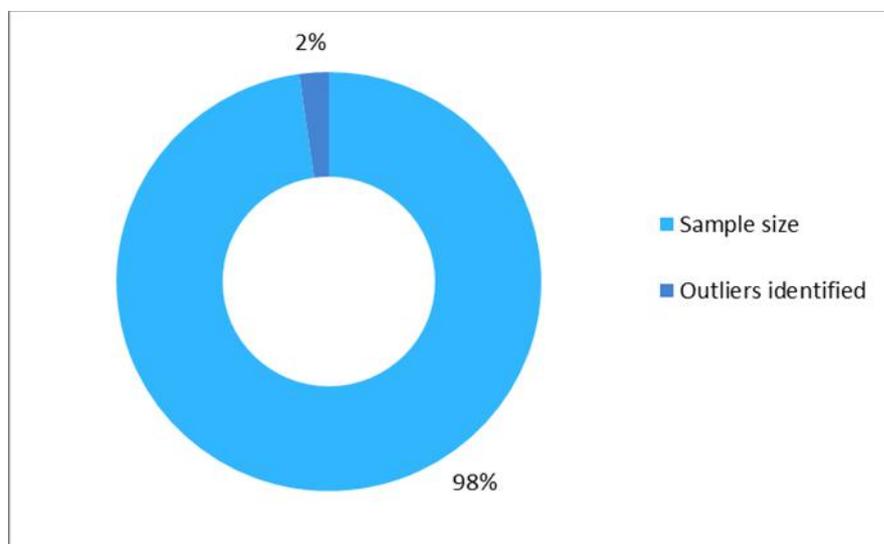
Table 12: Number of records obtained from environmental statements (after elimination of outliers)

Sample size									
Total number in the sample	Water	Energy	Waste	SOx	NOx	PM	Biodiversity	Raw materials	CO ₂
Nace 10	20	21	19	5	10	4	9	18	2
Nace 17	15	15	15	0	8	3	12	11	15
Nace 20	28	29	27	12	16	11	17	23	10
Nace 25	19	19	18	6	8	7	12	19	3
Nace 35	19	19	17	12	18	13	11	16	32
Nace 38	18	18	12	9	9	6	11	10	6
SUM of organisations	119	121	108	44	69	44	72	97	68

reporting

In certain exceptional cases, organisations experienced an unforeseen and/or disproportionate change in the value of one or several core indicators. Some statements noted the reason for this increase, for instance the building of an additional facility in year n-2 or the processing of another company's waste in year n. In such exceptional cases, the comments were taken as a justification to exclude the extreme values. The exclusion of these outliers was confirmed through calculation of a median absolute deviation, which was then applied to identify all numbers more than 2.5 deviations from the median (see Annex V for more information). In total, the method excluded 16 points of data, or 2.3% of the data set (see Figure 7). This falls well within the percentage of outliers generally considered acceptable for a sample (Ramsey & Ramsey 2007).

Figure 7: Percentage of environmental statement records determined to be outliers and excluded from analysis



3.11. Workshops

EMAS experts participated in a workshop on 22 October 2014. Attendees included environmental verifiers, Competent Bodies, European policy makers, representatives of EMAS Clubs, representatives of civil society and those involved in the EMS implementation within their organisation. The main aims of the workshop were to discuss the findings of the ex-post analysis and to collect ideas and input for the ex-ante analysis on the future of EMAS.

The data collected from several research methods highlight the existing problems of EMAS in its current form, with some evidence also pointing towards a discontinuation of EMAS as the best future option. While the fundamental existential questions of whether or not to continue EMAS also form part of the ex-ante analysis (Task 4), workshop discussions focused on more detailed questions of how EMAS could be improved, should it be continued. The aim was to examine in detail how EMAS could be amended in order to better achieve its two fundamental targets: improving environmental performance and raising registration numbers across the Member States in order to have a wider total impact. The workshop helped identify which modifications EMAS users actually appreciate and deem suitable; the more fundamental discussion around the future existence of EMAS bases itself on the findings that emerge from the suitability analysis

of the proposed modifications. Both are included as so-called “paths” within the ex-ante analysis (Chapter 7). The workshop report, including the list of participants, can be found in Annex VI.

Secondly, a workshop organised by the German Competent Body on the topic of an “EMAS Revision” took place on 7 November. The discussions from this workshop further helped to develop the policy options analysed under Task 4. The agenda and list of participants can be found in Annex VII.

3.12. Technical working group

The main objective of the technical working group was to gather further opinions of interested parties and to obtain an immediate feedback on the project topics. Participants in the technical working group are stakeholders with a deep knowledge of EMAS and its functioning. The technical working group involved experts and stakeholders considered to provide enough added value to be consulted in the evaluation process of the EMAS Regulation. These included core experts directly involved with EMAS in their daily work as well as non-core experts who do not deal directly with EMAS but who have significant expertise on the topic (see Table 13 and Table 14 for details). The technical working group effectively constitutes an addition to the EMAS workshop.

Table 13: List of participants of technical working group, core group

Core Group				
Name	Country	High Registration	Medium Registration	Low Registration
Marcel van Meesche	Belgium		X	
Harri Moora	Estonia			X
Maria Passalacqua	Spain	X		
Kamen Chipev	Bulgaria			X

The core group was/is involved in the following activities:

- Input on literature to be considered for the study
- Feedback on questionnaire for EMAS adopters
- Feedback Input on literature to be considered for the study
- Feedback on questionnaire for EMAS users
- Feedback on results of interim report (results of task 2; ex-post evaluation)
- Support development of different EMAS policy scenarios
- Support of stakeholder workshop

Table 14: List of participants of technical working group, wider group

Wider Group				
Name	Country	High Registration	Medium Registration	Low Registration
Monika Brom	Austria	X		
Enrico Cancila	Italy	X		
Víctor Vázquez Calvo	Spain	X		
Lennart Schleicher	Germany	X		
Tatjana Tambovceva	Latvia			X
Pavel Ruzicka	Czech Republic			X
Kim Christiansen	Denmark		X	
Andrew Marlow	United Kingdom		X	

Activities in which the wider group will be/was involved:

- Feedback on the task 2 chapters of the interim report
- Participation in the workshop
- Support development of different EMAS policy scenarios

The technical working group is comprised of experts operating in EMAS consulting, EMS adoption, environmental legislation and policy, EMAS dissemination and other related activities. Since the members of the technical working group work on different aspects of EMAS, their collaboration promoted an interdisciplinary approach to the EMAS evaluation. The selected experts represent eight countries, with examples from all three categories of high-, medium- and low-registration countries.

4. ASSESSMENT OF THE PERFORMANCE OF EMAS (EX-POST EVALUATION)

4.1. EMAS in numbers

Key points at a glance

- The overall number of EMAS registrations is one of the key factors in assessing the scheme's effectiveness for achieving a better overall impact from environmental improvements
- Despite the great emphasis the current Regulation placed on making the scheme more attractive to potential users, the EMAS Regulation did not reach its objective of increasing the number of registered organisations to 23,000 registered sites by 2015. The number of EMAS registered organisations increased by 30% between 2005 (3,084 registrations) and 2012 (4,473 registrations). After 2012, both the number of organisations and the number of sites started to decrease, reaching 4,049 organisations and 7,556 sites in mid-2014. This represents a decrease of approximately 10% between 2012 and 2014.
- In comparison with ISO 14001: In 2012, 105,534 organisations in Europe were ISO 14001 certified (285,844 certifications worldwide). Certification growth trends are positive, with high rates especially in Asia
- The introduction of EMAS III in 2010 has not so far led to an increase in registration numbers; rather, registration numbers – both on the organisation and the site level – have decreased

4.1.1. EMAS registration data

With the introduction of EMAS III, the European Commission set the objective of increasing the number of EMAS registered organisations to 23,000 registered sites by 2015. In order to provide the background against which to evaluate EMAS's effectiveness, efficiency and overall performance over time, the project team carried out an exhaustive data collection and a quantitative review of statistical trends for EMAS for the time frame between 2005 and 2014.

The information presented in the following sections should give an overview of the current spread of EMAS in the EU. The aim of this chapter and the classifications created is to support the findings of other sections of the study, which discuss EMAS's image, costs and benefits, environmental performance, added value, competitiveness, and innovation potential. By creating several classifications and rankings, the project team obtained statistics used to back up the data and better understand the findings from the study. It is not the aim of this chapter to determine whether or not EMAS is (particularly) successful in a particular country.

For the objective of determining the EMAS registration trends, the project team collected data and literature from a number of different sources, including the EU EMAS Register and the ISO Survey 2012. The team examined registration trends over the past ten years for the EMAS community as a whole, but also for sub-groups such as countries and sectors. By highlighting which sectors or countries hold potential for EMAS development or can provide lessons for the successful spread of EMAS, this analysis will help in developing different scenarios for the future of EMAS.

Additional sections of this chapter compare EMAS's growth trends with those of other instruments. The focus lays mainly on ISO 14001:2004 (henceforth: ISO 14001), as the most similar scheme to EMAS. Data for ISO 50001, a selection of national environmental management schemes and the Global Reporting Initiative (GRI) are also examined, the latter with a focus on EMAS's reporting element. The comparison of these instruments aims solely to highlight registration trends, including the numbers of registrations, the rate at which they are increasing or decreasing (their "popularity"), and their geographical distribution. This chapter does not evaluate or compare the content of the different environmental standards. Different data sets from the EU EMAS Register and other previously published studies provide the information for the analysis of EMAS registered organisations and sites, namely:

- EU EMAS Register, Data retrieved on August 25, 2014;⁹
- EMAS factsheets, published in 2005-2013;

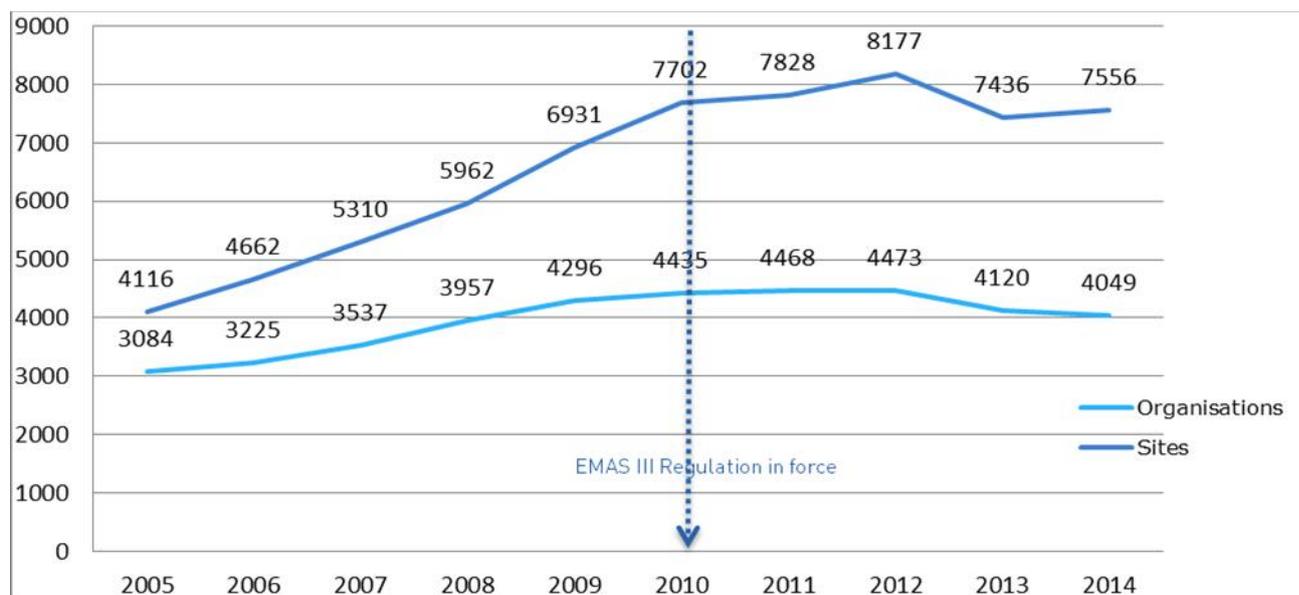
In order to focus on the most recent trends in EMAS registrations, the project team examined the time period from the last EMAS evaluation study (Iraldo et al. 2006) in 2005 until the middle of 2014. The analysis of both organisation and site numbers is essential for evaluating EMAS registration trends during this time period, as the EMAS III Regulation introduced the concept of the "EU corporate registration". As a result, one organisation can now register multiple sites in different countries under one registration, possibly impacting overall registration figures.¹⁰

Over this time period the number of EMAS registered organisations and sites showed a slow, but steady increase until 2012 (see Figure 8). The number of EMAS registered organisations increased by nearly 50%, from 3,084 in 2005 to 4,473 in 2012. After 2012, both the number of organisations and the number of sites started to decrease slightly, reaching 4,049 organisations and 7,556 sites in mid-2014. The follow sections will answer the question of which countries are contributing to the current decline in registration numbers.

⁹ In cases where EMAS Competent Bodies recommended that data from national EMAS registered should be used instead, the project team followed this recommendation.

¹⁰ With the EU corporate registration option being available under EMAS III, it is possible to observe discrepancies in the number of organisations and sites given that one organisation can now register all its European sites under one registration.

Figure 8: EMAS registered organisations and sites over time



Source: EU EMAS Register; German national EMAS register.

Figure 9 shows that – with regard to the number of organisations – the majority of EMAS registrations (88%) belong to four countries (Germany, Spain, Italy and Austria).

As of April 2014, Germany, Spain, Italy and Austria were the countries with the highest number of EMAS registered organisations, while Latvia, Luxembourg, Malta and Slovenia each had only one (or no) registrations. Regarding the number of registered sites, the situation is similar: The majority of EMAS registrations (81%) belong to four countries (Germany, Spain, Italy and Austria). See Annex VIII for a complete list of registration data.

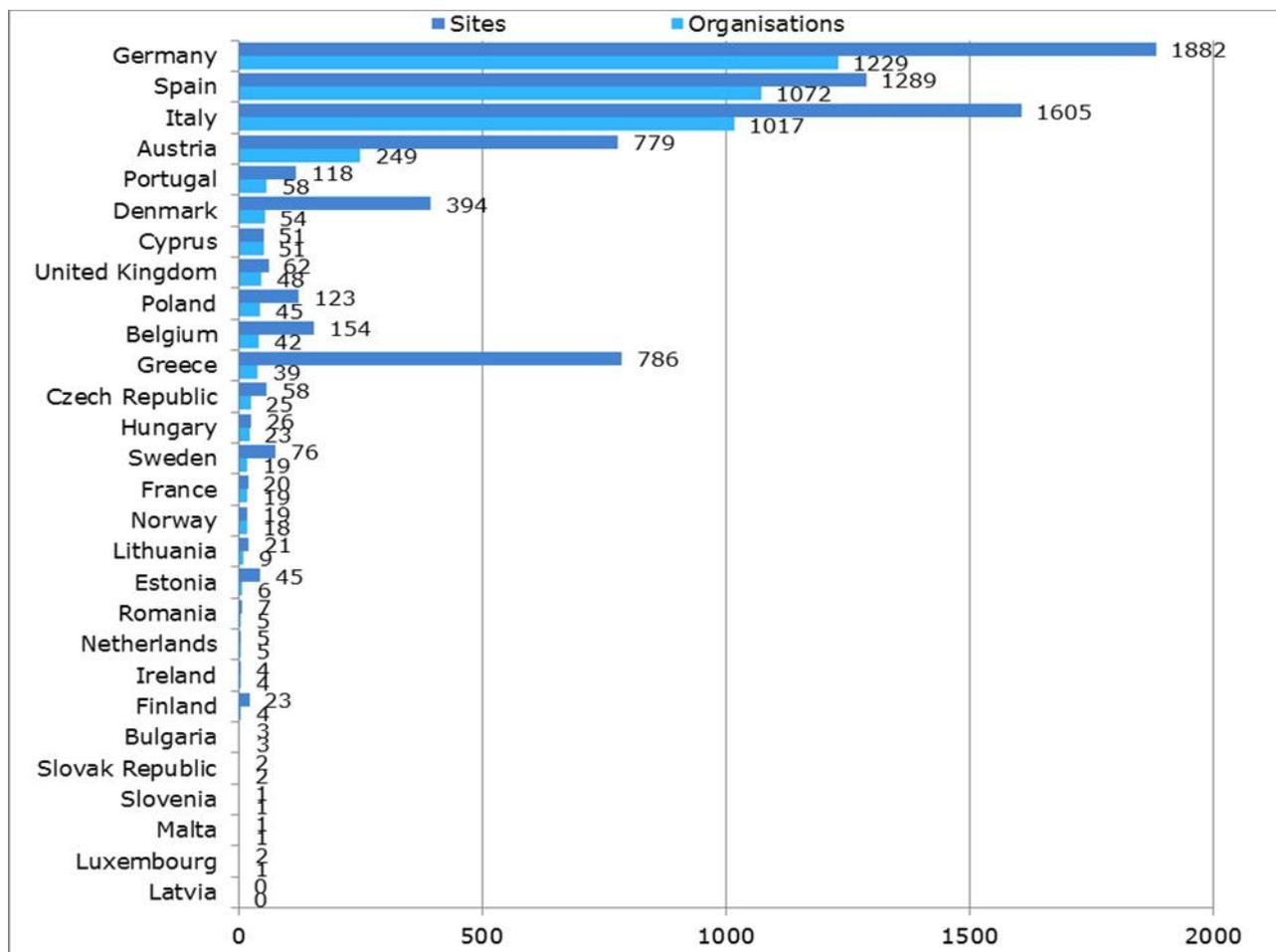
Given the wide discrepancies with regard to the numbers of registered organisations and sites, dividing countries into groups by numbers of EMAS registration can help determine what factors are influencing EMAS's adoption rates and effectiveness in countries with varying rates of EMAS uptake.¹¹ For the purposes of analysis in this study, we group these countries into three categories:

- 1) Countries with high numbers of EMAS registrations (more than 200 organisations; in alphabetical order): Austria, Germany, Italy, Spain
- 2) Countries with medium numbers of EMAS registrations (20-200 registered organisations; in alphabetical order): Belgium, Cyprus, Czech Republic, Denmark, Greece, Hungary, Poland, Portugal, Sweden, United Kingdom.

¹¹ The classification does not intend to imply that those countries in group I are more successful with implementing EMAS than others. Measuring Member States' success in the promotion of the scheme needs to consider a large number of factors (economic situation, date of accession to EU, size of industry, availability and popularity of national environmental management schemes, etc.). A comprehensive assessment is beyond the scope of this study.

3) Countries with low numbers of EMAS registrations (less than 20 registered organisations; in alphabetical order): 12 Bulgaria, Estonia, Finland, France, Ireland, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Romania, Slovak Republic, Slovenia.

Figure 9: EMAS registered organisations and sites. April 2014

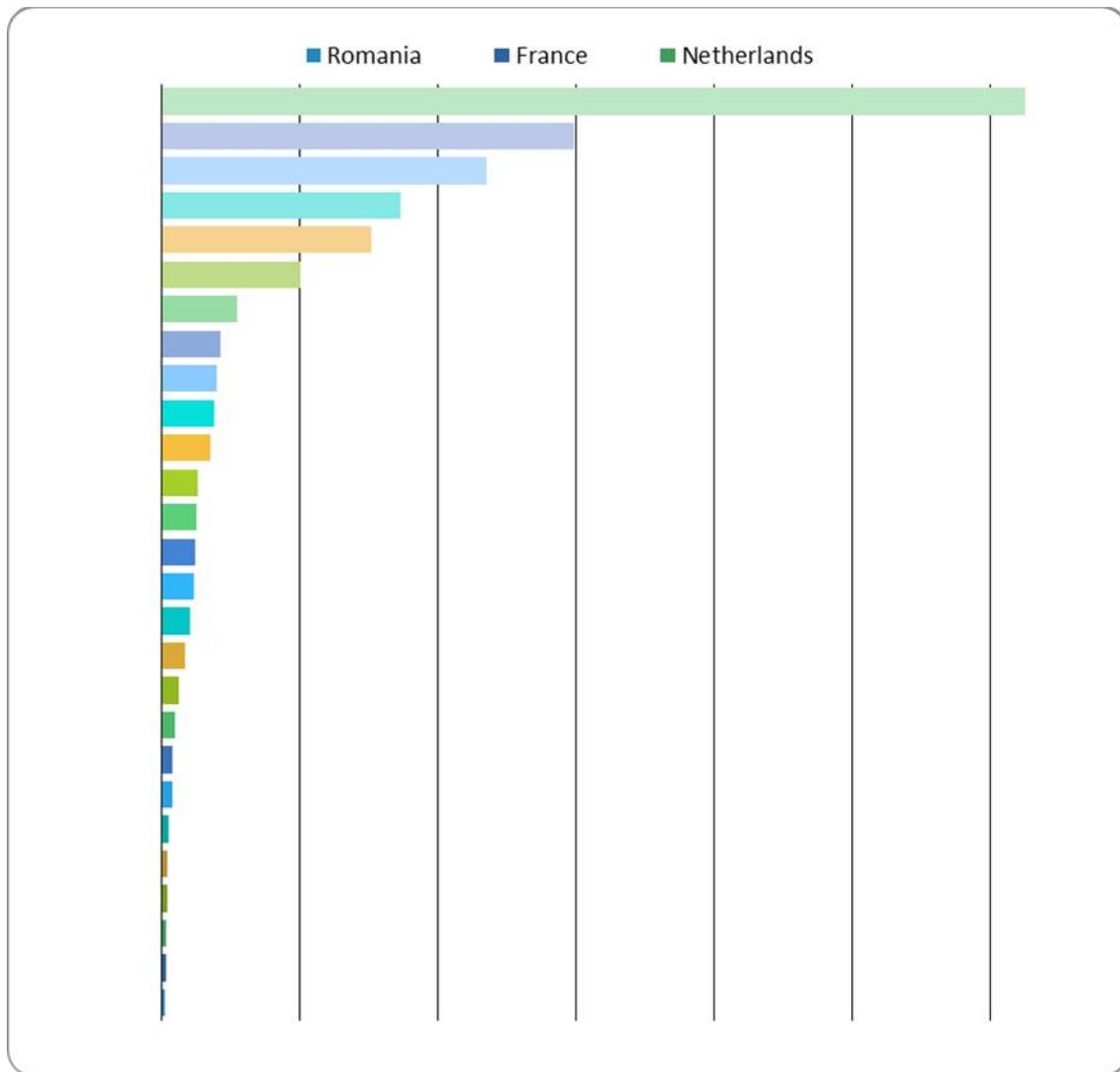


Source: EU EMAS Register; German national EMAS register.

When taking into account the number of registrations per million inhabitants, the picture of high registration countries changes (Figure 10). Cyprus is at the top of the chart, having significantly increased its registration numbers from 2012 to 2013, followed directly by Austria. Not surprisingly, Austria, Spain, Italy and Germany are also at the top of the chart, followed by Denmark. This comparison demonstrates that it may be somewhat simplistic to measure success only by absolute numbers of registrations per country. Only by linking several methodological approaches (questionnaire, interviews, previous research) can the report draw relevant conclusions.

¹² When looking at overall registration numbers the date of EU accession needs to be taken into account. Some Member States joined the EU only a few years ago (e.g. Bulgaria and Romania in 2007; Croatia in 2013) whereas Member States in Group I introduced EMAS in 1995. As a result, it is difficult to assess which Member States' have had not much success with promoting EMAS or for which ones it is still too early to tell.

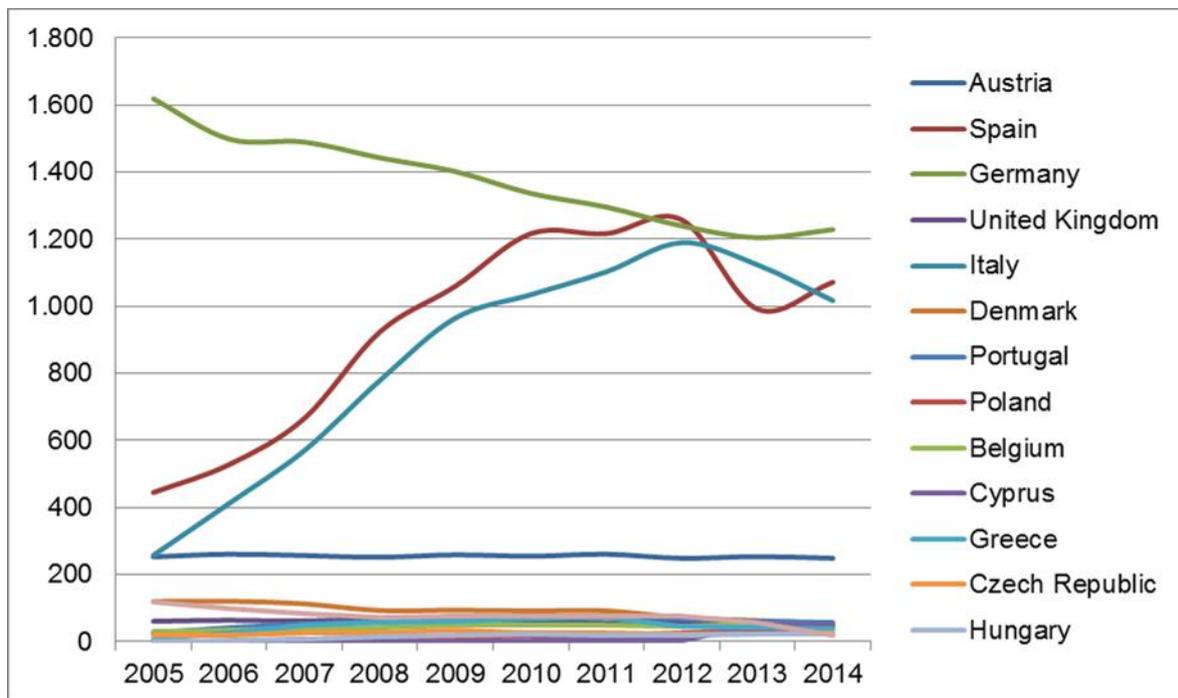
Figure 10: Number of EMAS registered organisations per million inhabitants. May 2014.



Source: EU EMAS Register; German national EMAS register; Eurostat.

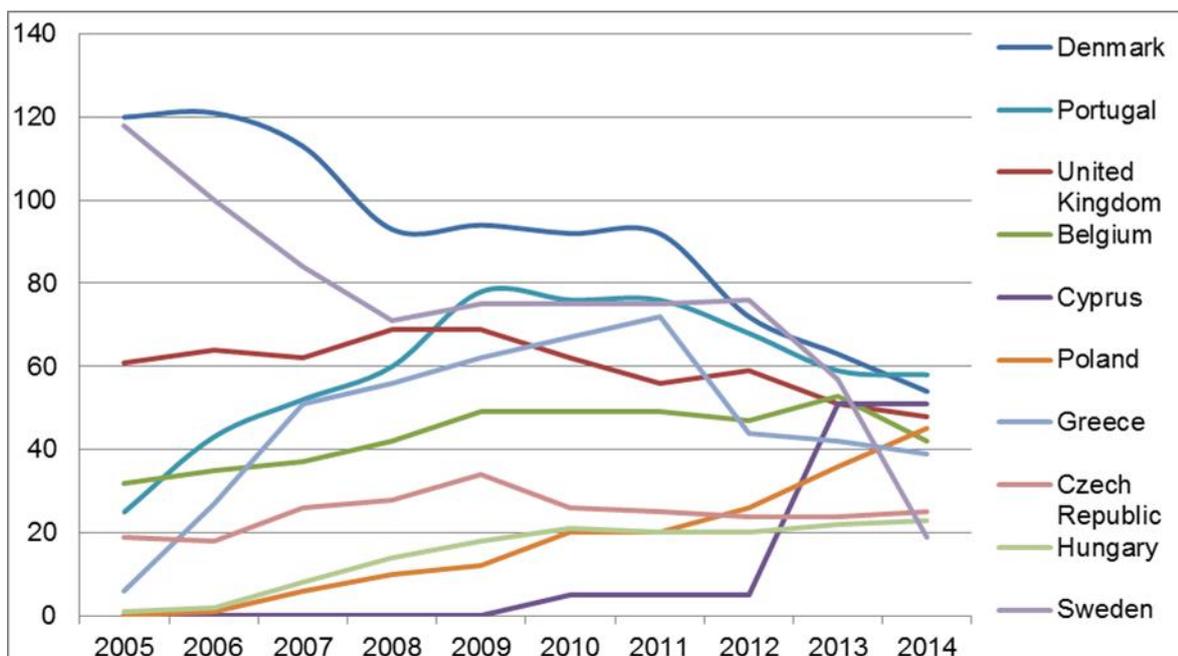
Examining the trends in the top 10 registration countries over the past ten years (Figure 11), Germany demonstrates a different trend than the other countries. The German EMAS numbers have actually declined gradually since 2005, while EMAS registrations in the other countries remained steady or increased until 2012. Looking at those Member States with high numbers of registrations, Austria's registration numbers remained relatively stable throughout the past decade,. In contrast, Spain and Italy experienced steady growth year after year, with Italy starting at roughly the same level as Austria in 2005 and increasing to over 1,000 organisations by 2010. After increasing up until 2012, Spain also experienced a drop in registrations in 2013. This trend appears to be gradually reversing itself in 2014.

Figure 11: Number of EMAS registered organisations in countries with high and medium number of organisations, from 2005 to 2014



Source: EU EMAS Register; German national EMAS register.

Figure 12: Number of EMAS registered organisations in countries with medium number of organisations, from 2005 to 2014 (zoom in from Figure 11)



Source: EU EMAS Register; German national EMAS register.

Looking at Figure 12, countries from the medium registration group clearly show greater variation in EMAS numbers when depicted on a graph with a smaller scale. Some countries experienced a significant drop in the recent years – e.g. Denmark, Sweden, Portugal and the United Kingdom – which greatly contributed to the general downward trend in EMAS registrations observed from 2012 onwards. Among countries on this list, only Cyprus, Hungary and Poland show an increase in the number of registrations. While numbers in Cyprus jump in 2012, Poland and Hungary represent a more gradual continuous growth over the entire period depicted.

Moreover, since EMAS III took effect, large discrepancies have emerged between the numbers of organisations and numbers of registered sites because some organisations now have many sites registered under one single corporate registration. If one such corporate entity decided to leave the scheme, its departure would cause a sudden large drop in the overall number of registered sites. Belgium and the United Kingdom are examples of Member States in which just a few organisations left EMAS after 2012 but nonetheless caused a significant drop in the number of registered sites (see Table 15; also Annex VIII).

Table 15: Countries in which few organisations leaving causing a large drop in the number of sites

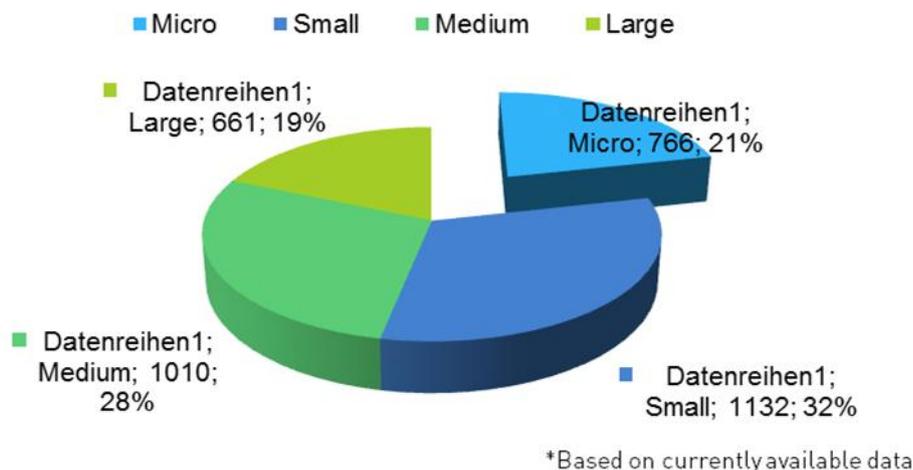
Country		2012	2014	Decline
United Kingdom	Sites	289	62	-227
	Organisations	59	48	-11
Belgium	Sites	426	154	-272
	Organisations	47	42	-5

Looking at different sized organisations can also help to draw valuable conclusions about the reasons for EMAS registration trends. Figure 13 thus examines the percentages of micro (less than 10 employees), small (10-50 employees), medium (50-250 employees) and large (more than 250 employees) organisations (2003/361/EC) in the overall EMAS population.

Overall, all sizes of organisation follow the general trend. The share of micro, small, medium and large organisations remaining relatively stable from 2005 to 2014. More specifically, their numbers grow steadily until 2012 and then, following the general trend, they decrease slightly between 2012- 2014.

In 2014 small and medium-sized organisations accounted for the biggest share of EMAS registered organisations, making up 32% and 28% of the total respectively (see Figure 13). This distribution mirrors the general statistics in which SMEs account for 99.8% of all enterprises (Eurostat, 27 August, 2014). At 19%, large organisations comprise the smallest share of the EMAS population, with 21% being micro.

Figure 13: Percentage of EMAS registered organisations by size. April 2014

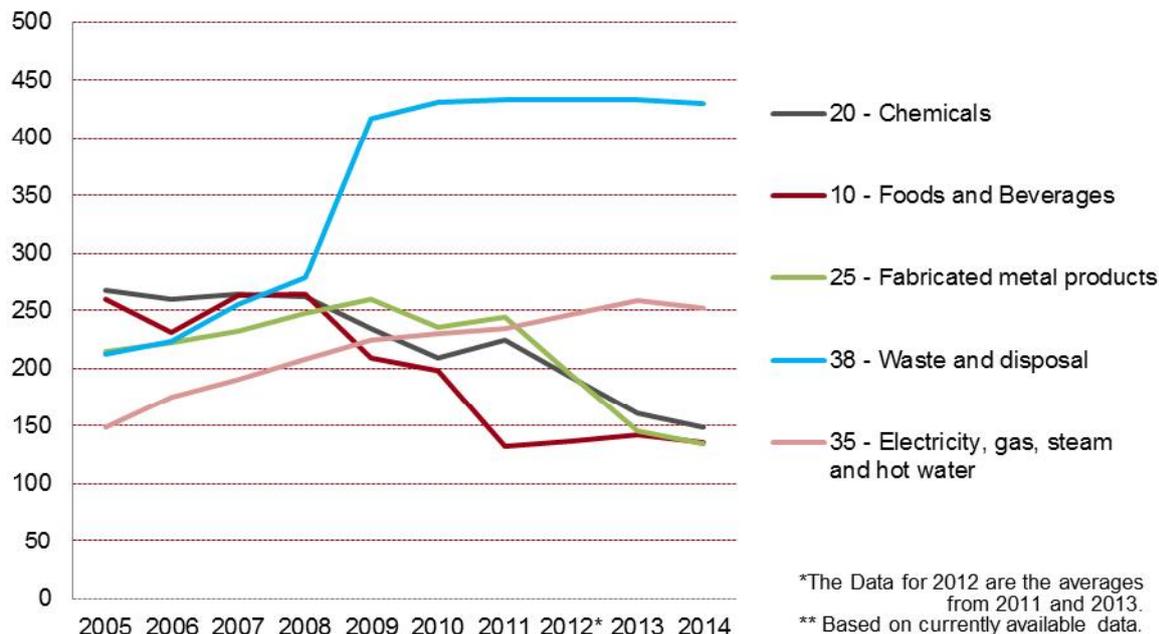


Source: EU EMAS Register.

Neither the leading industrial nor service sectors have changed much over time. Aside from the slight variations in the number of registered organisations from 2005 to 2014, the top five industrial sectors have remained the same (see Figure 14). However, within these sectors, different trends have developed. While the number of registered organisations in the electricity, gas, steam and hot water supply sector (NACE 35) and waste and disposal sector (NACE 38) have increased, overall numbers of registrations in the other sectors have declined. Of particular note is the waste and disposal sector (NACE 38), which doubled its number of registrations over the ten year period. Moreover, NACE 35 and NACE 38 show increasing numbers of registrations only until 2010; later, the numbers level out noticeably. This trend can be seen particularly when looking at NACE 38 registrations from 2010- to 2014. Overall, none of the industrial sectors show a significant increase in registrations in the most recent years.

Of note is the fact that the two leading sectors which increased number of registrations - the waste sector (NACE 38) and the electricity sector (NACE 35) - have the strictest environmental regulations of the industrial sectors with the highest EMAS regulations. Stronger and more frequently enacted policies in the electricity and waste sectors might thus have an impact on the registration trends.

Figure 14: Leading industrial sectors over time

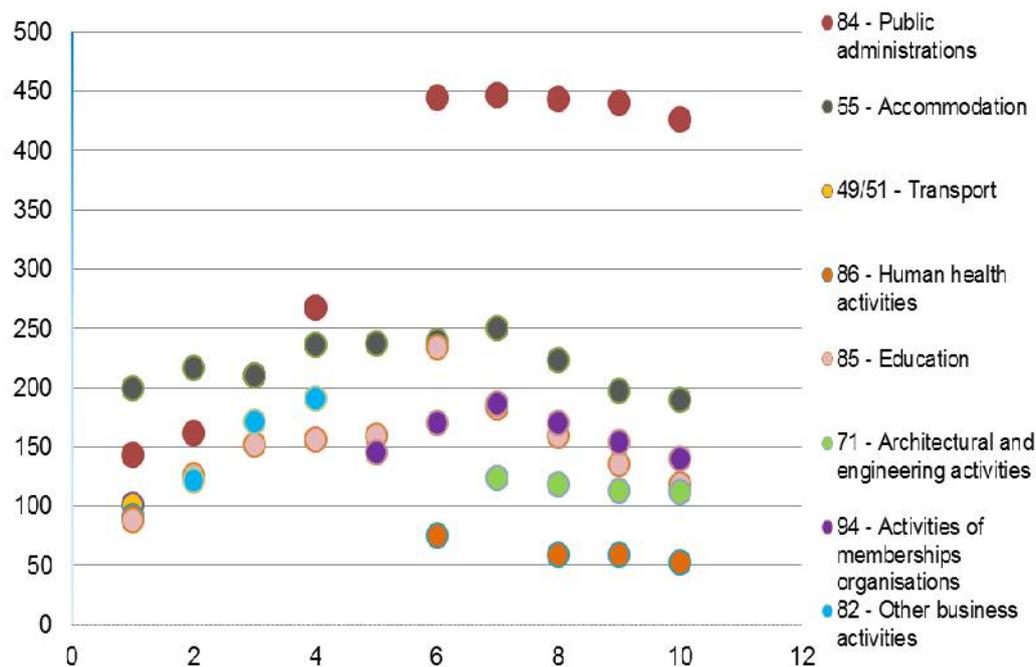


Source: EU EMAS Register.

In contrast, the results for the leading service sectors were more heterogeneous (see Figure 15). Only the sectors of Public Administration (NACE 84), Education (NACE 85), and Accommodation (NACE 55) remained among the top five over the decade analysed. While Transport (NACE 49/51) was among the leading sectors in 2005, it did not appear in the top five again. During the last few years, the sectors of Architectural and Engineering activities (NACE 71) and Activities of memberships organisations (NACE 94) entered the top five despite a downwards trend in their total number of registrations.

The Public Administration sector tops the chart in nearly all of the past ten years, with almost twice the number of registrations as the second-ranked Accommodation sector. The general trend of decreasing numbers was nevertheless visible in all sectors from 2011 on, mirroring the general trend for EMAS registrations.

Figure 15: Leading service sectors over time



Source: EU EMAS Register.

The sector trends mirror the general trend for the total number of EMAS registered organisations.

While these charts reflect the general trends the discussion on registration numbers should take into account that EMAS seems to have a wide-reaching (“spill-over”) influence. Results of our study show that 68% of survey respondents encourage their suppliers to adopt environmental measures or certifications, 46% have actually stopped ordering from a supplier for environmental reasons, and 49% say that they give preferential treatment to a supplier that is also EMAS registered. Moreover, many organisations that have left EMAS argue that they have done so for cost reasons, but nonetheless continue to make use of the main elements provided by EMAS. Some others argue that after having been EMAS registered for many years, they can no longer make significant performance improvements (which would outweigh costs of implementation and maintenance) and therefore leave the scheme. Hence, numbers of organisations with an EMAS framework might be higher than official data suggests.

4.1.2. Comparison with other management and reporting schemes

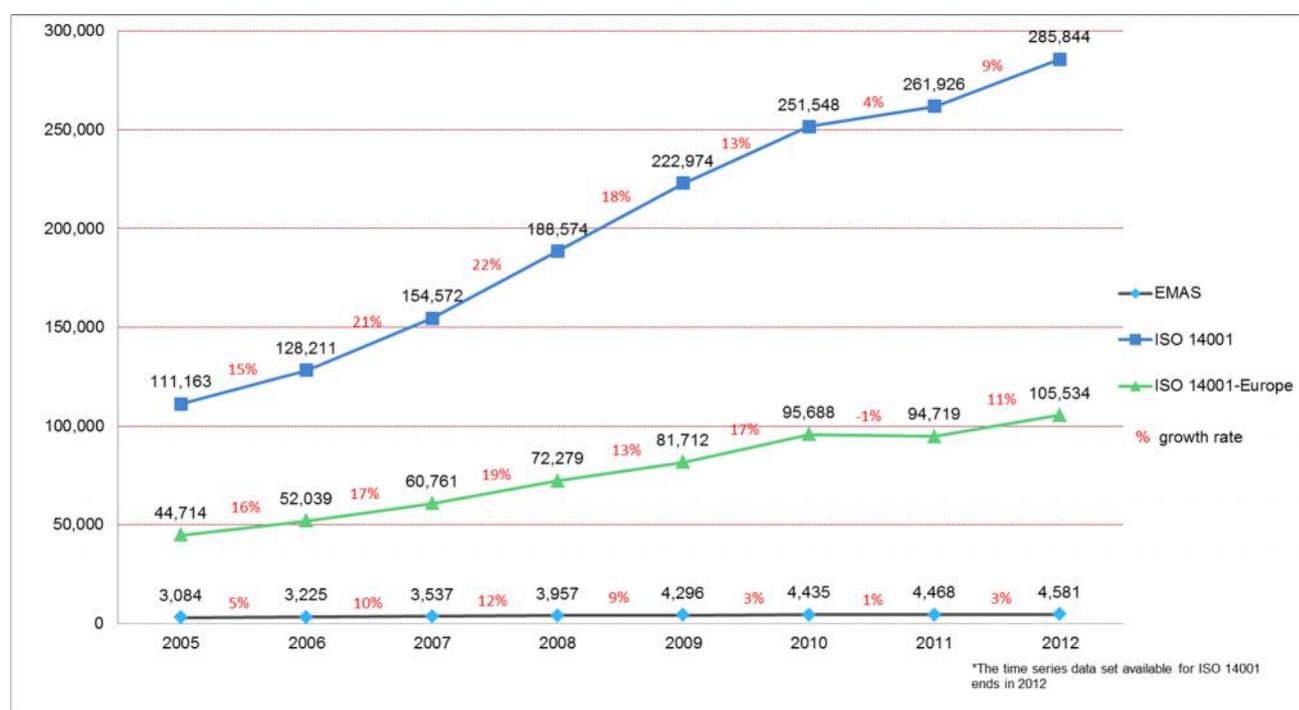
In order to get a broader and more reliable overview of EMAS’s presence, its numbers were also compared with the environmental management standard ISO 14001., which forms an integral part of EMAS, the energy management standard ISO 50001, national environmental management standards and the sustainability reporting standard of the

Global Reporting Initiative (GRI). The latter was chosen because both GRI and EMAS share environmental reporting features.¹³

4.1.2.1. ISO 14001

According to the 2012 ISO Survey, ISO 14001 had significantly more certified organisations¹⁴ (285,844 worldwide) than EMAS (4,581 registered organisations) in 2012. In contrast to EMAS, which has stagnated or even decreased in recent years, the numbers of ISO 14001 certifications have been continuously increasing over time (see Figure 16). However, the general trend for both instruments showed an increase in the number of registrations in years 2005-2012, albeit on a different scale.

Figure 16: Number of EMAS/ISO 14001 worldwide registered organisations 2005-2012*



Source: EU EMAS Register; German national EMAS register, ISO Central Secretariat 2012.

In this context, a factor to consider is that EMAS was limited to European countries until the EMAS III Regulation came into force in 2010. EMAS III introduced EMAS Global, allowing EMAS registrations of sites outside Europe (for organisations based both inside and outside the EU). In 2011, with their Guide on EU corporate, third country and global registration under EMAS 2011/832/EU, the EU first created the official path to EMAS registration for both EU and non-EU organisations with sites outside the EU and EEA. So far, however, only a few countries have implemented EMAS Global and offered (non-) EU

¹³ The authors of this study do not intent to put content, objectives and structure of EMAS and GRI standard on one level, for the aforementioned reason.

¹⁴ The term “registration” is used in the EMAS context.

companies the opportunity to register sites outside Europe. Additionally only a small number of companies have made use of the global option. These include the German company Schaeffler, which has registered sites in (inter alia) China, and the Finnish company UPM, which has registered sites in China and Uruguay. Hence, the impact of EMAS Global on the overall EMAS registration numbers is accordingly low.

In contrast, ISO 14001 has been a worldwide standard since its creation in 1996. As much as 60.3% of its certifications are outside of Europe. ISO 14001 thus presents the main EMS certification for most of the world, leading to significantly higher total numbers (285,844 ISO 14001 certifications worldwide) than EMAS (4049 registrations). In 2012, for instance, China and Japan together accounted for 42% of all ISO 14001 certifications worldwide. However, ISO 14001 also enjoys considerable popularity in Europe. The European organisations account for 39.7% of total ISO 14001 certifications. European countries also demonstrate widely positive trends for the uptake of ISO 14001; for example, Spain and Italy experienced the highest increases in ISO 14001 certifications in 2012. Among the ten countries with the highest rates of increasing ISO 14001 certification, seven are EU member states (the remaining three are China, the USA and Argentina). When looking at the trends in Figure 16, ISO 14001 registrations for the EU increased gradually up to 2012, reaching 105,534 in that year. These numbers indicate that certifiable environmental management standards are a widely popular management instrument, with ISO 14001 the most popular.

When comparing ISO 14001 registration numbers of Member States (Table 16), the picture is somewhat similar to EMAS. Italy and Spain have the highest numbers of ISO 14001 certified organisations. These countries are also top performers in the EMAS scheme, having respectively the second and third highest numbers of EMAS registered organisations. However, they are followed by the United Kingdom, Romania and France, all of which are in the medium and low registration groups for EMAS registered organisations. While Germany has high numbers of EMAS registrations, it does not reach the top five ranking for ISO 14001 registrations. As can be seen in Table 16, however, ISO 14001 is significantly more common than EMAS in all European countries, including Germany. This difference is even starker when the numbers of sites are compared (Table 16).

Table 16: EMAS/ISO 14001 registered/certified organisations in Europe by country in 2012¹⁵

Country	EMAS registered organisations	ISO 14001 organisations	EMAS sites	ISO 14001 sites
Austria	249	1,084	613	369
Belgium	47	1,026	426	663
Bulgaria	3	1,395	3	717
Cyprus	5	32	5	11

15 For ISO 14001, the latest official numbers are from 2012. Deviations from Figure 16 in terms of EMAS registration numbers can be attributed to the fact that numbers in the register fluctuate throughout the year as and when organisations leave or join EMAS. Exact numbers will depend on the day chosen for the reading.

Country	EMAS registered organisations	ISO 14001 organisations	EMAS sites	ISO 14001 sites
Czech Republic	24	4,215	68	4,172
Denmark	72	1,756	455	1,886
Estonia	3	394	5	117
Finland	8	1,310	21	6,306
France	21	7,975	21	26,752
Germany	1,240	7,034	1,836	6,721
Greece	44	657	795	458
Hungary	20	1,718	23	1,010
Ireland	5	417	9	398
Italy	1,190	19,705	1,705	117,161
Latvia	5	237	7	287
Lithuania	10	680	10	681
Luxembourg	2	51	4	58
Malta	1	23	1	23
Netherlands	4	2,085	4	1,233
Norway	21	824	21	1,233
Poland	26	2,014	33	1,738
Portugal	68	1,184	103	595
Romania	4	8,633	6	7,041
Slovak Republic	5	1,426	5	973
Slovenia	3	420	7	600
Spain	1,258	19,470	1,568	25,859
Sweden	76	3,885	134	5,433
United Kingdom	59	15,884	289	14,337
TOTAL	4,473	105,534	8,177	226,832

Source: EU EMAS Register; German national EMAS register, ISO Central Secretariat 2012.

When comparing the average growth rate of EMAS and ISO 14001 between 2005 and 2012 in Europe, the numbers differ slightly (see Figure 16). The average growth rate of EMAS is 6%, lower than that of ISO 14001, which is 13% (calculated Figure 16). However, both EMAS and ISO 14001 experienced higher growth rates until 2008 than afterwards in Europe. The biggest difference between the two standards occurred in 2009, when EMAS grew only by 3 % and ISO 14001 Europe by 17%.

In terms of sectoral distribution, a comparison between EMAS and ISO 14001 is not as accurate, as the two instruments group and define sectors differently. The top five industrial sectors for ISO 14001 certificates in 2012 are construction, basic metal & fabricated metal products, electrical and optical equipment, wholesale and retail trade and repairs of motor vehicles. In the data from the ISO Survey (ISO Central Secretariat 2012), services are aggregated as a single sector. This service group comprises the highest number of ISO 14001 certifications and includes, among other sectors, hotels and restaurants, transport, storage and communication, engineering services, education and public administration. These sectors also make up the top service sectors by number of EMAS registered organisations.

4.1.2.2. ISO 50001

ISO 50001:2011, hereafter ISO 50001, is the ISO standard created for energy management systems. ISO 50001 outlines requirements for establishing, implementing, maintaining and improving an energy management system with the goal of achieving continual improvement of energy performance. Energy efficiency, use and consumption, for example, all fall under this standard. This report, however, compares ISO 50001 and EMAS only with regard to registration trends and not to the content of the two schemes.¹⁶

Three years after its launch in 2011¹⁷ 7,345 organisations are ISO 50001 certified worldwide (see Figure 17). The difference in development between EMAS and ISO 50001 is striking when looking at the data from the past two years. While EMAS showed a slight decrease in number of registrations, ISO 50001 doubled over one year period. The abrupt growth stems to a large extent from German registrations, which increased from 1,539 sites to 3,276 sites in just one year. According to the 2012 ISO Survey (ISO Central Secretariat 2012), German energy legislation promoting ISO 50001 accounts for this increase, thus making a case for the importance of policy incentives for promoting voluntary environmental policy instruments.

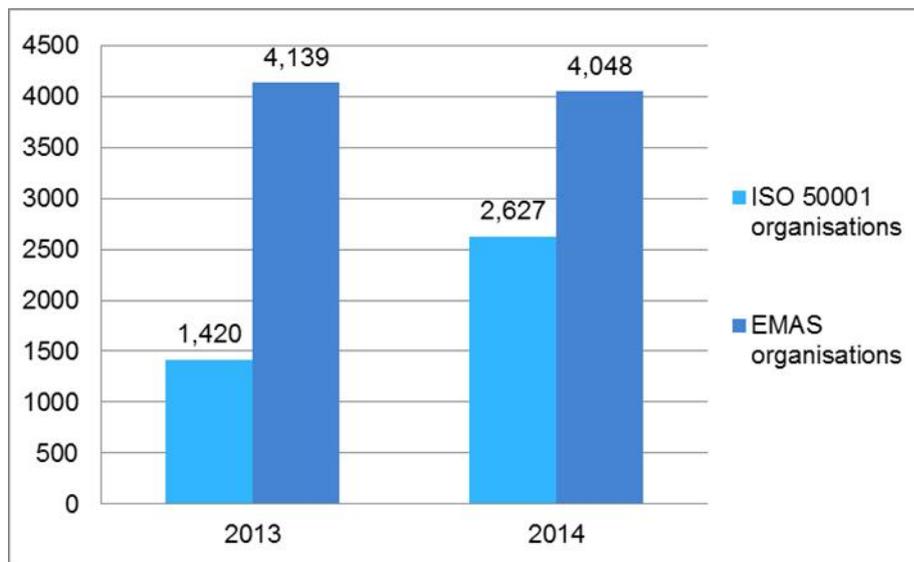
¹⁶ Information on the content of ISO 50001 is available here:

http://ec.europa.eu/environment/emas/pdf/factsheet/EMAS_Energy_Management.pdf

<https://www.umweltbundesamt.de/sites/default/files/medien/publikation/long/4013.pdf>

¹⁷ ISO Central Secretariat 2012: The ISO Survey of Management System Standard Certifications – 2012, Executive summary.

Figure 17: Number of EMAS registered and ISO 50001 certified organisations in Europe



Source: EU EMAS Register; UBA and BMU 2013.

4.1.2.3. Non-formal Environmental Management Systems

The 2009 study “Step up to EMAS” (BIO Intelligence Service and adelphi consult 2009), carried out on behalf of the Commission, provides the basis of the information for this section. This report provides only a basic overview of non-formal EMS in the EU with regard to EMAS.

In addition to EMAS and ISO 14001, more than 10,000 organisations in the EU were using one of 20 non-formal EMS in 2009.¹⁸ A large number of these non-formal EMS are located in Germany, the United Kingdom and Nordic countries (Sweden, Norway, Denmark). Other Member States with non-formal EMS include France, Spain, Austria and Belgium. These EMS are mostly designed to cover both public and private organisations with a specific size (e.g. SMEs) and/or organisations coming from specific areas or sectors of activities.

As some of the non-formal EMS are more successful than EMAS in their region - the Norwegian Eco-Lighthouse Programme provides one such example - the question arises of whether or not one of these EMS could substitute for EMAS. When comparing the 20 non-formal EMS to EMAS, fewer than half of them appear to have a close relation to the EMAS framework. The majority of the non-formal EMS does not (or only partially) address all of the EMAS requirements¹⁹, with the verified environmental statement being the most frequently missing criterion.

¹⁸ The selection was made in the EC funded project “Guidelines for transition from non-formal environmental management systems and ISO 14001 to EMAS” which was published in 2009. Available at: http://ec.europa.eu/environment/emas/documents/kit_en.htm

¹⁹ The EMAS requirements as developed in the 2009 project are: commitment of top management, environmental review, environmental policy or guidelines, proof of legal compliance objectives and environmental management programme, definition of organizational structure at company

Of the 20 non-formal EMS, only four address all EMAS requirements and could therefore be considered as a substitute for EMAS. However, these four EMS all demonstrate significant shortcomings with regard to external auditing and certification. Private external auditors undertake the auditing process of the non-formal EMS in nearly all cases, contrasting with EMAS's (independent) public auditors. Additionally, a telephone-based follow up to the 2009 study (BIO Intelligence Service and adelphi consult 2009) showed that hardly any of the non-formal EMS have revised their criteria since implementation (as done by ISO 14001 and EMAS).

Generally, the majority of the non-formal EMS labels have fewer criteria to qualify for registration and are not as comprehensive and stringent as EMAS. They thus cannot be considered as substitutes for the scheme. Although many such national EMS exist, most have low participation numbers in comparison with EMAS or ISO 14001.

Based on Article 45 of EMAS III, it is possible to recognize existing EMS or parts thereof as complying with certain EMAS requirements. Organisations can thus use previous efforts made for an existing EMS when seeking EMAS registration. So far, no official recognition of a non-formal EMS (or parts thereof) in the context of Article 45 has taken place. However, according to a study launched by the European Commission (BIO Intelligence Service and adelphi consult 2009), many non-formal EMS provide a suitable stepping stone to achieving EMAS registration.²⁰

The question remains why some of the EMS - most notably Ecoprofit (Austria), Eco-dynamic Enterprise Label (Brussels Region) and the Eco-Lighthouse Programme (Norway) - are more successful in their region than EMAS. For example, EMAS numbers in Norway are small and decreasing while Eco-Lighthouse clearly dominates. Austria and Belgium (Brussels Region), in contrast, also have a high number of EMAS registrations.

According to the Belgian Competent body for Brussels, Eco-dynamic Enterprise allocates a large share of its budget to communication and information activities and human resources, making the EMS label well known and successful in the region. EMAS, on the other hand, relies on voluntary initiatives to raise its profile. Because the Brussels Label Eco-dynamic Enterprise is closely connected to/ based on EMAS, companies that have the regional label are well-prepared to go on and apply for EMAS verification. Eco-dynamic has gone so far as to apply for a direct connection with EMAS so that organisations would have the possibility to receive EMAS as a last step. To date, however, that system is not yet in place.

Ecoprofit's success in Austria can be attributed to the fact that it creates more of a community than EMAS. It does so with the help of a program based on three pillars: (1) the Ökoprofit Academy (train-the-trainer program), (2) the Ökoprofit Basic (knowledge acquired transferred to employees); (3) the Ökoprofit Club (ongoing exchange of experience and knowledge).

level, training and education requirements, communication (internal and external), documentation requirements, management review, environmental report/ statement or similar publication by the participants of the EMS.

²⁰ To facilitate that step-up a European Commission study analysed 20 of the most relevant non-formal EMS and EN ISO 14001 in terms of their objectives, target group, geographical scope and affinity to EMAS, among other things. Additionally, the study outlines an applicable step-by-step approach to take in order to move from each EMS to EMAS. Further information is available here: http://ec.europa.eu/environment/emas/documents/kit_en.htm.

As mentioned above, in Norway the national EMS Eco-Lighthouse is the prevailing label for organisations and has no close relationship to EMAS. The national EMS only meets a few of the EMAS requirements and Eco-Lighthouse organisations have to meet far fewer criteria for registration. The greater ease in attaining Eco-Lighthouse certification may explain part of the label's greater popularity, but exact reasons for the difference in interest levels between the two standards could not be identified within the scope of this study.

4.1.2.4. Global Reporting Initiative

The Global Reporting Initiative (GRI) launched its Sustainability Reporting Guidelines in 1997. The current GRI G4 Sustainability Reporting Guidelines, created in 2013, include 62 indicators (20 of which are environmental) in sustainability topics.. Although the authors of this study acknowledge that EMAS and the GRI guidelines are different types of standards, both have environmental reporting features (mainly a set of defined indicators and reporting principles) in common. This public environmental reporting allows both standards to influence the way companies and other organisations disclose environmental information in Europe. Examining the number of GRI-based sustainability reports might suggest the readiness of organisations to reveal their environmental performance and their acceptance of sustainability standards, particularly in light of GRI's image as one of the most recognised sustainability and/or Corporate Social Responsibility (CSR) standards²¹.

Figure 18 represents the number of the reports hosted in the GRI Sustainability Disclosure Database²² in Europe and worldwide. The overall number of organisations that have a profile in GRI application worldwide is 6,496 (as at July 2014). Of those, 2,183 organisations have registered their GRI-based sustainability report in the GRI database in Europe.^{23 24}

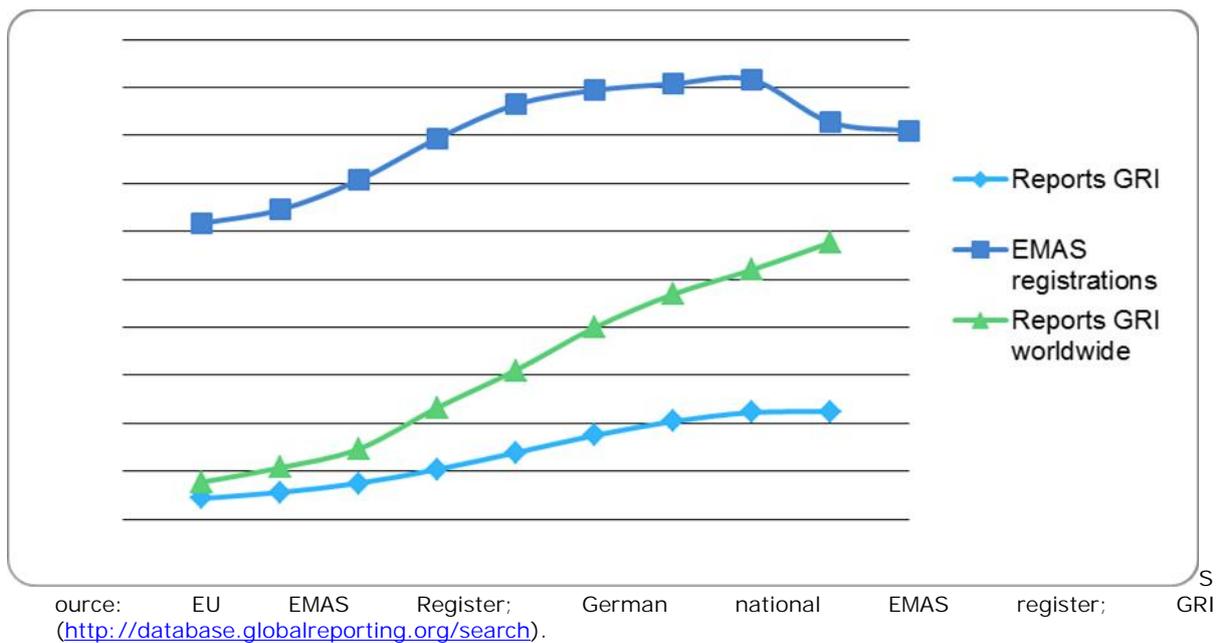
²¹ European Commission, March 2013, An Analysis of Policy References made by large EU Companies to Internationally Recognised CSR Guidelines and Principles.

²² Filtered for: GRI - G1, GRI - G2, GRI - G3, GRI - G3.1, GRI - G4, Europe.

²³ Data source: GRI, retrieved 20.08.2014 from <http://database.globalreporting.org>. The Sustainability Disclosure Database provides access to GRI-based sustainability reports.

²⁴ The Sustainability Disclosure Database includes reports that GRI is currently aware of. Some reports may be omitted, in particular those in non-Latin scripts or that are not published online; reports based on the GRI Guidelines without a GRI Content Index are included as "GRI-Referenced" reports in the Database and are not considered to be GRI reports; not all GRI reporters publish reports annually. Therefore, the total number of GRI reports per publication year does not correspond with the total number of GRI reporters.

Figure 18: GRI reports and EMAS registrations from 2005-2013



Based on Figure 18, GRI shows an overall more positive trend than EMAS in recent years, with GRI numbers increasing steadily. However, the picture changes when it comes to comparing the number of reports registered in the GRI application and the number of EMAS registered organisations. EMAS has significantly more organisations than reports registered in GRI, even when looking at the worldwide numbers for GRI.

4.1.3. Main findings

- The number of EMAS registrations was increasing until 2012 and then fell by approximately 10% between 2012 and 2014. By mid-2014, there were 4,049 registered organisations and 6,826 registered sites.
- Germany, Spain, Italy and Austria are the leading registration countries, accounting for 88% of all EMAS registrations.
- Small and medium enterprises account for the biggest share of EMAS registrations; this trend remained stable over the past ten years.
- Both ISO 14001 and ISO 50001 experienced a far greater increase in numbers of certifications than EMAS in recent years. In 2012 ISO 14001 had significantly more certifications than EMAS, both in Europe (105,534) and worldwide (285,844).
- In 2014, three years after its creation, ISO 5001 had 2,627 certifications, more than half the number of EMAS registrations. ISO attributes this rapid increase to ISO 50001's inclusion in recent German energy legislation.
- A number of non-formal EMS certificates exist on the national level in Europe, but most have another target group or different goals than EMAS. Although more successful than EMAS in certain regions, Europe-wide registration numbers for these national schemes are substantially lower.
- With regard to providing a standard for disclosing environmental information, EMAS is more popular in the EU than GRI.

4.2. Public image and stakeholders

Key points at a glance

- Since EMAS is a voluntary instrument, its “image” among stakeholders is undoubtedly just as important for its uptake as is the actual content of the Regulation
- Previous research found that the pressure for greater external legitimacy plays a major role in spurring manufacturing facilities to implement an EMS
- Our survey shows that the desire to improve their reputation is one of the main reasons why organisations adopt EMAS. Additionally, the survey, literature research and interviews show that stakeholders with a positive image of EMAS appear to be an important driving force behind an organisation’s desire to become EMAS registered.
- EMAS stakeholders report that they do not receive the reputational benefits desired and that external stakeholders’ lack of awareness and recognition of EMAS is one of the key barriers hindering the uptake of the scheme
- Surveyed EMAS registered organisations and Member States desire a greater presence for EMAS in EU laws and promotion activities, which organisations perceive as having a strong link to the image of the scheme among regulators.

4.2.1. Background and research aims

One of the main questions at the centre of this study is “who adopts EMAS and why?”. Determining the reasons why organisations choose EMAS - or why they do not - sheds important light on the effectiveness of the scheme. The current part of the analysis focuses on whether and to what extent stakeholders and their perceptions of EMAS have an influence on organisations’ decisions to adopt and/or maintain an EMAS registration. Furthermore, do these stakeholders see EMAS as an effective instrument in supporting and pushing registered organisations to improve their environmental performance? Finally, does EMAS provide an added value in this regard compared to other environmental management instruments?

Since EMAS is a voluntary instrument, its “image” among stakeholders is undoubtedly just as important for its uptake as is the actual content of the Regulation. Stakeholders with a positive image of EMAS appear to be an important driving force behind an organisation’s desire to become EMAS registered. A number of studies have also found that pressure from stakeholders to improve the environmental performance and reputation of an organisation in general are common reasons why companies decide to adopt a certified EMS (see chapter 5.2.4 and for example Henriques and Sadorsky 2006; Johnstone and Labonne 2009; Milieu and RPA 2009; Darnall et al. 2010). Conversely, a widespread lack of awareness of EMAS or a negative perception of EMAS among key groups can prevent or discourage an organisation from joining the Scheme.

In order to better evaluate the impact of stakeholders and public image on the success of EMAS, this chapter will first examine who those stakeholders are. External stakeholders - often the group more relevant for public image - include customers, public administrations, regulators, competing companies, and community and environmental groups. Internal stakeholders, or those operating within an organisation, include employees, management, shareholders, and investors Henriques and Sadorsky 2006; Darnell et al. 2008; Darnell et al. 2010; Lannelongue and Gonzalez-Benitio 2012).

Internal stakeholders can also exert pressure to adopt EMAS because they see improving their organisation's public environmental image as being essential for success.

Another key group of stakeholders which is external to the organisations but internal to the administration of EMAS itself are the government bodies that administer EMAS in the EU and EEA countries. Each country has both a Member State representative, responsible for administering the scheme at a national level, and a Competent Body, responsible for EMAS registrations. Under the EMAS Regulation, both of these stakeholders hold responsibility for promoting EMAS in their country. Through this work, they also exert a powerful influence on EMAS's public image.

This chapter first examines the existing literature on stakeholders' influence on both EMS adoption in general and EMAS adoption in particular. The related literature on stakeholders' image of EMAS and on Member State promotion activities is then explored. Finally, the relevant results from our online survey of EMAS registered organisations are presented, supported by information from interviews with EMAS registered organisations and EMAS Member State Representatives and Competent Bodies.

4.2.2. Previous research

4.2.2.1. Stakeholders, public image and the decision to implement an EMS

A number of recent studies have investigated the effect of stakeholders on an organisation's decision to implement an EMS. A few of those have focused particularly on EMAS (Milieu and RPA 2009; Bracke et al. 2008; BUMB 2012; SSSUP 2013). The majority of studies, however, demonstrate conclusions about stakeholders' influence on the adoption and implementation of an EMS in general or of ISO 14001 in particular (Granly and Welo 2014; Qi et al. 2011; Darnall et al. 2008; Gavronski et al. 2007; Botto and Comoglio 2013; Gonzalez-Benito et al. 2011; Heras-Saizaribitoria and Landin 2010; Kassolis 2007; Lannelongue and Gonzalez-Benito 2011; Nishitani 2010; Johnstone and Labonne 2009; Frondel et al. 2008). Some of these authors will be covered in more depth in the next chapter covering drivers, costs and benefits of EMAS adoption.

Although a certain degree of variation inevitably exists within such a wide range of studies, the evidence strongly indicates that stakeholders and public image have a significant influence on an organisation's decision to adopt an EMS in general. Darnall et al. (2008) found that the pressure for greater external legitimacy plays a major role in spurring manufacturing facilities to implement an EMS (374). Frondel et al. (2008) reported a similar result for German manufacturing facilities in particular, with the wish to improve corporate image being a major driving factor.

Another study by Gonzalez-Benito et al. (2011) indicated that the total amount of pressure exerted by all types of stakeholders ultimately influences an organisation's decision to adopt an EMS. However, the importance of a particular stakeholder group can vary considerably among organisations. The authors assert that some of this variation stems from differences in the size, sector, location and international scope of organisations.

Johnstone and Labonne (2009), for example, found that organisations use a certified EMS in particular to "signal" to both regulators and customers that they take their environmental performance seriously. This desire to improve their image towards stakeholders is much stronger for larger firms than for smaller ones, particularly with

regard to demonstrating environmental awareness to regulators. However, this evidence does not indicate that stakeholders are insignificant for smaller firms. On the contrary, Darnell et al. (2010) found that SMEs are actually more responsive to stakeholder pressures to adopt environmental strategies. The authors point out that, while small firms may experience pressure from key groups less frequently, that pressure appears to be more threatening to SMEs than to larger firms.

Along with the size of the organisation, the registration or certification of the EMS has also emerged as a significant factor in responding to stakeholders and improving an organisation's public image (Boiral 2007; Johnstone and Labonne 2009; Lannelongue and Gonzalez-Benito 2011). Lannelongue and Gonzalez-Benito demonstrated in a 2011 study that firms which adopted a certified EMS - including EMAS registration - had experienced a higher degree of pressure from stakeholders than firms without certification. Those organisations with a certified EMS perceived shareholders, employees, labour unions and neighbourhood/community associations as the most significant stakeholder groups. However, the authors also point out that these firms sometimes use EMS certification as a "buffering strategy" rather than as a means of true stakeholder engagement. In particular, Darnall et al. (2008) found that organisations that adopted EMS under external pressure showed less environmental performance improvement than those organisations that adopted EMS as a result of internal motivations.

Although the literature base is broad enough to assert with some certainty the influences of stakeholders and image on organisation's decisions to adopt EMS, many of these studies analysed the same dataset. A 2003 survey by the Organisation for Economic Cooperation and Development (OECD) provided the information for much of the existing research on EMS and stakeholder influence. Most other studies focus primarily on data pertaining to organisations with EMS certified under ISO 14001 and not EMAS. For those reasons, the studies that gather data focused specifically on EMAS should be given particular attention.

4.2.2.2. Stakeholders, public image and the decision to implement EMAS

Looking at EMAS specifically, the most relevant recent reports examining the influence of public image and stakeholders, in addition to the 2005 EVER study, include: the 2009 Study on the Costs and Benefits of EMAS (Milieu and RPA 2009); the EMAS in Germany Evaluation (UBA and BMU 2013); and the BRAVE study (SSSUP 2013). Each of these works reported that the wish to improve an organisation's image and reputation serves as a significant driver for becoming EMAS registered. Only one smaller study by Bracke et al. (2008) did not agree with that assessment. However, this particular investigation only looked at two stakeholder groups - shareholders and financial institutions - and so did not fully take into account all facets of EMAS's public image.

In the Study on EMAS Costs and Benefits (2009), a survey taken by over 400 EMAS registered organisations indicated that "improved reputation" was the third most popular reason for obtaining EMAS registration. 15% of organisations cited reputation as a driver. A lower but still significant number reported "the desire to improve transparency with stakeholders" as a reason for adopting EMAS (Ibid. iv).

The recent EMAS in Germany Evaluation (UBA and BMU 2013) reported an even greater significance for image as a driver. An average of 77% of the 573 EMAS registered organisations surveyed found image advantages to be an important factor in their

decision to join EMAS. The study found this influence to be slightly stronger in the production sector and among large organisations, but the rate was 71% even among small and non-production sector organisations. Transparency, the most important reason cited for adopting EMAS in Germany, also forms a key part of relations with external groups such as regulators, NGOs, and the local community.

The BRAVE study (SSSUP 2013) also found EMAS's image among stakeholders and stakeholder pressure to be a strong driver for EMAS adoption. Breaking down the relevance more strongly by stakeholder group, 36% of the EMAS registered companies in the BRAVE study cited pressure from public authorities as a reason for adopting EMAS. 19% felt the same about commercial buyers, especially in the context of improved reputation. In this investigation, the stakeholders that exerted least pressure towards actions for environmental improvement were workers' unions and banks.

Interestingly, in the BRAVE study, the relevance of each particular stakeholder group for EMAS adoption varied widely by Member State. Public authorities held the most significance in Italy and Portugal, for instance, while consumers played a far more important role in Austrian and Danish organisations' decisions. In the United Kingdom, on the other hand, environmental groups played a decisive role, influencing 86% of organisations that had decided to adopt EMAS.

Overall, the evidence from the literature indicates that concerns about image and pressure from stakeholders are highly relevant to EMAS registered organisations' decisions to join the Scheme. However, the importance of different types of stakeholders varies strongly among organisations depending on size, location and sector.

4.2.2.3. Awareness and reputation of EMAS among stakeholders

While it appears clear that satisfying stakeholders and improving public image are important drivers, another related enquiry involves the extent to which those expectations are met once organisations have become EMAS registered. Does their public image improve? Do stakeholders feel that they and the organisations benefit from EMAS? Which added benefits does an EMAS registration bring in the eyes of different stakeholder groups?

In the Study on EMAS Costs and Benefits (Milieu and RPA 2009), 36% of the surveyed organisations reported "improved stakeholder relationships" as either the most significant or second most significant benefit they received from EMAS. Respondents identified regulators as the group with the most positive response to EMAS.

The German EMAS evaluation (UBA and BMU 2013) returned similar results, finding that EMAS brought image benefits for nearly 50% of organisations. This result applied equally across sectors and among small, medium and large organisations. EMAS also impressed other stakeholders, bringing organisations the most significant reputational improvements among public authorities and staff. The impact on investors, local stakeholders, the general public and consumers was significantly less, although none appeared to have a negative image of EMAS.

Among other EMAS stakeholder groups such as the general public and clients, however, both the German evaluation and the Costs and Benefits study (Milieu and RPA 2009) indicated that a lack of awareness of EMAS formed a barrier to EMAS registration. Vernon et al. noted that this lack of awareness "serves to limit the benefits that organisations can reap in terms of improved image through transparency and the publication of the environmental statement" (91). A total of 90% of respondents in the

German study cited a significant need to improve "public awareness of the EMAS system". This result appeared across all types of organisations and across all sectors. Nearly all of the most frequent suggestions for improving EMAS involved better promotion and raising awareness of the scheme. Those organisations planning on leaving EMAS also cited a low level of awareness as one of the reasons for their departure.

4.2.2.4. EMAS's reputation in comparison to that of other environmental management instruments

With regard to EMAS's reputation in comparison to that of other EMS certifications, the evidence in the literature is mixed. While most stakeholders appear to have a positive image of EMAS, recent studies indicate that some stakeholders do not perceive EMAS as having benefits different from those of other environmental management certifications. For example, Milieu and RPA (2009) reported that organisations frequently do not see enough difference between EMAS and ISO-14001 to justify EMAS registration.

However, the same study's findings did indicate a reputational advantage for EMAS over ISO-14001 among public organisations. This advantage also held true for organisations in extremely competitive sectors or those with a negative reputation among external stakeholders. The authors hypothesized that EMAS's more positive image was due to its more substantial requirements for stakeholder engagement.

With respect to distinguishing itself from ISO 14001 and other EMS certifications, the EMAS recent Evaluation in Germany returned slightly different results. Although a few organisations in Germany reported frustration with the inability to find added value in EMAS, the vast majority (74%) reported that differentiation between EMAS and ISO 14001 did not hold any importance for them. Even among organisations planning to leave EMAS, a lack of reputational advantage over ISO 14001 and other certifications was not mentioned. Additionally, a number of the most important benefits reported by EMAS registered organisations included areas in which EMAS distinguishes itself from ISO 14001 - for example, employee involvement.

Although the literature clearly indicates that stakeholders play an important role in organisations' decisions to adopt an EMS, not very many studies focus on EMAS registration, particularly at a European scale. The few recent studies on EMAS support the results of the EVER study 10 years ago: improving reputation and image are both an important driver for and a benefit of EMAS registration. The literature also shows that stakeholders perceive EMAS very positively, although it is unclear if EMAS has a reputational advantage over other EMS certifications. Image here can be separated into three key aspects: the expectation of an image improvement among EMAS users; the image that different stakeholder groups have of EMAS as an environmental management instrument; and the role of EMAS institutional actors in promoting the scheme with the goal of improving EMAS's image among both potential EMAS users and external stakeholders.

4.2.3. Results

This section examines the findings from the interviews and surveys of EMAS stakeholders regarding the decision to implement EMAS and EMAS's public image.

4.2.3.1. Stakeholders and the decision to implement EMAS

The online survey asked EMAS registered organisations about their reasons for joining the scheme. The results of this question are discussed in detail in the following chapter. This section will review seven of the reasons listed, all of which relate to stakeholders or public image:

- To improve my organisation's public reputation
- To improve relations with the local community
- To improve relations with suppliers
- To satisfy a request from customers/clients
- To satisfy a request from trade associations
- To satisfy a request from NGOs
- To satisfy a request from corporate headquarters

The survey respondents were asked to rate these drivers on a scale of 1 (strongly disagree that this was a reason for joining EMAS) to 5 (strongly agree). Five of the seven options involving image and stakeholders received an average rating of between 2 and 3, indicating that they were not very important for the organisations in the survey. Only "to improve my organisation's public reputation" and "to improve relations with the local community" received confirmation as drivers.

The option "To improve my organisation's public reputation" in fact ranked as the second most important reason for joining EMAS overall (with a rating of 4.2). This result indicates that organisations widely perceive EMAS as a useful tool for reliably signalling an organisation's commitment to environmental issues. Survey respondents were slightly less likely to attribute importance to the driver "to improve relations with the local community", giving it an average rating of 3.5. Nonetheless, this finding lends further support to the assertion that organisations view EMAS's image as widely positive both for them and for the general public.

These results varied very little when the survey respondents were divided into groups according to geographic origin and size of the organisation. Organisations from Member States with high (more than 200), medium (20-200) and low (less than 20) levels of registrations all agreed that improving their public reputation was a primary motivation for joining EMAS. Likewise, enhancing reputation averaged out to be the most important or second most important driver for micro, small and medium and large organisations. Improving relations with the local community received slightly lower ratings, but these were also similar (between 3.2 and 3.6) in all geographic and size groups. The remaining five stakeholder motivations were not drivers for any subgroup of organisations.

EMAS registered organisations thus appear to view the local communities in which they operate as the most influential stakeholders for environmental issues, more so than suppliers, customers, trade associations, NGOs and corporate headquarters. When it comes to motivations for becoming EMAS registered, however, individual stakeholders do not appear as particularly strong driving forces for organisations. Improved reputation, on the other hand, holds a very high importance compared to other factors and is one of the primary reasons why organisations seek EMAS registration.

4.2.3.2. EMAS image

Questions 3.2 and 3.4 of the survey of EMAS registered organisations focused respectively on barriers to EMAS implementation and benefits to EMAS. While these results are discussed in depth in the “costs and benefits” chapter (Chapter 4.3), this section reviews those aspects particularly relevant to stakeholders and image.

Although organisations view EMAS positively and expect that it will improve their image, a substantial number of organisations in our survey agreed that lack of EMAS recognition by stakeholders and customers constituted a barrier to EMAS adoption and/or implementation. With an average score of 3.5 out of 5, lack of EMAS recognition by stakeholders and customers was assigned the fourth highest value on a list of 17 possible barriers, making it a significant obstacle in the eyes of many organisations.

When asked about benefits of EMAS, organisations were slightly more likely to agree than disagree (average rating of 3.2 out of 5) that EMAS had helped improve relations with public stakeholders and the local community. The average opinion reversed to 2.7 out of 5, however, when organisations considered whether EMAS had improved relations with private stakeholders such as suppliers, trade associations and markets. Therefore, despite organisations’ own positive impressions of EMAS, the reputational and relationship benefit they experienced is somewhat lower than expected and vary by stakeholder group.

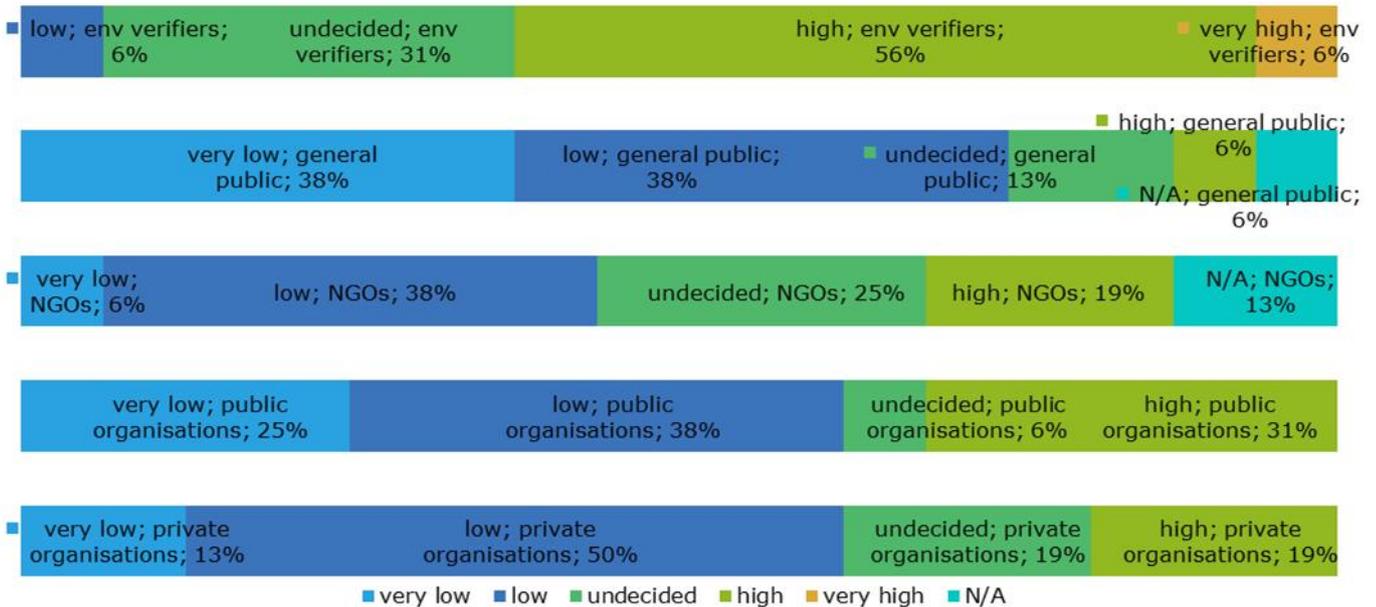
The interviews with EMAS and former EMAS registered organisations confirm that EMAS often did not improve organisations’ reputations as much as they had anticipated. Nearly all interviewed organisations reported disappointment with stakeholders’ – in particular, public authorities and customers’ - lack of knowledge and recognition of EMAS. Several felt that EMAS had failed to live up to their expectations of improved reputation, not because stakeholders had a negative image of EMAS but because they did not know EMAS at all.

The reports were not all negative, however. One long-registered organisation explained that EMAS provided reputational benefits, but only after a considerable effort on the part of the company to educate their customers on what EMAS meant. Another wished for greater recognition of EMAS but also emphasized that EMAS had helped to improve their image at a time when their industry was receiving considerable criticism for its environmental impact. Two regional governments also felt that EMAS had been beneficial for their image among the public.

Two other organisations, one currently EMAS registered and one that had left EMAS, mentioned that current EMAS promotion activities focus too much on the business-to-business aspect. They both felt that the European Commission and the Member States were not making enough of an effort to raise awareness of EMAS among the general population – an issue which will be discussed in the chapter on means invested by key actors (chapter 5). In their opinion and those of other interviewees, EMAS is failing to compete with other environmental management certifications and labels because, for most people and even many other businesses, EMAS is “just letters” (a Competent Body representative from a Member State with medium registration numbers).

Others mentioned disappointment that many public bodies and regulators in their countries had never heard of EMAS and so did not recognize its high standards. One organisation in particular felt that that EMAS was not making the most of a potential reputational advantage. In their view, too few stakeholders realised what added value EMAS presented over other EMS certifications and environmental labels. Several non-EMAS registered organisations also cited a perceived lack of reputational and practical advantages as one reason why they decided not to join.

Figure 19: Perceptions of EMAS awareness among stakeholders

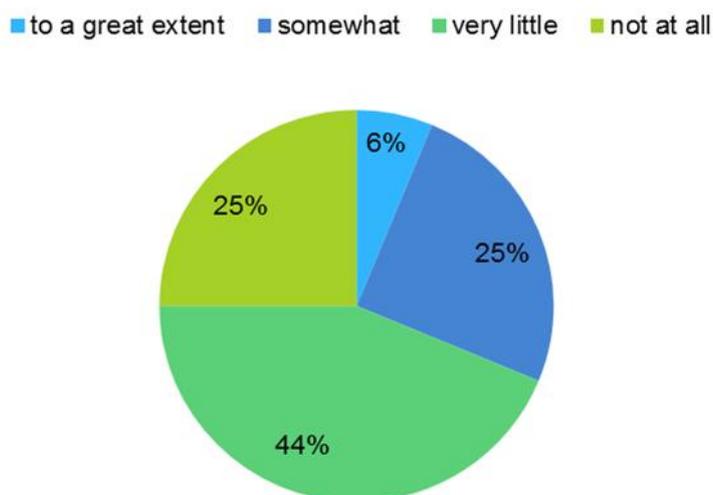


Many EMAS Member State representatives also echoed this sentiment, confirming low awareness of the scheme in their countries. When asked to rate levels of awareness of EMAS and its purpose among different stakeholders, the participating Member State representatives considered only environmental verifiers to be highly aware of EMAS (see Figure 19). A majority of interviewees felt that all other groups had a low or very low level of awareness. Even among public and private organisations – the pool of potential EMAS participants – only a minority of Member State representatives perceived a generally high awareness of EMAS and its purpose. Less than 20% of interviewees felt that the general public in their country knew about EMAS, supplying one reason why some organisations are not receiving the recognition from customers that they had hoped for when joining the scheme.

Although “outside” stakeholders were not consulted directly within the framework of this study, conclusions can be drawn indirectly from the perceived lack of recognition from these groups, which many registered organisations and Member State representatives have reported. This points towards a general lack of knowledge about EMAS among relevant stakeholder groups, in line with previous studies that found a lack of awareness of EMAS among groups such as clients and the general public (UBA and BMU 2013; Vernon et al. 2009).

Although not asked specifically about awareness of EMAS among regulators, Member State representatives reported that most regulatory authorities did not view EMAS as a benchmark against which to measure organisations’ environmental performance. As seen in Figure 20, only about a third of representatives felt that EMAS was used at least somewhat as monitoring benchmark. A number of EMAS registered organisations, Competent Bodies and Member State representatives reported that many regulators did not see an added value in EMAS over ISO 14001 and other EMS certifications. As mentioned previously, some EMAS registered organisations had also experienced regulators who had no awareness of EMAS as an environmental management instrument.

Figure 20: To what extent do EMAS registered organisations serve as a monitoring benchmark for government authorities (e.g. a best practice example, a standard on which to base regulations)?



In general, EMAS appears to enjoy a good reputation among the organisations and stakeholders that are familiar with the scheme. A majority of those surveyed and interviewed indicate overall positive impressions of EMAS, at least with regard to its credibility and reliability as an instrument for making organisations more environmentally friendly. Several commented that EMAS was more serious than other certifications.

Many organisations join EMAS in part to improve their reputation, indicating that they see the scheme as a credible tool for doing so. In particular, organisations in industries under criticism for their environmental impacts appear to have derived reputational benefit from joining EMAS. However, a widespread lack of awareness of EMAS and its purpose among relevant stakeholders are keeping many organisations from receiving the full reputation and image boost they had anticipated when adopting the scheme. This awareness barrier was described in the EVER study in 2005 and does not appear to have changed substantially since then.

4.2.4. Main findings

- Interviews and the survey of EMAS organisations show that EMAS enjoys a positive reputation and image among those familiar with the scheme. They regard it as a useful instrument for improving environmental performance.
- According to the survey results, improved reputation is one of the main reasons why organisations adopt EMAS. Stakeholder relationships, particularly with the local community and public authorities, also play an important role in EMAS uptake.
- Gap between expectations and reality: Organisations feel that EMAS has helped improve their reputation. However, many report in both the survey and interviews that the reputational benefits of EMAS did not meet their expectations. A majority see a lack of awareness of EMAS among stakeholder groups such as customers and regulators as a significant barrier to joining and implementing

EMAS. Surveyed Member State representatives confirm the low level of awareness of EMAS among nearly all stakeholder groups.

- Despite indications in the literature that public organisations may perceive EMAS more positively than ISO 14001, surveyed and interviewed organisations stated that they did not receive any such reputational or regulatory advantage
- A vast majority of both EMAS registered organisations and Member States desire a greater presence for EMAS in EU laws and promotion activities. Both organisations and stakeholders see these types of support as having a strong link to the scheme's image among regulators and customers.

4.3. Costs & benefits and drivers & barriers

Key points at a glance

- The chapter provides answers on several overlapping key issues addressed in the analytical framework, mainly with regard to the effectiveness and cost efficiency of the scheme
- The chapter analyses 1) motivations for adopting EMAS (drivers), 2) the reasons that prevent or discourage organisations from adopting EMAS (barriers), as well as 3) benefits (drivers that have materialised over time) and 4) costs incurred by organisations
- According to the survey, key motivations for implementing EMAS are environmental performance improvements, management improvements, and reputational gains including support from public authorities. Market-based drivers are not as significant.
- Our survey results and interviews indicate that there is a gap between expectation (drivers) and reality (benefits) with regard to reputational gains, which do not materialise after EMAS registration – indeed, survey respondents identify a lack of recognition by external stakeholders as the key barrier to joining EMAS.
- Similarly, other main barriers all have to do with lack of EMAS recognition and external incentives to joining the scheme. This also includes a lack of support from public authorities/regulators in providing financial and policy support to increase the cost efficiency of an EMAS implementation.
- Interviews with EMAS registered organisations strongly support the findings from the survey, with half of the organisations interviewed reporting not having benefited from any regulatory or financial incentives for EMAS adoption
- Despite desiring more regulatory relief, EMAS organisations did not identify economic costs as the most important barrier to the scheme. Cost is, however, a more significant factor for micro organisations than for others.
- With regard to other types of benefits, the majority of surveyed organisations report that EMAS has met their expectations for performance improvements and better management capabilities (e.g. legal compliance).
- EMAS registered organisations report real and significant cost savings through energy and resource efficiency; this savings is, however, more common among large organisations and those in certain industrial sectors

4.3.1. Background and research aims

More than twenty years on from the publication of the first EMAS Regulation in 1993, this chapter aims to examine organisations' principal motivations for adopting EMAS (drivers) and the reasons that prevent or discourage organisations from adopting EMAS (barriers). Within that general framework, this section aims to:

- Identify the drivers and barriers encouraging or preventing organisations from registering with EMAS, as well as the specific costs and benefits associated with the scheme;

- Evaluate, by means of a critical appraisal, the effect of various drivers and barriers on organisations' decisions to participate (or to continue to participate) in the scheme.

Following the EVER Study (Iraldo et al. 2005), the term "driver" refers to a condition or factor foreseen by or connected to the EMAS Regulation that, when activated, is able to:

- Make the organisation perceive a potential benefit or advantage deriving from participation in the scheme;
- Create a real benefit or advantage for the organisation derived from participation in the scheme;
- Make participation in the scheme and the achievement of the expected results easier or more convenient for the organisation;
- Produce beneficial side-effects from EMAS registration.

Tying in to this, the term "barrier" refers to a condition or factor foreseen by or connected to the EMAS Regulation, which:

- Is an unmet need of the organisation, the meeting of which would make adoption of EMAS more desirable;
- Makes participation in the scheme and achievement of expected results more difficult or expensive for the organisation;
- Does not meet the expectations of the organisation interested in EMAS;
- Makes the organisation perceive a potential disadvantage which would be caused by participation in the scheme;
- Would put the organisation at a disadvantage if it chose to take part in the scheme;
- Produces negative side-effects in relation to EMAS registration.

Finally, the term "benefits" refers strictly to the organisation's experiences after the adoption of EMAS. A driver, in contrast, refers to potential benefits that the organisation anticipates receiving when joining EMAS. A benefit, on the other hand, is what the organisation actually experiences. In particular, benefits can:

- Confirm or fail to meet the expectations (drivers) of the organisation after the adoption of EMAS;
- Be tangible (e.g. reduction of costs) or intangible (e.g. better management of environmental compliance);
- Be evaluated in relation to costs and difficulties, in order to decide whether to maintain or withdraw from EMAS.

A further key objective of this chapter is to uncover evidence of the kinds of benefits that accrue to organisations participating in EMAS. Finally, this chapter focuses on the costs incurred by organisations obtaining and maintaining registration, and on the incentives they received during implementation of EMAS.

By focusing on the effectiveness and efficiency of the scheme, this section of the report aims to tackle various key questions, including:

- What are the main internal drivers leading various kinds of organisations to an EMAS registration?

- What are the main external drivers – including incentives, regulatory relief and institutional pressures – which lead various kinds of organisations to an EMAS registration?
- Which are the main external benefits of an EMAS implementation that companies and other organisations take into consideration (quantitatively or qualitatively), including environmental, competitive, intangibles, etc.?
- Which are the main internal benefits of an EMAS implementation that companies and other organisations take into consideration (quantitatively or qualitatively)? Examples of such benefits could be employee satisfaction, improvements in daily operations and better definition of roles and responsibilities.
- What kinds of external barriers (in particular costs) are encountered by EMAS registered organisations in the implementation of EMAS requirements?
- What kinds of internal barriers are encountered by EMAS registered organisations in the implementation of EMAS requirements?
- What kinds of barriers discourage ISO 14001 adopters from adopting EMAS?
- Which promotional activities and incentives conducted by Competent Bodies and/or Member States increase awareness and acceptance of and encourage registration to EMAS?

A final key issue analysed during the study is that of the barriers experienced by organisations that decided to withdraw from EMAS. Nothing exists on this topic in the current technical and academic literature. In this chapter, we will summarise findings based on feedback from organisations that withdrew from EMAS in recent years.

Due to its wide scope, the chapter will be divided in various sub-chapters, with main findings summarised at the end of each sub-chapter.

4.3.2. Drivers

4.3.2.1. Previous research

There are many studies that deal with drivers of EMAS and other environmental management instruments. These show that there are a large number of factors driving companies towards these instruments. Drivers can be either economic/strategic, such as the desire to gain a competitive advantage from fiscal/normative incentives and facilitations, or environment-led external factors.

Taking into account the breadth of previous research material being analysed, the next section are structured as follows:

- Firstly, we present findings emerging from previous research, classified according to three different categories of driver: internal motivations, external image/reputation and market-based drivers.
- For each category, studies on other EMS standards (e.g. ISO 14001) in European countries and (if present) in other non-EU countries are described, followed by a description of studies on EMAS, in order to identify whether differences exist between other instruments (mainly ISO 14001) and EMAS.
- Finally, we aim to verify whether the findings are supported in other political and economic contexts.

4.3.2.1.1. Internal motivations

Grolleau et al. (2007) used empirical methods to work out which factors determine the voluntary adoption of EMS certification (ISO 14001 or EMAS) in agricultural industries. A discrete-choice model of EMS certification was applied to a sample of 1,000 French agricultural firms. The findings suggest that internal management-related factors drive certification more strongly than economic incentives. French farmers also expressed their willingness to increase the value of their organisation by cleaning-up/structuring their paperwork, meeting legal requirements and being attractive to the market.

Another key internal driver identified in previous studies is the aim of improving environmental performance. Heras and Arana (2010) report on the results of a survey that involved 262 companies in the Basque Autonomous Region. The research aimed to investigate the drivers, barriers and benefits to Spanish SMEs in the adoption of the Spanish standard Ekoscan and ISO 14001. The sample involved 169 ISO 14001 certified companies and 93 Ekoscan certified companies. Results showed that the main driver leading SMEs to implement the Ekoscan standard is improvement of the company's environmental performance (51.9% of the answers), while responses regarding the motivations behind companies implementing ISO 14001 were relatively heterogeneous, the highest value achieved (25.8%) also being the aim to improve the company's environmental performance. Marazza et al. (2010) confirm improvements in environmental performance to be drivers in the public sector. The authors observe that one of the drivers spurring public administrations to implement EMS is environmental and management performance improvement. In an ISO survey (2005), and in keeping with the EVER study (Iraldo et al. 2006) conducted in the same period, the capacity of EMAS to improve environmental legal compliance was considered to be both a driver and a benefit.

The report on the ISO 14001 survey (ISO 2014) found that one of the main drivers of implementation of the standard is commitment to environmental protection and conservation, followed by the reduction of risk related to adverse environmental impacts. The survey involved 5,000 organisations.

Broadening the scope of this research brings us to Fryxell et al. (2004)'s research on Chinese organisations. They examined the motivations of Chinese facilities in seeking ISO 14001 certification and the links between these motivations and organisations' own reports on the effectiveness of major EMS components. The study was conducted in 2002 in three major urban cities – Beijing, Shanghai, and Guangzhou – with a sample size of 128 facilities. The main drivers of certification were reported to be ensuring regulatory compliance, enhancing the firm's reputation and improving environmental performance. The study pointed out that internal motivations have an influence on most EMS components.

Aiming to shed light on EMAS in particular, Milieu and RPA (2009) interviewed more than 400 European EMAS registered organisations and Competent Bodies about the costs, benefits, drivers, barriers and added value of EMAS. They identified improvements to resource and production efficiency and the desire to improve legislative compliance as the two main internal drivers. Similar results were observed in the EVER study (Iraldo et al. 2006), which found that drivers of EMAS adoption (and also other kinds of EMS) are heterogeneous and are subject to change according to the sector, size and location of the organisation. Moreover, the study found that the interviews conducted all report environmental and internal drivers to be significant. Key internal drivers such as better management of legal compliance, the need to improve environmental performance and

the capacity of EMAS to prevent environmental risks and liabilities were cited as the main drivers of EMAS adoption.

Overall, the need to improve internal environmental management appears to be one of the most important drivers for organisations deciding to adopt an EMS. This can be motivated by the need to improve the management of environmental compliance, to improve environmental performance and resource efficiency and to improve organisational and managerial capabilities. Studies do not indicate a significant difference between EMAS and other environmental management instruments such as ISO 14001.

4.3.2.1.2. Improvement of the corporate image and reputation among external stakeholders

Obtaining third party certification is seen by both policy makers and organisations as a chance to show environmental commitment to external stakeholders; this is the case for public institutions, local communities, trade associations and NGOs. The studies analysed show that organisations can decide autonomously to obtain certification, or they can make this decision as a response to pressure exerted by external stakeholders.

Several studies have investigated drivers involving external stakeholders in ISO 14001 certified organisations. Granly and Welo (2014) looked at nine Norwegian SMEs in the manufacturing sector. The study demonstrates that customer pressure and improved environmental routines are the main external and internal drivers of ISO 14001 certification.

Darnall et al. (2008a) examined OECD survey data to determine if the motivations behind EMS adoption had any influence on the benefits the companies received from an EMS. Their conclusions were that facilities are driven to adopt more comprehensive EMS in response both to institutional pressure for greater external legitimacy and a desire to build upon existing complementary resources and capabilities.

By focusing on studies which used a sample of non-EU countries, Lannelongue and Gonzalez-Benito (2011) set out to explain the impact that stakeholder pressure has on the implementation (or non-implementation) of EMS, its certification by a firm and its subsequent relationship with environmental proactivity. The study analysed a sample of 3,748 plants from seven OECD countries (United States, Canada, France, Norway, Hungary, Germany, and Japan), to check whether certification is also a mechanism that firms use to differentiate between stakeholders, allowing firms to react only to the pressure of certain stakeholders. Findings reveal that the implementation of an EMS responds to pressure from stakeholders, but only once this system has been certified. In respect to drivers of EMS adoption, organisations mainly respond to pressure from internal primary stakeholders, ignoring pressure from external primary and secondary stakeholders and regulators.

Studies on Chinese and Brazilian samples drew different conclusions. Qi et al. (2011) analysed the effects of community, regulatory and organisational stakeholders on the diffusion of ISO 14001 certification at the provincial level in China. Panel data on ISO 14001 certification from each province for the period 2004-2008 provides evidence of such relations. Findings reveal that signals to foreign customers and community stakeholders play the main roles in encouraging diffusion of ISO 14001 certification. Foreign investors are not considered to be relevant drivers of the diffusion of ISO 14001 in China. Gavronski et al. (2008) explored the determinants of 63 Brazilian companies

from the chemical, mechanical and electronic industries to adopt ISO 14001. An exploratory factor analysis identified four sources of motivation: reaction to pressures from external stakeholders, proactivity in expectation of future business concerns, legal concerns and internal influences.

Boiral (2007) carried out case studies of nine Canadian companies implementing ISO 14001. He found that many organisations implement ISO 14001 to improve their reputation but do not always follow through on effective implementation.

Two studies shed light on (potential) differences between EMAS and ISO 14001 in terms of external stakeholders' influence on the implementation of an environmental management instrument.

Neugebauer (2012) presented 21 interviews with industrial and institutional representatives from the German automotive and engineering industry. This study found that different external pressures affect the adoption of the two standards: the choice to adopt ISO 14001 is mainly induced by external stakeholders while the implementation of EMAS is mainly influenced by internal drivers. These findings have been confirmed by Salomone (2008). The author surveyed 103 Italian companies with Integrated Management Systems certified According to ISO 14001, ISO 9001 and OHSAS 18001. The aim of the study was to identify the main drivers and barriers to adopting an EMS for companies who already had an integrated system. The motivations prompting companies to adopt an EMS were linked mainly to enhanced image (80%) and continual improvement (74%). Similar results were observed by Kassolis (2007). In his paper, he questions the extent to which the adoption of ISO 14001 in Greece is motivated by environmental sustainability or processes of economic globalisation. The study also addresses whether the new system of harmonised regulation, driven by economic globalisation and sustainability discourses, creates an inherently positive environment for environmental policy across different national contexts. The findings indicate that if sustainability is to be pursued through environmental management, proper institutional arrangements and a legal framework must be established and implemented by government and must also cover civil society. The pressures driving companies towards ISO 14001 do not only come from specific institutional stakeholders and elements in society at large, but also from economic stakeholders.

Focusing on EMAS only, SSSUP carried out a survey in 2012 as part of its BRAVE study (SSSUP 2013), interviewing 224 EMAS registered companies in several European countries. Part of the study focused on stakeholders that stimulate actions geared towards environmental improvements. The study shows that pressure from public authorities (including inspection agencies) plays a key role. Statistics show that the role of public entities is very important for 44% of respondents in Italy and for 67% in Portugal, while it is less significant in other countries such as Austria and Germany. The importance of external stakeholders was also observed in a survey carried out in Germany (UBA and BMU 2013). Their research shows the results of a survey of 573 German EMAS registered organisations. The main drivers identified are external stakeholders' interest in transparency with respect to key environmental performance data and improvement in operational environmental protection and energy/resource efficiency.

Another example is the aforementioned study on costs and benefits by Milieu and RPA (2009). It pointed out that general improvement to an organisation's reputation was identified as a key driver by 16% of the EMAS registered organisations surveyed, while about 12% were driven by the need to increase transparency with local stakeholders.

Studies, especially those of Neugebauer (2012), Salomone (2008) and Kassolis (2007), indicate that there might be a difference between EMAS and ISO 14001 with regard to motivations for the implementation of those instruments. Although EMAS studies show

that pressure from external stakeholders does play a role, it also shows that internal motivations (e.g. performance improvement) are stronger, as is the case with ISO 14001.

4.3.2.1.3. Market-based drivers

The academic literature on market-based drivers presents contradictory findings. Some studies show this category to be less important than other types of drivers discussed above, while other studies indicate that these drivers assume a significant role in deciding whether or not to adopt EMAS or other environmental management instruments like ISO 14001.

Johnstone and Labonne (2009), for example, carried out a survey which aimed to explore how the motivation for introducing an EMS certification is influenced by its requirements. They defined the roles of EMAS in bringing about: a) better compliance or improved performance, and b) external indicators of good environmental practices to both other market participants and regulatory authorities. Drawing upon a database of approximately 4,000 facilities in seven OECD countries, the authors found empirical evidence for the role that both factors play in encouraging adoption and certification of an EMS, even if the relative importance of different factors varies according to facility size. Their results support the view that facilities implement and certify EMS to send a signal to other players in the market, particularly when there is significant potential asymmetry of information between the facility in question and those to whom they are aiming to send a signal. In addition, they found strong evidence that certification serves as a signal to regulatory authorities, although the intended recipients of the signal appear to differ by facility size.

Price (2007) compared EMS in the United Kingdom, with a particular focus on the impact of changes made to the ISO 14001 standard during the revision of 2004. He found that organisations adopted ISO because of market-based drivers (increase of turnover). Other less important drivers included the need to respond to pressure from external stakeholders and changes in organisational policy and personnel. Similar financial drivers were observed by Prakash and Potoski (2006) even if they looked more to exports than turnover. They observe the effect of international trade on countries' ISO 14001 adoption rates, examining two countries' structural dependence on exports and how often their main trading partners have high rates of ISO certification. They found that international trade influences ISO 14001 adoption through bilateral trade but not through structural trade. Countries whose export destinations have higher levels of ISO 14001 certifications have higher certification levels themselves.

The ISO 14001 Continual Improvement Survey 2013 report (ISO 2014) includes survey results from 5,000 participants in 110 countries worldwide. One of the issues investigated showed that customer requests were the main driver influencing organisations to adopt ISO 14001. Several authors also observed market-based drivers in non-European countries. Nishitani (2010) analyses the environmental preferences of (and pressures exerted by) customers in environmentally conscious markets and how this influences the number of ISO 14001 adoptions in a given country. The research was carried out over eight years using a sample of 155 countries. Its aim was to confirm whether environmental preferences and pressure from customers in environmentally conscious markets are greater. The findings show that environmental preferences and pressure from customers in environmentally conscious markets (including Finland, Japan, Germany and Denmark) are more likely to encourage both domestic and foreign suppliers to adopt ISO 14001.

Singh et al. (2014) and Zhang et al. (2008) drew conclusions on market-based drivers of ISO 14001 certified companies in India and China respectively. The first study found that internal and market pressures are significant drivers of the adoption of proactive environmental management practices. In any case, external pressures from regulatory and social stakeholders were not found to be important in India. Zhang et al. (2008) looked at motivations for ISO 14001 registered firms in China and factors affecting implementation. The result indicates that the major motivation for the system was to seek entrance to international markets.

The analysis of EMAS-specific studies does not show that findings differ starkly from studies focusing on other environmental management instruments. Bracke et al. (2008) found that decisions to participate in EMAS are positively influenced by the solvency ratio, the share of non-current liabilities, average labour cost and absolute organisation size as well as the relative size of a company compared to sector average. The profit margin exerts a negative influence. They also found that companies whose headquarters are located in a country that actively encourages EMAS are more likely to participate. Finally, this paper suggests that, rather than attracting other kinds of companies, a favourable institutional environment succeeds in convincing similar companies to participate.

4.3.2.2. Results

Our survey aimed to identify which drivers push organisations to implement EMAS. EMAS registered organisations indicated their level of agreement with 21 different drivers proposed in the online questionnaire. They gave a score from 1 (strongly disagree) to 5 (strongly agree) to each one.

Table 17: Results related to EMAS and drivers

Why did you decide to implement EMAS?	Value ²⁵	Standard deviation
To improve my organisation's environmental performance	4.2 (4.24)	0.8
To improve my organisation's public reputation	4.2 (4.23)	0.8
To contribute to a more sustainable world by reducing our environmental impact	4.2 (4.20)	0.9
Better management and guarantee of legal compliance	4.1	0.9
To improve organisational and managerial capabilities in the environmental area	3.9 (3.93)	0.9
To demonstrate legal compliance status to the public	3.9 (3.89)	1.1
To have a uniform environmental management standard that is recognised across the EU (i.e. more visible than national or local standards, easier to meet EU-harmonised environmental requirements)	3.8	1.2

²⁵ Two decimals are added here and in other tables where different values were within the range of 0.1 and the differences were deemed important to be highlighted.

To achieve better risk management and environmental liability prevention	3.7	1.1
To improve relations with the local community	3.5	1
To improve the quality of products/services offered to the market	3.1	1.3
To gain benefits from regulatory relief or other policy measures (e.g. tax breaks, less frequent inspections by authorities)	3.0	1.4
To keep up with main competitors and/or with the other members of trade associations to which my organisation belongs	2.9	1.4
To increase employee satisfaction	2.9	1.1
To increase my organisation's chances of gaining access to or obtaining competitive advantage in public procurement procedures	2.8	1.4
To make environmental management practices consistent at production sites worldwide through EMAS Global (incl. legal compliance check; reporting)	2.8	1.4
To increase my organisation's competitiveness on the export market (e.g. in customer-supplier relationships)	2.8	1.4
To improve relations with suppliers	2.7	1.2
To satisfy a request from customers/clients	2.6	1.4
To satisfy a request from trade associations	2.1	1.1
To satisfy a request from NGOs	2.1	1.1
To satisfy a request from corporate headquarters	2.1	1.4

Our research (as seen in Table 17) shows that the main drivers among the sample are:

- 1) improving environmental performance,
- 2) improving public reputation
- 3) the wish to contribute to a more sustainable world,
- 4) the aim to guarantee better management of legal compliance.

These four options obtain a high score (over 4) when compared with other chapters/questionnaire topics in this study. The relatively low standard deviation indicates that respondents share similar views on the key drivers.

Although the results match some already-existing technical and academic literature, they also include original propositions not previously investigated as drivers for EMAS organisations. A number of previous studies have identified at least one of the first two drivers in the list as well as the fourth, the aim of managing legal compliance²⁶. The main novelty arising from our research is the high significance of the statement to contribute to a more sustainable world by reducing our environmental impact. EMAS registered organisations decide to obtain environmental certification because they believe both in the need to achieve sustainable development and in the management of businesses according to ethical standards. This reasoning goes beyond pure market-based drivers or external pressures.

EMAS registered organisations confirm in interviews that improving environmental performance for its own sake is a motivation for EMAS adoption. Two representatives of SMEs – one Spanish, one Estonian – stated that “one of the main drivers for the implementation of EMAS was the improvement of environmental performance.”

Other internal drivers are also important. The aforementioned Spanish SME stated that they sought to improve managerial capabilities in environmental matters, to strengthen the relationship with the local community, to have better risk management and environmental liability prevention, to ensure internal legal compliance, to demonstrate legal compliance to the public, and to contribute to a more sustainable world. Furthermore, NGOs, customers, suppliers, trade associations, competitors and other interested parties had contacted the NGO requesting that they join EMAS and improve their environmental performance. The Estonian SME remarked that enhancing its reputation through EMAS was another driver, given that the scheme is a uniform environmental management standard that is recognised across the EU.

The latter statement is in line with findings in Chapter 4.6, The relationship between EMAS and competitiveness. The improvement of an organisation’s public reputation is a key driver for EMAS implementation. Several interviews with ISO 14001 certified organisations that did not have EMAS also confirmed this. These organisations emphasized improvements in their reputation among local communities and stakeholders as one of the most important (and in some cases the only) reason to consider a move to EMAS. A large Italian organisation commented that the main benefits they would expect in adopting EMAS are “an improvement in public reputation and a better relationship with the local community.” The organisation added that these two benefits “can also be considered the two main drivers of and pressures on our organisation in deciding to move to EMAS.”

A Spanish ISO 14001 certified company expressed similar views. The organisations stated in particular that “the relation with the main stakeholders is the one and only driver to introduce any EMS [...], everything is planned in order to improve the relationship with sector-specific associations [...].” The interview highlighted the key importance of relationships with stakeholders as a potential motivation to adopt EMAS.

²⁶Studies identified as drivers the need to improve environmental performance (Sciopioni et al. 2007; Milieu and RPA 2009; Heras and Arana 2010; Marazza et al. 2010; UBA and BMU 2013), improve public reputation (Fryxell et al. 2004; Boiral 2007; Gavronski et al. 2008 Darnall et al. 2008b; Salomone 2008; Johnstone and Labonne 2009; Milieu and RPA 2009; Neugebauer 2012) and ensure better management of legal compliance (Fryxell et al. 2004; ISO 2005; Iraldo et al. 2006; Johnstone and Labonne 2009; Grolleau et al. 2007; Heras and Arana 2010).

Looking at other potential drivers, our survey results show that organisations did not consider the other options as significant. In some cases, high standard deviation values indicate that views on the matter differed significantly among organisations. For example, some organisations consider improving the quality of products to be a significant driver for joining EMAS, whereas for others this is not the case at all. However, when asked whether EMAS actually did improve the quality of products, values are even lower, leading to the conclusion that EMAS does not have a relevant role in driving improvements in the environmental performance of products.

Examining the particularly low-rated potential drivers to join EMAS - the satisfaction of requests from trade associations, NGOs, customers/clients (this option referred to requests from all customers/clients, not only from end-users), and corporate headquarters - also allows us to draw some conclusions. Firstly, we can suppose that the aim of improving reputation is not influenced by clients (nor by NGOs and trade association) but rather by other stakeholders (e.g. inspection agencies, public authorities, local communities). Similarly, the BRAVE study (SSSUP 2013) also indicates that inspection agencies and public authorities play an important role in encouraging EMAS adoption. In particular, the study shows that 67% of Portuguese and 44% of Italian EMAS registered organisations report pressure from public authorities (including inspection agencies) as playing a role in their decision to adopt EMAS. Secondly, organisations see EMAS less as a market instrument (in keeping with chapter 4.6 on competitiveness) and more as a tool with which to improve internal environmental management and the external reputation of the organisation.

The following tables (Table 18 and Table 19) analyse the data, classifying them according to the two main categories described in Chapter 3.6: geographical coverage (high registration countries, medium registration countries and low registration countries) and size (micro, small and medium, and large companies). For geographical coverage, we look at countries with high numbers of registrations (more than 200), those with medium numbers of registrations (20-200 registrations) and those with low numbers of registrations (fewer than 20).

Table 18: Drivers for EMAS implementation: analysis per geographical coverage

Why did you decide to implement EMAS?	High registration countries	Medium registration countries	Low registration countries	Aggregate Value
To improve my organisation's environmental performance	4.2	4.3	4.4	4.2
To contribute to a more sustainable world by reducing our environmental impact	4.2	4.2	4.3	4.2
To improve my organisation's public reputation	4.2	4.2	4.1	4.2
Better management and guarantee of legal compliance	4.1	4.0	4.1	4.1
To improve organisational and managerial capabilities in the environmental area	3.9	3.9	4.1	3.9
To demonstrate legal compliance status to the public	3.9	3.9	3.8	3.9

To have a uniform environmental management standard that is recognised across the EU (i.e. more visible than national or local standards, easier to meet EU-harmonised environmental requirements)	3.8	3.9	3.9	3.8
To achieve better risk management and environmental liability prevention	3.7	3.8	4.0	3.7
To improve relations with the local community	3.5	3.6	3.3	3.5
To improve the quality of products/services offered to the market	3.0	3.2	3.7	3.1
To gain benefits from regulatory relief or other policy measures (e.g. tax breaks, less frequent inspections by authorities)	3.1	2.5	2.8	3.0
To keep up with main competitors and/or with the other members of trade associations to which my organisation belongs	2.8	3.2	3.2	2.9
To increase employee satisfaction	2.8	3	2.7	2.9
To increase my organisation's chances of gaining access to or obtaining competitive advantage in public procurement procedures	2.7	3.2	3.0	2.8
To increase my organisation's competitiveness on the export market (e.g. in customer-supplier relationships)	2.6	3.0	3.5	2.8
To make environmental management practices consistent at production sites worldwide through EMAS Global (incl. legal compliance check; reporting)	2.7	3.4	2.5	2.8
To improve relations with suppliers	2.7	2.9	2.8	2.7
To satisfy a request from customers/clients	2.5	3.0	2.5	2.6
To satisfy a request from NGOs	2.1	2.2	2.0	2.1
To satisfy a request from trade associations	2.1	2.2	2.1	2.1

To satisfy a request from corporate headquarters	2.0	2.5	1.5	2.1
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When comparing the results, benefits from regulatory relief hold more importance for respondents from Member States with high registration numbers than for those from medium or low registration countries. This might indicate that Member States with high registration numbers offer a wider range of regulatory reliefs or other policy measures. The wide availability of regulatory relief might then in turn explain why those countries' registration numbers are high.

Table 19: Drivers for EMAS implementation: analysis per size of organisations

Why did you decide to implement EMAS?	Micro	Small and medium	Large	AggregateValue
To improve my organisation's environmental performance	4.4	4.2	4.2	4.2
To improve my organisation's public reputation	4.4	4.2	4.2	4.2
To contribute to a more sustainable world by reducing our environmental impact	4.4	4.2	4.1	4.2
Better management and guarantee of legal compliance	4.2	4.2	4.0	4.1
To improve organisational and managerial capabilities in the environmental area	4.1	4.0	3.8	3.9
To demonstrate legal compliance status to the public	3.7	3.9	3.9	3.9
To have a uniform environmental management standard that is recognised across the EU (i.e. more visible than national or local standards, easier to meet EU-harmonised environmental requirements)	4.2	3.8	3.6	3.8
To achieve better risk management and environmental liability prevention	3.9	3.8	3.6	3.7
To improve relations with the local community	3.5	3.5	3.5	3.5
To improve the quality of products/services offered to the market	3.1	3.4	2.7	3.1
To gain benefits from regulatory relief or other policy measures (e.g. tax breaks, less frequent inspections by authorities)	3.2	3.1	2.8	3.0
To increase employee satisfaction	2.9	2.8	2.9	2.9

To keep up with main competitors and/or with the other members of trade associations to which my organisation belongs	3.2	3.0	2.7	2.9
To increase my organisation's competitiveness on the export market (e.g. in customer-supplier relationships)	3.4	2.8	2.5	2.8
To increase my organisation's chances of gaining access to or obtaining competitive advantage in public procurement procedures	3.4	2.9	2.6	2.8
To make environmental management practices consistent at production sites worldwide through EMAS Global (incl. legal compliance check; reporting)	2.9	2.8	2.8	2.8
To improve relations with suppliers	3.1	2.8	2.5	2.7
To satisfy a request from customers/clients	2.9	2.6	2.6	2.6
To satisfy a request from NGOs	2.2	2.2	2.0	2.1
To satisfy a request from trade associations	2.5	2.2	1.9	2.1
To satisfy a request from corporate headquarters	2.2	2.0	2.2	2.1

When comparing organisations by size, micro organisations show a higher level of agreement with the first two potential drivers of EMAS implementation (improvement of organisation environmental performance and improvement to organisations' reputations) than do SMEs and large organisations. This finding confirms observations in the existing literature on environmental performance: larger companies begin actions directed to the optimisation of use of resources before they begin implementation of EMAS and consider those actions to be targeted strategies to reduce costs. For large organisations, this factor reduces the expectation of performance improvements through EMAS. In interviews, several large ISO 14001 certified companies stated that they do not expect further performance improvements should they decide to adopt EMAS. Indeed, a large Italian organisation stated that "we do not think that EMAS will allow us to increase performance over and above what we are already doing with ISO 14001."

In addition, we can observe that, even when broken down by organisation size (see Table 19), the most common drivers remain the same as for the whole sample shown in Table 18. The aims of improving performance and reputation remain the most positively rated options. This consistency indicates that the survey's results are representative and very significant.

A few additional differences between small, medium and large organisations can be identified. The driver "satisfying requests from NGOs" appears less important for large organisations than for micro organisations and small and medium-size organisations. On the contrary, as expected, satisfying requests from corporate headquarters is more important for large companies than for micro and SMEs (which in many cases do not have multi-site managerial and administrative structures).

Taking into account the driver to improve relations with suppliers, micro and small and medium-sized organisations perceive more pressures from suppliers than large organisations do. Nevertheless, most organisations do not in general consider pressure from suppliers to be an important driver for adopting EMAS to (the highest value is 3.1 out of 5).

When looking at the drivers relating to competitiveness on the market (satisfaction of a request from customers/clients, competitiveness on the export market, competitive advantage in public procurement procedure), our results show that micro organisations have consistently higher expectations from EMAS. This difference between organisation size does not, however, appear in this study's section on competitive advantages obtained with EMAS, where all types of organisations gave the options related to market advantages low scores (see chapter 4.6). The stark difference between the expectations expressed in this section on drivers (score 3.4 for both competitive advantages in exports and Green Public Procurement; GPP) and the low score indicated in the section on competitiveness (score 2.2 for the option "increase in turnover" and 2.0 for increase in export) indicate that micro organisations are the most disappointed in EMAS's weak effect on spurring competitiveness on the market.

Finally, the driver to contribute to a more sustainable world by reducing our environmental impact achieved a high score from all types of organisations. This finding implies that ethical drivers play a significant role for organisations, and that EMAS's main objective to serve as a tool for improvement of environment performance is an important consideration for potential EMAS adopters. These organisations obviously expect EMAS to be the right tool for achieving the larger objective of protecting the environment. Putting increased emphasis on this link in information and marketing campaigns could potentially strengthen the scheme's position among organisations and increase registration numbers.

4.3.2.3. Main findings

- Organisations decide to adopt EMAS for three main reasons:
 - Improving environmental performance
 - Improving additional internal environmental management capacity (includes the options improvement of management of legal compliance, improvement of organisational and managerial capabilities in the environmental area, better risk management and environmental liability prevention).
 - Improvement of organisations' public reputation (includes the options to improve my organisation's public reputation, demonstrating legal compliance status to the public and improved relations with the local community).
- The objective (or need) of improving public reputation focuses mainly on organisations' relationships with local communities and public authorities and is less relevant to relationships with NGOs, trade associations and clients/customers.
- Market-based drivers cannot be considered important in the context of EMAS (low scores for answers on to satisfy a request from customers/clients, improve relations with suppliers, increase my organisation's competitiveness on the export market, increase my organisation's chances of gaining access to or obtaining competitive advantage in public procurement procedures).
- All the aforementioned results confirm the findings of some previous studies on EMAS and other forms of EMS, with one exception: micro organisations

participating in our survey implement EMAS in order to improve market performance.

- In general, EMAS organisations do not perceive "to gain benefits from regulatory relief or other policy measures" as an important driver. They also report receiving few real benefits in this area. However, survey respondents from Member States with high registration numbers value regulatory relief and other policy measures more highly than those from other countries. These findings indicate the possibility that those Member States may offer more incentives, which, in turn translate into higher registration numbers.
- The study adds a new driver to the existing discussion in the EMAS literature. The option to contribute to a more sustainable world by reducing our environmental impact received a surprisingly high score, linked closely with ethical aspects of business management.

4.3.3. Barriers

4.3.3.1. Previous research on EMAS barriers

In the academic literature, several studies analyse the principal barriers hindering the adoption of EMAS and other environmental management instruments. Most literature distinguishes between external and internal barriers, as explained in the following sections.

4.3.3.1.1. External barriers

External barriers include a wide set of factors, ranging from the cost of implementation or other financial aspects to a lack of support and guidance, barriers concerning institutional frameworks and the verification/registration process to the lack of market recognition, or a lack of awareness of customers.

A lack of financial resources and the costs of implementation are two of the main external barriers to the adoption of environmental management instruments like ISO 14001. According to the Northern Ireland Environmental Agency (2009), the cost of implementation is the main barrier to adopting ISO 14001 and EMAS. Bist (2007) confirms these results, adding a lack of financial resources as a second important barrier. Similarly, Price (2007) found that ISO certified companies in the UK experienced three main barriers to EMS implementation: A lack of financial resources, a lack of external pressure and a perceived lack of benefits.

Emilsson and Hjelm (2005) reported similar results in public organisations. They carried out a survey with environmental managers in 37 local authorities. In this study, the authors also observed that budget constraints are barriers to public institutions' implementation of EMS. When resources are limited, the implementation of an EMS has to compete with many other local government priorities. Lozano and Valle (2007) contributed further to the discussion of barriers in public administrations, expanding the list to include a lack of political support and commitment. EMS requires changes in the policy agenda, but it is difficult to maintain the environment as a top priority on this agenda after completing the initial certification process.

The size of the organisation also affects which barriers they experience. The ISO report (2005) compared SMEs with larger firms and found that difficulty accessing information on EMS, lack of awareness of SMEs' environmental impact, lack of government/policy incentives and high implementation costs to be the main barriers discouraging SMEs in particular from adopting ISO 14001.

Looking beyond Europe, Ustad (2010) sought to determine New Zealand hotel managers' awareness of EMS and to identify hotel managers' understanding of the possible barriers associated with the adoption and implementation of EMS. The study identified two main barriers for the implementation of EMS: implementation cost and a lack of supporting technology.

With regard to EMAS, a lack of financial resources and the costs of implementation are also key barriers. Milieu and RPA (2009) found that 23% of EMAS registered organisations said that benefits were unclear or did not justify the costs. In addition, cost of implementation was a key barrier to registration for 20% of respondents.

Similar results can be observed in the EVER study (Iraldo et al. 2006), which found that important external barriers to the adoption of EMAS include economic factors (e.g. cost of implementation), low consumer awareness and interest (and thus a limited market response) and a lack of recognition and incentives from public institutions. The study identified a lack of competitive rewards and advantages, a lack of recognition by public institutions (including regulatory relief), and a lack of economic incentives (including funding) as the most important external barriers. A study by the Spanish Ministry of the Environment (2006) also identified the lack of recognition and promotion from institutions as the main external barrier to EMAS.

Looking at factors determining the implementation rate of EMAS, Blanco and Borsky (2013) examined EMAS registrations in the entire EU from 1995 to 2010. They determined that differences between countries' environmental regulatory stringency and the effectiveness/quality of institutions could accurately explain the number of EMAS certifications. Stricter environmental regulation increased the amount of effort required to meet EMAS's legal compliance requirements and correlates with a decrease in the number of registrations.

4.3.3.1.2. Internal barriers

Internal barriers are a wide category, including factors such as lack of resources (time and human capital), difficulties in the understanding and perception of EMAS, drawbacks in its implementation process, and organisations' working cultures.

Balzarova and Castka (2008) conducted an in-depth analysis of ISO 14001 certified organisations. The research focused on two case studies on small-to-medium-sized enterprises in the United Kingdom which had some similarities (e.g. in both cases organisations had ISO 14001 certification). Data were collected via semi-structured interviews, observations and document reviews. The paper found that "an inappropriate design of EMS shifts organisational focus towards maintaining the certification rather than improving organisational processes and performance," finding further that "if the ISO 14001 in organisations does not support organisational sustainability and success, it becomes a burden and people neither buy into it, nor do organisations invest into the system."

Other studies also emphasise the importance of the proper implementation of the EMS and the role of employees. According to Martín-Peña et al. (2014), difficulties with ISO

14001 include the requirements of the system, the organisational structure and commitment of the necessary human resources (managers and workers), as well as environmental information in terms of establishing objectives, calculating outcomes and establishing workers' environmental responsibilities.

Salomone (2008) showed (on the basis of a study of 103 Italian companies with Internal Management Systems certified according to ISO 14001, ISO 9001 and OHSAS 18001) that the barriers encountered in implementing an EMS are mainly internal, such as organisational barriers (41%) and scarcity of competent human resources (33%) followed by an external barrier: high costs of adopting and certifying an EMS (28%).

Bist (2007) found the lack of companies' commitment to be a barrier. In particular, SMEs do not see the need to implement an EMS in the company, and disregard the implementation of formalised management systems in general. The author also stated that lack of internal resources and skills can be considered barriers.

Price (2007) found that staff perceives EMS to promote excessive regulation and bureaucracy. Tambovceva (2010) described the barriers to ISO 14001 certified companies in a non-EU country. The research developed a model of environmental management assessment that can be used to compare different companies and to analyse activities in a single enterprise, as well as for self-assessment in enterprises. The questionnaire was prepared in accordance with section 4 of ISO 14001:2004. The survey was carried out in 2008 and involved 5 Latvian construction companies. The study confirms that in some companies, the EMS implemented is not functioning properly. The main internal barrier in the application of the EMS is a lack of understanding or knowledge about the concepts of environmental policy, environmental management and environmental activity factors. Another study related to ISO 14001 in a non-European country was carried out by Sambasivan and Yun Fei (2008). The authors carried out research on ISO 14001 certified companies in Malaysia. They examined the factors critical to ISO 14001 implementation and the benefits gleaned from it among companies in the electronics sector. The results of the study indicate that the critical success factors, in order of importance, are as follows: management approach, organisational change, technical aspects, and external and social aspects.

The EVER study (Iraldo et al. 2006) found that internal barriers for EMAS registered organisations are lack of resources (in terms of time, competences, human capital and culture) and difficulties in involving, motivating or obtaining the commitment of personnel.

Evidently, for both EMAS and other environmental management instruments like ISO 14001, the proper implementation of the EMS and the role of staff and their competences are key issues. Studies do not reveal differences between the two instruments in terms of important barriers.

4.3.3.2. Previous research on costs

Some studies in the academic literature examine the costs of EMAS and other environmental management instruments. With regard to ISO 14001 certified organisations, Pierotto's (2011) work shows the CESQA (Centre for Study on Environmental Quality of Università degli studi di Padova) ACCREDIA (Italian National Accreditation Body) 2010 survey's findings. The survey aims to investigate costs and benefits of EMS implementation according to the ISO 14001 standard in Italian organisations. The author classified the sample in five groups according to size, typology, year of certification, combination with other certificates, and geographical

area. The author found a positive correlation between company size and cost of actions on plants, cost of innovation, economic benefits and finally, the perceived usefulness of EMS.

Darnall and Edwards (2006) investigated i) whether EMS adoption costs vary according to ownership structure and ii) whether organisations with stronger complementary capabilities and greater access to resources incur fewer EMS adoption costs. The results support resource-based approaches: facilities with stronger internal capabilities prior to EMS adoption incurred lower EMS adoption costs and relied on external resources to a lesser extent, whereas facilities with fewer organisational capabilities incurred higher adoption costs and relied on external resources to a greater extent. This is in line with study findings on barriers from the previous section.

Costs were an important issue in the implementation of an EMS according to studies performed in non-European countries. Turk (2009) investigated ISO 14001 costs and benefits in the Turkish construction sector. The author found that the most significant negative issue in respect to ISO 14001 was operational cost.

Similar results were achieved with a sample of Brazilian companies. De Oliveira et al. (2010) affirmed that the Brazilian companies' main difficulties with ISO 14001 are operational cost increases and the constant changes in environmental legislation in Brazil.

Focusing on analysing both EMAS and ISO 14001, two studies present interesting results. The Bavarian Environmental Agency (2006) examined the ecological and economic effects of EMAS and other forms of EMS in the German state of Bavaria. EMAS and ISO 14001 were particularly strongly associated with higher and potentially burdensome costs.

Abeliotis (2006) identified and summarised the experiences of EMAS registered companies operating in Greece up until 2003. Only 10 companies (compared to the 126 that were ISO 14001) were EMAS registered in that year. Only 5 remained registered in 2005. The main cost items were upgrades to infrastructure and machinery with the goal of achieving the continuous improvement requested by the scheme and/or fees to environmental verifiers. Although this is certainly not a positive finding, as it indicates that costs are not amortised by efficiency gains, it nevertheless suggests that EMAS is indeed posing stricter requirements on performance improvements than ISO 14001.

The Study on the Costs and Benefits of EMAS (Milieu and RPA 2009) put a value on the financial aspect of EMAS registration, calculating the costs to a typical EMAS organisation to be about €48,000 in the first year of registration and €26,000 annually thereafter. However, these costs may vary widely among organisations and Member States.

Eco-Conseil Entreprise studied registration fee policies in various Member States in the framework of capacity building and EMAS for SME contracts (2005-2010). It shows that there is a correlation between countries with high registration fees and a low number of registered organisations.

Findings from the BRAVE study (SSSUP 2013), which focuses on EMAS, show clearly that the costs of implementation, including the internal and external costs (31% very important and 41% moderately important), and/or the costs of registration (28% and 42%) are once again among the challenges that EMAS registered organisations frequently have to tackle.

4.3.3.3. Results

The survey section on barriers presented 17 different potential barriers (Table 20). Interviewees assigned a score from 1 (strongly disagree) to 5 (strongly agree).

Table 20: Results related to barriers on EMAS implementation

Did you experience any of the following issues as causing difficulties in your implementation of EMAS?	Value	Standard deviation
Lack of EMAS recognition from the market	3.6	1.3
Lack of EMAS recognition by public institutions (including regulatory relief or other measures such as tax breaks)	3.5 (3.53)	1.3
Lack of external incentives	3.5 (3.46)	1.3
Lack of EMAS recognition by stakeholders and customers	3.5 (3.45)	1.3
Cost of environmental verifier	3.3	1.2
Costs of implementation (including external consultants)	3.2	1.2
Lack of EMAS recognition at the international level (outside EU)	3.1	1.3
Costs of maintaining registration over time	3.0	1.2
Lack of technical and information support about EMAS from public authorities	3.0	1.3
Difficulties in involving, motivating or obtaining the commitment of personnel	3.0	1.1
Difficulties in achieving continuous improvement of environmental performance	2.9	1.2
Difficulties originating from the set-up of EMAS (e.g. definition of roles and responsibilities; internal audits; staff training)	2.8	1.0
My organisation did not experience any difficulties in implementing EMAS	2.8	1.2
Difficulties linked to the approach followed by the environmental verifier (e.g. verification of legal requirements, different interpretation of EMAS requirements by different environmental verifiers, lack of experience of verifier, etc.)	2.6	1.1
Cost of registration fee (to Competent Body)	2.5	1.1
Difficulties in producing the environmental statement	2.4	1.1
Difficulties in achieving or maintaining legal compliance	2.4	1.1

It is useful to compare findings from this study with those of the EVER study (Iraldo et al. 2006). Despite the change and the enlargement of the survey sample in this study, the first four barriers encountered by EMAS registered organisations are exactly the same, and are also in the same order of importance.

The first five main barriers identified all have external origin (lack of recognition from the market, lack of recognition by public institutions, lack of external incentives, lack of recognition by stakeholders and customers, costs of environmental verifiers) while internal barriers (commitment of personnel, difficulties in achieving continuous improvement, difficulties originating from the set-up of EMAS, etc.) have a lower importance for survey respondents.

Survey respondents see the lack of recognition by the market as the most problematic barrier. Comparing this result with the results shown in the section on drivers, and the chapter on competitiveness (Chapter 4.6), it is evident that EMAS registered organisations do not decide to adopt EMAS for market reasons (low score in drivers). Additionally, after the adoption, the organisations confirm that EMAS does not lead to competitive advantage on the market (low scores in the chapter on competitiveness).

Based on our survey results, however, EMAS registered organisations do attach importance to market performance and would like to improve market performance through their registration (relevant score in the present section on barriers). A representative of a Member State with low registration numbers remarked in an interview that EMAS was initially built to foster market-based demand so that organisations could benefit from it. However, the representative concluded that “especially for large international companies with markets outside the EU, EMAS is not seen as an instrument which generates added value compared to ISO 14001.”

The lack of recognition of EMAS by public institutions received the second highest value as a barrier in the survey and relates to the issue of added value raised with regard to market performance. As described in the section on drivers, recognition is highly important for EMAS registered organisations. One of the main reasons why EMAS organisations decide to join the scheme is to improve their reputation among regulators, the local community and other stakeholders. Consequently, when EMAS does not deliver that improvement in reputation, registered organisations see its absence as a barrier to EMAS adoption.

Looking at the examples given (regulatory relief and tax breaks) and combining the results from the drivers and benefits sections, we can conclude that EMAS organisations are not satisfied with the amount of regulatory relief currently offered by Member States and the EU (low score in the section on benefits). EMAS registered organisations participating in the survey call for more such relief and for other forms of legislative simplifications as a reward for their environmental commitment (relevant score in the barrier section). This confirms the BRAVE survey (SSSUP 2013)’s recent findings.

In an interview, a representative of a small EMAS registered organisation made an interesting comment on the environmental statement’s usefulness as the main communication tool vis-à-vis (external) stakeholders and its relationship to the two barriers mentioned in the preceding paragraphs. The representative remarked that “the EMAS Regulation requests a lot of information and moreover the requests of the environmental verifier makes the environmental statement a very long, technical and unattractive document not suitable for communication purposes with stakeholders and other interested parties.” As a result, “an interested party has never requested the environmental statement from the company, so the use of it as a communication tool has been very limited.” The representative said that the company feels the environmental statement provides added value in theory but not in reality: “the

company has sent the environmental statement to certain interested parties - for example local authorities - and at the beginning recipients did not even know what this document was for."

Following the same theme of incentives, survey respondents assigned the third highest value to the lack of external incentives. This barrier is connected with the previous discussion on regulatory relief (which can also be considered as an incentive to obtain and maintain EMAS). EMAS stakeholders across the board, even Competent Body representatives in Member States with low registration numbers, desired an increase in incentives and regulatory relief for EMAS organisations. In interviews, organisations which have ISO 14001 but not EMAS reported that the lack of regulatory relief and especially tax breaks are an important barrier to joining EMAS. In fact, the issue of regulatory relief and other policy measures like tax breaks seems to be an important factor in increasing the number of registrations, as indicated in the academic literature (Daddi et al. 2014b). Often, agencies/departments other than the EMAS Competent Bodies take the decisions regarding regulatory relief, tax breaks, subsidies and other incentives, leading to a lack of coherence between the different incentives. Additionally, the EMAS community and potential EMAS users are not always aware of these existing incentives.

Two Competent Bodies representing Member States with a low number of EMAS registrations confirmed in interviews that the absence of external benefits or incentives is the most important barrier to increasing the number of registrations in their respective countries. One of the representatives said that "this absence is the main reason for the low number of EMAS registrations in the country, not only because organisations will not have added advantages passing from ISO 14001 to EMAS but also because they feel that the lack of incentives show that public institutions do not really believe in EMAS."

Explaining the reasons for the lack of incentives, the representative further added that "environmental authorities and public institutions do not see the added value in EMAS for the enforcement authorities so that they could support incentives for registered organisations. EMAS is seen as a tool with which registered organisations fulfil the requirements of environmental law and become aware of the environmental impacts of their organisation's operations". However, in the view of public authorities, organisations should be doing those things anyway. These comments confirm the findings of the Costs and Benefits study (Milieu and RPA 2009), which also attributed a lack of EMAS-specific incentives to policymakers' uncertainty about EMAS's added value compared to other instruments such as ISO 14001.

Negative survey responses from Member States representatives on the question of whether EMAS is seen as a benchmark of excellence in their respective countries confirm this lack of understanding of EMAS on a policy level (further information in Chapter 5.1). Because they do not see the added value of EMAS, "environmental authorities tend to point out other policies to improve the environmental quality of the country." The representative remarked that "on the other hand, representatives of the private sector (e.g. industrial associations) do not exert any pressure on environmental authorities to approve incentives specifically to EMAS registered organisations."

A lack of recognition of EMAS by stakeholders and customers received the fourth highest value in the study. This finding provides further support for the previous discussion on the first (lack of market recognition) and second barriers (lack of recognition by public institutions). EMAS organisations clearly feel that they are not receiving adequate advantages in either the public (regulatory) or the private (market) sphere, e.g. through improved reputation and its corresponding competitive advantage. It appears that organisations would ideally like both types of advantages, but the perceived lack of either type sends a strong signal as to why organisations may decide not to join and/or remain in the scheme. Costs received (only) the fifth and sixth highest values, making

them less relevant barriers. This finding stands in contrast to previous studies, which attached greater importance to financial aspects of EMAS registration. However, organisations leaving the scheme frequently cited the cost of environmental verifiers as one of the main reasons for leaving EMAS (see below). Even though EMAS registered organisations are very satisfied with the quality of the work of environmental verifiers overall (see Chapter 5.2.4), the cost issue should not be neglected in discussions on potential revision options – especially in light of the scheme's added value (Chapter 4.5).

The cost of registration fees, despite their non-homogeneity in Europe (see Chapter 5.1 for further information) cannot be considered a significant barrier for the adoption of EMAS. According to Article 39 of the current EMAS Regulation, Competent Bodies are allowed to charge fees for certain activities, such as the registration process, renewal of registration or suspension and deletion of the registration. Even though the Preamble (16) to the EMAS Regulation states that “costs and fees for registration under EMAS should be reasonable and proportionate to the size of the organisation and the work to be done by the Competent Bodies,” no upper limits are mentioned in the EMAS Regulation. Preamble (16) further specifies that exemptions or reductions of fees should be considered for small organisations in order to encourage their participation in the scheme.

It is worth mentioning that most surveyed organisations did not agree with the survey statement my organisation did not experience any difficulties in implementing EMAS. This means that the European Commission and Member States must take the feedback given by registered organisations on barriers listed seriously. It also makes a strong case for investigating options for a potential EMAS revision that directly address the most significant barriers.

In addition to survey results, the project team obtained data on feedback given by organisations in Germany, a Member State with high registration numbers, which left the scheme in the previous five years (see Annex IX for details). Main reasons include:

- No added value of EMAS with regard to ISO 14001. In fact, ISO 14001 is more often requested by clients. Therefore organisations decided to only maintain their ISO 14001 certification.
- The costs of maintaining an EMAS registration are too high, particularly the costs for environmental verifiers.
- After being registered for a long period of time, organisations do not see any more potential for improvement which would justify an EMAS registration.

The first and second points will be discussed in more depth in subsequent chapters (4.5 and 5). The third reason received a rather low score (2.9) in our survey. Other studies (mentioned in the section on benefits below) do not confirm this statement. Furthermore, the relatively high standard deviation (over 1) indicates that the certain organisations might feel the lack of improvement potential after a long registration period more strongly than others. Our own findings on EMAS performance in environmental statements and as well as in interviews with representatives from EMAS registered organisation seem to confirm this (further information is available in chapter 4.4).

The repartition of results according to Member State categories only showed one significant difference In Table 21, barriers are analysed according to the size of organisations.

Table 21: Barriers on EMAS implementation: analysis per size of organisations

Did you experience any of the following issues as causing difficulties in your implementation of EMAS?	Micro	Small and medium	Large	Aggregate Value
Lack of EMAS recognition from the market	3.6	3.5	3.7	3.6
Lack of external incentives	3.5	3.5	3.5	3.5
Lack of EMAS recognition by stakeholders and customers	3.5	3.4	3.5	3.5
Lack of EMAS recognition by public institutions (including regulatory relief or other measures such as tax breaks)	3.9	3.5	3.6	3.5
Cost of environmental verifier	3.9	3.4	3.0	3.3
Lack of EMAS recognition at the international level (outside the EU)	3.3	3.1	3.2	3.1
Costs of implementation (including external consultants)	3.8	3.4	2.9	3.2
Costs of maintaining registration over time	3.5	3.2	2.6	3.0
Difficulties in involving, motivating or obtaining the commitment of personnel	2.8	3.1	2.9	3.0
Lack of technical and information support about EMAS from public authorities	3.2	3.0	2.9	3.0
Difficulties in achieving continuous improvement of environmental performance	3.1	3.1	2.7	2.9
My organisation did not experience any difficulties in implementing EMAS	2.8	2.8	2.8	2.8
Difficulties originating from the set-up of the EMAS scheme (e.g. definition of roles and responsibilities; internal audits; staff training)	2.9	2.8	2.7	2.8
Difficulties linked to the approach	2.7	2.6	2.6	2.6

followed by the environmental verifier (e.g. verification of legal requirements, different interpretation of EMAS requirements by different environmental verifiers, lack of experience of verifier, etc.)				
Cost of registration fee (to Competent Body)	2.9	2.6	2.2	2.5
Difficulties in achieving or maintaining legal compliance	2.6	2.4	2.4	2.4
Difficulties in producing the environmental statement	2.4	2.5	2.5	2.4

Taking into account the organisations' sizes, we found that for micro organisations, costs (of implementation and of environmental verification) are among the most significant barriers. Costs are also cited as barriers in some of the literature (e.g. Bist 2007; Ustad 2010; Sciopioni et al. 2007). It is also interesting to note that, as expected, average values relating to all costs show them to be barriers (3.9). As one of the most important changes introduced by EMAS III is the reduction to the frequency of external audits for micro organisations with low environmental impacts (art. 7 Regulation 1221/2009), it can be inferred that the measure is either not working or that additional measures are needed to reduce micro organisation's financial burdens when employing environmental verifiers.

Moreover, the data shows that micro organisations, when considered alone, report the highest values in many cases (Table 21). This class of organisation appears to perceive EMAS barriers more acutely than larger organisations, as would be expected due to the fact that they have fewer financial and human resources and thus less protection against barriers.

4.3.3.4. Main findings

- The study identified the same first four barriers as the previous EMAS evaluation study (the 2005 EVER study): lack of EMAS recognition in the market, lack of EMAS recognition by public institutions (including regulatory relief or other measures such as tax breaks), lack of external incentives, lack of EMAS recognition by stakeholders and customers;
- The main barriers all have an external origin (market, public institutions, incentives, stakeholders and customer, costs, etc.) while internal barriers (commitment of personnel, continuous improvement, set-up of the EMAS scheme, etc.) have less importance;
- Despite the fact that registered organisations did not consider market recognition to be a driver of EMAS uptake (low score in the section on drivers), they nonetheless find EMAS's capacity to improve market performance to be the most important barrier listed;
- Costs are in general not the main barrier to EMAS uptake. However, for micro organisations they assume a higher importance, in particular the cost of environmental verifiers;

- Both Competent Bodies and organisations perceive the lack of regulatory relief and tax breaks for EMAS organisations as difficulties, confirming the findings of recent studies;
- Organisations which had decided to withdraw from EMAS identify different barriers (e.g. lack of added value, cost) when justifying that decision.

4.3.4. Benefits

4.3.4.1. Previous research

As defined at the beginning of this chapter, benefits are factors that organisations attain after employing EMAS, and with which they can confirm whether their expectations (drivers) have been met. One of the classifications most often used in the academic literature differentiates between tangible and intangible benefits. Tangible benefits are those that can be quantified with a precise unit of measurement. For example, economic savings achieved thanks to the improvement of resource efficiency are part of this class. The second class of benefits is not measurable and for that reason these benefits are defined as intangibles. Examples of intangible benefits of EMAS are improvements in the management of legislative compliance and increases in employee satisfaction. Keeping in line with the previous sections on barriers, this section will outline another key classification of benefits: external and internal benefits. Examples of external benefits include improvements in market performance or corporate reputation; internal benefits include factors such as improved resource efficiency and environmental performance.

4.3.4.1.1. External benefits

Studies have investigated the external benefits of environmental management standards, including ISO 14001 in non-European countries. For instance, Prajogo et al. (2012) examined the internal and external drivers leading to adoption of ISO 14001 in Australia and compared them with the internal benefits deriving from EMS. They found that companies with external drivers to adopt ISO 14001 gain enhanced social and market positioning, while those with internal drivers gain more environmental benefits. They conclude that managers may be seeking only a narrow set of outcomes from ISO 14001, rather than broader strategic improvement. Findings also reveal that social and market benefits are derived from the environmental benefits of adopting ISO 14001. Environmental benefits should be realised before firms can expect to reap social and market benefits from the implementation of an EMS.

Sambasivan and Yun Fei (2008) found that in the Malaysian case, external benefits that can be obtained by implementing ISO 14001 included improvement in the company's image and reputation, improvement in company's processes and profits, improvement in customer loyalty and trust, and improvement in staff morale and employer-employee relations.

Sakr et al. (2010) also discussed opportunities to integrate sustainable construction principles into the EMS, stating that this integration should result in environmental, social and economic benefits.

Turk (2008) looked at reasons for and against ISO 14001 certification and benefits to 68 large firms in the construction sector in Turkey. He found that an ISO 14001 certification

contributes not only in terms of environmental benefits but also provides corporate management and marketing effects.

Zhang et al. (2008) showed that the main external benefits of ISO 14001 are improved corporate image for marketing effects and enhanced environmental awareness of suppliers for supplier relations.

The main external benefits of EMAS pointed out by EVER study (Iraldo et al. 2006) are improvements in relations with stakeholders and the local community. Milieu and RPA (2009) confirm the results of the EVER study. Both studies are in line with research on ISO 14001 on that matter. According to the EMAS study conducted by Milieu and RPA (2009), the most significant external benefits of EMAS were improved relationships with stakeholders and reduction in negative incidents (e.g. accidents at production sites causing soil contamination).

Botta and Comoglio (2007) focus particularly on the method used by public administrations for implementation of both ISO 14001 and EMAS and on the main results obtained throughout on the territory in terms of sustainable tourism, reduction in energy consumption and CO₂ emissions, as well as in terms of improvement in citizens' quality of life, integrating environmental factors with social accountability.

4.3.4.1.2. Internal benefits

The ISO survey on ISO 14001 (ISO 2014), which involved 5,000 organisations, found that organisations gained significant value from the implementation of the EMS, most notably in terms of meeting legal requirements, improving environmental performance and enhancing management commitment and employee engagement.

Granly and Welo (2014) found that the main benefits of ISO 14001 to SMEs are increased awareness of environmental issues and reduced environmental impact.

Results from a Defra study (2011) show that SMEs reap internal and external benefits, both in terms of behavioural and commercial issues. Quantitative data provides robust evidence that EMS had generally delivered cost savings and new business sales for the majority of the study's SME participants. They also suggest that EMS could have an important role to play in helping to unlock latent cost savings within the SME population.

Heras and Arana (2010) found that for ISO 14001, surveyed companies and other Ekoscan certified organisations found improvement of resource efficiency to be a benefit. Martín-Peña et al. (2014) carried out a survey collecting 228 questionnaires from Spanish companies in the automotive industry (manufacturers and suppliers). ISO 14001 certified companies constituted more than 80% of the sample. According to the survey's findings, external benefits included improvements in the firm's market position, stakeholder relations, and access to environmental technologies.

Heras-Saizarbitoria et al. (2011) analysed the motivations that lead companies to adopt EMS to their perceived benefit: external pressure such as coercive, mimetic and regulatory pressures or internal pressure like cost savings or employee motivation. The article sheds light on the relationship between motivational factors and the benefits of the process of implementing and certifying ISO 14001. Companies motivated by internal factors perceive superior benefits, including greater satisfaction with the process itself.

Ardente et al. (2006) found that benefits of applying EMS in natural parks are mainly internal and were observed in both environmental (due to the correct management of

significant environmental factors) and financial (due to the optimisation of resource use) terms.

Tambovceva and Geipele (2011) described the experiences and effects of EMS in construction companies, on the basis of a questionnaire-based study conducted between 2007 and 2008 in the Latvian construction industry. The evidence shows that ISO 14001 often leads to reduced environmental impacts, especially in the area of waste.

De Oliveira et al. (2010) conducted a survey in 2008 on Brazilian ISO 14001 certified companies. The main internal benefits identified were related to the development of preventive environmental actions, reduction in the consumption of power, water, gas and fuel oil, and a positive influence on other internal management processes.

Ustad (2010) refers to New Zealand hotel managers' awareness of EMS. The perceived benefits of implementing EMS were found to be greater commitment to environmental safety and conservation as well as marketing and cost saving opportunities.

Finally, Yasuhumi and Eric (2008) aimed to identify the determinants of ISO certification in facilities and to understand how ISO 14001 certification affects various environmental and managerial outcomes in Japan. Data were from 2001 and cover more than 1,700 industrial organisations across four sectors: electronics, electrical power, electric machinery and chemical manufacturing. Results showed that ISO certified facilities are larger and report higher levels of environmental management capacity. In addition, early certifiers are more likely to have established voluntary environmental agreements and are more active in international trade and business.

Studies on EMAS confirm the role of resource savings and improvements to performance; however, not all studies identified these benefits as being the most important. The EVER study (Iraldo et al. 2006) showed that the main benefit derived from the adoption of EMAS was the management of legal compliance. In that study, the three most important benefits perceived by surveyed EMAS registered organisations involved the monitoring and management of legal compliance. 70% of surveyed EMAS organisations identified greater awareness of regulatory requirements as a fairly important or important benefit, 69% identified better compliance, and 67% mentioned better planning of actions for legal and regulatory compliance. The organisations perceived these benefits as far more important than financial savings (resource efficiency) and competitive advantages in the marketplace.

According to the survey of the German Federal Environment Agency (UBA and BMU 2013), German organisations experienced the biggest benefits from EMAS in energy and material savings – a key difference to the findings of the EVER study. Milieu and RPA (2009) reached similar conclusions, identifying resource savings as the most significant internal benefit of EMAS.

Evidence from a Spanish study demonstrates the importance of legal compliance management. The Spanish Ministry of the Environment (2006) carried out a study with the aim of discovering stakeholders' opinions on the benefits and barriers of EMAS implementation. Among participants in the study were registered organisations, environmental verifiers, Competent Bodies, consulting companies and national Accreditation and Licensing Bodies. The study identified a lower risk of failing to comply with environmental laws and an improved public image as the principal benefits of EMAS implementation.

Another German study (Bavarian Environmental Agency 2006a) examined the ecologic and economic effects of EMAS and other EMS in the German state of Bavaria. They found improvements in employee motivation, environmental performance, transparency and legal compliance to be the principal benefits.

Abeliotis (2006) identified benefits of an EMAS registration for companies in Greece. Their survey results cited stricter monitoring of the production process as the most commonly named internal benefit of the scheme.

Very few quantitative studies have thus far compared the effectiveness of benefits of EMAS and ISO 14001. In order to fill this gap, Testa et al. (2014) investigated the impacts of EMAS and ISO 14001 on the reduction of carbonic anhydride emissions in 229 energy intensive plants in Italy. By applying a rigorous statistical method, the results suggested that the implementation of an EMS in energy intensive industries has a clear influence on environmental performance both in the short and in the long term. However, the study found ISO 14001 and EMAS had different the effects on environmental performance. The adoption of ISO 14001 showed greater improvements in environmental performance in the short term than in the long term, while EMAS organisations demonstrated the opposite. This confirms the findings of Brouwer and van Koppen (2008), who found that ISO 14001 mainly determines improvements in the initial implementation phase.

The Northern Ireland Environmental Agency (2009) examined the existing research and carried out a questionnaire of Northern Irish businesses regarding EMS. They conclude that EMS in general contribute to improved environmental performance and compliance. They found ISO 14001 and EMAS are more suited to larger organisations, although ISO 14001 is by far the more popular in Northern Ireland. Benefits include compliance with legislation and improved water and waste reduction, with improvement being strongest in areas with cost reduction potential.

4.3.4.2. Results

Following the approach in previous sections, this part of the questionnaire on benefits asked survey takers to rate the closed answers from 1 to 5. The question included in the survey asked what kinds of benefits does your organisation experience by participating in EMAS? Overall, 22 potential answers were provided. Results are shown in Table 22.

Table 22: Results related to benefits and EMAS implementation

What kinds of benefits does your organisation experience by participating in EMAS?	Value	Standard deviation
Improved legislative compliance	3.8	1.0
Reduced risk of incurring environmental sanctions through improved compliance	3.5 (3.54)	1.1
Better identification of overall corporate responsibilities (e.g. clear identification of roles and responsibilities for managing environmental requirements)	3.5 (3.51)	1.0
Fewer environmental accidents	3.3 (3.29)	1.2
Cost savings through reuse, recycling, or decrease in resource or energy use	3.3 (3.25)	1.2
Improved relations with public stakeholders and the local community	3.2	1.1

Increased employees involvement and satisfaction	3.1	1.1
Consistent environmental management practices (incl. legal compliance check; reporting) worldwide through EMAS Global	3.1	1.2
Added value from having a uniform environmental management standard that is recognised across the EU (i.e. more visible than national or local standards, meets environmental requirements across EU)	3.0	1.2
Meeting environmental reporting obligations (based on national/EU legislation) through EMAS	3.0	1.2
Increased customer satisfaction	2.9	1.2
Improved relations with private stakeholders (suppliers, competitors, trade associations, markets, etc.)	2.8	1.1
Increased marketing opportunities	2.8	1.2
Improvement of the quality of products/services offered on the market	2.7	1.2
Improved competitive advantage on the domestic market	2.6	1.2
Obtaining administrative simplifications and regulatory relief (e.g. longer duration of permits, less frequent environmental inspections by authorities)	2.6	1.3
Improved competitive advantage on the European market	2.6	1.2
Improved rating from financial and insurance institutions	2.5	1.1
Increased shareholder value	2.4	1.1
My organisation has not experienced any benefits from EMAS	2.3	1.2
Better access to public funding or procurement procedures (including service contracts)	2.2	1.1
Improved competitive advantage on the extra-EU market	2.2	1.1

The two main benefits experienced by EMAS registered organisations concerned management of legal compliance. Our interviews with EMAS stakeholders and the results of previous studies (Iraldo et al. 2006, Bavarian Environmental Agency 2006a) confirm this finding. For example, an Austrian public administration affirmed that “EMAS brings a number of benefits [...] as a guarantee of legal compliance and compliance with other norms.”

The third and fourth benefits (better identification of responsibilities and fewer accidents) affirm EMAS's capacity to help participating organisations achieve real improvements in the internal management of environmental issues.

The savings achievable with improvements in resource efficiency are ranked just below those related to internal organisational and management factors. Survey respondents also assigned that option the highest value in this study's section on competitiveness (Chapter 4.6).

Improved relations with public stakeholders and the local community received the fifth highest rating. This rather low score reflects the related barrier identified earlier in this chapter, namely a lack of public recognition of EMAS. EMAS registered organisations ranked improvement of organisation's public reputation as the second most important driver but clearly are not receiving the expected benefit. Its repeated high scores in different questions indicate that public image is a very important issue for EMAS registered organisations. Despite its importance, however, EMAS registered organisations are not completely satisfied in terms of the possibilities for maximising the reputational, market and/or regulatory value of registration.

Respondents assigned all market-related options a score consistently under the threshold of 3, confirming their lower importance compared, for example, to public image. This finding echoes those described in the previous sections on barriers and competitiveness.

Among benefits with the lowest scores are better access to public funding or procurement procedures and improved competitive advantage in relation to non-EU markets. This latter factor confirms the need for better value maximisation of the tool in the GPP policies.

The topic of EMAS recognition in public policy recurred in interviews with organisations that have ISO 14001 but are not EMAS-registered. A company from a Member State with high registration numbers mentioned that "benefits we would like to see are access to GPP procedures and the obtainment of administrative simplifications and regulatory relief." Given that our survey results found that these are the lowest ranked benefits by EMAS registered organisations, it is clear that this issue needs to be analysed in-depth when developing policy options for EMAS (Chapter 6).

Two Competent Bodies of Member States with low registration numbers confirmed that the absence of external benefits or incentives as the most important barrier in the uptake of the registration in their countries. Moreover, they report that in some cases regulatory relief in the form of tax breaks or subsidies exists in a region or a country, but is not easily accessible because of a lack of communication. More specifically, the two representatives believe that there is a lack of horizontally integrated promotion of EMAS by public institutions. Currently, EMAS appears to target stakeholders with significant involvement in EMAS rather than aiming promotion at a wider range of potential users. Given that interviews with organisations which are not EMAS registered revealed that regulatory relief and other policy measures are good reasons for joining the scheme, more emphasis should indeed be put on reaching out to stakeholders beyond the "EMAS universe."

In the following table (Table 23), results are analysed according to geographical coverage.

Table 23: Benefits and EMAS implementation: analysis per geographical coverage

What kinds of benefits does your organisation experience by participating in EMAS?	High registration countries	Medium registration countries	Low registration countries	Aggregate Value
Improved legislative compliance	3.8	3.9	3.9	3.8
Reduced risk of incurring environmental sanctions through improved compliance	3.6	3.3	3.9	3.5
Better identification of overall corporate responsibilities (e.g. clear identification of roles and responsibilities for managing environmental requirements)	3.5	3.5	3.3	3.5
Cost savings through reuse, recycling, or decrease in resource or energy use	3.2	3.7	3.9	3.3
Fewer environmental accidents	3.2	3.6	3.4	3.3
Improved relations with public stakeholders and the local community	3.1	3.3	3.3	3.2
Consistent environmental management practices (incl. legal compliance check; reporting) worldwide through EMAS Global	3.0	3.4	3.4	3.1
Increased employee involvement and satisfaction	3.0	3.4	3.4	3.1
Added value from having a uniform environmental management standard that is recognised across the EU (i.e. more visible than national or local standards, meets environmental requirements across EU)	2.9	3.4	3.6	3.0
Meeting environmental reporting obligations (based on national/EU legislation) through EMAS	2.9	3.1	3.3	3.0
Increased customer satisfaction	2.8	3.3	3.6	2.9
Improved relations with private stakeholders (suppliers,	2.7	3.2	3.4	2.8

competitors, trade associations, markets, etc.)				
Increased marketing opportunities	2.7	3.2	3.3	2.8
Improvement of the quality of products/services offered on the market	2.7	2.9	3.0	2.7
Improved competitive advantage on the domestic market	2.6	3.0	3.1	2.6
Improved competitive advantage on the European market	2.5	3.0	3.7	2.6
Obtaining administrative simplifications and regulatory relief (e.g. longer duration of permits, less frequent environmental inspections by authorities)	2.6	2.4	2.3	2.6
Improved rating from financial and insurance institutions	2.4	2.5	2.8	2.5
Increased shareholder value	2.3	2.6	2.9	2.4
My organisation has not experienced any benefits from EMAS	2.4	1.9	1.7	2.3
Improved competitive advantage on the extra-EU market	2.0	2.6	2.9	2.2
Better access to public funding or procurement procedures (including service contracts)	2.1	2.3	2.3	2.2

Overall, survey respondents affirmed that they received benefits from EMAS implementation: the option my organisation has not experienced any benefits from EMAS received the lowest scores (1.7 in the case of low registration countries, 1.9 for medium registration countries and 2.4 in the case of high registration ones).

In general, data classified according to the number of registrations in Member States show that Member States with low registration numbers display the highest mean scores. In contrast, lower mean scores appear in Member States with high registration numbers and in which EMAS has been available since its official launch in 1995. One reason could be that organisations which have implemented the scheme for a long period of time do not experience significant benefits any more, as was indicated above. Another reason may be that because they are coming from “leading countries” in terms

of the absolute number EMAS registrations, they have higher expectations of the benefits of EMAS registration than organisations from other Member States.

In Table 24, we consider benefits of EMAS classified according to the size of organisations.

Table 24: Benefits and EMAS implementation: analysis per size of organisation

What kinds of benefits does your organisation experience by participating in EMAS?	Micro	Small and medium	Large	Aggregate Value
Increased employee involvement and satisfaction	3.1	3.2	3.0	3.1
Improved legislative compliance	3.6	3.9	3.8	3.8
Better identification of overall corporate responsibilities (e.g. clear identification of roles and responsibilities for managing environmental requirements)	3.7	3.5	3.4	3.5
Reduced risk of incurring environmental sanctions through improved compliance	3.6	3.6	3.5	3.5
Fewer environmental accidents	3.4	3.4	3.1	3.3
Cost savings through reuse, recycling, or decrease in resource or energy use	2.9	3.2	3.5	3.3
Improved relations with public stakeholders and the local community	2.8	3.2	3.1	3.2
Consistent environmental management practices (incl. legal compliance check; reporting) worldwide through EMAS Global	3.1	3.1	2.9	3.1
Meeting environmental reporting obligations (based on national/EU legislation) through EMAS	2.8	3.0	3.0	3.0
Added value from having a uniform environmental management standard that is recognised across the EU (i.e. more visible than national or local standards, meets environmental requirements across EU)	3.0	3.1	2.9	3.0
Increased customer satisfaction	2.9	3.0	2.7	2.9

Increased marketing opportunities	2.8	2.8	2.8	2.8
Improved relations with private stakeholders (suppliers, competitors, trade associations, markets, etc.)	2.9	2.8	2.8	2.8
Improvement of the quality of products/services offered on the market	2.9	2.8	2.5	2.7
Improved competitive advantage on the domestic market	2.6	2.6	2.6	2.6
Improved competitive advantage on the European market	2.5	2.6	2.5	2.6
Obtaining administrative simplifications and regulatory relief (e.g. longer duration of permits, less frequent environmental inspections by authorities)	2.4	2.6	2.7	2.6
Improved rating from financial and insurance institutions	2.2	2.4	2.5	2.5
Increased shareholder value	2.0	2.4	2.4	2.4
My organisation has not experienced any benefits from EMAS	2.4	2.2	2.3	2.3
Improved competitive advantage on the extra-EU market	2.0	2.2	2.1	2.2
Better access to public funding or procurement procedures (including service contracts)	2.4	2.2	2.0	2.2

We found that for micro organisations, the main benefit experienced by participating in EMAS is better identification of overall corporate responsibilities. This was quite predictable, since in micro (and small) organisations, the implementation of a systematic EMS is often an opportunity to set up a structure and assign responsibilities to address both environmental and social issues. On the contrary, it is quite surprising to see that micro organisations assigned a lower value than small and medium-sized and large organisations to the benefit improved legislative compliance. This result could be due to the fact that the level of knowledge of legal requirements depends of the size and the sector/activity of the organisation. Micro organisations are sometimes not even aware that their activity is subject to an environmental permit (or that they are located in a building that needs one) or that they have no relevant legal requirements to meet (except some waste sorting issues and fire tests).

As expected, benefits in terms of economic savings due to improved resource efficiency are mainly perceived by large organisations. In order to boost similar benefits for smaller organisations, the European Commission has recently launched the Green Action Plan for

SMEs (COM (2014) 440). Unfortunately, however, this document does not make reference to EMAS as an instrument with which to improve resource efficiency in SMEs.

Interview responses are by and large in line with survey results. With regard to links of EMAS to overall responsibilities, one interviewee from a large EMAS registered organisation from a Member State with high registration numbers remarked that “the introduction of a new method to manage environmental factors has also introduced a new way of working and a new way to manage some aspects of the organisation. The new approach adopted thanks to EMAS allowed the management of other factors (e.g. ISO14064 certification) with the same ways and modalities as EMAS”.

Although the scheme’s impact on the quality of products/service offered received a rather low value, a representative of a smaller EMAS registered organisation from a Member State with low registration numbers said that “EMAS pushed the whole staff to include environmental criteria in its spatial planning activities and this supported research into new innovative material [for roads, parks and buildings] and spatial planning [e.g. how to access the eco-district with sustainable transport].” For this company, external communication and relations with the local community also benefit: “spatial planning activities include public participation. EMAS supported this public participation by structuring communication activities and the transparency of projects and by delivering environmental performance indicators.”

4.3.4.3. Does it pay to have EMAS?

As described in the initial sections of this report, this study oversaw the collection and analysis of validated environmental statements. The aim of that activity was twofold:

- To identify through the analysis of reliable performance indicators whether the sample of EMAS registered organisations had improved or worsened environmental performance (see the section on performance);
- To identify the hypothetical economic savings achieved by EMAS adopters thanks to the improvement of resource efficiency.

Starting from the environmental statements collected to calculate the economic effects of EMAS, the following methods were used:

Research is focused on energy consumption. In particular, data of electricity and natural gas consumption were used in order to have a reliable indication of market prices. For other resources such as water or raw materials, reliable prices classified according to country were not available.

As in the case of environmental performance, the changes in costs have been analysed with reference to two years: the year N-2 and the year N.

To calculate the change between years N-2 and N, we used the difference between the performance indicators as an indication of the change in total production in the years analysed.

Due to insufficient data, not all statements collected have been used.

We calculated electricity costs from 100 EMAS statements and natural gas costs from 67 statements. The source for prices of electricity and natural gas is the EUROSTAT database²⁷. That database provides the prices for industrial uses from 2007 onwards for ranges of consumption. In order to consider the total price paid by the EMAS organisations we added together the following costs: the cost of energy, the cost of network and supply, and the taxes and levies.

Aggregate results are shown in Table 25.

Table 25: Economic savings achieved in the energy consumption of EMAS registered organisations

	Total costs in the year N (k euro)	Variation in the costs from year N-2 to year N (k euro)	Variation in the costs from year N-2 to year N (%)
Electricity consumption	306,551.74	- 2,381.23	- 0.8%
Natural gas consumption	25,510,755.68	- 1,359,895.53	- 5.3%
TOTAL	25,817,307.44	- 1,362,276.79	-5.3%

The table shows significant economic savings for EMAS registered companies, considering the trend of the consumption for the selected year (N and N-2). However, we cannot consider the adoption of EMAS to be the sole cause of these results. Other variables should be considered, for instance technological progress. Nonetheless, these findings demonstrate that improvements to performance can offset increases in prices, confirming theories on resource efficiency (e.g. Porter and Van der Linde 1995). Although EMAS registered companies experienced savings in both areas (natural gas and electric energy consumption), those for natural gas were higher. The total amount of savings in euro is about €1.3 billion, confirming the survey's finding that the reduction of costs through increased resource efficiency is a benefit of EMAS adoption.

The industry breakdown in Table 26 and Table 27 show, however, that not all sectors achieve savings.

²⁷ <http://epp.eurostat.ec.europa.eu/portal/page/portal/energy/data/database>

Table 26: Economic savings on electric energy

Electric energy					
Sector	NACE code	Number of environmental statements analysed	Total costs in the year N (k euro)	Variation in the costs from year N-2 to year N (k euro)	Variation in the costs from year N-2 to year N (%)
Food	10	20	17,693.2	1,075.0	6.1%
Paper	17	10	158,424.2	-2,718.8	-1.7%
Chemicals	20	27	74,909.3	-1,254.7	-1.7%
Metal products	25	15	5,340.8	-244.8	-4.6%
Production of electricity	35	11	42,208.9	-584.9	-1.4%
Waste collection	38	17	7,975.3	1,346.9	16.9%
TOTAL		110	306,551.7	-2,381.2	-0.8%

In our sample, all the industrial sectors apart from food production and waste collection achieved economic savings. The waste collection industry, on the other hand, had a significant increase in costs: 16.89%. In absolute values, paper and chemical industries achieved savings of about €2.7 million and €1.2 million respectively.

For natural gas (Table 27), the economic savings are higher. Although only half of the industries achieved savings, the amount saved is much higher than the corresponding increase experienced in the other three industries. The total economic savings amounts to 5.3% of the total costs.

Table 27: Economic savings on natural gas

Natural gas					
Sector	Nace code	Number of Environmental Statements analysed	Total costs in the year N (k euro)	Variation in the costs from year N-2 to year N (k euro)	Variation in the costs from year N-2 to year N (%)
Food	10	12	260,471.5	62,823.4	24.1%
Paper	17	9	2,159,612.1	86,247.9	4.0%
Chemicals	20	16	2,144,548.2	-511,633.9	-23.9%
Metal products	25	15	155,922.2	63,452.1	40.7%
Production of electricity	35	11	20,741,763.9	-1,038,581.7	-5.0%
Waste collection	38	4	48,437.7	-22,203.3	-45.8%
TOTAL		67	25,510,755.7	-1,359,895.5	-5.3%

The highest savings occurred among companies belonging to NACE code 35, which together saved more than one billion Euro. Considering that this industry tends to have large companies, the results confirm the previously mentioned finding that large organisations are the main beneficiaries of cost savings.

4.3.4.4. Main findings

- The main benefit of EMAS is registered organisations' improved capabilities in the management of environmental compliance. This result confirms what was observed in previous studies such as the EVER study;
- The top four benefits (improved legislative compliance, reduced risk of incurring environmental sanctions, better identification of overall corporate responsibilities, and cost savings through better resource use) indicate EMAS's strength in achieving real improvements in the internal management of environmental issues in participating organisations;
- EMAS does not allow the improvement of market performance and the results confirm the low value of the tool in GPP procedures;

- Economic savings derived from an improvement of resource efficiency are a benefit perceived mainly by large organisations, while in micro organisations, the definition of internal roles and responsibilities is the main benefit;
- EMAS organisations show significant cost savings through energy efficiency; however, these savings are not equally distributed among the different industries analysed.

4.3.5. Incentives

4.3.5.1. Previous research

Incentives can be seen as a natural bridge between barriers and EMAS adoption and between EMAS and benefits. They enable the relevant parties to overcome important barriers or strengthen the already existing benefits in the policies that aim to increase uptake and properly exploit EMAS.

Among the incentives in both technical literature as well as desires expressed by organisations, an important role is assumed by regulatory relief. Regulatory relief and simplification measures in general have always been identified among the most relevant benefits arising from EMAS registration, whereas almost all previous studies identify the lack of adequate recognition by public institutions as one of the most important barriers to adoption and maintenance of the scheme (Wätzold et al. 2001; Iraldo et al. 2006; Milieu and RPA 2009; SSSUP 2013).

Among the main measures introduced by EMAS III, the Regulation provides for simplification of administrative procedures for organisations by stimulating further reduction of regulatory and administrative burdens. It also introduces elements that create synergies with and allow for closer operational links between EMAS and other EU legislation and instruments. These links occur through regulatory flexibility, including both regulatory relief (substitution of legal requirements without changes in environmental legislation as such) and deregulation (changes in the legislation itself). Information on these aims is included in the articles 38, 44 of Regulation 1221/2009.

The EVER study (Iraldo et al. 2006) investigated the incentives most desired by the companies interviewed. The authors found that most organisations wanted fiscal incentives such as tax abatement, regulatory relief (administrative procedures, permits, etc.) and for public institutions to conduct information and promotion campaigns for EMAS (and its logo).

Milieu and RPA (2009) reported similar results, stating that “while many EMAS organisations had expectations of regulatory relief from EMAS registration, the evidence of organisations actually benefiting from regulatory relief was limited.” In addition, the study indicated that financial support provides the greatest stimulus for organisations to register. Results from both surveys and interviews indicated that financial support to register was an important incentive, though technical assistance (e.g. publishing of guidelines) was not. Daddi et al (2014b) describe the case of Italian regulatory relief being used as leverage to spread the adoption of EMAS. The paper classifies the incentives adopted in Italy into four different categories: simplifications in permit-issuing procedures, reduction of administrative costs and reduction of financial guarantees and tax reductions. EMAS registration increased in the industries affected by these measures, although for some industrial sectors, the link to the regulatory incentives is not clear.

An older study by Wätzold et al. (2001) is nonetheless of interest because it identified regulatory relief as an important component in increasing the number of EMAS registrations. After analysing regulatory relief measures in France, Germany, the Netherlands, and the United Kingdom, the authors concluded that “regulatory relief can increase participation in EMAS, but that to do so it must be granted exclusively to EMAS registered companies, and that ideally such relief should be substantial and integrated into a comprehensive voluntary policy approach aimed at altering the traditional relationship between government and industry”. When EMAS and ISO 14001 are treated as equivalent with respect to regulatory relief, however, EMAS registrations do not increase.

Extending our review to an international level and considering studies on ISO 14001, Potoski and Prakash (2005) identified regulatory relief as one of the benefits obtained by companies from the United States that adhere to voluntary programs such as ISO 14001 or voluntary audits. Both national governments and the US Environmental Protection Agency (EPA) supported these forms of incentives.

Some of the most recent research on regulatory relief and simplification measures has been carried out in the framework of the BRAVE project. BRAVE actually provides for the most updated and specific evidence at the European level as regards the actual and potential role of regulatory relief and institutional simplification measures for increasing EMAS effectiveness. In 2013, a specific survey (SSSUP 2013) was carried out within the framework of the BRAVE project that investigated the effectiveness of EMAS III's simplifications for the adoption and active maintenance of EMAS. 3,956 EMAS organisations were surveyed as to the effect of these simplifications and that of existing incentives at the European level. Of these, 224 organisations responded, all located throughout Europe and operating in numerous producing sectors. The main results of that research are summarised in the box below.

Box: Results of BRAVE study (SSSUP 2013) on regulatory relief.

The study showed that most EMAS organisations in the sample were familiar with public incentives such as regulatory relief, grants and tax reductions. Looking on a geographic level, more than 50% of organisations in Italy, Spain, Germany and Austria were aware of the normative regulatory relief for EMAS companies.

Results also showed that micro and medium organisations have a higher awareness of existing public incentives to adopt EMAS than do large and small organisations. In addition, manufacturing firms, energy and environmental service providers have a slightly higher knowledge of public incentives than organisations in other sectors.

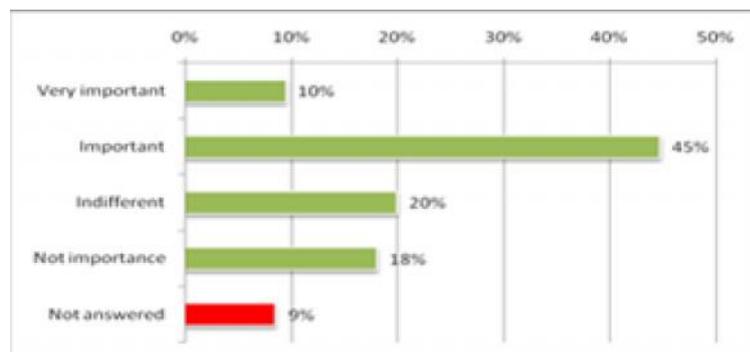
The results highlighted that only 40% of organisations have used any of the indicated public tools or initiatives. Only in Italy and Austria did more than 50% of the organisations affirm having used regulatory relief initiatives.

In Germany and Spain, however, that percentage falls to 40% and 30% respectively. In countries with medium or low numbers of registrations, only 16% of EMAS organisations reported using such incentives. In the latter case, this difference is highly statistically significant, showing that policymakers in high registration countries have a different approach to creating policy incentives for EMAS.

The sector of activity has a role in increasing the level of use of public incentives. The 50% of organisations in the sample that operated in sectors providing energy or environmental services (e.g.. waste treatment or wastewater purification organisations) were by far the most likely to make use of public incentives. In contrast, few agro-food and service organisations utilised them.

One aim of the study was to understand the role of regulatory relief as an incentive for adopting EMAS. The study also compared the organisations' level of interest in these measures with other motivations that had pushed them to obtain registration (e.g. improvement of the organisation's image, improvement of relations with the authorities, improvements to internal organisation). The results showed that for a significant percentage of interviewed organisations, regulatory relief played a significant role. In Austria, Germany and Italy, a large number of organisations reported public incentive measures as an important driver for EMAS implementation. In Spain and in lower registration countries, on the other hand, only a few organisations perceived regulatory relief as a key driver to achieve the registration. Sectoral differences emerged as well: only a small percentage of organisations from the agri-food sector affirmed that regulatory relief is a driver for EMAS adoption, while almost 30% of environmental service/energy organisations considered it a relevant driver.

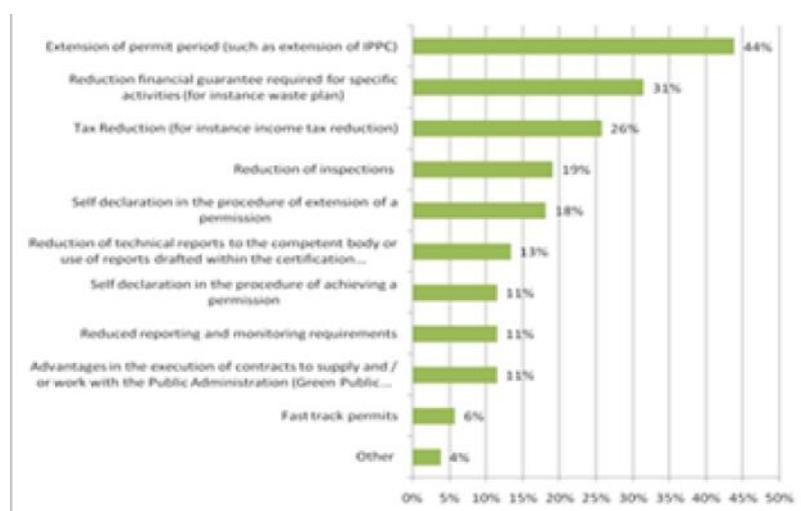
Figure 21: The role of regulatory relief with respect to all other motivations/incentives



The study also focused on the types of regulatory relief most often used by organisations. The following figure shows that 44% of the organisations confirmed that they took advantage of the possibility to extend the length of their authorisations and/or permits. Organisations also used the reduction in financial guarantees and taxes as incentives.

The type of incentive differed from country to country. In Italy, companies were most likely to make use of the reduction in financial guarantees, a longer authorisation period and tax breaks. In contrast, German organisations named inspections reduction by competent authorities and self-certifications for permits renewal or issuance as the main incentives. Similar results are valid for Austria, where along with self-certification for permit issuance/renewal and the reduction in inspections by the competent authorities, a lessening of internal auditing obligations was also found to be one of main regulatory reliefs. In Spain, the most relevant measures concerned self-certification for permit renewal and issuance and the reduction in technical reports to send to competent authorities.

Figure 22: Types of regulatory relief utilised



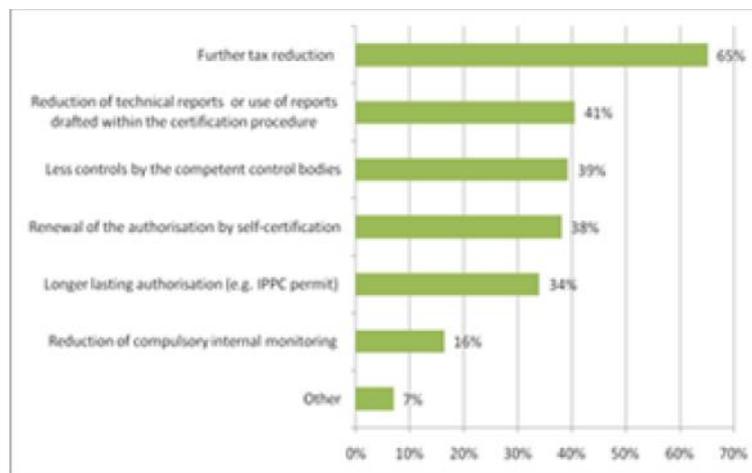
The BRAVE study also aimed to suggest opportunities for the development of new measures or for the strengthening of existing measures. This process included gathering organisations' proposals for additional regulatory relief that the respondents would appreciate.

The organisations identified the introduction of new forms of tax cuts, a reduction in technical reports to be sent to the competent authorities and a reduction in inspections as potential incentives. The companies interviewed found a reduction in internal auditing obligations to be the least relevant option.

All organisations would appreciate further tax reductions, especially those located in Italy and Austria. Organisations from these two countries also expressed interest in promoting fewer inspections for EMAS organisations and in the use of forms of self-certification for the renewal of the authorisations.

Organisations operating in Germany desired a reduction in technical reports and an extension of environmental permit duration, while Spanish organisations showed the least interest in most of the incentives.

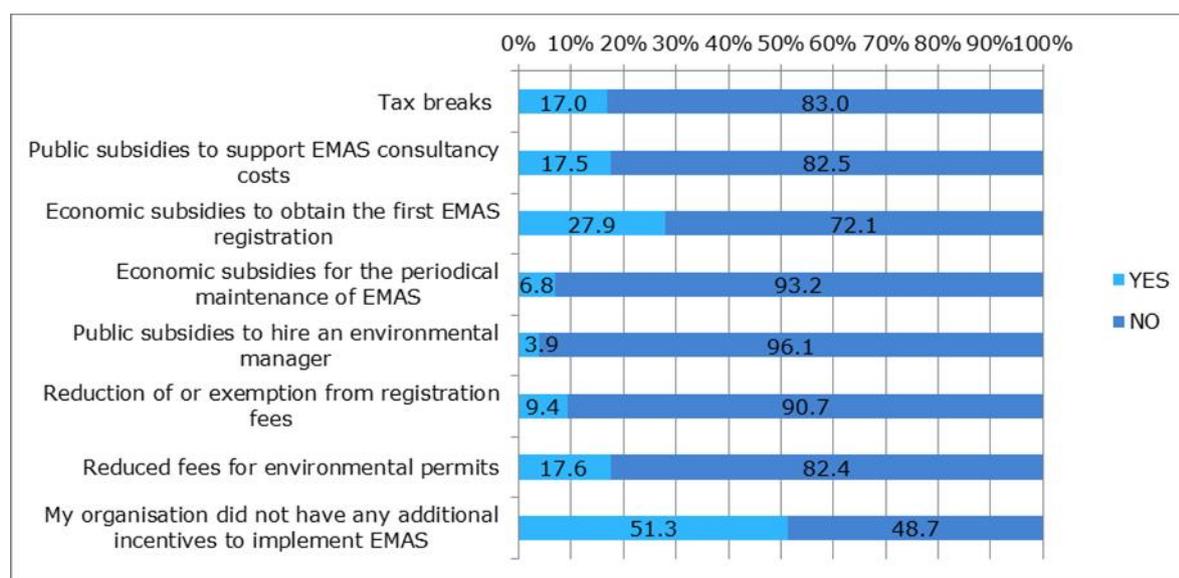
Figure 23: Types of regulatory relief that would be appreciated (in addition to currently existing ones)



4.3.5.2. Results

In a similar manner to the BRAVE survey outlined in the previous box, our evaluation survey also aimed to determine whether EMAS adopters benefited from implementation incentives.

Figure 24: Did your organisation benefit from any of the following incentives for implementing EMAS?



Respondents assigned the highest value to economic subsidies to obtain the first EMAS registration (about 28% of responses). However, such economic subsidies almost completely disappear when the companies seek to maintain the registration (6.8%). Interviews carried out with EMAS organisations confirm this situation. The organisations

feel “abandoned” by (not only financial) incentive-providing bodies in the period in which they have to maintain EMAS and pursue the objective of continuous improvement. Regulatory relief (e.g. a longer duration of permits) for EMAS registered companies is an incentive typically requested by organisations that have already obtained the registration. An example of that measure can be observed in the answer reduced fees for environmental permits (17.6% of positive answers). This measure is clearly applicable to companies already registered for EMAS. A large EMAS registered company suggested “enhancing regulatory relief for EMAS organisations in EU and Member State laws” as the most effective option for improving EMAS. A Spanish SME organisation affirmed that “one of the best rated options to improve EMAS is to enhance the presence of regulatory relief for EMAS registered organisations within EU Directives and Member States laws.”

A French organisation said that “there doesn’t seem to be anyone who promotes EMAS at the national level. One business associations has 30 business parks and eco-district member organisations which are ISO 14001 certified and that could go to EMAS, but there is no incentive for them to upgrade to EMAS.”

In high and medium registration countries, respondents most frequently took advantage of economic incentives to obtain the first EMAS registration (see Figure 25). In contrast, in low registration countries, the economic subsidies for the long-term maintenance of EMAS proved to be the most important. Moreover, not one organisation belonging to low registration countries benefited from public subsidies provided for the hiring of environmental managers.

Figure 25: Did your organisation benefit from any of the following incentives for implementing EMAS? Analysis per geographical coverage

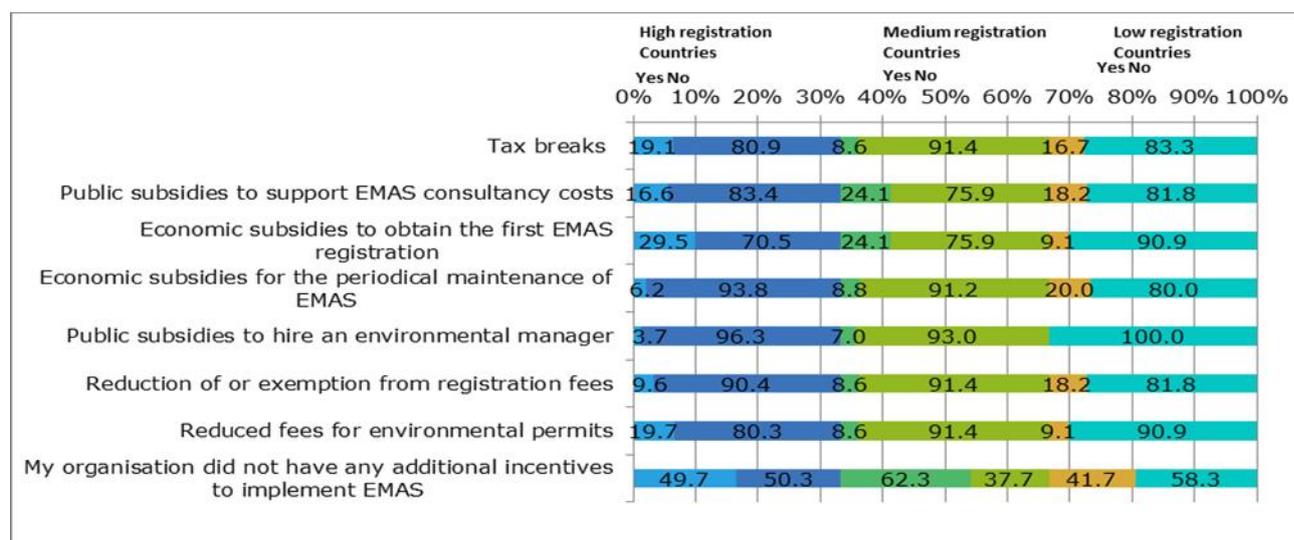
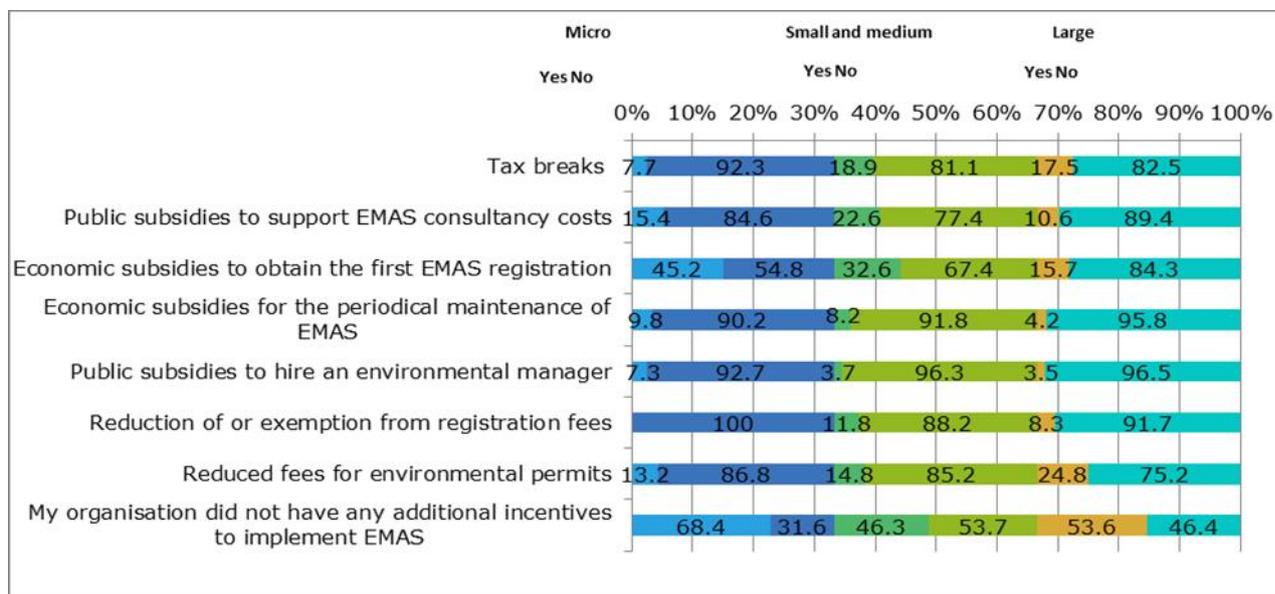


Figure 26: Did your organisation benefit from any of the following incentives for implementing EMAS? Analysis according to size of organisation



When looking at organisations by size (as depicted in Figure 26) the main incentive for micro organisations to implement EMAS relates to economic subsidies to obtain a first EMAS registration (45.2% of respondents). The micro-organisations benefited least from the reduction of or exemption from environmental fees. SMEs benefited mainly from economic subsidies for the first registration, followed by public subsidies to support EMAS consultancy costs. Finally, large organisations benefited mainly from reduced fees for environmental permits needed to implement EMAS (24.8% of respondents).

There is often a lack of communication which makes these incentives not easily accessible to micro organisations. Many are not aware of the incentives because they are not adequately promoted in the industrial and business associations used by SMEs.

4.3.5.3. Main findings

In accordance with the results of previous research and this study's surveys, the following conclusions can be made:

- More than half of the interviewed organisations reported not having benefited from any incentives when adopting EMAS;
- Economic incentives are available for the first EMAS registration, but are almost entirely absent afterwards, for maintenance of the registration;
- Previous research demonstrates that regulatory relief is among the most desired incentives cited by EMAS registered companies, even though Member States have not widely adopted it. Our survey (see barriers section) confirms that EMAS organisations perceive the lack of regulatory relief as a difficulty.

4.4. Performance - contribution to reducing negative environmental impacts

Key points at a glance

- The effectiveness of EMAS largely depends on the scheme's ability to help organisations achieve continuous environmental performance improvements
- The chapter uses previous research, the analysis of core indicators in EMAS environmental statements, survey responses and interviews to show that EMAS appears to have a positive effect on organisations' environmental performance
- Previous research indicates that EMS in general and EMAS in particular can lead to performance improvements, with most showing a somewhat more positive trend for EMAS than for ISO 14001. However, the amount of improvement is related to the degree of EMAS implementation and varies substantially among core indicators.
- Our analysis of environmental statements – the largest analysis of environmental core indicators to date – substantiates the evidence for environmental performance improvements through EMAS, but only for certain indicators (air emissions, energy efficiency, and CO2 emissions). Nearly all surveyed and interviewed organisations reported performance improvement, although that improvement was often confined to a few core indicators. Stagnation in longer-registered organisations was also reported.
- Interviewees often emphasised the importance of EMAS for other types of less easily measurable improvement, for example increasing the environmental awareness of employees and customers.
- Both recent academic literature and our review of environmental statements indicate that the EMAS Regulation is being implemented to varying degrees in different organisations, which may be worth further investigation
-

4.4.1. Background and research aims

As an environmental management instrument, EMAS's main purpose is to reduce the environmental impacts of registered organisations. The current EMAS Regulation states that "environmental management schemes, including EMAS as set out in the previous Regulation (EC) No 761/2001 demonstrated their effectiveness in promoting of the environmental performance of organisations" (Regulation (EC) No 1221/2009: 2).

Revisiting EMAS's effectiveness in promoting improvements in environmental performance thus comprises an essential part of any evaluation of EMAS as a policy. The following analysis presents the most extensive investigation to date into EMAS's influence on multiple aspects of organisations' environmental performance. The first part details previous research findings on the effect of EMS on environmental performance and the effect of EMAS in particular, providing a background to the subsequent presentation and analysis of this study's own interviews and quantitative research. The next sections present the methodology and data sets used, followed by a discussion of the quantitative and qualitative results.

4.4.2. Previous research

4.4.2.1. Influence of environmental management instruments on environmental performance of organisations

Although a small number of studies have investigated EMAS in this context before, the majority of the (academic) literature in the field focuses on analysing ISO 14001 or EMS in general. This research has not proven entirely conclusive. While most studies noted that environmental management schemes reduce companies' environmental impacts, others have found little proof of such a connection. In sum, in the literature, it appears that such schemes do offer a moderate level of environmental performance benefit, but this benefit differs widely among organisations. The existing studies mainly attribute these differences to variations in organisations' level of EMS implementation.

For example, by focusing on studies which observe positive effects of ISO 14001 adoption on environmental performance, Molina-Azorin et al. (2009) affirm in their review article that most empirical studies analysed demonstrate a positive relationship between environmental management practices (including ISO 14001 adoption) and firm (environmental) performance. Another large-scale study by King et al. (2005) also revealed that ISO 14001 could lead to the performance improvements. This study involved a sample of 7,899 United States manufacturing facilities and data collected from the Toxics Release Inventory (TRI). Russo (2009) also found a similar environmental improvements among ISO 14001 certified firms in the United States.

Two recent Japanese studies have supported ISO 14001's positive influence on environmental performance as well. Nishitani et al. (2012) studied 500 manufacturing firms in Japan, around 60% of which had been ISO 14001 certified for more than 4 years. The statistical model adopted in this case reveals that firms which implement an EMS are more likely to reduce pollution emissions than those that do not. Iwata et al. (2010) also found that ISO 14001 adoption had a positive effect on the level of air emissions from 216 Japanese manufacturing facilities. Another recent survey by Agan et al (2013) on ISO 14001 certified construction firms in Turkey also produced results similar to those in the Japanese research.

A number of other studies, however, have found much less or no environmental improvement stemming from an ISO 14001 certification. For instance, Hertin et al. (2008) produced a regression and times series analyses of European industrial companies and production sites with different EMS practices, including both ISO 14001 and EMAS. The sample is based on a large dataset of the environmental performance of 265 European companies in five industrial sectors. Their main finding was that the link between a company's EMS and environmental performance (measured with eco-efficiency indicators) is weak and ambiguous: companies with a formal EMS perform better on a number of indicators, but worse on several others. Moreover, only a small number of correlations were statistically significant.

More recently, Lam et al. (2011), by observing the performance of firms who had implemented an EMS in the construction sector, and Gomez and Rodriguez (2011), by comparing the TRI data of 56 certified companies with the data of 70 uncertified companies, concluded that EMS adoption, including ISO 14001, does not produce sufficient incentive to improve a company's environmental performance. Qi et al. (2012) found a similar result in their survey of self-reported data from 246 certified organisations in the Chinese construction sector. Looking at six environmental indicators (solid waste, dust emissions, complaints, noise emissions, raw material consumption and energy consumption), the study showed an unclear correlation between ISO 14001 and environmental performance.

Throughout the existing literature, the main explanation found for these contrasting results are the wide differences in implementation of EMS among firms. For instance, in their meta-analysis of 23 studies on EMS and environmental improvement, Nawrocka and Parker (2009) showed an inconclusive relationship between the two issues for the following two main reasons: the use of heterogeneous methods in the studies to measure environmental performance and the investigation of different modalities on how the EMS should improve the performance. Studies by Yin and Schmeidler looking at ISO 14001 companies in the US and Darnall et al. (2008) in the OECD also emphasised that companies' different motivations for EMS adoption and their varying degree of EMS implementation have an influence on the EMS's ability to improve environmental performance. They reported that organisations adopting EMS due to internal motivations tend to perform better than those that adopted EMS to satisfy external stakeholders (see also Chapters 4.2 and 4.3).

4.4.2.2. Influence of EMAS on environmental performance

The small number of studies focusing primarily on EMAS's effect on environmental performance makes it difficult to be conclusive, but they appear to show a somewhat more positive trend. Three recent Italian studies conducted by project partner SSSUP have demonstrated that EMAS has a positive effect on environmental performance. The first, Iraldo et al. (2009), applied an econometric analysis based on data collected through questionnaires in the framework of the 2005 EVER Study and determined performance improvements.

Daddi et al. (2011) performed an analysis of the trends of the environmental performance of a sample of 64 Italian companies in six different industrial sectors which had been EMAS registered for at least three years. That study revealed that EMAS exerted a positive influence on performance for environmental aspects like water consumption and waste. In those respective sectors, 52% and 44% of companies improved their environmental performance in the two year period after EMAS registration, compared to only 36% and 35% respectively in the previous two year period. EMAS appeared, however, to have a largely insignificant influence on energy consumption, with only 6% more companies showing improvement after joining EMAS. The authors attribute this lack of effect to Italian legislation requiring energy managers for large companies and to the high cost-saving potential of energy conservation. Many firms without EMS may thus have already reduced energy consumption.

Testa et al. (2014) investigated the impacts of EMAS and ISO 14001 on the reduction of carbonic anhydride emissions on 229 energy intensive plants in Italy. The study's results suggested that the implementation of an EMS in energy intensive industries has a clear influence on environmental performance, both in the short and in the long term. Additionally, Testa et al. found that EMAS registered organisations performed better over the long term than ISO 14001 certified companies, due to the greater involvement of environmental authorities in the verification and validation process, creating more pressure for tangible and continuous improvements.

Finally, a recent analysis of environmental statements from a sample of Austrian EMAS registered organisations (Umweltbundesamt GmbH 2015) determined that EMAS has a positive effect on environmental performance. 94% of organisations analysed showed improvement over the past five years in at least one core indicator. However, the number of indicators in which organisations showed improvement varied between sectors and among organisations.

The evidence for performance improvement through EMAS, at least for certain indicators, thus appears substantiated. However, as both Daddi et al. and Testa et al. focused only on the Italian context, a complete evaluation of EMAS performance necessitates investigating if their results are also applicable to EMAS throughout Europe. Using several sources of data, the following sections will help to fill in this gap by exploring in more detail EMAS's effect on the environmental performance of organisations throughout Europe.

Two other studies focusing on EMAS report difficulties related to evaluating environmental performance improvement accurately. While these studies do not show a failure of EMAS to improve environmental performance, they reveal the limitations of the current EMAS environmental statement requirements to adequately demonstrate organisations' performance across the board. For example, Petrosillo et al (2013) investigated EMAS environmental statements of local authorities in Italy and found that the EMAS core indicators do not always adequately reflect environmental impacts. The authorities tended to emphasise or include only the environmental aspects that were "fully under the management control of the organisation", neglecting indirect impacts that can also have a significant effect on an organisation's overall environmental performance (266).

In another study also looking at environmental statements, Skouloudis et al. (2013) found that a third of Greek environmental statements are missing environmental information, making performance improvements more difficult to discern. This finding raises the question of whether or not those organisations that report their performance are in general better performers than the organisations that do not, indicating a potentially large sample bias in studies based on environmental statements. During our evaluation of environmental statements, we also observed a substantial variation in the quality of data presented, confirming Skouloudis et al.'s results in a European context (see Section 2.3.5) for more details).

The wide variations in organisations' implementation of the EMAS Regulation with regard to environmental statements leads to the question of what other differences in implementation exist among EMAS registered organisations. Given the literature confirming the effect of the degree of implementation on the environmental performance of organisations with other certifications and EMS, such a link may have implications for EMAS environmental performance as well. Although beyond the scope of this report, a more detailed investigation of the differences in EMAS implementation among firms could be useful in the future.

4.4.3. Results

The following sections detail the results of our analysis of EMAS registered organisations' environmental performance. The data analysed stems from two main sources: the environmental statements of 122 EMAS registered organisations (see chapter 3.10 of this report) and our online survey for EMAS adopters (see chapter 3.6 and Annex I). Additional qualitative information on performance was obtained through personal interviews with managers in nine EMAS-registered organisations.

4.4.3.1. Results of the environmental statement analysis

The data collected from the most recent environmental statements of 122 EMAS registered organisations was examined for performance trends in core indicators both for

the whole sample and for the sample divided into two groups by length of registration (those registered for four years or less and those registered for more than four years). As mentioned in Section 3.5 of this report, the sample size varied somewhat for the core indicators because not all organisations reported data for all indicators.

Performance improvement refers to an organisation reducing its environmental impact over the two year period studied (e.g. a decrease in energy use). Performance worsening or deterioration refers to the opposite (e.g. an increase in energy use). An increase or decrease of 1% or less signifies no change in performance.

For each category, two types of information are evaluated: the percentage of organisations showing performance improvement, deterioration and lack of change respectively; and the average calculated improvement per company in the sample over the two year period. We can thus evaluate both the absolute improvement over the two-year period and the trend of continual improvement based on the differences in performance between more newly registered and older EMAS registered organisations.

Overall performance by core indicator

Energy use

The majority of companies in our analysis showed improvement in energy consumption, measured in gigajoules per production unit (Figure 27). Out of the sample as a whole, 58% of companies improved their energy performance (decreasing energy use), whereas 33% of companies worsened (increased energy use) and 9% remained stable. When separated by length of registration (Figure 29), the percentages of organisations improving did not change. This finding indicates that most EMAS registered organisations experience longer-lasting, continual progress in this indicator.

Although a majority of organisations improved across all groups, the average organisation in our sample experienced only a 1.5% improvement in performance over the two years analysed (see Figure 28). This percentage indicates two possible interpretations of the energy data, each or both of which may be applicable for the different sectors:

While a large percentage of organisations are capable of improving energy efficiency in a short period of time, that improvement is relatively small.

In some cases, organisations which showed significant deterioration in their energy performance may be bringing down the overall average for the sector.

This second explanation holds weight particularly in the case of more newly registered organisations. 59% of those registered for less than four years showed some improvement in energy efficiency, but the average performance of these companies actually deteriorated by 1.3% (see Figure 29). Longer registered organisations, on the other hand, averaged nearly 3% improvement. The 33% of newer companies whose performance worsened thus increased their energy use significantly more than the other companies could reduce theirs. This example indicates that the overall effect of implementing an EMS can potentially be affected by only few companies whose performance deteriorated substantially.

Figure 27: Performance in EMAS Core Indicators - per cent of organisations showing improvement, worsening, and no change in EMAS core indicators (whole sample)

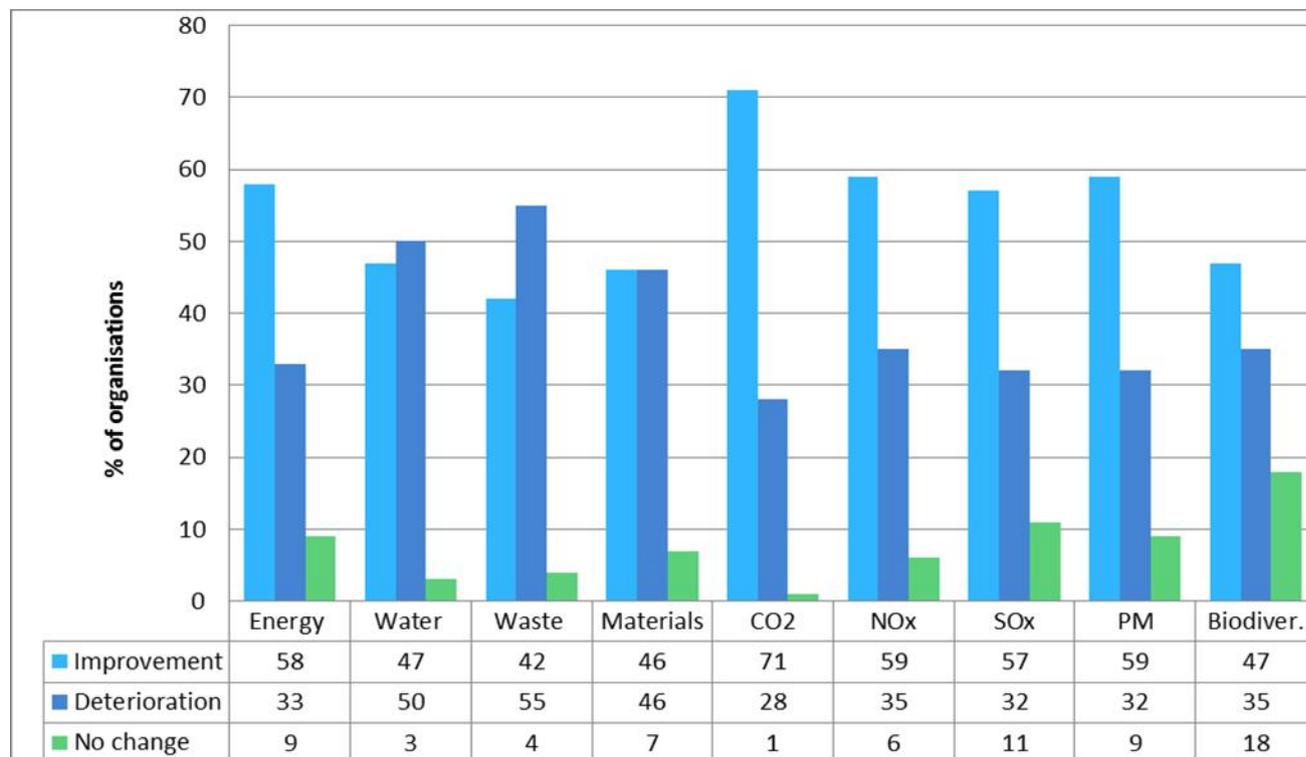


Figure 28: Organisations' average improvement: average improvement per organisation in the EMAS core indicators (whole sample)

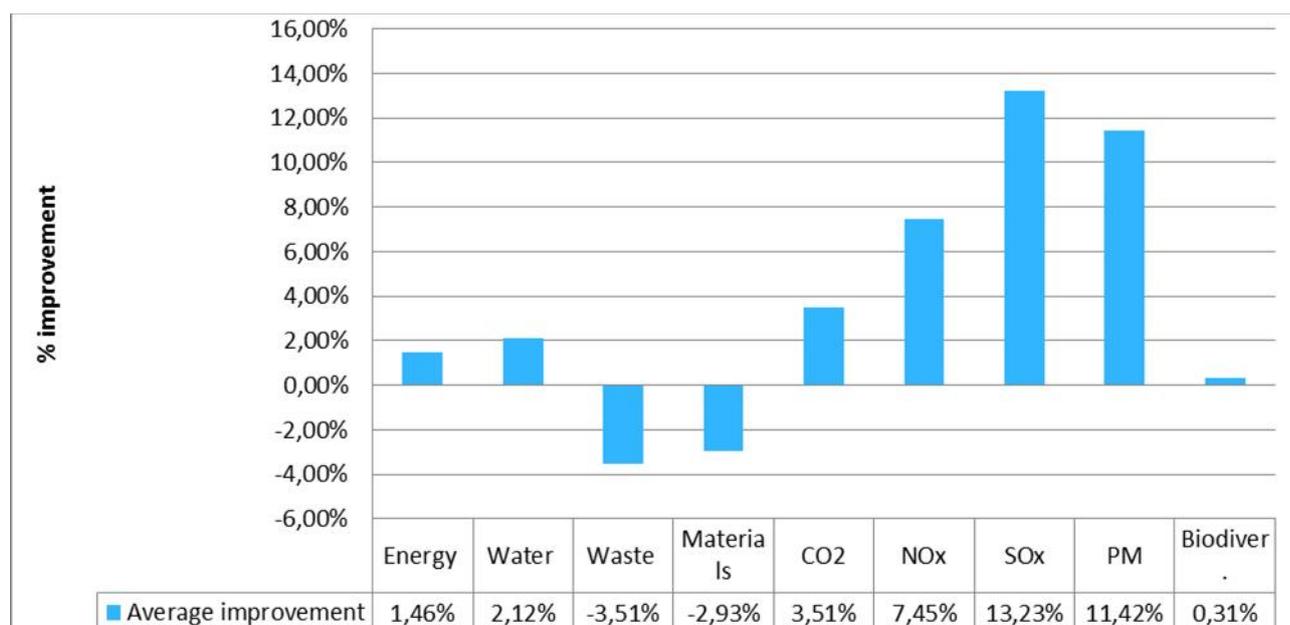


Figure 29: Average performance improvement per organisation by length of organisations' registration

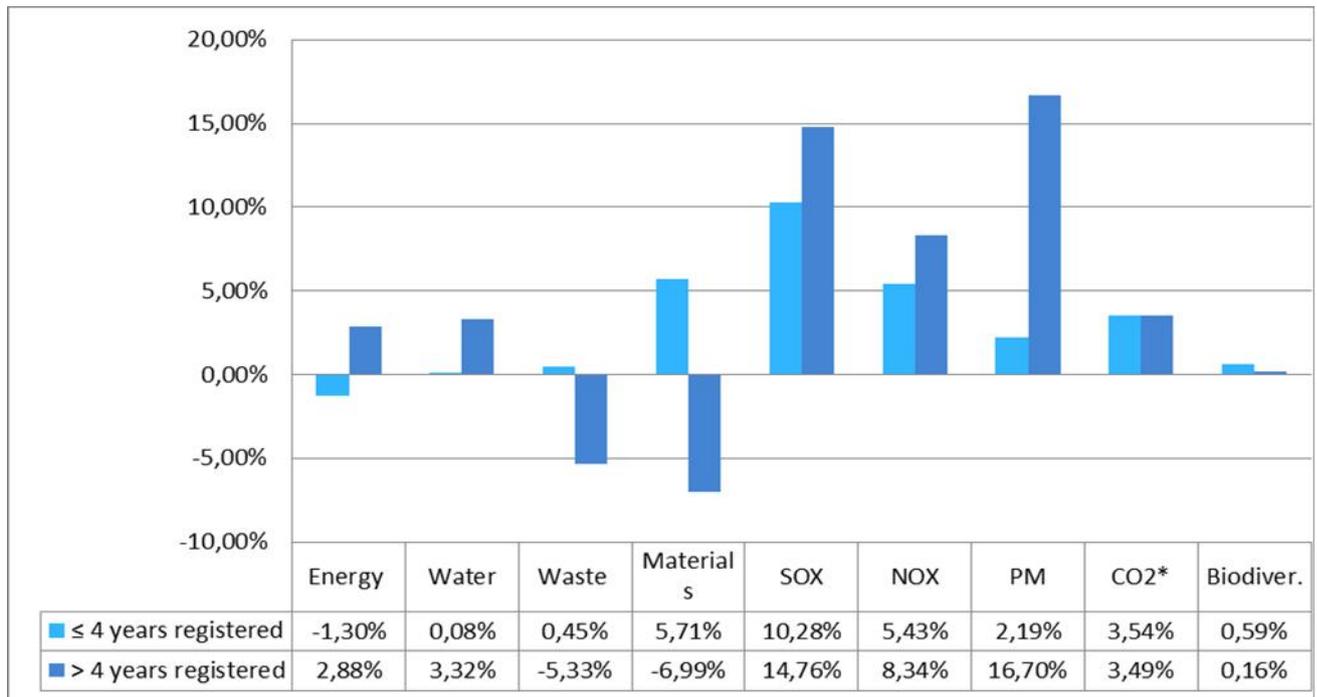
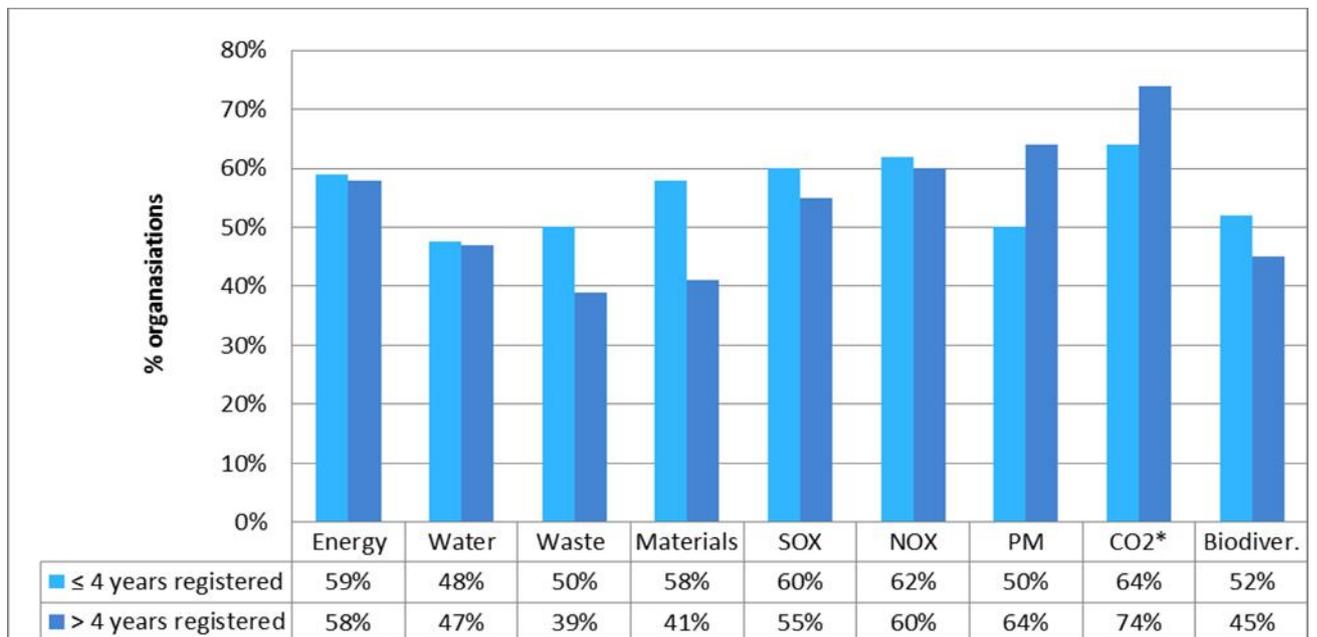


Figure 30: Percentage of organisations showing improvement in the EMAS core indicators according to length of organisations' registration



These findings for energy also demonstrate that, when looking at the sample as a whole, the percentage of companies showing improvement provides a better indicator for EMAS's effect on environmental performance than does the actual degree to which performance improved. It also raises questions as to why most companies are improving their energy efficiency while others are showing significant deterioration. As extreme outliers have already been eliminated from the sample (for further explanation see section 3.5.4 of the methodology chapter) most of these deteriorations are considered reliable indications of the companies' performance and received no explanation in the environmental statements. This particular situation thus deserves notice, despite the fact that EMAS registered organisations in general are experiencing success in improving both their absolute and continual performance in the energy indicator.

Waste generation

115 organisations in our sample reported the waste generation core indicator (tonnes of waste generated annually divided by production) in their environmental statements. Although the sample size was quite large, the reported data range was diverse and displayed large fluctuations. As a result, the waste production sample contained the highest number of outliers eliminated before further analysis (seven, or 6% of the sample for this indicator).

More companies in the sample experienced a deterioration in their performance (55%) than showed improvement (42%). Those organisations that had been EMAS registered for longer than four years were more likely to experience worsening performance; only 39% decreased waste generation, while 50% of older companies actually produced more waste per production unit. In contrast, half of recently registered companies showed improvement. Additionally, the average longer-registered organisation experienced a 5% performance deterioration (see Figure 29), while newer companies showed on average no change in performance during the two year period (0.5% improvement). Organisations thus appear more to have considerable difficulty achieving ongoing performance improvements in this indicator.

Indeed, on average, the organisations in the sample showed a 3.5% worsening in performance over the two years analysed. This trend is not unexpected, given that a majority of companies increased their waste generation. Additionally, longer-registered companies make up 2/3 of the sample and appear to experience significantly more difficulty achieving waste reduction. EMAS registered organisations thus show an overall negative trend in the waste indicator, with a majority struggling to achieve either absolute or continual performance improvements.

Water consumption

The indicator water consumption is derived from the organisations' total annual water consumption in m³ divided by total annual production. EMAS registered organisations in our sample do not show a clear performance trend in this indicator, with 50% of companies experiencing worsening performance and slightly less than half (47%) improving. Both the longer-registered and more newly registered groups showed the same level of improvement.

Looking at the average rate of improvement per company, however, the picture appears more positive. The organisations in the sample demonstrated an average performance improvement of 2% over the two year period, nearly all stemming from longer-registered organisations (see Figure 29). When examining the raw data from the sample, the number of companies showing high levels of improvement (more than 25% over two years) is nearly twice as high as the number showing such high levels of deterioration. This general tendency for decreases in water consumption to be more substantial than the increases explains the discrepancy between the average improvement per company

(positive trend) and the percentage of companies showing improvement in this indicator (no clear trend).

In sum, EMAS does not have a clear effect on water consumption overall, but appears to be helping a small number of companies reduce their water use substantially. This trend is further supported by Figure 29, which shows that longer-registered companies show higher levels of average improvement (3%) than newer companies (0%). Thus, at least some of the 47% of longer-registered companies reporting improvements appear to be experiencing higher than average success in water conservation. Nonetheless, no clear trend of either absolute or continual improvement appears for this indicator. One explanation, which is also in line with trends observed for other core indicators, is that the success of EMAS depends on the quality of the implementation of the scheme. If implemented on a high quality level, substantial performance improvements are possible, which shows the potential of EMAS to support organisation improve their environmental performance.

Raw materials

The material efficiency performance indicator shows the increase or decrease in organisations' consumption of raw materials, accounting for differences in production. As most organisations use multiple raw material inputs in their production processes, we employed an average of the performance trends for the four most common materials listed. For organisations registered under NACE 35 (electricity generation), we did not count fuel inputs, only additional materials related to the production process such as lime.

As seen in Figure 27, the sample contained equal numbers of companies with increases and decreases in material efficiency. The paper sector (NACE 17) in particular showed very high rates of improvement, with 73% of companies improving and only 9% having deteriorating performance. Similar to the trend in the waste indicator, length of registration appeared to have a significant negative effect on companies' ability to increase their material efficiency. While 58% of organisations registered for four years or less showed improvement, only 41% of those registered for four years or longer did (see Figure 29).

The disparity between longer-registered organisations and those newer to EMAS becomes even greater when examining the average improvement per organisation. While longer-registered organisations produced on average 7% more waste, more recently registered companies actually improved performance by nearly 6% - a 13% difference. The entire sample had an average decline in performance of 2.9%, mainly reflecting the higher percentage of longer-registered organisations.

A small but significant number of newly registered organisations are thus experiencing a degree of success in reducing their material consumption, but this trend appears difficult to sustain over the long term. On the whole, EMAS registered organisations in this sample are not achieving the goal of continual improvement in this indicator.

Biodiversity

The biodiversity indicator (m² of built up area divided by the unit of production) aims to show the transformation of natural habitats and habitat exploitation. 72 of the 122 organisations reported biodiversity in their environmental statements.

As represented in Figure 27, the overall trend shows a slight tendency towards improvement over the two year period. 47% of companies improved their performance and only 35% worsened. Compared to the results of other indicators, however, a

relatively high percentage of companies did not show any change in their built up area at all (18%).

The large share of companies experiencing no change – unique to this indicator - suggests that many organisations do not see a significant difference in their built-up area on a year-to-year basis. This result has a clear explanation; most organisations do not change their location, significantly expand their premises, or build new facilities every year. Many do so only every few years at most, suggesting that the biodiversity indicator is most useful for measuring trends over a much longer period of time than two years.

Length of registration had only a very small influence on companies' biodiversity indicators. A plurality of both newly registered and established companies improved (52% and 45% respectively), with a high percentage of companies in both groups showing no change at all. As was the case in all other indicators except CO₂ and particulate emissions, the likelihood of improvement was somewhat higher for organisations that had adopted EMAS within the past four years.

Examining the average percent improvement in the total sample (Figure 28), the biodiversity indicator again reflected a tendency towards no change. The average organisation improved its performance by only 0.3%. Longer-registered organisations improved by 0.2%, while newer organisations' performance worsened by 0.6%. All groups thus averaged a change of less than 1%.

While there is no overall change in this indicator, small differences in performance do occur on the level of the individual organisations. These differences are nearly always the result of slight changes in production occurring on a yearly basis while the built up area remains the same. This result further supports the suggestion that the biodiversity indicator is most useful in the longer term, when the effects of both large one-time investments like building a new factory and small short-term variations in production even out to reveal true long-term trends. As our study only examines change over a two-year period, we were unable to achieve clear results for this indicator. No conclusion can thus be drawn with regard to EMAS's companies' ability to show improvement in biodiversity.

Air

Because of the widely varying environmental effects of different types of air emissions and pollutants, EMAS registered organisations report separate indicators for sulphur oxides (SO_x), nitrogen oxides (NO_x), and particulate matter (PM). We examine these emissions separately in our study, which is also suitable because significantly more organisations in our sample reported NO_x emissions (69 out of 122) than SO_x or PM (each 44 organisations). The varying sample sizes shows that NO_x is the most relevant air emissions indicator for EMAS registered organisations, and also makes the data for NO_x in our study reflect trends more reliably than the PM or SO_x indicators. On average, as will be discussed in the next sections, EMAS registered organisations improved their environmental impacts for all three types of air emissions.

NO_x

The organisations in the sample showed the clearest improvement in NO_x. 59% of all companies and a majority of organisations in five out of the six sectors reduced their NO_x emissions over two years. 35% experienced NO_x increases (negative performance trends) while 6% showed no change. This trend remained roughly the same for companies registered EMAS for four years or less (62% improved) and those registered for more than four years (60% improved). Newer EMAS registered organisations were, however, less likely to show deterioration in this performance indicators (29% vs. 35%).

Both groups showed a positive trend, however, with the NO_x sample containing the second highest percentages of organisations improving in any indicator.

Further confirming EMAS registered organisations' overall positive performance in NO_x emissions, companies in the study experienced on average a 7.5% reduction in NO_x over the two years. Although the percentage of older organisations improving was slightly lower, they evidenced a higher average improvement rate (8%) than newer companies (5%). This trend holds true for the other types of air emissions as well.

The raw data also shows that fully a third of the 69 firms studied experienced NO_x increases or decreases of over 20%, with the majority of these high rates of change being performance improvements. A significant percentage of EMAS registered organisations, many of them longer-registered organisations, are thus making substantial progress in this indicator in a relatively short period of time. This finding provides additional evidence for both absolute and continual progress in NO_x emissions.

SO_x

The data for SO_x emissions shows a percentage of companies reducing emissions similar to that in the NO_x sample (57%). 32% experienced deteriorating performance, while fully 11% had no change (Figure 27). When looking at length of registration (Figure 29), organisations registered for four years or less were once again more likely to show performance improvement than longer-registered companies (60% vs. 55%). Those two groups also showed a similar likelihood of worsening or stagnating performance. However, looking at Figure 30, organisations that had been EMAS registered for longer than four years improved their average performance significantly more than newly registered companies (14% vs. 10%).

Organisations in the whole sample showed an average 13% performance improvement in SO_x emissions, the highest of all indicators. Again similar to other air emission indicators, the data contained a wide overall span of performance trends. The top performing company improved by 98%, while the firm with the highest emission increases showed an almost equal rate of deterioration (95%). Nearly half (46%) of organisations in the total sample reported SO_x emissions increases or decreases of over 20%; a third had differences in SO_x emissions of over 50% in the two years studied. Most of these large changes were performance improvements and signify the substantial impact that organisations can have on their air emissions, both over a short period of time and on a continuous basis.

Particulate matter (PM)

The results for PM emissions resemble those of SO_x and NO_x: 59% of organisations in the total sample showed performance improvement. In contrast to the other two emissions indicators, however, companies that had been EMAS registered for longer than four years were considerably more likely to have improved their performance (64% improved) than were newly registered organisations (50%). The numbers of companies showing worsening performance was also slightly higher among the newly registered organisations (32% vs 29%), though quite low compared to other indicators. PM thus appears to be one of the few indicators that companies are clearly successful in improving over the long-term, offering potential for meeting goals of continuous improvement.

On average, organisations decreased their PM emissions by 11% over the two year period, with an even higher rate for longer-registered organisations (17%). As with NO_x and SO_x, the variation in rates of increase and decrease among the firms in the sample was substantial. Fully 60% of the sample had changes in performance of over 25%, with

over a third experiencing increases or decreases of over 50%. PM thus joins energy and the other air emissions indicators as an area in which EMAS registered organisations are improving both their absolute and continuous performance.

Greenhouse gas emissions (CO₂)

Unlike the other core indicators analysed, the data for CO₂ emissions did not come from this study's environmental statement analysis, but instead from the 2013 CO₂ inventory Measuring CO₂ emissions performance of EMAS registered companies (adelphi 2013). The trend for the EMAS registered companies in the sample is clearly positive, with 71% of companies reducing their CO₂ emissions. Only 28% had CO₂ increases. When looking at the length of EMAS registration, companies registered for longer than four years displayed a slight advantage in reducing CO₂ emissions (74% experienced improvement) over companies registered for four years or less (64% improved).

Similar to other emission indicator trends, the improvement of the total sample shows a positive trend, with the average company reducing their CO₂ emissions by 3.5% over a one year period. EMAS registered organisations are also achieving continual improvement in this indicator, as shown by the high numbers of longer-registered companies still able to reduce their emissions during the time period studied.

Continuous improvement

Overall, our results show that EMAS registered organisations experience environmental performance improvements. However, these improvements do not apply equally to all groups of EMAS registered organisations or to all core indicators.

As seen in Table 28 and explained in the previous sections, companies registered with EMAS for less than four years are more likely than longer registered companies to show improvement in all indicators except CO₂ and air emissions. The difference is negligible in the energy and water indicators (1%) but substantial for waste and material efficiency. This finding stands in contrast to the results of Testa et al. (2014), which indicate that EMAS organisation experience worsening performance in the first years but reverse that trend in the longer term. This discrepancy can be explained by Testa et al.'s focus on CO₂ emissions, the indicator in which the highest percentages of EMAS registered organisations show improvement. Importantly, CO₂ is also one of only two indicators in our study in which longer-registered EMAS registered organisations were more likely to show performance improvement than those registered for four years or less.

Our results show that longer registered companies follow (or guide) the general trend for the sample, with a majority able to improve their performance only in the indicators which showed improvement in the total population: energy efficiency, air emissions, and CO₂. In contrast, more than 50% of organisations that were newer to EMAS (joined in the last four years before the data was reported) also showed improvement in waste generation, material efficiency, and biodiversity.

The findings in our study thus do not contradict those of previous studies that focused on only one indicator. They simply demonstrate that the ability of EMAS registered organisations to achieve continual environmental performance improvement varies considerably by core indicator, a finding that corresponds strongly to the recent Austrian environmental statement analysis (Umweltbundesamt GmbH 2015). EMAS registered organisations appear indeed to be achieving continual performance improvements in certain areas, but this success cannot be applied evenly to all environmental impacts.

Table 28: Overview of performance trends (in %) by length of registration

Improvement categories	Energy	Water	Waste	Materials	NOx	SOx	PM	CO ₂ [*]	Biodiv.
Average improvement per organisation	1.5	2.1	-3.5	-2.9	7.5	13.2	11.4	3.5	0.3
Average improvement - EMAS 4 years	-1.3	0.1	0.5	5.7	5.4	10.3	2.9	3.5	0.6
Average improvement - EMAS >4 years	2.9	3.3	-5.3	-7	8.3	14.8	16.7	3.5	-0.2
% of organisations with improved performance - total sample	58	47	42	46	59	57	59	71	47
% with improved performance - EMAS 4 years	59	48	50	58	62	60	50	64	52
% with improved performance - EMAS >4 years	58	47	39	41	60	55	64	74	45

As the duration of registration does not seem to be core decisive variable/factor, one possible explanation is that the quality of EMS implementation is more important - was it, for example, done properly in first year of registration? The organisation's starting point may also be relevant (did the company previously have an EMS, efficient technology, etc.?).

Overall trends

EMAS registered organisations in the sample show on average slight performance improvements in all but two indicators (waste and material efficiency). For individual companies, the absolute improvements are generally low (around 2-5%) but nonetheless demonstrate relevant reductions in environmental impacts over a two year period. The exception air emissions, in which organisations achieved improvements of over 10%.

When looking at the numbers of companies improving in each individual indicator, however, the picture is less positive (see Table 29). The range of companies improving was between 40% and 60%, the only exception being CO₂ with 71%. This clustering around the middle indicates that no very strong overall environmental performance trends exist for the EMAS registered organisations in the study, at least not over the two year period examined. Rather, significant differences exist between the core indicators,

with close to 60% of organisations exhibiting improvement in energy, air emissions, and CO₂ emissions, while over 50% showed deterioration in the water and waste indicators.

Table 29: Overview of performance trends (in %)

	Energy	Water	Waste	Materials	NOx	SOx	PM	CO ₂ *	Biodiv.
No. of organisations reporting data (of 122)	121	119	108	97	69	44	44	--	72
Average improvement per organisation (in %)	1.5	2.1	-3.5	-2.9	7.5	13.2	11.4	3.5	0.3
% of organisations with improved performance	58	47	42	46	59	57	59	71	47
% with declining performance	33	50	55	46	35	32	32	28	35
% no change	9	3	4	7	6	11	9	1	18

The reasons for the strong performances in energy and emissions may be attributable to the fact that additional European regulations exist for these indicators, making performance improvement mandatory/providing additional incentives for performance improvements in these fields. Cost savings are also a likely motivation for increasing energy efficiency, but clearly not the only one, as the reduction of raw materials often also offers substantial cost savings but is not being achieved by the majority of organisations in the sample. An additional explanation may be that the particular industrial sectors studied are more easily able to reduce their impact continually in certain indicators but not in others, in part as a result of available technology.

Here, a transition/introduction to the survey would be good. Something like: we now analyse whether the observations made and explanations given – performance improvements in some but not all environmental areas, importance of regulation, importance of cost savings potential – are confirmed by questionnaire results.

4.4.3.2. Results from the survey of EMAS registered organisations

The 467 EMAS registered organisations that took part in the survey also answered four sets of questions on EMAS's direct and indirect effects on environmental performance and impacts (Section 5 of the questionnaire).

Environmental indicators

The first question in Section 5 enquired as to how organisations' environmental performance had changed over the past few years in particular areas, including the core indicators. Organisations reported whether they had seen improvement, no change, or deterioration in performance in 11 areas such as energy efficiency and waste production. The results are depicted below in Table 30.

Table 30: With reference to the production unit, how has the environmental performance of your organisation changed over the last years in the following areas?

	Deteriorated a lot	Deteriorated somewhat	No change	Improved somewhat	Improved significantly
Energy efficiency	0.2%	2.7%	11.8%	41.5%	43.8%
Efficiency in the use of materials (e.g. chemicals, raw materials)	0.5%	0.9%	22.8%	48.5%	27.3%
Water consumption	0.5%	3.5%	24.1%	42.3%	29.7%
Waste production	0.5%	2.3%	20.6%	44.9%	31.8%
Biodiversity	1.4%	1.4%	65.0%	20.5%	11.9%
Quality/quantity of air emissions	0.5%	1.7%	37.0%	38.0%	22.7%
Quality/quantity of wastewater effluents	0.8%	1.3%	48.5%	28.6%	20.9%
Noise emissions	0.3%	2.0%	54.6%	29.6%	13.6%
Protection of soil and groundwater	0.8%	0.8%	49.2%	30.5%	18.7%
Odours	0.8%	1.7%	67.2%	19.7%	10.6%
Prevention of risks for (chemical) accidents. improved accident preparedness and response	0.5%	0.7%	22.5%	45.6%	30.7%

The organisations' responses show an overwhelmingly positive environmental performance result, with a majority reporting some or significant improvement in all of the EMAS III core indicators except biodiversity. Even for biodiversity, however, most organisations (65%) reported a lack of change, while only around 3% indicated worsening performance. More than 70% of organisations experienced performance improvement in all core indicators except for air emissions (61% improved) and biodiversity (32%). Energy efficiency showed not only the highest percentage of respondents improving (85%) but also was the only indicator in which most organisations (44%) reported significant improvement.

The survey also covered several non-core indicator areas not examined in the environmental statement analysis. The relationship between EMAS and these performance areas, however, was considerably weaker. Only for the category of risk prevention and accident preparedness did a majority of organisations (76%) report improvement. In the other areas (wastewater effluents, protection of soil and groundwater, noise emissions, and odour), organisations mostly reported a lack of change. Although improvement rates were lower in these categories, rates of deterioration were comparable to those seen in the core indicators (less than 3%).

These two general patterns – a majority reporting improvement in all core indicators except biodiversity and a plurality showing no change in all non-core indicator areas except risk prevention - held true across all sizes of organisations. Slight differences occurred according to the size of the organisation, however. The highest percentage of micro organisations reported improvement in material efficiency (77%) rather than energy efficiency (75%), which was the most common area of improvement among small and medium (84%) and large organisations (90%). Large organisations were also more likely than micro, small, and medium ones to report improvement in the non-core indicator areas. Levels of reported deterioration were very low in all size categories.

Interestingly, the percentage of organisations showing performance improvement in core indicators in the survey sample is considerably higher and lack of improvement considerably lower than in the environmental statement analysis. Several factors may account for this discrepancy. Firstly, in the self-reported survey, organisations may be giving rough estimates and impressions rather than relying on concrete data and/or are considering trends significantly longer than the two years investigated in the environmental statements. Furthermore, the survey sample applies to a much more diverse group of organisations. The statement analysis, on the other hand, focused on large industrial sectors whose level and consistency of environmental improvement may not be as positive as that of organisations in other industries or in the service sector (35% of the survey sample). Despite the discrepancy between the survey and environmental statement results, however, the survey results can be interpreted to show that a high percentage of EMAS registered organisations perceive improvement in the EMAS core indicators.

Factors influencing environmental performance

The survey also asked EMAS registered organisations to rate 11 different factors according to their importance for achieving environmental improvement. On a scale of 1-5, a value of 1 indicated the factor was "not important at all" and 5 meant "very important". The averaged responses of all organisations are listed in Table 31 below.

Table 31: How would you rate the following factors in terms of their importance for achieving environmental improvement?

	Value	Standard deviation
Technical progress	4.0	0.8
EMS used to fulfil EMAS requirements	3.9	0.8
Environmental regulation/public policy intervention	3.9	0.9
Environmental reporting	3.8	0.9
Cost (savings) of production inputs	3.7	1.0
Participation in EMAS	3.6	0.9
Monitoring of core environmental performance indicators	3.6	1.0
Customer demand	3.6	1.1
Competition	3.4	1.0
Environmental fees and taxes	3.4	1.2
Stakeholder pressures and/or expectations	3.3	1.1

EMAS registered organisations gave the highest significance to technical progress, followed by EMS and environmental regulation. The variation in performance trends is discussed above in the context of the environmental statement analysis

The explanation given about the importance of an EMS to achieve performance improvements is thus confirmed by the questionnaire results.

Environmental reporting was also considered important, with an average score of nearly 3.8. Cost savings of production inputs made up the last factor in a ranking of the top five factors, although it was closely followed by participation in EMAS. The standard deviation generally increased as the factors became less important, indicating that organisations are very much in agreement about the most important contributors to environmental performance but differ slightly more on the importance of the lesser factors. Nevertheless, all factors achieved an average of higher than three both in the whole sample and in all subgroups examined, indicating that EMAS registered organisations consider each of these factors to hold some importance for environmental improvement.

Table 32: By geographic distribution: How would you rate the following factors in terms of their importance for achieving environmental improvement?

	High registration countries	Medium registration countries	Low registration countries
Environmental regulation/public policy intervention	3.9	3.7	4.1
Technical progress	4.0	4.0	3.7
Customer demand	3.6	3.7	3.4
Competition	3.4	3.6	3.3
Participation in EMAS	3.6	3.7	3.4
Environmental fees and taxes	3.4	3.3	3.3
Cost (savings) of production inputs	3.6	3.8	3.3
Stakeholder pressures and/or expectations	3.3	3.4	3.5
Monitoring of core environmental performance indicators	3.6	3.7	3.5
EMS used to fulfil EMAS requirements	3.9	4.1	4.1
Environmental reporting	3.7	4.0	3.9

When looking at the results broken down by the geographical coverage of EMAS (Table 32), organisations generally agreed on the importance of the top five factors. Slight differences exist, with organisations in high registration countries ranking technical progress as the most important factor while medium and low registration countries both ranked the EMS as the most important (technical progress was second). One possible explanation is that organisations in high registration countries may perceive that the implementation of the scheme itself and also policy support/intervention have already reached a considerably high standard and significant performance improvements hinge on technical progress. Environmental regulation was the only one of the top five factors to have significantly different ranks of importance among the three geographic groups. Organisations in countries with low numbers of registrations saw this as the most important factor, while those in medium registration countries put regulation in fifth place. Participation in EMAS ranked sixth or seventh in all groups.

Table 33: By organisation size: How would you rate the following factors in terms of their importance for achieving environmental improvement?

	Micro	Small and medium	Large
Environmental regulation/public intervention policy	3.9	3.8	3.9
Technical progress	3.9	3.9	4.1
Customer demand	3.7	3.6	3.5
Competition	3.4	3.4	3.4
Participation in EMAS	3.7	3.6	3.5
Environmental fees and taxes	3.5	3.2	3.3
Cost (savings) of production inputs	3.4	3.7	3.7
Stakeholder pressures and/or expectations	3.2	3.3	3.3
Monitoring of core environmental performance indicators	3.4	3.7	3.5
EMS used to fulfil EMAS requirements	3.7	3.9	3.9
Environmental reporting	3.6	3.8	3.7

With regard to size (Table 33), small, medium and large organisations showed very similar patterns, while the answers of micro organisations differed somewhat more. For micro organisations, environmental regulation was the most important performance factor; however, it ranked only in fourth and third place respectively for the other two groups. Micro organisations also gave more importance to participation in EMAS, being the only subgroup to rank EMAS as one of the top five factors for environmental performance. They accorded a higher importance to customer demand as well, while

small and medium organisations valued environmental reporting and core performance indicators more strongly than the other groups. Micro organisations in particular thus appear to have slightly different performance influences, although their relatively small proportion in the survey sample may also have contributed to these results.

Although organisations rank participation in EMAS itself somewhere in the middle of the most important factors influencing environmental improvement, the adoption of EMAS can be linked indirectly to the top-ranked factors. Aside from requiring fulfilment of regulatory standards, the scheme also spurs certain types of innovation and thus, in some cases, technical progress (see Chapter 4.8). According to the findings of the previous sections, EMAS registered organisations show the ability to continually improve their environmental performance in, for example, energy use, thereby contributing to cost savings. In contrast to other EMS certifications, EMAS also requires regular environmental reporting validated by an independent environmental verifier.

EMAS requirements influencing environmental performance

Another survey question examined the importance of EMAS requirements for environmental improvement. Ranked again on a scale of 1 (not important at all) to 5 (very important), organisations gave average values of 4 or higher (fairly important) to four of the eight EMAS components (see Table 34).

Table 34: How would you rate individual EMAS requirements in terms of their importance for improving performance in practice?

	Value	Standard deviation
Objectives and targets	4.2	0.8
Legal compliance requirements	4.1	0.9
Employee involvement	4.1	0.9
Initial Environmental Review	4.0	0.9
Audit	4.0	0.8
Management review	4.0	0.9
environmental statement	3.9	0.9
Environmental policy	3.7	0.9

Objectives and targets demonstrated by far the highest importance, followed by legal compliance requirements. In contrast to the relatively high importance of environmental reporting indicated in Table 34, organisations' environmental statements and policies ranked here as the least influential EMAS requirements. Although faring worse in a comparative perspective, these two aspects nonetheless achieved higher average scores of importance (3.9 and 3.7) than most of the more general factors investigated in the previous section. Given that in general great importance is attached to the scheme and its features, this, again, indicates that the quality of the implementation of the scheme is an important factor in achieving performance improvements. The organisations also showed general agreement on the rankings of the EMAS factors when divided by geography and size. Objectives and targets, for example, achieved the highest importance in all categories of organisations. Among the few significant differences were

lower average scores for all aspects in countries with few EMAS registrations and a very high importance given by micro organisations to the initial environmental review.

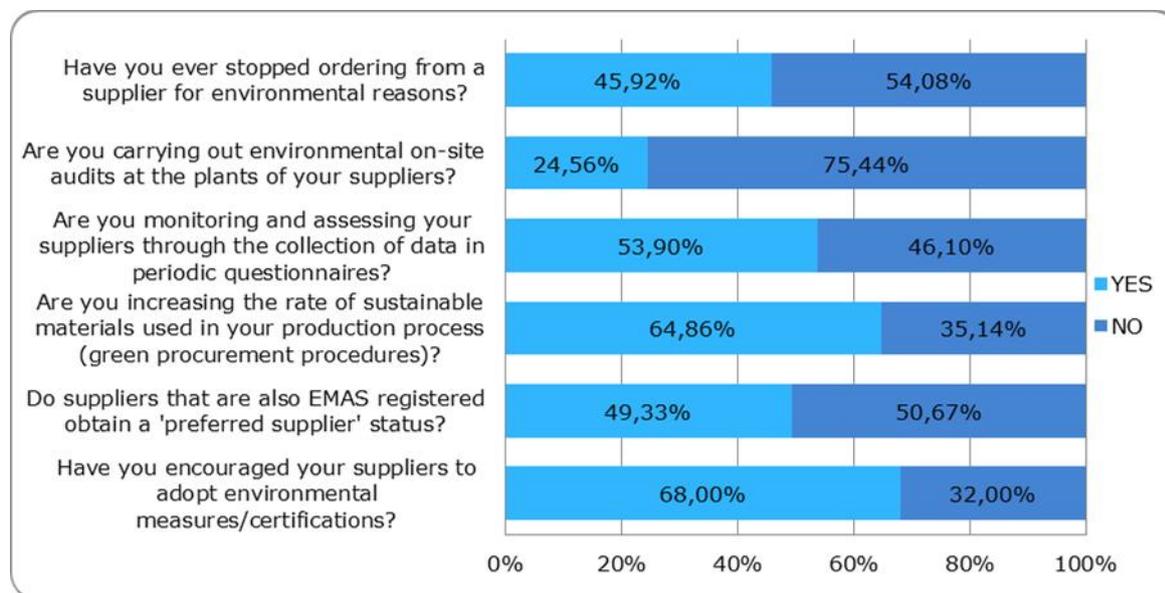
Employee involvement also ranked as somewhat more important among small and medium organisations and in countries with high numbers of registrations, the two largest groups in the sample. Although the differences are slight, particularly among the different geographic groups, this fact may be significant for EMAS adoption. Unlike objectives and targets, employee involvement is one aspect which distinguishes EMAS from ISO 14001. This aspect thus appears to comprise one of the advantages for EMAS for the two subsectors of the population with the highest numbers of EMAS registrations.

Indirect aspects of EMAS

The final question on environmental performance in the survey focused on ways in which EMAS can indirectly impact an organisation’s environmental improvement. The options focus on ways in which organisations can integrate environmental concerns into the supply and production processes.

As can be seen from Figure 31, a majority of organisations report taking three of the six indirect environmental performance measures. The most popular option is encouraging suppliers to adopt environmental measures or certifications (68% of organisations report doing so), followed closely by green procurement procedures (65%). Only 25% of organisations reported carrying out on-site environmental audits at the plants of suppliers, making it by far the least popular method of improving indirect environmental performance.

Figure 31: Indirect effects of EMAS



These three measures with strong trends remained consistent in their respective positive or negative trends for all sizes and geographic groups of organisations. The remaining three options each received positive responses from approximately 50% of organisations and varied somewhat between different groups. Interestingly, small and medium organisations and those in countries with high numbers of registrations again showed overall trends differing slightly from the other groups. At least half of organisations in both groups answered positively for five out of the six indirect performance options,

higher than the average. This result again indicates that these groups are more likely to benefit from EMAS with regard to environmental performance improvements.

Unsurprisingly, organisations are in general more likely to report EMAS having indirect effects on their performance in areas which do not as obviously affect their relationships with their existing suppliers (e.g. encouraging environmental certification, increasing use of sustainable materials). Methods that include more extensive involvement in the day-to-day business of the suppliers or that terminate existing relationships are somewhat less popular.

4.4.3.3. Results from interviews

The personal interviews with eight EMAS registered organisations confirm the general findings of the environmental statement analysis and the survey, highlighting in particular EMAS's effect on performance aspects outside the environmental core indicators. Although the organisations interviewed are located in seven different Member States and include public and private and small and large organisations, they reported core indicator improvement patterns similar to those found in the environmental statement analysis. Specifically, most organisations reported improvement in certain indicators – the most common being energy - but not in others. Several indicated that the biggest improvements usually appeared in the first years of EMAS registration.

One of the organisations interviewed, a large private company in the industry sector, has experienced improvement in all core indicators since introducing EMAS in the early 2000s. The others, a mix of public and private organisations, all reported improvements in energy efficiency, and several also experienced reductions in CO₂ emissions, waste generation, and water consumption. Only one organisation, registered for only one year, said they had not seen any significant improvements.

According to most of the organisations interviewed, the ability to improve performance decreased after having been EMAS registered for several years. After having achieved a certain standard, it can be difficult - particularly for small organisations – to achieve significant further improvements in the core indicators. This circumstance can be the result of lack of technology and also of a lack of resources. However, at least one organisation that had been registered for a decade or more was still experiencing small performance improvements in some areas.

Two small private organisations that had been EMAS registered for over 15 years reported that they were no longer able to make significant progress in the core indicators but received continuous benefits from EMAS in other areas. For example, these organisations explained that EMAS helped them to continue to raise employee and general awareness of environmental issues, improve data quality in environmental statements, and spread organisational systems to other parts of the organisation. While confirming limits on continuous progress in the core indicators, the interviews thus call attention to EMAS's support of an organisation's ability to make improvements in other, less measurable areas. In addition, the statements indicate that EMAS's core elements such as employee involvement or reporting procedures can become integral parts of an organisation's management approach, even if the scheme itself is no longer used officially.

4.4.3.4. Additional findings

The environmental statement analysis presented above will inform recommendations on the future of the EMAS Regulation included in the final study report. The results can also help to identify areas in which EMAS has been successful in achieving its goal of environmental performance improvement and areas in which modification might be useful for the future development of the EMAS Regulation. In addition to the quantitative results on performance, the data collection process of the environmental statement analysis also allowed us to identify additional aspects relevant to the implementation of the EMAS Regulation.

While searching for environmental statements in the EU EMAS Register, national registers, and the websites of organisations, we noticed that many companies do not have environmental statements that are online and easily accessible. When statements were found, the data provided was often incomplete or unclear. Despite the requirements of the EMAS III Regulation, many statements did not provide data on all - or even most - core indicators. Additionally, this data was not presented in a manner compatible with the recommendations of the EMAS Regulation, as specified for example in the German Environment Ministry's 2013 instruction manual on EMAS core indicators (BMU and UBA 2013). This finding corresponds to Skouloudis et al.(2013)'s observation that a large number of Greek environmental statements were missing required information.

Nevertheless, EMAS registered organisations remain the only private organisations that report such environmental impact data on a reliable, consistent basis and which obtain independent verification from a third party. Comparable data sets for non-EMAS registered organisations rarely exist and, when they do, usually lack independent verification. Thus, although a more consistent implementation of the EMAS III Regulation appears necessary, many EMAS registered organisations are indeed - and uniquely - achieving the goal of increased transparency.

4.4.4. Main findings

- EMAS registered organisations both perceive and experience environmental performance improvements, but these improvements do not apply equally to all groups of EMAS registered organisations or to all core indicators described in the EMAS III Regulation. Our analysis indicates that EMAS registered organisations are improving their performance over time in energy use, air emissions and CO₂ emissions, while they are stagnating in water consumption and largely negative in waste and material efficiency.
- The positive and negative performance trends tended to be stronger for longer-registered organisations (those registered for more than four years). In contrast, a slight majority of organisations that are newer to EMAS improved in all indicators except water and waste.
- The online survey showed over 70% of EMAS registered organisations perceived improvement in all core indicators except air emissions and biodiversity. Only a very small percentage (less than 4%) reported performance deterioration. These differences between the environmental statement analysis and the survey most likely result from differences in perception (respondents thinking over a longer time scale than two years) and also from the very different samples in the two datasets (organisations of different sectors and sizes).

- Nearly all interviewed organisations reported performance improvement, although that improvement was often confined to a few core indicators. When discussing performance, the interviewees often emphasised the importance of EMAS for non-tangible types of improvement, for example increasing environmental awareness and improving management processes.
- Regarding factors to improve performance, surveyed EMAS registered organisations attributed the highest importance to the following elements: technological progress, EMS, and environmental regulation. In terms of EMAS specific requirements for performance improvements, EMAS registered organisations view the following as the most important: objectives and targets, legal compliance requirements, and employee involvement
- Our findings correspond with that of the existing literature on the topic, which confirms EMAS' positive influence on environmental performance, at least for certain indicators. Several studies show that EMS in general affects performance of organisation but the likelihood of improvement depends greatly on the degree of implementation (see for example Darnall et al. 2008). The wide variety of quality witnessed in EMAS environmental statements as part of this study corresponds to other recent findings (Skouladis et al. 2013) and supports the hypothesis that organisations are at the very least implementing the EMAS Regulation to varying degrees.

4.5. Added value of EMAS with regard to other policy tools

Key points at a glance

- This chapter examines the potential added value of EMAS from two perspectives: 1) benefits for its adopters that could not be gained through other tools and 2) its coherence with and support for other tools and their policy goals. This is an area in which little previous research exists.
- From the first perspective, survey and interview results indicate that EMAS has an added value over ISO 14001 with regard to market credibility, transparency and legal compliance guarantees for regulators (e.g. through government-verified external auditors). This is in line with the findings of two previous studies.
- In contrast, surveyed and interviewed organisations and Member States indicate that EMAS has little or no added value for organisations over ISO 14001 in terms of regulatory relief, fiscal incentives and GPP.
- From the second added value perspective, surveyed and interviewed organisations indicate that EMAS brings added value in terms of synergies with existing management systems that address quality, energy, and health and safety issues.
- However, surveyed organisations do not see EMAS as providing added value to product tools such as Ecodesign and EU Ecolabel or to EU policies on misleading environmental claims. Registered organisations and competent bodies are also undecided about EMAS's added value and opportunities for integration with the EU OEF, possibly as a result of OEF's newness.

4.5.1. Background and research aims

The section analyses the added value of EMAS with regards to other EU policy tools within the framework of the SCP/SIP Action Plan (COM 2008/397 final) and its evolution over time. These will be examined in terms of possible:

- Synergies and opportunities for integration with both existing and forthcoming policy instruments with the potential to be used more widely and/or better exploited by EMAS.
- Current conflicts between EMAS and these tools which may prevent and/or limit the achievement of overall SCP goals, as well as those specific to EMAS.

The research questions to be addressed by this part of the study diverge considerably according to the various policy tools considered.

To best evaluate the added value, a set of questions on policy coherence was developed. For EMAS, the focus will be (among other things) on linking the scheme to other policies/instruments at the EU and national levels and aiming to ensure that EMAS is taken into consideration where appropriate. Examples include product-related

instruments (e.g. Ecodesign, EU Energy Labelling and EU Ecolabel), which relate to EMAS (and its requirements) by influencing the design and development of products and/or by supporting companies' compliance with specific provisions.²⁸

In comparison to other topics covered in the evaluation study, this field of analysis is not directly addressed by existing academic and technical literature: previous studies and research tend rather to focus on the role and effectiveness of each single EU policy tool, rarely analysing them from the perspective of "added value." Indirect evidence is available whenever a study/research investigates the relationship between EMAS and at least one other policy tool.

Also addressed in this section are questions on the concept of EU added value. The concept assesses the added value resulting from EU intervention in contrast to what could be achieved by Member States (or private actors) alone. Questions included investigate the added value of EMAS with respect to other private voluntary tools available on the market, whose scope, goals and/or approach overlap, at least partially, with those of the EU scheme. This is the case, above all, with respect to ISO 14001, whose requirements have been an integral part of EMAS since the second version of scheme (EMAS Regulation No.1761/2001, also called EMAS II). Plenty of literature is available on ISO 14001, although it has to be noted that the private standard is currently under revision, with a new version expected in mid to late 2015. The draft version (ISO/DIS 14001) issued in July 2014 already contains important implications for the revision of EMAS. Our analysis of the added value of EMAS compared to ISO 14001 thus has to evaluate findings emerging from the study in the light of revisions to the international private standard.

On the whole, the added value of the EMAS in comparison to all the other (public and private) tools currently available on the market actually resides in its uniqueness. Unlike the other tools, EMAS is simultaneously:

- An institutional tool, whose requirements and characteristics of the registration process aim to provide for its high credibility and reliability, and
- A comprehensive management tool that aims to provide organisations with a method and an approach to systematically manage and improve all aspects of their environmental policy.

In such a context, the potential added value of EMAS may be investigated from two major analytical perspectives:

1. In terms of benefits for its adopters that could not be gained through other tools;
2. In terms of EMAS's support for the adoption and implementation of other tools and its contribution to the achievement of their goals.

This chapter in many ways synthesises the findings of other chapters in this study, especially with regard to analysing EMAS's potential added value compared to ISO 14001. In addition to survey results dedicated to this particular topic, as well as interviews and case studies, Chapter 4.2 (public image and stakeholders) on policies on misleading claims, Chapter 4.3 (Drivers, barriers, costs and benefits) and Chapter 4.6

²⁸ For example, Article 8, clause 2 of the Ecodesign Directive 2009/125/EC foresees a presumption of compliance for EMAS registered organisation with the requirements of the Annex V of the Directive "Management system for assessing conformity".

(Competitiveness) all provide evidence of the added value of EMAS compared to specific European SCP policies and instruments such as ISO 14001 or EU GPP.

4.5.2. Previous research

Studies and research have rather tended to focus on the role and effectiveness of individual EU policy tools, rarely comparing them in terms of “added value.” Indirect evidence is available whenever a study/research investigates the relationship between EMAS and at least one other policy tool.

The EVER study (Iraldo 2006 et al.), the previous EMAS evaluation study, did not address the added value of EMAS with regard to other tools as an explicit strand of analysis. However, the study did directly and indirectly include some key questions on this issue in its investigation of the relationship between EMAS and the EU Ecolabel and, more generally, with sustainable development (i.e. with a number of public and private sustainability-targeted initiatives). Furthermore, the evaluation of the benefits perceived by registered organisations covered the synergies associated with the integration of EMAS with many tools, such as the Environmental Product Declaration (EPD), other management systems, etc.

4.5.3. Results

The survey explored the relationships and the level of integration (and mutual support) of EMAS with other policy instruments, ranging from other EMS standards to some of the most important EU environmental policy tools. The idea is that the more EMAS is integrated and used in addition to and in support of other policy tools, the higher the added value provided by the scheme to EMAS adopters and other actors within the scheme. Table 35 below illustrates the results according to the entire sample interviewed.

Table 35: Actual level of integration with other voluntary tools

If your organisation has implemented other voluntary instruments, how well are they integrated with EMAS?	Highly integrated	Moderately integrated	Scarcely/Not integrated	Not adopted
ISO 9001 (quality management)	44.7%	19.3%	11.3%	24.7%
ISO 14001 (environmental management)	81.2%	4.9%	1.0%	12.8%
ISO 50001 (energy management)	15.5%	7.9%	5.4%	71.2%
OHSAS 18001 (health and safety)	31.2%	14.5%	10.1%	44.3%

SA 8000 (social responsibility)	5.2%	5.5%	7.5%	81.8%
ISO 26000 (social responsibility)	3.5%	6.1%	7.3%	83.1%
Other CSR reporting instruments such as the United Nations Global Compact or the Global Reporting Initiative (GRI)	10.8%	10.0%	8.6%	70.7%
European Ecolabel for at least one product	4.6%	3.4%	6.0%	86.0%
Energy labelling*	2.9%	5.8%	4.0%	87.4%
Eco-design (for energy-using products)*	3.8%	3.2%	6.7%	86.3%
Environmental Product Declaration	6.7%	5.0%	7.0%	81.3%
Other form of third party certification on the product environmental, carbon or water footprint (i.e. PAS 2050; BP X30-323; OEF; PEF; ISO 14064)	5.4%	4.2%	8.1%	82.4%
Other national and regional schemes for environmental management (e.g. Ecoprofit, Ecolighthouse, Ecodynamic Label)	4.7%	4.7%	5.0%	85.7%

(* these are mandatory instruments, but were included in this part of the survey in order to investigate the possible integration of the management of these product-related tools too with EMAS)

Data show a high level of integration of EMAS with other widespread management instruments. Apart from ISO 14001 – whose certification is often obtained together with an EMAS registration – respondents confirm how major opportunities for integration are to be found with management systems addressing quality and health and safety issues: 64% of the sample integrate EMAS with the quality standard ISO 9001 standard and

about 46% with the health and safety standard OHSAS 18001.²⁹ On the other hand, EMAS registered organisations seem unwilling to adopt some form of third-party certification of their CSR – namely the SA 8000 standard – and to integrate it with EMAS. The same applies to ISO 26000, a newly developed CSR guidance document.³⁰

This survey-based evidence is corroborated and enriched by findings emerging from interviews and case studies carried out with different stakeholders:

- On the one hand, most EMAS registered organisations interviewed confirmed their successful integration of EMAS with other management instruments such as ISO 14001, ISO 9001 and OHSAS 18001. Even though survey respondents indicated a rather low integration of ISO 50001 (which is surprising given its close proximity to EMAS with regard to requirements), an interviewed organisation which had achieved this integration remarked that “the integration of certain standards wanted from stakeholders like ISO 50001 was extremely easy because EMAS covers so many of their requirements already” and that a full integration of EMAS with these tools would be a “warmly welcomed option.” This issue will be dealt with further in Chapter 7.3.1).
- On the other hand, representatives of Competent Bodies asked to express their opinion on the integration of EMAS with CSR instruments voiced conflicting ideas: While one representative emphasised that “the improvement of the links with social responsibility issues is one of the most important topics for the future of EMAS,” another points out that the inclusion of social requirements within EMAS “would result in an excessively complex management system” and that “an EU-specific system for the social requirements would be preferable.”

Focusing on the relationship with product policy tools, results show little integration of EMAS with the EU Ecolabel, Energy labelling and Ecodesign: only 8.6% of the sample integrates EMAS with Energy labelling, whereas the percentage falls to approximately 8% and 7% for the EU Ecolabel and the Ecodesign respectively.³¹ All three of these EU policy tools are currently less integrated with EMAS than private forms of product certification, such as the EPD (11.7%) or other third-party certifications on the product – environmental, carbon or water footprint (9.4%). The evidence that EMAS is less integrated with the Energy labelling, the EU Ecolabel and the Ecodesign – compared with the carbon and water footprint tools – is quite surprising for the following reasons:

- the first three tools are all “older” European tools like EMAS, compared to the more recent footprinting tools from various private and public sources;
- along with EMAS, all three tools share a focus on environmental performance and improvement (with obviously different aims and scopes);
- as far as they set specific environmental requirements, the three tools are easier to integrate within an environmental management system than, for example, the effort required to carry out a life cycle assessment to calculate a water or a carbon footprint.

²⁹ Summing up the respective percentages of “highly integrated” and “moderately integrated”.

³⁰ The latter is not a standard for purpose certification.

³¹ Summing up the respective percentages of “highly integrated” and “moderately integrated”.

This evidence can be read in two ways:

On the one hand, it is quite clear that registered organisations consider EMAS to be a voluntary scheme which is able to provide added value (be it competitive, reputational or linked to better performance) with respect to other forms of certification of products and their life-cycles. This means that even when they have to face very stringent requirements on the performance of their products (such as in the case of the EU Ecolabel, or when they are subject to the requirements of the Eco-design Directive, etc.), registered organisations still think that EMAS is useful for pursuing different aims and providing additional guarantees concerning environmental management. Thus we can say that organisations find added value in EMAS, even when they have to (or they choose to) comply with other environmental standards.

On the other hand, these results clearly show that EMAS today does not represent value in terms of operational support for surveyed EMAS registered organisations that have to deal with the requirements of Ecodesign or the Energy Labelling Directives (i.e. those manufacturing organisations subject to these Directives), or even the requirements of a voluntary scheme such as the EU Ecolabel. The answers to the survey questions are quite clear: registered organisations are not using EMAS in an integrative manner with product-related tools. On the contrary, the organisations tend to consider these tools as independent and potentially complementary. This lack of integration occurs despite both the Ecodesign Directive and the Ecolabel Regulation providing favourable conditions for organisations that are also EMAS registered.³²

Interviews with Member State representatives provide no evidence of specific efforts carried out at the Member State level with the aim of pushing the integration of EMAS with other policy tools, except for information and promotion activities, which are (at least for some tools) jointly implemented (see Chapter 4.2 for details).

With reference to management tools, the evidence is in line with the results of the EVER study (Iraldo et al. 2006), in which 67% of the registered organisations surveyed also adopted a health and safety management system, while synergy or integration with ISO 9001 was recognised as a benefit by 60% of EMAS registered organisations. At the same time, the relationship between EMAS and Corporate Social Responsibility (CSR) issues was, even then, a controversial issue: while the majority of survey respondents in the EVER study carried out CSR initiatives, upgrading EMAS to a wider scheme integrating CSR elements was less supported, 48% of survey respondents agreeing on this, with 52% disagreeing. On the other hand, the numbers in the EVER study on the integration of EMAS with product tools were more positive: 24% of the registered organisations surveyed experienced important synergies in terms of the integration of EMAS with the

³² As for the Ecodesign Directive, Article 8, Article 8 (Conformity assessment), comma 2, states: “Where a product covered by implementing measures is designed by an organisation registered in accordance with Regulation (EC) No 761/2001 of the European Parliament and of the Council of 19 March 2001 allowing voluntary participation by organisations in a Community eco-management and audit scheme (EMAS) (1) and the design function is included within the scope of that registration, the management system of that organisation shall be presumed to comply with the requirements of Annex V to this Directive”.

As for the Ecolabel Regulation, Annex III (Fees), states that: “The application fee shall be reduced by 20% for applicants registered under the Community eco-management and audit scheme (EMAS) and/or certified under the standard ISO 14001. This reduction is subject to the condition that the applicant explicitly commits, in its environmental policy, to ensure full compliance of its ecolabelled products with the EU Ecolabel criteria throughout the period of validity of the contract and that this commitment is appropriately incorporated into the detailed environmental objectives. ISO 14001 certified applicants shall demonstrate annually the implementation of this commitment. EMAS registered applicants shall forward a copy of their annually verified environmental statement”.

EU Ecolabel, while the percentage raised to 32% in terms of synergies with Life Cycle Assessment and Environmental Product Declaration.

The relationship between EMAS and ISO 14001 is somewhat ambiguous: on the one hand, the ISO 14001 environmental management requirements are an integral part of EMAS and form the basis of the EMS. On the other hand, ISO 14001 is the international market leader, and many organisations make a decision either for EMAS or ISO 14001 – the latter winning out in the majority of cases.

Based on the comparison of ISO 14001 and EMAS in the EMAS Regulation itself (its Annex II), EMAS is presented in brochures, info sheets and similar publications as providing added value in three ways (Zippel 2011):

- Performance improvement: While ISO 14001 focuses on improving the management system, EMAS addresses continuous improvement of an organisation's environmental performance
- Communication: Whereas ISO 14001 does not require organisations to communicate externally, EMAS registered organisations have to communicate externally through the environmental statement, which is validated by the environmental verifier
- Management of legal compliance: While legal compliance is a goal of the ISO 14001 standard, EMAS requires participants to clearly demonstrate and prove legal and regulatory compliance

The key question is whether these differences are also present in the practical application of EMAS or whether they only exist in the Regulation.

Our survey also asked whether EMAS has an added value with regard to ISO 14001. EMAS registered organisations were asked to indicate their level of agreement with statements concerning the added value of EMAS when compared to ISO 14001 according to five options, ranging from "1 = strongly disagree" to "5 = strongly agree".

As shown in Table 36 below, results generally confirm an ability of EMAS to provide additional benefits beyond those provided by ISO 14001 (average value of 3.4). Among them, environmental and legal compliance stands as one of the most important advantages perceived by registered organisations – with an average value of 3.3. Many organisations also reported a higher credibility in the market (3.1), although this value is not significantly different from being impartial. Overall, the high standard deviation value (above 1) would indicate that although survey respondents were more likely to agree than to disagree with the statements mentioned here, views were in fact split. The results of the survey indicate that not all organisations feel they receive more substantial benefits with an EMAS registration than with ISO 14001 or that EMAS gives them an advantage in environmental and legal compliance or higher credibility in the market.

Overall, the results are consistent with existing literature, which tends to emphasise value added of EMAS in terms of credibility, transparency and guarantees of legal compliance, mainly due to its institutional grounding and involvement of government actors (BIO Intelligence Service and adelphi Consult 2009, Milieu and RPA 2009). Recent studies also call the objective, rigorous and unambiguous nature of ISO 14001 certification into question, highlighting how the issue of the credibility and transparency of external audits within the ISO 14001 certification process has not been properly addressed by empirical literature so far (Heras-Saizarbitoria et al. 2013; Dogui et al. 2014).

Table 36: EMAS added value with respect to ISO 14001

Please indicate your level of agreement with the following statements concerning the relationship between EMAS and ISO 14001.	Value	Standard deviation
My organisation perceives substantial benefits related to EMAS compared to the ISO 14001 standard	3.4	1.2
My organisation obtains a level of environmental and legal compliance that would not have been achieved if it had only been ISO 14001 certified	3.3	1.2
My organisation obtains a higher credibility on the market than if it was only ISO 14001 certified	3.1	1.2
My organisation obtains regulatory relief that it would not have obtained if it was only ISO 14001 certified	2.8	1.2
My organisation obtains fiscal benefits or other subsidies that it would not have obtained if it was only ISO 14001 certified	2.3	1.3
My organisation obtains benefits in public procurement that it would not have obtained if it was only ISO 14001 certified	2.2	1.1

Nonetheless, literature on regulatory relief and fiscal benefits does not explicitly focus on a possible added value of EMAS when compared to ISO 14001. The most recent and wide-ranging survey on regulatory reliefs – carried out within the BRAVE study (SSSUP 2013) – addressed the importance of the role of regulatory relief in promoting and supporting EMAS implementation, but without stressing substantial benefits related to EMAS compared to the ISO 14001 standard.

Survey and desk research results underline at the same time, however, that the vast majority of policy makers and regulators do not seem to believe in an added value of EMAS – at least not one which would justify giving EMAS regulatory advantages over ISO 14001. According to our survey results, registered organisations do not perceive that EMAS gives them added value over ISO 14001 for public procurement, targeted regulatory relief and/or fiscal benefits. These results correspond strongly to those in the Costs and Benefits study (Milieu and RPA 2009).

With regard to these findings, two Competent Body representatives remarked that “the absence [of incentives and regulatory relief] is the main reason for the low number of EMAS registrations in our countries [...] as organisations would not have additional advantages passing from ISO 14001 to EMAS.” They argued that “certain aspects of EMAS could be enhanced in order to encourage ISO 14001 certified organisations to upgrade to EMAS: regulatory relief, [...] and tax breaks.”

One likely reason for these different views on the additional elements of EMAS – which are laid out in the EMAS regulation - is that Member States apply and manage ISO 14001 and their recognition of the standard differently. Several Member State representatives confirmed this finding. For example, some Member States have a similar

or equal compliance check for ISO 14001 and EMAS, while others treat the two standards differently.

Annex II B2 of the EMAS Regulation requires organisations to identify legal requirements during the environmental review and “provide for legal compliance with environmental legislation, including permits and permit limits”. Sections 4.5.2 and 4.5.3 of the ISO 14001/2004 standard also addresses legal compliance, but does not specifically require organisations to be legally compliant in order to achieve certification. Section 4.5.2 of the ISO 14001 standard states that organisations “shall establish, implement and maintain a procedure(s) for periodically evaluating compliance with applicable legal requirements”. The standard’s Section 4.5.3 specifies that organisations must develop an action plan for dealing with actual and potential non-conformities, but stops short of requiring legal compliance; instead, organisations shall take action “appropriate to the magnitude of the problem and the environmental impacts encountered”.

While the EMAS Regulation thus contains a clear requirement of legal compliance that is not present in the ISO 14001/2004 standard, the difference in practice between ISO 14001 organisations and EMAS registered organisations is less clear. Informal interviews with EMAS Competent Bodies, environmental verifiers and environmental management consultants and experts from six Member States with varying EMAS registration and ISO certification numbers revealed differences in auditing practice and application between countries. In some countries, EMAS organisations appear to undergo stricter auditing procedures than ISO 14001 certified organisations with regard to legal compliance, while in others, the procedure is in effect the same. Several interviewees reported that most - if not all - EMAS environmental verifiers in their countries also perform ISO 14001 audits, creating further overlaps in the auditing procedure.

EMAS experts or Competent Bodies from four Member States with medium or high EMAS registration numbers mentioned that ISO 14001 auditors will highlight legal non-compliance but will not require the organisation to become compliant before issuing or reissuing the certification. According to one expert from a country with medium registration numbers, at least one EMAS registered organisation was given only their ISO 14001 certification when found to be non-compliant during their verification audit. Their EMAS registration was reinstated only after proving compliance. Along similar lines, experts from two countries with high numbers of EMAS registrations mentioned that EMAS environmental verifiers often feel under pressure to check more strictly for legal compliance because they know the EMAS Competent Body will be conducting additional research on compliance as well. One expert reported that, in his experience, the EMAS environmental verifier is sometimes more stringent in his inspections than the regulatory authorities.

Other environmental verifiers and Competent Bodies reported little difference in implementation between the two standards with regard to legal compliance. An environmental verifier from a Member State with both high EMAS registration and ISO certification numbers stated that, in the Member State in which he operates, there is no significant difference in practice between EMAS registered and ISO 14001 certified organisations for a number of activities. These include the level of environmental and legal compliance as well as the need to conduct an environmental review. Although legal compliance is not officially required by an ISO 14001 certification, most organisations conduct it anyway in order to meet the requirement of identifying the environmental aspects and assessing their significance. Thus the audits find these organisations to be legally compliant even if the ISO 14001 standard does not require it.

Variations in the guidelines for environmental audits explain some of this difference in application in the Member States. According to an interview with an expert in a country with both high EMAS and high ISO 14001 numbers, the national Accreditation Body’s

established procedure for auditing organisations with either standard is the same. However, the specific procedure for EMAS verifiers contains more detail on how to react to concrete situations regarding legal non compliance when auditing. An EMAS Competent Body from a country with medium EMAS registration numbers and a strong ISO 14001 presence reported similar auditing procedures. In this case, the main difference was that ISO 14001 certification does not require checking the organisation's history of legal compliance with the relevant regulatory authority.

In one country with low EMAS registration and high ISO 14001 certification numbers, however, the EMAS Competent Body reported the opposite: the legal compliance check during ISO 14001 audits may be stricter than for EMAS. The Competent Body explained that this difference occurs because they (the authority in charge of administering the auditing process for both EMAS and the ISO 14001 standards) have developed a more detailed interpretation of the ISO 14001 standard. However, a real difference in practice cannot be verified because this country does not have any EMAS registered organisations that do not also have ISO 14001.

This Competent Body also reported that regulatory authorities in their country do not accept any type of environmental management certification as proof of legal compliance. They explained that the EMAS environmental statement, despite its validation by an environmental verifier, simply does not contain enough detail to satisfy regulators.

In contrast, regulatory authorities in a number of other countries accept EMAS registration as proof of legal compliance and grant regulatory relief at least partially on that basis (see examples in Chapters 5.2.3.3 and 7.2.8). Interviews with two EMAS experts from a high registration country mentioned that the EMAS Competent Body also being the regulatory authority helped assure a greater recognition of EMAS's legal compliance guarantee. No evidence was found of a regulatory advantage existing for ISO 14001 on the basis of legal compliance, although organisations with ISO 14001 or another certified EMS do receive regulatory relief on a level equivalent to that of EMAS in a number of Member States.

While the differences between EMAS and ISO 14001 with regard to legal compliance appear to be stronger in theory than in practice in a number of Member States, interviews did identify differences in the organisations' practices with regard to external communication and employee involvement. In terms of external communication, European Member States maintain databases of the EMAS registered organisations' publicly accessible environmental statements. However, no database of environmental programmes or statements for ISO 14001 certified organisations exists. Additionally, many EMAS organisations feature their environmental statement on their websites.

According to the environmental verifier from the country with high numbers of both EMAS registrations and ISO 14001 certifications, these differences in practice tend to arise from differences in organisations' attitudes and philosophies. The environmental verifier reports EMAS registered organisations having a both of these concerns to be significantly higher with EMAS, while many ISO 14001 certified organisations choose not to adopt any external communication initiatives at all. An interview with a small EMAS registered organisation from a Member State with high EMAS registration numbers confirmed this impression, reporting a higher level of internal environmental commitment and transparency among other EMAS registered organisations than among those with other environmental management certifications.

The evidence from the interviews thus indicates that clear differences exist in the Member States' interpretation of the EMAS Regulation with regard to environmental verifiers' audits. Guidelines for EMAS environmental verifiers vary from country to country and sometimes from region to region, with some Member States establishing different procedures for EMAS and ISO 14001 and others not. Additionally, regulatory

authorities in different Member States vary in how they view the results of the audits with regard to proving legal compliance. From the examples in the interviews, a closer connection between the EMAS Competent Body and the regulatory authority (or in some cases, the two being identical) appears to result in the regulatory authority placing a greater trust in EMAS as reliably indicating legal compliance and differentiating EMAS from ISO 14001.

A further dimension of EU added value can be identified by comparing EMAS with the current draft ISO 14001 and national non-formal environmental management standards. An analysis of the new provisions in the draft ISO 14001 standard shows that several key elements have been part of EMAS for a long time, e.g. those focusing on engagement with interested parties or external communication. Furthermore, interviews with Member State representatives and experts involved in the development of the draft ISO 14001 standard revealed that EMAS was taken as a reference, also when developing national/regional non-formal environmental management standards. Through EMAS, EU and Member State policy makers are thus able to directly set and drive the agenda for the development of environmental management standards and the introduction of new elements. The European Commission and Member States would lose this steering capacity if EMAS were discontinued, especially with regard to national non-formal environmental management standards. Even with respect to ISO, despite national governments being involved in the standard's revision process (and exerting some influence in that context), EMAS offers policy makers a much higher degree of influence.

Our survey results indicate that the management approach and organisational structure of EMAS is based on the involvement of governmental actors. Registered organisations see this as a benefit. This type of governance approach is fundamentally different from that of ISO 14001, which is a private standard operated by a private organisation. The European Commission and Member States do not have the same degree of influence in the ISO 14001 revision process as they have in the case of EMAS.

The comparison in Chapter 4.1.2.3 of EMAS with existing non-formal EMS operating on the national and regional levels also reveals a further element of EU added value. EMAS has far higher numbers of participating organisations than any of the national or regional schemes, indicating the value of having a single standard used by organisations throughout the EU and recognized by both the EU and all Member State governments. Additionally, the comparison in Chapter 4.1.2.3 reveals that the non-formal EMSs vary widely in their requirements and focus. None fully address all of EMAS's requirements for reporting and external auditing.

There is also no clear answer as to whether organisations experience a greater cost through EMAS registration or through ISO 14001 certification. Several discussions with EMAS experts and practitioners have unearthed the following points:

- Administrative costs: no fee is charged for receiving an ISO 14001 certification, while certain Member States charge fees for an EMAS registration.
- Costs of external validation or certification: for ISO 14001, fixed numbers of man-days are set dependent on the size and characteristics of the organisation. For EMAS this number is flexible and could mean that in certain cases an organisation would require fewer man-days than would be the case under ISO 14001, thus saving costs. In practice, however, both external audits are often carried out at the same time and environmental verifiers tend to use the specifications of ISO 14001 for required man-days as a reference. Since EMAS also requires a public environmental statement that must be verified, expenses for this scheme tend to be slightly higher.

- Internal costs of implementing the EMS: these can be assumed to be largely the same for EMAS and ISO 14001. Certain stakeholders noted that this may be higher for EMAS in cases where a Member State has a stronger legal compliance check for EMAS. In practice, however, the cost is entirely dependent on the level of motivation of a given registered or certified organisation
- Difference in cost for SMEs: One additional element that is sometimes highlighted as a benefit of EMAS above ISO 14001 is the provision of Article 7 of the EMAS Regulation, which allows certain SMEs to apply for a reduced audit frequency. In practice, however, many organisations cannot take advantage of this opportunity, as most SMEs also hold an ISO 14001 certification that does not permit a reduced frequency of audits. According to an EMAS core expert, only about 10-20% of all EMAS registered SMEs make use of this clause.

The role of EMAS with regard to the EU GPP policy tool is investigated in several parts of the survey, and consequently reported in different sections of the study (see chapter 4.3 on benefits and chapter 4.6 on competitiveness). To sum up the results, there seems to be no added value from EMAS in respect to GPP, neither in terms of major benefits compared to ISO 14001, nor in terms of better access to public procurement procedures and improved capacity to win public tenders.

Finally, the survey addresses communication issues as part of the analysis of EMAS added value, providing answers to some key questions on EU policies on misleading claims. In recent years, these policies have progressively focused on the need to strengthen the enforcement of the legal framework on green claims and its harmonised implementation across Member States, as well as on prevention of the growing phenomenon of “greenwashing.” The number of vague and/or unfounded green claims is actually increasing, thus contributing to a decline in consumer trust. At the same time, the use of accurate environmental claims is important in order to protect companies and other organisations that are making genuine claims from unfair competition. In such a context, key questions on the added value of EMAS with respect to the EU policies on misleading claims are:

- Do EMAS communication requirements support organisations in providing a clear, transparent and comprehensive communication with their stakeholders/markets, thus helping them to avoid “greenwashing”?
- What is the role of the communication and reporting activities carried out by organisations to comply with EMAS requirements within their marketing-targeted environmental communication?
- Are the data and indicators from the environmental statement used by registered organisations in the development of their green claims and/or advertising?

Table 37 below provides some preliminary indications on the role and effectiveness of EMAS communications requirements and related activities in respect to these questions. Registered organisations were asked to indicate their level of agreement with a number of statements concerning EMAS communication activities, four of which directly address green claims, “greenwashing” and marketing communication issues:

- “My organisation uses the data and indicators in its Environmental Statement or EMS for the development of green claims, advertising, CSR reporting, etc.”
- “The EMAS communication and reporting requirements help private organisations avoid greenwashing.”
- “The Environmental Statement is used as a marketing tool (e.g. toward customers, clients, suppliers).”

- “The EMAS communication and reporting requirements are a key element of my organisation’s marketing-targeted environmental communication.”

Table 37: EMAS added value in terms of marketing-targeted environmental communication

Please indicate your level of agreement with the following statements concerning EMAS communication activities.	Value	Standard deviation
In its environmental statement, my organisation communicates the environmental innovations it has adopted	4.1	0.9
My organisation uses its environmental statement to report the environmental performance of its products and services	3.7 (3.71)	1.0
The environmental statement is used as a tool toward other stakeholders (e.g. public authorities, industrial associations, local community)	3.7 (3.70)	1.1
My organisation uses the data and indicators in its environmental statement or EMS for the development of green claims, advertising, CSR reporting, etc.	3.6	1.1
The current rules for using the EMAS logo satisfy my organisation’s communication needs	3.5	1.0
The EMAS communication and reporting requirements help private organisations avoid “greenwashing”	3.3 (3.31)	1.0
The environmental statement can be easily integrated with requirements of other standards/guidelines (e.g. reports drafted according to Global Reporting Initiative guidelines or the EU Directive on non-financial reporting)	3.3 (3.28)	1.0
The environmental statement is used as a marketing tool (e.g. toward customers, clients, suppliers)	3.3 (3.26)	1.2
The EMAS communication and reporting requirements are a key element of my organisation’s marketing-targeted environmental communication	3.2	1.1
I would like to use the EMAS logo on products, even though that means accepting EMAS’s stronger requirements for the assessment and management of supply chain impacts	3.0	1.3

The evidence shows how, at present, EMAS communication requirements seem to play a rather moderate role in supporting accurate and effective environmental marketing-targeted communication on the part of registered organisations: the average value of the four selected options ranges from 3.2 (EMAS communication and reporting requirements are a key element of my organisation’s marketing-targeted environmental communication) to 3.6 (My organisation uses the data and indicators in its

environmental statement or EMS for the development of green claims, advertising, CSR reporting).

Still, quite surprisingly, looking at the breakdown of the results according to the numbers of EMAS registrations across Member States (Table 38), EMAS communication requirements are considered more effective in Member States with low registration numbers than in others. Given that several Member States with low registration numbers have only recently joined the EU, one conclusion might be that, in these countries, EMAS is seen as a benchmark of excellence which signals strong performance to external stakeholders. With regard to organisational size (Table 39), no significant differences can be observed overall. The only result that stands out is that larger organisations engage more in EMAS-related CSR and sustainability reporting than smaller organisations, in line with research on CSR reporting, in that the share of larger organisation using tools such as GRI reporting guidelines is higher than the share of smaller entities.

Table 38: EMAS added value in terms of marketing-targeted environmental communication – Breakdown per country

Please indicate your level of agreement with the following statements concerning EMAS communication activities.	High registration countries	Medium registration Countries	Low registration countries	Aggregate Value
My organisation uses the data and indicators in its Environmental Statement or EMS for the development of green claims, advertising, CSR reporting, etc.	3.5	3.8 (3.77)	3.8 (3.75)	3.6 (3.55)
The EMAS communication and reporting requirements help private organisations avoid “greenwashing”	3.2	3.7	3.9	3.3
The EMAS communication and reporting requirements are a key element of my organisation’s marketing-targeted environmental communication	3.2	3.6 (3.62)	3.6 (3.57)	3.2
The environmental statement is used as a marketing tool (e.g. toward customers, clients, suppliers)	3.2 (3.19)	3.6	4.0	3.3 (3.26)

Table 39: EMAS added value in terms of marketing-targeted environmental communication – Breakdown per organisation size

Please indicate your level of agreement with the following statements concerning EMAS communication activities.	Micro	Small and medium	Large	Aggregate Value
My organisation uses the data and indicators in its Environmental Statement or EMS for the development of green claims, advertising, CSR reporting, etc.	3.2	3.5	3.7	3.6
The EMAS communication and reporting requirements help private organisations avoid “greenwashing”	3.3 (3.31)	3.3 (3.27)	3.4	3.3
The EMAS communication and reporting requirements are a key element of my organisation’s marketing-targeted environmental communication	3.3 (3.28)	3.3 (3.32)	3.0	3.2
The environmental statement is used as a marketing tool (e.g. toward customers, clients, suppliers)	3.0	3.3	3.2	3.3

4.5.4. Summary EMAS-ISO 14001

The objective of this section is to summarise in an accessible manner the main differences between EMAS and ISO14001 that emerged in the evaluation report. The main aim is to give a more comprehensive picture of the features of the two instruments that emerge in different chapters of the report. According to the approaches and methods adopted in the study, this fact sheet uses different sources to gather information on the two tools:

- for EMAS, the info and data stem from the results of the survey of EMAS organisations, the interviews with EMAS stakeholders and the results of desk research;
- for ISO14001, the contents of the table are mainly the result of desk research.

The structure of the following section follows in general the structure of the main report, summarising the main differences according to the main themes investigated during the study.

Table 40: Formal Differences between EMAS and ISO 14001

Topic	ISO 14001	EMAS
Nature	Private standard	Public Regulation
Validity	Valid at international level since its beginning in 1996	Valid only in Europe from 1995 to 2009 and at international level since 2010
External communication	Not mandatory	Foresees an Environmental Statement available to the public
Scope	Organisations from all sectors	Organisations from all sectors and experimentally applied in industrial clusters

Source: Testa et al., 2014 and authors' elaboration

Added value of EMAS

- Our analysis of studies comparing EMAS and ISO 14001 in terms of environmental performance improvements revealed that results achieved with EMAS were slightly more positive than with ISO 14001 (e.g. Testa et al., 2014)
- The capacity of EMAS to trigger competitive advantages on the market is weak. Study results indicate that this is directly related to the stronger relative position of ISO 14001
- Additional EMAS elements that focus on external stakeholder relations, including the EMAS logo and the environmental statement, are not effectively strengthening EMAS's position on the market
- Lower costs and effort are the primary reasons for the better cost-benefit-ratio of an ISO 14001 certification. EMAS's higher costs result from the creation, layout and validation of the environmental statement and from the expense of auditing
- EU added value also emerges when comparing EMAS with the most recent updates to the ISO 14001 environmental standard, currently in draft form. Several key elements of the new ISO standard, such as those focusing on engagement with interested parties or on external communication, have been part of EMAS for a long time. Interviews with Member State representatives also reveal that EMAS is sometimes taken as a reference when developing national environmental standards, allowing EU and Member State policy makers the opportunity to drive the agenda for developing and amending environmental management standards.
- Another indirect benefit mentioned in several interviews with Member State representatives was transparency created by participating organisations' disclosure of environmental data in the environmental statement. Considering the importance of transparency in EU legislation (e.g. Directive on disclose of non-financial and diversity information by certain large companies, amending the 2013 Accounting Directive) government authorities can benefit from EMAS's

environmental reporting platform, which includes a validation process for published data.

- Recent studies also call the objective, rigorous and unambiguous nature of ISO 14001 certification into question, highlighting how the empirical literature has not yet properly addressed the issue of the credibility and transparency of external audits within the ISO 14001 certification process

Drivers

EMAS

- the results of the survey showed that the organisations decide to adopt EMAS for two main reasons:
 - to improve their internal environmental management capacity;
 - to improve their public reputation, particularly vis-à-vis local communities and public authorities
- registered organisations also identified the aim “to contribute to a more sustainable world by reducing our environmental impact” as a key driver
- survey results indicated that organisations did not consider market based motivations as drivers for adopting EMAS;
- previous literature revealed improvement of resources and production efficiency and to the desire to improve their legislative compliance as important drivers (Iraldo et al., 2006; Milieu and RPA , 2009)

ISO 14001

- A key driver for ISO 14001 – especially with regard to its global relevance – are customer requests (Granly and Welo, 2014), commitment to environmental protection/conservation, and reduction of risk of adverse environmental impact (ISO, 2014);
- Several studies highlighted internal motivations as key drivers to adopt ISO 14001. These include internal management-related factors (Grolleau et al., 2007), and the goals of improving environmental performance (Heras and Arana, 2010; Marazza et al., 2010), and improving the capability for managing legal compliance (Chung et al., 2004);

Barriers

EMAS

- Our study identified four main barriers: lack of EMAS recognition from the market, lack of EMAS recognition by public institutions (including regulatory relief or other measures such as tax breaks), lack of external incentives, lack of EMAS recognition by stakeholders and customers;
- The main important barriers are all external in origin (market, public institutions, incentives, stakeholders and customer, costs, etc.) while internal barriers (commitment of personnel, continuous improvement, set-up of the EMAS scheme, etc.) have a lower importance for organisations;

- The costs of implementing and running the scheme in general are not the most important internal barrier. However, for micro organisations they assume a higher relevance, especially the cost of the environmental verifier;
- EMAS registered organisations and other stakeholders perceived the lack of regulatory relief and tax breaks for EMAS organisations as difficulties preventing the uptake and efficiency of EMAS, thus confirming the findings of recent studies published (SSSUP, 2013)

ISO14001

- A number of studies highlighted the cost of implementation as one of the main barriers to adopting ISO 14001 (Emilsson and Hjelm, 2005; Bist, 2007; Price, 2007; Northern Ireland Environmental Agency, 2009);
- Other studies focused on internal barriers, identifying an inadequate organisational structure and the low commitment of employees as being particularly relevant (Salomone, 2008; Tambovceva, 2010; Martín-Peña et al., 2014)

Benefits

EMAS

- The survey of EMAS registered organisations showed that the main benefit of EMAS is organisations' improved capability to manage environmental compliance;
- The survey also identified other main important benefits (reduced risk of incurring environmental sanctions; better identification of overall corporate responsibilities; fewer environmental accidents) , all of which highlight EMAS's capacity to achieve a real improvement in organisations' internal management of environmental issues
- According to our survey results, registered organisations do not perceive added value from EMAS in terms of targeted regulatory relief and/or fiscal benefits, or within public procurement, when compared to ISO 14001 certification. With regard to these findings, two Competent Body representatives remarked that "the absence [of incentives and regulatory relief] is the main reason for the low number of EMAS registrations in our countries [...], as organisations would not have additional advantages passing from ISO 14001 to EMAS";

ISO14001

- According to a large survey of ISO certified companies, the main benefits of ISO 14001 certification are: the ability to meet legal requirements, environmental performance improvement, and meeting stakeholder requirements (ISO, 2014);
- Other studies focused only on external benefits, identifying an improved corporate image (Zang et al., 2007; Sambasivan and Yun Fei, 2008), better market position and improved stakeholder relations (Martín-Peña et al., 2014) as the main benefits.

Performance

EMAS

- Our analysis of environmental statements revealed that the majority of organisations analysed have achieved environmental performance improvements, although not for the entire set of relevant performance indicators;
- The results of the survey showed that EMAS registered organisations perceive a strong performance improvement, again with a focus on certain indicators more than others, ;
- The organisations identify technical progress as the main determinant of performance improvements;

ISO14001

- Results are less conclusive on ISO 14001's effect on performance improvement
- Several international studies revealed the capacity of ISO14001 to affect the environmental performance of the certified organisations positively (King et al., 2005; Russo, 2009; Molina-Azorin et al., 2009; Iwata et al., 2010; Nishitani et al. 2012);
- A number of other studies, however, have found much less or no environmental improvement stemming from an ISO 14001 certification (Hertin et al., 2008; Gomez and Rodriguez, 2011; Qi et al., 2012);
- A recent study investigated the impacts of EMAS and ISO 14001 on the reduction of carbonic anhydride emissions in 229 energy intensive plants in Italy. It found that EMAS registered organisations performed better over the long term than ISO 14001 certified companies (Testa et al., 2014)

Competitiveness

EMAS

- The survey showed that the positive influence of EMAS on competitiveness is mainly related to the increase in the efficiency of resource use and in the subsequent reduction of costs
- On the contrary, the capacity of EMAS to trigger competitive advantages on the market is still weak. The survey and the interviews reveal that companies have not achieved competitive benefits in terms of increase of turnover, increase of market share of the main products, or an increase in exports

ISO14001

- A recent study analysed labour productivity in certified companies. The study reports the result of a survey involving 4,929 employees of certified and non-certified companies in France, showing that employees of companies with ISO 14001 are 16% more productive than employees of companies without the certification (Delmas and Pekovic, 2012)

- A study conducted on Malaysian certified companies showed that EMS in general increased customer satisfaction levels and improved the company's competitive position (Goh Eng Ahn et al., 2006)
- Yet another study found no confirmation of ISO 14001 as a tool to increase competitiveness (Chiappetta Jabbour et al., 2012)

Innovation

EMAS

- The survey does not highlight a clear relation between EMAS and innovation. It showed that EMAS stimulates mainly organisational and process innovations, while product innovations are less frequently adopted by EMAS registered organisations;
- Results of the linear logistic regression model showed that the probability of introducing innovations increases in EMAS registered organisations according to their capacity to manage the supply chain in a sustainable way. In addition, EMAS registered organisations with a higher capacity to implement eco-innovations achieve a greater competitive advantage in terms of both reputation and market issues.

ISO14001

- A recent study investigated the relationship between the number of ISO14001 certified organisations and environmental patents registered at country level. It found that country-level ISO 14001 participation is a significant predictor of a country's environmental patent applications (Lim and Prakash, 2014)

4.5.5. Main findings

- EMAS brings added value in terms of synergies with existing management systems that address quality, energy, and health and safety issues. Respondents favour revising the regulation to strengthen links with such management systems.
- In contrast, the integration of the EU scheme with management standards/tools on social responsibility is not a common practice (except for – and to a limited extent – the reporting tools). Respondents and interviewees do not consider adding such social requirements to EMAS to be a viable option for the future.
- EMAS has an added value with respect to ISO 14001 because it is perceived as more credible on the market and as a guarantee of legal compliance. The EMAS Regulation requires legal compliance and a check with regulatory authorities before allowing an organisation's registration, while the ISO 14001 standard does not.
- Interviews indicate that, in practice, organisations do not appear to differ greatly in their legal compliance. Many Member States have similar guidelines for EMAS and ISO 14001 audits, as the interpretation of the EMAS Regulation with regard to audits appears to vary strongly among the Member States.
- EMAS does not provide substantial benefits in some key areas such as regulatory relief, fiscal incentives and GPP. This aspect of added value does not appear to be well publicized; many non-EMAS registered organisations stated that they saw little added benefit to having both EMAS and ISO 14001 and thus chose ISO 14001.

- EMAS provides another level of added value, on the EU level, in that EMAS presents the best existing possibility for the European Commission to influence environmental management standards. It also provides a unified standard for environmental management recognized throughout the EU with more comprehensive requirements than any existing national EMS or EMS certification. A comparison of the EMAS Regulation with the current draft ISO 14001/2014 standard and national non-formal environmental management standards reveals that these standards contain several key elements that were first present in the EMAS Regulation. Additionally, registered organisations participating in the survey saw the (public) governance approach of EMAS as a benefit.
- There is no substantial evidence of the added value of EMAS in terms of a contribution to EU policies on misleading environmental claims: the communication requirements of the scheme play a minor role in supporting accurate and effective environmental marketing-targeted communication for

4.6. The relationship between EMAS and competitiveness

Key points at a glance

- Competitiveness can be defined as an ability to produce products or services of a superior quality and/or lower cost than other entities that act in the same economic context
- Despite resource efficiency being one of the most frequently discussed topics in the relationship between EMAS and competitiveness, the study also analysed other more intangible benefits such as organisational efficiency, reputation gains or the ability to attract, retain and engage employees
- Previous empirical research shows that the adoption of an EMS (according to EMAS or ISO 14001) does not automatically lead to an improvement in competitive performance. The relation is neither direct nor automatic, but rather depends on the effects a well-implemented EMS has on an organisation's environmental performance
- According to previous studies, there is no evidence that EMAS is stronger than ISO 14001 in this regard. Additionally, effects on other competitive variables such as market performance, resource productivity and intangible assets are not strongly supported in the literature.
- Overall, our survey results confirm previous research on the unclear connection between EMAS and competitiveness:
- The most important competitive advantage reported for EMAS registered organisations is a more efficient use of natural resources and subsequent cost reductions.
- However, the capacity of EMAS to trigger competitive advantages on the market is still weak. The survey and interviews reveal that companies have not achieved competitive benefits in terms of increased turnover, increased market share for their main products, or increased exports
- Competitive advantage appears strongest in those organisations with the greatest ability to implement eco-innovations

4.6.1. Background and research aims

Through an analysis of various different definitions of competitiveness provided by academics, institutions and practitioners, it is possible to determine features common to the term: it is generally defined as the ability of an entity – a country, region, industry or company – to produce products or services of a superior quality and/or at lower cost than other entities that act in the same economic context (i.e. a competition arena, such as a market or a sector). What determines or influences the ability of an entity to prevail over its competitors is the capacity to use its own resource endowment optimally in order to obtain better results. Starting from this common ground, we can conclude that the concept of competitiveness may be defined and analysed at different levels, each one measured by different variables:

1. The level of entities that are active in the competitive arena: a single company or factory; a cluster of companies (i.e. an industry, a sector, a branch or a local productive system, e.g. an industrial district); a territorial entity (i.e. a country or a region).

2. There are at least three dimensions to competitiveness: international competitiveness, national competitiveness and local competitiveness.
3. The key variables affecting competitiveness as well as the ways to measure these variables: macro level (territorial: international/national); meso level (cluster: sectoral/industry/district) and micro level (plant/firm).

As regards the level of entities, the concept of competitiveness at the company level implies that these companies are able to produce goods and services more efficiently or effectively than their competitors. This is achieved by relying on competitive factors, with a particular focus on the productivity of certain inputs.

With regard to competitiveness at the national level, the academic literature focuses on indices of competitiveness, such as level and growth of Gross Domestic Product (GDP) or Gross National Product (SQW 2006), GDP per capita (Esty, Porter et al. 1991) and international trade flows (Florax, Mulatu et al. 2001). In the view of most authors, national competitiveness is grounded in the efficiency with which resources are allocated and used at the micro level (i.e. at the sector and/or company levels).

Despite resource efficiency being one of the most discussed topics in the relationship between EMAS and competitiveness, this study also aimed to investigate competitive benefits, including intangible indicators. In particular, we focused on additional key judgement criteria which can help us to answer questions about the link between EMAS and competitiveness: is EMAS able to improve adopters' market performance? Is EMAS able to improve organisational efficiency? Is EMAS able to improve the quality of an organisation's workforce by attracting and retaining talent and by improving employees' skills? Does EMAS improve the reputation of adopters?

After summarising key literature about EMAS adoption's effects on competitiveness, this chapter will discuss findings based on surveys and interviews. Finding and related remarks drawn from this part of the study refer mainly to competitiveness in private organisations, even if some aspects can also be applied to public organisations.

4.6.2. Previous research

4.6.2.1. Environmental policies and competitiveness

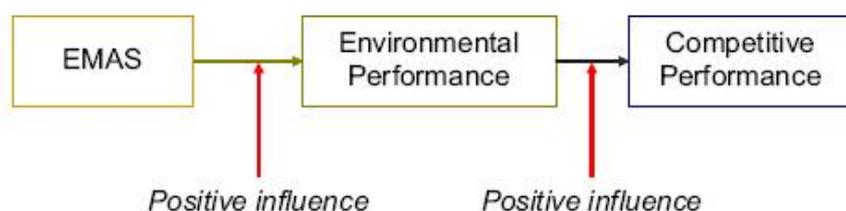
A comprehensive overview of the main theoretical approaches linking environmental policies, organisations' environmental performance, their competitiveness and financial success, even when combined with an overview of the most pertinent recent findings from empirical studies, reveals that no one theory has prevailed over the others. The literature has not established a unique relationship between environmental policies and competitiveness. Research has brought forward a number of methodological explanations for this missing link, including the small amount of statistical data available and the insufficient quality thereof. Researchers have also developed various theoretical explanations, such as the influence of different corporate strategies or the relatively small influence of environmental issues in industry (as only one economic success factor among many others such as the cost of raw materials, cost of transports, etc.).

In summary, we can identify three major theoretical approaches in literature: the neoclassical perspective, the Porter hypothesis, and the resource-based view.

The traditionalist approach espoused by neoclassical environmental economics argues that the purpose of environmental regulation is to correct negative externalities, and that as a consequence, environmental regulation – by internalising costs from negative externalities – corrects a market failure, while burdening companies with additional costs. Firms complying with regulation (by increasing expenditures in environmental protection) face higher production costs and have less time for pursuing other management tasks. This is deemed to have effects on competitiveness at company, sector and national levels. Affected companies will lose market share due to higher production costs, industrial sectors will give up producing polluting goods and hence will change the composition of their production, and industries will relocate to territories with less stringent environmental standards (Jenkins 1998).

Opposing the neoclassical perspective, a revisionist view emerged, stating that improved environmental performance is a potential source of competitive advantage, as it can lead to more efficient processes, improvements in productivity, lower compliance costs and new market opportunities (Schaltegger 1988, Porter 1991, Gabel and Sinclair-Desgagné 1993, Porter and van der Linde 1995, Sinclair-Desgagné 1999). Porter and Van der Linde (1995) and Porter (1990) suggested that environmental regulations could be beneficial to companies, as they provide incentives to change production routines (technological or process innovation) in a way that leads to compliance and reduced costs through decreased resource inputs or increased efficiency, or can even lead to new, marketable products (the Porter hypothesis). Such innovations may well offset the costs of compliance. According to the aforementioned revisionist theory, the link between EMAS/other environmental policy tools and competitiveness is the instruments' capability to improve environmental performance, thus reducing resource usage costs (see Figure 32).

Figure 32: Theoretical scheme on the positive influence of EMAS on resource efficiency and competitive performance



Source: Iraldo et al. 2009

Porter (1995) suggested that if a country adopts stricter environmental regulations than its competitor countries, the increase in innovation will enable that country to become a net exporter of newly developed environmental technologies, increasing its competitiveness. According to this revisionist view, environmental regulation is mainly considered to be “an industrial policy instrument aiming at increasing the firm’s competitiveness. The underlying rationale for this statement being that well designed environmental regulation could force firms to seek innovations that would turn out to be both privately and socially profitable” (Sinclair-Desgagné 1999). Still, the relationship between regulation and increased cost is not as static as is often assumed, in particular when taking a more long-term approach.

A third and more recent interpretation of the impacts of environmental policies on competitiveness is proposed by the so-called “resource-based view.” According to this approach, companies’ and industries’ competitiveness depends on the quality and quantity of resources available, as well as on the ability of companies/industries to deploy them optimally. This approach is an evolution of the Porter approach, as it

enlarges the typologies of resources that companies and industries can rely on. This theory offers a suitable tool with which to refine the analysis of how environmental policy influences economic performance for at least two reasons. Firstly, it places a strong focus on performance as the key outcome variable. Secondly, research working with the resource-based view explicitly recognises the importance of intangible assets such as know-how (Teece 1980), corporate culture (Barney 1986) and reputation (Hall 1992).

4.6.2.2. Nexus between environmental management and competitiveness at the company level

The academic literature provides different perspectives and theories on the relationship between environmental policies and the competitive performance of companies. The debate over the last fifteen years – over a wide range of theoretical questions – has investigated whether, under what circumstances and how exactly environmental issues are related to competitiveness.

Empirical evidence shows that the adoption of an EMS (according to EMAS or ISO 14001) does not automatically lead to an improvement in competitive performance. The relation is neither direct nor automatic, but rather depends on the effects of EMS on the organisation's environmental performance. In other words, if an EMS achieves the aim for which it was designed, or a continuous improvement of environmental performances, a positive effect on competitiveness could obtain. Effects on other competitive variables such as market performance, resource productivity and intangible assets are not strongly supported (Iraldo et al. 2009).

The geographical scope of this research can be broadened by engaging with studies focusing on similar phenomena outside of Europe. Goh Eng Ahn et al. (2006) evaluated the impact of Malaysian companies' EMS on performance variables, such as the core strategic areas of competition; cost, lead-time and market position. Results showed that EMS increased customer satisfaction levels and improved the company's competitive position.

Chiappetta Jabbour et al. (2012) questioned whether environmental management should now be considered to be a new competitive priority for manufacturers in Brazil. A survey was conducted with Brazilian companies certified by ISO 14001. Sixty-five questionnaires were analysed through Structural Equation Modelling. Results showed that rather than considering environmental management to be a tool which creates a competitive advantage, companies regarded it as a pollution prevention tool, focused on eco-efficiency. The study further concluded that environmental management, albeit approached as a preventive tool, was able to positively influence the four competitive manufacturing priorities: cost, quality, flexibility and delivery.

Studies specifically addressing EMAS confirm these findings. Regarding the relationship between EMAS adoption and competitiveness, Rennings et al. (2006) investigated the impact of various characteristics of EMAS on technical environmental innovations and economic performances in Germany, via an analysis of a unique dataset drawn from EMAS registered sites. The study identified a weak relationship between EMAS and some indicators of market success. However, a positive impact was observed in increases of turnover and exports, especially when a company is able to achieve significant learning via the adoption of EMAS. The authors thus concluded that improved link-up between environmental management, organisational learning and/or innovation management could improve competitiveness.

The EVER study (Iraldo et al. 2006) found evidence that EMAS exerts a positive influence on competitiveness, even if the relevance of EMAS is not certain, especially in respect to some variables like market positioning and revenue/turnover increase. In particular, the study confirmed the importance of EMAS in intangible fields (such as an improvement of corporate image) or in the internal sphere of the organisation (e.g. cost optimisation, innovation capabilities). The study showed that competitive advantages in the market are still very weak, so that the lack of market pulls results in little improvement to more traditional, direct and quantifiable competitive variables, such as market shares and revenues.

Overall, studies indicate that no direct relationship between the introduction of an EMS (according to EMAS or ISO 14001) and increased competitiveness exists. Furthermore, according to previous studies, there is no evidence that EMAS is stronger than ISO 14001 in this regard.

The nexus between environmental management and competitiveness has been analysed from one further perspective. Delmas and Pekovic (2012) are unique in having posed a question investigating an issue seldom discussed in the academic literature: the influence of EMS on labour productivity. The study reports the result of a survey of 4,929 employees of certified and non-certified companies in France. Findings showed that employees of companies adopting environmental standards like ISO 14001 are 16% more productive than employees of those who do not. This could be attributed to stricter and more specific employee involvement requirements. However, whether EMAS would lead to added value in comparison to ISO 14001 in this respect cannot be derived from the literature.

4.6.3. EMAS and Green Public Procurement

Green Public Procurement provides the inclusion of environmental criteria in public procurement tenders. It is a key aspect of environmental policies both at European Union and Member State level.

The public sector has a high purchasing power, spending the equivalent of 19,9% of the EU Gross Domestic Product on the purchase of goods and services each year (EC, 2011). The high demand from public authorities for “green” products and services and the diffusion of GPP can effectively contribute to decreasing the environmental pressure caused by unsustainable consumption patterns. This demand can also help stimulate a “critical mass” of demand on the final and intermediate markets for more sustainable goods and services (Testa et al., 2012).

At the European level, Green Book of Integrated Products Policy (EC, 2001a) and the Sixth Environment Action Programme (EP, 2002) first recognized key role of green public procurement in decreasing environmental impacts and in promoting market awareness. The European Communication n. 274/2001 is one of the most important documents concerning GPP (EC, 2001b). This document highlighted the opportunity for public authorities to integrate environmental considerations in their procurement procedures and has provided operational guidance to contracting public offices on what environmental criteria have to be included and in which phases of a public procurement procedure. Following the indications in the Communication, the Directive 2004/18/EC on “the coordination of Procedures for the award of public works contracts, public supply contracts and public service contracts, which has changed the legal framework on public procurement at the EU level” (EC, 2004) clearly provides the possibility for public authorities to take into account environmental issues at each stage of the procurement process (Parikka-Alhola, 2008).

Regarding the existing link between environmental management systems (EMAS and ISO14001) and GPP, the literature shows that public administrations find environmental certifications a useful tool for the implementation of GPP practices. However, our research indicates that they are somewhat confused about how to use such certifications. This confusion is mainly the result of an unclear legislative framework on this topic. As highlighted by our survey, EMAS registered organisations are not satisfied with the public sector's current level of recognition of environmental certifications in public tenders. The EVER study (Iraldo et al. 2006) also found that the GPP is one of the main incentives desired by certified organisations and one of the main means of support the organisations request from the European Commission.

Current legislation on GPP already includes the possibility for the public sector to take into account of environmental issues in each phase of the public procurement procedure. For example, Directive 2014/24/EC of the European Parliament and of the Council of 26 February 2014 on public procurement states that the inclusion of environmental criteria in public tenders may be:

- in technical specifications (Article 42), i.e. in terms of performance or functional requirements including environmental characteristics;
- in assessing the technical expertise of competitors (Article 62) by requiring to bidders to demonstrate their expertise in implementing environmental management measures. They can do so through EMAS registration (EC, 2009) or other environmental management systems based on the relevant European or international standards by accredited bodies;
- in choosing the award criteria (Article 67) in which the most economically advantageous tender shall be identified on the basis of the price or cost. To do so, they may use a cost-effectiveness approach, such as life-cycle costing, and may also include the best price-quality ratio, which includes criteria such as qualitative environmental aspects. Such criteria may comprise, for instance: quality, including, among others, environmental and innovative characteristics. Moreover, Article 67 specifies that public bodies should consider award criteria that relates to the works, supplies or services to be provided under that contract in any respect and at any stage of their life cycle, including factors involved in: (a) the specific process of production, provision or trading of those works, supplies or services; or (b) a specific process for another stage of their life cycle, even where such factors do not form part of their material substance;
- in a life cycle costing approach (Article 68) that covers the cost of use, such as consumption of energy and other resources and end of life costs. Provided their monetary value can be determined and verified, these end-of-life costs include costs attributed to environmental externalities linked to the product, service or works during its life cycle. Such costs may include collection and recycling costs, the cost of emissions of greenhouse gases and other pollutants, and additional climate change mitigation costs.
- in the conditions for performance of contracts (Article 70) that also include environmental considerations.

Looking at technical specifications for GPP, the Directive 2014/25/EC on procurement by entities operating in the water, energy, transport and postal services sectors (and repealing Directive 2004/17/EC) establishes rules on the procedures for procurement by contracting entities in specific, defined areas. Both Article 42 of Directive 2014/24/EC and Article 60 of Directive 2014/25/EC reference environmental criteria for the economic operator, thus allowing the technical specification of the tender to include environmental performance levels of a product or service. However, the public bodies may not require the contractor to possess a certification. In addition, the public administrations may not

include ISO 14001, EMAS or environmental management systems in general as requirement in the technical specification of the public tender. The environmental management system has no a direct impact on the environmental characteristics of a product or service, neither provides performance requirements; rather, it is a tool that defines specific managements modalities for improving the entire organisation's environmental performance.

The EU clearly cites the role of environmental management systems and in particular that of EMAS in Articles 62 of Directive 2014/24/EC and Article 81 of Directive 2014/25/EC. These Articles state that, in situations which require the economic operator to produce certifications for environmental systems or standards, contracting authorities should refer to EMAS, to EMS recognised in Article 45 of Regulation (EC) No 1221/2009 or to other relevant European or international environmental management standards from accredited bodies.

These articles thus clearly demonstrate that EMAS or ISO 14001 may serve as proof that candidates possess the technical environmental management capability to fulfil the tender in an appropriate manner. These two Articles also specify similar conditions for quality assurance. Although the Articles require quality assurance certificates based on the relevant European standards series certified by accredited bodies, under certain circumstances they are also obligated to accept other evidence of quality assurance measures. The articles do not clarify if the EMAS and other environmental management systems could be considered as such quality assurance standards.

Environmental management systems also emerge in Article 70 of Directive 2014/24/EC and Article 87 of Directive 2014/25/EC, which establish that contracting authorities might require conditions for performance of contracts that also include environmental considerations. An environmental management system verified by an independent body can represent a “guarantee” of the compliance with the environmental management considerations defined in the tender.

Based on this overview, we can conclude that the role of environmental management systems in EU Green Public Procurement practices can appear very limited. However, the legislation indicates that European environmental certifications such as EMAS , provide a valid means of support to the European Commission for defining environmental criteria in tenders. Importantly, this support can also be achieved by indirect references to environmental management certification. However, public officers would need to be somewhat familiar with environmental management schemes in order to fully understand the potential of these tools for public procurement and for a easier implementation of the GPP practices.

4.6.4. Results

The survey questionnaire aimed to explore the relationship between EMAS and competitiveness in organisations which have adopted EMS according to EMAS. The questionnaire was composed of two questions related to this topic: regarding the first question, respondents indicated their level of agreement with 16 statements on the kind of competitive advantage they experienced as a result of participating in EMAS. They gave a score from 1 (strongly disagree) to 5 (strongly agree) to each item.

In Table 41 below, we ranked statements according to respondent scores. Values indicated in the table refer to the mean of scores given by representatives of EMAS registered organisations.

Table 41: Level of agreement with the following statements on what kind of competitive advantage your organisation experiences as a result of participating in EMAS

	Value	Standard deviation
Improvement of efficiency in the use of natural resources and energy, with its corresponding reduction of costs	3.7	1.0
Improved corporate image towards local and national domestic customers and suppliers	3.5	1.0
Increase in skills and know-how of employees	3.3	1.0
Improved corporate image towards international customers and suppliers	3.3	1.1
Increase in consumers' trust of the organisation	3.3	1.1
Improvement in relationships with local communities and reduction of conflicts (e.g. public complaints)	3.2	1.0
Increase in the level of trust in the relationship with suppliers/customers	3.2	1.1
Improved ability to share knowledge of environmental performance with the most strategic suppliers/customers	3.0	1.1
Increase in ability to introduce process or product innovations	2.8	1.1
Improved capacity to win public tenders	2.5	1.2
Easier access to capital market because of a lower environmental risk	2.5	1.1
Increase in shared investments with suppliers/customers in relation to specific assets	2.5	1.0
Ability to attract and retain talent and valuable human resources	2.4	1.0
Increase in turnover	2.4	1.0
Increase in market share of your main products	2.3	1.0
Increase in exports	2.2	1.0

The most important competitive advantages indicated by EMAS registered organisations is a more efficient use of natural resources and subsequent cost reductions. EMAS registered organisations seem to confirm Porter's theory of the importance of resource efficiency to achieving competitive advantage. Furthermore, it shows that EMAS is

apparently able to impact on the key topic of competitiveness. However, the value of 3.7 indicates that this relationship does not apply to all respondents. This is in line with the analysis of environmental statements (chapter 4.4) and partly confirms respondents' feedback: energy use is one of the key indicators in which performance improvements were achieved.

The option with the second highest value (3.5) is the improvement of the organisation's image in the minds of local and national customers and suppliers. This advantage confirms previous findings observed in the EVER study (Iraldo et al. 2006). Moreover, considering that the option citing international customers and suppliers obtained a score of 3.3, we can affirm that improvement in the reputation of the organisation can be a key issue in the relationship between EMAS and competitiveness. However, survey results on the image of EMAS among key stakeholders (chapter 4.2) indicate that the scheme's image is not necessarily an asset which contributes to competitiveness in all cases, which might, among other things, depend on the registered organisation's sector.

Another interesting relationship is the capacity of EMAS to increase employees' skills and know-how. Although this does not necessarily translate into labour productivity, it nonetheless seconds the results achieved by Delmas and Pekovic in 2012.

The low value given to the option linking competitive advantage to public tenders is expected and results from the fact that EMAS is either not used (or rarely used) in GPP tenders. As illustrated in the previous section, it does not have an advantage over other environmental management instruments – mainly ISO 14001 - in such tenders. In addition, in some cases when public tenders use EMAS for service contracts (e.g. printing, cleaning services, waste collection, etc.), its weight in the final evaluation of bids is still very low (usually < 5%), with the lowest price always being the main criteria.

EMAS registered organisations do not seem to have easier access to the capital market because of lower environmental risk; survey respondents assigned this criteria a value of 2.5. One explanation is that investors and rating agencies either do not know EMAS or do not value it highly. These results are in line with findings regarding the image of the scheme among market participants.

Finally, some remarks on the final three potential competitive advantages listed in the table above (Table 41): turnover, market share and exports. Our research confirms that EMAS cannot be considered to be a tool that improves market positioning. Even if it allows for improvements to an organisation's image and reputation to a certain extent or in certain sectors, this improvement does not always cause a concomitant improvement in market share.

Results appear to correspond perfectly with those of the EVER study (Iraldo et al. 2006), which also revealed that better results were observed in intangible fields (such as corporate reputation) and cost optimisation than in market performance.

One smaller EMAS registered organisation that was interviewed affirmed that "competitiveness is strongly related to the improvement of efficiency in energy and other resources, a lower environmental risk, increase in skills and know-how of employees and the ability to share knowledge of environmental performance with suppliers and customers. Regarding recognition and corporate image, it depends on interested parties' knowledge of EMAS, which is, unfortunately, at the present time still very limited."

Some organisations that have adopted ISO 14001 but not EMAS, or that adopted and subsequently abandoned EMAS, did not feel that any competitive advantage could be gained by adopting EMAS. With regard to market positioning, a number of interviewees stated that their international partners (e.g. customers) do not request the application of EMAS, but do appreciate ISO 14001. A large ISO 14001 certified company in a Member

State with high registration numbers gave a similar answer, stating that “we do not think that we should move on to EMAS to increase our competitiveness in the marketplace; on the contrary, we think that it would improve our local reputation.”

One ISO 14001 certified (but not EMAS registered) organisation claimed that “EMAS brings no competitive advantages over ISO 14001.” This opinion was seconded by a company from a Member State with high registration numbers that had left EMAS because they felt “EMAS has not produced relevant effects on our competitiveness.” The company planned to implement only ISO 14001 instead.

In the table (Table 42) below, the last column indicates the aggregated values shown in the previous tables, in order to allow an easy comparison with the differences identified in the total survey sample. If we compare competitive advantages achieved among high registration, medium registration and low registration Member States, we can observe that low registration countries achieved the highest mean score regarding better efficient use of natural resources. We also found that for these countries, an increased level of trust in the relationship with suppliers/customers and the increase in consumers’ trust of the organisation are the most benefits. In high and medium registration countries, on the other hand, competitive benefits are the most important.

Table 42: Level of agreement with the following statements on what kind of competitive advantage your organisation experiences by participating in EMAS: analysis according geographical coverage of registrations.

	High registration countries	Medium registration countries	Low registration countries	Aggregate Value
Improvement of efficiency in the use of natural resources and energy, with its corresponding reduction of costs	3.7	3.8	4.0	3.7
Improved corporate image towards local and national domestic customers and suppliers	3.4	3.6	4.0	3.5
Increase in skills and know-how of employees	3.3	3.4	3.8	3.3
Improved corporate image towards international customers and suppliers	3.3	3.4	4.0	3.3
Increase in consumers’ trust of the organisation	3.2	3.4	4.1	3.3
Improvement in relationships with local communities and reduction of conflicts (e.g. public complaints)	3.2	3.5	3.9	3.2

Increase in the level of trust in the relationship with suppliers/customers	3.1	3.5	4.1	3.2
Improved ability to share knowledge of environmental performance with the most strategic suppliers/customers	2.9	3.7	3.3	3.0
Increase in ability to introduce process or product innovations	2.7	3.1	3.3	2.8
Improved capacity to win public tenders	2.4	3.1	2.8	2.5
Easier access to capital market because of a lower environmental risk	2.4	3.1	2.9	2.5
Increase in shared investments with suppliers/customers in relation to specific assets	2.3	3.0	3.0	2.5
Ability to attract and retain talent and valuable human resources	2.3	2.9	2.9	2.4
Increase in turnover	2.3	2.8	2.9	2.4
Increase in market share of your main products	2.2	2.8	2.9	2.3
Increase in exports	2.1	2.5	2.8	2.2

Calculating the mean of the different scores, we observe that in low registration countries that value is 3.4, while in medium and high registration countries the average values are 3.2 and 2.8 respectively. This is caused by the consistently higher values achieved by the variables concerning improved corporate image in the minds of customers, suppliers and consumers in those countries (answers in the lines from 8 to 11). It seems that organisations located in countries with a low number of EMAS registrations benefit from greater recognition among the kinds of stakeholders that consider EMAS to be a tool for a small number of outstanding organisations and as a “unique selling point.”

Another cause may be that respondents mix experiences with expectations. Generally speaking, the table above indicates a greater level of optimism for EMAS’s effect on competitiveness in the low registration Member States. Our interviews support these findings. An organisation without EMAS from a Member State with low registration numbers affirmed that if EMAS had been adopted, one of the most important expected competitive advantages would be increased trust from suppliers and/or customers: “[...] some advantages are expected from improved relationships with local communities,

improved ability to share knowledge of environmental performance with the most strategic suppliers and customers, as well as improved corporate image towards both domestic and international customers and suppliers.”

However, the organisation mentioned above did not expect an increase in exports to be a competitive advantage of EMAS. The survey results also confirmed that exports increase is one of the advantages with lowest value, also in for low registration countries (2.8). Indeed, in many cases, the findings from interviews carried out with ISO 14001 certified (but non-EMAS registered) organisations without EMAS corresponded to the results of our survey of EMAS participants. Non-EMAS registered organisations thus have an accurate awareness of the characteristics and added values obtainable if they decide to adopt EMAS.

Table 43: Level of agreement with the following statements on what kind of competitive advantage your organisation experiences by participating in EMAS: analysis per size of organisations

	Micro	Small and medium	Large	Aggregated Value
Improvement of efficiency in the use of natural resources and energy, with its corresponding reduction of costs	3.5	3.7	3.9	3.7
Improved corporate image towards local and national domestic customers and suppliers	3.2	3.5	3.6	3.5
Increase in skills and know-how of employees	3.2	3.4	3.2	3.3
Improved corporate image towards international customers and suppliers	3.1	3.4	3.3	3.3
Increase in consumers' trust of the organisation	2.9	3.4	3.2	3.3
Improvement in relationships with local communities and reduction of conflicts (e.g. public complaints)	2.9	3.3	3.3	3.2
Increase in the level of trust in the relationship with suppliers/customers	2.9	3.3	3.1	3.2
Improved ability to share knowledge of environmental performance with the most strategic suppliers/customers	2.8	3.0	3.0	3.0

Increase in ability to introduce process or product innovations	2.7	2.8	2.9	2.8
Improved capacity to win public tenders	2.6	2.6	2.4	2.5
Easier access to capital market because of a lower environmental risk	1.9	2.6	2.6	2.5
Increase in shared investments with suppliers/customers in relation to specific assets	2.3	2.5	2.4	2.5
Ability to attract and retain talent and valuable human resources	2.1	2.4	2.5	2.4
Increase in turnover	2.2	2.5	2.3	2.4
Increase in market share of your main products	2.1	2.4	2.3	2.3
Increase in exports	2.0	2.2	2.2	2.2

The focus on responses related to the size of organisations (Table 43) allows us to draw some useful conclusions.

Firstly, as expected, large organisations achieved the highest value of resource efficiency implications on competitiveness. These organisations clearly have a greater scope for cost reduction and improving their performance in resource efficiency. These findings are also in line with previous EMAS studies (Iraldo et al. 2009, Milieu and RPA 2009). Indeed, large organisations usually have a higher consumption (e.g. of energy) of a wider range of resources (e.g. steam, electricity, fuel) and many different production and auxiliary processes that use resources. All these variables allow such companies to identify improvement opportunities with consequent cost reductions. Regarding results from interviews, one large EMAS registered organisation from a Member State with medium registration numbers stated that “EMAS has made the company more competitive in that it has helped the company avoid unnecessary costs. For example, the organisation today trains employees to keep a very close eye on their equipment, making sure that they replace parts and/or machines before they become old and inefficient. In this way, they reduce waste (including energy waste) but also save money by investing at the right time.”

Secondly, easier access to capital markets is not an important matter for micro organisations (mean score is 1.9 out of 5). This kind of advantage is more apparent to small, medium and large organisations for which the access to capital markets may be easier and more important than for micro ones. However, even for these organisations,

the link is still relatively weak (2.6 for small and medium sized organisations and 2.6 for larger organisations).

Finally, improved corporate image in the minds of local and national domestic customers and suppliers is a competitive gain of more relevance to large and smaller and medium sized organisations (3.6 and 3.5) than to micro ones (3.2).

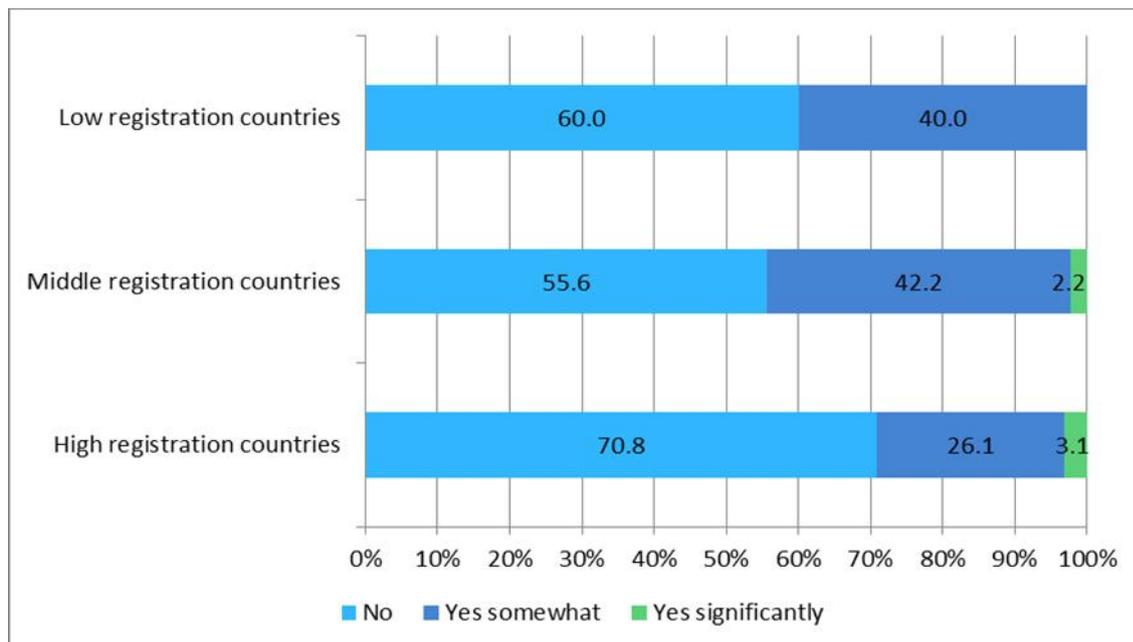
When comparing different competitive benefits, one smaller organisation was not very positive regarding the competitive advantages of EMAS: "I do not feel that EMAS helps competitiveness for company at all, except perhaps by improving reputation and image. Even that, however, is not enough to outweigh costs for smaller companies, particularly since communicating EMAS to customers and employees is very time-consuming. Today it would probably not be worth it to adopt EMAS since it is not well-known enough."

In fact, a number of survey respondents and interviewees highlighted that EMAS is not well known by some stakeholders, in particular consumers and local communities. According to an ISO 14001 certified organisation from a Member State with high registration numbers that has left EMAS, "[...] EMAS will be a good solution for the market share of their products only if the European Commission modifies the external communication of the scheme, appointing a strong b2b communication strategy."

Overall, it seems as if the measurable payoff of EMAS in terms of increased competitiveness alone is not sufficient to establish a clear-cut business case for the scheme – at least not for all types of organisations in all sectors.

The survey also explored whether EMAS registration helped organisations to tackle the economic crisis (Figure 33). In keeping with results of the previous tables on turnover increase capacities, findings in this section showed that for the majority organisations, EMAS had not helped them to face the current crisis. This result does not, however, necessarily mean that EMAS was counterproductive (e.g. due to implementation and maintenance costs). The highest numbers of negative answers were observed in high registration Member States, where more than 70% of respondents reported that EMAS was not of assistance in dealing with the economic crisis. In these Member States, options like turnover, market share and exports received the lowest scores when compared with medium and low registration Member States.

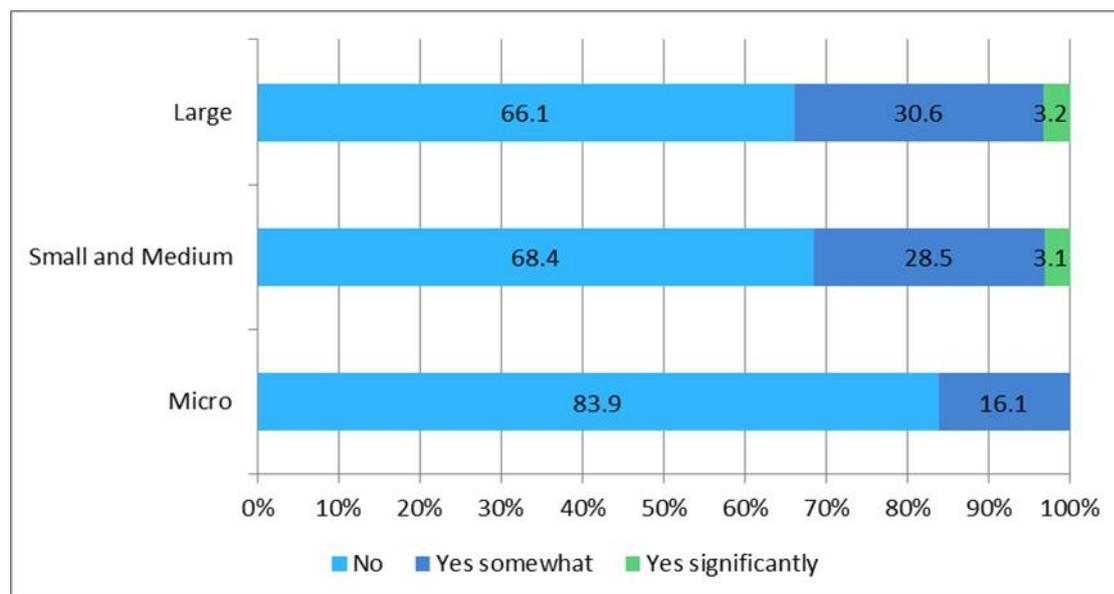
Figure 33: Is an EMAS registration helping your organisation tackle the current economic crisis? Analysis according geographical coverage of registrations.



Feedback from organisations that abandoned EMAS in a Member State with high registration numbers demonstrate similar results (Annex IX). These interviews revealed that the costs linked with the scheme were one of the most frequently cited reasons for abandoning EMAS.

In respect to different organisation sizes, it is certainly worth pointing out that as expected, only 16% of micro organisations affirmed that EMAS registration had helped them to tackle the economic crisis (Figure 34). EMAS helped more large organisations to face the crisis (33.8% of respondents) than it did smaller and medium sized organisations (31.6%). This is not surprising, as factors that lead to increased competitiveness - for instance, increased resource efficiency - are more pronounced at larger organisations.

Figure 34: Is an EMAS registration helping your organisation tackle the current economic crisis? Analysis per size of organisations



4.6.5. Some interpretation keys through statistical modelling

Analysing the results discussed in the previous section does not lead to the emergence of a clear picture of the relationship between EMAS and competitiveness. EMAS seems to produce advantages for some organisations and in respect to some forms of competitiveness, but not across the board. Why do the effects of EMAS on competitiveness at the company level differ so markedly? Which other variables can influence the effectiveness of EMAS on competitiveness? Identifying an answer to these questions can help policy makers adopt policies which strengthen the scheme’s relationship with competitiveness.

To explore the relationship between EMAS and competitiveness in more depth, we analysed data further, performing statistical regressions by identifying and applying variables not included in the questionnaire. We also used the STATA 12 software to analyse data further with regression statistics (see Annex X for details of these findings).

The first regression was related to the relationship between EMAS and competitiveness, using some new variables such as supply chain management capability and company’s satisfaction with EMAS (see Annex X for details on how these variables have been identified). This process allowed us to compare answers given to these questions with the answers given in the section on EMAS and competitiveness.

The project team studied the relationship between a set of variables and the competitive advantages that EMAS adopters achieved on the market (Table 3 of Annex X). Results of the linear logistic regression model emphasise that EMAS registered organisations that are committed to eco-innovation obtain more competitive advantages in both reputation and on the market.

These results concur with much of the academic literature (e.g. Porter and Van der Linde 1995). It can thus be argued that eco-innovation in the medium to long term allows

offsetting of investments made possible through higher resource productivity (process offsets) and higher quality products (product offsets).

Looking at EMAS's effect on the reputation of the organisations, we used the following options to measure that variable: ability to attract and retain talent and valuable human resources, improvement in relationships with local communities and reduction of conflicts (e.g. public complaints), increase in the level of trust in the relationship with suppliers/customers, improved corporate image for local and national domestic customers and suppliers, improved corporate image for international customers and suppliers, increase in consumers' trust in the organisation (Table 2 of Annex X).

Findings reveal that organisations committed to innovation achieve competitive advantages regarding their reputation (coefficient 0.5 and meaningful to 99%). Moreover, we also found that organisations in low registration countries achieve these kinds of advantages as well (coefficient 0.3 and meaningful to 99%).

Finally, we investigated the relationship between EMAS and competitive advantages in the marketplace, measured with the following options: increase in turnover, increase in market share of main organisation products, increase in exports and improved capacity to win public tenders.

Findings from the linear logistic regression model again emphasise that EMAS registered organisations that are committed to innovation obtain competitive advantages in the market (coefficient 0.4 and meaningful to 99%), even in low registration countries (coefficient 0.3 and meaningful to 95%).

4.6.6. Main findings

- EMAS influences the competitiveness of participant organisations positively in several respects. This positive influence occurs in two main areas: increased resource usage efficiency and the subsequent reduction of costs; and an improved reputation of the registered organisations among stakeholders like local, national and international domestic customers and suppliers, consumers and local communities.
- However, despite its demonstrated capacity to improve an organisation's image among certain stakeholders, the capacity of EMAS to trigger competitive advantages on the market is still weak.
- The survey and interviews reveal that companies have not achieved competitive benefits in terms of increased turnover, increased market share for their main products, or increased exports. Existing literature on the topic confirms these findings.
- The analysis of data according to geographical scope (high registration, medium registration and low registration countries) and to size of organisations (micro, small and medium, large) does not show significant differences, indicating that no particular type of organisation enjoys a greater competitive advantage from EMAS.
- Results of the linear logistic regression model emphasise the role of innovation in the competitive challenges. EMAS registered organisations with a higher capacity to implement eco-innovations achieve higher competitive performance on reputation as well as on market issues.

4.7. The relationship between EMAS and innovation

Key points at a glance

- Achieving innovation can contribute to a better cost efficiency of EMAS and improve competitive potential (see Section 4.6.5)
- The study analysed EMAS's relationship with three different classes of innovation: 1) environmental organisational innovations; 2) environmental production process innovations; and 3) environmental product-related innovations
- Previous research, most of which does not specifically address EMAS, indicates that, instead of a clear causal relationship between environmental management schemes and technological environmental innovations, a complex dynamic interrelationship between these measures seems more likely. However, not all studies see a correlation or even dynamic relationship between EMS and innovation. One of the few EMAS-specific studies on this subject matter revealed a positive relation between length of EMAS registration and process innovations, indicating that the relation between the two variables can be considered a "learning by doing" process
- Our survey confirms previous research and does not highlight a clear relation between EMAS and innovation
- Surveyed registered organisations reported that EMAS stimulates mainly organisational and process innovations, while product innovations are less frequently adopted. Small and medium-sized organisations indicated more organisational benefit from EMAS than did larger ones.

4.7.1. Background and research aims

Since the publication of the first version of the EMAS Regulation in 1993, one of the scheme's main aims has been to stimulate environmental innovation within registered organisations: the principle of continuous improvement of performance is key to EMAS's efforts in this regard.

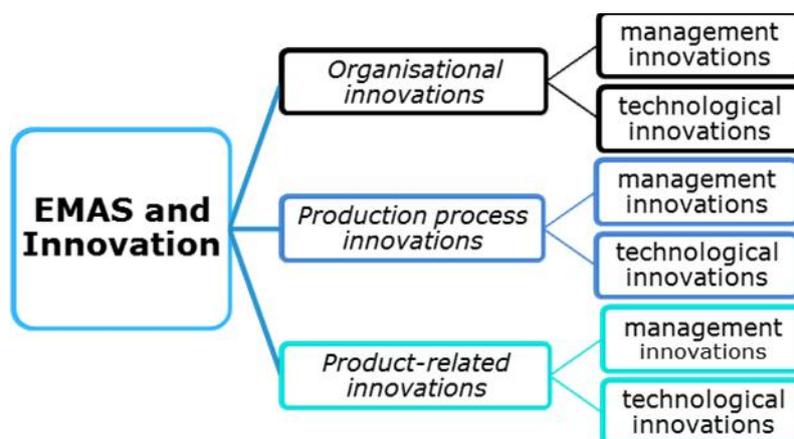
Article 3 of Regulation 1836/1993 (EMAS I) included a provision linking the scheme's continuous improvement approach with the concept of Best Available Techniques (BAT). More specifically, EMAS I invited registered companies to be compliant with the BAT-Associated Emissions Level. The concept of BAT as it is included in the IED involves not only to environmental technologies but also management practices. In fact, the IPPC Directive defines BAT as "the technology used and the way in which the installation is designed, built, maintained, operated and decommissioned."

While EMAS Regulation 761/01 (EMAS II) does a better job of articulating the concept of continuous improvement, the latest EMAS Regulation 1221/2009 (EMAS III) confirmed the importance of EMAS as an innovation-triggering policy instrument through the inclusion of the new concept of Best Environmental Management Practice. EMAS holds this concept to be "the most effective way to implement the EMS by organisations in a relevant sector, and that can result in best environmental performance under given economic and technical conditions." The Joint Research Centre (JRC), the institution responsible for elaborating Sectoral Reference Documents (SRDs) on best environmental management practice, uses a definition of Best Environmental Management Practice that points out a clear link between this new concept of EMAS III and environmental

innovation, identifying them as “techniques, measures or actions that are implemented by the organisations within the sector that are most advanced in terms of environmental performance in each of many areas, such as energy efficiency, resource efficiency, emissions, but also supply chain management.”

The literature in the field notes three different classes of innovation involving EMAS: environmental organisational innovations, environmental production process innovations and environmental product-related innovations (see Figure 35). In addition to each class, we considered two other kinds of innovations in this study: management innovations and technological innovations.

Figure 35: Approach followed in the study of the relationship between EMAS and Innovation



The key research question is whether EMAS is a driver of innovation, and if so, how exactly does this occur? Following the innovation classification introduced above, the project team established several judgment criteria, formulated as specific questions covering the various dimensions of the main research question.

Questions to be posed in respect to organisational innovations are as follows:

- Is EMAS able to stimulate the adoption of other kinds of management systems (e.g. quality management, energy management, safety management, etc.) or other organisational innovations?
- Has active employee involvement in the EMS had beneficial effects in other areas of the organisational structure of the registered company?
- Is EMAS able to stimulate the extension of the auditing system to other areas of the organisational structure of the registered company?
- Is EMAS able to stimulate the adoption of technological innovations (e.g. Information and Communication Technologies) to manage key requirements of the standard (e.g. training and involvement of employees, environmental communication, management of environmental compliance, performance monitoring and continuous improvement)?
- Have these technological innovations been transposed to other areas of the organisational structure of the registered company?

As regards production process innovations, questions include:

- Is EMAS spurring the adoption of BAT?

- Is EMAS able to improve the level of investment in innovative technologies?
- Is EMAS able to stimulate investment in research and development of new production processes or new techniques?
- Is EMAS stimulating industrial symbiosis initiatives or creating spill-over effects between registered companies and neighbouring companies?
- Is EMAS able to stimulate the adoption of management innovations linked to specific operational tasks, such as equipment maintenance (e.g. machinery checking, leak control, filter maintenance, calibration of measuring equipment); storage of chemicals; handling, dosing and dispensing; minimisation/optimisation of chemicals used, etc.?

Finally, in the case of product-related innovations, questions include:

- Does EMAS influence the design and development of the products?
- Is EMAS able to reduce product packaging?
- Has EMAS stimulated the adoption of environmental product-related policy instruments, such as Life Cycle Analysis (LCA), Ecolabel, EPD or environmental footprinting?

Indicators referring to and forming part of the judgement criteria above are quantitative wherever possible.

4.7.2. Previous research

Most scientific and technical papers address the question of environmental management and innovation on a more general level by covering not only EMAS but also other environmental management instruments, ISO 14001 in particular. A small number of studies do, however, deal with the relationship between EMAS or other environmental management instruments, production processes or product innovations, and can provide some background to our own research.

According to Ziegler and Nogareda (2009), the causal relationship between environmental management schemes and technological environmental innovations is ambiguous: instead of a clear causal relation, a complex dynamic interrelationship between these measures seems to be more likely. They hypothesise that the certification of an EMS through ISO 14001 or EMAS could be affected by environmental product and process innovations. The econometric analysis they undertake with uni- and multivariate probit models supports this hypothesis because environmental process innovations have a significantly positive effect on certified EMS. In their study, they contacted 2,399 companies, with 24.5% (588) of them agreeing to participate in the survey. The analysis also suggested that environmental product innovations are positively related to environmental life cycle assessment activities, waste disposal or redemption of own products.

Looking at another innovation category, Lim and Prakash (2014) and other authors concentrated their efforts on studying the relationship between EMAS and other environmental management instruments and organisational innovations. They studied the country-level relationship between the number of ISO 14001 certificates issued and registered patents. Examining data from 79 countries for the period 1996-2009, the authors considered registered patents related to the following categories: air pollution abatement, water pollution abatement, waste management (such as solid waste

collection and recycling), soil remediation, and environmental monitoring. They found that country-level ISO 14001 participation is a significant predictor of a country's environmental patent applications.

Halila (2007) showed how SMEs use existing networks to start and implement some parts of an EMS or, in some cases, to adopt the whole EMS, leading to ISO 14001 certification. Study data were obtained between December 1998 and June 2000 through interviews, participant-observations and studies of documentation in the nine network companies investigated.

Karapetrovic and Casadesus (2009) analysed how the implementation of the EMS in accordance with ISO 14001 has been carried out in organisations with more than one standardised management system. They carried out a survey with 176 organisations possessing both ISO 14001 and ISO 9001 registrations. Four implementation issues were discussed: the various management system standards used for registration, the order in which the management system standards were implemented, the time required for each implementation, and the degree of integration of these management system standards into a single Integrated Management System. The results confirm that a high percentage of organisations with an EMS certified under the ISO 14001:2004 standard also have a Quality Management System certified in accordance with ISO 9001:2000.

However, not all studies see a correlation or even dynamic relationship between EMS and innovation. For example, in a survey with German organisations, Frondel et al. (2008) investigated if innovation activities among German manufacturing firms are associated with the adoption of an EMS. They found that environmental innovation activities are neither associated with EMS implementation nor any other single policy instrument, at least in the minds of interviewees. Instead, they reported a correlation between stringency of governmental environmental policy initiatives and innovation.

Very few scientific and technical papers offer an in-depth analysis of the relationship between EMAS registered companies and the scheme's influence on their ability to introduce innovations.

Rennings et al. (2006) investigated the impact of EMAS on technical environmental innovations and economic performances at EMAS registered sites in Germany. Their survey involved 1,277 EMAS facilities and most of them "report a positive influence of the EMS in general on environmental process innovations." The study revealed a positive relation between length of EMAS registration and process innovations, indicating that the relation between the two variables can be considered a "learning by doing" process. Similar positive relations were observed with regard to the effects of EMAS on product innovations.

The BRAVE project survey (SSSUP 2013) also investigated the ability of EMAS to stimulate environmental investments (and thus indirectly encourage innovation). The findings show that in the last three years, approximately 40% of EMAS registered companies have increased investments in environmental improvements, while only 15% have reduced them. The study confirms previous findings on EMAS's ability to stimulate environmental investments. The data indicate a positive effect on innovation, especially in the years immediately following registration when the organisations have more room for manoeuvre in terms of pursuing improvement options.

As we can observe, the most recent papers and technical reports published in the field do not unequivocally clarify the relationship between environmental management instruments like EMAS and ISO 14001 and innovation. Furthermore, it is difficult, if not impossible, to say whether EMAS has a bigger impact on innovation than ISO 14001. Furthermore, previous research does not specify the types of processes, products and organisational innovations that EMAS is able to stimulate. One key finding is that, as was

the case with the relationship between environmental management and competitiveness, the quality of the EMAS implemented influences its ability to (Rennings et al. 2006).

4.7.3. Results

The innovation section of the survey questionnaire for EMAS registered organisations included three different questions, each of them presenting options related to the main topics: process innovations, product innovations and organisational innovations. Respondents could choose from 15 total options in the three categories.

Table 44 below lists the five innovations which have received the highest value from a total of 15 options. It has to be noted however that the list was compiled by the project team after the survey was carried out, in order to arrive at an initial assessment of the responses. Survey respondents gave answers on each innovation category separately (three categories with three to seven questions each). As with the results shown in other chapters, the higher the value from 1 to 5, the more respondents agree with the suggestion. A value higher than three indicates that companies on average agree with the statement, while values lower than three indicate general disagreement.

Table 44: EMAS and process, product and organisational innovation – please indicate your level of agreement on the effect of EMAS on the three classes of innovation (top-five values)

EMAS and innovation	Value	Standard deviation
EMAS stimulates innovative communication patterns internally (with employees) and externally (with stakeholders)	3.5 (3.52)	0.9
EMAS stimulates the adoption of green technology or BAT	3.5 (3.49)	0.9
EMAS stimulates the adoption of other kinds of management systems (e.g. ISO 9001, OHSAS 18001, etc.)	3.5 (3.48)	1.1
EMAS stimulates the extension of the auditing system to other organisational areas (e.g. safety, social responsibilities, finance)	3.4 (3.44)	0.9
EMAS improves the level of investment in the identification of more sustainable production processes	3.4 (3.43)	0.9

Our results show that EMAS registered organisations display the highest level of agreement with statements linking EMAS to organisational and process innovations, even if scores achieved are in the range of 3.5 to 3.4, considerably lower than values assigned to other questionnaire topics. Among the top five values, three belong to the class of organisational innovations and two to process innovations. Implementation of EMAS requires organisations to analyse their performance, set policy and set targets, etc. When an organisation goes through such a process, they have to consider innovation as one of several means by which achieve their objectives.

According to survey respondents, EMAS has the biggest effect on the adoption of innovative internal and external communication practices. This confirms the importance

of communicating environmental progress to external stakeholders, as also observed in the chapter on drivers of EMAS implementation (Chapter 4.3). The results of that chapter identify the improvement of an organisation’s public reputation as the second most important driver of EMAS adoption.

Survey results also show that EMAS registered organisations believe that EMAS stimulates the adoption of green technology or BAT. In addition, taking into account the increased relevance of BAT with the approval of IED, EMAS’s ability to encourage BAT can provide policymakers with indications of how EMAS could work as a tool to implement the IED Directive.

Respondents also credit EMAS with the ability to stimulate the adoption of other management systems and to increase investment levels. This confirms findings described in the literature review as pointed out by Karapetrovic and Casadesus (2009) and by the BRAVE study. Additionally, respondents pointed out how EMAS can be used as leverage to apply the auditing techniques to other areas of the organisational structure such as safety, CSR and finance.

The next three tables illustrate the results of the questionnaire concerning the three types of innovations investigated in this study: process (Table 45), product (Table 46) and organisational innovations (Table 47). For each type of innovation (process, product, and organisational), the questionnaire takes into account both technological and management innovations.

Table 45: EMAS and process innovation– please indicate your level of agreement on the effect of EMAS on the three classes of innovation

EMAS and process innovations	Value	Standard deviation
EMAS stimulates the adoption of green technology or BAT	3.5	0.9
EMAS improves the level of investment in the identification of more sustainable production processes	3.4 (3.43)	0.9
EMAS stimulates the adoption of innovations linked with specific tasks or process phases, as for instance: equipment maintenance (e.g. machinery checks, filter maintenance); chemicals handling, storage, dosing and dispensing, etc.	3.4 (3.41)	1.0
EMAS stimulates the level of investment in innovative technologies	3.3	0.9
EMAS stimulates the launch of initiatives between the registered companies and neighbouring companies (e.g. through by-product exchanges, energy exchanges, etc.)	2.9	1.0

Importantly, responses demonstrate that many EMAS registered organisations agree with the statement that EMAS stimulates the adoption of green technology or that BAT contributes to the discussion on the capacity of voluntary policy tools to spread the adoption of technological innovations. As stated in this chapter’s summary of previous research, some authors have recently observed that “the causal relationship between EMS and technological environmental innovations is ambiguous” (Ziegler and Nogareda

2009). Our data do not confirm this statement; instead it is fair to say that EMAS has an at least moderately positive influence on the adoption of green technologies.

With the exception of the first two options and the fourth, all of which have already been discussed in the previous section on the types of innovations that EMAS stimulates, the data illustrated in Table 45 reveal the importance of what we identified as management techniques connected with process innovations. Survey respondents gave the third highest score to the option stating that EMAS stimulates the adoption of innovations linked with specific tasks or process phases, as for instance: equipment maintenance (e.g. machinery checks, filter maintenance); chemicals handling, storage, dosing and dispensing, etc.

Given the relatively low value assigned, it is fair to say that EMAS registered organisations do not believe that EMAS stimulates the launch of initiatives linked with the circular economy and industrial symbiosis, as requested by a recent Communication of the European Commission (COM (2014) 398).

Table 46: EMAS and product innovation– please indicate your level of agreement on the effect of EMAS on the three classes of innovation

EMAS and product innovations	Value	Standard deviation
EMAS contributes to assessing the environmental effects of new products or of substantial product changes	3.4 (3.37)	1.0
EMAS contributes to the adoption of innovative tools for assessing and enhancing the sustainability of products (e.g. Life-Cycle Analysis, Product/OEF, Ecolabel)	3.4 (3.35)	1.0
EMAS influences the design and development of products	2.9	1.0

Looking more closely at product innovation (Table 46), the survey reveals that, according to respondents, the most important innovation in this category is the contribution of EMAS to the evaluation of environmental effects of new products or of substantial product changes. This corresponds with Article 8 of the EMAS Regulation, which was introduced with the current version of the Regulation. It requires registered organisations to carry out an environmental review in response to any changes in processes, activities and products. In doing so, organisations will be able to rethink their products and reduce the environmental impacts caused in the production phase.

Organisations displayed a similar level of agreement with EMAS’s ability to encourage to the adoption of innovative impact assessment instruments for products. Again, the value of 3.4 does not indicate universal approval either from survey respondents or from EMAS registered organisations. However, the value confirms that in light of the publication of Recommendation 2013/179/EU (which launched the PEF and OEF methods), a number of registered companies are interested in the synergies that can be created between EMAS and these new policy tools. The relatively low rating given to the last option – whether or not EMAS influences the design of products – indicates a lack of synergy between EMAS and eco-design and policies. It may also indicate that EMAS is operated in relative isolation from an organisation’s strategic management.

Table 47: EMAS and organisational innovation– please indicate your level of agreement on the effect of EMAS on the three classes of innovation

EMAS and organisational innovations	Value	Standard deviation
EMAS stimulates innovative communication patterns internally (with employees) and externally (with stakeholders)	3.5 (3.52)	0.9
EMAS stimulates the adoption of other kinds of management systems (e.g. ISO 9001, OHSAS 18001, etc.)	3.5 (3.48)	1.1
EMAS stimulates the extension of the auditing system to other organisational areas (e.g. safety, social responsibilities, finance)	3.4	0.9
EMAS stimulates the adoption of technological innovations (e.g. ICT) to manage key requirements of the scheme (e.g. training and involvement of employees, continuous improvement, etc.)	3.3 (3.33)	0.9
EMAS's requirements on roles and responsibilities have also had strong beneficial effects in other areas of my organisation	3.3 (3.30)	1.0
EMAS stimulates the extension of the auditing system or an EMS to the supply chain and/or suppliers	3.2	1.0
EMAS stimulates the adoption of environmental management practices in an industrial area or cluster (e.g. involving neighbouring companies and public-private partnership)	3.0	1.0

Table 47 illustrates the study's work on EMAS's relationships with organisational innovations. Of the three innovation classes, organisational innovations received on average the highest scores, with EMAS registered organisations agreeing on average with all of the options and disagreeing with none. However, as said before, values ranging between 3.5 and 3.0 cannot be interpreted as a completely convincing case for EMAS spurring (organisational) innovation. Rather, the scheme has the potential to contribute to different innovation patterns.

Apart from the first three innovations discussed in Table 45, the score of 3.3 achieved by the fourth option shows that EMAS contributes to a certain extent to the adoption of technological innovations in the field of organisational innovations. However, as with the following options – EMAS's impact on roles and responsibilities, the extension of the auditing scheme and the adoption environmental management practices in cluster approaches ("spill-over") – no clear statement on the impact of the scheme on technological innovations emerges from the survey.

The results displayed in all three tables show low values of standard deviation, indicating a level of homogeneity in the responses and a lack of substantial variations in the individual answers.

The following tables (Table 48) present the data according to the two main categories of analysis described in the chapter on sample description: geographical coverage and size.

Geographical coverage breaks down into countries with high numbers of registrations (more than 200), medium numbers of registration (20-200 registrations) those with low numbers of registration (fewer than 20). Size indicates a micro, small, medium or large company.

The last column indicates the aggregated values shown in the previous tables in order to allow an easy comparison with the differences identifiable in the disaggregated data.

Table 48: Process innovations: analysis by geographical coverage

Process innovations	High registration countries	Medium registration countries	Low registration countries	Aggregate value
EMAS stimulates the adoption of green technology or BAT	3.5 (3.46)	3.7	3.8	3.5 (3.49)
EMAS stimulates the level of investment in innovative technologies	3.2	3.5	3.8	3.3
EMAS improves the level of investment in the identification of more sustainable production processes	3.4	3.7 (3.65)	3.7 (3.67)	3.4
EMAS stimulates the start-up of initiatives between the registered companies and neighbouring companies (e.g. through by-product exchanges, energy exchanges, etc.)	2.9 (2.87)	3.0	2.9 (2.92)	2.9
EMAS stimulates the adoption of innovations linked with specific tasks or process phases, as for instance: equipment maintenance (e.g. machinery checks, filter maintenance); chemicals handling, storage, dosing and dispensing, etc.	3.4	3.5	3.3	3.4

Table 49: Process innovations: analysis by size of organisations

Process Innovations	Micro	Small and medium	Large	Aggregate value
EMAS stimulates the adoption of green technology or BAT	3.3	3.5 (3.52)	3.5 (3.49)	3.5
EMAS stimulates the level of investment in innovative technologies	3.2 (3.18)	3.4	3.2 (3.16)	3.3
EMAS improves the level of investment in the identification of more sustainable production processes	3.4 (3.35)	3.5	3.3 (3.28)	3.4
EMAS stimulates the start-up of initiatives between the registered companies and neighbouring companies (e.g. through by-product exchanges, energy exchanges, etc.)	2.8	2.9 (2.90)	2.9 (2.87)	2.9
EMAS stimulates the adoption of innovations linked with specific tasks or process phases, as for instance: equipment maintenance (e.g. machinery checks, filter maintenance); chemicals handling, storage, dosing and dispensing, etc.	3.3	3.5	3.3	3.4

If we compare the averages for the first three process innovation options (stimulation of green technologies and BAT, stimulation of investments in more sustainable processes, improvement of level of investment related to sustainable production processes), the high values given by respondents from Member States with low registration numbers stand out. The reason could be that there are more front-runner companies in and among those few registered organisations, which, in addition to implementing EMAS, shows innovation activities in a greater number. Furthermore, it is possible that the EMAS management approach (see chapter 5), which involves key roles played by environmental verifiers and environmental consultants, is a good platform for spurring innovation in Member States in which EMAS is one of the main environmental policy instruments. This might be particularly true in Member States which have recently joined the EU (most Member States with low registration numbers are countries which joined the EU quite recently). In this light, EMAS is an important instrument both for the implementation of the environmental *acquis communautaire* and for key environmental objectives.

Ordering responses according to the size of the organisation allows us to draw some initial conclusions. Firstly, micro organisations are not as likely as larger organisations to agree that EMAS stimulates the adoption of BAT. This result is not unexpected, as lower resources and the non-inclusion of these organisations in the IED Directive both provide likely explanations for this result. Secondly, large organisations are less likely than smaller organisations to perceive EMAS as a reason to increase the level of investments

in production processes. One explanation may be that larger organisations are more likely to weigh other variables more strongly in these decisions, for instance economic savings or the results of their R&D department.

Looking at the category geographical coverage in Table 50 on product innovations, the first two options reveal unexpected values in Member States with low numbers of registrations. In both cases, representatives of EMAS registered organisations from Member States with less than 20 registrations are more convinced than representatives of registered organisations in the other two Member State groups that EMAS influences the design of products and contributes to the assessment of new products.

Table 50: Product innovations: analysis by geographical coverage

Product Innovations	High registration countries	Medium registration countries	Low registration countries	Aggregate value
EMAS influences the design and development of the products	2.9 (2.86)	2.9 (2.88)	3.6	2.9 (2.89)
EMAS contributes to assessing the environmental effects of new products or of substantial product changes	3.4 (3.37)	3.4 (3.35)	3.8	3.4 (3.37)

With regard to organisational size (Table 51), no significant differences can be observed, apart from the option on the adoption of innovative tools to assess and enhance products, which showed an unexpected result: large organisations see the weakest links between this issue and EMAS. Although the data does not indicate that large organisations are not adopting the mentioned tools (LCA, PEF, OEF, etc.), it does show that these organisations do not consider the decision to adopt these tools to be the result of EMAS.

Table 51: Product innovations: analysis per size of organisations

Product Innovations	Micro	Small and medium	Large	Aggregate value
EMAS influences the design and development of the products	2.94	2.92	2.78	2.89
EMAS contributes to assessing the environmental effects of new products or of substantial product changes	3.45	3.43	3.22	3.37
EMAS contributes to the adoption of innovative tools for assessing and enhancing the sustainability of products (e.g. Life-Cycle Analysis, Product/Organisation Environmental Footprint, Ecolabel)	3.38	3.40	3.21	3.35

When looking at organisational innovations, we do not observe significant differences between replies of representatives from registered organisations in Member States with low, medium and high registration numbers. However, when classified according to the size of organisations, the data show that small and medium-sized organisations constantly give the highest scores.

Table 52: Organisational innovations: analysis by size of organisations

Organisational Innovations	Micro	Small and medium	Large	Aggregate value
EMAS stimulates the adoption of technological innovations (e.g. ICT) to manage key requirements of the scheme (e.g. training and involvement of employees, continuous improvement, etc.)	3.1	3.4	3.3	3.3
EMAS stimulates the adoption of environmental management practices in an industrial area or cluster (e.g. involving neighbouring companies and public-private partnership)	3.0	3.1	2.9	3.0

These classes of organisations appear to perceive the organisational benefits of EMAS more than either micro or large organisations. The reason for this may be that EMAS has a more significant organisational impact on small and medium sized enterprises than on micro or large ones. This effect may not be of use for micro organisations, as they do not have the financial and human resources to initiate organisational innovations. Indeed, micro organisations give the lowest values in all but one case – that of synergies with other actors in the industrial area or cluster. Many cluster and sectoral projects (e.g. EMAS easy projects) have been carried out in several Member States in the past and have helped micro and small organisations to implement EMAS. These kind of EMAS applications (e.g. EMAS easy implementation in SME clusters) have actually stimulated regional cooperation between EMAS registered companies, suppliers and authorities. In a way, these results show that certain EMAS implementation approaches (implementation in clusters) have also had a stimulated the creation of initiatives between registered and neighbouring companies. However, although micro-sized enterprises consistently rate the relationship between EMAS and the innovation as above 3 (positive), this class also has the least trust in EMAS’s capacity to contribute to organisational innovations.

4.7.4. Interpretation keys through statistical modelling

To highlight the evidence emerging from the descriptive analysis and verify which contextual factors can, in general, have a positive or negative influence on the relationship between EMAS and innovation, a regression analysis of the relationships was performed using STATA 12 software. Table 4 of the statistical annex (Annex X) shows the degree to which various factors affect how organisations perceive the relationship between EMAS and innovation.

The results of the statistical regressions have been achieved using some new variables to interpret the data. In particular, we used the variable supply chain management

capability and company's satisfaction with EMAS. The first variable measures the capability of the interviewed organisation to manage the whole supply chain, while the second refers to EMAS and in particular to any slight/major modifications to the scheme they may like to see. This process allowed us to compare the answers given to these questions in other chapters with the answers given in the EMAS and innovation chapters.

The results of the linear logistic regression model emphasise how the probability of introducing innovations increases in EMAS registered organisations according to their capacity to manage the supply chain in a sustainable way (coefficient 0.3 and meaningful to 99%). As capacity grows, more innovations are introduced. These findings confirm the results of several studies (Chiou et al. 2011, Abu Seman et al. 2012) that have looked at the relationship between green supply chain management and innovation. Although those studies examined companies that were not EMAS registered, they also found a positive relationship between those two variables.

Moreover, our model investigates a relationship which the existing academic literature has, to the best of our knowledge, never before examined. This relation shows that the probability of adopting innovations increases with a company's level of satisfaction with EMAS (coefficient 0.2 and meaningful to 99%). Those companies that are satisfied with how EMAS functions appear to be more able to introduce innovations.

None of the other variables we investigated, including the number of employees, length of EMAS registration or integration with other systems as ISO 9001 and OSHAS18001, seem to improve the probability of introducing innovative approaches in EMAS registered organisations.

4.7.5. Main findings

- Our survey does not highlight a clear relation between EMAS and innovation
- Corresponding to the results of previous studies, our survey respondents indicate that the relationship is clearer for some classes of innovation than for others. Survey results show that EMAS stimulates mainly organisational and process innovations, while product innovations are less frequently adopted by EMAS registered organisations.
- The most important organisational innovations adopted by organisations who participated in the survey are: adoption of innovative internal and external communication patterns, adoption of other kinds of management systems such as ISO 9001 or OHSAS 18001, and the extension of the auditing system to other organisational areas.
- Small and medium-sized organisations appear to experience the organisational benefits of EMAS more than either micro or large organisations.
- The most important process innovations stimulated by EMAS are: adoption of green technologies or BAT, and improvement of level of investments in the identification of more sustainable production processes.
- The adopted statistical model reveals that the higher the "capability of managing the supply chain in a sustainable way" and the higher the "company's satisfaction with EMAS", the higher will be the probability that EMAS registered organisations adopt innovations.

5. ANALYSIS OF THE EMAS MANAGEMENT APPROACH AND ORGANISATIONAL STRUCTURE (EX-POST ANALYSIS)

In this chapter, the project team sheds light on how EMAS is managed by the European Commission and Member States. Three aspects will be analysed:

- The costs and benefits of managing the scheme at EU and Member State level
- The role of key actors, including the European Commission, Member States and environmental verifiers, with special focus on the appropriateness of means they invest in promoting and facilitating the uptake of the scheme
- The effectiveness of features introduced with the latest revision of the scheme

5.1. Analysis of the cost and benefits of implementing and running the scheme at EU level and Member State level

Key points at a glance

- This chapter examines the extent to which the costs and benefits associated with the EMAS Regulation's implementation in Member States and at EU level are linked with EMAS registration numbers
- Little previous research exists, but one 2009 study highlighted the wide variance in Member State promotion and assistance funds and the difficulty of obtaining accurate cost information
- The results of our survey show that overall, the size of Member States' budgets correlates to their EMAS registration numbers in that Member States with higher registration numbers have a higher budget
- Based on their own assessment, Member State representatives confirmed that for policy measures which were clearly defined in scope (e.g. regulatory relief or promotion in a specific sector), a clear correlation between promotion effort and increase in registration numbers was observed, leading to a cost effective application of the EMAS Regulation in those Member States
- Most Member State representatives are not convinced that EMAS reduces inspection time and costs. Additionally, most report that policymakers do not use it as a benchmark at the Member State level. These findings may be both a cause and a result of the absence of policy support measures for EMAS.

5.1.1. Background and research aims

Whereas chapter 4.3 focuses on the costs and benefits of implementing EMAS on the organisational level, this chapter addresses costs and benefits on the EU and Member State level, including registration costs for organisations joining the scheme. Costs incurred to Member States through EMAS do have an additional dimension in that they are financial and human resources used as a means invested to achieve defined objectives of the EMAS Regulation. This dimension will be dealt with in the following chapter (5.2).

In order to provide sufficient background for discussing the costs and benefits of running EMAS, the chapter analyses several criteria. It will firstly shed light on resources used

(overall budget and budget items such as number of Competent Bodies/Accreditation and Licensing Bodies, staff, national EMAS registers). Subsequently, EMAS budgets will be compared to those of other environmental instruments. Finally, the chapter will address whether financial or other types of benefits are generated by running the scheme on an administrative level. A key benchmark with regard to efficiency is whether and to what extent costs and benefits associated with the implementation of the scheme can be linked to high registration numbers. Furthermore, can good practice in terms of cost-effective application of the EMAS Regulation in Member States be identified? The findings of this chapter will be used to discuss whether and to what extent administrative costs/resources spend correlate with Member States' registration numbers.

The chapter will focus on individual Member State level as well as cumulative costs and benefits. According to the EMAS Regulation Member States are responsible for appointing Competent Bodies and Accreditation and Licensing Bodies at national level. Among other duties, Competent Bodies are responsible for registering organisations, for keeping an up-to-date register of participating organisations and for cancelling registrations. Should a Member State decide to participate in EMAS Global, a Competent Body can also be responsible for registrations outside of Europe. Accreditation and Licensing Bodies are responsible for the accreditation/licensing and supervision of environmental verifiers. Both Competent Bodies and Accreditation and Licensing Bodies have established EU-level forums that convene at twice a year with representatives from all Member States in order to ensure harmonisation of procedures, provide guidance and organise peer evaluations. The environmental verifiers' role is to assess the compliance of registered or newcomer organisations with the requirements of the EMAS Regulation and to validate any updated information in organisations' environmental statements at an interval of no more than 12 months. In addition, Member States should manage several tasks, including promotion of EMAS and providing information to the public.

5.1.2. Previous Research

Existing studies tend to focus on the costs of EMAS to registered organisations. Not much work has been done to examine the running costs of the scheme on the side of the European Commission or national/regional administrations as well as benefits. The existing literature, consisting of one main study (Milieu and RPA 2009), shows that budgets and administration structures vary significantly across Member States. Promotion and assistance funds vary from tens of thousands of Euros to nothing, making a direct comparison of costs between the Member States difficult. In addition, the authors emphasise that Competent Bodies were often not able to report accurately on their expenditures.

5.1.3. Results

5.1.3.1. Costs

At EU level, the external costs for EMAS ran to approximately €325,000 in 2014. The largest single factor in the administrative budget is the EMAS Helpdesk³³, the duties of which include support and information to EMAS stakeholders, the production of informational and promotional material on the scheme, and maintenance of the European EMAS register, the EMAS website, the EMAS social media accounts. The European Commission also dedicates funds to a peer review through the Forum of Accreditation and Licensing Bodies (FALB) as specified under the EMAS Regulation's Article 31. The FALB, created under Article 30 of the Regulation, supervises and provides guidance on the various Accreditation and Licensing Bodies involved in EMAS verification. Additional costs include meetings of the EMAS Committee and Competent Bodies, maintaining the ISO 14001 copyright, and the EMAS Awards and other communication measures. Internal costs, mainly concerning staff, were not possible to calculate accurately because most of the employees working on EMAS at the EU level also have additional duties.

Table 53: Annual external costs for EMAS at the EU Level

Item	Approximate budget (EUR)
EMAS Helpdesk	185,00
FALB Peer Review	50,000
Committee Meetings	40,000
ISO 14001 Copyright	25,000
EMAS Awards and additional communication activities	25,000

The size of Member States' annual EMAS budgets varies considerably, ranging from €3,000 (Bulgaria) to €285,000 per year (Austria) (Table 53).³⁴ The average budget size is approximately €72,000. Of the 20 Member States listed, four have a total budget which is (far) higher than the average and 10 have a budget (well) below the average of €72,000. The remaining six Member States are left out, as their budgets are unknown. The variation from the average is thus quite high. The overall cumulative budget of the 14 member States which have reported their budget is approximately €1 million – extrapolated to all 28 Member States, the overall cumulative budget would be approximately €2 million.

³³ adelphi, one of the authors of this report, is part of a consortium responsible for administering the EMAS Helpdesk.

³⁴ Member States, which have not provided data, are not included in this list. Overall, budget information from 12 Member States is available.

Table 54: Administrative EMAS budget per Member State in 2014 (in Euro)³⁵

(* Amounts with asteriks are estimates, as available data was not clear)

Group ³⁶	Country	Budget Total	Staff	Travel	Training	Promotion
High registration	Austria	285,000	250,000	5,000	N/A	30,000*
Medium registration	Belgium	N/A	N/A*	100	N/A	5,000*
Low registration	Bulgaria	3,280	2,760	520	0	0
Medium registration	Cyprus	29,000 ³⁷	7,000	1,500*	0*	20,500*
Low registration	Estonia	N/A	N/A	N/A	500	500
Low registration	Finland	44,000	40,000	4,000	N/A	0*
High registration	Germany	N/A due to federal structure	N/A	N/A	N/A	N/A
Medium registration	Greece	35,000	35,000*	0*	0*	0*
Medium registration	Hungary	N/A	N/A	N/A	N/A	N/A
Low registration	Ireland	60,000	N/A	N/A	N/A	N/A

³⁵ In countries which do not use EUR, the currency was converted.

³⁶ Member States with high registration numbers: more than 200; Member States with medium registration numbers: 20-199 registrations); Member States with low registration numbers: less than 20.

³⁷ Overall sum based on calculation of the project team.

High registration	Italy	160,000	almost all*	Some*	N/A*	N/A
Low registration	Lithuania	N/A	N/A	N/A	N/A	N/A
Low registration	Malta	7,400	5,000	1,500	500	400
Low registration	Norway	136,880	119,026	5,951	N/A	11,903*
Medium registration	Poland	80,000	N/A*	N/A *	N/A*	N/A*
Medium registration	Portugal	69,000	28,000*	3,000*	1,000*	37,000*
Low registration	Slovakia	38,000	30,000	3,000	0*	5,000*
High registration	Spain	N/A	N/A*	3,000	N/A*	N/A*
Low registration	The Netherlands	51,000 ³⁸	30,000	1,000	0	20,000
Medium registration	United Kingdom	9,103	see total; shared with travel	see total; shared with staff	0	0

Overall, the size of Member States' budgets correlates to their EMAS registration numbers in that Member States with higher registration numbers have a higher budget (e.g. Austria, Italy). This is plausible given that the registration process involves – in addition to promotion measures – administrative measures (e.g. maintaining a register/submitting data to the EU EMAS Register; issuing a registration number) carried out by Member State authorities. In turn, this situation does not automatically indicate a clear causal relationship in the sense that higher budgets automatically lead to higher registration numbers. In addition, comparability may be restricted in that EMAS budgets cannot always be clearly separated from budgets for other policy instruments (e.g. with regard to promotion activities). As described below, Member States include not only other policy instruments launched by the European Commission but also policy

³⁸ Overall sum based on calculation of the project team.

instruments from private organisations such as ISO 14001 in their promotion activities. This circumstance suggests that the same staff members manage multiple instruments. As a result, even the Member State themselves cannot always conclusively clarify the share of the budget dedicated specifically to EMAS.

According to our survey, Competent Bodies receive their budget either from the state or directly from the collection of EMAS registration fees. In many cases, the income from registration fees goes into the state budget and a proportion of this total is then reallocated to the EMAS initiative (e.g. Italy, Bulgaria). In some cases the budget for EMAS is partly funded by the government, partly by the income from registration fees (e.g. United Kingdom). Based on questionnaire responses, Member States tend not to benefit financially from the registrations. However, in some cases, survey results indicate that the income they receive from registrations is higher than their total EMAS budget, in particular when they charge a renewal fee. The findings above indicate that can be possible for Member States to run EMAS and cover their costs or more especially when renewal fees exist.

The largest share of the budget is allocated to staff cost. All Member States' EMAS representatives were asked to share information on the resources used to manage EMAS on national/regional level (see Table 55). The number of full-time employees designated to EMAS ranges from 0 to 20 with the vast majority of Member States having max. two employees. Most Member States range between 0.5 and 2 employees.³⁹

Table 55: Key data on Member States' EMAS organisational setting

Group ⁴⁰	Country	Registered Organisations	Competent Bodies	Accreditation/ Licensing Bodies	Employees (FTEs)	EMAS Register
High registration	Austria	249	1	2	2	Yes
Medium registration	Belgium	47	3	N/A	1.5 (0.5 per Competent Body)	Yes
Low registration	Bulgaria	3	1	1	1 part-time	Yes
Medium registration	Cyprus	5	1	3	1	N/A
Low registration	Estonia	3	1	1	2 part-time	Yes
Low	Finland	8	1	1	1	N/A

³⁹ Employees are defined as full-time equivalents.

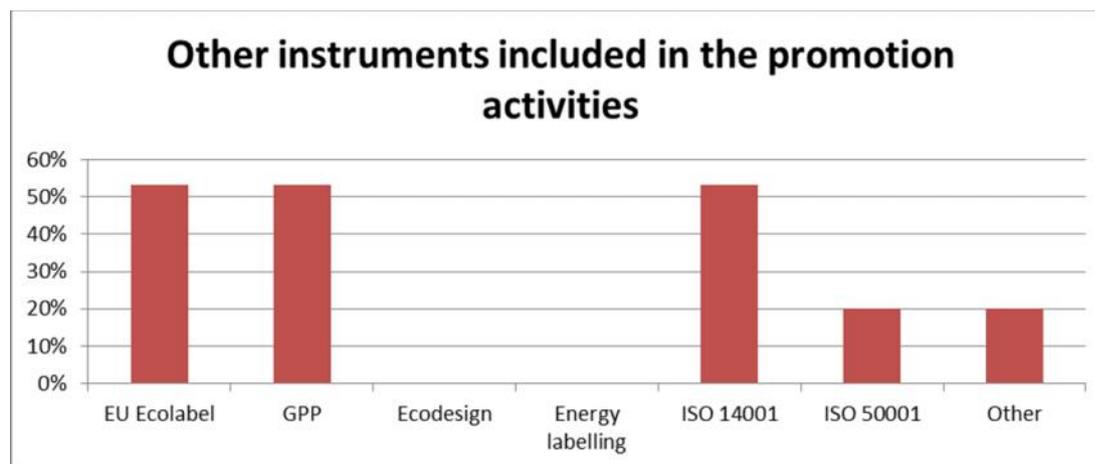
⁴⁰ Member States with high registration numbers: more than 200; Member States with medium registration numbers: 20-199 registrations); Member States with low registration numbers: less than 20.

registration						
High registration	Germany	1,240	1 (national) 40 (regional)	1	N/A	Yes
Medium registration	Greece	44	1	1	1.5	Yes
Medium registration	Hungary	20	1	3	1	Yes
Low registration	Ireland	5	1	0	1 part-time	Yes
High registration	Italy	1,190	1	1	about 10	N/A
Low registration	Lithuania	10	1	1	1	Yes
Low registration	Malta	1	1	1	1	No
Low registration	Norway	21	1	1	1 part-time	Yes
Medium registration	Poland	26	1	1	1 full-time 1 part-time	Yes
Medium registration	Portugal	68	1	1	3 part-time	Yes
Low registration	Slovakia	5	1	1	2 full-time 1 part-time	Yes
High registration	Spain	1,258	1 national 19 regional	1	approximately 20	No
Low registration	The Netherlands	4	1	1	N/A	Yes
Medium registration	United Kingdom	59	1	1		Yes

Only a few Member States, mainly those with federal structures and/or autonomous communities, operate with more staff – including Belgium (3 Competent Bodies), Germany (1 national Competent Body and 40 regional Competent Bodies) and Spain (1 national Competent Body and 19 regional Competent Bodies for its autonomous communities). The same can be said about the number of Accreditation and Licensing Bodies (although with slightly different numbers). As is the case for the overall budget, the number of employees designated to EMAS broadly correlates to the number of registered organisations. Again, this can be explained by administrative tasks which need to be carried out by Member State authorities.

Promotion activities are the second largest budget item.⁴¹ The budget size ranges from 0 to 37,000 EUR per year. The share of promotion costs in overall budget ranges from 0 to 50% (Portugal).⁴² Promotion costs in this context include those for having a website with EMAS content, a national EMAS register, organisation events or workshops or producing production materials such as publications or banners (further information in the following chapter). In the context of promotion activities' impact on the overall budget, it needs to be stressed that Member States' promotion activities also focused on other instruments (see Figure 36).

Figure 36: Which of the following environmental instruments are also included in these information and promotion activities?



In cases where other instruments were promoted by Member States, the two ISO environmental/energy management standards as well as the EU Ecolabel and GPP, both managed by the European Commission, were mentioned most frequently.⁴³ The success of these promotion activities is questionable given that focusing on the relationship with product policy tools, results of our study show little integration of EMAS with the EU Ecolabel, Energy labelling and Ecodesign in practice.

The final cost aspect addressed in the Member State representatives' questionnaire was the use of national EMAS registers. According to Article 12 of the EMAS Regulation, Member States (namely Competent Bodies) shall establish and maintain a national register of organisations registered in their Member States (European Commission 2009: 9). The vast majority of Member States which have provided an answer on this issue have set up a national register. No information on the costs of establishing and maintaining a register is available, but it is likely that especially in Member States with high registration numbers the management of the register is a significant budget item. Furthermore, Competent Bodies have to actively support the operation of an EU EMAS Register, which is, according to Article 43 of the EMAS Regulation, managed by the

⁴¹ Overall, 9 Member States provided quantitative data on their promotion budget as well as data on their overall budget.

⁴² It must be noted that for those cases where Member States have not reported any promotion budgets, it does not necessarily mean that no promotion takes place. In these cases, Member States may see promotion costs as part of their staff budget since employees carry out promotion activities.

⁴³ Fifteen Member States replied to this question.

European Commission. Streamlining this by focusing on one central register could be one way to cut administrative costs.

5.1.3.2. Benefits

In addition to analysing costs stemming from implementing and running the scheme on Member State level, the evaluation study also sheds lights on benefits on the side of Member States. However, as was the case with benefits on the organisational level, taxonomies of benefits are more difficult to develop than the ones for costs. This is partly due to the fact that “[...] benefits are at once the most apparent aspect of a regulation” (Renda et al. 2014: 31) since they are often stated as the reason for regulating.

In terms of direct benefits, the questionnaire addressed two aspects: firstly, the reduction of inspection and monitoring costs and secondly, the use of EMAS as a monitoring benchmark for government authorities. In both cases, no monetary value can be directly assigned. Nevertheless, by analysing these issues, the value of EMAS for Member States can be described more precisely.

Member State representatives’ were asked whether costs for inspections and monitoring affected when an organisation becomes EMAS registered (see Table 56).

Table 56: How are Member States’ costs for inspection and monitoring affected when an organisation becomes EMAS registered?

Response	Percentage of Respondents
Increase significantly	0%
Increase slightly	14%
Stay the same	57%
Decrease slightly	29%
Decrease significantly	0%

The majority of Member States’ representatives are not convinced when it comes to reducing cost (and time) for inspections and monitoring activities with regard to EMAS registered organisations. However, more respondents said that a slight decrease can be observed than those who thought that costs increased slightly. Nevertheless, the impact of EMAS can by no means considered high on this matter given that no respondent said that costs decreased or increased significantly.

An interesting indirect (spill-over) effect was mentioned by several Member States’ representatives in interviews. They remarked that EMAS registered organisations performed better with regard to complying with other legislation. This would support the argument that EMAS is providing added value in that an EMAS registration ensures legal compliance. However, only anecdotal evidence is available in this regard. Furthermore, it is not clear whether this applies to EMAS only or also to other/similar environmental management instruments (e.g. ISO 14001).

As already mentioned in the chapter public image and stakeholders (4.2), the majority of Member State representatives' does not use EMAS registered organisations as a benchmark in the environmental field.

This result is noticeable in that the scheme is perceived by adopters as a useful instrument to achieve performance improvement results, which was confirmed – for certain environmental issues – by the environmental statements analysis in this study. Survey responses do not shed light on the reasons for this result – whether it is an “on the ground” observation that EMAS registered organisations' environmental performance is not setting the benchmark or whether government authorities simply do not believe that this is the case (e.g. because they do not know EMAS at all – see further discussions on this in chapter 4.2). It is likely that this reluctance of public authority representatives to actively promote the scheme as a benchmark has an effect of the scheme's dissemination, e.g. in public policies.

Another indirect benefit mentioned by several Member States' representatives revolves around transparency created by participating organisations' disclosure of environmental data in the environmental statement. Again, it is impossible to assign a direct financial benefit to this. Nevertheless, against the background of an increasing amount of legislation in this regard (e.g. Directive on disclosure of non-financial and diversity information by certain large companies, amending the 2013 Accounting Directive), the fact that EMAS provides a platform of environmental reporting, including a validation process for published data, can be seen as a benefit for government authorities.

Furthermore, several Member States' representatives mentioned indirect employment and economic effects caused by EMAS, including environmental consultants, environmental verifiers and environmental managers in registered organisations.

Environmental consultants

Even though no official data on the number of environmental consultants exist, it is possible to provide an estimate of the overall turnover of EMAS consultancy services. The work of environmental consultants focuses on the initial implementation of the scheme. Hence the financial burden is greatest for organisations in their first year of EMAS registration. In the last five years since the introduction of the latest EMAS Regulation, every year around 200 organisations entered the scheme for the first time. In 2014, there were 4024 EMAS registered organisations (EMAS Helpdesk 2014) with a distribution of 20% micro organizations, 31% small, 30% medium-size and 19% large organisations. For the purposes of this study, this distribution is assumed to be representative also of new registrations in a given year. Based on the 2009 study on costs & benefits (Milieu and RPA 2009) the average sum of consultancy services for the first year is €3,712 for micro organisations, €6,316 for small, €5,957 for medium⁴⁴ and €7,773 for large organisations. The annual costs lie at approx. €1,005 for micro, €2,283 for small, €1422 for medium and €3,377 for large organisations.

With 200 organisations joining the scheme on average every year and 3024 organisations which have been registered under EMAS for at least one year or more (EMAS Helpdesk 2014), the estimated annual costs for EMAS consultancy services is approximately €8,750,000, with (~€1,190,000 accounting for 'first year' consultancy services and ~€7,560.000 for the annual consultancy).

⁴⁴ One would expect consultancy costs for medium organizations to be higher than for small organisations. Milieu and RPA (2009) suggest that the lower costs for medium sized organisations can be attributed to economies of scale.

This number is only a rough estimate as costs of external environmental consultants vary not only between sizes of organisations but also between public and private organisations and according to region (Northern European Member States, Southern European Member States, “new” Member States). Another shortcoming is the fact that estimates of environmental consultancy costs can differ considerably⁴⁵. It extends the scope of this study to take all these criteria into account, but the calculated figure already gives a reference point of the annual turnover of EMAS consultancy services.

Environmental verifiers

With the launch of EMAS in 1995, an entirely new profession was created. Currently, overall 418 environmental verifiers respectively environmental verifier organisations are official accredited/possess a license in Europe.⁴⁶ However, on the basis of a random sample it is valid to say that a considerable number of environmental verifiers/environmental verifier organisations also offer other services (e.g. with regard to ISO 140001 or ISO 50001), which means that EMAS is not solely responsible for the employment effect.

Previous studies (Milieu and RPA 2009; UBA and BMUB 2013) refer only to accumulated external costs which include validation/re-validation costs for external verifiers/auditors as well as registration costs and may also include additional external consultancy costs. Reliable figures of the annual turnover of environmental verifiers cannot be derived thereof. Another difficulty in calculating a reliable estimate for the costs of environmental verifiers lies in the fact that daily rates as well as man-days charged for each task differ considerably. The daily rate of environmental verifiers of € 950 that is taken as reference figure here, is an average that derives from Milieu and RPA (2009), UBA and BMUB (2013) as well as own research. For the purposes of the estimation it is assumed that all SMEs undergo a four-year cycle of verification and validation (as laid out in Article 7 of the EMAS Regulation), while large organisations have a three-year cycle. In reality, significantly fewer SMEs actually take advantage of the clause, since most of them are also ISO 14001 certified and this certification does not allow a four-year cycle. Hence, it can be assumed. Furthermore, it needs to be taken into account that large organisations undergo a three-year cycle of verification and validation while SMEs may have a four-year cycle of verification and validation. Each year alternating tasks are carried out by the environmental verifiers, hence costs also differ. Table 57 gives an overview of the costs of verification/validation in large organisations.

⁴⁵ An external expert has stated much higher figures than the ones from Milieu and RPA's study (e.g. 7,500-15,000€ for SMEs in their first year and 1,000-2,000€ of annual costs).

⁴⁶ Data was drawn from the EU EMAS Register (access: 15 December 2014). Given that in most cases environmental verifier organisations consist of various single environmental verifiers, the actual number of individual environmental verifiers is higher.

Table 57: The three-year verification/validation cycle: large organisations

3 year cycle	The environmental verifier is paid for:	Costs of the environmental verifier/environmental verifier organisation
First year	first registration	6,000 – 10,000
Second year	first maintenance verification	3,000 – 4,000
Third year	second maintenance verification	3,000 – 4,000
	renewal of the registration (new cycle begins)	6,000 – 10,000

In contrast to large organisations, SMEs can apply to undergo a four-year (instead of three-year) cycle of verification and validation. This gives them an advantage by decreasing their maintenance costs and is granted with Article 7 of the EMAS Regulation. However, not all SMEs apply for it and many therefore undergo a three-year cycle (the same as large organisations). This is often due to the fact that most of these SMEs also hold an ISO 14001 certification, which does not allow a four-year cycle.

In order to simplify the calculation of costs for the environmental verifiers, the assumption is made that all SMEs are undergoing the four-year cycle. An estimation of a core expert of this study indicates that only about 10-20% of all SMEs in reality apply for the reduced audit frequency. Hence, the turnover calculated below is likely to be substantially higher in reality. Table 58 gives an overview of the costs of verification/validation for SMEs.

Table 58: The four-year verification/validation cycle: SMEs

4 year cycle	The environmental verifier is paid for:	Costs of the environmental verifier/ environmental verifier organisation (in €)
First year	first registration	2,500 – 5,000
Second year	(The environmental statement is updated but no maintenance verification takes place)	0
Third year	first (and unique) maintenance verification	1,500 – 3,000
Fourth year	(The environmental statement is updated but no maintenance verification takes place)	0
	renewal of the registration (new cycle begins)	2,500 – 5,000

In total, there are 4,049 organisations registered with EMAS (EMAS Helpdesk 2014). The size of the organisations is as follows: 19% are large organisations, 28% are medium

organisations, 32% are small organisations and 21% are micro organisations. In the following these are only differentiated as large (19%) and SMEs (81%).

The financial turnover of environmental verifier activities per year can only be estimated, as reliable numbers on new registrations are only available from 2009 onwards. Hence, it is not possible to know at which phase of the 3 and 4 year cycles all of the 4,049 organisations currently stand. In order to allow for a calculation of the annual turnover of the environmental verifiers, the organisations are evenly spread out over the cycles. As could be seen in Table 57 (3 year cycle) and Table 58 (4 year cycle) the costs of the environmental verifiers/environmental verifier organisations differ in the different phases of the cycle.

Table 59 gives an overview of the estimated annual financial turnover of environmental verifier activities, deriving from the costs for SMEs and large organisations.

Table 59: Estimated annual financial turnover of environmental verifiers

Cycle	large organisations (769: 19% of 4,024)			SMEs (3,280: 81% of 4,049)			
	1st Year (33,3% of all)	2nd Year (33.3%)	3rd Year (33.3%)	1st Year (25%)	2nd Year 25%	3rd Year (25%)	4th Year (25%)
number of organisations (assumption)	256	256	256	820	820	820	820
costs verifier (in €)	8,000	3,500	3,500	3,750		2,250	0
total accumulated costs (in €)	8.708.137,2 €						

With all 4,049 organisations registered in EMAS distributed evenly over the different phases of the cycles (which is necessary in order to be able to calculate an estimate), the estimated annual financial turnover of environmental verifiers is 8.708.137,2€.

Environmental managers in EMAS registered organisations

The employment effect of environmental managers in EMAS registered organisation and the internal human resources needed is difficult to estimate, as there are no numbers on how many of them are employed part-time or full time. The EMAS costs and benefits study of 2009 (Milieu and RPA 2009) estimates average costs for internal staff per organisation with € 22,814 for the first year of registration and €14,410 annually. This includes implementation and maintenance costs. These figures must, however, be treated with precaution, as there are considerable variations across sectors and Member States.

5.1.4. Main findings

- Not much work has been done to examine the running costs of the scheme on the side of the European Commission or national/regional administrations as well as benefits
- The size of Member States' annual EMAS budgets varies considerably. The cumulative budget of those 14 Member States who reported numbers is 1 Million EUR
- Overall, the size of Member States' budgets correlates to their EMAS registration numbers in that Member States with higher registration numbers have a higher budget. A clear causal relationship cannot, however, be assumed.
- Based on questionnaire responses, Member States tend not to benefit financially from the registrations. In a few cases, however, the income they receive from registrations is higher than their total EMAS budget.
- The largest share of the budget is allocated to staff cost, followed by promotion costs and running national EMAS registers. The existence of both national registers and an EU-wide register indicate a redundancy and a potential area for cost-cutting
- In terms of direct benefits (e.g. the reduction of inspection and monitoring costs and the use of EMAS as a monitoring benchmark for government authorities), we could not determine a direct monetary value
- The majority of Member States' representatives are not convinced that EMAS registered organisations reduce cost (and time) for inspections and monitoring activities. They also do not use EMAS registered organisations as benchmarks in the environmental field. It is likely that this reluctance to actively promote the scheme as a benchmark has an effect on the scheme's dissemination, e.g. in public policies.
- In terms of indirect benefits, several Member States' representatives mentioned indirect employment and economic effects caused by EMAS, including environmental consultants, environmental verifiers and environmental managers in registered organisations.

5.2. Analysis of means invested appropriate in quantity and quality to achieve the defined objectives of this policy

Key points at a glance

- The latest revision process aimed to intensify the availability of policy support, e.g. in the form of regulatory relief measures or information and promotion campaigns, of both Member States and the European Commission
- The current EMAS Regulation is specifically clear on the fact that more support from both the EU and national regulators is needed to raise the effectiveness of the scheme, in particular the overall number of registered organisations
- In the survey and interviews, EMAS registered organisations and Member State representatives report the need for an increase in two specific types of promotion activities: those that increase the benefits for EMAS organisations (e.g. increased presence in legislation and regulation) and those that raise awareness of EMAS among external stakeholder groups such as regulators, customers and the wider public.
- Feedback from registered organisations shows that the lack of policy support for EMAS on both EU and Member State level is a key barrier to a better uptake and a cost efficient implementation of the scheme
- Similarly, organisations also desire Member States and the EC to engage in more promotion activities aimed at raising both regulators' and the general public's awareness of EMAS. Greater awareness would strengthen the competitive advantage brought through improved reputation and potentially increase EMAS uptake. In both interviews and the survey, organisations of all sizes reported general satisfaction with the work of their EMAS environmental verifier. The environmental verifier appears to be an important source of added value to the EMAS scheme.

5.2.1. Background and research aims

Based on the analysis of costs and benefits of the management of EMAS in the previous chapter, this chapter will analyse the role of key actors, including the European Commission, Member States and environmental verifiers, with special focus on the appropriateness of means invested by them to promote and facilitate the uptake of the scheme. Survey data on EMAS registered organisations will be used as judgment criteria to highlight the opinion of EMAS registered organisations on the activities carried out by these three EMAS key actors.

The latest revision process aimed to intensify the use of regulatory relief measures (Article 38), information and promotion activities of Member States and the European Commission (Article 33-36; 42; 44). According to the EMAS Regulation, one of the Member States' core tasks is to promote EMAS by establishing a promotion strategy which shall be revised on a regular basis. Furthermore, a benchmark with regard to the coherent application of the scheme in Member States is to what extent support policies focusing on regulatory relief and financial support used to promote EMAS. In fact, the issue of regulatory relief is directly linked to legal compliance. The EMAS Regulation expands on the requirements of the previous version. In the introduction of the current Regulation, it says that one of EMAS's general aims is that "the mechanism for

establishing an organisation’s compliance with all applicable legal requirements relating to the environment should be strengthened in order to enhance the credibility of EMAS and, in particular, to enable Member States to reduce the administrative burden of registered organisations by way of deregulation or regulatory relief” (preamble of the EMAS Regulation) Such a clear reference to this topic cannot be found in previous versions of the Regulation. Finally, another key question is what can be observed concerning the appropriateness of means invested by the European Commission and Member States, in quantity and quality, to achieve defined objectives (as mentioned above) of the EMAS Regulation.

5.2.2. The role of the European Commission

The 2005 EVER study (Iraldo et al. 2006), the Costs and Benefits study (Milieu and RPA 2009) and the EMAS Evaluation in Germany (UBA and BMU 2013) all analysed promotion activities at both the EU and Member State levels. On the European Commission level, they recommended more extensive integration of EMAS into EU legislation. This recommendation for more recognition in EU legislation was echoed in the 2012 EMAS in Germany Evaluation (UBA and BMU 2013), but also appeared more extensively in the EVER study (Iraldo et al. 2006).

The questionnaire followed up on this by asking EMAS registered organisations which activities the European Commission should be more strongly engaged in. Respondents indicated their opinions on three activities (see table 59 below) in which the European Commission could engage more strongly by giving a score from 1 (strongly disagree) to 5 (strongly agree). In the table below we ranked the 3 activities according to respondent’s scores. Values indicated in the following table refer to the mean of scores given by EMAS adopters.

Table 60: Activities in which the European Commission should engage more strongly

Activities in which the European Commission should engage more strongly	Value	Standard deviation
Integration and recognition of EMAS in European laws	4.38	0.80
Information activities	4.21	0.80
Promotion activities	4.15	0.90

The high ratings - an average value of over four means that most organisations agreed and many agreed strongly - and low standard deviations show widespread accord for both Member States and the European Commission to increase information and promotion activities. This desire for more promotion is not surprising, given organisations’ disappointment in stakeholders’ lack of EMAS awareness detailed earlier in this report. The strong emphasis on EMAS promotion in EU legislation indicates that, in addition to increasing the visibility of EMAS, organisations are hoping that its inclusion in European laws will bring additional regulatory benefits.

Interviews conducted with EMAS registered organisations have shed additional light on this matter. For example, a large EMAS registered organisation in a Member State with medium registration numbers said that mentioning EMAS in more national and EU laws "would only be useful if organisations are given financial incentives to adopt EMAS", including, "laws allowing EMAS registered organisations to have fewer or cheaper

inspections, a reduction in risk rating, or providing some sort of financial relief". Several interviewed organisations and Competent Bodies also mentioned that such regulatory changes providing financial relief were difficult to implement on a local, regional or even national level without first being present in EU legislation. According to a Competent Body from a country with low registration numbers, local and regional levels have difficulty providing policy support for EMAS "unless the decision is based on national or European legislation." This Competent Body cited the European Directive on Industrial Emissions (Directive EC 75/2010) as an example of such successful integration of EMAS into EU policy.

An EMAS organisation from a member state with high registration numbers expressed the same need for such a "trickle-down" integration of EMAS into environmental policy. With regard to the European Commission's role as the "guardian of the Treaties," the organisation recommended to "pressure Member States that are not doing enough EMAS promotion in their countries and that are not including EMAS in their environmental legislation". The organisation also felt the European Commission should encourage the creation of EMAS Clubs or similar organisations to disseminate knowledge on EMAS.

Highlight: Interview responses on policy support

Interview responses on policy support

"It would be useful to have EMAS mentioned in more national and EU laws, but that would only be successful if organisations are given financial incentives to adopt EMAS...EMAS has given us a clear benefit over ISO-14001 in terms of performance and a better ability to comply with environmental regulations, but has given little added value in terms of obtaining regulatory relief, fiscal benefits, or public procurement benefits." - large EMAS registered organisation in a medium registration country

"The only financial incentives we receive are through [this country's] energy efficiency law. Promotion and information activities are well done here but most public organisations do not have to take environmental standards into account at all. That change should come from the EU, as part of the road towards a real circular economy." - small EMAS registered organisation in a high registration country

"A key aspect [of the desired increase in EMAS promotion] is the systematic integration of EMAS into all EU environmental directives and regulations (the best added value of EMAS). If this is not done at EU level, then it's very hard to have EMAS recognized at Member State level or at regional legislation level." - small EMAS registered organisation in a high registration country

" [If we were to join EMAS] we would be looking for more economic incentives, such as tax breaks and reduced fees for other environmental permits linked with EMAS registration. Also more regulatory relief and more recognition when participating in public procurement." - large ISO 14001 certified organisation in a low registration country

"The EU should systematically and clearly include EMAS when developing environmental directives and to be sure that this is done at Member State level." - Competent Body representative from a high registration country

"The absence of regulatory incentives is the main reason for the low numbers of EMAS registrations [in this country]. It is not possible to decide on incentives at the local or regional level unless the decision is based on national or European legislation. The EU should increase its effort to better integrate EMAS in European legislation... the IED Directive can be an example..." Competent Body representative from a low registration country

Regarding stronger European Commission engagement in promotion and information activities, an EMAS registered company from a Member State with high registration numbers reported that “the European Commission has not granted EMAS the same recognition as other tools”. The organisation further added that “EMAS promotion activities at EU level have not been carried out strongly and, unfortunately, EMAS does not have the publicity that ISO 14001 has in economic sectors; therefore it is even more important to advertise and promote EMAS at different levels – economic sectors, public administrations and in society in general.”

Another EMAS registered organisation located in a Member State with medium registration numbers emphasised the importance of coordinated EU and Member State activities in combination with the cooperation with parties able to disseminate EMAS ideas: “the European Commission and Member States should work together on improving their promotion efforts. In addition, they should promote EMAS more with trade associations, public procurement contracts and by using EMAS themselves.”

5.2.3. The role of Member States

One of EMAS’s key objectives is to increase the number of organisations participating in the scheme so as to achieve a greater overall impact in environmental improvement. As outlined in chapter 4.1, three Member States (Germany, Spain, Italy) have more than 1,000 registered organisations. Austria has around 250 registrations. After these four Member States a large gap in registration numbers exists, with the next group of countries having 50 registrations each (United Kingdom, Denmark, Portugal, Belgium). Many have far fewer. Furthermore, different trends can be observed across Europe – in some Member States, registration numbers have declined gradually, while numbers in other countries have remained steady or increased.

Why are these disparities in the adoption rate among the different Member States appearing? How can we explain the different trends?⁴⁷

A possible answer could lie in the different means Members States invest in to incentivise and promote EMAS. In the EMAS context, different categories of means are observed:

- Financial support provided to (registered) organisations in the form of (among other things) subsidies or reduced fees, and
- Policy support in the form of referring to the scheme in legislative and administrative acts.
- Administrative support in the form of fast and user-friendly processes.
- Promotional support in the form of (inter alia) EMAS websites, brochures or workshops and trainings.

The questions raised above will be analysed from two perspectives: firstly from the perspective of EMAS registered organisations, and secondly from the perspective of

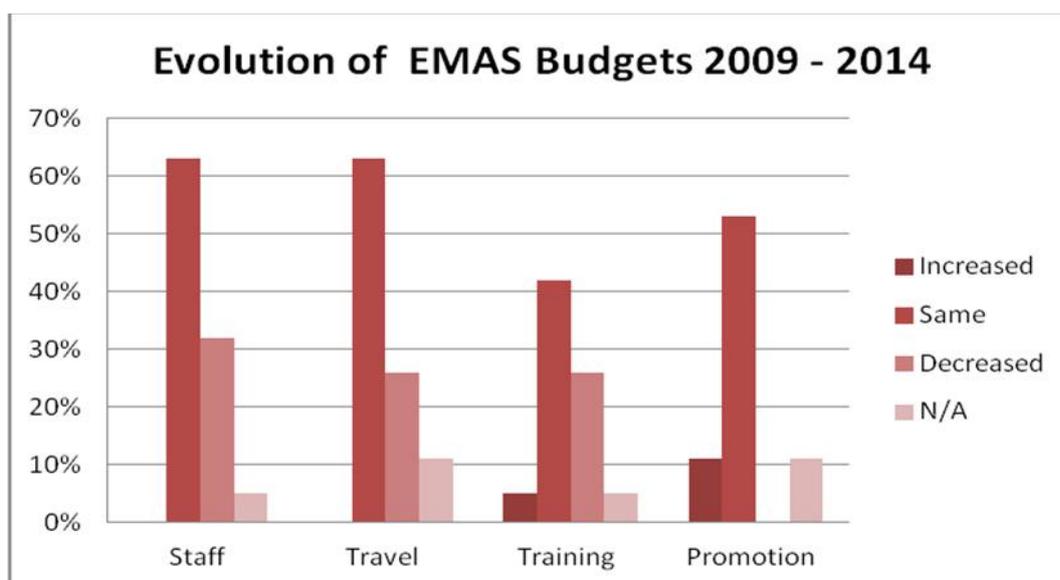
⁴⁷ Some restrictions have already been made with regard to making the link between high registration numbers and the successful promotion of the scheme.

Member State representatives responsible for managing EMAS on an administrative level.

Before analysing the means listed above, the overall budget trends will be analysed. As regards funding sources, there are often two different types of budgets – one covering Competent Body functions (e.g. through registration fees) and one covering promotion activities funded by the government.

One of the key findings of the survey of EMAS registered organisations was that an “expectation-reality gap” exists; EMAS’s users expected more support from policy makers (e.g. promotion activities) so that benefits can materialise. An analysis of changes in Member States’ EMAS budgets over the last five years, as reported in the survey of Member State representatives, shows that national budgets for EMAS have generally either decreased or stayed the same (see Figure 37). The survey considered the following four budget categories: staff expenses, travel, training, and promotion activities. Only in a small number of Member States has the budget for training or promotion increased (for 5% and 11% of respondents respectively).

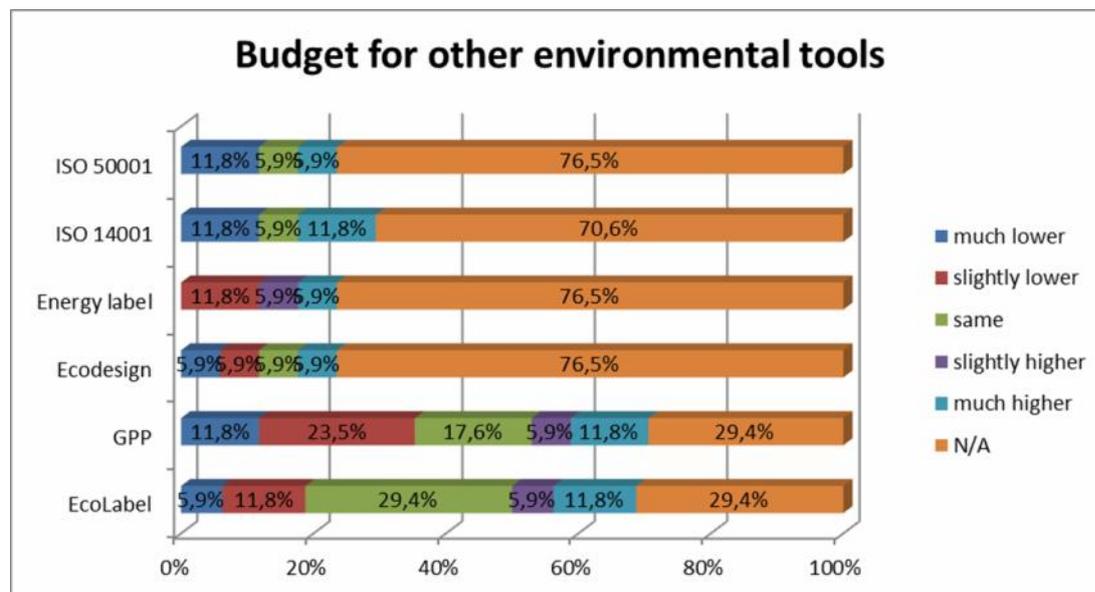
Figure 37: Budget evolution over the last 5 years



One reason for a budget decrease might be loss of interest in the scheme. As regards the reasons for the decrease of EMAS budgets, the Competent Body of a Member State with markedly low registration numbers and a clear downward trend over the past 10 years remarked that “the budget was much higher in the late 1990s, but declined after 2000 because EMAS was not catching on.” The Member State deemed the budget to be sufficient due to the relatively low interest in EMAS. This situation may then lead to a potentially self-amplifying effect – less interest in EMAS results in lower registration numbers, thus leading to a downward adjustment of the EMAS budget.

Member States’ representatives were also asked to state whether they have a higher or lower budget for other policy instruments when compared with EMAS. However, no clear picture emerged, with a large percentage of respondents reporting they did not have access to data on this question (see Figure 38).

Figure 38: Did you have a higher or lower overall annual budget for the following policy instruments when compared with the EMAS budget?



In fact, most Member State representatives managing EMAS are not managing policies related to other instruments, particularly ISO 14001, ISO 50001, Ecodesign and the energy labels. In the case of the ISO schemes, the results may also show that Member State involvement in the privately governed schemes is limited. In the cases in which Member States provided data, responses do not indicate a clear pattern. Only for the EcoLabel and GPP does enough data exist to draw conclusions. For the EcoLabel, the majority of respondents (excluding n/a answers) indicated that the budget is the same. Bulgaria, for example, has one full-time employee who covers both EMAS and EcoLabel (part-time for EMAS). The budget for each instrument is about €3,000. For GPP, the majority of respondents (excluding n/a answers) said that the budget was slightly lower or the same.

Interviews also gave only limited information as to whether the support of non-formal EMS weakens the position of EMAS. According to one representative of a Competent Body from a Member State with medium registration numbers, “resources seem insufficient, in particular those allocated to staff, communication and information activities”. According to the interview, larger budgets will be useful also for the promotion and provision of information of EMAS and human resources: “In fact, for our regional label, since there is greater interest from the region, a larger budget is available (for three people), while the adhesion of companies to EMAS is left to voluntary initiative without too much effort made to spur their interest.”

5.2.3.1. Financial support

The tables below classify the results according to Member State, listed by number of registrations in descending order. All Member States included in the following four tables belong to countries with either high or medium registration numbers. As in the previous section, only Member States with at least five responding organisations have been included in the table. One reason answers are not unequivocal in individual Member States could be that support schemes differ from region to region.

The table below (Table) highlights the highest rated answers on financial incentives,

Table 60: Financial subsidies to obtain the first EMAS registration: analysis per country

Economic subsidies to obtain the first EMAS registration	YES	NO
Germany	15.3%	84.6%
Spain	35.2%	64.8%
Italy	39.3%	60.8%
Austria	30%	70%
Denmark	0%	100%
United Kingdom	0%	100%
Belgium	0%	100%
Greece	44.4%	55.6%
Czech Republic	25%	75%

Financial subsidy for the first EMAS registration was the factor that received the highest percentage of affirmative answers (27.9% of the sample declaring that they had received such incentives). The results for the first seven Member States listed in this table are particularly interesting. For the four Member States with the highest numbers of EMAS registered organisations (Germany, Spain, Italy, Austria), anywhere from 15-40% of organisations reported receiving economic incentives to obtain an EMAS registration. In contrast, no organisations in the following three Member States, all with medium or low numbers of registrations, (Denmark, United Kingdom, Belgium), received subsidies. However, the cases of Greece and the Czech Republic do not follow this pattern: while some of the organisations located in these countries have reportedly benefited from economic subsidies (potentially because support is given to a organisations of a specific size or/and sector), these countries have considerably lower registration numbers than the four Member States with the highest number of EMAS registrations. However, it must be noted that the sample size for the last three countries was small.

The next two tables will show the reported incidence of two different types of economic incentive: subsidies to cover consultancy costs and the possibility of paying reduced administrative fees for the issuing of environmental permits.

In the case of consultancy costs (see Table 61), the results are consistent across Member States. Consultancy costs refer not only to activities related to achieving first registration (as analysed in the previous table) but also to costs incurred in maintaining EMAS. Activities include periodical internal audits, training employees, support in the updating of EMS, and support in drafting the environmental statement.

Table 61: Financial subsidies to support EMAS consultancy costs: analysis per country

Public subsidies to support EMAS consultancy costs	YES	NO
Germany	18%	82%
Spain	9%	91%
Italy	20%	80%
Austria	29%	71%
Denmark	0	100%
United Kingdom	9%	91%
Belgium	38%	63%
Greece	39%	61%
Czech Republic	25%	75%

We compared these results to the reported incidence of subsidies for the first EMAS registration (Table 60). While German organisations are more likely to benefit from funding for consultancy fees, the percentage of organisations benefitting in other countries with high registration numbers (Spain, Italy, Austria) decreases. In Belgium and the United Kingdom, where no organisations benefited from an incentive for first registration, subsidies to support consultancy costs were more widespread. Organisations can thus receive subsidies for other activities once they are registered and appear more likely to do so in Member States which do not provide financial support for first registration as widely.

The next table (Table 62) analyses another incentive adopted by Member States to support EMAS, namely the reduction of fees for the issuing of environmental permits.

Table 62: Reduced fees for environmental permits: analysis per country

Reduced fees for environmental permits	YES	NO
Germany	32%	68%
Spain	5%	95%
Italy	22%	78%
Austria	10%	90%
Denmark	0	100%
United Kingdom	27%	73%
Belgium	0	100%
Greece	6%	94%
Czech Republic	13%	88%

This table confirms several of the factors discussed above. Firstly, in Germany – the country with the highest number of registered organisations – investments are geared towards spreading EMAS by rewarding organisations that have already achieved EMAS registration rather than subsidising organisations looking to obtain their first registration. The opposite situation can be observed in Italy and Spain, where economic subsidies to obtain the first EMAS registration are more typical. Secondly, Member States with a medium number of registrations according to the grouping of Member States established in chapter (4.1) indicated in the table above are not investing in subsidies to convince organisations to adopt EMAS, but do provide some incentives for those organisations which have obtained the registration. Finally, there are some Member States that did not make any investments in EMAS subsidies at all – for Denmark, values in the previous three tables remained at zero.

When comparing the responses, all Member States included in the tables above appear to give financial support only to a minority of organisations surveyed. Interviews with Competent Bodies indicate one possible reason. According to one representative, “environmental authorities and public institutions do not see extra benefits in EMAS that could help decide whether to provide subsidies and incentives to the organisations. EMAS is seen as a tool with which to fulfil the requirements of the environmental legislation and to be aware of the environmental impacts of the organisations operations rather than a tool with which to protect the environment. They tend to point out other policies serving to improve the environmental quality of the country. On the other hand, representatives from the private sector (e.g. industrial associations) do not exert any pressure on the public institutions to approve incentives specific for EMAS registered organisations, the numbers of EMAS being so low.”

The representative concluded that “this absence is the main reason for the low number of EMAS registrations in the country, not only because the organisations will not have added advantages passing from ISO 14001 to EMAS, but also because they feel that the public institutions do not believe so much in EMAS.” Several other interviewees raised

similar views, indicating that the mix of low EMAS registration numbers relative to ISO 14001 and the lack of publicly created financial incentives for EMAS are both causes and effects of each other.

5.2.3.2. Administrative support

With regard to administrative support, one of the key aspects is related to the time needed by Competent Bodies to issue a registration after the validation of the environmental statement by the responsible environmental verifier. Most organisations involved in the survey affirmed that the time needed to obtain the official registration number after the application ranges from 1 to 3 months. However, out of eleven Member States (with more than five organisations having participated in the survey), there are three Member States (one with high and two with medium registration numbers) in which a considerably high number of organisations stated that more than 6 months are needed to obtain the registration number. It is thus evident that the process is not coherent across all Member States.

A representative of one of the responsible Competent Bodies confirmed that “the Competent Body as a public administration is perceived as a guarantor of reliability, but also as a bureaucratic measure which slows down activities. Some aspects linked to the procedure activities (controls, activity of environmental verifiers, role of the public body, etc.) discourage companies”. One of the key findings in this regard is that the establishment of regional Competent Bodies can help streamline processes, especially in Member States with high registration numbers.

5.2.3.3. Promotional and policy support

The 2005 EVER study (Iraldo et al. 2006), the Costs and Benefits study (Milieu 2009) and the EMAS Evaluation in Germany (UBA and BMU 2013) all analysed input from national organisations that promote EMAS in Member States. According to a sample of available literature, promotion activities in the Member States vary, depending in part on the country’s size, budget, and perceived potential for expanding EMAS. The Costs and Benefits study (Milieu and RPA 2009) assessed these promotional activities and concluded that they had less influence on EMAS registration numbers than cultural preferences or client demands had. The study instead recommended focusing on certain types of activities such as increasing regulatory and financial relief for SMEs, national EMAS award ceremonies, media campaigns about EMAS, increased presence at trade fairs and generating awareness and support of EMAS among environmental NGOs.

The EVER study identified the following point regarding EMAS’s image and awareness of EMAS among stakeholders: a lack of EMAS awareness, particularly among public institutions, presented a barrier to registration. The study thus recommended increasing EMAS promotional activities in the Member States, more integration of EMAS into EU and Member State laws, and increasing use of the EMAS logo to raise positive awareness. Additionally, the EVER study showed that promotional projects, even when not resulting in EMAS registration, left participating organisations with a very positive image of EMAS.

Included here under a very broad definition of promotion activities is also policy support, e.g. referring to the scheme in legislative and administrative acts. As highlighted in Chapter 4.3.5 on incentives, numerous studies conducted over the past two decades have found that public administration’s support of EMAS through regulatory and

legislative advantages play an important role in organisations' decision to join the scheme and should be enhanced (Wätzold et al. 2001; Iraldo et al. 2006; Milieu and RPA 2009; SSSUP 2013). The project team also included questions about EMAS promotion activities in the online survey of EMAS registered organisations, in the questionnaire for EMAS Member State representatives and in interviews. From the results described in the previous sections and the discussions with EMAS stakeholders, the need appears for effective promotion activities to address two separate issues: increasing general awareness of EMAS among all types of stakeholders, including customers and regulators; and increasing organisations' awareness of and desire to join EMAS. Both aspects are discussed in the following section and will help to inform the discussion on the future of EMAS in the next part (Task 4) of this study.

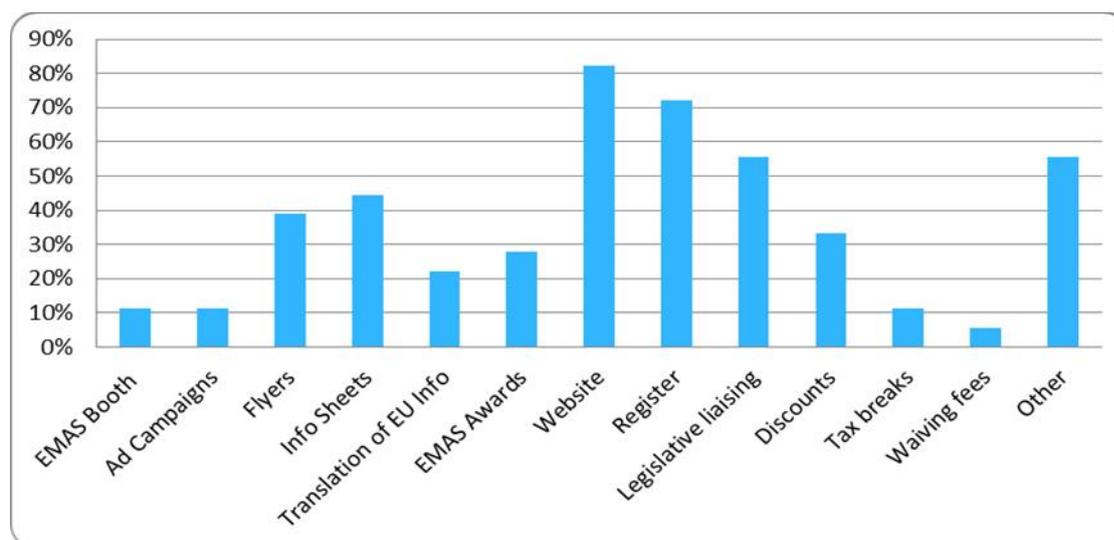
In order to judge whether or not organisations feel EMAS would benefit from additional promotion, section 10 of the online survey (see Annex I) asked EMAS registered organisations several questions about Member State and European Commission support for EMAS. The first enquired as to which types of activities Competent Bodies and Member States should engage in more strongly. Information and promotion activities topped the list, differing little according to geographic distribution and the size of the organisation. Again on a scale of 1 (strongly disagree) to 5 (strongly agree), information activities received an average score of 4.2 and promotion activities a score of 4.1 (see Table 63).

Table 63: Which of the following activities should the Competent Bodies and/or Member States engage in more strongly?

	Value	Standard deviation
Information activities	4.2	0.8
Promotion activities	4.1	0.9
Assistance during EMAS implementation (e.g. provide check list to carry out internal audits, provide a scheme for the drafting of the environmental statement)	3.9	1.0
Training sessions	3.9	0.9
Contact with verifiers, consultants and/or other registered companies	3.7	0.9

When asked about how they promote EMAS in their countries, Member States report a wide variety of such activities (see Figure 39). Some are reported with a significantly greater frequency than others. 15 of the 16 Member states responding (82%) have a website promoting EMAS, while 13 (72%) maintain a national register of EMAS registered organisations. 56% participate in legislative liaison at the national level, with the same percentage reporting that EMAS is promoted in certain national environmental and energy laws. Less than half, however, distribute and/or translate information sheets and fliers, run advertising campaigns, have EMAS booths at industry fairs, or provide financial incentives to EMAS registered organisations. Additional activities reported by a few individual Member States include EMAS conferences and workshops, exemptions from gas and coal duties, the integration of EMAS into sectoral operational or climate protection programs, and campaigns targeted at specific groups (e.g. SMEs, organisations in the waste sector).

Figure 39: What kinds of activities are carried out in your Member State under Articles 33 and 34 of the EMAS Regulation? ⁴⁸



Most of these activities aim to increase awareness among potential EMAS registered organisations significantly more than among other stakeholders. This goal is key to the scheme's success and appears to be at least partially achieved: nearly 40% of the organisations participating in our survey learned about EMAS through institutional channels such as Competent Bodies. This is backed by information collected from interviews, detailing that for many new Member States, EMAS promotion activities and training/consultation events have led to additional EMAS registrations. In Estonia, for example, most registered organisations first heard about EMAS through such projects and were encouraged to join as a result. The next most common source of information about EMAS – technical or scientific reports or conferences – had created awareness in only 14% of organisations.

Despite the considerable role that Member States in general and Competent Bodies in particular play in informing organisations about EMAS, no clear links appear between the number or type of general promotion activities and recent trends in registration numbers. As shown in the EMAS in numbers chapter, Member States have experienced different registration trends in the past decade.

Germany, with its extensive catalogue of promotion activities⁴⁹, amounting to more than any other Member State⁵⁰, has nonetheless experienced a slight decline in registration numbers in recent years. Spain, on the other hand, increased its number of EMAS registered organisations for much of the last decade. The Spanish government authority responsible for EMAS reports engaging in only four types of promotion activities: national EMAS Awards, website, info booths and legislative liaison, which has resulted in EMAS's promotion in several Spanish environmental regulations.

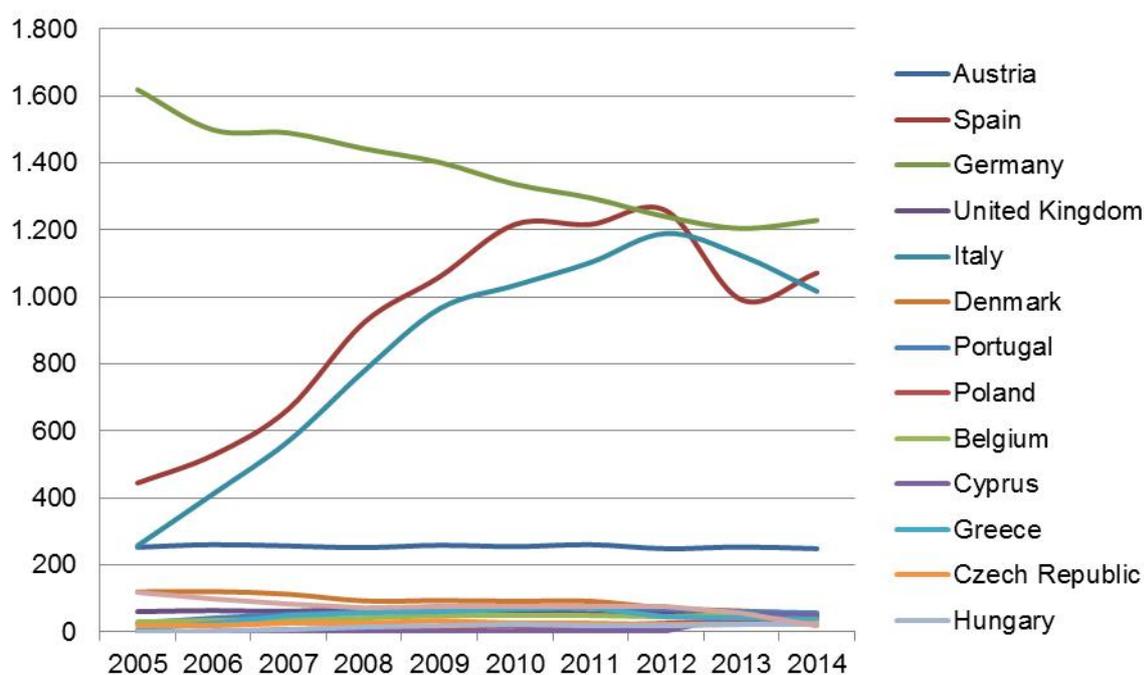
⁴⁸ Overall, 16 Member States responded (one partly).

⁴⁹For an overview of Germany's promotion activities and incentives for EMAS registration (in German), see: http://www.emas.de/fileadmin/user_upload/06_service/PDF-Dateien/EMAS_Foerderung_und_Privilegierung.pdf

⁵⁰According to the information obtained in the survey of Member States.

Spain's success may be the result of focusing on more effective types of promotion activities. However, a number of confounding factors make asserting a connection between Spain's promotion activities and its EMAS registration numbers impossible. These include, for instance, cultural differences, differences in business climates - including export orientation – and the fact that Spain has 19 regional Competent Bodies which also engage in a number of separate and more localised promotional activities.

Figure 40: Number of EMAS registered organisations in countries with high and medium number of organisations, from 2005 to 2014



Source: EU EMAS Register; German national EMAS register.

When looking at Member States' responses in the interviews and questionnaire, a small correlation did appear between countries' numbers of registrations and their average number of promotion activities. Countries in the high registration group participated on average in 6.5 different activities, while those in the medium registration group had 5 on average, with low registration countries reporting slightly more than 4 activities. Although more activity may indeed correlate somewhat with higher levels of success, these small differences are not conclusive. Additionally, not all Member States reported their activities, for which they have widely varying designated budgets.

More significantly, countries with low registration numbers could be engaging in fewer promotion activities because they have had little success with promotion in the past. In interviews, several Member State representatives confirmed this was the case for their countries. For example, a Member State with medium registration numbers felt that its extensive promotion activities in the late 1990s and early 2000s did not result in increased awareness of EMAS among stakeholders or in higher rates of EMAS uptake. Another Member State with medium registration numbers – with similarly unchanging numbers of EMAS registrations – described a similar situation. Certain countries on the other hand have only been part of the EMAS initiative for a few years, and clear registration trends cannot yet be identified.

Our results thus do not indicate a strong connection between the number of promotion activities in a particular country and its number of registered organisations. However,

Interviews with Competent Body and Member State representatives highlight that certain types of activities have been particularly successful both at increasing awareness of EMAS among certain stakeholder groups and at increasing EMAS registration numbers. These include campaigns and policies targeted at specific sectors (e.g. the waste sector in Poland and tourism in Spain). The Italian Competent Body also mentioned having increased awareness at low cost by cooperating with local authorities, schools and universities on EMAS research and information activities.

Although these promotion activities have contributed to increased EMAS registrations in Poland, Spain and Italy, those countries also emphasised that general awareness of the scheme remained relatively low and a barrier to EMAS's success. Indeed, all responding Member States indicated the need for more promotional activities at the EU level to provide organisations with incentives to join EMAS and to increase Europe-wide awareness of the scheme. As discussed above, EMAS registered organisations share this view, particularly with regard to EU legislation. One Member State mentioned the Directive on Industrial Emissions (IED Directive 75/2010) as a recent example of successfully increased registration numbers, while the Directive on integrated pollution and prevention control (IPPC Directive 2008/1/EC) was mentioned as a missed opportunity.

Both the EVER (Iraldo et al. 2006) and Costs and Benefits (Milieu and RPA 2009) studies on EMAS also strongly recommended the increased presence of EMAS in relevant legislation. However, in our study, only 56% of Member States reported participating in legislative liaison for this purpose. Although relatively common compared to other activities, this option appears not to be employed to its fullest potential at either the EU or the Member State level. As Article 38 of the EMAS Regulation already foresees Member States providing such regulatory relief and/or advantages, a challenge appears to be enforcing a more uniform application of that Article throughout the EEA.

The table below sheds light on whether registered organisations participating in the survey felt that the Member State in which they are located is promoting EMAS in legislative and administrative acts.

Table 64: Promotion of EMAS in legislative and administrative acts: analysis per country

Does the Member State (i.e. the Member State in which your organisation's headquarters is located) promote EMAS by referring to it in legislative and administrative acts (e.g. laws on energy efficiency)?	No	Don't know	Yes, partially	Yes, significantly
Germany	6%	19%	64%	10%
Spain	37%	17%	38%	8%
Italy	30%	16%	49%	4%
Austria	17%	17%	67%	0
Denmark	20%	20%	60%	0
United Kingdom	44%	44%	11%	0

Belgium	25%	0	50%	25%
Greece	20%	7%	60%	13%
Czech Republic	0	14%	71%	14%

In some cases like Germany and Austria, the data confirms the hypothesis that policy support as defined above correlates with high EMAS registration numbers. In contrast, in Member States in which surveyed EMAS users felt less policy support, registration numbers are considerably lower (e.g. United Kingdom). However, the situation is less clear for Italy and Spain. For these two Member States, results indicate a balance of negative and positive answers (mainly "yes, partially"), yet both are Member States with more than 1,000 registered organisations.

One possible explanation lies in the fact that some regional legislation provides support for EMAS. In Italy, for instance, regions such as Tuscany, Emilia Romagna or Lombardy have adopted several measures to promote EMAS in legislation, whereas other regions have not. One Competent Body representative confirmed this situation, stating: "The planning of inspections and the technical documents that must be submitted to request a permit and the issuing of the permits are managed at regional and local level. Municipalities and regional authorities are also the frontline authorities, working in close contact with the companies discussing and receiving administrative requests."

According to interviews with Competent Bodies and Member State representatives, it is frequently not possible to decide on incentives at the local or regional level unless the decision is based on national or European legislation. For this reason, it is very important for policy makers that the simplification initiative starts at the highest level of administration.

A recent positive example in this field is given by the approval of the European Directive on Industrial Emissions (IED Directive 75/2010). It foresees EMAS registration being taken into consideration as a means to reduce the frequency of environmental inspections in the companies within the scope of the Directive." The statement also makes the case for a coherent approach to policy support which must be implemented in a top-down manner.

Identifying a clear correlation between specific policy measures and an increase in registration numbers is difficult to do merely by looking at survey data. The project team also carried out interviews with Member State representatives to shed light on the impact of policy activities on registration numbers, particularly those which give EMAS priority over other environmental management instruments (like ISO 14001). As pointed out by Wätzold et al. (2001), regulatory relief and policy support may only be successful at increasing EMAS registration numbers when targeted specifically and exclusively at EMAS registered organisations.

Examples of policy initiatives

In Poland, for example, the Competent Body has recently aimed a number of promotion activities and incentives at the waste sector. Registrations in this sector increased by over 250% in the past two years and now account for nearly 25% of all Polish EMAS

registrations⁵¹. The Polish Competent Body explained that the Polish waste sector is a particularly good match for EMAS because of its need for frequent inspection. Activities in this campaign resulted in a waste packaging act that requires audits by a qualified EMAS environmental verifier. EMAS coverage in legislative acts includes:

Act of 13 June 2013 on packaging and packaging waste

One of the new obligations introduced by this legal act was the obligation for packaging waste companies to carry out an annual external environmental audit. EMAS environmental verifiers were appointed to be only auditors which will be able to perform those compulsory audits. Obligation for companies to submit external audits takes effect starting from 2017. However, this does not mean that those companies will be obligated to register in EMAS.

Act of 14 December 2012 on waste

The act introduced exemption from the registration fee for the new register for waste management sector. A new register will be created in 2016. The use of environmental management instruments like EMAS or ISO 14001 is regarded as one exemplary measure of waste prevention.

Act of 29 August 2014 changing the act on batteries and accumulators

A new act adopted in 2014 obligates brokers in the battery recycling industry to achieve an EMAS registration or ISO 14001 certification.

Draft act changing act of 29 July 2005 on waste electrical and electronic equipment

The draft act on new regulations concerning waste electrical and electronic equipment aims at introducing the same obligation as is already included in the packaging waste act. Waste of Electrical and Electronic Equipment (WEEE) recovery organisations as well as WEEE treatment facilities will be obligated to carry out an annual external environmental audit. Once again, only EMAS environmental verifiers will have the competence to perform those audits. The draft act is still not adopted.

In addition to including EMAS in policies, Member States also included provisions in laws designed mainly to spur interest in the scheme (in comparison to ISO 14001, for example). The German government has recently transposed the Energy Efficiency Directive into national law. According to the new law, a wide range of companies (except for SMEs; overall approximately 50,000) are required to carry out an energy audit according to EN 16247. A qualified expert needs to carry out the audit every four years. As an alternative to EN 16247, Energy Management Systems (EnMS) certified according to ISO 50001 or registered under EMAS are eligible equivalents. EMS certified under ISO 14001 are not eligible.

The Austrian government has introduced a provision in GPP law which gives priority to EMAS over other environmental management standards. According to a Member State representative involved in managing EMAS, the policy initiative has led to an increase of EMAS registrations in the cleaning services industry.

⁵¹Source: EU EMAS register (<http://ec.europa.eu/environment/emas/register/>) listing all registrations for Poland under the NACE code 38.

In Italy, one of the main simplifications introduced in the granting of permits relates to companies that fall within the scope of the Integrated Pollution Prevention and Control (IPPC) Directive (Directive 96/61/EC, currently Industrial Emissions Directive 2010/75/EC). The legislator provides for a longer-lasting Integrated Environmental Authorisation for certified companies. In particular, the standard 5 year duration of this authorisation is extended to 6 years for ISO 14001 certified companies and to 8 years for EMAS registered companies (Daddi et al. 2014).

A similar approach is established in Article 6 of Legislative Decree 2009/2003 and in Article 10 of Legislative Decree No. 36/2003. The first decree implements Directive 2000/53/EC on end-of-life vehicles; the second decree applies Directive 1999/31/EC on waste landfills. In these two cases the duration of the authorization for treatment plants for end-of-life vehicles and waste landfills is increased from 5 to 8 years for EMAS registered companies, while no extension is planned for those companies that have only the ISO 14001 certification (Daddi et al. 2014).

An additional benefit of an increased presence of EMAS in legislation would be to raise awareness among stakeholders other than EMAS registered organisations. As discussed above, most promotion activities focus on increasing numbers of EMAS registrations, which is both important and necessary to the success of the scheme. EMAS registered organisations, however, report that they would experience more benefits and fewer barriers if EMAS were also more widely promoted to other stakeholder groups such as regulators and the general public. Furthermore, as outlined in the chapter on public image, external pressure preconditions external stakeholders' knowledge about the scheme and can be a significant driver of EMAS implementation in the first place.

A further aspect of this promotion among stakeholder groups is the role that registered organisations' environmental statements play as a communication tool to demonstrate an organisation's environmental performance. Evidence collected in the context of this study suggests that a lot more could be done to improve this use. In the questionnaire sent to EMAS registered organisations, respondents were asked to indicate their level of agreement with several EMAS communication activities pertaining to the EMAS environmental statement and EMAS logo. Out of ten possible responses, the following relate directly to environmental statements as a communication tool:

- In its environmental statement, my organisation communicates the environmental innovations it has adopted.
- My organisation uses its environmental statement to report the environmental performance of its products and services.
- The environmental statement is used as a tool toward other stakeholders (e.g. public authorities, industrial associations, local community).
- My organisation uses the data and indicators in its environmental statement or EMS for the development of green claims, advertising, CSR reporting, etc.
- The environmental statement is used as a marketing tool (e.g. toward customers, clients, suppliers).

Though respondents ranked all these statements positively (between 3 and 4, with 5 being the highest value), all but the first had noticeably high standard deviations, indicating that respondents were divided about their accuracy. Organisations do not appear to be convinced that their environmental statements are effective marketing tools. Findings from the interviews confirmed this impression. In a Member State with high registration numbers, organisations reported that a lack of interest from the general public and clients in their environmental statements, in part as a result of the statements' complexity.

In contrast, certain types of activities (such as legislative liaising and the organisation of EMAS Awards) appear particularly suited for raising EMAS's profile and bolstering its image among a number of groups. Only the European Commission and a few high registration Member States currently have EMAS Awards, most likely for practical budgetary reasons. When making a decision at EU or national level on (future) promotion activities, these different types of activities should certainly be evaluated individually for their impact both on target organisations and other groups of stakeholders.

5.2.4. The role of environmental verifiers

According to the European Commission and Member States, the verification and validation process carried out by accredited or licensed environmental verifiers is one of the features of EMAS that sets the scheme apart from ISO 14001⁵². The verification and validation process is praised in conjunction with the scheme's focus on continuous improvement of a registered organisation's environmental performance, in that third-party audits determine whether the planned improvements to environmental activities have been achieved – while ISO 14001, according to European Commission and Member States' statements, focuses on improving the management system⁵³. The key question is thus whether EMAS creates added value in this regard and whether the verification and validation process led by environmental verifiers is effective in the sense that it helps EMAS registered organisations achieve environmental performance improvements.

The role of the external environmental auditor and its relevance to organisations in the certification process has been debated by practitioners and academics alike. There are no academic and technical studies on EMAS environmental verifiers in particular, but some papers do analyse the certification process in the context of ISO 14001. Taking into account the similarity of the two schemes, as well as that processes and the high frequency with which external environmental auditors are qualified for both ISO 14001 and EMAS, the following section will report the main findings of these studies. In the subsequent section, we will highlight the opinions of EMAS registered organisations on the work of environmental verifiers.

5.2.4.1. Previous research

There is conflicting evidence on the effectiveness and robustness of the certification/registration process, revolving around two issues: 1) the question of whether the ISO audit focuses on simply acquiring the certificate rather than improving performance and 2) whether auditors carry out their work in a truly independent and objective manner. Neo-institutional theory highlights the importance of institutional and social pressures to the implementation of practices which lead to obtaining or improving organisational legitimacy (Di Maggio and Powell 1983, Scott 2001). Moreover, in some cases, implementation of these practices is superficial and oriented towards adapting the organisation to external pressures, rather than to improvements in efficiency (Meyer and

⁵² http://www.emas.de/fileadmin/user_upload/06_service/PDF-Dateien/Creating_Added_Value_with_EMAS.pdf

⁵³ http://www.emas.de/fileadmin/user_upload/06_service/PDF-Dateien/Creating_Added_Value_with_EMAS.pdf

Rowan 1977, Townley 2002). This theory could also be applicable to the certification process (i.e. to the external audits) where it leads to an improvement to an organisation's image. According to this approach, some studies (Boiral 2007, Delmas 2002, Jiang and Bansal 2003) found that the ISO 14001 standard is adopted in response to marketing and commercial pressures.

According to Boiral (2012), the process of acquiring social legitimacy through the audit and the certification process (considered as a rigorous and serious activity) has some similarities to the acquisition of academic degrees. Indeed, academic degrees determine social legitimacy and require examination to confirm knowledge and competencies. It is for this reason that Boiral affirmed that ISO certification could be considered a kind of "organisational degree" achieved after an exam (the certification audit) carried out by independent auditors. Just like students, organisations' managers aim to achieve certifications mainly as a form of degree, and secondarily as a tool for improvement. Boiral (2012) highlighted this as it is for this reason that ISO certification could result in a symbolic response to stakeholder's requests and improvements to company image. And it is in this context that the certification audit is usually seen as similar to a passing grade in an exam. Boiral focused on the symbolic aspects of all the processes involved in achieving ISO certifications, exploring these through the degree-purchasing syndrome (DPS) theory in education. DPS theory posits that students' objectives are more to acquire a diploma than to learn and know that which the degree concerns. Boiral's empirical work focused on the way members of organisations interpret certification audits and perceive the activities to prepare audits. Data refer to 60 managers of 60 ISO 9000 certified organisations. The paper confirmed the DPS theory, stating that certification audits are not always rational, rigorous and reliable. The study also noted the lack of auditor independence. The study also confirmed the short duration of audits and the predictability of audit activities.

Similarly to Boiral, Power (1996, 1997, 2003) emphasised that the academic image of audits is exaggerated and that the rigour and independence attributed to auditors aims mainly to improve the stakeholders legitimacy.

Contrary to this view, there are also studies which affirmed that the implementation of ISO 14001 is not necessarily led by these external pressures (Aravind and Christmann 2011, Heras-Saizarbitoria 2011, Boiral, 2007). Some organisations aimed at an ISO 14001 certification for reasons other than external pressures to implement EMS and are thus successfully improving their internal environmental management practices (Boiral 2003, 2007, Walgenbach 2001).

Another aspect to consider is that organisations aim to show a rigorous, autonomous and independent commitment to environmental issues in order to improve social legitimacy. In this sense, audits of certifications aim to achieve this through an audit and verification procedure which is carried out independently (Mil-Homens 2011, Power 1997, Boiral and Gendron 2011). Audit activities determine the social legitimacy of organisations due to a verification process that is considered to be rigorous, independent and impartial (Martin 2007, Moore et al. 2006, Power 2003). Indeed, external audits and auditors need to be independent from the audited organisations if they want to be credible (Ammenberg et al. 2001, Andrews et al. 2001, Burdick 2001). The independence of the auditors requires the absence of external pressures or personal relationships that could undermine the impartiality of the auditors. Regarding ISO 14001 audits, Lang (1999: 112) defined independence as "the objective and unobstructed inquiry by an independent environmental auditing function to avoid potential conflicts of interest and the marring of the objectivity by personal relationships" (Dogui et al. 2014). The meaning of auditor independence consists of a distance between auditor and auditee (Dogui et al. 2013). Further regarding the audit process, the ISO 19011 standard on quality and EMS audits defined auditing activity as "a systematic, independent and documented process for obtaining audit evidence and evaluating it objectively to determine the extent to which

audit criteria are fulfilled" (ISO 2002: 1). Darnall et al. (2009) stated that external audits are transparent and credible.

Contrary to those studies that take the independence and the objectivity of external audits activities for granted, some empirical studies on ISO 14001 consider audit procedures to be too superficial and non-objective.

Heras-Saizarbitoria et al. (2013), for example, analysed to what extent ISO 14001 certification audits can be independent and rigorous, and if external audits regarding the ISO 14001 standard are performed according to a consulting or a conformance perspective. Another aim of that study is to explore to what extent external audits regarding ISO 14001 consider substantial improvements of environmental performance rather than EMS procedural factors. The focus of the study is on 36 Canadian professionals involved in ISO 14001 audits. Many of the study's findings suggest that ISO 14001 audits are not unambiguous and objective. Rather, certification procedures seem elastic, with flexible application of the standard's requirements. Moreover, the article found that audits have a focus on procedural rather than substantive aspects of EMS, in line with the "EMAS added value" claim presented at the beginning of this section. In this sense, Heras-Saizarbitoria et al. (2013) called the reliability of the certification procedure of ISO 14001 standard into question.

Similar to these results, Ammemberg et al. (2001) found that ISO 14001 auditors applied the key requirements of the standard in different ways. The study focussed on all auditors belonging to Swedish certification bodies. Zutshi and Sohal also observed external audit procedures to be non-objective and non-rigorous (2002). They analysed the experiences of the implementation of the standard among Australian ISO 14001 external auditors. The study found that auditors had at times a lack of knowledge of organisations' real and perceived benefits from EMS. Further work on the independence of ISO audits is provided by Dogui et al. (2014), who explored the effects of audit fees and clients' financial power on the independence of ISO 14001 auditors. The external auditors' independence could indeed be affected by the contractual and business relationship between the organisation aiming to obtain certification and the certification body, characterised by the remuneration paid by the company seeking certification. The study is based on the analysis of ISO 14001 auditors' perceptions of the effect of payment methods and the size of organisations on their independence. The research found that most auditors legitimise the remuneration system used by the client organisation to pay the certification body. Consensus on the actual method of auditors' remuneration is accepted by some studies (DeFond et al. 2002, Umar and Anandarajan 2004). Nevertheless, Dogui et al. (2014) also found that some respondents recognise that the form of remuneration is also a threat to the auditors' independence. Indeed, the study also showed that auditors in some cases adapt their behaviour to the client's economic means and the size of the company. Similarly, some authors found that financial auditors are usually influenced by commercialism (Covaleski et al. 1998, Gendron and Spira 2010, Kornberger et al. 2011, Suddaby et al. 2007), clearly calling their independence into question.

On the contrary, part of the literature pertaining to finance issues stated that the current method of auditor remuneration allows the auditors to operate objectively and independently (Craswell et al. 2002, DeFond et al. 2002, Umar and Anandarajan 2004).

Dogui et al. (2013) aimed to explore how the concept of auditor independence is constructed within the network of ISO 14001 stakeholders (auditors, consultants, and managers of certified organisations). The study claims that "sense-making strategies" are used to determine levels of confidence in auditor's professional independence. In the study, the authors conducted 36 interviews, exploring how perceptions of independence were constructed in ISO 14001 auditing. Results showed that interviewees use sense-

making strategies to build up trust that ISO 14001 audits live up to the professional requirements of auditor independence. The construction of this trust is guided by stereotyped and procedural mechanisms “collectively mobilised in the production of a comfort culture around the concept of auditor independence.”

As previously stated, the issue of auditor independence and the supplier-customer relationship between external auditors and certified companies is hotly debated. The current study has further investigated this issue.

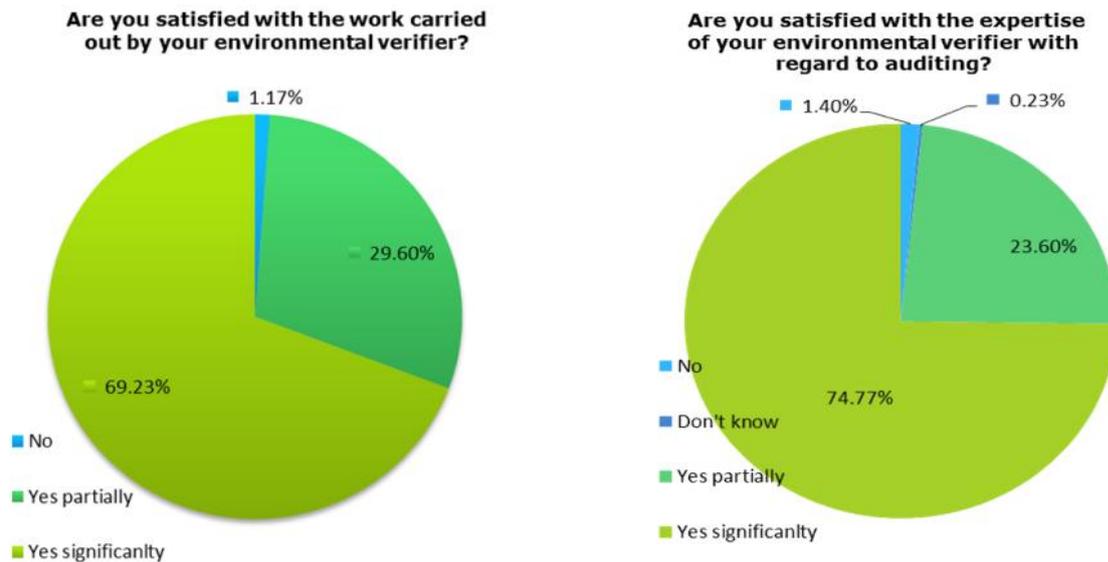
5.2.4.2. Results

In this section we report the results of the section of the survey aimed at assessing the role of a key player in the management of EMAS on government level: the environmental verifier.

To shed some light on the role of the verifier, the online questionnaire posed seven different questions to EMAS registered organisations, using a qualitative approach to investigate various topics such as the added value given by the external audit and the costs and the competence of environmental verifiers. As usual, when deemed relevant, we present the data breakdown in this section, classified according to size and geographical range.

The first two questions aimed to assess the satisfaction of EMAS registered organisations with the work done by the environmental verifiers.

Figure 41: Satisfaction of interviewed EMAS registered organisation with environmental verifiers’ work



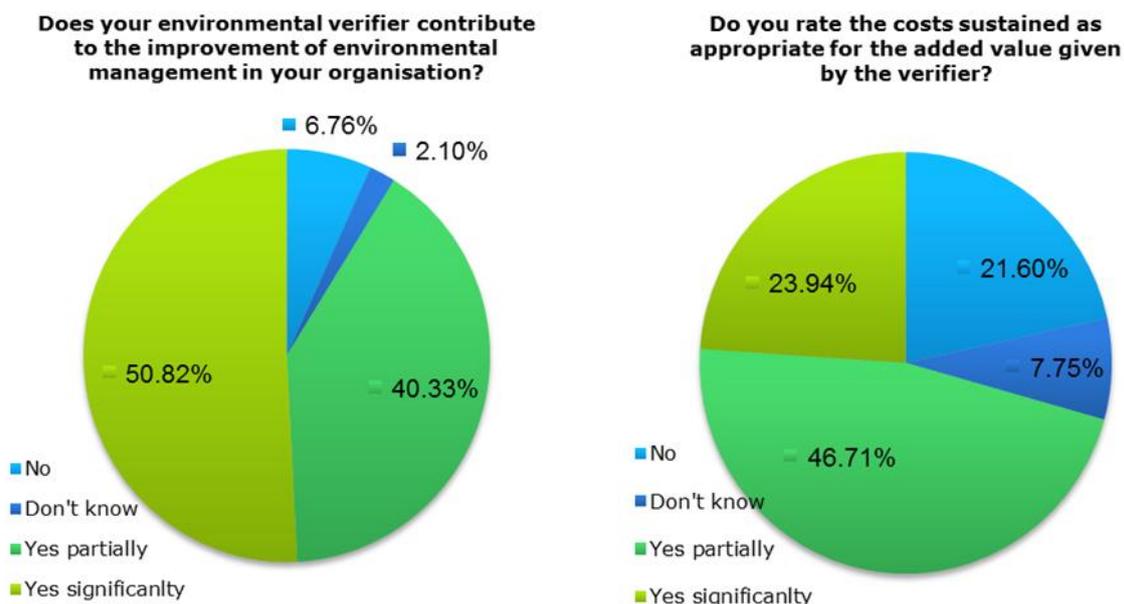
The results of the survey show the respondents' general satisfaction with the work carried out by environmental verifiers. The questions represent only a general overview of this satisfaction. No significant difference was observed in the classification of this question according to size or geographical coverage. On the one hand, satisfaction may be linked to the feeling of "passing an exam," as some scholars have discussed in the literature cited above (Boiral 2012). On the other hand, satisfaction may be justified by the effective added value given by environmental verifiers in the improvement of the organisations' environmental management.

The interviews carried out in our study can, alongside other concepts described in this section, help us better understand this factor. Overall, interviewed representatives – irrespective if their organisation was located in a Member State with high, medium or low registration numbers – were satisfied with the knowledge and experience of the environmental verifier. An organisation located in a Member State with high registration numbers said that "the company is very satisfied with the work of the environmental verifier. He is expensive but knowledgeable and definitely worth the money." Another representative of a company from a Member State with high registration numbers and whose company had abandoned EMAS stated that "the relationship with environmental verifiers was excellent. Environmental verifiers have a perfect knowledge of the industrial sector in which we work." An issue which was brought forward by representatives from Member States with medium and low registration numbers was the fact that only a limited number of environmental verifiers are available.

From the interviews carried out, it appears that this satisfaction is linked to the added value given by the environmental verifiers in terms of knowledge and experience. Furthermore, given that no significant difference was observed in the classification of this question according to geographical coverage (or size), it can also be deducted that environmental verifiers are not the key variable in explaining why certain Member States have fewer EMAS registrations than others.

The first finding mentioned is strengthened further by the answers given to the questions posed in Figure 39.

Figure 42: Contribution and appropriateness of costs of environmental verifiers



According to more than half of the answers received, environmental verifiers contribute significantly to the improvement of environmental management in registered organisations. Against the background of the mixed performance improvement results received in the environmental statement analysis (chapter 4.4), this does not necessarily mean that the environmental verifier's positive influence on environmental management always translates into environmental performance improvements. However, it is fair to say that it is likely that the former correlates with the latter – especially since the verification requirements used to judge an organisation's continuous improvement in environmental performance are clearly set out in the EMAS Regulation and build one of the cornerstones of the work of environmental verifiers (Article 18 (2c)). This finding can be backed up when widening the definition of performance improvement and considering it against the background of the principal benefits identified by this study (improved legislative compliance and reduced risk of incurring environmental sanctions through improved compliance, as detailed in chapter 4.3). It can thus be assumed that environmental verifiers contribute to the improvement of environmental compliance. Considering the considerable amount of time devoted by environmental verifiers to checking the environmental compliance of the registered organisation during the external audits, this appears to confirm this supposition.

The second question asked registered organisations to assess the appropriateness of the costs of engaging environmental verifiers in terms of added value given. In this case, the positive answers amount to around 70%. However, whereas only 7% of respondents said that environmental verifiers do not contribute to the improvement of environmental management, 22% of respondents do not think that costs incurred by environmental verifier activities are outweighed by added value generated by them. Against this background, EMAS users' feedback that more policy and promotion activities (e.g. more regulatory relief, better integration of EMAS in other legislation) are needed to strengthen the business case for EMAS is reinforced. For at least 30% of respondents (22% "no" answers and 8% "do not know" answers), the work of environmental verifiers alone does not make a convincing business case in the sense of performance

improvements translating into financial gains which are higher than implementation costs, including costs for environmental verifiers.

For both questions, investigating the results according to break-down by geographical coverage and size of organisations provides further findings.

Table 65: Added value given by the verifiers: classification per size

Does your environmental verifier contribute to the improvement of environmental management in your organisation?	Micro	Small and medium	Large
No	10.5%	6.2%	5.8%
Don't know	2.6%	1.2%	3.6%
Yes partially	42.1%	40.2%	40.3%
Yes significantly	44.7%	52.3%	50.4%

Do you rate the costs sustained as appropriate for the added value given by the verifier?	Micro	Small and medium	Large
No	29.7%	19.2%	23.7%
Don't know	10.8%	7.5%	7.2%
Yes partially	37.8%	50.4%	42.4%
Yes significantly	21.6%	22.9%	26.6%

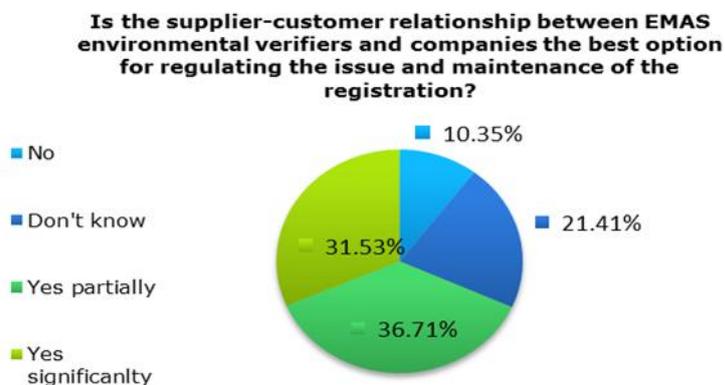
Micro organisations gave the highest percentage of negative answers on the question whether environmental verifiers contribute to the improvement of environmental management. One reason for this could be that micro organisations tend to have a rather intuitive and informal practice of EMAS and that, in some cases, the formal verification and audit process suits micro organisations less than larger organisations with more formal management processes (cf. Knopf and Mayer Scholl 2013).

The same applies to the second question – again, a considerable number of micro organisations (30%) do not think that costs incurred by environmental verifier activities are outweighed by the added value. This finding is in line with survey results displayed in the chapter on costs and benefits of an EMAS registration (chapter 4.3). Costs related to EMAS registration and implementation weigh more heavily on micro organisations because, among other reasons, some external costs are fixed and place a higher burden on smaller organisations (Milieu and RPA 2009: 78). Furthermore, a barrier in the form of the cost of environmental verifiers was ranked highest by micro organisations (3.9). Hence, even though organisations of all sizes are satisfied with the work of environmental verifiers, costs incurred by verification and validation activities may be a barrier to joining the scheme for micro organisations in particular.

Interviews carried out as part of this study shed light on the environmental verifier market in Member States and its impact on costs. In most Member States, large organisations which are also involved in ISO 14001 certification activities constitute the majority of accredited/licensed environmental verifiers. For instance, an EMAS registered company from a Member State with high registration numbers stated that “in relation to the accreditation of EMAS environmental verifiers, there are no accredited individuals in this country. The market is composed of the main certification bodies that are already engaged in ISO 14001 certifications. This situation could limit the possibilities for SMEs to reduce the costs of third party audits as the choice is limited to big companies with similar tariffs”.

With regard to the question of whether auditors are acting in an independent manner – which is debated quite vigorously by scholars (Dogui et al. 2014) –the standard ISO19011:2012 (Guidelines for auditing management systems) defined the independence of auditors as “the basis for the impartiality of the audit and objectivity of the audit conclusions.” The standard states that “auditors should be independent of the activity being audited wherever practicable, and should in all cases act in a manner that is free from bias and conflict of interest.” But how can the independence of auditors and environmental verifiers be assured if organisations are paying for the auditing services? Does this customer-supplier relationship threaten the independence of auditors? Which alternative solutions are possible? Taking into account the relevance of this issue, the questionnaire included a specific question aimed at collecting the opinion of EMAS registered organisations on this matter.

Figure 43: Contribution and appropriateness of costs of environmental verifiers



Around 32% of interviewed EMAS registered organisations think the supplier-customer relationship with the environmental verifiers is the best option for regulating external auditing activities.

A further question in the questionnaire aimed to merge the following two topics: added value provided by environmental verifiers and their independence. In particular, survey respondents were asked to give a judgment on several factors linked with those two themes. No significant difference was observed in the classification of this question according to size or geographical coverage.

Table 66: Added value added by the verifiers

How would you rate the knowledge of your environmental verifier with regard to the following aspects?	Value	Standard deviation

Knowledge of EMAS requirements	4.60	0.65
Reliability	4.39	0.80
Knowledge of applicable environmental legislation	4.37	0.72
Independence	4.37	0.82
Environmental protection	4.32	0.73
Scope of examination	4.26	0.80
Organisational issues	4.10	0.83
Technical issues	4.07	0.84
Sector-specific knowledge	3.90	0.89

All answers received a noticeably high score. This confirms the overall satisfaction of EMAS registered organisations with the work of the environmental verifiers, as shown in the previous tables. The respondents recognise in the environmental verifiers a high competence in EMAS requirements and environmental legislation, confirming also some more individual factors such as reliability and independence.

In light of EMAS's users' feedback, discussed above, and considering the difficulty in finding a different and more suitable organisational structure with which to regulate this relationship and guarantee non-bias, there does not seem to be sufficient justification to suggest substantial changes to the current approach. Furthermore, a possible alternative approach (which has already been discussed) could be to establish a system whereby Competent Bodies select the environmental verifier for an EMAS registered organisation. In such a system, EMAS registered organisations would pay the costs of the external audits to the Competent Bodies who then select and pay environmental verifiers according to a specific procedure from a list of accredited/licensed environmental verifiers. However, whereas this system would solve the "customer-supplier relationship" to a certain extent, it would also increase the workload of the Competent Body, threatening its overall functioning. The "customer-supplier" model therefore still appears largely unrivalled; furthermore it can be argued that it exists not only in the case of voluntary systems but also in environmental regulation systems. In Italy, for example, private environmental verifiers are engaged in the certification of the mandatory communication on CO₂ emissions within the framework of the Emission Trading System (ETS) Regulation. Here it is also the case that organisations select and pay the environmental verifiers directly, who then produce a report used to prove legal compliance to an environmental mandatory norm.

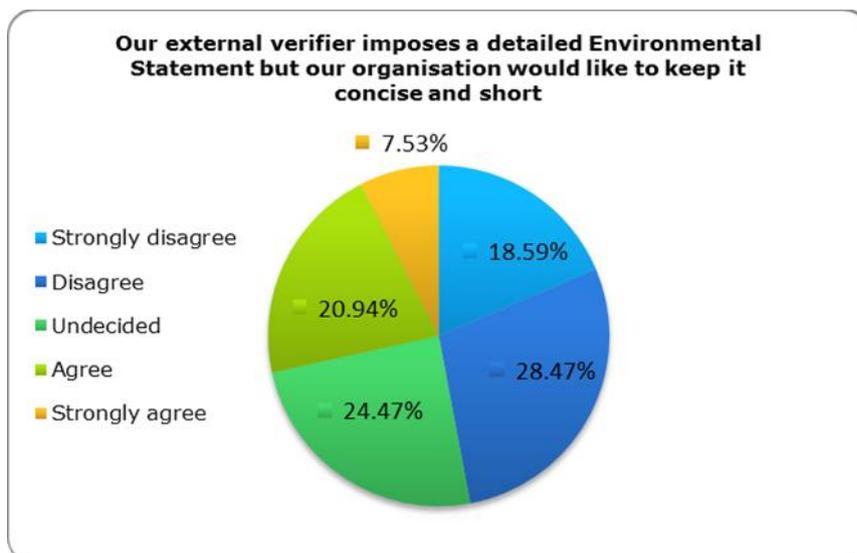
Despite the rigid mechanisms used to accredit an environmental verifier in a specific productive sector, the skill attributed with the least value by EMAS's users was sector-specific knowledge. This factor is also observed in interviews. A representative from an EMAS registered company in a Member State with high registration numbers stated that "the environmental verifier contributes to the environmental management of the organisation even if sometimes, there is a lack of sector-specific knowledge." It is clear that despite all the aforementioned rules for accreditation, the parties responsible for environmental management in a given EMAS registered organisation will undoubtedly have a higher knowledge of the productive processes than the environmental verifier. Nevertheless, the responses of EMAS registered organisations indicate that there is room for improvement with regard to sector-specific knowledge. SRDs might be an appropriate

instrument with which to provide sector-specific knowledge. SRDs, which were introduced with the latest EMAS revision (EMAS III) but not yet officially published, address this issue in that they provide, among other things, sector-specific information on Best Environmental Management Practices and performance indicators. Environmental verifiers will take this information into account in their work. According to our survey results, environmental verifiers' sector-specific knowledge can be specifically improved with regard to large organisations, as these organisations have more comprehensive internal processes.

Another question addressed in the survey of EMAS registered organisations investigates a common point of contention in the relationship between EMAS registered organisations and environmental verifiers: the length of environmental statements, an issue which has been often debated in recent years. In addition to specifying the minimum contents to be included in the environmental statement, Annex IV of the EMAS Regulation specifies that "environmental information shall be presented in a clear and coherent manner." No specifications on the need for concision are included. However, examining the environmental statements validated in various different countries as part of the EMAS performance chapter (Chapter 4.4), we can observe that they are of substantially different length, even for organisations with similar environmental issues and within the same sector.

The survey results are not unanimous (Figure 44): the majority of respondents answered this question negatively, but the study also observed a large number of undecided answers. Almost 30% were in favour of creating a more concise environment statement. For example, an EMAS registered organisation from a Member State with high registration numbers stated that "the company is satisfied with the work of the environmental verifier, but it considers that external verifiers impose a detailed environmental statement while the organisation would like to keep it concise, short and more adapted to the external communication needs".

Figure 44: Request from environmental verifier on the length of the environmental statement



5.2.5. Main findings

- Member States undertake a number of activities to promote EMAS, the most common of which are maintaining a website and national EMAS register, followed by legislative liaison to promote EMAS in national laws and regulations. No clear connection appears between the number of promotion activities in a Member State and the trends in registration numbers over the past decade.
- EMAS registered organisations and representatives report the need for an increase in two specific groups of promotion activities:
 - those that raise the benefits of EMAS for organisations (e.g. increased presence in legislation and regulation)
 - those that raise awareness of EMAS among stakeholder groups such as regulators, customers and the wider public, thus creating a stronger competitive advantage through improved reputation (see also Chapters 4.2, 4.3, and 4.6).
- The survey and interviews with registered organisations show that neither the European Commission and Member States provide a sufficient level of policy support (e.g. regulatory exemptions and financial relief) to help organisations achieve a cost efficient implementation of the scheme. In this context, there appear to be challenges in the enforcement Article 38 of the EMAS Regulation. Certain types of promotion and information activities aimed at potential EMAS organisations have been especially successful at raising registration numbers on the national level. These include policies and campaigns that provide regulatory relief, target certain sectors or involve cooperation with local institutions.
- The time needed to issue the EMAS registration number by the Competent Body after the validation of the environmental statement is a problem for organisations, especially in Italy. In this country, the majority of respondents indicated a time period of more than 6 months. Organisations desire more administrative support in this area
- Organisations interviewed are very satisfied with the expertise and the work done by the environmental verifiers: they contribute to the improvement of environmental management in the organisations, the ratio of added value and cost is considered to be appropriate, they recognise environmental verifiers' technical skills (e.g. knowledge of EMAS requirements, knowledge of applicable environmental legislation) as well as personal characteristics (independence, reliability).

5.3. Analysis of the effectiveness of the most recent revision to EMAS

Key points at a glance

- Changes made in the current EMAS Regulation, EMAS III, aimed at providing added value for organisations in terms of regulatory control, cost savings and public image
- In particular, the participation of smaller organisations should be increased
- Our study results show that the changes introduced with EMAS III did not contribute in an effective manner to making the scheme more attractive to companies and other organisations.
- In fact, despite a majority of organisations believing that the changes introduced with EMAS III have been in place long enough to show their effects (about 60% of answers are positive), they largely state that these reforms (e.g. reduced frequency of audits for SMEs, EMAS Global) have not been very effective.
- Our interview results show that organisations, Member State representatives and Competent Bodies have a somewhat negative view of EMAS III. They report that it has added to the complexity of EMAS implementation and maintenance without bringing significant added value in terms of flexibility or increased registrations

5.3.1. Background and research aims

EMAS has so far undergone two changes since it came into force in 1995 (EMAS I). Each revision introduced new features. For example, the scheme was originally restricted to the industrial sector, but with the introduction of EMAS II in 2001, it was opened up to all economic sectors. In addition, EMAS II was strengthened by the integration of the environmental management requirements of ISO 14001; by adopting a new EMAS logo to signal engagement to stakeholders; and by taking indirect effects into greater consideration.

The objective of this chapter is to analyse which modifications introduced with the current version of the EMAS Regulation (EMAS III) are working well and should be kept in any potential future revision to the Regulation, and to identify which elements should be changed in order to improve the overall effectiveness of EMAS.

5.3.2. Main changes introduced by the EMAS Regulation 1221/2009 (EMAS III)

There are a number of features in the current EMAS Regulation that distinguish it from the previous EMAS Regulation. The following four features, all directly addressing EMAS users, were covered in our survey of EMAS registered organisations:

- Revised audit cycles for SMEs (Article 7)

- Single EMAS logo (Article 10; Annex V)
- Environmental core indicators (Annex IV)
- EMAS Global (Article 3; Article 11)

One of EMAS III's key considerations was dismantling registration barriers for smaller organisations, which represent a much greater pool of potential registrants than larger enterprises (SMEs account for 99% of European companies and generate 57% of value added products). A major change in EMAS III that aimed to accomplish this goal addressed the length of time required to obtain registration and the frequency of audits for SMEs. Article 7 of the EMAS Regulation provided that a small organisation can send a request to a Competent Body to extend the three year maximum registration period up to four years, and to undergo surveillance audits biannually rather than annually. These extensions can only be provided if the environmental verifier confirms that they have complied with the following conditions:

- there are no significant environmental risks;
- the organisation does not plan significant changes;
- the organisation does not contribute to significant environmental problems at the local level.

Small organisations could thus reduce the number of regular audits by the accredited environmental verifier from 4 (3 annual monitoring checks and 1 renewal) to 2 (1 annual monitoring check and 1 for renewal), thus reducing costs. Small organisations receiving the extension must prepare and submit their updated environmental statement to the Competent Body annually, although the statement does not necessarily have to be validated each year. The current EMAS Regulation also proposes specific recommendations for the monitoring of small organisations, providing, under Article 26, that the environmental verifier should accept exemptions and exceptions to the conventional structure of an EMS based on written procedures and formalised organisational procedures. This modification would recognize features typical for smaller businesses, such as direct communication and informal multifunctional staff (who cover various functions, environmental and otherwise), training provided through coaching in the workplace and, above all, limited documentation.

In addition, the current Regulation attached importance to strengthening the scheme's visibility and outreach by establishing one single version of the EMAS logo (Article 10; Annex V), in order to communicate EMAS and related green claims in a coherent and distinct way. Under the previous EMAS Regulation, two versions of the logo existed – one which was used to demonstrate the organisation's EMAS registration, the other to communicate the accuracy and validity of environmental information associated with the organisation or its activities.⁵⁴ Furthermore, the use of the logo on transport and tertiary packaging is no longer permitted under EMAS III. What has remained consistent is that the logo cannot be used on products or their packaging, with comparative claims concerning other activities and services, or in a way that may create confusion with environmental product labels. These restrictions exist because the EMAS logo is an award for organisational and operational environmental performance, not for environmentally friendly products, and the rules therefore reduce the risk of confusion

⁵⁴ The logo without a registration number can be used by stakeholders for marketing and promotional purposes.

with product eco-labels. The European Parliament was mainly responsible for the decision not to broaden the scope of the logo's application to products.

Furthermore, with the introduction of core performance indicators, new communication and reporting requirements were established with the objective of increasing the reliability of green claims (Annex IV of EMAS Regulation). The indicators cover six environmental areas: energy efficiency, material efficiency, water, waste, biodiversity and emissions. The introduction of mandatory indicators is meant to streamline reporting under EMAS. The core indicators only refer to direct environmental issues and need only be considered if they are relevant to the significant environmental aspects of the organisation (Annex IV).

Finally, the current EMAS Regulation introduced EMAS Global, which opens up the possibility for organisations to obtain an EMAS registration for sites located outside Europe (Art. 3). The decision to allow EMAS Global registrations is in the hands of individual Member States.

5.3.3. EMAS registered organisations' attitudes towards the changes introduced by EMAS III

The survey aimed to investigate the opinions of representatives of EMAS registered organisations on the effectiveness of some reforms introduced through EMAS III. Respondents indicated their opinions on the effectiveness of 5 reforms (see the table below) giving a score from 1 (not important at all) to 5 (very important). In the table below we ranked the 5 reforms according to the respondent's scores. Values indicated in Table 67 refer to the mean of scores given by adopters.

Table 67: Effectiveness of reforms introduced in the third revision of the EMAS regulation

Effectiveness of reforms introduced in the third revision of the EMAS regulation	Value	Standard deviation
Reduced frequency of audits for SMEs	3.25	1.24
New communication and reporting requirements to increase reliability of green claims	3.18	0.98
Improved quality of environmental reporting through new requirements for the core performance indicators	3.16	1.09
The possibility of applying EMAS worldwide (EMAS Global)	3.11	1.18
Increased awareness of EMAS among buyers and other stakeholders as a result of the new rules on the EMAS logo	3.04	1.12

In general, the results in the table indicate that EMAS adopters do not feel reforms introduced by EMAS III are very effective. Indeed, the highest score achieved by the five reforms is only 3.25 out of 5, which is considerably lower than for other questionnaire topics. The general high value of the standard deviation indicates a high variability among answers. This is supported by some remarks made in interviews. For example, a large EMAS registered company from a Member State with medium registration numbers affirmed that "EMAS III brought little added value. EMAS III is perceived in a somewhat negative manner because many of the additional requirements take a great deal of time

but do not have any clear benefit.” A Representative of a Member State with medium registration numbers added that “we do not see EMAS III as a positive development at all. It has not increased registrations. None of the key problems (e.g. flexibility) were addressed.”

According to our survey results, respondents considered the most effective reforms introduced with EMAS III to be reduced frequency of audits for small and medium-sized organisations (3.25). However, feedback from Member States is mixed as to whether this provision is useful or not. While some see it as a provision which provides added value compared to ISO 14001, some Member States (Germany in particular) criticized that EMAS III reduced the validation cycles for surveillance audits in organisations with less than 50 employees from a maximum extended time of 36 months to 24 months. In some cases, under EMAS II, the yearly validation of the environmental statement was not necessary at all. A potential reason for Member States’ varying opinions on EMAS III could be that the Member States did not apply the provisions of EMAS III uniformly and some did not apply it all. In any case, official data does not exist, but experts estimate that only 20% of eligible organisations use this instrument.

According to our survey results, the second most effective reform introduced with EMAS III was related to new communication and reporting requirements. These requirements aim to improve the reliability of green claims (3.18). With regard to the core indicators, the information from interviews and the survey revealed that the current indicator on biodiversity is not considered meaningful. Another remark from interviews is that the application of Figure B (denominator) as described in the EMAS Regulation needs to be more flexible. However, overall, the EMAS stakeholders involved in our study did not give great importance to the new reporting requirements.

The interviews with Competent Bodies showed that EMAS Global has so far not taken off, and that very few organisations are considering pursuing registrations under EMAS Global. At present, only a few have done so. The German automotive supplier Schaeffler (operating, among other places, in Brazil, China and South Africa) and the Finnish pulp and paper company UPM (China, Uruguay) are front-runners in this regard (a case study on EMAS Global is available in Annex III). Our survey results on the effectiveness of EMAS Global (3.11 with a high standard deviation) reflect that most organisations are neutral on the topic, although a few have strong opinions, both positive and negative.

Examining the data from interviews with Competent Bodies, one representative from a Member State with medium registration numbers affirmed that “the Competent Bodies have not carried out EMAS Global registrations up to this point because there are some legal adaptations and procedures to be defined before developing this approach. There is a general agreement for EMAS Global registration, but the accreditation system needs to be adapted accordingly. More resources would be necessary.”

In contrast, a representative of a Competent Body from a Member State with medium registration numbers in which several EMAS Global registrations have already taken place said that “even if at the beginning of the path we expected hard work, it has been easier and quicker [than we expected]. We have not experienced added costs or extra work in applying the procedure and a key theme has been fruitful cooperation with national operators and public institutions in these two non-EU countries. Environmental verifiers have an important role in these non-EU registrations. The experience has not extended to other potentially interested organisations in those countries but if a new request were to be received, the Competent Body would manage it easily.” Another Competent Body representative with EMAS Global experience from a Member State with high registration numbers had similar experiences: “In general, the procedure which the Competent Body followed with EMAS Global did not present any particularly critical issues; no additional costs were requested.”

The new rules on the EMAS logo aimed at increasing awareness of EMAS among buyers and other stakeholders were considered less effective than the other options (score 3.04). A complaint heard from both EMAS users and Member State representatives was that EMAS registered organisations should be allowed to use the logo on products and packaging. However, this issue remains controversial because of the potential for misleading claims.

In the table below, the last column indicates the aggregated values shown in the previous table, in order to allow easy comparison with the differences identifiable in the disaggregated data. The following table shows the results of the survey broken down by the number of total registrations in Member States.

Table 68: Effectiveness of changes introduced in the third revision of the EMAS regulation: analysis per geographical coverage

Effectiveness of changes introduced in the third revision of the EMAS regulation: analysis per geographical coverage	High registration countries	Medium registration countries	Low registration countries	Aggregated value
Reduced frequency of audits for SMEs	3.24	3.33	3.17	3.25
New communication and reporting requirements to increase reliability of green claims	3.15	3.25	3.25	3.18
Increased awareness of EMAS among buyers and other stakeholders as a result of the new rules on the EMAS logo	2.98	3.26	3.08	3.04
Improved quality of environmental reporting through new requirements for the core performance indicators	3.10	3.33	3.50	3.16
The possibility of applying EMAS worldwide (EMAS Global)	3.01	3.61	3.33	3.11

Comparing respondents' opinions on the effectiveness of reforms introduced by EMAS III in high registration, medium registration and low registration countries, results show that high registration countries had the highest mean score related to the reform ranked most effective overall (reduced frequency of audits for SMEs). However, the differences to the responses of the other two groups are rather minor. An additional difference was that respondents in low registration countries viewed as most effective the improved quality of environmental reporting through new requirements for their core performance indicators.

Table 69: Effectiveness of changes introduced in the third revision of the EMAS regulation: analysis per size of organisations

Effectiveness of changes introduced in the third revision of the EMAS regulation: analysis per size of organisations	Micro	Small and medium	Large	Aggregated value
Reduced frequency of audits for SMEs	3.28	3.33	3.09	3.25
New communication and reporting requirements to increase reliability of green claims	3.05	3.18	3.17	3.18
Increased awareness of EMAS among buyers and other stakeholders as a result of the new rules on the EMAS logo	2.97	3.19	2.76	3.04
Improved quality of environmental reporting through new requirements for the core performance indicators	3.18	3.21	3.04	3.16
The possibility of applying EMAS worldwide (EMAS Global)	3.00	3.20	2.97	3.11

Breaking the data down by organisation size, a few additional differences emerge. SMEs and micro organisations judged as most effective the reform reducing frequency of audits. This result is logical because they are the targets of the provision. For large organisations, the reform achieving the highest score was the new communication and reporting requirements intended to increase the reliability of green claims. One reason for this view might be that larger organisations feel that they can now align environmental reporting based on indicators with their (GRI-based) sustainability reporting more easily. Moreover, if we consider overall scores given by each organisation category, we find that large organisations in general give the lowest effectiveness ratings to the reforms, in particular the reforms aimed at the use of the EMAS logo. Given that larger organisations tend to have strong brand names, the logo provisions may not be effective enough to be able to “cut through the noise”.

In addition to those examined in the survey, EMAS III introduced a few additional changes, including SRDs (Article 46) and a cluster approach (Article 47). The objective of SRDs is to help (EMAS registered) organisations improve their environmental performance by describing Best Environmental Management Practices for different sectors. To do so, the European Commission, in cooperation with stakeholders, follows the so-called frontrunner approach. It studies those techniques, measures or actions that are implemented by the organisations within the sector that are most advanced in terms of environmental performance in each of several areas, such as energy efficiency, resource efficiency, emissions, and supply chain management. In addition, SRDs include environmental performance indicators for specific sectors as well as, where appropriate, benchmarks of excellence and rating systems identifying environmental performance levels. When applying SRDs, the Regulation specifies that EMAS registered organisations shall take into account the relevant documents when assessing their environmental performance. The same applies to EMAS environmental verifiers when checking

requirements under Article 18 of the EMAS Regulation. However, according to representatives of EMAS registered organisations and environmental verifiers who were interviewed, the meaning of “shall take into account,” is unclear, primarily regarding the extent to which their statements on benchmarks of excellence and indicators are mandatory.

The European Commission has laid out eleven priority sectors (e.g. retail trade, tourism, construction) for which SRDs will be prepared. So far, no SRD has been adopted in final form; the first adoption (for the SRD covering the retail trade sector) is expected in 2015. Since there EMAS registered organisations and environmental verifiers so far have no extensive experience in applying SRDs, these documents were not directly covered in the questionnaire of EMAS users. However, SRDs are analysed in the context of the work of environmental verifiers (chapter 5.2.4.2)

Several studies have noted a cluster approach to EMS implementation in the sense of networking and cooperation between organisations (Daddi et al., 2010). Empirical observations identify the cluster approach as one of the most important factors fostering the spreading of formal EMS (such as EMAS). Many authors (Steger 2000, Hillary 2004) emphasized that working with groups of companies is a useful and efficient way of adopting EMAS, particularly for SMEs. Moreover, the European Commission has confirmed the key role of networking in overcoming the constraints and barriers for EMS adoption between SMEs (European Commission 2007). The European Commission has, in fact, highlighted its commitment to promoting and encouraging the use of EMAS in industrial clusters or districts of SMEs, using specific cluster- or supply chain-oriented approaches, because these approaches can reduce consultancy and audit/verification costs for SMEs. They can also facilitate additional knowledge sharing and experience exchange among participants. The current EMAS Regulation also highlights the opportunity to apply EMAS in industrial clusters in order to promote the adoption of EMAS among SMEs.

The effectiveness of the networking approach can be observed in particular among organisations operating in the same sector or in the same region. The most visible examples are likely in the industrial sector, but but even service sectors such as tourism or public institutions operating at different levels.

Enterprises in the same sector can cooperate by identifying and assessing similar environmental factors and by finding technological and operational solutions that can be applied to similar production processes and products, as well as by defining organisational structures suitable for the same kind of production cycles. In the second case, enterprises operating in the same region, cooperation is facilitated by physical proximity. Additionally, there are synergies both in lessening the environmental impact on the same local ecosystem and in interacting and communicating with the same stakeholders (local population, authorities, etc.).

In some cases, a network of SMEs within a cluster is created in order to foster information exchange and the sharing of experiences. The network can also be used to , define and apply common solutions to similar environmental, technical and/or organisational problems, or to share environmental management resources. A specific type of cooperation within a cluster of organisations takes place in the supply chain: for example, when a large customer is willing to support small suppliers in the EMS implementation process, all the smaller organisations involved in the supply chain are subsequently able to benefit greatly from networking. This approach proved to be effective in member states such as Germany (“Konvoi” approach), Spain (cooperation in the tourism supply chain) and some Nordic countries (Denmark and Sweden).

Other European experiences have recently led to the development of an EMAS cluster approach. For example the “Move it!” project aimed to reduce internal and external costs

incurred by SMEs in implementing EMAS in five European countries (Belgium, Germany, Bulgaria, Cyprus and Estonia), involving 15 tourist industry clusters. The project involved 144 companies and 110 of them were labelled or recognised by the end of project in June 2012 (Merli et al., 2014).

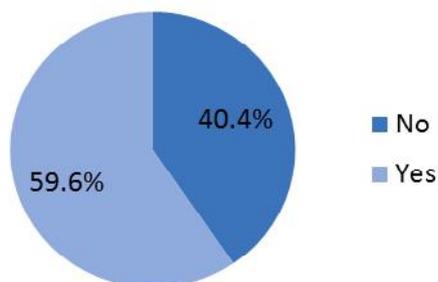
A similar approach was adopted outside Europe with the Regional Environmental Management System. This approach model works through the following principles, linkable to EMAS Cluster approach: identification of shared local, regional, and state priorities relevant to the partnering organisations, focusing efforts on individual goals and those of the partnership, facilitating regular communications among partners, finding new cost-effective business cases to exceed environmental requirements and goals through voluntary approaches (Parrish and Wassersug, 2012).

In Italy, an operational path to networking and clusters has been outlined and experimented on by several industrial clusters. It consists of several steps, leading to firms belonging to the same cluster (and their local stakeholders) implementing EMS at the cluster level. They mirror the main requirements set by EMAS Regulation for individual organisations. This experience has led to the Italian Competent Body publishing an official act that sets the rules for applying EMAS in Italian clusters and allows the cluster to be officially recognized (a sort of national registration for clusters) if it passes the audit of the accredited verifier. The Competent Body has established the rules for the cluster audit. After the publication of that Act (the “Position of EMAS CB on EMAS clusters”) several Italian clusters have started on the path towards obtaining official recognition from the EMAS CB. Currently, 13 clusters have obtained the EMAS cluster recognition in Italy. The experience of the Imagine project has been particularly successful, involving four industrial clusters located in Tuscany and belonging to the fashion supply chain. All four clusters (textile cluster of Prato, tannery cluster of Santa Croce sull’Arno, footwear cluster of Lucca, apparel cluster of Empoli) obtained official recognition from the national CB and several SMEs achieved the single EMAS registration (Daddi et al., 2014a).

5.3.4. Time needed by EMAS III reforms to show effects

As shown above, the current Regulation introduced some notable changes from the previous version. In addition to survey respondents’ general opinion on the effectiveness of these new provisions, the project team also aimed to determine their opinion on the time needed for these changes to show their effectiveness. This distinction was important to show whether respondents might consider some reforms unsuccessful because they had not yet had time to show their effects. Additionally, some of the changes in EMAS III (for example, new audit frequencies for small organisations) needed to be considered thoroughly before being applied by environmental verifiers or registered organisations. Figure 45 reports the findings of the survey on the length of time needed to show the effects of the EMAS III reforms.

Figure 45: Do you think that the reforms in the EMAS III Regulation have been in place long enough to show effects?



Around 60% of respondents felt that EMAS III had been in force for long enough to show its effects. Both when the data was grouped by organisational size and when it was divided by organisations' geographical location, a higher percentage answered with "yes". For this reason, we can affirm that for the majority of EMAS registered organisations replying to the survey, the changes introduced by EMAS III have had enough time to demonstrate their effects.

Comparing this result with those discussed in the previous section on the efficacy of the changes, we can affirm that the respondents maintain that the EMAS III reforms have been in place long enough to show results, but have been ineffective.

5.3.5. Main findings

- EMAS registered organisations maintain that the reforms introduced by EMAS III have been in place long enough to show their effects (about 60% of answers positive) but they largely hold that these reforms (e.g. reduced frequency of audits for SMEs, EMAS Global) have been not effective (low scores achieved in section 5.2.2).
- In general, interviews and survey results indicate that many Member State representatives and organisations have a negative view of many of the EMAS III reforms, citing the limitations of EMAS Global and greater complexity in the environmental reporting

6. CONCLUSION EX-POST ANALYSIS

The general conclusion of the analysis presented in the previous sections is that, judging by overall registration numbers, the global effectiveness of EMAS – the goal of achieving more overall improvements by increasing the number of registrations – is not sufficient. In order to understand the current status of EMAS and assess the scheme's performance, it is vital to comprehend which drivers and actual benefits lead organisations to implement the scheme on a voluntary basis. Three groups of drivers, combined with whether or not those drivers turn out to bring real benefits (or a business case), are relevant to understanding why organisations choose to join the scheme or not.

Firstly, organisations expect benefits in the form of environmental performance improvements. The business case for EMAS is that these performance improvements lead to cost efficiency. Our results show that that this can be achieved – in some cases rather moderately, in others more clearly – for most environmental core indicators analysed. These results are in line with those of previous studies. The sum of the research indicates that environmental management schemes do offer a moderate level of environmental performance benefit, but this benefit differs widely among organisations and sectors. EMAS appears to show a somewhat more positive trend than ISO 14001 in this regard.

However, there is a need to reinforce existing benefits and deliver additional ones to registered organisations in order to maintain and increase EMAS's relevance, particularly given that registration numbers are low compared to ISO 14001 and have been declining since 2012. Our study indicates that efficiency gains isolated from other types of benefits (both those that are intangible and those created by policy support) cannot make for a convincing business case. This conclusion holds especially true when performance improvements are not significant enough to outweigh costs and when fixed costs are proportionally higher than efficiency gains. Particularly for smaller organisations, costs can still be a significant factor when deciding whether or not to leave or to adopt the scheme in the first place.

Given that 99% of companies in the EU are micro, small and medium-sized enterprises, these costs surely have an impact on the uptake of the scheme. Further strengthening EMAS's internal capability to help achieve performance improvements and thus efficiency gains remains a challenge which must be addressed in order to establish a clear business case for the scheme. Making sure that EMAS registered organisations are able to demonstrate a clear improvement in their environmental performance is also necessary to provide a clear case for regulators to set up the framework conditions for policies supporting the scheme.

Secondly, intangible benefits (their significance cannot be measured in monetary terms) can help provide added value to organisations. Our study indicates that the main benefit of EMAS in this regard is registered organisations' improved capabilities in the management of environmental compliance. Others include better identification of overall corporate responsibilities or increased employee involvement. However, these benefits do not necessarily directly translate into cost efficiency gains or competitive advantage. In fact, from this perspective, the business case for EMAS depends on how highly stakeholders such as customers, regulators, and the organisations themselves value EMAS's principles and requirements. Their view of features such as employee involvement requirements, external reporting or the management of legal compliance, and the quality of the management approach to meeting EMAS's and social responsibility requirements are essential factors in this regard.

For example, customer requests can play a crucial role as a market-based driver. In that sense, implementing an environmental management scheme can be likened to a “license to operate”. According to scientific literature, this is a significant driver for the uptake of ISO 14001. For EMAS, in contrast, this driver is essentially non-existent – particularly on the international level. Surveyed organisations do not think that features such as EMAS Global, the EMAS logo and the environmental statement, which could raise EMAS’s profile and strengthen its position on the market, are currently fit for this purpose. Evidence suggests that modifying these (and additional) features could lead to a better realisation of intangible benefits. Furthermore, for various features of the scheme, including environmental reporting or legal compliance checks, the added value the scheme provides is directly linked to the question of whether regulators are willing to grant support on the basis of the value provided by EMAS. This would include, for instance, regulatory relief resulting from EMAS’s built-in internal checks for legal compliance.

The study also shows a lack of benefits in other areas, particularly in the form of competitive advantage and reputational gains. According to scientific literature, these benefits are significant drivers for the uptake of ISO 14001. For EMAS, in contrast, these drivers are essentially non-existent, particularly on the international level. Surveyed organisations do not think that features such as EMAS Global, the EMAS logo and the environmental statement, which could raise EMAS’s profile and strengthen its position on the market, are currently fit for this purpose. Evidence suggests that modifying these (and additional) features could lead to a better realisation of both intangible benefits for EMAS users and the more direct potential financial benefits resulting from, for example, an improved reputation among consumers.

Third, the importance of these intangible benefits and the failure of EMAS to realise some of its potential reputational and competitive benefits makes a strong argument for policy support as an integral requirement for EMAS’s success. Although the scheme can increase economic efficiency at the organization level, EMAS is above all an environmental instrument. As is the case with many environmental policy tools, relying solely on the market to make a convincing business case for EMAS adoption appears to be both ineffective and inefficient because it fails to recognize the uncalculated monetary and health benefits that result from EMAS firms’ changed behaviour. At present, however, EMAS is not widely recognised as the European “EMS certification of choice” in related policies or regulations. Without this demonstration of trust – that is, policymakers’ recognition and promotion of EMAS as the most reliable and transparent EMS certification – the scheme will not be able to maintain its relevance and efficiency compared to voluntary private schemes such as ISO 14001.

This finding - the need for more policy support to provide EMAS organisations with regulatory relief and to enhance EMAS’s added value compared to other policy instruments - echoes those of multiple studies conducted on EMAS over the past two decades (Wätzold et al. 2001; Iraldo et al. 2006; Milieu and RPA 2009; SSSUP 2013). While the Regulation has been revised twice in that time frame and its Article 38 currently includes provisions requiring Member States to take measures “facilitating organisations to become or remain EMAS registered”, including regulatory relief and better regulation that provides advantages to EMAS registered companies. However, the survey and interviews conducted for this study indicate that nearly all EMAS stakeholders desire a better enforcement of this provision in the form of more regulatory relief for EMAS organisations and a greater recognition and integration of EMAS into laws and regulation at both the EU and the Member State levels. Our surveys of organisations and of Member States demonstrate that the degree to which each individual Member State has implemented such policy support varies widely. As EMAS is a Regulation and not a Directive, this recognition and integration of EMAS into environmental policies could be enforced more uniformly across Member States.

Although the EMAS Regulation defines clear requirements on these matters, evidence indicates that neither the European Commission nor the Member States are implementing support measures for EMAS either sufficiently or effectively on a regular basis. For example, the vast majority of the EMAS registered organisations surveyed emphasised that they do not experience better access to public funding or procurement procedures (including service contracts). Accordingly, registered organisations gave the potential benefit of "obtaining administrative simplifications and regulatory relief (e.g. longer duration of permits, less frequent environmental inspections by authorities)" a low score in our survey.

One key question is whether this absence of policy support can be attributed purely to a lack of financial and human resources and to a lack of awareness among policy makers about the added value of EMAS, or whether a failure to perceive EMAS's added value compared to other instruments may also play a substantial role. Our results show that the majority of Member State representatives do not use EMAS registered organisations' performance as a benchmark in the environmental field. As mentioned above, the majority of Member State representatives surveyed reported that EMAS was not assigned a special status in inspection and monitoring activities.

These findings indicate that policy makers are unsure about EMAS's ability to improve performance in a manner sufficiently consistent and comprehensive so as to justify an introduction of regulatory relief measures. Evidence suggests that in cases where the Member State acknowledges the added value of EMAS, organisations benefit and overall registrations numbers are high. For example, a recent EMAS survey in Germany demonstrates that – in the German case – EMAS gave registered organisations the most significant reputational improvements among public authorities. Our study results show that Germany, which belongs to the group of Member States with a high number of registrations, has launched a significant number of policy initiatives to promote the diffusion of EMAS (in some cases ranking EMAS higher than other certifications like ISO 14001).

There is also a general lack of awareness of EMAS among external stakeholders. One common complaint of EMAS users is that the scheme is not widely known. As mentioned above, this lack of general recognition has additional clear consequences on both the effectiveness and the efficiency of the EMAS Regulation. Organisations experience little pressure from external sources to choose EMAS over other environmental management instruments, thus eliminating a potential driver for raising total registration numbers. Additionally, those organisations that have already adopted the scheme often do not experience the potential tangible benefit of being more attractive for (and thus attracting more) customers.

The uneven success of EMAS throughout the EU in terms of registration numbers makes a case for recognising EMAS's capability to improve organisations' environmental performance and for seeking ways to strengthen certain features of the scheme. It also indicates that the European Commission needs to clarify what kind of support measures Member States should implement to increase the uptake of the scheme. The current EMAS Regulation does not provide specific instructions, allowing for the wide divergence among the Member States. The addition of a robust monitoring mechanism - which would be used to check whether Member States implement measures in accordance with the provisions in the EMAS Regulation - could also help to raise effectiveness and coherency while simultaneously increasing authorities' trust in EMAS.

7. POLICY OPTIONS FOR EMAS (EX-ANTE ANALYSIS)

Against the background of our findings from the ex-post analysis of EMAS, the following chapters analyse various policy options. The policy options are divided into three general paths. These paths each consider future possible developments of EMAS on a different level. Path I elaborates on keeping EMAS as it is, while Paths II and III focus on options which lead respectively to slight or major modifications. Path IV addresses the question of whether EMAS should be phased out. Survey respondents were asked to provide their opinions regarding these different policy options for EMAS. These opinions have been analysed and included in Annex XI.

7.1. Path I - Business-as-Usual option: Keeping EMAS as it is (baseline)

Rationale

Developing a baseline can be a comprehensive exercise, including modelling of impacts, especially if the ambition is to define the baseline on the basis of policy relevant indicators. This exercise is, however, beyond the scope of this study, which will therefore follow a more pragmatic and efficient approach. The Business-as-usual (BaU) option assumes that no changes are made to the EMAS Regulation and also no other modifications are implemented that do not require a change to the Regulation itself (this is the case for some of the options described under Path II). A key approach is to identify and assess the main weaknesses of EMAS against the background of the six assessment criteria effectiveness, efficiency, relevance, coherence, EU added value and feasibility in a qualitative manner. A quantitative scoring system will then be used to assess all subsequent options against this baseline.

Potential impact

As regards effectiveness, our environmental statement analysis has revealed that registered organisations are putting into practice the principle of continuous environmental performance improvement. However, the overall picture will likely remain the same: the majority of organisations achieve continuous performance improvements while some others do not. This circumstance in turn has implications for the image of the scheme – our research, interview and survey results indicate that policy makers are not predominantly convinced that EMAS is a “benchmark for excellence”. As a result, they are hesitant to push for or provide regulatory relief aimed specifically at EMAS organisations.

When taking a broader view of performance improvement, our results show that the management of legal compliance stands out as an advantage for EMAS. Both EMAS users and policy makers acknowledge that EMAS provides a clear and substantial added value in this regard. Looking at eco-innovation and competitiveness, the scheme is moderately successful overall, but can create real added value for specific elements (e.g. organisational innovations).

However, the survey results on barriers, drivers and benefits indicate that, without sufficient substantive benefits recognizing these points of added value, registration numbers will at best stagnate and likely further decline. A decrease is particularly likely given that SMEs, which comprise 80% of all EMAS registrations, experience several

barriers more strongly than other organisations. The revised ISO 14001 standard, which incorporates several aspects currently providing added value to EMAS, would also make a decline in EMAS registration more likely.

According to our survey results, the main competitive advantage experienced by registered organisations is the improvement of efficiency in the use of natural resources and energy, with its corresponding reduction of costs. It is expected that EMAS will continue to provide a suitable instrument for the improvement of financial performance, based on efficiency gains. However, those gains do not apply to all types of organisations/all sectors. According to our survey, smaller organisations in particular take financial performance drivers into account when assessing whether or not to join the scheme. The absence of efficiency improvements in some smaller organisations may discourage similar organisations from joining EMAS. Overall, EMAS can lead to significant performance improvements, but our findings indicate that cost efficiency alone is not a sufficient driver for EMAS adoption.

Looking at the criterion of coherence, EMAS's relationship to ISO 14001 assumes a high importance for the future of the scheme. EMAS users currently believe in the scheme's added value compared to ISO 14001, for example with regard to the rigorous verification process and external reporting. Survey results also indicate that achieving and maintaining legal compliance – a requirement of EMAS but not of ISO 14001 - is the main added benefit of an EMAS registration. .

Because of the ongoing ISO 14001 revision, however, the EC will need to adjust the EMAS Regulation to make sure that both standards are coherent and synergies can be maintained as easily as is the case at present. The exact implications of the ISO 14001 revision are still unknown, as the process is still ongoing. Nonetheless, an analysis of the draft revision reveals that (potential) EMAS users and policy makers can be expected to see less added value (if any) in EMAS in its current form compared to the ISO 14001:2015 standard. The ISO 14001 revision will add new elements which have the potential to "close the gap" to EMAS or even exceed EMAS's requirements. As a result, EMAS will have to be adjusted in two respects if it is to maintain its relevance: firstly, it will have to incorporate the ISO 14001 revisions; and secondly, it will have to add new or expand existing aspects to maintain its added value.

Looking beyond ISO 14001, EMAS demonstrates a good level of coherence with other relevant management instruments such as ISO 50001. Nevertheless, in some cases, the lack of overlap with other instruments (e.g. EU Ecolabel) results in difficulties in adopting them in an integrated manner. The OEF, currently in pilot status, also mentions EMAS, but is in too early a stage to determine the exact relationship between the two instruments. However, the OEF pilots may come to the conclusion that EMAS's role in this policy instrument should be specified or redefined (e.g. making EMAS an important platform for footprinting exercises at organisational level). Such a decision would necessitate changes to the Regulation. Additionally, one of the main weaknesses identified in our survey is that EMAS is not well integrated into other laws and policy initiatives (e.g. with regard to regulatory relief).

General EMAS principles and objectives (voluntary approach; prevention of pollution; continuous improvement) are very much valid and in tune with current EU policies. Recent EU policy initiatives like the 7th EAP and the Roadmap to a Resource efficient Europe emphasise the importance of environmental footprinting. However, as mentioned previously, OEF is currently in a pilot stage and as such its links to EMAS cannot be thoroughly assessed.

When examining the effectiveness and efficiency of EMAS's business model, the costs for maintaining EMAS on EU and Member State level are considered to be moderate to low

and thus acceptable. Furthermore, results from the surveys of registered organisations and Member States also indicate that not all EMAS users see the need to change the scheme (again). However, our survey results show foremost that EMAS users would like to see modifications to ensure that benefits reach the users, for example that barriers are removed and costs reduced. In fact, most surveyed organisations did not agree with the survey statement my organisation did not experience any difficulties in implementing EMAS. Several Member States, among them the four with greatest EMAS registration numbers, also indicated that the scheme should be modified to address certain barriers.

Overall, the survey results show that EMAS stakeholders tend to prefer slight modifications which would not change the scheme fundamentally. Smaller modifications could address existing problems without creating the added work and expense of adapting to a fundamentally changed Regulation. The by far most frequently voiced criticism of survey respondents – and thus an important area for potential modification - was lack of policy support at EU and Member State level. Organisations desired such support in the form of regulatory relief and a better integration of EMAS in EU and national laws.

Overall, considering the additional support desired by organisations and the changes necessary in light of the upcoming ISO 14001 revision, “Keeping EMAS as it is” does not appear to be a viable option. Making no changes at all to EMAS would lead to, at best, a “muddling-through” of the scheme with decreasing registration numbers and mixed results on performance improvements, and at worst, to a significant decline in EMAS’s overall relevance.

Impact profile

Assessment criterion	Assessment aspect	Measure of the policy option ⁵⁵
		7.1
Effectiveness	Increase in the number of registrations that the option is capable of producing (e.g. addressing the main drivers and barriers for EMAS adoption)	•
	Improvement of participants' environmental performance in the areas targeted by the proposed changes	••
	Increase in capability to spur eco-innovations and an increase in competitiveness of the registered organisations	••
	Beneficial consequences for actors other than the participants (suppliers, customers, institutions, etc.) that are linked to the development of the option (indirect effect)	••
Efficiency	Benefits are felt by all participants and across all sectors (EMAS registered organisations)	••
	Improvement of participants' economic performance in terms of reduction of costs or an increase in competitiveness	••
	Reduction of the challenges faced by SMEs participating in this scheme	•
Coherence	Improvement of the consistency/ alignment of EMAS as a policy tool with the policy objectives of the Sustainable Consumption and Production and Sustainable Industrial Policy (SCP/SIP) Action Plan , the 7 th EAP, the Roadmap to a and the Resource efficient Europe	••
	Contribution to overcoming unjustified overlaps, obsolete provisions and/or gaps with other pieces of EU legislation	•

⁵⁵ ••• = EMAS's principal objectives as well as criteria, effectiveness, efficiency, etc. can be [most likely] met); •• = Meeting EMAS's principal objectives as well as criteria is likely/will be achieved in some cases; • = Meeting EMAS's principal objectives as well as criteria, e.g. effectiveness, efficiency, is highly unlikely or even impossible.

	Improvement of synergies with other (EMS) standards	•
Relevance	Relevance in terms of driving improvements in the environmental performance of private and public organisations, making them more resource efficient and reducing their environmental impact	••
	Contribution to increasing the relevance and validity of existing EMAS objectives or providing new relevant objectives for the scheme	••
EU added value	The option increases the added value of EMAS (e.g. with regard to other environmental management instruments like ISO 14001) due to actions at EU-level	•
Feasibility	Administrative and technical feasibility: organisational and coordination effort by the European Commission and Member States (e.g. Competent Bodies) is acceptable	••
	Administrative feasibility of implementation for registered organisations/newly registering organisations	••
	Budget feasibility: budget needed to implement the option is acceptable	•••
	Proportionality: the option leaves scope for national decisions as much as possible and does not go beyond what is necessary to satisfactorily achieve the set objectives	n/a

7.2. Path II – Modifications (internal dimensions of EMAS)

7.2.1. Strengthening the requirements of indirect aspects in the environmental review or within the EMS

Rationale

Indirect environmental aspects were introduced with the first revision of the EMAS Regulation in 2001 and have since received little attention, especially when compared to direct environmental aspects. The current version of the EMAS Regulation only includes a general list of these indirect aspects, and does not provide precise indications on how to manage them. The most common approach to dealing with indirect aspects adopted by most EMAS registered organisations (including those operating in the services sector) is to simply identify and describe these aspects. Most EMAS registered organisations do not collect quantitative data or elaborate which indicators are to be used in assessing their significance or in monitoring their environmental performance. In addition, it is also very unlikely that these aspects are targeted by specific improvement actions in environmental programmes.

Despite the fact that the practical application of EMAS thus appears to underestimate the importance of indirect aspects, most practitioners and academics acknowledge their relevance for improving organisations' impact on the environment. This is particularly true for the supply chain. Our review of the available literature has shown that many studies demonstrate how proactive "green management" in the supply chain can have positive effects in terms of improvements to environmental performance.

Furthermore, it is also important to note that EMAS registered organisations can, by placing greater emphasis on environmental factors (especially in supply chain management), stimulate suppliers to request EMAS registration either as a guarantee or as a precondition to being included on vendor lists. This procedure thus triggers a greater diffusion of EMAS among providers.

The life cycle approach provides further significant potential for improvement to the management of performance as regards indirect environmental aspects and the supply chain. Several parts of this study provide evidence for this conclusion,, particularly the survey and the stakeholder workshop. Moreover, the new version of the ISO 14001 standard also includes the element of considering a "life-cycle perspective".

One option to achieve a greater consideration of indirect aspects could be to exploit the potential synergies between EMAS and the Ecolabel and to seek a possible integration of the two tools. This option was considered and examined in the past, as part of the EVER study and also by practitioners on the basis of trials in practice. However, the option was then deemed unsuitable and discarded. Another significant opportunity to increase the consideration of indirect aspects in EMAS, thus including a "life-cycle" perspective, might come from the currently on-going pilot projects being conducted by the European Commission DG Environment on OEF and PEF. As mentioned previously, however, a thorough and full assessment of any possible synergies between EMAS and these methods cannot be conducted until the completion of the OEF and PEF's experimental stage. The project team thus focusses on a stronger integration of indirect environmental aspects within the Plan-Do-Check-Act cycle of the scheme itself.

Description and means of implementation

The objective of this option is to increase the importance of indirect environmental aspects in the environmental management of EMAS registered organisations. The aim is to better manage the impacts linked to such indirect aspects and to spread the adoption of EMAS among suppliers and other actors connected to EMAS registered organisations.

The measures can be linked to both the environmental review and the EMS.

The environmental review could include:

- New requirements in the EMAS Regulation on the adoption of a life-cycle approach in order to identify and quantify the environmental aspects linked to the product dimension, as well as those observed in the business, logistic, commercial etc. relationships in the supply chain;
- A list of indicators (essentially, “core indicators” for indirect aspects) to collect and assess the environmental impact connected with the product dimension;
- Additional requirements aimed at involving suppliers and other actors more in the process of identification and assessment of indirect aspects, in order to improve their knowledge of EMAS;
- Making the requirement more explicit and clearer in the EMAS Regulation, for example, including specific objectives and programmes for improving the main indirect aspects;

The measures of the EMS could include:

- Establishing a periodic monitoring of the quantitative data and indicators linked to indirect aspects;
- New requirements for EMAS registered organisations to ask their suppliers to implement an EMS and apply for EMAS;
- Explicit requirements for EMAS registered organisations to carry out a “second party audit” on the actors in the supply-chain during the audit cycle;
- Strengthening the requirements concerning the main suppliers’ environmental legal compliance;
- Introducing requirements that supplier personnel demonstrate greater environmental skills and awareness (achievable by way of specific environmental training), at least for the suppliers causing the most significant indirect environmental impacts

Potential impact

This option is estimated to be moderately effective. It could contribute to increases in EMAS numbers, especially by involving suppliers more strongly in improving environmental performance.

On the other hand, the option will undoubtedly add new requirements for registered organisations, thus increasing the effort and the cost of adopting EMAS. For this reason, this option could lead to a trade-off between potentially increasing numbers – due to suppliers joining the scheme – and deterring organisations from maintaining their registration due to increasingly demanding requirements. This option is also able to increase the relevance and validity of the EMAS scheme, since the inclusion of new requirements in the EMAS Regulation on the adoption of a life-cycle approach would add elements.

The option is certainly feasible for the EU institutions because it is implemented by way of modifications to the EMAS Regulation (or equivalent acts). For organisations, on the other hand, the effort would be much higher. The feasibility of the option would ultimately depend on the kinds of requirements that will be included. Depending on the requirements, increasing the importance of indirect environmental aspects might turn out to be a barrier, especially for SMEs.

Impact profile

Assessment criterion	Assessment aspect	Measures of the policy option
		7.2.1
Effectiveness	Increase in the number of registrations that the option is capable of producing (e.g. addressing the main drivers and barriers for EMAS adoption)	2
	Improvement of participants' environmental performance in the areas targeted by the proposed changes	3
	Increase in capability to spur eco-innovations and an increase in competitiveness of the registered organisations	2
	Beneficial consequences for actors other than the participants (suppliers, customers, institutions, etc.) that are linked to the development of the option (indirect effect)	3
	Effectiveness (MEAN)	2.5
Efficiency	Benefits are felt by all participants and across all sectors (EMAS registered organisations)	2
	Improvement of participants' economic performance in terms of reduction of costs or increase of competitiveness	2
	Reduction of the challenges faced by SMEs participating in this scheme	1
	Efficiency (MEAN)	1.67
Coherence	Improvement of the consistency/ alignment of EMAS as a policy tool with the policy objectives of the Sustainable Consumption and Production and Sustainable Industrial Policy (SCP/SIP) Action Plan , the 7 th EAP, the Roadmap to a and the Resource efficient Europe	2
	Contribution to overcoming unjustified overlaps, obsolete provisions and/or gaps with other pieces of EU legislation	2
	Improvement of synergies with other (EMS) standards	3
	Coherence (MEAN)	2.33

Relevance	Relevance in terms of driving improvements in the environmental performance of private and public organisations, making them more resource efficient and reducing their environmental impact	3
	Contribution to increasing the relevance and validity of existing EMAS objectives or providing new relevant objectives for the scheme	3
	Relevance (MEAN)	3
EU added value	The option increases the added value of EMAS (e.g. with regard to other environmental management instruments like ISO 14001) due to actions at EU-level	2
	EU added value	2
Feasibility	Administrative and technical feasibility: organisational and coordination effort by the European Commission and Member States (e.g. Competent Bodies) is acceptable	3
	Administrative feasibility of implementation for registered organisations/newly registering organisations	1
	Budget feasibility: budget needed to implement the option is acceptable	3
	Proportionality: the option leaves scope for national decisions as much as possible and does not go beyond what is necessary to satisfactorily achieve the set objectives	2
	Feasibility (MEAN)	2.25
Mean value of the policy option “Strengthening requirements on indirect aspects”		2.29

7.2.2. Environmental reporting – make the environmental statement more usable and available

Rationale

The need to strengthen the communication capacity of EMAS registered organisations emerges from several parts of the ex-post analysis as well as from the discussions at the EMAS workshop.

In particular, the results from the literature review and the survey highlight that:

- The desire to improve the corporate image and reputation toward external stakeholders is a key driver of EMAS organisations. The driver to improve my organisation's public reputation has been identified as the second most important motivation to adopt EMAS, with a survey value of 4.23 out of 5;
- Other important drivers identified in the survey (to demonstrate legal compliance status to the public and to improve relations with the local community) confirm the importance of the environmental reporting;
- Among the main barriers, two of them (lack of EMAS recognition by stakeholders and customers and lack of EMAS recognition by public institutions) can be tackled through effective environmental communication;
- External communication and reporting is a key difference to the ISO 14001 standard and for that reason it can provide added value for EMAS compared to the ISO standard;
- Regarding communication activities, the surveyed EMAS registered organisations agreed that the EMAS communication and reporting requirements help private organisations avoid "greenwashing" and the environmental statement is used as a tool toward other stakeholders (e.g. public authorities, industrial associations, local community);

In addition the following emerged from the workshop:

- The experts involved in the EMAS workshop stated that environmental statements are often too long and difficult to read/understand for many stakeholders. They felt the environmental statement as a communication tool should be made more appealing and readable;
- Another aspect raised during the workshop was the problem of environmental statements not being easily accessible online or at times entirely unavailable. The project team also encountered this difficulty when collecting statements for the performance analysis described in Chapter 4.4.3.

Description and means of implementation

The EMAS regulation already encourages organisations to use all methods available to communicate with their stakeholders and to give them free and easy access to the information in the environmental statement. The environmental statement provides part of a twofold solution to organisations' reported lack of recognition from external stakeholders (one of the main barriers to adopting EMAS identified in the survey). As a first step, more effective promotion activities could raise stakeholders' awareness (as discussed in Chapter 7.2.7). Secondly, the use of the environmental statement as a communication tool can be strengthening, reaching external stakeholders and indirectly increasing the recognition of the scheme. This second point will be considered in this chapter.

Survey results indicate that registered organisations often do not value the use of the environmental statement as external communication tool. In the survey and interviews conducted for this study, organisations cited several reasons for not using the statement as a communication tool. These included:

- the statement often uses highly technical language, making it difficult for some stakeholders to understand;
- the requirements necessitate the document at times being excessively long, making it difficult for stakeholders to find the key information and data they require;
- there is often a considerable delay in EMAS organisations updating their websites with the latest version of their environmental statement.

The following means are suggested to improve the accessibility of the environmental statement and its use as a communication tool:

- Amend Annex IV of the EMAS Regulation (“Environmental Reporting”) to include the possibility of drafting summaries of the environmental statement using parts of the information already validated by the environmental verifier. These summary documents should include the EMAS logo. This aspect is currently not allowed under clause 5 of Article 10 of the EMAS Regulation;
- Amend point D of Annex IV of EMAS Regulation (“Public availability”) requiring registered organisations to publish the last version of their environmental statement online and to send it to the European library.

Potential impact

The measure aims to increase the external communication of EMAS registered organisations, raising the general awareness of EMAS. For that reason, it could have a positive impact on the total number of EMAS registrations. The modification should be implemented by an amendment of the EMAS Regulation. Therefore, EU support for the option increases its added value and is, in fact, required. The feasibility is high: no relevant administrative and technical actions are needed and the budget needed to implement the option is quite low.

Impact profile

Assessment criterion	Assessment aspect	Measures of the policy option
		7.2.2
Effectiveness	Increase in the number of registrations that the option is capable of producing (e.g. addressing the main drivers and barriers for EMAS adoption)	2
	Improvement of participants' environmental performance in the areas targeted by the proposed changes	3
	Increase in capability to spur eco-innovations and an increase in competitiveness of the registered organisations	2
	Beneficial consequences for actors other than the participants (suppliers, customers, institutions, etc.) that are linked to the development of the option (indirect effect)	2
	Effectiveness (MEAN)	2.25
Efficiency	Benefits are felt by all participants and across all sectors (EMAS registered organisations)	3
	Improvement of economic performance of the participants in terms of reduction of costs or increase of competitiveness	2
	Reduction of the challenges faced by SMEs participating in this scheme	3
	Efficiency (MEAN)	2.66
Coherence	Improvement of the consistency/ alignment of EMAS as a policy tool with the policy objectives of the Sustainable Consumption and Production and Sustainable Industrial Policy (SCP/SIP) Action Plan , the 7 th EAP, the Roadmap to a and the Resource efficient Europe	2
	Contribution to overcoming unjustified overlaps, obsolete provisions and/or gaps with other pieces of EU legislation	2
	Improvement of synergies with other (EMS) standards	2
	Coherence (MEAN)	2

Relevance	Relevance in terms of driving improvements in the environmental performance of private and public organisations, making them more resource efficient and reducing their environmental impact	2
	Contribution in terms of increasing the relevance and validity of existing EMAS objectives or providing new relevant objectives for the scheme	2
	Relevance (MEAN)	2
EU added value	The option increases the added value of EMAS (e.g. with regard to other environmental management instruments like ISO 14001) due to actions at EU-level	3
	EU added value	3
Feasibility	Administrative and technical feasibility: organisational and coordination effort by the European Commission and Member States (e.g. Competent Bodies) is acceptable	3
	Administrative feasibility of implementation for registered organisations/newly registering organisations	3
	Budget feasibility: budget needed to implement the option is acceptable	3
	Proportionality: the option leaves scope for national decisions as much as possible and does not go beyond what is necessary to satisfactorily achieve the set objectives	3
	Feasibility (MEAN)	3
Mean value of the policy option “Environmental reporting”		2.49

7.2.3. Facilitated conditions for SMEs

Rationale

There are about 23 million SMEs in the EU, providing approximately 75 million jobs (66% in private employment and up to 80% in some industrial sectors such as textiles, construction or furniture). Since they represent such a large proportion of economic activity, SMEs have a significant impact on the environment. Their environmental impact is not fully tangible if one considers individual firms (although in some cases a single SME can have significant impacts on local environments and communities) but becomes much more obvious when examining their combined and cumulative impact.

The survey carried out in our study showed in some cases that large organisations and SMEs have different needs and perceptions. For instance, the survey reveals that micro enterprises and SMEs often consider costs related to EMAS to be a significant barrier to joining and maintaining the scheme, while large organisations do not.

The net increase in EMAS numbers has been achieved only thanks to an increase in the number of registered SMEs. For this reason, a modification providing facilitated conditions for SMEs becomes crucial to the future success of EMAS. Past revisions of EMAS have addressed this issue. With the publication of EMAS II, the enlargement to all productive sectors gave many SMEs in service sectors the chance to obtain EMAS. In 2009, with the publication of EMAS, Article 7 on the reduced audit frequency introduced specific facilitations for SMEs. Despite these initiatives, however, additional actions can be adopted to facilitate SMEs' access to EMAS.

The following policy options have been identified, developed and discussed in different steps of the present study.

Description and means of implementation and assessment of impact

7.2.3.1. Extend the period foreseen in Article 7, further reducing the audit frequency for SMEs with no significant environmental risk

Article 7 of the current EMAS Regulation was initiated to give SMEs an incentive to adopt EMAS. It allows a longer audit cycle of four years, enabling SMEs to save a portion of the environmental verification costs. However, EMAS registered organisations surveyed in our study indicated that the initiative has been "not effective at all" in practice. This option thus aims to increase its effectiveness. In particular, the aim of this policy option is to further reduce the audit frequency in order to help micro enterprises and SMEs achieve more significant cost savings.

The current situation as regards Article 7 can be illustrated using a practical example:

- Registration date: the accredited environmental verifier carries out the first registration audit in the organisation;
- One year later: the organisation updates the environmental statement, but it is not verified by the environmental verifier;

- Two years later: the environmental verifier carries out a surveillance audit in the organisation;
- Three years later: the organisation updates the environmental statement but it is not verified by the environmental verifier;
- Four years later: renewal of the EMAS registration through an audit carried out by the accredited verifier.

As we can see, the audit cycle is currently four years for organisations that fall within the conditions outlined in Article 7. The proposal is to extend that period from four to six years as follows:

- Registration date: the accredited environmental verifier carries out the first registration audit in the organisation.
- One year later: the organisation updates the Environmental Statement but it is not verified by the environmental verifier.
- Two years later: the environmental verifier carries out the first surveillance audit in the organisation.
- Three years later: the organisation updates the Environmental Statement but it is not verified by the environmental verifier.
- Four years later: the environmental verifier carries out the second surveillance audit in the organisation.
- Five years later: the organisation updates the Environmental Statement but it is not verified by the environmental verifier.
- Six years later: renewal of the registration through an audit of the environmental accredited verifier.

This modification will further increase cost savings for micro enterprises and SMEs, as they will only have to renew the registration after six years.

The efficiency of this option can be considered high, as our survey and interview results show that micro enterprises and SMEs identify the cost of environmental verifiers as one of the most important barriers to EMAS.

The efficiency of this option is high as it contributes to the achievement of EMAS objectives by pushing more SMEs to participate in the scheme at no additional cost for European and national institutions.

The scenario further ensures coherence with other SCP policies and, overall, with EU environmental legislation, which generally foresees facilitated conditions for SMEs. This option is highly feasible for two main reasons: first, it could be implemented by simply amending the current version of Article 7 of EMAS Regulation (not necessarily through a full revision of the scheme), and secondly, it is a gradual improvement of an already existing measure in favour of SMEs.

7.2.3.2. Include criteria in Article 7 to enable a clear preliminary identification of the organisations entitled to reduced audit frequency.

The exemption for small organisations foreseen in the Article 7 can be applied if three conditions occur:

- 1) No significant environmental risks are present;
- 2) The organisation has no substantial changes planned;
- 3) There exist no significant local environmental problems that the organisation contributes to.

The workshop carried out in this study highlighted that the various Member States do not have a single clear interpretation of the term “no significant environmental risk”. For example, Italian public administrations (e.g. municipalities) are not permitted to apply for the reduced audit frequency foreseen in the Article 7, as it is assumed that they always contribute indirectly (i.e.: with their policies) to significant local environmental problems. In contrast, Austria and other Member States allow their public administrations to apply.

In this situation, a better and clearer interpretation of the conditions set out in Article 7 can homogenise the application of the exemption throughout the EU. This uniformity would increase the number of SMEs benefiting from the derogation and therefore encourage their increased participation in EMAS.

In order to implement this option, an objective criterion could be included in Article 7 to preliminarily identify the organisations entitled to reduced audit frequency. One example could be to develop a matrix based on the number of employees and the environmental complexity of the applicant organisation’s industrial sector. A similar approach already adopted by the International Accreditation Forum establishes the number of man days auditors devote to each organisation during a certification of the ISO 14001 standard (IAF Mandatory Document 5:2009 “Duration of QMS and EMS Audits”). The approach could be transferred to this new matrix in order to determine the eligibility of EMAS SMEs to reduced audit frequency.

In terms of effectiveness, this measure could trigger the application of the exemption foreseen in Article 7 and thereby spur an increase in EMAS registrations by micro enterprises and SMEs. These changes could occur without any cost to European or national institutions or Competent Bodies. The measure also ensures coherence with other SCP policies and, more generally, with EU environmental legislation, which normally foresees facilitated conditions for SMEs. Moreover, it represents a mere modification of a provision that already exists in EMAS. The option can therefore be considered highly feasible. In terms of EU added value, this measure would ensure a uniform application of derogation rules across Europe.

7.2.3.3. Enhance the application of EMAS in industrial clusters, better specifying the rules of application and simplifications for SMEs.

The ex-post analysis of our study has highlighted how the application of EMAS at the cluster level can help to spread EMAS among SMEs and, consequently, enhance SMEs’ environmental legal compliance and performance improvements. Since this approach

began operating in industrial clusters, international experience has demonstrated some success.

Currently, the EMAS cluster approach is mentioned in Article 37 of the EMAS Regulation, which establishes that “Member States shall encourage local authorities to provide, in participation with industrial associations, chambers of commerce and other concerned parties, specific assistance to clusters of organisations to meet the requirements for registration”. In addition, some Member States (e.g. Italy) have gained extensive experience on the application of EMAS in clusters thanks to ad hoc initiatives carried out by the national Competent Body.

Option 7.2.3.3 thus aims to increase the application of EMAS in clusters by means of two specific measures:

1. Modify Article 37 to foresee official EU recognition for actors applying EMAS in clusters (e.g. a simplified EMAS cluster certificate). Each organisation will continue to be registered separately but the promoters of the EMAS cluster approach will receive recognition;
2. Include in an annex of the future Regulation operational details and more specific requirements on how to apply EMAS in the cluster (e.g.: how to carry out the Environmental Review of the cluster, how to draft the Policy and Improvement Programme of the cluster, etc.). It should also clarify which simplifications the organisations located in an “EMAS cluster” will benefit from once they individually decide to obtain the registration. Benefits could include, for example, using the cluster environmental review to identify their most significant environmental issue, using common core indicators relating to the whole cluster as benchmarks to elaborate their own specific indicators and assess the significance of the corresponding environmental aspects, and/or adopting the cluster Policy as their own individual Policy.

This measure will widen and spread the application of EMAS at the cluster level and, consequently, will support and stimulate the adoption of EMAS by individual SMEs located in those clusters. This measure is also likely to increase the organisations’ capability to innovate, in particular due to the potential for knowledge-sharing with other organisations within the cluster. For this reason, the effectiveness of this option can be considered high.

This option is also very efficient due to the fact that it can be implemented at reasonable cost. Moreover, through their membership in the cluster, organisations will face reduced costs for implementing EMAS.

The added value of EU level intervention to coordinate this action is very high, especially with regard to homogenising the different Member State initiatives and approaches to this issue. The implementation of the option indicates the need to modify the EMAS Regulation. It also necessitates the Competent Bodies adopting new procedures for issuing official recognition to the clusters that will apply for recognition. The scenario is coherent with other policy initiatives at the EU level that are promoting the development of networking actions to improve the environmental conditions of European clusters.

7.2.3.4. Provide technical/legal support for SMEs (e.g. specifically targeted information via the official European EMAS website or Member States' EMAS websites)

The lack of knowledge on how to implement EMAS or to maintain environmental compliance can be a barrier to the participation of micro enterprises or SMEs in the scheme, or even a cause of high external costs. For this reason, we propose an option based on providing technical support to micro enterprises or SMEs through specific communication channels such as the official European EMAS Helpdesk or national EMAS websites. On the basis of the results of our ex-post analysis, we can clearly state that most of the surveyed organisations and the stakeholders involved in the workshop deemed this option to be effective for increasing SME's adoption of EMAS. . In fact, as shown in the section of the report focusing on barriers to registration (sub-Chapter 4.3.3), cost remains the main hurdle for micro enterprises and SMEs. The costs for implementation (including the costs for consultants) are the most important barrier to joining EMAS for these organisations.

Examples of services that consultants usually provide to SMEs are: identification of the main legislative texts and requirements pertaining to the organisation's activities; support in the identification and assessment of direct and indirect environmental aspects in the environmental review; support in drafting operational procedures for management of waste, air emissions, water emissions; selection and monitoring of the key performance indicators; training and involvement of the staff (e.g. through specific online training courses); support in the drafting of the Environmental Statement.

Experience in applying EMAS in recent years has shown that technical support provided to SMEs via innovative tools and approaches (such as the EMAS EASY) can prove effective in helping these organisations to comply with the Regulation requirements at lower costs. This measure will reduce SMEs' costs of participation in EMAS and for this reason can be considered highly efficient.

The proposed option could also contribute to filling a gap in the implementation of the current EMAS Regulation. Article 32 of the Regulation, in fact, foresees that Member States provide assistance to organisations in order for them to comply with legal requirements relating to the environment. This article has been largely ignored by Member States. This task could be, at least partially, performed by the Helpdesk or the Competent Bodies.

The added value of EU support for this option appears rather low, with the exception of a potential role for the EMAS Helpdesk. In any case, the proposed activity can likely be more efficiently and effectively managed at the national level because the types and content of support and information needed vary from country to country (e.g. national legislative requirements). However, feasibility, especially if considered from an administrative and organisational point of view, is low, as the EMAS Competent Bodies often do not have adequate human resources to set up and apply the assistance foreseen in this option. Here, financial support at EU level could provide an added value.

7.2.3.5. Summary of potential impact

Considering the relevance of SMEs in the EU context, we assess the positive impact of the measure as particularly high. Today, SMEs already represent a large share of the total number of EMAS registered organisations and the proposed option can further increase these numbers. The objectives of this policy option are ambitious but achievable. They are also relevant to the central aims of the EMAS Regulation because they concern SMEs, a key set of actors for EMAS and one which also represent the backbone of the EU industrial system.

Impact profile

Assessment criterion	Assessment aspect	Measures of the policy option			
		7.2.3.1	7.2.3.2	7.2.3.3	7.2.3.4
Effectiveness	Increase in the number of registrations that the option is capable of producing (e.g. addressing the main drivers and barriers for EMAS adoption)	3	2	3	3
	Improvement of participants' environmental performance in the areas targeted by the proposed changes	2	2	3	2
	Increase in capability to spur eco-innovations and an increase in competitiveness of the registered organisations	2	2	3	2
	Beneficial consequences for actors other than the participants (suppliers, customers, institutions, etc.) that are linked to the development of the option (indirect effect)	3	3	3	3
	Effectiveness (MEAN)	2.5	2.25	3	2.5
Efficiency	Benefits are felt by all participants and across all sectors (EMAS registered organisations)	3	3	3	2
	Improvement of participants' economic performance in terms of reduction of costs or increase of competitiveness	3	2	3	3
	Reduction of the challenges faced by SMEs participating in this scheme	3	3	3	3
	Efficiency (MEAN)	3	2.66	3	2.66
Coherence	Improvement of the consistency/ alignment of EMAS as a policy tool with the policy objectives of the Sustainable Consumption and Production and Sustainable Industrial Policy (SCP/SIP) Action Plan , the 7 th EAP, the Roadmap to a and the Resource efficient Europe	3	3	2	2
	Contribution to overcoming unjustified overlaps, obsolete provisions and/or gaps with other pieces of EU legislation	2	2	3	2

	Improvement of synergies with other (EMS) standards	1	1	2	2
	Coherence (MEAN)	2	2	2.33	2
Relevance	Relevance in terms of driving improvements in the environmental performance of private and public organisations, making them more resource efficient and reducing their environmental impact	3	3	3	2
	Contribution to increasing the relevance and validity of existing EMAS objectives or providing new relevant objectives for the scheme	3	3	3	2
	Relevance (MEAN)	3	3	3	2
EU added value	The option increases the added value of EMAS (e.g. with regard to other environmental management instruments like ISO 14001) due to actions at EU-level	3	3	3	2
	EU added value	3	3	3	2
Feasibility	Administrative and technical feasibility: organisational and coordination effort by the European Commission and Member States (e.g. Competent Bodies) is acceptable	3	3	2	1
	Administrative feasibility of implementation for registered organisations/newly registering organisations	3	3	3	3
	Budget feasibility: budget needed to implement the option is acceptable	3	3	2	1
	Proportionality: the option leaves scope for national decisions as much as possible and does not go beyond what is necessary to satisfactorily achieve the set objectives	3	3	3	2
	Feasibility (MEAN)	3	3	2,5	1,75
Mean values of each measure		2.75	2.65	2.81	2.15
Mean value of the policy option “Facilitated conditions for SMEs”		2.59			

7.2.4. Revise EMAS logo provisions (Art. 10 of the EMAS Regulation)

Rationale

The second revision of the scheme, supported by the EVER study (2006), recognised the importance of the EMAS logo as “an appealing communication and marketing tool for organisations, which raises the awareness of buyers and other stakeholders to EMAS” (considerandum 15, EMAS Regulation). The EVER study concluded that the logo needed more visibility and should be strengthened through, among other things, a reconsideration of the very restrictive framework for its use (as included in the previous EMAS II). The framework should be amended to make EMAS a real “EU brand” for organisations, representing high environmental performance and leadership. Following the recommendations outlined in the EVER study, rules for the use of the logo have been changed and simplified in the current EMAS Regulation, leading to the use of one single logo (Article 10). Additionally, many of the previous existing restrictions have been removed, with the exception of those relating to products and packaging.

EMAS organisations also indicate a desire for improving the use of the logo. In the section of our survey that examined the effectiveness of the EMAS III reforms, respondents also indicated how the new logo rules have performed in terms of increasing the attractiveness of the EMAS logo to registered organisations. Overall, survey respondents felt that the EMAS III reforms have been in place long enough to show their effects (about 60% of answers positive), but they largely hold that the reforms have been not effective. Indeed, the new rules on the logo were rated as the least effective of the reforms, at least with regard to increasing awareness and the appeal of the scheme. In a separate section on future policy scenarios, our survey also presented the option of improving the recognition and use of the EMAS logo in a potential future revision. Survey respondents looked upon this option favourably, giving it the fourth highest value of the twelve scenarios proposed. Finally, the outcome of the workshop confirmed a general consensus on the need to allow for a more flexible use of the EMAS logo: in spite of its potential key role in promoting diffusion and increasing the appeal of the scheme, the logo has never become a “trade-mark” known to the broad majority of external stakeholders. In order to overcome this barrier, a number of suggestions were provided, ranging from increasing opportunities to use the logo (without a registration number for general promotion purposes) to extending its use on registered organisations’ products.

Description and means of implementation

Overall, the evidence supports setting up an option to revise current EMAS logo provisions, with the aims of increasing its visibility and further simplifying its usage rules. At the same time, the revision would:

- Preserve the logo’s key role as a distinctive graphic image associated with the correct implementation of the scheme (i.e. a clear signal to the market of organisations’ commitment to continuous environmental improvement, of the credibility of the information on their environmental performance; of their proven legal compliance, etc.);
- Avoid any risk of potential overlap and confusion with the EU Eco-label and environmental product labels in general. This last concern – which was already well-known at the time of the second revision of EMAS – is even more crucial today, in a context characterised by the proliferation of environmental product labels and the growing phenomenon of “greenwashing”.

To this end, we propose to amend Article 10 of the current Regulation by removing those provisions that prevent a broader and further simplified use of the logo while still restricting the logo's use enough to prevent false claims.

Article 10 should be amended essentially by revising its fifth clause addressing the use of the EMAS logo by EMAS registered organisations in conjunction with environmental information drawn from their latest environmental statement or updated environmental statement. We propose deletion of the last statement of clause 5, which currently calls for an environmental verifier to validate this information as being:

1. Accurate;
2. Substantiated and verifiable;
3. Relevant and used in an appropriate context or setting;
4. Representative of the overall environmental performance of the organisation;
5. Unlikely to result in misinterpretation; and
6. Significant in relation to the overall environmental impact.

We propose deletion of this statement because:

- All the data and information drawn from organisations' environmental statement (or updated environmental statement) have already been subject to a rigorous validation procedure within the overall EMAS verification process, which guarantees its accuracy, reliability, relevance, clarity, in accordance with the requirements of Annex IV of the Regulation;
- In such a context, a second validation process entails additional efforts and costs for registered organisations willing to publicise them in conjunction with the EMAS logo, without adding any substantial value in terms of credibility and truthfulness;

At the same time, the requirements that call for this information to be: (i) representative of the overall environmental performance, and (ii) significant in relation to the overall environmental impact, result de facto in the impossibility of easily using the EMAS logo in combination with environmental claims drawn from the environmental statement. This requirement would prevent, for example, usage of the EMAS logo to accompany a claim on the carbon footprint of the organisation for marketing purposes despite the fact that this environmental indicator has been validated within the environmental statement. This would occur because the carbon footprint is not really representative of the overall performance of the organisation itself. It is self-evident that this might represent a strong constraint and limitation on the use of the logo for communication and marketing purposes.

Potential impact

The effectiveness of the measure is not high: it does not directly affect the environmental performance of participants, nor their capability of spurring innovations and increase competitiveness. The impact of this policy option on EMAS diffusion would be moderate.

The benefits of achieving more visibility of the EMAS logo would be felt by all participants and across all sectors, although it would not help to reduce challenges specific to SMEs. This measure will increase the coherence of EMAS with other policy tools. At the same time, this option will increase the relevance and the EU added value of the Regulation. The measure does not imply any particular organisational or economic effort on the side of the European Commission and is thus feasible from an administrative perspective. However, the EC should clarify the rules for the use of the logo in order to avoid overlaps with the EU Ecolabel or other product labels.

Impact profile

Assessment criterion	Assessment aspect	Measures of the policy option
		7.2.4
Effectiveness	Increase in the number of registrations, that the option is capable of producing (e.g. addressing the main drivers and barriers for EMAS adoption)	2
	Improvement of participants' environmental performance in the areas targeted by the proposed changes	1
	Increase in capability to spur eco-innovations and an increase in competitiveness of the registered organisations	1
	Effectiveness (MEAN)	1.33
Efficiency	Benefits are felt among all participants and across all sectors (EMAS registered organisations)	3
	Improvement of participants' economic performance in terms of reduction of costs or increase of competitiveness	2
	Reduction of the challenges faced by SMEs participating in this scheme	1
	Efficiency (MEAN)	2
Coherence	Improvement of the consistency/alignment of EMAS as a policy tool with the policy objectives of the Sustainable Consumption and Production and Sustainable Industrial Policy (SCP/SIP) Action Plan , the 7 th EAP, the Roadmap to a and the Resource efficient Europe	3
	Contribution to overcoming unjustified overlaps, obsolete provisions and/or gaps with other pieces of EU legislation	3
	Improvement of synergies with other (EMS) standards	2
	Coherence (MEAN)	2.66

Relevance	Relevance in terms of driving improvements in the environmental performance of private and public organisations, making them more resource efficient and reducing their environmental impact	1
	Contribution to increasing the relevance and validity of existing EMAS objectives or providing new relevant objectives for the scheme	3
	Relevance (MEAN)	2
EU added value	The option increases the added value of EMAS (e.g. with regard to other environmental management instruments like ISO 14001) due to actions at EU-level	3
	EU added value	3
Feasibility	Administrative and technical feasibility: organisational and coordination effort by the European Commission and Member States (e.g. Competent Bodies) is acceptable	2
	Administrative feasibility of implementation for registered organisations/newly registering organisations	3
	Budget feasibility: budget needed to implement the option is acceptable	3
	Proportionality: the option leaves scope for national decisions as much as possible and does not go beyond what is necessary to satisfactorily achieve the set objectives	3
	Feasibility (MEAN)	3
Mean value of the policy option "Revise EMAS logo provisions"		2.33

7.2.5. Revising the multi-site registration approach

Rationale

Currently, the EMAS Regulation calls for the environmental verifier to “examine documentation, visit the organisation, carry out spot-checks and conduct interviews with personnel” as part of the verification and validation activities taking place during a yearly visit to a registered organisation (Article 25 Section 4). In the case of a single-site organisation, the environmental verifier has to go on-site every year. For small single-site organisations– which apply the derogation for small organisations (Article 7), validation/verification activities have to be carried out after two and four years, necessitating a visit by the environmental verifier every two years. In the case of a registered multi-site-organisation, the “EMAS Users Guide” (Commission Decision 2013/131/EU) has specified that the environmental verifier’s obligation is fulfilled when he/she visits the organisation (this could be one or more sites, or different sites) each year, but “the visiting program has to ensure that each site, which is included in the registration number of this multi-site-organisation, is at least visited (completely verified) once within a cycle of 36 months,” and “before a first registration, the environmental verifier has to visit all sites of a multi-site organisation” (Article 2.4.2., clause 5).

Overall, these requirements contribute to the reliability and robustness of the scheme, as well as to its added value in terms of credibility when compared to other EMS. At the same time, the provision of visiting each site once within a cycle of 36 months poses challenges to those organisations with a large number of sites who are committed to obtaining and maintaining corporate registration covering all these sites (whether all at once, or by way of a gradual extension of the registration itself). The maintenance of this corporate registration requires a massive effort in terms of the organisational, human and financial resources allocated annually to enable the environmental verifier to carry out the required visit and verification program. For multi-site organisations with thousands of sites, an EMAS corporate registration becomes practically impossible.

In such a context, the absence of specific provisions aimed at regulating the registration of such multi-site organisations ultimately stands as a significant barrier to the widest possible diffusion of EMAS. It is also a barrier to an increase in the number of EMAS registrations. In contrast, third party audit rules for ISO 14001 certification – the major alternative to EMAS – already include multi-site organisation-targeted provisions aimed at ensuring that: (i) the audit provides adequate confidence in the conformity of the management system to the standard across all sites and (ii) the audit is both practical and feasible in economic and operative terms (IAF Mandatory Document for the Certification of Multiple Sites Based on Sampling, IAF MD 1:2007).

Our study addressed these issues both in the survey – by investigating the opinion of the respondents on the effectiveness of the “enhancement of support for the registration of multi-site organisations” as a possible option to improve the scheme – and in the workshop.

Firstly, the results of the survey show a significant appreciation of the proposed option. The option received the greatest support from large organisations, which is logical given that these organisations are the “target group” of the multi-site registration approach.

Secondly, a discussion during the workshop focused on the EMAS management approach and highlighted how the legislative provision of a multi-site registration approach would be particularly attractive for organisations with many sites which are similar in terms of environmental impact. A wide consensus emerged on the need to provide guidelines and clarifications for multi-site registrations, essentially by introducing a specific approach

targeted at those multi-site organisations that comply with certain criteria (e.g. in the case of non-manufacturing sectors when the most significant environmental aspects are controlled by headquarters, companies with multiple branches, etc.).

Description and means of implementation

Taking into account the European Commission objective of increasing the number of EMAS registered organisations and promoting the scheme's diffusion at a global level, we propose a measure aimed at removing barriers to adoption and implementation of the scheme by multi-site organisations with certain characteristics. This measure would indicate the need for a revision of the multi-site registration approach introduced with EMAS III.

This option involves the introduction – in the text of the Regulation – of a new article addressing the multi-site registration case and consistent with the derogation mechanism currently in force for small organisations (Article 7). In particular, the multi-site registration approach proposed is based on the following changes:

- Competent Bodies should, upon request of a multi-site organisation, grant the adoption of sampling rules for the definition of the triannual visiting program of the environmental verifier, provided that the he/she confirms that all the following conditions are met:
 - 1) High number of sites of limited sizes
The sampling rules shall be applicable to those organisations having an identified central function (i.e. a central office, not necessarily the headquarters of the organisation) at which their activities are planned, controlled and managed – and a wide network of local offices or branches (sites) of limited size, at which such activities are fully or partially carried out.
 - 2) Homogeneity of the processes and activities carried out
The sampling rules shall be applicable only to those organisations whose different sites – under a common EMS, which is laid down, established and subject to monitoring and internal audits by the identified central function – have fundamentally similar and homogenous processes and activities.
 - 3) Non-manufacturing sectors
The sampling rules shall be applicable only to those organisations belonging to non-manufacturing sectors.
- Competent Bodies should refuse the request if the above mentioned conditions are not met and should communicate a reasoned justification to the organisation.

These conditions should apply for multi-site organisations both at their first EMAS registration and at subsequent renewals. A consistent definition of multi-site organisation should also be given within the Article of the Regulation providing the definitions that are needed to adopt and implement the scheme.

Potential impact

The direct impact of this option on registration numbers, in terms of effectiveness, could be high. For example, a pending multi-site registration case of an EMAS registered organisation in the service sector could lead to approximately 4,000 additional sites.

Furthermore, the measure could increase the number of EMAS registrations by improving the attractiveness of the scheme for many (both EU and non-EU) multi-site organisations whose geographical distribution currently makes adoption of EMAS more difficult (e.g. organisations operating with franchises, manufacturing companies with a

network of sales offices, service companies with multiple sites offering a similar service, companies with multiple branches, etc.).

In terms of efficiency, this option could also significantly contribute to removing the economic and operative barriers associated with the auditing requirements that currently prevent the adoption of the scheme by these multi-site organisations. This measure would also be consistent with the Regulation provisions stating that costs and fees for registration under EMAS should be reasonable, and that unnecessary costs for participants should be avoided.

The option is coherent with other policy tools as it would improve synergies with other EMS standards, in particular by guaranteeing the applicability of EMAS at the same (or similar) conditions foreseen for the ISO 14001 standard. At present, certain types of organisations have difficulty adopting and implementing EMAS, but may not experience the same difficulties with other certifications. In this sense, the option also contributes to avoiding a potential loss of EMAS added value in comparison to other EMS certifications such as ISO 14001. The relevance of the scheme could thus increase with this option because of the introduction of a new article addressing multi-site registrations.

Finally, the adoption of this option has a high level of technical and administrative feasibility, both for institutional actors (at EU and at national level) and registered organisations.

Impact profile

Assessment criterion	Assessment aspect	Measures of the policy option
		7.2.5
Effectiveness	Increase in the number of registrations, that the option is capable of producing (e.g. addressing the main drivers and barriers for EMAS adoption)	3
	Improvement of participants' environmental performance in the areas targeted by the proposed changes	1
	Increase in capability to spur eco-innovations and increase in competitiveness of the registered organisations	2
	Effectiveness (MEAN)	2
Efficiency	Benefits are felt by all participants and across all sectors (EMAS registered organisations)	2
	Improvement of participants' economic performance in terms of reduction of costs or increase of competitiveness	2
	Reduction of the challenges faced by SMEs participating in this scheme	1
	Efficiency (MEAN)	1.66
Coherence	Improvement of the consistency/alignment of EMAS as a policy tool with the policy objectives of the Sustainable Consumption and Production and Sustainable Industrial Policy (SCP/SIP) Action Plan , the 7 th EAP, the Roadmap to a and the Resource efficient Europe	3
	Contribution to overcoming unjustified overlaps, obsolete provisions and/or gaps with other pieces of EU legislation	1
	Improvement of synergies with other (EMS) standards	3
	Coherence (MEAN)	2.33
Relevance	Relevance in terms of driving improvements in the environmental performance of private and public organisations, making them more resource efficient and reducing their environmental impact	2

	Contribution to increasing the relevance and validity of existing EMAS objectives or providing new relevant objectives for the scheme	3
	Relevance (MEAN)	2.5
EU added value	The option increases the added value of EMAS (e.g. with regard to other environmental management instruments like ISO 14001) due to actions at EU-level	3
	EU added value	3
Feasibility	Administrative and technical feasibility: organisational and coordination effort by the European Commission and Member States (e.g. Competent Bodies) is acceptable	3
	Administrative feasibility of implementation for registered organisations/newly registering organisations	3
	Budget feasibility: budget needed to implement the option is acceptable	3
	Proportionality: the option leaves scope for national decisions as much as possible and does not go beyond what is necessary to satisfactorily achieve the set objectives	3
	Feasibility (MEAN)	3
Mean value of the policy option "Use of multi-site registration approach"		2.41

7.2.6. Role of Sectoral Reference Documents

Rationale

According to Article 46 of the EMAS Regulation, the European Commission will develop, in consultation with stakeholders and Member States, SRDs comprising best environmental management practices, environmental performance indicators and benchmarks of excellence. The documents aim to describe concrete measures that organisations of a given sector can undertake to improve their environmental performance and minimise their environmental impact. Article 46 also foresees that the documents would go beyond EMAS, offering support and information for all organisations that wish to improve their environmental performance.

The Decision of the Commission of 4 March 2013 provided further guidance on how SRDs should be used in organisations' environmental statements. Section 2.4 of the Decision, concerning the verification and validation procedures, states that "The Commission has developed 'Sectoral Reference Documents' that should be taken into account when checking environmental performance in the organisation. The environmental statement should clarify how the Sectoral Reference Documents, when available, were taken into account."

As the SRDs have not yet been officially approved and issued, the survey of our study did not directly investigate the opinion of registered organisations on these documents. Nevertheless, some indication of respondents' opinions on SRDs can be obtained from the results of the survey. First, in the section on environmental performance, EMAS registered organisations were asked the following question: How would you rate the following factors in terms of their importance for achieving environmental improvement? Organisations identified technical progress as most important. SRDs would aim to support the spread of technical progress at the firm level. Second, regarding the knowledge and skills of environmental verifiers, the surveyed EMAS organisations indicated "sector-specific knowledge" as being the topic where they would most like to see improvements. If tailored correctly, SRDs could also give guidance and support to environmental verifiers.

However, interviews with certain EMAS actors and the debates arising at the workshops raised some doubts about the validity and feasibility of the process set up to issue SRDs and to keep them up to date. From an economic point of view, the amount of time and resources needed to publish the report appear to carry significant cost. Some attendees highlighted felt that these documents have a poor cost-benefit ratio and that the Commission should invest the resources in other actions. These could include a stronger promotion of EMAS or the integration of the scheme into other EU Directives and laws. Additionally, from a technical point of view, some experts mentioned the potentially rapid rate of technological change for some sectors. They raised doubts on the effective capacity of the Commission to update these documents in manner timely enough to make them a true reference for the Best Environmental Management Practice of a specific sector.

A third criticism raised was linked to the readability of these documents by EMAS registered organisations. The current drafts published appear too long and in some parts too difficult for micro organisations and SMEs to apply or gain value from them.

Finally, some workshop attendees indicated that the non-mandatory role of the SRDs should be better specified defining them as a "guidance document".

Taking into account the results of the ex-post analysis and these different opinions of stakeholders, the following sections will analyse three different scenarios for the future of SRDs.

Description and means of implementation and assessment of impact

7.2.6.1. Stopping SRDs: sudden death

One possible future policy option would be a “sudden death” of the process of developing SRDs. As described above, some EMAS actors have raised doubts about the utility of SRDs, mainly focused on the relationship between their costs and their actual benefits. A “sudden death” of the process to draft SRDs would free up resources to invest in other measures of the EMAS system.

This option would follow through a specific modification of the next version of the EMAS Regulation.

The decision to stop the SRDs would have a number of influences on the effectiveness of achieving EMAS objectives. On one hand, this policy option would reduce the amount of information available for EMAS registered organisations to improve their environmental management. On the other hand, it will allow the saved resources to be invested in other EMAS priorities identified by our study, such as the promotion of the scheme. The impact for EMAS organisations will not be significant. The option does not contradict other interventions with similar objectives and, for that reason, it can be considered coherent with the other SCP policies. However, the option will likely reduce EMAS’s relevance in terms of driving improvements in environmental performance. Additionally, the feasibility at the EU level will necessitate some modifications to the role of the team currently dedicated to researching and composing the SRDs. The option’s feasibility for registered organisations is high, indicating little or no change to their operations.

7.2.6.2. Stopping SRDs: transferring SRDs elements to BREFs

The Best Available Techniques Reference Documents (BREFs) play a role within the IED framework similar to that of the SRDs in the EMAS system. They describe the Best Available Techniques (BATs) of the sectors covered under the Directive, identifying the BAT-Associated Emission Level (BAT-AEL). The BREFs contain descriptions of relevant environmental technologies and management techniques. The elements referring to the Best Environmental Management Practices (currently or in the future) included in the SRDs could thus be transferred over to the BREFs, creating a stricter connection between EMAS registered organisations and the BREFs in future versions of the EMAS Regulation. Accordingly, the Competent Bodies and EMAS organisations could refer to the BREFs in order to identify significant improvement opportunities. Alternatively or additionally, the BREFs could be used as a benchmark of EMAS organisations’ performance. As BREFs do not exist for all productive sectors, they could only be used as reference documents by EMAS organisations from sectors that lie within the scope of the IED.

This option could be implemented through the introduction of specific references on the use of BREFs for EMAS registered organisations in the current version for Article 46 of the EMAS regulation.

The effectiveness, efficiency, coherence, relevance, added value and feasibility of this option are similar to that of the previous option (sudden death). A small difference is that the EMAS registered organisations would be able to obtain information on BEMP within the BREFs. The positive impact on effectiveness and relevance can thus be considered higher than in the previous option.

7.2.6.3. Improve the relevance of SRDs

Whereas the previous two actions foresaw stopping SRDs, this current option aims to assess the strength of the SRD's role in the EMAS system and how this can be improved. This objective can be pursued through two different approaches.

The first is related to EMAS registered organisations' use of the contents of SRDs. As mentioned above, organisations are currently instructed to use SRDs as guidance documents. The Decision of March 2013 states that "the environmental statement should clarify how the Sectoral Reference Documents, when available, were taken into account". The Commission could strengthen the current role of SRDs by increasing obligations for EMAS organisations based on the content of the SRDs. Examples include but are not limited to:

- A requirement for an organisation to include mandatory environmental performance indicators related to their most significant environmental impact(s) based on their sector, in order to guarantee a true improvement of performance;
- The inclusion of specific management practices within SRDs to be adopted by registered organisations;
- A mandatory requirement to include environmental benchmarks in the Environmental Statement, providing a ready comparison for the reader in terms of the organisation's environmental performance

This approach will increase the degree to which SRDs are mandatory for organisations. This entails an important limitation since it can only be applied when SRDs have been issued for all sectors, as it would otherwise create disparities between organisations from different sectors.

The second approach will not affect the obligations linked to the SRDs but instead focuses on increasing the SRDs' relevance, either by enlarging the scope of the documents or modifying the process for elaborating and updating them. This policy option foresees the following possible actions:

- The SRDs will become official guidance documents which organisations can refer to for topics beyond best environmental management practices and environmental performance. They will include additional content on methodologies and technical support for achieving the most important steps for implementing and maintaining EMAS. Possible elements to include in the SRDs include: support on how to draft the Environmental Review that identifies, quantifies and assesses direct and indirect environmental aspects; support in identifying the most important legal requirements for the sector; outlining schemes of operational procedures to manage the most significant environmental aspects; and support in the drafting of the Environmental Statement. Should this policy option be developed, the SRDs would become an important support tool for organisations, particularly those with low human resources like micro organisations and SMEs;
- It would be possible to develop cross-sectoral RDs on specific environmental aspects which prove particularly difficult to analyse or to improve, such as biodiversity;
- A group of international experts could be established to regularly revise and update the SRDs;

With regard to effectiveness, this option could have a positive effect on the improvement of environmental performance by EMAS registered organisations, since it would require them to adhere to specific performance indicators and management practices and provide technical support in the implementation of EMAS. However, this option might have a negative impact on new organisations' decision to adopt EMAS because it would increase the requirements. It could thus negatively affect the number of registrations.

In terms of efficiency, the measure could increase the costs of participating organisations because they will have less flexibility to identify improvement opportunities of their own accord. Additionally, the organisations would have to invest the resources to achieve specific performance indicators or adopt specific management practices that they might not otherwise have adopted.

In order for the measure to be effective, it would require significant coordination at the EU level and for thus holds significant EU added value. The option also requires a strong organisational effort on the part of the European Commission, as well as a higher budget for enlarging the scope of SRDs and keeping them updated.

7.2.6.4. Summary of potential impact

To better understand the potential impact of this measure we should consider the different options separately: options aimed at stopping SRDs and the option aimed at increasing their relevance.

The highest impact of the "negative" policy options would be saving the considerable resources dedicated to publishing and updating SRDs. These resources would then be available to invest in other actions aimed at increasing EMAS registration numbers. However, eliminating SRDs would reduce the support given to organisations in identifying possibilities for environmental performance improvement and eco-innovation opportunities.

In contrast, the scenario aimed at increasing the relevance of SRDs would require a significantly greater budget. This budget increase alone calls the feasibility of this option in question. However, if financially feasible, an expansion of the SRDs role would contribute to an improved performance of EMAS registered organisations. Actions at EU-level are fundamental to implementing this policy option.

Impact profile

Assessment criterion	Assessment aspect	Measures of the policy option		
		7.2.6.1	7.2.6.2	7.2.6.3
Effectiveness	Increase in the number of registrations that the option is capable of producing (e.g. addressing the main drivers and barriers for EMAS adoption)	2	2	1
	Improvement of participants' environmental performance in the areas targeted by the proposed changes	1	2	3
	Increase in capability to spur eco-innovations and increase in competitiveness of the registered organisations	1	1	3
	Beneficial consequences for actors other than the participants (suppliers, customers, institutions, etc.) that are linked to the development of the option (indirect effect)	2	2	2
	Effectiveness (MEAN)	1.5	1.75	2.25
Efficiency	Benefits are felt among all participants and across all sectors (EMAS registered organisations)	2	2	1
	Improvement of economic performance of the participants in terms of reduction of costs or increase of competitiveness	2	2	2
	Reduction of the challenges faced by SMEs participating in this scheme	1	2	2
	Efficiency (MEAN)	1.66	2	1.66
Coherence	Improvement of the consistency/ alignment of EMAS as a policy tool with the policy objectives of the Sustainable Consumption and Production and Sustainable Industrial Policy (SCP/SIP) Action Plan , the 7 th EAP, the Roadmap to a and the Resource efficient Europe	2	2	2
	Contribution to overcoming unjustified overlaps, obsolete provisions and/or gaps with other pieces of EU legislation	2	2	2
	Improvement of synergies with other (EMS) standards	2	2	2

	Coherence (MEAN)	2	2	2
Relevance	Relevance in terms of driving improvements in the environmental performance of private and public organisations, making them more resource efficient and reducing their environmental impact	1	2	3
	Contribution to increasing the relevance and validity of existing EMAS objectives or providing new relevant objectives for the scheme	2	2	3
	Relevance (MEAN)	1.5	2	3
EU added value	The option increases the added value of EMAS (e.g. with regard to other environmental management instruments like ISO 14001) due to actions at EU-level	2	2	2
	EU added value	2	2	2
Feasibility	Administrative and technical feasibility: organisational and coordination effort by the European Commission and Member States (e.g. Competent Bodies) is acceptable	3	3	2
	Administrative feasibility of implementation for registered organisations/newly registering organisations	3	3	1
	Budget feasibility: budget needed to implement the option is acceptable	3	3	1
	Proportionality: the option leaves scope for national decisions as much as possible and does not go beyond what is necessary to satisfactorily achieve the set objectives	3	3	1
	Feasibility (MEAN)	3	3	1.25
Mean values of each measure		1.94	2.13	2.03
Mean value of the policy option “Role of SRDs” (stopping SRDs; reinforcing SRDs respectively)		2.04		2.03

7.2.7. Promotion and information activities

Rationale

EMAS registered organisations perceive a lack of awareness of EMAS among clients and public institutions to be a significant barrier. The ex-post analysis has clearly identified this issue as a problem, confirming previous EMAS studies' conclusions that the regulation is not very well known or appreciated by key stakeholders (potential users, civil society, regulators, etc.).

According to this previous research and our survey results, public administrations, regulators, consumers and community and environmental groups alike all share a lack of recognition of EMAS. Similarly, our interviews with organisations that are not registered with EMAS but are certified according to ISO 14001 confirmed this issue as one of the most significant barriers in passing from ISO 14001 to EMAS. Several interviewees declared that EMAS had failed to live up to their expectations of improved reputation, not because stakeholders had a negative image of EMAS but because they did not know EMAS at all. Member State representatives also observed this lack of recognition, confirming low awareness of the scheme in their countries.

These results suggest that more information should be disseminated and promotional activities on EMAS should be stepped up if registration numbers are to be increased. As mentioned previously in the study, an increase in registration numbers would in turn increase the overall effectiveness of the policy instrument.

As described in the section concerning the EMAS management approach and organisational structure (chapter 5), EMAS registered organisations expect Competent Bodies and Member States to strengthen their information and promotion activities. Survey respondents also requested more activity on the part of the European Commission to integrate EMAS into more European policies and legislation, particularly with the goal of facilitating regulatory relief and other benefits for EMAS organisations. Even if most of the stakeholders interviewed declared satisfaction with the role of EMAS forums (Article 49 Committee and Forum of Competent Bodies), some also suggested potential improvements. One example was to increase opportunities to exchange information and good practices on Member States' promotion initiatives. Other proposed improvements include trying to develop synergies among EMAS Competent Bodies with regard to information and promotion activities.

In light of these findings, this section of the study will outline promotional activities and measures which aim at increasing the number of EMAS registrations.

Description and means of implementation and assessment of impact

7.2.7.1. Requiring Member States to define and carry out a yearly EMAS Communication Plan

The yearly communication plan should identify actions, budget and specific indicators to monitor the state of the implementation of the plan. In addition, Member States should then make a yearly report available to the public describing the actions carried out to implement the plan.

This measure aims to increase each Member State's responsibility for EMAS promotion activities. They will be obliged to give public evidence on how they are applying Articles 34, 35 and 36 of the EMAS Regulation.⁵⁶

Specifically, Member States should be required to draft a yearly EMAS Communication Plan in order to plan promotional activities. They should also draft a yearly report which should then be made publicly available, providing evidence of which actions have been implemented.

The communication plan should cover at least the following points:

- A description of the actions to be adopted
- The geographical scale of the action (national, regional, etc.)
- A quantified objective of the measure
- The tools to be used for each action
- The target groups
- A deadline to carry out the action
- Designate a person responsible for the actions
- The budget for implementation

The report will include a brief description on how the Member States have implemented specific measures and on how many target actors have been addressed. These reports must also be made available to the public, for instance through publication on the official European EMAS website.

This option will be able to address one of the main barriers perceived by organisations, the lack of EMAS recognition by key stakeholders. Costs of implementing the various potential actions detailed in a communication plan are not excessively high, especially if compared to achievable benefits in terms of better awareness and image of the scheme. This increased awareness should lead to higher number of registrations, which, in turn, leads to a higher positive impact on the environment.

In case this measure stretches human and financial resources thin in some Member States, they should be encouraged to focus on measures which have shown a good cost-benefit ratio. These reports can help achieve that goal by encouraging exchange of information between Member States and policy learning in general (see next sub-option for further information). The latter also contributes to strengthening the "EMAS community", in which key actors exchange best practice approaches. They can explore, for example, the most suitable initiatives on policy level or look at good management approaches on the organisational level.

By strengthening EMAS communication activities, this action also has the potential to improve coherence between EMAS and similar policy tools. European policies, in fact, usually aim to spur communication and dissemination, and this can be done with the aim of creating synergies with other EU SCP tools' communication plans.

With regard to coherence, this option does not help to address gaps with other pieces of EU legislation. For this reason, the option's contribution to correcting obsolete provisions

⁵⁶ Articles 34-36 outline information and promotion activities which shall be carried out by Member States.

is minor. Nevertheless, information campaigns aimed at policy makers may be used to strengthen the case for more policy support (see next option; chapter 7.2.8). Improved EMAS communication activities could also moderately improve synergies with other EMS standards. Communication activities are key drivers for organisations to improve environmental performance and, if undertaken by Competent Bodies and Member States, could increase the number of EMAS registrations and improve overall environmental performance.

For the EU, added value of EMAS as a result of this action is also high: the EU-level actions are needed to assess the national budget for the planned communication actions and to coordinate the actions creating synergies at international level.

Finally, the feasibility of the measure is medium. It does not require technical effort on the part of European Commission, but does require action from Competent Bodies and Member States, for whom it is possible to make national decisions on communication initiatives. A budget effort to implement these activities is requested. Since the implementation of this option does not require interventions by the EMAS registered organisations, the question of feasibility for organisations cannot be evaluated.

7.2.7.2. Increasing best practice sharing (beyond the activities of the Forum) by creating an online platform

The lack of knowledge of EMAS is often not only linked to low investments made by Member States, but also to the adoption of communications campaigns which turn out to be ineffective. However, some Member States have had experiences with low budget initiatives which have led to successful results. One such example is an initiative adopted by the Italian EMAS Competent Body a few years ago. The Competent Body awarded a flag with the EMAS logo to every newly-registered organisation. For several years, it was not unusual to see the EMAS flag waving beside the Italian and EU flags on the roofs of many EMAS registered organisations, increasing the visibility of the scheme. This is an easily replicable and effective measure which would not require a substantial budget.

To encourage sharing of best practice, an online platform could be established (perhaps as a section of the official European EMAS website) on which Member States and Competent Bodies can share ideas and initiatives. The platform could include discussion of best practice in the areas of promotion and EMAS awareness activities from all Member States and Competent Bodies in Europe.

The aim of this measure is to increase opportunities to diffuse, share, disseminate, promote and communicate positive and successful promotion and awareness practices. All information should be used by Member States as a guideline to the best possible implementation and promotion of EMAS.

Moreover, the sharing of best practices could lead to opportunities for Member States to develop joint projects, creating common promotional materials, potentially reducing costs, and learning from implementation activities developed by other Member States.

The sharing of best practice information on EMAS promotion can also work at the company level. In fact, the platform could also help in circulating individual organisations' experiences of adopting EMAS and in promoting their own registration, leading to competitive benefits or stakeholders' consensus. This higher level of knowledge and awareness of EMAS could encourage organisations to implement EMAS and help already registered organisations to achieve their EMAS objectives. In addition, there could be a significant effect on organisations' competitiveness and innovation: if

indeed this option did achieve a higher level of consumer knowledge and awareness of EMAS, EMAS registered organisations' competitiveness and ability/desire to innovate could increase as a result of the organisations receiving greater attention on the market. Moreover, this option can also benefit other stakeholders who would profit from more widespread familiarity with EMAS.

Moreover, the sharing of effective EMAS initiatives can increase the efficiency of the scheme: best practice will increase participants' knowledge of EMAS and, as a consequence, will help to simplify some aspects of its implementation. For this reason, benefits are achievable at reasonable costs. Thanks to a higher awareness of EMAS, challenges faced by SMEs can be reduced to a certain extent: as we have seen, promoting best practices will help SMEs to overcome some barriers.

This measure will increase the coherence of the scheme with other policy tools. Indeed some best promotion practices could set examples for further actions and suggest synergies with policies which have similar objectives. This option does not tackle any gaps in other pieces of EU legislation, and for this reason the contribution to overcoming obsolete provisions is low.

The sharing of best practice will stimulate higher knowledge and awareness of EMAS. This will significantly increase the usefulness of the scheme in terms of environmental performance improvements. Indeed, organisations will be more aware of EMAS and of its key objective of reducing environmental impacts. As in the case of the previous measure, EU added value of EMAS is high in terms of financial support of activities needed at the EU level.

The measure does not require that the European Commission undertake any technical tasks. A moderate level of action would be required from national bodies and Member States. Since the implementation of this option does not require interventions by EMAS registered organisations, the feasibility of this option for organisations cannot be evaluated.

7.2.7.3. Making registration fees publicly available and promoting the spread of this information, and providing a price comparison on the EMAS Helpdesk website

The measure aims to increase transparency and allow the comparison of registration fees charged by the various Member States. Even if the registration fee was not rated among the main barriers in the ex-post analysis, high registration fees in Member States could limit EMAS adoption especially among micro enterprises and SMEs. The comparison could be made through a clear and explicit indication of registration fees on the official European EMAS website. The EMAS Helpdesk website is accessible to all EMAS interested parties and stakeholders, such as companies, public authorities, environmental groups, academic researchers, trade unions, suppliers and the general public.

EMAS efficiency could be moderately improved. Making fees public and verifying that they are cost-effective will be a positive message for potential participants and serve to underline the transparency that plays such a significant role in the EMAS environmental statements. This option could also show if one or more Member States are applying (excessively) high fees; public comparison could put social pressure on these Member States to lower them, creating potential benefits for organisations in terms of the cost of EMAS participation.

This measure has a moderate impact on EMAS's ability to drive overall improvement in environmental performance. The EU added value of EMAS is low, requiring only implementation by the Helpdesk. This option would mainly be operative at the national level. Finally, the feasibility of the measure is high. Indeed, it requires very little effort from the European Commission, and only minimum effort from national competent bodies and Member States who would be called on to make information on fees available.

7.2.7.4. More promotion activities under the competency of the European Commission

This option, suggesting a centralisation of more promotion activities and responsibilities under the European Commission, includes both indirect and direct actions.

One possible future scenario would see EMAS promotion or implementation activities become eligible for support from EU environmental funding programmes. Currently, EMAS is mainly mentioned in programmes (such as Switch Asia) pursuing collaboration with non-EU parties, which can lead to an increase in the number of EMAS experiences outside Europe, although this potential is rather limited (see chapter 5 for further information). The Life Programme includes a short reference to EMAS in the LIFE Environment & Resource Efficiency section, but no explicit references are included in Life Environmental Governance and Information, which aims specifically to co-finance information, awareness and dissemination projects. Other programmes such as the collaboration programmes (Interreg, MED, SUDOE, etc.) do not mention EMAS among the actions that they fund. By increasing the funding available for EMAS promotion and information activities, this action could produce significant benefits.

Another option for the European Commission could be the planning and coordination of international EMAS public events. The objective would be promoting EMAS to a wider audience. In this study, registered organisations explicitly requested this type of promotion in their survey responses.

Moreover, the European Commission should set up a framework or launch flagship initiatives which set the tone for national campaigns and which are able to promote EMAS on a larger scale. Indeed, EMAS should be promoted in the context of currently relevant policy ideas and initiatives, such as the circular economy, which would link EMAS to current debates and strengthen its relevance.

Centralising more activities and responsibilities under the authority of the European Commission could have a high impact on EMAS effectiveness. This action could actually increase the number of registrations and, as a consequence, improve overall environmental performance. If the European Commission were to strengthen EMAS communication activities, this step could also effectively address several of the main barriers registered organisations face in maintaining EMAS. More widespread promotion of the scheme, for example, could address the lack of EMAS recognition among stakeholders; this would be the principal objective of this measure. More increased and centralised promotion could foster the competitiveness of EMAS organisations, thanks to a stronger and more widespread recognition and knowledge of the scheme, which in turn can create a competitive advantage for those that are able to obtain registration.

Beneficial effects for actors other than participants in the scheme can also be high: many stakeholders will be more informed and be more likely to choose to work with or buy

from EMAS organisations. Organisations not participating in EMAS could benefit as a result of registered organisations issuing more data and information. This information can subsequently be used as both as a good practice benchmark and as a reference point for environmental improvement activities.

This measure will, however, not directly improve the efficiency of EMAS. Indeed, the centralisation of EMAS promotion activities will neither significantly help SMEs to face their challenges nor it will affect cost-efficiency for organisations in general. A small indirect effect on cost-efficiency for some organisations may be observed if increased visibility of EMAS helps to improve their reputation and win more customers.

Stronger European Commission involvement in the promotion activities will considerably increase EMAS's coherence with other EU policies. The European Commission will have more influence over EMAS communication and will also be able to increase consistency with the promotion of other EU voluntary initiatives and programmes (e.g. the EU Ecolabel). The planning and the coordination of information days for EMAS (e.g. during the Green Week) could also significantly improve EMAS synergies with other EMS standards.

This option can significantly increase EMAS's relevance for driving environmental performance improvements. Indeed, more EMAS promotion by the European Commission could increase organisations' awareness of the importance of achieving better environmental performance. The reinforcement of European Commission responsibilities can increase EMAS relevance and its validity as the result of a stronger and more direct commitment at the European level.

The EU added value of EMAS from this action is high, due to the full involvement of the European Commission. The European Commission will be responsible for designing and executing flagship campaigns on EMAS promotion. In order to act within the framework of the Circular Economy, the European Commission should promote EMAS in more comprehensive way.

Finally, the feasibility of the measure is moderate. Indeed, the action requires a moderately high effort from the European Commission, including both internal coordination and a higher budget devoted to promotion activities. The involvement of EMAS registered organisations is not foreseen in this action and thus the administrative feasibility of this measure for organisations is not evaluable.

7.2.7.5. Boosting networks and pan-European activities in the EMAS community

The many stakeholders operating within the EMAS community should carry out measures to promote networking and pan-European activities. In addition to the promotion activities directly carried out by the European Commission and Member States, it is crucial that other entities involved in the scheme also play a key role in the diffusion of EMAS. For example, EMAS Clubs could make a stronger contribution to EMAS promotion. The existing EMAS Clubs aim to promote EMAS through communication and networking. These Clubs' objectives include strengthening EMAS visibility and strengthening the image and reputation of registered organisations. The EMAS Clubs also aim to develop networks among EMAS organisations, in order to promote collaboration and the exchange of experiences. The Clubs also increase the main stakeholders' awareness of EMAS.

The role and the importance of the EMAS Clubs should therefore be augmented. The EMAS Clubs should be officially recognised and supported by the European Commission, in order to enable them to intensify their activities and initiatives to further promote EMAS. They should organise promotional campaigns, workshops and other dissemination events where networks opportunities among EMAS stakeholders will be enhanced. These events should also be an occasion to exchange know-how and include non-EMAS users. Organisations which do not already have an EMAS registration could thus be encouraged to implement the scheme.

By allocating more resources, the European Commission could assist the promotion of information campaigns and other similar events on a regular basis. To this purpose, more funds should be provided to Member States to assist and help the EMAS Clubs promote EMAS.

The promotion activities carried out by the EMAS Clubs can also positively impact EMAS's effectiveness. Workshops and dissemination events potentially increase the number of EMAS registration and facilitate performance improvements in the (new) participants. The increased networking opportunities will also produce benefits for other stakeholders. Networking and information campaigns carried out by the clubs will also be able to address some of the main barriers to EMAS implementation, such as lack of recognition at many levels (the market, public institutions, stakeholders, etc.). There could also be an effect on organisations' competitiveness. New relationships and contacts with a wider spectrum of EMAS stakeholders could also stimulate organisations' abilities to improve environmental competitiveness.

The efficiency of EMAS can be considerably improved by this measure. The sharing of best practices can lead to cost reductions for a number of organisations of all sizes and sectors. Additionally, a better knowledge of EMAS and best practice could help to address the main drivers and barriers and ensure, thus further increasing the scheme's effectiveness..

To a certain extent, networking and dissemination events could improve the coherence of EMAS with other similar policy tools. European policies, in fact, usually aim to achieve a high level of cross fertilisation between the various policy tools, which can be obtained through networking. This option does not directly tackle gaps in other pieces of EU legislation, and for this reason the contribution to overcoming obsolete provisions is low.

The activities promoted by EMAS Clubs are also drivers to improve total environmental impact by increasing EMAS registration numbers. The Clubs also offer the additional benefits of benchmarking and exchange of best practices between participating EMAS organisations. The EU added value of EMAS within this action is high because the activities of EMAS Clubs at the national and regional levels will require EU financial and organisational support.

Finally, the feasibility of the measure is medium. Indeed, it requires a certain technical and financial effort by the European Commission, and a moderate effort on the part of national bodies and Member States. Moreover, this measure is not evaluable for organisations because they are not involved in its implementation.

7.2.7.6. Summary of potential impact

This option is highly recommended, as it can produce the following positive impacts:

An effective and well planned promotion campaign can lead to an increase to the number of EMAS registered organisations, and, as a consequence, improve overall environmental performance. Increased knowledge of EMAS, alongside intensified information campaigns and promotion activities, could also improve the recognition of the scheme among several stakeholder groups. Increasing awareness of EMAS among consumers, suppliers, intermediate customers, and policy makers addresses one of the most significant barriers to the scheme identified by survey respondents.

This option can be fully and effectively implemented by means of a considerable resource deployment by the European Commission and the Member States. In fact, it requires a large and continuous budget to support the implementation of promotion and information activities aimed at increasing knowledge and interest in EMAS and promoting more relationships and networks among stakeholders.

Impact profile

Assessment criterion	Assessment aspect	Measures of the policy option				
		7.2.7.1	7.2.7.2	7.2.7.3	7.2.7.4	7.2.7.5
Effectiveness	Increase in the number of registrations, that the option is capable of producing (e.g. addressing the main drivers and barriers for EMAS adoption)	3	3	2	3	2
	Improvement of participants' environmental performance in the areas targeted by the proposed changes	2	3	2	3	3
	Increase in capability to spur eco-innovations and increase in competitiveness of the registered organisations	2	3	2	3	2
	Beneficial consequences for actors other than the participants (suppliers, customers, institutions, etc.) that are linked to the development of the option (indirect effect)	3	3	1	3	3
	Effectiveness (MEAN)	2.5	3	1.75	3	2,5
Efficiency	Benefits are felt among all participants and across all sectors (EMAS registered organisations)	3	3	3	3	3
	Improvement of economic performance of the participants in terms of reduction of costs or increase of competitiveness	2	3	2	2	3
	Reduction of the challenges faced by SMEs participating in this scheme	2	2	2	3	3
	Efficiency (MEAN)	2.33	2,67	2.33	2,67	3
Coherence	Improvement of the consistency/ alignment of EMAS as a policy tool with the policy objectives of the Sustainable Consumption and Production and Sustainable Industrial Policy (SCP/SIP) Action Plan , the 7 th EAP, the Roadmap to a and the Resource efficient Europe	3	3	1	3	3
	Contribution to overcoming unjustified overlaps, obsolete provisions and/or gaps with other pieces of EU legislation	1	1	1	3	1

	Improvement of synergies with other (EMS) standards	2	3	1	3	3
	Coherence (MEAN)	2	2,33	1	3	2,33
Relevance	Relevance in terms of driving improvements in the environmental performance of private and public organisations, making them more resource efficient and reducing their environmental impact	3	3	2	3	2
	Contribution to increasing the relevance and validity of existing EMAS objectives or providing new relevant objectives for the scheme	3	3	3	3	3
	Relevance (MEAN)	3	3	2.5	3	2.5
EU added value	The option increases the added value of EMAS (e.g. with regard to other environmental management instruments like ISO 14001) due to actions at EU-level	3	3	1	3	3
	EU added value	3	3	1	3	3
Feasibility	Administrative and technical feasibility: organisational and coordination effort by the European Commission and Member States (e.g. Competent Bodies) is acceptable	2	3	3	2	2
	Administrative feasibility of implementation for registered organisations/newly registering organisations	n.a.	n.a.	n.a.	n.a.	n.a.
	Budget feasibility: budget needed to implement the option is acceptable	1	3	3	1	1
	Proportionality: the option leaves scope for national decisions as much as possible and does not go beyond what is necessary to satisfactorily achieve the set objectives	3	3	3	3	3
	Feasibility (MEAN)	2	3	3	2	2
Mean value of each measure		2.47	2.83	1.93	2.78	2.56
Mean value of the policy option "Promotion and information activities"		2.51				

7.2.8. Provide more regulatory relief and incentives

Rationale

In many Member States, regulatory relief has been explicitly and intentionally linked to organisations' ability to demonstrate their environmental performance improvement. According to this approach, regulatory relief (i.e. a significant reduction of bureaucracy and costs thereof) is carried out to the benefit of those organisations that can prove their commitment to environmental performance improvement and excellence through, for example, voluntarily adopting EMAS.

The issue of regulatory relief in the area of environmental policy is tightly connected to that of disseminating EMAS. Enabling administrative relief to be provided to EMAS registered organisations has two effects: rewarding organisations' environmental commitment through a reduction in their administrative burdens, and simplifying the bureaucratic apparatus to the benefit of organisations, citizens and public administrations.

Regulatory relief is usually pursued at the operational level by designing the requirements of environmental legislation in such a way as to create favourable conditions for EMAS registered organisations. It can also occur through simplifying the procedures and activities through which organisations comply with these requirements, for example regulatory inspections.

The European Commission, while seeking to increase the levels of compliance among businesses, also works to improve and simplify environmental legislation to enable businesses and institutions to meet the legal standards. Over the past few years, the Commission, the European Parliament and the Council have launched a range of initiatives have been to codify, consolidate and simplify existing legislation and to better evaluate the likely economic, social and environmental impacts of new regulatory proposals. Implementing regulations and laws entails costs. Some costs are linked to legal obligations to provide information either to public or private parties. Some legal obligations to provide information have become needlessly time-consuming, excessively complicated or useless. Unnecessary and disproportionate administrative costs may hamper economic activity and/or irritate business, citizens and public authorities. By reducing unnecessary reporting requirements, businesses can spend more time on their core activities. This focus may reduce production costs and allow additional investment and innovation, which in turn should improve productivity and overall competitiveness.

In interviews and in several different sections of our survey, organisations repeatedly expressed their desire for greater recognition from public institutions and more regulatory relief. When asked about barriers to EMAS adoption and implementation, organisations rated the lack of public recognition and external incentives as the most severe of all the barriers listed. The survey results also show that regulatory relief is a key element in promoting EMAS adoption among organisations. Indeed, survey respondents rated the option to enhance the presence of regulatory relief for EMAS registered organisations in EU Directives and Member States' laws as the second most important and effective way of improving EMAS. In the section on benefits, organisations reported little satisfaction with the regulatory relief they currently receive, giving it the lowest rating as a benefit.

Interviews with ISO 14001 certified organisations that do not have EMAS also saw increased policy support in the form of regulatory relief (and tax breaks in particular) as important argument in favour of EMAS. Combined with evidence from the academic literature showing similar results, it can be concluded that this factor seems to be important in increasing the number of registrations. Interviews with two Competent

Bodies representing Member States with a low number of EMAS registrations confirmed that the absence of external benefits and incentives is the main barrier to increasing the number of registrations in their countries.

Moreover, taking into account our results on the analysis of EMAS's added value in comparison to other tools (e.g. environmental reporting, legal compliance management), we found that EMAS does not provide substantial benefits with respect to ISO 14001 in certain key areas such as such as regulatory relief, fiscal incentives and GPP. The report also highlights that EMAS provides little or no competitive advantage in GPP procedures.

Finally, this study's chapter on the EMAS management approach and organisational structure (Chapter 5) also shows that organisations overwhelmingly want the European Commission to engage more strongly in integrating EMAS into European law.

Description and means of implementation and assessment of impact

We propose five possible measures to implement this option.

7.2.8.1. Introduce tax breaks for registered organisations

This measure consists of providing benefits to EMAS registered organisations by introducing tax breaks or tax reductions. Even if these kinds of fiscal measures must necessarily be applied at the national or regional level (where taxes are issued), the EU level can provide the initial momentum and legal basis for applying them.

The principle underpinning this measure is to grant a fiscal benefit to those organisations that are more efficient in the use of environmental resources and that reduce pollution, because in doing so they consequently minimise the externalities they produce in terms of social costs for the whole community. Tax breaks are one of most appreciated forms of fiscal incentive for businesses because they produce an immediate economic advantage that is easily quantifiable in terms of monetary savings.

Generally, in the Member States, the reduction of taxes is already used as a tool for the promotion of private organisations' green initiatives. The EU cannot define the level of taxation in the different Member States, but it has the power to define guidelines and set rules to homogenise taxation and to prevent unfair competition (e.g. the State Aid regime). These measures will therefore be set at national or regional/local level, depending on the fiscal framework of each Member State. The Italian region of Tuscany provides one example: currently, Tuscany's Law 79/2013 on the reorganisation of tax cuts for businesses affecting the regional tax on productive activities (IRAP) reduces the IRAP tax for EMAS registered organisations by 0.6% for the tax periods between 2014 and 2016.

The European Commission's role could be to provide guidelines suggesting to Member States how to use EMAS as a means of proof to demonstrate that a private organisation has earned a tax break on the basis of its environmental excellence. Moreover, a potentially revised EMAS Regulation could provide a general indication for Member States that registered organisations should have access to tax breaks in their national countries. To this end, the revision of EMAS could set an obligation for Member States to grant tax breaks for EMAS registered organisations. Each Member State will be free to identify the more appropriate fiscal measures and choose the preferred form of the tax breaks.

The effectiveness of this measure, in term of contribution to EMAS objectives, could be very high. Tax breaks for registered organisations could increase uptake of EMAS and, as a consequence, support the achievement of its main objectives, such as the

improvement of environmental performance. As has been empirically demonstrated by the significant tax breaks introduced by Italian Regions, this measure can be very efficient in terms of increasing EMAS registration numbers. Tax breaks can also stimulate organisations' innovation and competitive capacities.

Tax breaks are very coherent with other instruments and with provisions of other EU environmental policies. This measure will contribute to the policy objectives of the EAP and will improve alignment with other European policies on better regulation. Moreover, the EMAS Regulation explicitly requires the adoption of better regulation and regulatory relief. Article 44 states that the European Commission shall consider how registration under EMAS in accordance with the Regulation can be taken into account in the development of new legislation and revision of existing legislation, in particular in the form of regulatory relief (so that a registered organisation is considered to be compliant with certain legal requirements relating to the environment laid down in other legal instruments, identified by the competent authorities), and better regulation (whereby other legal instruments are modified so that burdens on organisations participating in EMAS are removed, reduced or simplified with a view to encouraging the efficient operation of markets and raising the level of competitiveness).

The EU added value of the measure is high because of the action required at the EU level. Finally, regarding feasibility, the implementation of this measure requires moderate efforts by Member States and other institutions and governments (e.g. regional governments). The loss of tax income that results from the newly introduced tax breaks is minimal in proportion to the budgets of regions and states, largely because the number of registered organisations eligible for tax breaks is low. The region of Tuscany in Italy has one of the highest numbers of EMAS registered organisations in Europe, yet the budgetary impact of the tax breaks for EMAS organisations is low. Moreover, environmental tax breaks can be counterbalanced by other actions such as tax increases for highly polluting organisations. In Tuscany, for example, this aspect is covered by IRAP tax.

7.2.8.2. Favoured access to public funds for EMAS registered organisations (to encourage innovative behaviour)

This measure consists of facilitating EMAS registered organisations' access to public funds. Registered organisations should have direct access to national and European funds that support the adoption of environmental targets and actions. An EMAS organisation that aims to invest in new innovative environmental initiatives should be favoured in accessing public funds because of their continuous commitment to achieving better environmental performance and their proven compliance with environmental regulations.

The access to public funds for EMAS registered organisations could be improved by, for instance, increasing the maximum thresholds foreseen for the State Aids. The increase with respect to the ordinary threshold (*de minimis*) should only make reference to environmental investments planned and carried out within the scope of the EMAS process (e.g. included in the Environmental Programme).

Belgium's Walloon region provides one such example of this practice, offering an investment rebate for organisations investing in new technologies that will lower their environmental impact. In order to obtain the rebate, these clean technologies must protect the environment beyond the levels of compliance mandated in European legislation. SMEs with an EMS receive a 20% refund on their investment, while those

with ISO 14001 receive 25% and those with EMAS 30%. The maximum amount available for one organisation is €1,000,000 within a four year period.

Supporting access to public funds for EMAS registered organisations could be a very effective way of achieving EMAS objectives. Indeed, when facilitating and supporting the EMAS registered organisations' innovation strategies, is important to achieve the main EMAS objective: the continuous improvement of environmental performance.

This measure will bolster organisations' innovation processes by contributing to their investments and by sharing the resultant economic risk. In this sense, the measure is very efficient for those organisations which have access to public funds for innovation investments, including SMEs.

Furthermore, this measure, based on the promotion of eco-innovation, is highly coherent with other interventions and policies which have similar objectives to EMAS.

The EU must play a key role in supporting the organisations' attempts at innovative behaviour, thus increasing EU added value.

Finally, regarding feasibility, the implementation of this measure requires a moderate effort on the part of the European Commission, Member States and Competent Bodies. This measure requires a negligible budget.

7.2.8.3. Fast-track administrative procedures and/or simplify control activities and inspections related to environmental issues

This measure involves the simplification of permits and other administrative procedures for EMAS registered organisations as well as the simplification of their environmental inspections. In particular, EMAS registered organisations should benefit from easier and quicker procedures when applying for permits or other kind of environmental administration documents or when being subject to inspections. There are several aspects to the creation of simplifications for EMAS registered organisations:

- Simplification of existing legislation and permitting procedures.

To renew, update and/or review environmental permits, organisations must usually submit the necessary documentation to the competent authority. This process also normally includes the responsible authorities visiting and inspecting their facilities. If EMAS registered facilities submit an annual Environmental Statement validated by an Environmental Verifier, the process of renewing, updating and/or reviewing environmental permits for these facilities could be simplified or sped up. Additionally, the validity period of environmental permits could be extended for these facilities.

In the case of environmental communication/reporting obligations or legal requirements, the EMAS registered organisations should be allowed to use the documents already produced in the framework of the EMS. In particular, this measure aims to use the environmental statement, and especially its annual update, to provide public administration bodies with documentation on all updated and verified data on the organisation's environmental management.

- Reduction of frequency of inspections for EMAS-registered organisations.

This measure aims to reduce the frequency of inspections for EMAS-registered organisations.

Institutions and public administrations should consider the third-party periodical inspection of EMAS organisations should be considered as a strong guarantee of their environmental commitment and legal compliance. Therefore, institutions should reduce the intensity and frequency of inspections for organisations voluntarily undertaking third-party EMAS verification. Planning fewer inspections for EMAS-registered organisations is consistent with the Community approach and is intended to ensure tighter control of non-registered companies.

Simplifications which incentivise adoption of EMS can be implemented by establishing a system of compliance risk assessment, based on variables such as:

- The complexity of activities and processes operated by the company
- The type of emissions authorised (or to be authorised)
- The location, in terms of environmental targets proximity and sensitivity
- The operator performance: i.e. the EMS effectiveness, weigh on skills and training, emergency planning, reporting, achieved performances, etc.
- The compliance rating: based on the significance and number of historical violations

The system may result in a risk assessment (for example organised according to several risk classes) that affects the planning of inspection activities (i.e. organisations belonging to the lower risk classes are monitored to a lesser extent) and the costs of preliminary investigation and inspection (assuming that the lower the risk class of the company, the less expensive the inspection and/or the assessment).

Having an EMAS registration should have a significant influence on the operator's performance rating, leading to a substantial reduction in frequency of inspections.

Last but not least, inspection activities can be simplified by allowing EMAS registered organisations, when inspected, to use information and data from all the third-party verified documents from their Environmental Management System as evidence of their compliance. In other words, whenever a competent authority (with monitoring or inspection tasks) requires the collection of data or the provision of environmental data (or results of monitoring activities), the organisation can rely on (and directly provide to the authority) the indicators and data already included in the EMAS documentation.

The simplification of administrative procedures has the potential to considerably increase effectiveness by reducing the administrative burdens of EMAS registered organisations. . This reduction could increase the number of organisations deciding to participate in the scheme, and, as a consequence, improve their environmental performance.

This measure is also relevant to the question of EMAS efficiency. Simplifications enable private organisations to achieve time and cost reductions and better use of resources (human and financial). Simplifications could thus lead to considerable benefits for those organisations and sectors for which they are applicable.

This measure will also increase the coherence of EMAS with other environmental policies. For example, the IED provides in its Article 23 that the systematic appraisal of the environmental risks shall be based on, among others, the criterion concerning the participation of the operator in the EU's eco-management and audit scheme (EMAS), pursuant to Regulation (EC) No 1221/2009.

Several examples of reduced inspections for EMAS registered organisations already exist in the Member States. For example, in 2011 Greece passed Laws 3982 and 4014 simplifying licensing and planning procedures for EMAS registered organisations in the manufacturing sector. Environmental permits for Greek EMAS registered manufacturing organisations are now valid for 14 years rather than 10, while organisations with ISO 14001 have permits valid for 12 years. As mentioned in Chapter 5.2.3.3, another example is provided by Germany's Energy Efficiency Law, which considers EMAS registered organisations to have fulfilled a new energy audit obligation simply by submitting proof of registration.

7.2.8.4. Include requirements for EMAS in GPP

Green Public Procurement (GPP) is "a process whereby public authorities seek to procure goods, services and works with a reduced environmental impact throughout their life-cycle when compared to goods, services and works with the same primary function that would otherwise be procured." Improved recognition of EMAS in GPP could allow registered organisations to increase their market share and turnover thanks to an increase in orders from public authorities. This measure consists of a stronger integration of the European policies on GPP and EMAS, including corresponding changes to the EU Public Procurement Directive, thus giving greater value to EMAS.

Alternatively, the inclusion of more general EMAS-like requirements in the specifications of GPP-related EU legislation could be an effective measure. As an example, if requirements to produce externally validated reports are included in the public purchasing procedure criteria, EMAS registered organisations will benefit because they can use their Environmental Statement.

In Austria, for instance, Article 19 of the Austrian Federal Procurement Act of 2006 also takes ecological criteria into account in addition to price. The Act allows public authorities to include environmental aspects in the terms of reference or in consideration of ecological requirements when defining the technical specifications of the award criteria. When awarding cleaning services contracts for public bodies in Austria, the FPA considers the presence of an environmental management system as part of the technical capacity ecological aspects. EMAS registered organisations achieve extra points in the bidding evaluation, a distinction made within the definition of technical specifications in the tender's terms of reference.

The integration of EMAS into regulations and Directives on GPP could strengthen the potential of the scheme to achieve its main objectives by increasing the number of registrations and strengthening participants' environmental performance. Organisations' innovatory and competitive capabilities will also improve.

A stronger integration between EMAS and GPP will result in a higher efficiency of the scheme. Those organisations that have to comply with GPP criteria will increase their competitiveness as a result of access to GPP procedures. However, because of the many specifications of relevant European and Member State legislation, Member States would have to take expert advice before adding EMAS to legislation on GPP, increasing the effort involved in implementing the measure. This measure is very useful in terms of driving improvements in environmental performance of organisations. The EU added value of the measure is also very high: EU intervention is vital to integration of EMAS and GPP.

7.2.8.5. Financial guarantee

Financial guarantees are primary regulatory requirements, mandatory for high environmental risk activities. A guarantee should ensure that the operator has adequate financial resources to incur all costs arising from the adoption of measures to prevent, avoid or repair possible environmental damages associated with its activities. Legislation shall define the amount of financial guarantees and this happens, in most cases, proportionally to the size of the enterprise and its plants and facilities. Organisations willing to work in certain areas are required to present guarantees in the preliminary stage in order to obtain authorisation to operate the business. To acquire financial guarantees, companies refer to banks, to which they pay out an annual interest rate on top of the preliminary investigation costs. Therefore, the bank provides the company with a pre-determined amount in the event of environmental harms caused by its actions.

Companies that hold an EMAS registered environmental management system should give the institutions enough reassurances to be considered companies with "limited environmental risk." Companies adopting environmental management systems verified by competent third parties should, in fact, ensure optimal environmental management, reducing environmental impacts and related risks. Institutions may give credit to companies adopting EMS, rewarding them through reduced financial guarantees and associated cost abatements.

The introduction of financial guarantee reductions should thus generate economic benefits for EMAS companies by recognising their commitment to improving their own environmental performance. The effectiveness of this measure is very high. Indeed, the spread of incentives involving financial guarantee reductions could increase the number of organisations opting to implement EMAS. As a consequence, improvement of their environmental performance will occur. This measure also stimulates organisations to innovate and compete. In addition, the organisations' commitment to reduce pollution and improve environmental risk management is strengthened.

The measure will also increase the efficiency of EMAS. Organisations working in sectors where guarantees are widespread (as such waste, mining and thermal energy sectors) will obtain financial guarantee reductions, allowing these companies to make immediate savings on borrowing costs. The economic resources generated in this way can be used to improve the environmental management of services.

A further aim of this measure is promoting EMAS. For this reason, financial guarantee reductions are strong drivers of improved environmental performance and reduced environmental impacts. This option has moderate EU added value because EU actions are not required for the implementation of the measure, instead, implementation requires the involvement of national bodies.

The feasibility of the measure is high: it requires moderate cooperation between EU and Member States.

7.2.8.6. Summary of impact

The impact of this policy option on EMAS diffusion would be very high. Survey results show that the option could be very useful to organisations' implementation of EMAS and could attract newcomers to the scheme.

There could also be a considerable effect on overall environmental performance resulting from the increase in the total number of EMAS registrations. Indirect effects will be very significant, as the proposed measures would provide institutions with a simple and effective tool for the identification of companies with superior environmental performance in calls for tenders, procedures for attributing public funds, fiscal levies, etc.

None of the abovementioned measures imply any particular organisational or economic effort on the part of the European Commission, with the possible exception of the negotiation process required to obtain political consensus among the Member States. However, it needs to be taken into account that this option relies on the willingness of policy makers to implement it. The 2005 EVER study (Iraldo et al. 2006) also identified lack of policy support as one of the main barriers; however, based on our results and interviews, the situation has not substantially changed. Our analysis has revealed that the lack of policy support seems to be based on a lack of trust in the added value of EMAS among policy makers on both EU and Member State level. Against this background, simply stating that more policy support is needed may not be enough. This issue will be addressed in the recommendations (chapter 9).

Impact profile

Assessment criterion	Assessment aspect	Measures of the policy option				
		7.2.8.1	7.2.8.2	7.2.8.3	7.2.8.4	7.2.8.5
Effectiveness	Increase in the number of registrations, that the option is capable of producing (e.g. addressing the main drivers and barriers for EMAS adoption)	3	3	3	3	3
	Improvement of participants' environmental performance in the areas targeted by the proposed changes	3	3	3	3	3
	Increase in capability to spur eco-innovations and increase in competitiveness of the registered organisations	3	3	3	3	3
	Beneficial consequences for actors other than the participants (suppliers, customers, institutions, etc.) that are linked to the development of the option (indirect effect)	3	3	3	3	3
	Effectiveness (MEAN)	3	3	3	3	3
Efficiency	Benefits are felt among all participants and across all sectors (EMAS registered organisations)	3	2	2	2	2
	Improvement of economic performance of the participants in terms of reduction of costs or increase of competitiveness	3	3	3	3	3
	Reduction of the challenges faced by SMEs participating in this scheme	3	3	3	3	3
	Efficiency (MEAN)	3	2.67	2.67	2.67	2.67
Coherence	Improvement of the consistency/ alignment of EMAS as a policy tool with the policy objectives of the Sustainable Consumption and Production and Sustainable Industrial Policy (SCP/SIP) Action Plan , the 7 th EAP, the Roadmap to a and the Resource efficient Europe	3	3	3	3	3
	Contribution to overcoming unjustified overlaps, obsolete provisions and/or gaps with other pieces of EU legislation	3	3	3	3	3

	Improvement of synergies with other (EMS) standards	3	3	3	3	3
	Coherence (MEAN)	3	3	3	3	3
Relevance	Relevance in terms of driving improvements in the environmental performance of private and public organisations, making them more resource efficient and reducing their environmental impact	3	3	3	3	3
	Contribution to increasing the relevance and validity of existing EMAS objectives or providing new relevant objectives for the scheme	3	3	3	3	3
	Relevance (MEAN)	3	3	3	3	3
EU added value	The option increases the added value of EMAS (e.g. with regard to other environmental management instruments like ISO 14001) due to actions at EU-level	3	3	3	3	2
	EU added value	3	3	3	3	2
Feasibility	Administrative and technical feasibility: organisational and coordination effort by the European Commission and Member States (e.g. Competent Bodies) is acceptable	3	2	3	3	3
	Administrative feasibility of implementation for registered organisations/newly registering organisations	n.a.	n.a.	3	n.a.	3
	Budget feasibility: budget needed to implement the option is acceptable	2	3	3	3	3
	Proportionality: the option leaves scope for national decisions as much as possible and does not go beyond what is necessary to satisfactorily achieve the set objectives	3	3	2	3	3
	Feasibility (MEAN)	2.67	2.67	2.75	3	3
Mean value of each measure		2.95	2.89	2.90	2.95	2.78
Mean value of the policy option "Provide more regulatory relief and incentives"				2.89		

7.2.9. Revise EMAS Global provisions

Rationale

Since goods and services are more and more frequently being traded globally, various stakeholders (e.g. governments, consumers, civil society organisations) are increasingly holding companies with international business interests and operations responsible for adhering to comprehensive environmental performance standards. The introduction of “EMAS Global” in 2010 focuses exactly on these issues and aims to support companies in improving their environmental performance at their own sites outside Europe or at those of suppliers.

So far, only a handful of companies have used the EMAS Global approach to register sites outside Europe. The German automotive supplier Schaeffler and the Finnish pulp and paper company UPM can be considered front-runners in this regard. The two companies together are responsible for the vast majority of EMAS Global registrations, including registered sites in China, Mexico, South Africa and Uruguay. Furthermore, most Member States do not offer the possibility to register sites outside of Europe.

Our survey results indicate that organisations see the EMAS Global feature in a moderately positive light. However, the results also show that there is room for improvement. Interviews and case studies of companies which have implemented EMAS at sites outside of Europe and workshop discussions in Brussels, Belgium and Berlin, Germany have revealed that EMAS Global “users” believe administrative burdens should be reduced to make the approach more attractive and cost efficient.

Stakeholders in “third countries”⁵⁷ – especially companies and environmental auditors which were interested in implementing the scheme respectively acting as environmental verifiers – reported that so far the registration and accreditation/licensing processes are too costly for them to embrace EMAS Global. However, changing requirements with regard to their role would require major modifications in the Regulation itself.

Description and way of implementation

Based on the key findings and conclusions above, the options focus on slight modifications. Companies which have gained practical experience through the implementation of EMAS Global at sites outside of Europe have provided key feedback taken into account in crafting these options

- Environmental statement: According to Annex IV of the EMAS Regulation, the environmental statement has to be prepared in the official language(s) of the Member State in which the organisation is registered and in (one of) the official languages of those “third countries” in which the site is located. While representatives of EMAS registered organisations with EMAS Global experience agree that the second requirement makes sense and is necessary, Member States should have the option to accept additional languages (e.g. a statement in English only for a site in South Africa that is registered in Germany)

⁵⁷ Official EMAS Global term.

- Check of legal requirements: According to EMAS Global adopters' feedback, it is very difficult to compare legal requirements according to Article 4, No 3, 3rd section of the EMAS Regulation. This could be improved by:
 - Producing a guideline and sample document
 - A focus on limits for waste water and air emissions
- Support from experts in the "third country": Experts from the "third country" in which the implementation should take place are needed for the legal compliance check of the environmental law in the "third country". Again, according to adopters' feedback, it can be very difficult and costly to find a "qualified person" according to Article 22, No. 3 of the EMAS Regulation. This could be improved by:
 - Producing a checklist, guideline and sample documents for environmental verifiers.
 - Instituting the option to use a representative of the local environmental authority of the "third country" as a "qualified person".
- EMAS Global can also be improved by creating opportunities for routine feedback and information exchange among those Member States (e.g. Austria, Finland, Germany) and EMAS registered organisations (Schaeffler, UPM) which already gained experience with EMAS Global in practice.
- In addition to technical adjustments, feedback given also addressed the need for more promotional measures for EMAS Global – both inside and outside of Europe.

Potential impact

Even with slight modifications aimed at easing administrative burdens, it is not expected that registration numbers will increase significantly. Preliminary results of an EMAS Global project funded by the European Commission confirm this assessment.⁵⁸ In the context of EMAS Global in China, multinational companies named the following main reasons for a low level of participation in EMAS Global:

- EMAS is not known outside Europe
- ISO 14001 covers the international context sufficiently
- The profit gained from EMAS is too small, even in Europe
- Expected additional costs are too high
- No market necessity
- Own management systems at sites outside Europe are considered to be effective
- Hardly any authorities and clients ask for it, especially in Asia

The attractiveness of EMAS Global is not only based upon the viability of the mechanism itself but also on the attractiveness of the overall scheme, especially with regard to ISO 14001. Hence, the effectiveness of this option relies on the implementation and success of other options to increase the overall attractiveness of EMAS. Furthermore, the option is expected to have a moderate positive impact on the environmental performance of

⁵⁸ Information was derived from the EU funded SWITCH ASIA project "EMAS Global China". adelphi is one of the project partners of the SWITCH ASIA project. Further information is available at: <http://www.switch-asia.eu/projects/emas-global-china/>

organisations implementing the scheme at sites in “third countries”, including passing environmental standards on to suppliers. It is also possible that environmental authorities in “third countries” will use EMAS Global as a model which can be replicated at national level. Companies that have gained practical experience with EMAS Global perceive financial costs from the administrative burden as one of the main barriers to implementing the scheme. Improving cost efficiency is thus the key focus of this option. Since the option focuses on larger industrial companies, benefits would not be felt across all participants and all sectors. The option would not have an effect on SMEs.

If the EMAS Global mechanism can be improved, it would further strengthen the link to ISO 14001 and make it easier for organisations (or sites) outside Europe to step up from ISO 14001 to EMAS. This option would increase overall effectiveness in terms of environmental performance, since organisations would need to take into account the applicable environmental law of the Member State in which the headquarters of the organisation is located. Given that EMAS is so far not well known outside Europe, the option does have the potential to increase the relevance of the scheme and its objectives, especially compared to ISO 14001. The option does not otherwise address the objective of performance improvements.

EU added value is expected to be high, as EMAS Global closed one of the key “gaps” between EMAS, which was originally restricted to Europe, and ISO 14001, which was applicable worldwide right from the beginning.

Overall, the feasibility of this option is expected to be high, given that the option only addresses a certain type of organisations (multinational enterprises). Based on interviews carried out with Member State representatives, the added workload for Member States can be considered moderate. Since EMAS Global is a voluntary option within the voluntary tool EMAS, the option would certainly leave scope for national decision-making.

Impact profile

Assessment criterion	Assessment aspect	Measures of the policy option
		7.2.9
Effectiveness	Increase in the number of registrations that the option is capable of producing (e.g. addressing the main drivers and barriers for EMAS adoption)	1
	Improvement of participants' environmental performance in the areas targeted by the proposed changes	2
	Increase in capability to spur eco-innovations and increase in competitiveness of the registered organisations	1
	Beneficial consequences for actors other than the participants (suppliers, customers, institutions, etc.) that are linked to the development of the option (indirect effect)	3
	Effectiveness (MEAN)	1,75
Efficiency	Benefits are felt among all participants and across all sectors (EMAS registered organisations)Benefits are felt among all participants and across all sectors (EMAS registered organisations)	1
	Improvement of economic performance of the participants in terms of reduction of costs or increase of competitiveness	2
	Reduction of the challenges faced by SMEs participating in this scheme	n/a
	Efficiency (MEAN)	1.5
Coherence	Improvement of the consistency/ alignment of EMAS as a policy tool with the policy objectives of the Sustainable Consumption and Production and Sustainable Industrial Policy (SCP/SIP) Action Plan , the 7 th EAP, the Roadmap to a and the Resource efficient Europe	n/a
	Contribution to overcome unjustified overlaps, obsolete provisions and/or gaps with other pieces of EU and/or national legislation/policy instruments	3

	Improvement of synergies with other (EMS) standards	3
	Coherence (MEAN)	3
Relevance	Relevance in terms of driving improvements in the environmental performance of private and public organisations, making them more resource efficient and reducing their environmental impact	1
	Contribution to increasing the relevance and validity of existing EMAS objectives or providing new relevant objectives for the scheme	2
	Relevance (MEAN)	1.5
EU added value	The option increases the added value of EMAS (e.g. with regard to other environmental management instruments like ISO 14001) due to actions at EU-level	3
	EU added value	3
Feasibility	Administrative and technical feasibility: organisational and coordination effort by the European Commission and Member States (e.g. Competent Bodies) is acceptable	3
	Administrative feasibility of implementation for registered organisations/newly registering organisations	3
	Budget feasibility: budget needed to implement the option is acceptable	3
	Proportionality: the option leaves scope for national decisions as much as possible and does not go beyond what is necessary to satisfactorily achieve the set objectives	3
	Feasibility (MEAN)	3
Mean value of the policy option		2.3

7.3. Path III – modifications (external dimensions of EMAS)

7.3.1. EMAS as an umbrella system (including optional elements like CSR or climate adaptation)

Rationale

Many discussions around EMAS focus on including criteria from other standards in addition to the baseline EMS. These additions could be CSR or energy-related criteria or a more stringent version of an EMS that goes beyond the standard requirements.

Interviews with Competent Body representatives touched on the integration of CSR issues and revealed conflicting ideas. While one representative explicitly welcomed the idea of strengthening the links between EMAS and CSR, another one feared that EMAS would become too complex and convoluted. The idea of EMAS acting as an “umbrella system” with optional modules beyond the baseline EMS, which was also discussed at the workshop, might be the best approach to include additional elements. Several studies report that the structure of the existing EMS is well-developed and has the potential to be applied for purposes beyond environmental management alone.

Description and way of implementation

This option would allow organisations to pick and choose which modules of criteria they would like to add to their environmental certificate, while the current EMAS would continue to form the initial and required building block. The additional modules could either expand certain elements already present in EMAS or go beyond EMAS to cover new topics. In the first case, the modules might address energy efficiency/management or climate change adaptation, both of which will be discussed below in more detail. Essentially, any of the current EMAS core criteria could be expanded, including energy efficiency, biodiversity, material efficiency or emissions. In addition, the modules could cover topics such as climate adaptation which have come to the fore in recent years. In the second case - covering new topics - EMAS could be broadened to include CSR/sustainability criteria.

EMAS already covers many aspects of energy efficiency management (based on ISO 50001) and CSR (based on ISO 26000). In fact, for both ISO 50001 and ISO 26000, the European Commission has created info sheets analysing the similarities and differences. The “EMAS umbrella system” could function as a standard with different grading levels, depending on the type and number of modules an organisation chooses to adopt. All registrations would benefit from the EMAS seal of quality. The key question around the modular approach is to what extent new elements would be integrated in the “Plan-Do-Check-Act” approach of EMAS. General preparatory and implementation steps could include:

- The Regulation would introduce a new terminology, differentiating between “shall”, “should” and “may” (similar to the terminology used in the OEF methodology (Commission Recommendation 2013/179/EU) to indicate requirements, recommendations and options that registered organisations may choose.
- The European Commission would determine which environmental management system requirements outlined in Annex II of the current EMAS Regulation would need to be revised to incorporate the additional criteria. Individual stages would

need to be expanded (for example, to include social criteria as well as environmental criteria) or additional stages created as necessary.

- As regards the topics covered, the initial focus could be on topics which are already part of EMAS (e.g. energy efficiency as outlined in ISO 50001) or which are close to EMAS (e.g. health and safety issues as outlined in the standard OHSAS 18001).
- One possibility would be to start integrating modular aspects into the environmental review, the environmental policy and the legal compliance check.⁵⁹ On these matters, the organisation could then report in the environmental statement
- This approach would mean that the Regulation foresees no overall verification and validation process for these modular elements at the initial registration, but would require the validation of information provided on these modular elements in the environmental statement. For example, for health and safety issues, no verification of the EMS is necessary. Instead, additional claims can be made in the environmental statement and validated by an environmental verifier.
- The Regulation would specify whether and how the accreditation/licensing system of environmental verifiers and their role and responsibilities should be adjusted.
 - For example, as is the case for an EMAS Global accreditation/licensing, the EMAS Regulation would specify additional requirements with regard to the topic of the module (e.g. CSR, climate adaptation)
 - The Regulation would clarify in which way organisations should communicate optional activities in the environmental statement and which additional claims they can make using the modular approach. It would also specify how information on optional issues would be checked and validated by environmental verifiers. For CSR modules, the reporting guidelines of the Global Reporting Initiative could be used as the main reference for reporting.
- The Regulation would specify how adopters, the European Commission and the Member States could promote the modular approach.
 - Similar to GRI, an additional element (e.g. "+") could be added to the logo indicating that the environmental statement provides additional information. Environmental statements that include additional information about modular topics could be listed separately in separate part of an environmental statement database.
- Finally, the European Commission should seek memorandums of understanding with other standards and instruments where compliance can be demonstrated. These might include the Global Reporting Initiative or the BSI group for OHSAS 18001. In certain cases, additional steps may be required to be fully certified with such a standard. The information provided on EMAS, for example the EMAS user guide, should highlight the additional standards that an organisation could obtain directly or with little additional effort.

The modules described in this option would allow organisations could choose which aspects they would like to focus on. This choice gives the system an advantage over a mandatory integration of particular topics, such as CSR (option 7.3.2). However, the

⁵⁹ To be discussed whether key terms used in the environmental management requirements (Annex II of the EMAS Regulation) would need to be adjusted.

option could also be a bridge to integrate additional topics into EMAS as mandatory elements (see option 7.3.2 for further information on this).

Potential impact

This option includes two additional modules – one focusing on deepening existing EMAS environmental topics (energy efficiency based on additional ISO 50001 requirements) and one going beyond the scheme's thematic focus (health & safety as outlined in OHSAS 18001 and ISO 26000). As both energy efficiency and CSR are topics of increasing interest to organisations - for example, the growth rate of ISO 50001 uptake is substantially higher than that of EMAS - the implementation of these additional modules could attract more interest in EMAS.

However, our results show that the majority of EMAS registered organisations participating in the survey do not integrate energy efficiency management based on ISO 50001 in EMAS processes. The same applies to CSR criteria based on ISO 26000, GRI or other CSR instruments. Finally, our survey results show that implementation costs (incl. external consultancy costs) are a significant barrier to such options, particularly for smaller organisations. As around 80% of all EMAS registered organisations are small and medium-sized organisations, the prospects of a significant increase in registration numbers is low.

Instead, a small number of front-runner organisations would likely use the optional modules. This supposition is also in line with our research findings, which indicate that EMAS registered organisations see a lack of external recognition as one of the key barriers. Positioning themselves as front-runners could be attractive for a share of EMAS registered organisations, especially those with a large number of external stakeholders (and b2c relationships). Such organisations could benefit from competitive advantages because such measures would allow them to tailor the scheme to their needs and priorities and provide more targeted information to their audiences. They are also likely to benefit from an EMAS image boost resulting from the highlighted transferability of the EMS as a tool for achieving social as well as environmental goals. If these front-runners can illustrate that these modules lead to performance improvements and reputational gains, "spill-over" effects might lead other organisations to adopt the measures as well.

In terms of environmental improvement of individual organisations, expectations are mixed. No significant performance improvements are expected for topics like energy efficiency, which are already integrated in EMAS to a certain extent. However, organisations may be able to show excellent performance in the environmental topics covered in the modules and thus be considered "benchmarks of excellence". For CSR topics, in contrast, significant performance improvements are expected if the EMAS registered organisations have not yet systematically integrated CSR criteria into their management processes. However, the complexity of the new system and the corresponding increase in verification requirements and criteria could also risk endangering EMAS's environmental effectiveness through a weaker emphasis on the individual goals. Rather than being the main focus, environmental performance improvements would be only one of several targets.

All EMAS registered organisations could benefit from this introduced flexibility, should they choose to take advantage of it. However, the implementation and verification processes could become extremely complex, making small and medium-sized organisations – the largest group of EMAS registered organisations – the least likely candidates to exploit the new opportunities. As a result, this measure could contradict the EMAS Regulation's clear objective of promoting the uptake among smaller organisations. One solution could be to provide incentives for smaller organisations when they decide to implement optional modules.

The option's strongest impact is expected in its ability to both promote policy coherence and strengthen the relevance of the scheme, potentially with indirect effects on the increase of registration numbers. Rather than focusing on reducing overlaps, this option would allow for greater compatibility with other existing instruments and standards, and where applicable, an automatic certification of another standard. Furthermore, the option is highly relevant as it provides new objectives for EMAS and additional added value for the scheme

The added value resulting from an EU intervention is also high because the EU can use EMAS as a Europe-wide platform for testing advanced policy instruments and management approaches.

In terms of feasibility, designing these modules and integrating them into the scheme would require organisational efforts for both the European Commission and Member States.

Administrative feasibility for registered organisations would be low, given that additional resources are needed to implement these modules. Larger organisations would be more able to make use of the modules than micro organisations or SMEs. The same applies to budget feasibility. In particular, organisational and coordination efforts are needed for setting up revised accreditation and licensing procedures (e.g. qualification of environmental verifiers) and for the work of environmental verifiers. Competent Bodies would need to set up additional verification structures to ensure that EMAS registered organisations' are valid. The non-obligatory nature of the option would, however, leave a wide scope for national decisions.

Impact Profile

Assessment criterion	Assessment aspect	Measures of the policy option
		7.3.1
Effectiveness	Increase in the number of registrations that the option is capable of producing (e.g. addressing the main drivers and barriers for EMAS adoption)	1
	Improvement of participants' environmental performance in the areas targeted by the proposed changes	2
	Increase in capability to spur eco-innovations and increase in competitiveness of the registered organisations	3
	Beneficial consequences for actors other than the participants (suppliers, customers, institutions, etc.) that are linked to the development of the option (indirect effect)	2
	Effectiveness (MEAN)	2
Efficiency	Benefits are felt among all participants and across all sectors (EMAS registered organisations)Benefits are felt among all participants and across all sectors (EMAS registered organisations)	1
	Improvement of economic performance of the participants in terms of reduction of costs or increase of competitiveness	2
	Reduction of the challenges faced by SMEs participating in this scheme	1
	Efficiency (MEAN)	1.3
Coherence	Improvement of the consistency/ alignment of EMAS as a policy tool with the policy objectives of the Sustainable Consumption and Production and Sustainable Industrial Policy (SCP/SIP) Action Plan , the 7 th EAP, the Roadmap to a and the Resource efficient Europe	3
	Contribution to overcome unjustified overlaps, obsolete provisions and/or gaps with other pieces of EU and/or national legislation/policy instruments	3

	Improvement of synergies with other (EMS) standards	3
	Coherence (MEAN)	3
Relevance	Relevance in terms of driving improvements in the environmental performance of private and public organisations, making them more resource efficient and reducing their environmental impact	1
	Contribution to increasing the relevance and validity of existing EMAS objectives or providing new relevant objectives for the scheme	3
	Relevance (MEAN)	2
EU added value	The option increases the added value of EMAS (e.g. with regard to other environmental management instruments like ISO 14001) due to actions at EU-level	3
	EU added value	3
Feasibility	Administrative and technical feasibility: organisational and coordination effort by the European Commission and Member States (e.g. Competent Bodies) is acceptable	1
	Administrative feasibility of implementation for registered organisations/newly registering organisations	1
	Budget feasibility: budget needed to implement the option is acceptable	1
	Proportionality: the option leaves scope for national decisions as much as possible and does not go beyond what is necessary to satisfactorily achieve the set objectives	3
	Feasibility (MEAN)	1.5
Mean value of the policy option “EMAS as an umbrella system”		2.1

7.3.2. Enhance the integration and mutual recognition of EMAS with ISO 50001

Rationale

The renewed Energy Efficiency Directive obliges large enterprises to carry out an energy audit at least every four years and incentivises SMEs to undertake energy audits. In line with this, an increasing number of organisations are opting to adopt EnMS according to ISO 50001, which is considered to be the best practice energy management instrument.

The results of this study and technical reports (Moosmayer 2012; Kahlenborn et al 2012; Weiss et al. 2013) show that there is already a high level of integration between EMAS and ISO 50001. Where organisations have adopted this scheme, some respondents actively voiced their approval for stronger linkages between the schemes. Moreover, studies confirm that the gap between ISO 50001 requirements and the energy performance requirements of EMAS are minimal, allowing for an easy integration (Moosmayer 2012; Kahlenborn et al 2012). Thus, the remaining elements of ISO 50001 going beyond EMAS could be included within EMAS and allow for an automatic ISO 50001 certification for EMAS registered organisations.

Description and means of implementation

In order to make sure that an EMAS registration automatically qualifies an organisation for ISO 50001, the option would require the inclusion of ISO 50001 requirements in EMAS. Overall, EMAS registered organisations would only need to take a few additional steps to meet ISO 50001 requirements. These steps mainly relate to the specific inclusion of energy-related topics in the EMS and some structural adaptations. Additional requirements of ISO 50001 include (European Commission 2013):

- Energy policy: Add specific reference to “energy performance”
- Environmental review:
 - Consider energy consumption when evaluating significance of aspects according to scale, number, etc. if necessary, conduct separate energy review
 - Estimation of expected energy consumption
 - Identification of all persons whose tasks can potentially cause significant change to energy consumption
- Employee involvement: Providing proof of qualification and competence of energy manager (can also be the environmental manager)
- Documentation: Some differences in terms, e.g. “core elements” instead of “main elements”
- Monitoring and measurement (inter alia): Determination of energy consumption and associated energy factors, comparison of energy performance indicators with those of similar organisations
- Management review:
 - Adding special statement on energy when reviewing energy aspects and energy policy
 - Adding special statements on energy in the management review

In addition to the integration of additional elements in the EMS, the procedures for issuing an ISO 50001 certification as part of the EMAS registration need to be

determined (mainly on the level of Accreditation/Licensing Bodies). This includes an agreement on verification/certification cycles between environmental verifiers and the organisation which seeks EMAS registration/ISO 50001 certification.

In turn, EMAS goes beyond ISO 50001 requirements in several ways, the most significant being the environmental statement. ISO 50001 does not have requirements on external reporting.

Potential impact

Overall effectiveness is moderate. There may be an increase in registration numbers, due to the influx from ISO 50001, especially because EnMS are now mandatory for both SMEs and large organisations under the revised Energy Efficiency Directive. Organisations which decide to implement ISO 50001 might be convinced to “go the extra mile” and implement EMAS as well, given that an EMAS registration automatically leads to an ISO 50001 certification and covers additional environmental topics.

Similarly, since EMAS goes beyond ISO 50001 with regard to environmental reporting, organisations which originally intended to implement only ISO 50001 may see an added value in implementing EMAS as well. Furthermore, organisations which are unsure about EMAS benefits might see a clearer added value due to an automatic ISO 50001 certification, for example an increase in energy efficiency or better acknowledgement of voluntary efforts in public policies (e.g. incentives). Since the gap between EMAS and ISO 50001 is considered to be relatively close, significant performance improvements are not expected. However, energy efficiency is considered to be one of the key issues of EMAS in particular and EU policy in general.

Even though EMAS already covers the majority of ISO 50001 requirements, the EMAS Regulation would still need to add a few requirements (see above). Adding additional requirements may deter potential EMAS adopters and already registered organisations. An alternative might be that additional ISO 50001 requirements are included as optional elements (see option 7.3.1 for further information).

ISO 50001 is particularly useful for organisations with energy intensive activities with big energy- as well as cost-savings potential and those which aim to receive public financial support such as energy tax exemptions or any kind of regulatory relief. One possibility could be to provide financial incentives to support the implementation of additional steps.

The key impact with regard to coherence is the improvement of synergies with ISO 50001. Furthermore, the improvement of the consistency and the alignment of EMAS as a policy tool with EU policy objectives (see below under Impact profile) is considered to be high because increasing energy efficiency on company/organisational level is one of the key objectives of the European Commission.

EU added value is considered to be high because it would add elements which are currently not covered by ISO 14001 (and also most likely not in the revised ISO standard). EMAS could be positioned as an integrative management instrument that covers key environmental aspects such as energy efficiency, which is an aspect high on the political agenda at EU and Member State level.

Feasibility for both the administrative level and registered organisations is expected to be moderate, as EMAS already meets most of the requirements of an EnMS according to ISO 50001 (Kahlenborn et al. 2012). Furthermore, environmental verifiers are considered to be sufficiently skilled to issue an ISO 50001 certificate. For example, in Germany, many environmental verifiers have already issued ISO 50001 certificates. On the EU and Member State level, administrative and technical feasibility is expected to be

moderate to high. Environmental verifiers would need to receive extra training to be able to assess whether ISO 50001 requirements have been met by organisations implementing EMAS, which involves additional activities from Accreditation/Licensing Bodies. Furthermore, Competent Bodies would need to expand the scope of their surveillance activities.

Impact profile

Assessment criterion	Assessment aspect	Measures of the policy option
		7.3.2
Effectiveness	Increase in the number of registrations that the option is capable of producing (e.g. addressing the main drivers and barriers for EMAS adoption)	2
	Improvement of participants' environmental performance in the areas targeted by the proposed changes	2
	Increase in capability to spur eco-innovations and increase in competitiveness of the registered organisations	1
	Beneficial consequences for actors other than the participants (suppliers, customers, institutions, etc.) that are linked to the development of the option (indirect effect)	1
	Effectiveness (MEAN)	1.5
Efficiency	Benefits are felt among all participants and across all sectors (EMAS registered organisations)	1
	Improvement of economic performance of the participants in terms of reduction of costs or increase of competitiveness	2
	Reduction of the challenges faced by SMEs participating in this scheme	1
	Efficiency (MEAN)	1.3
Coherence	Improvement of the consistency/ alignment of EMAS as a policy tool with the policy objectives of the Sustainable Consumption and Production and Sustainable Industrial Policy (SCP/SIP) Action Plan , the 7 th EAP, the Roadmap to a and the Resource efficient Europe	3
	Contribution to overcome unjustified overlaps, obsolete provisions and/or gaps with other pieces of EU and/or national legislation/policy instruments	3
	Improvement of synergies with other (EMS) standards	3

	Coherence (MEAN)	3
Relevance	Relevance in terms of driving improvements in the environmental performance of private and public organisations, making them more resource efficient and reducing their environmental impact	2
	Contribution to increasing the relevance and validity of existing EMAS objectives or providing new relevant objectives for the scheme	3
	Relevance (MEAN)	2.5
EU added value	The option increases the added value of EMAS (e.g. with regard to other environmental management instruments like ISO 14001) due to actions at EU-level	3
	EU added value	3
Feasibility	Administrative and technical feasibility: organisational and coordination effort by the European Commission and Member States (e.g. Competent Bodies) is acceptable	2
	Administrative feasibility of implementation for registered organisations/newly registering organisations	2
	Budget feasibility: budget needed to implement the option is acceptable	2
	Proportionality: the option leaves scope for national decisions as much as possible and does not go beyond what is necessary to satisfactorily achieve the set objectives	2
	Feasibility (MEAN)	2
Mean Value of the policy option “ Enhance the integration and mutual recognition with ISO 50001 ”		2.2

7.3.3. EMAS as a CSR instrument

Rationale

Over the last decade, CSR has become a mainstream issue, increasingly adopted by companies, investors and business schools and focused on by civil society organisations, academia and media. CSR has also been climbing higher on national and transnational political agendas (Williamson et al. 2014). Environmental sustainability in general and climate change in particular have been important issues within CSR approaches for a number of years.

As seen in the ex post analysis of this study, a large proportion of organisations that are registered under EMAS currently do not use any CSR standards or instruments (in each case over 70% of organisations that responded to the survey do not make use of SA 8000, ISO 26000, UN Global Compact and GRI). Where CSR standards have been adopted, there is currently no large degree of integration with EMAS.

CSR however is an activity on the rise. Many stakeholders commented on the fact that the EMS set up for EMAS and ISO 14001 provides the necessary structure and systemic integrity to implement CSR criteria that is, for example, lacking in ISO 26000. To name just one example, the defining and collating of core indicators could also be used in the sustainability context in order to help operationalise ISO 26000 recommendations and make them more concrete (Hardtke et al. 2014).

Since CSR criteria are increasingly being adopted by organisations and this trend is likely to continue, certain stakeholders argue for a greater integration of CSR requirements into EMAS in the future. Views among respondents consulted in this study are split, some arguing that it would greatly enhance EMAS, others saying that the result would be an excessively complex management system. Workshop participants tended to agree with the latter view, stating that a better solution would be for the EU to develop its own CSR system in addition to EMAS. This is in line with the findings of the EVER study (Iraldo et al. 2006), which notes a lack of support for expanding EMAS to CSR requirements. However, the EVER study did support providing EMAS registered organisations with the option of including CSR reporting as an add-on. This modular approach is described in detail in chapter 7.3.1. However, the workshop participants recognized the potential for increasing EMAS's ability to act as a stepping stone towards the adoption of a CSR system and for the option of increasing the synergies between EMAS and CSR.

The nexus CSR and certification has gained traction with the introduction of ISO 26000, which is a non-certifiable guidance standard making recommendations on CSR matters. As outlined in the option 7.3.1, EMAS already covers many ISO 26000 recommends – and not only those directly related to environmental matters. While the workshop experts ultimately recommended not integrating the requirements for ISO 26000 into EMAS, arguments exist both in favour and against the introduction of a certifiable CSR standard.

Description and means of implementation and assessment of impact

A greater integration of CSR within EMAS can take place at either a lower or a higher level of integration:

7.3.3.1. Strengthen and highlight existing links between EMAS and CSR

Firstly, EMAS's contribution to CSR could be enhanced and made more prominent within the currently existing legislative framework by strengthening and highlighting the existing links of EMAS to CSR elements. Concrete steps might include:

- Changing EMAS guidance documents, such as the EMAS user's guide, to make stronger reference to CSR. For example, in the EMAS user's guide, a paragraph

could be included detailing how organisations could also use the EMAS implementation steps for implementing CSR criteria. Wherever this transfer of implementation procedures is possible, reference could be made to CSR in the text of the EMAS user guide

- Changes to EU legislation to highlight the role that EMAS can play as a stepping stone towards CSR reporting. For example, the Directive on the disclosure of non-financial and diversity information by certain large companies and groups mentions EMAS as one of several EU-based or international frameworks suitable for structuring the information to be provided by companies. However, because of its well-established structure, the Directive or other legislation could assign EMAS a greater degree of suitability than other tools. Reference could be made to the links highlighted in the EMAS user's guide (if bullet point above is implemented)
- Outside of EMAS and EU legislation, a memorandum of understanding could be created with existing CSR standards and instruments, such as the UN Global Compact, ISO 26000, the GRI and the OECD Guidelines for Multinational Enterprises. The memorandum should detail that the management system laid down in EMAS can be used to operationalise these standards and that EMAS compliance already fulfils parts of the standard (where applicable). For example, if an organisation is EMAS registered, it has already met the conditions to fulfil ISO 26000's recommendations with regard to environmental protection (as well as other recommendations on stakeholder management and more general aspects).

While the option neither directly addresses the issue of improving environmental performance nor encourages innovative or competitive behaviour, there is a chance that registered organisations would benefit from an image boost due to the increased visibility of EMAS as a stepping stone towards CSR. This may encourage some organisations to register, namely those interested in adapting a systematic approach to developing a robust CSR policy. This would lead to a slight increase in numbers. The same reasoning can, however, also apply to the adoption of ISO 14001, especially with the new Revision likely to introduce new elements focused on taking into account the impacts on an organisation's surroundings ("Strategic Environmental Management"). This expansion of ISO 14001 to include certain CSR criteria would decrease this option's added value.

Additionally, it can be assumed that EMAS registered organisations are more likely to move on to CSR activities if the existing links and the ease of transition to CSR is clear. This would have wider benefits both for employees of participating organisations and for other actors who are indirectly or directly affected by organisations' activities. Examples include better working conditions within registered organisations, extending expectations for better working conditions to their suppliers, and additional benefits to local communities where registered organisations have their sites.

While the option does not address resource efficiency issues and is thus unlikely to result in cost savings, any benefits attached to making the links between EMAS and CSR more visible would reach all participating organisations. SMEs may actually benefit more from this increased ease of transition, since they are less likely than large organisations to already have any systematic CSR management approach in place (Meyer 2011).

In terms of alignment with other EU policy objectives in the area of environment, this option has moderate impact. It is focused on emphasizing existing links and synergies to CSR activities, and not specifically environmental activities. Implementing this option would help reduce gaps to other EU legislation, in particular the non-financial disclosure Directive.

This option certainly has an added value which could not be achieved at a sub-EU level, since it involves giving a bigger role to EMAS within EU legislation. It also creates a role for EMAS in combination with other CSR instruments that go beyond the EU. Such agreements are much less likely to be reached at a lower (for example national) level.

As this policy measure requires changes to non-EMAS legislation or even to non-EU texts, the European Commission may run into obstacles in achieving these goals. Regarding the

impact on registered organisations and on national decisions, no effects are to be expected, making it an entirely feasible option in this regard.

7.3.3.2. Expand EMAS's scope to include all CSR criteria

In addition to the CSR options outlined above, more profound changes to the EMAS Regulation could be made:

- Given that it may be difficult to define appropriate and useful requirements for social aspects of CSR in particular, a crucial step would be to analyse existing national CSR standards, particularly those which are linked to ISO 26000.
 - National certifiable ISO 26000-based CSR standards exist in several countries, including Austrian, Denmark and Spain.
 - It needs to be clarified which CSR elements are actually certifiable and which are not. A key challenge would be to avoid focusing on those issues which can be verified, rather than those which may have the greatest positive impacts (Henriques 2012).
- EMAS's scope would be expanded to CSR topics in all Plan-Do-Check-Act stages (e.g. introduce a sustainability review, prove legal compliance with relevant CSR legislation, reporting based on core sustainability indicators).
- As regards reporting, CSR issues would be reported in a separate section of the environmental statement, which would then become a sustainability statement (or report). EMAS could make a reference to the GRI reporting guidelines when selecting relevant sustainability issues and indicators.

In terms of tackling the main drivers and barriers currently identified within EMAS and the potential to increase EMAS registration numbers, this option could lead to either positive or negative results. On the one hand, the new provisions could attract organisations that are mainly interested in CSR criteria and they could develop an interest in the other (environmental) criteria of EMAS, therefore leading to increased registration numbers. On the other hand, the increased complexity involved in expanding EMAS to include CSR elements could have an adverse effect on interest in the scheme, even among already registered organisations. This may actually lead to a fall in overall registration numbers.

Similarly, both arguments could be made for the environmental performance of registered organisations. While the option does not address environmental performance improvements per se, it could encourage a wider uptake of EMAS, therefore creating the greatest possible impact by increasing the number of registered organisations. Equally, a fall in total registrations could have an adverse impact on environmental performance should organisations not choose to carry on with environmental management independently. Moreover, due to the increased complexity of EMAS, the institutional framework may offer less guidance on environmental performance improvements. Correspondingly, the focus of the organisations on environmental performance could actually become diluted. Wider benefits for actors other than the direct participants are possible, but could potentially be overshadowed by a decrease in the scheme's quality resulting from a dilution of environmental emphasis and/or a fall in registration numbers.

This option also has the potential to address another barrier, the concerns of registered organisations about the lack of reputational gains through EMAS. According to academic research, more advanced companies have turned the implementation of CSR into a competitive advantage. By integrating CSR into their core business, they can address social and environmental problems which driving innovation and carving out new business opportunities at the same time (Porter and Kramer 2006).

In terms of efficiency, as already touched on above, the increased complexity of the scheme means this measure not likely to provide any additional benefits. Costs of implementing the scheme would increase for organisations (because of longer auditing periods, greater requirements for external consultants, etc.). This option may also create further inequalities since those organisations that have already developed a CSR policy would find the transition significantly easier. In fact, organisations that do not have the resources to invest in a more complex scheme are likely to simply drop out of EMAS altogether. SMEs are likely to experience the greatest difficulties. In the event of this option being implemented, financial support from Member States for external consultancy would be necessary to ease their transition. Generally, SMEs are perceived as having a greater need than larger firms to purchase external assistance, but have a greater reluctance to do so (Bennett 1999: 3).

As it focuses on social aspects, this measure does not directly address either the need for alignment with other EU policy objectives in the area of environment or the improvement of synergies with other EMS standards. Since no certifiable CSR standard currently exists on EU level, it would nonetheless close gaps in EU legislation. However, this would only apply if this matter is indeed perceived as a gap, which interviews with Member State representatives indicate is still a matter of contention.

The measure of introducing CSR elements to EMAS is not relevant for driving environmental performance improvements and could actually lead to a drop in environmental performance if registered organisations attempt to spread their resources to include CSR criteria. The aim could shift from achieving actual performance gains to simply trying to comply with a standard. The new measure would provide new objectives for the scheme and would also clearly set EMAS apart from ISO 14001, arguably creating an added value due to action at EU level. However, the question remains whether the creation of a separate CSR standard would not achieve these goals more effectively. As has already been touched upon, this option would imply both a significant effort and an increase in costs on the side of registered organisations, possibly leading to a fall in registration numbers if organisations are not in favour of adopting additional CSR requirements. The impact on SMEs would be particularly high.

Many additional resources would also be required from the European Commission and Member States. The scope of environmental verifiers would need to be widened significantly and the verification and validation approach may need to be revised. Given the strong, conflicting opinions on the topic that emerged in our interviews with Member State representatives and the contentious discussions about the verifiability of CSR in general and ISO 26000 in particular, the option would likely face opposition from some Member States, registered organisations, business associations and civil society organisations.

7.3.3.3. Summary of potential impact

The key criterion addressed here is increasing the relevance of EMAS. With regard to the first option, there is a chance that registered organisations would benefit from an image boost due to the increased visibility of EMAS as a stepping stone towards CSR. This may encourage some organisations to register. By doing so, coherence with other EU policies could be increased (in the medium-term) because highlighting EMAS's role as a stepping stone to integration with further instruments may help raise policy makers' awareness. However, taking this step requires significant support on a policy level. The second option would have a huge impact on the nature of the scheme and brings a number of potential risks to the effectiveness of EMAS. For this reason, the option incites a great deal of debate among EMAS users and Member State representatives, making it substantially more difficult to implement.

Impact Profile

Assessment criterion	Assessment aspect	Measures of the policy option	
		7.3.3.1	7.3.3.2
Effectiveness	Increase in the number of registrations that the option is capable of producing (e.g. addressing the main drivers and barriers for EMAS adoption)	2	2
	Improvement of participants' environmental performance in the areas targeted by the proposed changes	1	1
	Increase in capability to spur eco-innovations and increase in competitiveness of the registered organisations	1	1
	Beneficial consequences for actors other than the participants (suppliers, customers, institutions, etc.) that are linked to the development of the option (indirect effect)	2	2
	Effectiveness (MEAN)	1.5	1.5
Efficiency	Benefits are felt among all participants and across all sectors (EMAS registered organisations)Benefits are felt among all participants and across all sectors (EMAS registered organisations)	3	1
	Improvement of economic performance of the participants in terms of reduction of costs or increase of competitiveness	1	1
	Reduction of the challenges faced by SMEs participating in this scheme	2	1
	Efficiency (MEAN)	2	1
Coherence	Improvement of the consistency/ alignment of EMAS as a policy tool with the policy objectives of the Sustainable Consumption and Production and Sustainable Industrial Policy (SCP/SIP) Action Plan , the 7 th EAP, the Roadmap to a and the Resource efficient Europe	1	2
	Contribution to overcoming unjustified overlaps, obsolete provisions and/or gaps with other pieces of EU legislation	2	2

	Improvement of synergies with other (EMS) standards	1	1
	Coherence (MEAN)	1.3	1.6
Relevance	Relevance in terms of driving improvements in the environmental performance of private and public organisations, making them more resource efficient and reducing their environmental impact	2	1
	Contribution to increasing the relevance and validity of existing EMAS objectives or providing new relevant objectives for the scheme	2	3
	Relevance (MEAN)	2	2
EU added value	The option increases the added value of EMAS (e.g. with regard to other environmental management instruments like ISO 14001) due to actions at EU-level	3	2
	EU added value	3	2
Feasibility	Administrative and technical feasibility: organisational and coordination effort by the European Commission and Member States (e.g. Competent Bodies) is acceptable	2	1
	Administrative feasibility of implementation for registered organisations/newly registering organisations	3	1
	Budget feasibility: budget needed to implement the option is acceptable	3	1
	Proportionality: the option leaves scope for national decisions as much as possible and does not go beyond what is necessary to satisfactorily achieve the set objectives	3	n/a
	Feasibility (MEAN)	2.75	1
Mean values of each measure		2.09	1.52
Mean value of the policy option "EMAS as a CSR instrument"		1.81	

7.3.4. Mandatory use of the scheme

Rationale

In interviews and workshops, a number of EMAS experts pointed out that there have been attempts to make EMAS a legal requirement (sometimes through ad-hoc regulation). These proposals have mainly been aimed at highly polluting companies and sectors and companies located in territories subject to environmental risks.

EU legislation already has other examples of legally compulsory management systems. The most well-known example is the Seveso Directive, which entails the application of a safety management system for some companies falling in the scope of the Directive. A similar situation occurs with the so-called end of waste legislation (European Regulation 333/2011), which specifies when certain waste products cease to be waste and obtain product (or secondary raw material) status. One of the many requirements of this Regulation mandates adoption of an environmental management system. In addition, a quasi-mandatory approach was adopted under the IPPC Directive (now replaced by IED), in which the adoption of an Environmental Management System is suggested as both a best management practice and as a general BAT (Best Available Technique) for all processes within the BREF on BAT of most industrial sectors.

Some Member States also have experience in this issue on a national level. In Italy, Legislative Decree No. 231 of June 8th 2001 brought in requirements on the administrative liability of companies, which provide that an organisation may be found liable and hence face penalties for any crimes committed or attempted by directors or employees in the interest or to the advantage of the company. The list of crimes includes environmental and safety crimes. The company cannot be held liable if, prior to the crime being committed, it has adopted and effectively implemented an organisational, management and control system designed to prevent environmental crimes within the scope of the law, and has established a structure for monitoring operation and compliance. This is equivalent to requesting the adoption of an environmental management system.

Our survey investigated EMAS organisations' opinions on the effectiveness of some options concerning the future of the EMAS scheme. Within this framework, the option Making EMAS mandatory (e.g. for specific sectors and industries with relevant environmental impacts, such as companies within the scope of the IED) was ranked third out of six options. Respondents thus did not view moving EMAS from a voluntary to a mandatory scheme as one of the most effective alternatives for EMAS's future. Nonetheless, its selection in third place indicates that the option cannot be automatically dismissed.

Description and means of implementation and assessment of impact

Considering the factors discussed above, we can consider three future scenarios in which the scheme would be established as mandatory.

7.3.4.1. Making the demonstration of a management system with the characteristics of EMAS a mandatory requirement in legislative acts such as the IED Directive, the SEVESO Directive or other EU legislations aimed at organisations with high environmental impacts

The aim of this measure is to make the implementation of EMAS mandatory for all organisations in sectors with high environmental impacts and covered by specific European legislation. For these organisations, EMAS should be used as a management system benchmark.

The measure could be included in the next revision to the Industrial Emission Directive (2010/75/EC). This legislation aims to prevent, reduce and/or eliminate pollution arising from industrial activities and is applicable to around European 50,000 plants. Some of these plants already received a similar “invitation” in the permits they received from the competent authorities; the EMS, as previously mentioned, is considered to be a BAT in many reference documents (BREF).

Similarly, this measure could also be included in the Seveso III Directive (2012/18/EU). This Directive lays down rules for the prevention of major accidents involving dangerous substances, and the limitation of such accidents’ consequences to human health and the environment. Indeed, the Directive also refers to substances dangerous to the environment. To prevent environmental hazards, this measure would include a requirement on EMAS implementation in the Seveso III legislation for all organisations covered by the Directive.

This measure can be applied following two main paths:

- Including a specific reference to EMAS Registration as a requirement in the relevant legislations.
- Include a few specific key requirements from an EMAS-like EMS in the legislative text, citing EMAS as a point of reference. In this case, companies in the scope of the Directive will be free to choose the preferred EMS reference standard or to implement the management system without obtaining the registration/certification. An additional requirement would obviously be that if the company is EMAS registered, it does not need to demonstrate its compliance with the environmental management system implementation requirements.

The effectiveness of this measure in terms of a contribution to EMAS objectives is considerable. Making the implementation of an environmental management system mandatory for organisations with high environmental impacts would substantially increase the number of EMAS registrations. As a consequence, organisations’ environmental performance will also improve. At the same time, making EMAS mandatory will also address some of the main barriers faced by organisations, especially in terms of lack of visibility: a mandatory tool would indeed increase public, institutional and even market recognition of the scheme. As a consequence of higher recognition, organisations will also observe a positive effect on their competitiveness, but we should also take into consideration that when EMAS becomes mandatory for all the companies subject to a Directive or a Regulation, it is no longer a distinctive feature.

The efficiency of this measure is moderate: organisations in sectors with high environmental impacts will receive the most benefit. This measure will not reduce the challenges faced by SMEs participating in the scheme, as making EMAS mandatory may not be sufficient to help them face the many problems they encounter in implementation. The barriers might be lowered if just a few key elements of the environmental management system foreseen in EMAS are included as requirements in a relevant Directive or Regulation.

This measure can be considered coherent with other relevant EU policies even if it entails a radical change to one of the key principles of EMAS: the voluntary approach. Indeed, making the scheme mandatory will in certain cases align EMAS to other policies, forming a strong synergy with other policies' environmental improvement objectives. Moreover, the option can contribute to overcoming some gaps in other pieces of EU legislation, fostering so-called "Better Regulation" (i.e. at least in the second approach, which uses of a voluntary tool to implement mandatory legislation).

The added value given by the activities carried out at EU level is high, as the implementation of the measure would have to be coordinated entirely at the EU level. This also implies that the administrative effort for the European Commission would be considerable.

7.3.4.2. Making EMAS mandatory for any organisations obtaining European funds for research and development projects which exceed a certain threshold

Many organisations benefit from EU funds for research and development projects linked with environmental issues. Application for grants or final payment of grants could be subject to EMAS registration. Thus, participants in EU funding programmes such as Life, Horizon 2020, MED, Interreg, beneficiaries of the EU regional and structural funds, and beneficiaries of the various subsidies exceeding defined thresholds of the Common Agriculture Policy could all be required to participate in EMAS. The rule would apply to the final beneficiary of the grant, not only to intermediary agencies or project partners. The rationale for this requirement is that these organisations will obtain funds to increase or apply environmental methods and technologies: EMAS will allow them to be maintained efficiently, not only during the project being funded, but also in the future. To guarantee this efficiency, mandatory adoption and maintenance of EMAS registration should be expanded to a significant period after the end of the publically funded project. In addition, the measure could also apply to specific productive sectors; beneficiaries in the manufacturing sector could be required to apply EMAS, whereas NGOs would not. Making EMAS mandatory for organisations receiving European funds could be very effective. Indeed, the number of registrations will increase and one of the main barriers of the scheme (the lack of external incentives to implement EMAS) will be overcome.

The efficiency of this measure, in terms of effects achieved at reasonable costs, is significant. Making EMAS mandatory for companies applying for public funds allows organisations to achieve environmental improvements at reasonable costs, thanks to the funds they receive.

As is the case in the sub-option above, the coherence of EMAS with other policies will be considerable.

In terms of feasibility, the measure requires moderate administrative effort from the European Commission and Member States, as it would have to be implemented through the various Regulations stipulating the conditions for EU grants. Given the risk that those in receipt of grants above certain threshold might participate in EMAS without any long term commitment, it would be wise to combine such a step with stronger requirements on the provision of evidence that the EMS leads to environmental performance improvements. For organisations, however, very high efforts are required to implement this measure, since they are obligated to comply with EMAS (or with some of its key requirements).

This policy mainly involves the European Commission; when implementing this option, few decisions can be taken on a national level.

7.3.4.3. Making EMAS mandatory for public organisations: leading by example

The idea behind this third measure is to make public organisations lead EMAS implementation by example. The rationale behind this measure is that public organisations (focus could be on federal and regional ministries) could have difficulty persuading other stakeholders to become EMAS registered if they are not EMAS registered themselves. . In the case of GPP, for example, public organisations could send a bad message by favouring EMAS registered organisations in public procurement yet not being EMAS registered themselves.

Making EMAS mandatory for public organisations is a measure that will be moderately effective. Indeed, this kind of intervention will mainly spur public organisations to implement EMAS. Public administrations usually cause few significant direct environmental impacts, and for this reason the effect on one of EMAS's main objectives (the reduction of environmental burdens) will be moderate. However, indirect environmental impacts would be high.

The effect on public organisations' innovation and competitiveness will be rather low. However, indirect effects on other stakeholders are considerable: public organisations with EMAS will act as a beacon, and for this reason, the number of private companies implementing the scheme may increase. This particularly applies to those companies which act as suppliers to public administrations or which operate in a territory in which the government is legally required to be EMAS registered.

The efficiency of this option is considerable, improving the resource efficiency and reducing the environmental impact of public organisations. Benefits of this measure will directly accrue to non-public organisations. The adoption of EMAS by public entities will set a positive example for all organisations deciding on whether to implement EMAS. The improvement of economic performance in terms of costs or increased competitiveness is low, due to the public nature of administrations. Due to the current economic situation in Europe, costs may be a barrier. One possibility to reduce the burden could be to implement EMAS in public entities by means of a convoy approach, as was successfully done by a federal ministry in Germany.

The administrative feasibility of the measure requires moderate effort on the part of the European Commission and Member States. In contrast, public organisations required to comply with EMAS would have to put forth significant effort to implement this measure. Various examples of EMAS registered public entities exist (e.g. federal ministries), which could serve as examples

The European Commission and the Member States would need to take the main decision on this matter, as the latter would need to provide resources for the implementation of EMAS in public organisations. Proportionality would be ensured if Member States can influence the decision as to which groups of public entities should be selected for the mandatory approach.

7.3.4.4. Summary of potential impact

The impact of this option on EMAS diffusion would be positive. The survey results show, however, that respondents do not rank this option highly. The impact would be medium to high. Making EMAS mandatory under specific conditions will increase the number of registrations and, as a consequence, will ensure lowered environmental impacts. Additionally, including requirements on mandatory EMAS in specific legislations (e.g. IED and Seveso Directive) will contribute to higher coherence between the EMAS scheme and other European policies.

However, administrative and technical feasibility is low: this policy requires extensive efforts from those organisations that would have to comply with a mandatory scheme. In addition, implementing this policy requires political support which is by no means guaranteed, particularly in light of the potentially high costs.

Impact profile

Assessment criterion	Assessment aspect	Measures of the policy option		
		7.3.4.1	7.3.4.2	7.3.4.3
Effectiveness	Increase in the number of registrations that the option is capable of producing (e.g. addressing the main drivers and barriers for EMAS adoption)	3	3	2
	Improvement of participants' environmental performance in the areas targeted by the proposed changes	3	3	2
	Increase in capability to spur eco-innovations and increase in competitiveness of the registered organisations	3	3	1
	Beneficial consequences for actors other than the participants (suppliers, customers, institutions, etc.) that are linked to the development of the option (indirect effect)	2	3	3
	Effectiveness (MEAN)	2.75	3	2
Efficiency	Benefits are felt among all participants and across all sectors (EMAS registered organisations)Benefits are felt among all participants and across all sectors (EMAS registered organisations)	2	2	3
	Improvement of economic performance of the participants in terms of reduction of costs or increase of competitiveness	3	3	1
	Reduction of the challenges faced by SMEs participating in this scheme	2	2	1
	Efficiency (MEAN)	2.33	2.33	1.67
Coherence	Improvement of the consistency/ alignment of EMAS as a policy tool with the policy objectives of the Sustainable Consumption and Production and Sustainable Industrial Policy (SCP/SIP) Action Plan , the 7 th EAP, the Roadmap to a and the Resource efficient Europe	3	3	3
	Contribution to overcoming unjustified overlaps, obsolete provisions and/or gaps with other pieces of EU legislation	3	3	3

	Improvement of synergies with other (EMS) standards	3	3	3
	Coherence (MEAN)	3	3	3
Relevance	Relevance in terms of driving improvements in the environmental performance of private and public organisations, making them more resource efficient and reducing their environmental impact	3	3	2
	Contribution to increasing the relevance and validity of existing EMAS objectives or providing new relevant objectives for the scheme	3	3	3
	Relevance (MEAN)	3	3	2.5
EU added value	The option increases the added value of EMAS (e.g. with regard to other environmental management instruments like ISO 14001) due to actions at EU-level	3	3	3
	EU added value	3	3	3
Feasibility	Administrative and technical feasibility: organisational and coordination effort by the European Commission and Member States (e.g. Competent Bodies) is acceptable	2	2	2
	Administrative feasibility of implementation for registered organisations/newly registering organisations	1	1	1
	Budget feasibility: budget needed to implement the option is acceptable	2	2	2
	Proportionality: the option leaves scope for national decisions as much as possible and does not go beyond what is necessary to satisfactorily achieve the set objectives	1	1	1
	Feasibility (MEAN)	1.5	1.5	1.5
Mean value of each measure		2.60	2.64	2.28
Mean value of the policy option "Mandatory use of the scheme"		2.51		

7.3.5. EMAS and a revised ISO 14001

Rationale

EMAS and ISO 14001 enjoy a special relationship because of the integration of ISO 14001 requirements into EMAS (within Annex II of the Regulation) and because of their standing as the two premiere instruments for environmental management certification. The current revision of ISO 14001 thus requires a policy option for exploring how the relationship between the two standards will continue in the future. EMAS is presented as a scheme that has all the characteristics of ISO 14001 and also integrates additional requirements, such as the validated environmental report. The results of this study show that there is already a high level of integration between EMAS and ISO 14001 for organisations that have adopted the scheme.

However, discussions in the workshop highlighted that, along with the substantial similarities between ISO 14001 and EMAS, confusion also exists as to the degree to which the two standards are compatible. For example, in certain instances the definitions listed in the EMAS Regulation under Annex II diverge from those in the ISO 14001:2004 standard in such a way that it is not clear whether or not this was intentional.

Moreover, many organisations that are new to environmental management are unsure about the actual differences between EMAS and ISO 14001 and sometimes (falsely) assume that the two are essentially the same. Because the differences were not clear and ISO 14001 is better known, interviewed non-EMAS organisations reported seeing little incentive in adopting EMAS in addition to ISO 14001. It is therefore important to provide further clarification as to how these schemes relate to each other and also make their differences visible to outsiders.

With ISO 14001 currently undergoing a revision due to be published in the third quarter of 2015, the aim of this policy option is to analyse how the changes to the ISO standard should be considered with regard to a future revision of EMAS, both technically and strategically.

To this end, the relationship of the two instruments will be analysed with regard to two dimensions:

- Technical: What is needed to bring EMAS in line with a revised ISO 14001 and where do possible difficulties lie? As part of this step, previously identified ambiguities regarding the compatibility between ISO 14001 and EMAS should also be examined and removed.
- Strategic: should new EMAS elements be developed or existing ones refined that go beyond revised ISO requirements? This would be necessary to reinforce EMAS's position – defined by the European Commission - as the most stringent and demanding environmental management instrument.

The following are the main changes expected with the introduction of ISO 14001:2015, as taken from the official information sheet on the ISO website (ISO/TC 207/SC 1, 2014).⁶⁰ The results of the analysis are relevant for taking a decision on potential options

⁶⁰ To complement the information available on the ISO website, a review of online information on judgements by certification bodies was also carried out. The following bodies were considered: DQS-UL CFS GmbH, GUTcert, TÜV Nord, TÜV Süd. An EMAS Member State Representative taking part in the ISO 14001 Revision process was also consulted.

to modify EMAS (if modification is the recommended path) in light of its technical alignment with ISO 14001 and its strategic positioning toward the ISO standard.⁶¹

⁶¹ For the purposes of this study, the analysis bases itself entirely on the information available up until 18 December. Any documents posted after this date on the topic of the ISO 14001 Revision cannot be taken into consideration.

Table 70: Main changes to be expected with the introduction of ISO 14001:2015

(Potentially) new ISO 14001 element	Change to previous ISO 14001 version	Relationship to EMAS Regulation	Coverage of new ISO provisions in EMAS	Adjustment of EMAS - technical dimension ⁶²	Adjustment of EMAS - strategic dimension
Strategic Environmental Management – understanding the organisation and its context	Increased prominence of environmental management within an organisation's strategic planning process; new requirement to understand the organisation's context and its potential impact on environmental conditions.	This element has not fully been considered within EMAS. As part of the environmental review (Annex I, limited to EMAS, not part of ISO 14001), organisations need to develop criteria for assessing the significance of their environmental impact. Considerations "may include" -among other factors- "views of interested parties", but no obligation exists to consider these. However, it has to be underlined that the context includes the environmental conditions but are not limited to these conditions: issues emerging from the context might include other dimensions such as the legal, market, economic, social conditions or aspect that might affect the ability of the organization to achieve its intended outcome. This will be requested for a complete understanding of the context.	Partially covered	Yes Annex I	No
Impact of the environment on the	In addition to managing the impact of the organisation on the environment, organisations will also need to consider the impact	This element is partly covered in the environmental review (Annex I of the EMAS Regulation). However, the focus is on the organisation's impact	Partially covered	Yes Annex I	No

⁶² It is to be understood as a preliminary assessment of the project team that is not based on a legal assessment.

organisation	of the environment on the organisation (e.g. changing climate/climate adaptation) and how it would respond.	on the environment.			
Strategic Environmental Management – understanding the needs and expectations of interested parties	Increased prominence of environmental management within an organisation's strategic planning process; new requirement to understand the organisation's potential impact on interested parties.	<p>The draft ISO 14001 implies a stronger commitment on the consideration of interested parties for two main reasons:</p> <ul style="list-style-type: none"> - EMAS asks to “consider” the views of interested parties while the new ISO standard asks to “understand”; this means that the organization must be able to demonstrate that it has carried out an exhaustive identification of the parties and analysis of their “needs and expectations” that are requirements for the environmental management system. - Moreover, the new ISO 14001 requests to assess the relevance of these needs and expectations (i.e.: requirements) of the interested parties in order to identify which of these become “compliance obligations” for the organization. This step is not present in EMAS. 	Partially covered	Yes Annex I, II	Yes To make sure EMAS maintains this higher level, requirements should be increased on how to consider and assess the opinions of interested parties.
Leadership	New clause assigning specific responsibilities for those in leadership roles to promote environmental management in their organisation.	In the current version of EMAS the requirements on leadership are resumed in the Annex II and in particular in the paragraphs 4.4.1 (Resources, roles, responsibility and authority and 4.6 (management reviews) of ISO14001:04. For that reason, all the new elements of ISO/DIS 14001:2014 referred to leadership are also new elements	Partially covered	Yes Annex II	No

		for EMAS.			
Protecting the environment	Organisations now need to commit to proactive initiatives to protect the environment. 'Protect the environment' is not defined per se, but text notes that this can include prevention of pollution, sustainable resource use, climate change mitigation and adaptation, protection of biodiversity and ecosystems, etc.	The EMAS Regulation notes that organisations need to demonstrate that their EMS addresses their "actual environmental performance" (Annex II) with respect to direct and indirect aspects identified in the environmental review. EMAS seems to fully cover the new ISO 14001 requirements.	Fully covered	No	No
Risks assessment	The revised ISO 14001 requires organisations to consider the organisational risks and opportunities arising from significant environmental aspects, compliance obligations and external environmental conditions that might affect the organisation. More structured and detailed approach to risk assessment and management and demonstration of the use of risk assessment tools from the ISO Guide 73 should be followed (GUTcert 2014; TÜV Nord 2014).	This element is not included in EMAS.	Not covered	Yes Annex I It should be emphasised that both risks deriving from the environmental aspects and impacts (risks for the environment) and the risks deriving to the organization from not being able to meet the "compliance obligations" should be assessed by applying a risk-assessment method.	No
Environmental performance	A shift in emphasis, now with a focus on continual improvement, and shift from improving the management system to improving the environmental performance. TÜV-Nord (2014) mentions the introduction of performance indicators and GUTcert (2014)	The element of continual improvement already exists in EMAS.	Fully covered	Yes Annex II (in case sentence 1 in B.3(2) will be deleted	Yes To make sure EMAS maintains this higher level, the European Commission and Member States should discuss how

	even notes that the new requirements may go beyond EMAS.				to strengthen the principle of continuous improvement (e.g. stronger links to SRDs and/or OEFs).
Life-cycle thinking	In addition to requirements associated with procured goods and services, organisations now need to extend their control and influence to product use and end-of-life treatment. The requirement stops short of requesting a life cycle assessment.	<p>Only covered to a limited degree when organisations are requested to identify their direct and indirect environmental effects as part of the environmental review.</p> <p>EMAS reference to life-cycle thinking in Annex I. It is especially referred to non-industrial organisations while the new ISO standard strongly refers that requirement to all organisations.</p> <p>Our environmental statement analysis indicated that the practice of identifying and assessing the indirect environmental aspects using a life-cycle perspective has a very low diffusion.</p>	Partially covered	Yes Annex I (depending on scope of changes, also adjustment of Regulation text itself needed)	Yes The element could be given greater consideration in EMAS in future, with the expansion of the product dimension when OEF and PEF tools become developed.
Requirements on suppliers	Organisations will need to set up criteria in order to rate suppliers, set additional requirements on their suppliers, and improve communication with them (TÜV Nord 2014; TÜV Süd 2014).	Annex I includes requirements on suppliers which seem to be equal to those outlined in the draft ISO standard	Fully covered	No	No

<p>Communication plan</p>	<p>Communication plan to be developed with equal emphasis on external and internal communication, including a mechanism to allow employees to make suggestions on how to improve the EMS.</p> <p>Organisation can decide whether or not to communicate externally (except where they are legally required to report – e.g. performance to regulators as pollution permit conditions). Certain sources note that some form of external communication could also become mandatory (TÜV-Nord 2014).</p>	<p>This element remains more strongly developed under EMAS, mainly through the validated environmental statement.</p> <p>Organisations need to be able to demonstrate an open dialogue with the public and other interested parties.</p>	<p>Partially covered</p>	<p>Yes</p> <p>Annex II, maybe in combination with Annex IV and Regulation text (preamble)</p>	<p>Yes</p> <p>EMAS requires to the registered organisations a strong commitment toward transparency and communication, especially by way of the Environmental Statement-related requirements. In spite of that, the Regulations does not request the development of a communication plan as requested by the draft ISO14001.</p>
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Looking at the results of the comparison, most changes required appear to be of a technical nature. Several new ISO 14001 elements require a strategic response to address EMAS's continued added value, including life-cycle thinking and communication plan.

Important to note is that the expected impacts from the ISO 14001 revision vary considerably. Some EMAS stakeholders from the literature, interviews and workshops commented that, in practice, not much will change at all. For example, the certification body DQS-UL CFS GmbH argues that all the new criteria implicitly already existed in ISO 14001:2004 and the revision does not represent a great challenge for ambitious organisations and well-informed environmental verifiers. Other stakeholders, however, insist that the ISO 14001 revision will bring fundamental practical changes.

Description and means of implementation and assessment of impact

7.3.5.1. Technical alignment of EMAS with a revised ISO 14001

On the policy making side, the following three points should be considered regarding the technical effort required by EMAS to remain in line with a new ISO 14001:

- 1) Since the EMS of EMAS is based on ISO 14001:2004, a simple solution would be to amend Annex II (and possibly Annex I) of the EMAS Regulation in order for it to refer to the most recent ISO 14001 Regulation.
- 2) An additional issue to consider is that certain terms and definitions included in the main body of the EMAS Regulation refer to definitions made in the EMS of the revised ISO standard. In order for EMAS to be in line with ISO 14001:2015, a revision and changes to the EMAS Regulation itself may be required.
- 3) The time frame: the due date for certified organisations to become compliant with ISO 14001:2015 is three years after its publication, thus in 2018. The EMAS revision therefore needs to be completed before then so that organisations holding both standards do not lose their ISO 14001 certification.

The level of technical effort required by organisations to adapt to the revised ISO 14001:2015 is likely to be lower for organisations already registered with EMAS, as certain new elements introduced to ISO 14001 already exist within EMAS (see Table 69 for details). Therefore, provided that the EMAS alignment takes place on time, being EMAS registered should enable an easier transition to ISO 14001:2015 for participating organisations.

The technical alignment is not a strategic option; rather, it is a necessary step which will need to be taken in order for EMAS to continue to function as the Regulation currently foresees. As a result, the assessment of the impact focuses on the criteria of coherence and relevance. The results show that aligning EMAS with a revised ISO 14001 standard is important for meeting those criteria.

7.3.5.2. Strategic: Develop new EMAS elements as a reaction to a revised ISO 14001 (to reinforce EMAS's position as the most stringent environmental management instrument)

A second option would be for EMAS to not simply become aligned and more closely integrated with a revised ISO standard, but also to develop new elements to ensure continued EMAS added value that goes beyond the requirements of ISO 14001.

In summary, Table 70 makes clear that, ISO 14001:2015 is becoming more like EMAS in several regards. The similarities indicate the need to discuss the development of new

EMAS elements or the refinement of existing ones that go beyond the (draft) ISO 14001:2015. At present, similarities to current unique EMAS requirements exist in the following features of the draft ISO 14001:2015:

- New requirements to understand the needs and expectations of interested parties
- A commitment to continuous environmental performance improvements (as opposed to simply preventing environmental harm and focusing on improvement of the EMS)
- The requirement for organisations to extend their control and influence to product use and end-of-life treatment by considering a life-cycle perspective
- Requiring some form of external communication. The details on this point are, however, still unclear; experts agree that the communication is unlikely to be as comprehensive as that; required by EMAS

For a detailed discussion on possible elements that could be introduced to EMAS and which would again widen the gap between EMAS and ISO 14001: 2015, please see the policy options discussed under Path III of this study.

Summary of potential impact

In summary, the analysis above shows that both a technical and strategic adjustment of EMAS in view of a revised ISO 14001 will be crucial for the continuation of EMAS. These adjustments will also ideally lead to gains in terms of efficiency and effectiveness, a point discussed in more detail in the ranking of options on the future development of EMAS. A technical and strategic positioning of EMAS towards and ISO 14001:2015 would have a high impact (a rating of 3) on each of the following criteria: relevance, coherence and EU added value. They directly address the issues of EMAS's relevance and coherence with regard to other policy instruments, and these options can only be implemented through action at EU level. In terms of feasibility, such an adjustment of EMAS would certainly involve considerable challenges (see Path II for more details). However, the need for considerable resources to implement this option does not reduce its necessity for maintaining the relevance of the EMAS regulation.

7.4. Path IV – Phasing out EMAS

Rationale

The principle objectives of EMAS are to improve the environmental performance of registered organisations and to create the greatest possible impact by increasing the number of registered organisations. The results of our analysis of environmental statements (specifically of core indicators) show that EMAS registered organisations experience environmental performance improvements. However, these improvements do not apply equally to all groups of EMAS organisations or to all core indicators described in the EMAS Regulation.

The study was unable to make a quantitative comparison to performance improvements caused by other schemes because those schemes do not publish comparable data. To date, no comprehensive comparison has been carried out and an analysis thus relies largely on anecdotal evidence.

Results from the survey and interviews, as well as statements made during the workshop, tend to support the positive impact that EMAS has had on environmental performance. This is also in line with findings of academic research. Most studies and articles on this subject matter indicate that environmental management instruments (like EMAS and ISO 14001) in general help organisations improve their environmental performance. Several studies indicate that EMAS registered organisations tend to

perform better than ISO 14001 certified organisations, especially in the long term. However, our survey results show that the majority of Member State EMAS/environmental authorities do not use EMAS as a “benchmark of excellence”.

Overall, no robust conclusion can be drawn as to whether EMAS can be considered as a benchmark of excellence or whether EMAS registered organisations perform better than organisations with another environmental management instrument (e.g. ISO 14001), although studies indicate in general that organisations with EMS perform better than those that are not using an environmental management scheme at all. The most robust conclusion that can be drawn is that EMAS can help organisations achieve significant environmental performance improvements but an EMAS registration does not automatically lead to excellent environmental performance.

In terms of numerical targets, with approximately 4,000 registered organisations and 7,550 registered sites in mid-2014, EMAS will not meet its the objective of reaching 23,000 registered sites by 2015. Additionally, EMAS has not been adopted uniformly across the Member States. Only four countries have over 200 registrations, while twelve countries have less than 10 registered organisations. In comparison, ISO 14001 had approximately 105,500 certified organisations in Europe in 2012 and higher numbers than EMAS in every single Member State.

Against the background of the findings above, the option of discontinuing EMAS therefore needs to be given consideration. Two potential paths are possible – a “sudden death” option and an option in which policy makers try to ensure that EMAS elements are transferred either to other European Commission policy tools or to other environmental management instruments.

7.4.1. “Sudden death”

Description and means of implementation

Ending EMAS with no further activity from the European Commission would be one option for discontinuing EMAS. The following steps would be necessary:

Under this option, the key objective should be to ensure that EMAS registered organisations and all related key factors such as environmental verifiers experience the benefits of being part of the EMAS community for as long as EMAS registrations are valid. Furthermore, the European Commission should aim at using elements of the scheme (e.g. environmental verifier framework) in other EU policies.

Measures should include:

- A systematic analysis of the implications of discontinuing EMAS, for example by means of a cost-benefit analysis. The analysis would need to consider the impact of the disintegration of institutions linked to EMAS (Competent Bodies, Accreditation and Licensing Bodies, Article 49 Committee) as well as the impact the option has on key actors like environmental verifiers and, foremost, EMAS registered organisations.
- The European Commission should conduct a high-level policy exchange with Member States to discuss the implications of the policy shift and how to best manage and implement that shift. The process of ending the scheme could be initiated through an amendment to the EMAS Regulation which sets an end date for all of the Regulation’s existing provisions. The provisions could expire all at once or gradually, with different elements being phased out in steps. The Commission and the Member States would thereby need to consider any existing benefits for registered organisations and their gradual expiration.

Potential impact

Due to the special nature of this policy option (as discussed above), an analysis according to the assessment criteria designed for options focusing on modifying the scheme would not be useful. This section will thus focus on implications for key actors – firstly, for registered organisations and, secondly, at a governance level.

Implications for registered organisations

Chapter 4.3 discusses the results of the survey that focus on the perceived and actual benefits that EMAS delivers to registered organisations. While EMAS does not currently meet all of the respondents' expectations, a discontinuation of EMAS would still lead to a loss of reputation and credibility for the registered organisations. In particular, smaller organisations seeking to increase their visibility and improve their reputation may feel these effects strongly.

Furthermore, the analysis of environmental statements and evidence from other studies indicates that EMAS contributes to organisations' environmental performance improvements. The annual EMAS Awards confirm that organisations which use EMAS can truly become top performers, and survey results confirm that registered organisations place value on environmental sustainability. Interviews and survey results show that, aside from quantifiable performance improvements, organisations also experience unquantifiable improvements, for example in the environmental awareness of employees and customers. Discontinuing the scheme would thus most likely have a negative impact on a significant number of EMAS registered organisations.

Since organisations have already invested in an EMS, it is likely that in the majority of cases organisations would keep the EMS rather than simply abandoning it. In organisations which do not have a strong environmental policy of their own, however, the quality of the EMS may decrease over time with the reduced stringency of external verifications. Organisations may also be more likely to obtain an ISO 14001 certificate because of the high degree of similarity between the EMS of both standards.

Implications at a governance level

The discontinuation of EMAS would mean that the European Commission would lose a tool through which it currently exerts influence on environmental performance. Although the ex-post analysis of this study addresses the current limitations of EMAS with regard to effectiveness, the scheme nonetheless remains the European Commission's strongest and most direct means of influencing environmental management standards, either directly or through example. The credibility of the European Commission may also suffer if it abandons its own scheme. Furthermore, targets and objectives set at EU level will no longer exist, leading to a lack of guidance at EU level. At worst, this could send a signal to the Member States of a reduced need for activities around voluntary environmental protection at organisational level.

The abolition of EMAS would certainly result in reduced transparency in environmental reporting, since no other environmental standard combines the requirements for a publicly available environmental statement and for external auditing and certification in the same way as EMAS. Regarding legal compliance, our study reports some evidence from interviews that EMAS registered organisations tend to perform better than their peers with regard to complying with legislation in general. However, no conclusive evidence from the survey suggests that this increased compliance translates into reduced time and cost spent on inspection and monitoring (as reported by Member State representatives – for more details see Chapter 5.1.3.2). An abolition of EMAS would thus be unlikely to increase the resources public administrations spend on compliance checks, as EMAS registration does not in most cases provide for a reduced stringency or frequency of inspections.

Additionally, all related administrative bodies would no longer need staff and/or resources devoted solely to EMAS. Environmental verifiers would also experience a reduced workload, possibly leading to redundancies. Although job losses could be a substantial factor in some Member State environmental authorities (e.g. Competent Bodies) most tasks related to EMAS tend to be undertaken on a part-time basis, with employees also having other responsibilities. At the same time, ending EMAS may provide an opportunity for increased action on environmental issues at the national level or to shift resources to other EU policy instruments.

This shifting of resources could lead to an improvement of existing schemes or to the development of new schemes at a European and national level. Activities at national level would, however, take place outside of the control of the European Commission. Member States with a weak track record in environmental policy would not be likely to step up to fill the void created by ending EMAS.

Finally, there is a strong argument that EMAS acts as a front-runner and a benchmark for other environmental schemes. Some schemes at national level, such as the Belgian “Ecodynamic Enterprise Labelling”, are reportedly based on EMAS. EMAS thus may play a special role in testing and paving the way for new elements in environmental schemes. As EMAS is a public tool and therefore not reliant on generating income, it may enjoy a greater capacity for experimentation. EMAS thus provides added value by seeking out new ways of encouraging a better environmental performance among registered organisations. Eliminating EMAS would also eliminate this added contribution to environmental protection.

7.4.2. Transferring EMAS elements to other instruments

Description and means of implementation

Another option for dealing with a phase out of EMAS would be to transfer the key elements that make up the scheme to another existing policy tool, with a view to saving resources in the process. Firstly, EMAS elements could be transferred to other EU level SCP tools, meaning that the check on organisations’ environmental performance would remain within the competencies of the European Commission. Secondly, the elements could be transferred to a so-called “ISO 14001 PLUS” standard. This option would create another ISO standard in addition to the current ISO 14001. This additional ISO option would include elements currently only present in EMAS. Organisations would have the choice between adopting the “normal” – i.e. the current or revised ISO 14001 respectively – or “PLUS” versions.

7.4.2.1. Transferring EMAS elements to other SCP tools of the European Commission

The following SCP tools have been identified as potentially suitable for incorporating EMAS elements:

- OEF and PEF
- Energy labelling
- EU Ecolabel
- The Retail Forum

From the above list, the environmental footprinting tools OEF and PEF are the most suitable instruments for incorporating EMAS elements. If EMAS continues to exist, the expansion could potentially work in both directions: the greatest potential for expanding

the product dimension of EMAS also lies with OEF and PEF (see chapter 7.2.1. for option on indirect environmental aspects). Based on the available information on OEF, EMAS's entire accreditation/licensing system, and its environmental verification and validation approach could potentially be transferred to OEF. As these two aspects are well received by EMAS registered organisations, making this option potentially quite beneficial.⁶³ The two footprinting tools are, however, currently still at the pilot stage, and therefore a detailed analysis of a possible integration of EMAS criteria into OEF and PEF cannot be conducted at this stage.

Among the remaining SCP tools, the energy labelling, the Ecolabel and the Retail Forum all focus entirely on the product dimension and do not provide an adequate framework for including elements from EMAS. Moreover, the possibility of integrating EMAS and Ecolabel has been considered in the past, including in the EVER study (Iraldo et al. 2006), but was not found to be a viable option.

7.4.2.2. Transferring EMAS elements to a (European) ISO 14001 PLUS standard

This option would entail shifting the elements of EMAS that go beyond those of ISO 14001 to the responsibility of ISO. Taking into account the current state of information on the ISO 14001 revision (see Chapter 7.3.5), the following EMAS elements appear to remain applicable to EMAS only. As such they could be added to an ISO 14001 PLUS Standard:

- Requirements with regard to legal compliance screening procedures
- External communication via an externally validated environmental statement

The different elements can therefore easily be identified, however:

- It would need to be clarified to what extent an institutional framework needed to fulfil all of the envisaged ISO 14001 PLUS requirements exists
- The European Commission would lose control of the instrument – either entirely or to a certain extent

Some form of agreement between ISO and the European Commission could potentially enable a joint operation of ISO 14001. This arrangement would also make use of existing administrative structures and expertise and enable the European Commission to maintain an element of control. However, the feasibility of this option would depend entirely on ISO's cooperation.

An additional point to consider is whether organisations already registered under EMAS would automatically receive the ISO 14001 PLUS Standard or whether additional administrative steps should exist. An adaptation to ISO 14001:2015 would be required in any case (see Chapter 7.3.5 for more details).

Potential impact

Since the EU policy instruments OEF and PEF are currently in a pilot stage, no analysis with regard to the potential impact can be carried out. Additional pilot studies and discussions and analysis in EMAS forums (Article 49 Committee, Competent Bodies)

⁶³ A stronger link to OEF is also possible under the option of maintaining EMAS (EMAS and indirect environmental impacts).

should explore the (potential) relationship between the two instruments, as stronger integration has the potential to benefit both instruments.

With regard to content, the constellation between ISO 14001 PLUS and ISO 14001 would be very similar to the current relationship between ISO 14001 and EMAS. However, but the administrative structure would change entirely. The significant differences would include:

- European Commission would not manage the instrument
- a potentially easier/quicker spread of the additional elements beyond the EU
- resource constraints (providing the necessary institutional framework worldwide) could be an issue
- potential that ISO 14001 PLUS will not maintain the same quality as EMAS

7.4.3. Summary of potential impact

An assessment of the option phasing out EMAS should take into account three layers:

- Firstly, as analysed above, the impact of discontinuing the scheme on the key actors, including users, environmental verifiers and the European Commission itself.
- Secondly, the current performance of EMAS with regard to the six REFIT criteria and the question whether this can be considered to be positive
- Thirdly, modification options and the question of whether these options are able to remedy the key weaknesses of the scheme identified in the ex-post analysis.

Table 71: Comparison of ex-post findings with potential of modification options to improve EMAS

Criterion	Key findings ex-post analysis	Comparison with modification options ⁶⁴	Assessment
Effectiveness	<ul style="list-style-type: none"> • Results from the survey and interviews, as well as statements made during the workshop, tend to support the positive impact that EMAS has had on environmental performance. • It is likely that the picture will remain the same: the majority of organisations achieve performance improvements while others do not, which has implications for the image of the scheme (policy makers are predominantly not convinced about EMAS being a “benchmark for excellence”) • It is expected that registration numbers will at best stagnate if key barriers and lack of drivers/unclear benefits are not addressed. • However, considering recent trends, the revised ISO 14001, and the fact that several barriers identified in the survey are felt particularly strongly by SMEs (which constitute 80% of EMAS registrations), it is likely that registration numbers will further decline 	<ul style="list-style-type: none"> • Several options aim at increasing the scale and/or improving performance; including: <ul style="list-style-type: none"> ○ Strengthening the requirements on indirect aspects (option 1) ○ Facilitated conditions for SMEs (option 3) ○ Use of Multi-site registration approach (option 5) 	<ul style="list-style-type: none"> • Options have the potential to make a positive contribution to EMAS registration numbers, especially the multi-site registration approach • Principle of continuous performance is addressed with regard to indirect aspects • Further action may be needed to strengthen the principle, e.g. links to OEF • How the ISO 14001 revision is dealt with is a key factor in EMAS’s future development (see “relevance” for further information)

⁶⁴ The underlying questions are whether EMAS’s current performance with regard to the six criteria can be considered to be positive and whether options aiming at modifying the scheme are able to remedy the key weaknesses.

<p>Efficiency</p>	<ul style="list-style-type: none"> • According to our survey results, the main competitive advantage experienced by registered organisations is improvement of efficiency in the use of natural resources and energy, with its corresponding reduction of costs • It is expected that EMAS will provide a suitable instrument for improvement of financial performance also in the future • However, cost savings do not apply to all types of organisations/all sectors. Smaller organisations in particular take financial performance drivers into account. The ongoing lack of financial incentives may present a barrier to adoption and maintenance of the scheme for smaller organisations • Overall, the survey results indicate that not all organisations feel cost efficiency alone is a sufficient driver for EMAS adoption 	<ul style="list-style-type: none"> • Several options aim at cost reductions, for example: <ul style="list-style-type: none"> ◦ Environmental reporting (option 2) ◦ Facilitated conditions for SMEs (option 3) ◦ Use of Multi-site registration approach (option 5) 	<ul style="list-style-type: none"> • Options have the potential to help cut costs • Further action aiming directly at improving efficiency may be needed, e.g. by establishing links to OEF
<p>Coherence</p>	<ul style="list-style-type: none"> • One of the main weaknesses identified in the survey and interviews is that EMAS is not well connected to other laws and policy initiatives (e.g. with regard to regulatory relief) • Due to the ongoing ISO 14001 revision, there will be a need to adjust EMAS in order to make sure that both standards are coherent and synergies can be maintained as easily as it is the case now • Overall, there is a good coherence of EMAS with other relevant instruments. In 	<ul style="list-style-type: none"> • Option Provide more regulatory relief and incentives directly addresses the weakness • Option EMAS and a revised ISO 14001 is outlining an approach on how to “respond” to the ISO 14001 revision 	<ul style="list-style-type: none"> • One modification option directly covers the lack of regulatory relief and policy integration • However, the option’s implementation will depend on political will and on whether Member States and the European Commission “trust” that EMAS provides added value • How the ISO 14001 revision is dealt with is a key factor in the future development of EMAS (see

	<p>some cases the lack of overlaps with other instruments (e.g. EU Ecolabel) also results in difficulties adopting them in an integrated manner</p>		<p>“relevance” for further information)</p>
Relevance	<ul style="list-style-type: none"> • General EMAS principles and objectives (voluntary approach; prevention of pollution, continuous improvement) are very much valid in light of current EU policies • Based on the analysis of the draft of the revised ISO 14001, both (potential) EMAS users and policy makers are likely to see less (if any) added value in EMAS compared to the ISO 14001:2015 standard if EMAS is not modified 	<ul style="list-style-type: none"> • Option Provide more regulatory relief and incentives directly addresses the weakness • Option EMAS and a revised ISO 14001 is outlining an approach on how to “respond” to the ISO 14001 revision 	<ul style="list-style-type: none"> • How the ISO 14001 revision is dealt with is a key factor in the future development of EMAS (see “relevance” for further information)
EU added value	<ul style="list-style-type: none"> • EMAS users believe in the scheme’s added value compared to ISO 14001, for example with regard to the rigorous verification process and external reporting. • Survey results indicate that achieving and maintaining legal compliance is the main benefit of an EMAS registered organisations • However, the ISO 14001 revision is (based on the current draft) adding new elements which have the potential to “close the gap” to EMAS or even exceed EMAS’s requirements and reduce the latter’s added value. • Based on the preliminary analysis of the draft ISO 14001 standard, the ongoing 	<ul style="list-style-type: none"> • Option EMAS and a revised ISO 14001 is outlining an approach on how to “respond” to the ISO 14001 revision 	<ul style="list-style-type: none"> • How the ISO 14001 revision is dealt with is a key factor in the future development of EMAS (see “relevance” for further information) • Agenda-setting and steering capacity are important in light of the different nature of the ISO governance scheme, which would not give policy makers the same degree of influence on the future path of environmental management in general

	<p>ISO 14001 revision makes an adjustment of EMAS necessary if EMAS wants to maintain or create more added value over ISO 14001</p> <ul style="list-style-type: none"> • EMAS provides policy makers with steering capacity, offering them the chance to set and drive the agenda for the development of environmental management standards and the introduction of new elements 		
Feasibility	<ul style="list-style-type: none"> • Our survey results show that EMAS's users see an added value and do not intend to leave the scheme but ask for modifications • In addition, several Member States have positive trends in registration numbers and/or relatively high overall registration numbers • The four Member States with high registrations numbers also favour modifications 		

As mentioned above, our assessment of the possible discontinuation of EMAS is built upon three layers:

- Firstly, we took into account the current performance of EMAS by applying the six assessment criteria to the business-as-usual option (Chapter 7.1);
- Secondly, we considered several modification options and aimed to assess whether these options are able to remedy the key weaknesses of the scheme, as identified in the ex-post analysis;
- Thirdly, the assessment of the option phasing out EMAS considers the impact of discontinuing the scheme on the key actors, including users, environmental verifiers and the European Commission itself.

As regards the first layer, our study results support the notion that EMAS has had a positive impact on environmental performance. However, as such improvements do not appear to be evenly distributed across core indicators, organisations and sectors, the principle of continuous improvement should be strengthened when modifying the scheme (e.g. with links to OEF).

Furthermore, the main weakness of EMAS relates to matters of coherence, namely the lack of policy support for the scheme. Our survey and interview results indicate that this absence of policy support has a negative impact on registration numbers. The above analysis indicates significant untapped potential for better policy integration to increase registration numbers. Consequently, actions should be undertaken to achieve a stronger and more effective integration of EMAS into the EU and national legislative and regulation frameworks.

Finally, we come to the conclusion that EMAS has an added value compared to ISO 14001 (and other environmental management instruments) which justifies further policy action at EU level. However, the added value can be confirmed only for the reporting element of EMAS; the other potential additional benefits have not been conclusively proven. In this regard, the ISO 14001 revision is (based on the current draft) adding new elements which have the potential to “close the gap” to EMAS or even to exceed EMAS’s requirements and reduce its added value.

As regards the second layer - the modification options - EMAS appears to require modification not only to address the identified weaknesses but also as a response to the ISO 14001 revision (further information in chapter 7.3.5). The options defined and analysed in this report have the potential to address these key weaknesses.

Concerning the third layer (the impact of discontinuing EMAS), a number of non-desirable effects and the unclear situation with regard to the (potential) links of EMAS to the European Commission’s footprinting policy initiative OEF raise significant doubts as to the advisability of the option Phasing out EMAS at the current time. . The European Commission would lose a tool through which it has a major influence on environmental performance. Targets and objectives set at EU level will no longer exist, leading to a lack of guidance for and uniformity among Member States. At worst, eliminating EMAS could send a signal to the Member States that activities regarding voluntary environmental protection at organisational level are no longer necessary. Furthermore, given that the European Commission’s new environmental footprinting instrument OEF is currently being tested in pilots, we are not yet able to fully assess the added value and relevance of EMAS. This is pertinent since the OEF refers to EMAS on several matters (e.g. reporting, performance indicators). A decision as fundamental as phasing out the scheme should only be taken after a full assessment of the connection between the two instruments.

Taking all of the above points into account (the current performance of EMAS and our analysis of key weaknesses; non-desirable effects of phasing out EMAS; the fact that the situation with regard to the European Commission’s footprinting policy initiative is unclear), the evidence indicates that phasing out EMAS would be premature at this time.

8. RANKING OF OPTIONS

8.1. Approach

In order to provide robust and effective suggestions, the ranking of policy options will take into account both the potential impact of each option and the ability of the specific options to create synergies with one another. Given its importance with regard to the relevance of EMAS, we also took into account the potential impact of the ongoing ISO 14001 revision on that standard's compatibility with EMAS, EMAS's added value and EMAS's relevance.

Step 1:

As regards the assessment of individual options, they will be summarised, indicating the score (1: low impact – 3: high impact) assigned to each option in Chapter 7, where the potential impact was assessed according to the criteria of: effectiveness, efficiency, coherence, relevance, added value and feasibility.

Step 2:

As regards the potential for synergies, we will create a synergy index assessing the compatibility of each option with the others. The main aim of the index is to provide an overview of the extent to which each option is synergetic, neutral or not compatible with the other options. For each option, the synergy index is calculated by summing the corresponding cross values with all the other options (in rows and columns). This comparative assessment focuses on the possibility of implementing the options together by pursuing potential synergies. The aim is to evaluate and select proposed options on the basis of their capability of reinforcing one another and strengthening each other's effects when implemented in parallel. The analysis aims at establishing if and how the options can be used to reinforce each other's aims or if they are instead mutually exclusive.

Step3:

Given that the ISO 14001 management requirements also form the basis of EMAS (Annex II of the EMAS Regulation), and that ISO 14001 is a dominant international market player, the revision of the ISO standard needs to be taken into account when drawing up recommendations for the development of EMAS.

The first two steps will be assessed in combination with each other, whereas the final step will be analysed separately, based upon the results of the assessment of the first two steps.

8.2. Summary of assessment of options

8.2.1. Path I – Keeping EMAS as it is

Due to its nature, the Keeping EMAS as it is option and all modification options are mutually exclusive. Therefore, this option is not included in the synergy index. In Table the description of that option is reported.

Table 72: Description of the option Keeping EMAS as it is

Description	Potential impact
Keeping EMAS as it is (baseline) The option assumes that no changes are made to the EMAS Regulation and also no other modifications are implemented that do not require a change to the Regulation itself (this is the case for some of the options described under Path II & III). The option serves as a baseline for all the options focusing on modifying or phasing out the scheme.	Not recommended

8.2.2. Path II & III – Modifications – internal and external dimensions

The ex-post analysis of this study identified barriers, weak drivers and unclear benefits as reasons why EMAS's two core objectives have either not been met unequivocally. Against the background of this study's findings on the ex-post analysis of the scheme - which is reflected in the assessment of the potential impact of the path I option - path II & III policy options were developed or reaffirmed (as most of them have already been outlined in the terms of references). These options directly address the identified weaknesses of the scheme. Two types of modifications were developed: those internal and those external to EMAS.

Table 73: Description of the options and their potential impact

Option no.	Description	Potential impact
Path II – Modifications internal to EMAS		
1	Strengthening the requirements on indirect aspects This option contains one sub-option named Stronger integration of indirect environmental aspects (e.g. related to the supply chain) within the environmental review or within the requirements of the EMS. The objective of this option is to increase the consideration of indirect environmental aspects by EMAS registered organisations, in order to improve the management of the impacts linked to such environmental aspects, and to spread the adoption of EMAS among suppliers and other actors connected to EMAS registered organisations.	2.29
2	Environmental reporting This option contains one sub-option named Make the Environmental Statement more usable and available. The measure aims to strengthen the external communication of EMAS registered organisations, in order to increase the awareness of EMAS among external stakeholders and to strength the communication capacity of EMAS organisations.	2.49

3	<p>Facilitated conditions for SMEs</p> <p>This option includes the following sub-options:</p> <ul style="list-style-type: none"> - Enlarge the period foreseen in Article 7 further reducing the audit frequency for SMEs with no significant environmental risk - Include criteria in Article 7 to enable a clear preliminary identification of the organisations entitled to reduced audit frequency - Enhance the application of EMAS in industrial clusters, better specifying rules of application and simplifications for SMEs - Provide technical/legal support for SMEs <p>The main objective of the option is to modify the future Regulation in order to increase the appeal of EMAS for SMEs. SMEs build a large pool of potential EMAS registered organisations, and at the same time they have a high impact on the environment. Facilitating the conditions for SMEs to adopt EMAS could be a key factor in increasing EMAS numbers.</p>	2.59
4	<p>Revise EMAS logo provisions</p> <p>This option contains one sub-option called Revise the rules on the use of the EMAS logo provided by Article 10 of the Regulation. This option aims to increase the attractiveness of the EMAS logo to registered organisations. To this end, it aims to amend Article 10 of the current Regulation by removing those provisions that prevent a broader and more simplified use of the logo but do not add substantial value in terms of guaranteeing its proper use.</p>	2.33
5	<p>Use of multi-site registration approach</p> <p>This option contains one sub-option called Amending the EMAS Regulation with a multi-site registration approach aimed at removing barriers to adoption and implementation of the scheme by multi-site organisations with certain characteristics by introducing an approach targeted to multi-site registration.</p>	2.41
6	<p>Role of Sectoral Reference Documents – “discontinue” options</p> <p>This first set of options regarding SRDs considers ending SRDs through two sub-options:</p> <ul style="list-style-type: none"> - Stopping SRDs: sudden death - Stopping SRDs: transferring SRDs elements to BREFs <p>This option aims at stopping the development of SRDs considering two different paths: stop the development without further action or transfer the objectives and the contents of SRDs into BREFs by amending the current version of Article 46 of the EMAS Regulation.</p>	2.04

7	<p>Role of Sectoral Reference Documents – “strengthening” option</p> <p>This option considers the following sub-option: “Improve the relevance of SRDs”. The option aims to strengthen the role of SRDs in the EMAS system by increasing the obligations laid out in the documents that EMAS organisations need to produce.</p>	2.03
8	<p>Promotion and information activities</p> <p>This option includes the following sub-options:</p> <ul style="list-style-type: none"> - Requiring Member States to define and carry out a yearly EMAS Communication Plan identifying actions, budget and specific indicators to monitor the state of the implementation of the plan - Increasing best practice sharing by creating an online platform - Making registration fees publicly available and promoting the spread of this information, and providing a price comparison on the EMAS Helpdesk website - More promotion activities under the competency of the European Commission - Boosting networks and pan-European activities in the EMAS community <p>The option aims to overcome the lack of recognition by external stakeholders, which is perceived as one of the main barriers to the spread of EMAS. The different sub-options foresee promotion and information activities to be carried out at different levels in order to increase the awareness of EMAS.</p>	2.51
9	<p>Provide more regulatory relief and incentives</p> <p>This option includes the following sub-options:</p> <ul style="list-style-type: none"> - Introduce tax breaks for registered organisations - Favoured access to public funds for EMAS registered organisations - Fast-track administrative procedures and/or simplify control activities and inspections related to environmental issues - Include requirements for EMAS in Green Public Procurement - Financial guarantee <p>The option aims to address one of the topics raised most frequently by stakeholders whose feedback was collected: regulatory relief. EMAS registered organisations that were surveyed and interviewed ask for a better valorisation of EMAS in European and Member State law in order to create a stronger business case for EMAS and reward voluntary efforts taken by registered organisations.</p>	2.89
10	<p>Revise EMAS Global provisions</p> <p>This option aims to improve EMAS Global provisions to make the approach more attractive (e.g. reduce costs and complexity).</p>	2.30

Path III – Modifications internal to EMAS		
11	<p>Enhance the integration and mutual recognition of EMAS with ISO 50001</p> <p>The option aims to integrate the ISO 50001 requirements in the future version of EMAS</p>	2.22
12	<p>EMAS as a tool of excellence of CSR</p> <p>This option includes the following sub-options: “Expand EMAS’ scope to include all CSR criteria” and “Strengthen and highlight existing links between EMAS and CSR”. The aim of the option is to achieve a greater integration of CSR into the future EMAS Regulation. This will allow EMAS to transform into a tool of excellence for environmental management and CSR.</p>	1.78
13	<p>EMAS as an umbrella system</p> <p>This option aims to introduce a modular approach to the EMAS scheme (e.g. modules on CSR, ISO 50001, OHSAS 18001) to allow organisations to pick and choose which modules of criteria they would like to add to their environmental certificate. The current EMAS would always form the initial and required building block.</p>	2.13
14	<p>Mandatory use of the scheme for specific sectors/organisations</p> <p>This option includes the following sub-options:</p> <ul style="list-style-type: none"> - Making the demonstration of a management system with the characteristics of EMAS a mandatory requirement in legislative acts such as the IED Directive, the SEVESO Directive or other EU legislations aimed at organisations with high environmental impacts - Making EMAS mandatory for any organisations obtaining European funds for research and development projects if these funds exceed a certain threshold” - Making EMAS mandatory for public organisations <p>The option aims to establish the scheme as a mandatory instrument for organisations in specific sectors or in specific settings.</p>	2.51
15	EMAS and a revised ISO 14001 ⁶⁵	3 (rated only on coherence, relevance and EU added value)

8.2.3. Path IV – Phasing out EMAS

Again, due to the nature of the option, the synergy index cannot be applied to the Phasing out EMAS option because it necessarily excludes all the modification options. Table 74 describes that option.

⁶⁵ The option will not be included in the synergy index but assessed in a subsequent step.

Table 74: Description of the option Phasing out EMAS

Description	Potential impact
<p>Phasing out EMAS This option includes the following sub-options:</p> <ul style="list-style-type: none"> - Sudden death - Transferring EMAS elements to other Sustainable Consumption and Production (SCP) tools of the European Commission - Transferring EMAS elements to a (European) ISO14001 PLUS standard <p>The sudden death option foresees stopping EMAS either with no further action or with a gradual ending laid out in the next version of the Regulation. The other two sub-options aim to maintain EMAS’s key elements by transferring them to other SCP tools or to the ISO14001 standard, creating a new standard named ISO14001 PLUS.</p>	<p>Not recommended</p>

8.3. Assessment of synergies between the options focused on modifying EMAS

As mentioned at the beginning of this chapter, the synergy assessment examines the possibility of implementing several options in parallel by pursuing potential synergies. The proposed options focused on modifying the scheme should be evaluated and selected not only with regard to their rating in Chapter 7 but also on the basis of their ability to reinforce one another and to strengthen each other’s positive impacts. The analysis highlights if and how the options can be used in a mutually reinforcing way, or if they instead have to be considered as alternatives to one another. The option concerning the ISO 14001 revision will be examined separately, as our analysis has revealed that considering the revised ISO standard is of central importance to the future development of EMAS.

A synergy index will be calculated in order to highlight the degree to which the options complement each other. Each option will be combined with the others in Table, producing one of the following scores:

Score	Assessment
2	strong mutual reinforcement
1	Synergetic
0	Neutral
-1	non-compatible
-2	strong non-compatibility

The synergy index is calculated below as the sum of the scores attributed in the assessment matrix (rightmost column).

Table 75: Calculation of the synergy indexes

	Option 1	Option 2	Option 3	Option 4	Option 5	Option 6	Option 7	Option 8	Option 9	Option 10	Option 11	Option 12	Option 13	Option 14	Synergy Index
Option 1		1	0	0	0	1	0	1	2	1	1	2	1	0	10
Option 2	1		2	1	1	0	0	1	2	0	0	1	1	1	11
Option 3	0	2		2	0	0	-1	2	2	0	1	-1	0	0	7
Option 4	0	1	2		1	0	0	2	0	1	1	1	1	1	11
Option 5	0	1	0	1		0	0	1	0	1	1	0	0	1	6
Option 6	1	0	0	0	0		0	2	0	0	0	0	0	0	3
Option 7	0	0	-1	0	0	0		0	0	0	0	0	0	0	-1
Option 8	1	1	2	2	1	2	0		2	1	0	0	0	0	12
Option 9	2	2	2	0	0	0	0	2		0	0	0	0	0	8
Option 10	1	0	0	1	1	0	0	1	0		1	1	1	0	7
Option 11	1	0	1	1	1	0	0	0	0	1		0	-1	0	4
Option 12	2	1	-1	1	0	0	0	0	0	1	0		-1	0	3
Option 13	1	1	0	1	0	0	0	0	0	1	-1	-1		0	2
Option 14	0	1	0	1	1	0	0	0	0	0	0	0	0		3

Several observations emerge from the results in the synergy matrix above. Firstly, many options are independent of each other. Several scores show no potential for synergies (as indicated by the value 0). Secondly, a few options show non-compatibility with the other options (negative value). Thirdly, no option has received a value indicating a strong non-compatibility with another option (value -2). Finally, only one option shows a negative synergy index that indicates a difficult integration with the other options for modifying EMAS (Option 7: Strengthening the role of SRDs). According to the assessment approach outlined at the beginning of the study, this option will be automatically excluded from the final assessment.

The options which show the highest potential for synergies during implementation are: Promotion and information activities (option 8), Strengthening the requirements on indirect aspects (option 1), Environmental reporting (option 2) and Revise EMAS logo provisions (option 4). Strengthening promotion and information elements in the EMAS management and organisational structure is an option that can be implemented simultaneously with many other options, leading to a situation of mutual reinforcement.

For example, the promotion and information option can help increase both the effectiveness of Facilitated conditions for SMEs (option 3) and the proposals related to Revise EMAS logo provisions (option 4). In addition, as described in Chapter 7.2.6, the discontinuation of SRDs could contribute to saving resources to invest in promotion activities.

The option Strengthening the requirements on indirect aspects (option 1) shows significant synergies with Provide more regulatory relief and incentives (option 9) and EMAS as CSR instrument (option 13). In the first case, a better management of suppliers would likely guarantee more effective environmental management in these organisations, and for that reason also increase the possibility for public institutions to concede administrative simplifications or to reduce inspection frequencies. In the second case, the synergies are linked to the importance of the environmental management of suppliers in the CSR tools and approaches.

The option Environmental reporting (option 9) has the potential to reinforce the option Facilitate conditions for SMEs (option 3). Both would encourage SMEs to join the scheme because the possibility of disseminating extracts of the environmental statement would improve the external communication and reputation of those organisations in particular. The same applies to the option Revise EMAS logo provisions (option 4). The latter option also has the additional potential to reinforce the option promotion and information activities (option 8).

8.4. Setting up the final ranking

In order to set up a final ranking of the options, we take the following approach:

- the options with a negative synergy index will be automatically excluded
- the values of the synergy indexes (maximum value of 24) will be revised in order to draw comparisons to the scores of the potential impact of specific options (1: low impact – 3: high impact)
- we will sum up the two values, attributing the following weighting: 60% to the potential impact and 40% to the synergy index value. This will ensure that the results reflect the higher importance of the potential impact of specific options. The following formula applies: 60% potential impact + 40% revised synergy index
- we will add elements from our ISO 14001 revision analysis which should be taken into account when drawing up recommendations

Table shows the calculation of the revised synergy index.

Table 76: Calculation of the revised synergy index

Options	Synergy index	Revised synergy index
Option 1	10	1.25
Option 2	11	1.375
Option 3	7	0.875
Option 4	11	1.375
Option 5	6	0.75
Option 6	3	0.375
Option 7	-1	Excluded
Option 8	12	1.5
Option 9	8	1.125
Option 10	7	0.875
Option 11	4	0.5
Option 12	3	0.375
Option 13	2	0.25
Option 14	3	0.375

It is now possible to draw up the final ranking of the options (Table) according to the proposed weighting of the potential impact and the revised synergy index.

Table 77: Final assessment results

Options	Final assessment
Option 1	1.9
Option 2	2.0
Option 3	1.9
Option 4	1.9
Option 5	1.7
Option 6	1.4
Option 7	-
Option 8	2.1
Option 9	2.2
Option 10	1.7
Option 11	1.5
Option 12	1.2
Option 13	1.4
Option 14	1.6

After carrying out the calculation above, top two options identified (score higher than 2.0) to improve EMAS with a view to achieving its principal two objectives – improvement of registered organisations’ environmental performance and increase in registration numbers to achieve highest possible overall environmental benefit – are the following (in order of importance):

Provide more regulatory relief and incentives (option 9)

Promotion and information activities (option 8)

Given that the main weakness of EMAS is a lack of policy support, the two highest ranking options focus on supporting and promoting the scheme through external aspects. These measures can likely be implemented simply through better implementation and enforcement rather than revision of the EMAS Regulation.

However, since the two highest ranking options rely on policy support (“trust” in EMAS’s added value for environmental objectives), they should be supported by measures which reinforce the core elements of the scheme. This would include measures for strengthening the principle of continuous improvement, facilitating the uptake of the scheme and improving the visibility of the scheme (options with a score higher than 1.5 – at least medium impact):

- Environmental reporting (option 2)
- Strengthening the requirements on indirect aspects (option 1)
- Facilitated conditions for SMEs (option 3)
- Revise EMAS logo provisions (option 4)
- Use of multi-site registration approach (option 5)
- Revise EMAS Global provisions (option 10)
- Mandatory use of the scheme (option 14)

Our analysis shows that the impact of the ISO 14001 revision on EMAS (Chapter 7.3.5) has both a technical and strategic dimension. Most new ISO 14001 elements only require a technical adjustment of EMAS in the sense that Annex II (or, in some cases, Annex I) of the EMAS Regulation would need to be amended. As regards the strategic dimension, our options 1 and 2 directly address aspects which have been introduced in the draft revised ISO 14001.

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10. ANNEXES

10.1. ANNEX I: EVALUATION STUDY QUESTIONNAIRE FOR EMAS ORGANISATIONS

1. Section 1: ORGANISATION DETAILS

- 1.1 Number of employees _____
- 1.2 Year of first registration _____
- 1.3 NACE Code _____
- 1.4 Country (headquarters) _____

How did your organisation find out about EMAS?

- From institutional channels (e.g. Competent Bodies, other public institutions)
- From customers
- From suppliers
- From competitors
- From technical/scientific reports or conferences
- From the media (press, TV)
- From industrial associations
- Other (please specify): _____

Annual Turnover (public organisations may skip to the next question)

- Less than 1,000,000 Euro
- 1,000,000- 2,000,000 Euro
- 2,000,000 - 10,000,000 Euro
- 10,000,001 – 50,000,000 Euro
- Higher than 50,000,000 Euro

NOTE: For the following sections, comment boxes will be included after questions so that, when applicable, responders may leave more detailed reasons, suggestions, and explanations.

2. Section 2 : EMAS AND FUTURE POLICY SCENARIOS

2.1 Please indicate your opinion on the effectiveness of the following POSSIBLE options concerning the future of the EMAS scheme, its ability to guarantee a continuous environmental performance improvement, and its contribution to the achievement of EU sustainable consumption and production objectives.

	Not effective at all	Slightly effective	Undecided	Effective	Very effective
Keeping EMAS as it is					
Slight modification/improvement of EMAS					
Strong modification/improvement of EMAS					
Phasing out EMAS completely and focusing resources and effort on other EU policy tools					
Making EMAS mandatory (e.g. for specific sectors and industries with relevant environmental impacts, such as companies in the scope of the Industrial Emissions Directive)					
Include simplified requirements of an EMS in future Directives where applicable					
Do you prefer another policy option which is not listed here? If so, which one?					

2.2 Please indicate your opinion on the possible extension of core performance indicators to the following direct and indirect environmental aspects.

	Not effective at all	Slightly effective	Undecided	Effective	Very effective
Wastewater emissions					
Noise emissions					
Product life cycle related issues					
Capital investment (e.g. indicators related to financial participation of the registered company in firms with relevant environmental impacts)					
Administrative and planning decisions (e.g. indicators related to environmental issues taken into account in the institutional planning documents of a public authority)					
Environmental performance of contractors, subcontractors and suppliers					
Choice and composition of services, e.g. transport, catering					
Others:					

2.3 Please indicate your opinion on the effectiveness of the following possible options to improve the EMAS scheme.

	Not effective at all	Slightly effective	Undecided	Effective	Very effective
Enhance the presence of regulatory relief for EMAS registered organisations in EU Directives and Member States' laws					
Strengthen the diffusion of EMAS at the global level					
Improve the recognition and use of the EMAS logo					
Strengthen the presence of production criteria in indirect environmental aspects					
Strengthen the presence of special conditions for SMEs					
Provide EU guidelines for EMAS environmental verifiers					
Enhance support for the registration of multi-site organisations					
Complete the integration and automatic certification of ISO 14001 when an organisation obtains EMAS					
Complete the integration and automatic certification of ISO 50001 when an organisation obtains EMAS					
Introduce Organisation Environmental Footprint (OEF) as means for identifying and measuring the most significant environmental impacts					
Enlarge the scope of EMAS by including social requirements					

Increase integration with other SCP tools (e.g. green public procurement, Ecolabel, Ecodesign, etc)					
What reasons do you have for your opinion?					
Do you have any other ideas for improving EMAS? Please specify:					

2.4 Please indicate your opinion on the effectiveness of the following options for possibly stopping the EMAS scheme

	Not effective at all	Slightly effective	Undecided	Effective	Very effective
The EU should phase out the EMAS Regulation without transferring elements of it to other policies or policy areas					
The EU should phase out the EMAS Regulation and propose to transfer (some) key elements of EMAS to an improved ISO14001 standard (e.g. suggesting additional requirements on performance improvement, legal compliance, external communication, employees involvement, and indirect environmental aspects)					

3. Section 3 : EMAS DRIVERS, BARRIERS, COSTS AND BENEFITS

3.1 Drivers

(Scores go from 1 to 5: 1 strongly disagree; 2 disagree; 3 undecided; 4 agree; 5 strongly agree)

Why did you decide to implement EMAS?	1	2	3	4	5
To improve my ⁶⁶ organisation's environmental performance					
To improve my organisation's public reputation					
To improve organisational and managerial capabilities in the environmental area					
To improve relations with the local community					
To satisfy a request from NGOs					
To increase employee satisfaction					
To improve relations with suppliers					
To satisfy a request from trade associations					
To achieve better risk management and environmental liability prevention					
To contribute to a more sustainable world by reducing our environmental impact					
To have a uniform environmental management standard that is recognized across the EU (i.e. more visible than national or local standards, easier to meet EU-harmonised environmental requirements)					
Better management and guarantee of legal compliance					
To demonstrate legal compliance status to the public					
Please explain where needed:					

⁶⁶ In this context of this questionnaire, "my organisation" refers to the organisation for which you work.

The following answers apply only to private organisations; public organisations may skip to the next question					
	1	2	3	4	5
To satisfy a request from corporate headquarters					
To satisfy a request from customers/clients					
To keep up with main competitors and/or with the other members of trade associations to which my organisation belongs					
To increase my organisation's competitiveness on the export market (e.g. in customer-supplier relationships)					
To increase my organisation's chances of gaining access to or obtaining competitive advantage in public procurement procedures					
To gain benefits from regulatory relief or other policy measures (e.g. tax breaks, less frequent inspections by authorities)					
To improve the quality of products/services offered to the market					
To make environmental management practices consistent at production sites worldwide through EMAS Global (incl. legal compliance check; reporting)					
Please explain where needed:					

3.2 Barriers

(Scores go from 1 to 5: 1 strongly disagree; 2 disagree; 3 undecided; 4 agree; 5 strongly agree)

Did you experience any of the following issues as causing difficulties in your implementation of EMAS?					
	1	2	3	4	5
Costs of implementation (including external consultants)					
Cost of environmental verifier					
Cost of registration fee (to Competent Body)					
Costs of maintaining registration over time					
Difficulties originating from the set-up of the EMAS scheme (e.g. definition of roles and responsibilities; internal audits; staff training)					
Difficulties linked to the approach followed by the environmental verifier (e.g. verification of legal requirements, different interpretation of EMAS requirements by different environmental verifiers, lack of experience of verifier, etc.)					
Difficulties in achieving or maintaining legal compliance					
Difficulties in achieving continuous improvement of environmental performance					
Difficulties in producing the Environmental Statement					
Difficulties in involving, motivating or obtaining the commitment of personnel					
Lack of technical and information support about EMAS from public authorities					
Lack of external incentives					
Lack of EMAS recognition by stakeholders and customers					
Lack of EMAS recognition from the market					
Lack of EMAS recognition by public institutions (including regulatory relief or other measures such as tax breaks)					
Lack of EMAS recognition at the international level (outside the EU)					
My organisation did not experience any difficulties in					

implementing EMAS					
Please explain where needed:					

3.3 Economic Incentives

Did your organisation benefit from any of the following incentives for implementing EMAS?		
	yes	no
Tax breaks		
Public subsidies to support EMAS consultancy costs		
Economic subsidies to obtain the first EMAS registration		
Economic subsidies for the periodical maintenance of EMAS		
Public subsidies to hire an environmental manager		
Reduction of or exemption from registration fees		
Reduced fees for environmental permits		
My organisation did not have any additional incentives to implement EMAS		
Please explain where needed:		

3.4 Benefits

(Scores go from 1 to 5: 1 strongly disagree; 2 disagree; 3 undecided; 4 agree ; 5 strongly agree)

What kinds of benefits does your organisation experience by participating in EMAS?					
	1	2	3	4	5
Cost savings through reuse, recycling, or decrease in resource or energy use					
Improved legislative compliance					
Improved relations with public stakeholders and the local community					
Increased employee involvement and satisfaction					
Increased marketing opportunities					
Improved rating from financial and insurance institutions					
Meeting environmental reporting obligations (based on national/EU legislation) through EMAS					
Added value from having a uniform environmental management standard that is recognized across the EU (i.e. more visible than national or local standards, meets environmental requirements across EU)					
My organisation has not experienced any benefits from EMAS					
Please explain where needed:					

The following answers apply only to private organisations; public organisations may skip to the next question					
	1	2	3	4	5
Better identification of overall corporate responsibilities (e.g. clear identification of roles and responsibilities for managing environmental requirements)					
Improved relations with private stakeholders (suppliers, competitors, trade associations, markets, etc.)					
Improved competitive advantage on the domestic market					
Improved competitive advantage on the European market					
Improved competitive advantage on the extra-EU market					
Better access to public funding or procurement procedures (including service contracts)					
Reduced risk of incurring environmental sanctions through improved compliance					
Fewer environmental accidents					
Obtaining administrative simplifications and regulatory relief (e.g. longer duration of permits, less frequent environmental inspections by authorities)					
Improvement of the quality of products/services offered on the market					
Increased shareholder value					
Increased customer satisfaction					
Consistent environmental management practices (incl. legal compliance check; reporting) worldwide through EMAS Global					
Please explain where needed:					

4. Section 4 : EMAS III (Regulation (EC) No 1221/2009)

4.1 In your opinion, how effective are the following reforms introduced in the third revision of the EMAS regulation (Regulation 1221/2009)?

(Scores go from 1 to 5: 1 not important at all; 2 not very important; 3 somewhat important; 4 fairly important; 5 very important)

	1	2	3	4	5
Reduced frequency of audits for SMEs					
New communication and reporting requirements to increase reliability of green claims					
Increased awareness of EMAS among buyers and other stakeholders as a result of the new rules on the EMAS logo					
Improved quality of environmental reporting through new requirements for the core performance indicators					
The possibility of applying EMAS worldwide (EMAS Global)					
Please explain where needed:					

4.2 Do you think that the reforms in the EMAS III Regulation have been in place long enough to show effects?

- Yes
- No

5. Section 5 : EMAS PERFORMANCE

5.1 With reference to the production unit, how has the environmental performance of your organisation changed over the last years in the following areas?

	Deteriorated a lot	Deteriorated somewhat	No change	Improved somewhat	Improved significantly	Don't know/ Not Applicable
Energy efficiency;						
Efficiency in the use of materials (e.g. chemicals, raw materials)						
Water consumption						
Waste production						
Biodiversity						
Quality/quantity of wastewater effluents						
Quality/quantity of air emissions						
Noise emissions						
Protection of soil and groundwater						
Odours						
Prevention of risks for (chemical) accidents, improved accident preparedness and response						
Please explain where needed:						

5.2 How would you rate the following factors in terms of their importance for achieving environmental improvement?

(Scores go from 1 to 5: 1 not important at all; 2 not very important; 3 somewhat important; 4 fairly important; 5 very important)

	1	2	3	4	5
Environmental regulation/public policy intervention					
Technical progress					
Customer demand					
Competition					
Participation in EMAS					
Environmental fees and taxes					
Cost (savings) of production inputs					
Stakeholder pressures and/or expectations					
Monitoring of core environmental performance indicators					
Environmental management system used to fulfil EMAS requirements					
Environmental reporting					
Please explain where needed:					

5.3 How would you rate individual EMAS requirements in terms of their importance for improving performance in practice?

(Scores go from 1 to 5: 1 not important at all; 2 not very important; 3 somewhat important; 4 fairly important; 5 very important)

	1	2	3	4	5
Initial Environmental Review					
Environmental policy					
Objectives and targets					
Legal compliance requirements					
Employee involvement					
Audit					
Management review					
Environmental Statement					
Please explain where needed:					

5.4 Indirect effects of EMAS

	yes	no
Have you encouraged your suppliers to adopt environmental measures/certifications?		
Do suppliers that are also EMAS registered obtain a 'preferred supplier' status?		
Are you increasing the rate of sustainable materials used in your production process (green procurement procedures)?		
Are you monitoring and assessing your suppliers through the collection of data in periodic questionnaires?		
Are you carrying out environmental on-site audits at the plants of your suppliers?		
Have you ever stopped ordering from a supplier for environmental reasons?		
Please explain where needed:		

6. Section 6 : EMAS and Communication

6.1 Please indicate your level of agreement with the following statements concerning EMAS communication activities.

(Scores go from 1 to 5: 1 strongly disagree; 2 disagree; 3 undecided; 4 agree; 5 strongly agree)

	1	2	3	4	5
The Environmental Statement is used as a tool toward other stakeholders (e.g. public authorities, industrial associations, local community)					
My organisation uses the data and indicators in its Environmental Statement or EMS for the development of green claims, advertising, CSR reporting, etc.					
My organisation uses its Environmental Statement to report the environmental performance of its products and services					
In its Environmental Statement, my organisation communicates the environmental innovations it has adopted					

The Environmental Statement can be easily integrated with requirements of other standards/guidelines (e.g. reports drafted according to Global Reporting Initiative guidelines or the EU Directive on non-financial reporting)					
The current rules for using the EMAS logo satisfy my organisation's communication needs					
Please explain where needed:					

The following answers apply only to private organisations; public organisations may skip to the next question					
	1	2	3	4	5
The EMAS communication and reporting requirements help private organisations avoid "greenwashing"					
The EMAS communication and reporting requirements are a key element of my organisation's marketing-targeted environmental communication					
The Environmental Statement is used as a marketing tool (e.g. toward customers, clients, suppliers)					
I would like to use the EMAS logo on products, even though that means accepting EMAS's stronger requirements for the assessment and management of supply chain impacts					
Please explain where needed:					

7. Section 7 : EMAS AND COMPETITIVENESS (Public organisations may skip to the next section)

7.1 Please indicate your level of agreement with the following statements on what kind of competitive advantage your organisation experiences by participating in EMAS

(Scores go from 1 to 5: 1 strongly disagree; 2 disagree; 3 undecided; 4 agree; 5 strongly agree)

	1	2	3	4	5
Improvement of efficiency in the use of natural resources and energy, with its corresponding reduction of costs					
Easier access to capital market because of a lower environmental risk					
Ability to attract and retain talent and valuable human resources					
Increase in skills and know-how of employees					
Improvement in relationships with local communities and reduction of conflicts (e.g. public complaints)					
Improved ability to share knowledge of environmental performance with the most strategic suppliers/customers					
Increase in shared investments with suppliers/customers in relation to specific assets					
Increase in the level of trust in the relationship with suppliers/customers					
Improved corporate image towards local and national domestic customers and suppliers					
Improved corporate image towards international customers and suppliers					
Increase in consumers' trust of the organisation					
Increase in turnover					
Increase in market share of your main products					
Increase in exports					
Increase in ability to introduce process or product					

innovations					
Improved capacity to win public tenders					
Please explain where needed:					

7.2 Is an EMAS registration helping your organisation tackle the current economic crisis?

- Yes, significantly
- Yes, somewhat
- No

8. Section 8 : EMAS AND INNOVATION

(Scores go from 1 to 5: 1 strongly disagree; 2 disagree; 3 undecided; 4 agree; 5 strongly agree)

8.1 EMAS and process innovations

Please indicate your level of agreement on the effect of EMAS on process innovation					
	1	2	3	4	5
EMAS stimulates the adoption of green technology or BAT (Best Available Techniques)					
EMAS stimulates the level of investment in innovative technologies					
EMAS improves the level of investment in the identification of more sustainable production processes					
EMAS stimulates the start-up of initiatives between the registered companies and neighbouring companies (e.g. through product exchanges, energy exchanges, etc.)					
EMAS stimulates the adoption of innovations linked with specific tasks or process phases, as for instance: equipment maintenance (e.g. machinery checks, filter maintenance); chemicals handling, storage, dosing and dispensing, etc.					
Please explain where needed:					

8.2 EMAS and product innovations

Please indicate your level of agreement on the effect of EMAS on product innovation					
	1	2	3	4	5
EMAS influences the design and development of the products					
EMAS contributes to assessing the environmental effects of new products or of substantial product changes					
EMAS contributes to the adoption of innovative tools for assessing and enhancing the sustainability of products (e.g. Life-Cycle Analysis, Product/Organisation Environmental Footprint, Ecolabel)					
Please explain where needed:					

8.3 EMAS and organisational innovations

Please indicate your level of agreement on the effect of EMAS on organisational innovation					
	1	2	3	4	5
EMAS's requirements on roles and responsibilities have also had strong beneficial effects in other areas of my organisation					
EMAS stimulates innovative communication patterns internally (with employees) and externally (with stakeholders)					

EMAS stimulates the adoption of other kinds of management systems (e.g. ISO 9001, OHSAS 18001, etc.)					
EMAS stimulates the extension of the auditing system to other organisational areas (e.g. safety, social responsibilities, finance)					
EMAS stimulates the extension of the auditing system or an EMS to the supply chain and/or suppliers					
EMAS stimulates the adoption of technological innovations (e.g. ICT technologies) to manage key requirements of the scheme (e.g. training and involvement of employees, continuous improvement, etc.)					
EMAS stimulates the adoption of environmental management practices in an industrial area or cluster (e.g. involving neighbouring companies and public-private partnership)					
Please explain where needed:					

9. Section 9 : IMPLEMENTATION OF EMAS AND OTHER VOLUNTARY INSTRUMENTS

9.1 If your organisation has implemented other voluntary instruments, how well are they integrated with EMAS?

	Highly integrated	Moderately integrated	Scarcely/ Not integrated	Not adopted
ISO 9001 (quality management)				
ISO 14001 (environmental management)				
ISO 50001 (energy management)				
OHSAS 18001 (health and safety)				
SA 8000 (social responsibility)				
ISO 26000 (social responsibility)				
Other CSR reporting instruments such as the United Nations Global Compact or the Global Reporting Initiative (GRI)				
European Ecolabel for at least one product				
Energy labelling*				
Eco-design (for energy-using products)*				
Environmental Product Declaration				
Other form of third party certification on the product environmental, carbon or water footprint (i.e. PAS 2050; BP X30-323; PEF; ISO 14064)				
Other national and regional schemes for environmental management (e.g. Ecoprofit, Ecolighthouse, Ecodynamic Label)				
Please explain where needed:				

(* These are mandatory instruments, but were included in this part of the survey in order to investigate the possible integration of the management of these product-related tools too with EMAS)

Please indicate your level of agreement with the following statements

9.2 Please indicate your level of agreement with the following statements concerning the relationship between EMAS and ISO 14001.

(Scores go from 1 to 5: 1 strongly disagree; 2 disagree; 3 undecided; 4 agree; 5 strongly agree)

	1	2	3	4	5
My organisation perceives substantial benefits related to EMAS compared to the ISO 14001 standard					

My organisation obtains a level of environmental and legal compliance that would not have been achieved if it had only been ISO 14001-certified					
My organisation obtains regulatory relief that it would not have obtained if it was only ISO 14001- certified					
My organisation obtains fiscal benefits or other subsidies that it would not have obtained if it was only ISO 14001-certified					
My organisation obtains benefits in public procurement that it would not have obtained if it was only ISO 14001 certified					
My organisation obtains a higher credibility on the market than if it was only ISO 14001-certified					
Please explain where needed:					

10. Section 10 : EMAS' BUSINESS MODELL

EMAS Environmental verifiers

- a. Are you satisfied with the work carried out by your environmental verifier?
 - Yes, significantly
 - Yes, partially
 - No
 - Don't know

- b. Are you satisfied with the expertise of your environmental verifier with regard to auditing?
 - Yes, significantly
 - Yes, partially
 - No
 - Don't know

- c. Does your environmental verifier contribute to the improvement of environmental management in your organisation?
 - Yes, significantly
 - Yes, partially
 - No
 - Don't know

- d. Do you rate the costs sustained as appropriate for the added value given by the verifier?
 - Yes, significantly
 - Yes, partially
 - No
 - Don't know

- e. Is the supplier-customer relationship between EMAS environmental verifiers and companies the best option for regulating the issue and maintenance of the registration?
 - Yes, significantly
 - Yes, partially
 - No
 - Don't know

- f. Our external verifier imposes a detailed environmental statement but our organisation would like to keep it concise and short
 - strongly disagree
 - disagree
 - undecided
 - agree
 - strongly agree

g. How would you rate the knowledge of your environmental verifier with regard to the following aspects:

(Scores go from 1-5: 1: very low; 2: low; 3: medium; 4: high; 5: very high)

	1	2	3	4	5
Environmental protection					
Technical issues					
Organisational issues					
Knowledge of applicable environmental legislation					
Knowledge of EMAS requirements					
Sector-specific knowledge					
Independence					
Reliability					
Scope of examination					

10.1 Support from Competent Bodies, Member States and the European Union

a. In your experience, how much time was needed to obtain your registration number after your application for registration?

- Less than 1 month
- 1-3 months
- 4-6 months
- More than 6 months

b. Do you think the registration fee is appropriate?

- Yes, significantly
- Yes, somewhat
- No, it's too high
- Don't know

c. Which of the following activities should the Competent Bodies and/or Member States engage in more strongly?

(Scores go from 1 to 5: 1 strongly disagree; 2 disagree; 3 undecided; 4 agree; 5 strongly agree)

	1	2	3	4	5
Promotion activities					
Information activities					
Training sessions					
Assistance during EMAS implementation (e.g. provide check list to carry out internal audits, provide a scheme for the drafting of the Environmental Statement)					
Contact with verifiers, consultants and/or other registered companies					

d. Which of the following activities should the European Commission engage in more strongly?

(Scores go from 1 to 5: 1 strongly disagree; 2 disagree; 3 undecided; 4 agree; 5 strongly agree)

	1	2	3	4	5
Promotion activities					
Information activities					
Integration and recognition of EMAS in European laws					

- e. Does the Member State (i.e. the E.U. Member State in which your organisation's headquarters is located) promote EMAS by referring to it in legislative and administrative acts (e.g., laws on energy efficiency)?
- o Yes, significantly
 - o Yes, partially
 - o No
 - o Don't know

10.2. ANNEX II : QUESTIONNAIRE FOR MEMBER STATE REPRESENTATIVES

1. Section 1 : MEMBER STATE⁶⁷ DETAILS

- 1.1 Country _____
- 1.2 Number of EMAS-registered organisations _____
- 1.3 Number of EMAS Competent Bodies _____
- 1.4 Number of Accreditation/Licensing Bodies _____
- 1.5 How many designated employees work full-time on EMAS in public authorities?

- 1.6 Does the Member State maintain a national EMAS register? _____

2. Section 2 : GENERAL BUDGET

2.1

- a. What is the annual cost associated with the EMAS activities carried out by the Member State for the following areas:

Staff: _____

Travel: _____

Training: _____

Promotion and information: _____

- b. Do you judge this budget to be sufficient for the following areas?

	yes	no
Staff		
Travel		
Training		
Promotion and Information		

- c. How has the amount of the budget changed in those areas over the past five years?

	Increased	Decreased	Stayed the same
Staff			
Travel			
Training			
Promotion and Information			

⁶⁷ EU and EEA.

2.2

a. What percentage of the budget costs described in 2.1 is covered by the EMAS registration fees?

b. How high are EMAS registration fees in your Member State?

2.3 To which extent can Member States' authorities save money by increasing synergies between law enforcement authorities and EMAS actors (e.g. environmental verifiers, Accreditation & Licensing Bodies and Competent Bodies)?

- o to a great extent
- o somewhat
- o very little
- o not at all

2.4 Which (if any) additional economic benefits does EMAS registration bring to Member States (e.g. increased employment, increased tax revenues economic activities of environmental verifiers and EMAS advisors, etc.)?

2.5 Please indicate if for the following policy instruments you have a higher or lower overall annual budget when compared with the EMAS budget.

	Much lower	Slightly lower	More or less the same	Slightly higher	Much higher
EU Ecolabel					
Green Public Procurement					
Ecodesign Directive					
Energy labelling					
ISO 14001					
ISO 50001					

3. Section 3 : MEMBER STATE PROMOTION AND INFORMATION ACTIVITIES (Articles 33 and 34)

3.1 What kinds of activities are carried out in your Member State under Articles 33 and 34?

- o EMAS booth at industry fairs
- o Advertising campaigns
- o Promotional flyers
- o Distribution of info sheets
- o Translation of EU EMAS info sheets
- o National EMAS Awards
- o Creation and maintenance of EMAS website
- o Creation and maintenance of EMAS register
- o Legislative liaising with a view to promoting EMAS in energy and environmental legislation
- o Discounts for EMAS-registered organisations
- o Tax breaks for EMAS-registered organisations (regulatory incentive)
- o Waiving monitoring fees for EMAS-registered organisations
- o Other (please specify): _____

If EMAS is promoted in energy or environmental legislation, please list the most relevant laws:

3.2 Which of the following environmental instruments are also included in these information and promotion activities?

- EU Ecolabel
- Green Public Procurement
- Ecodesign Directive
- Energy labelling
- ISO 14001
- ISO 50001
- other (please specify): _____

4. Section 4 : COMPLIANCE (Article 32)

What kind of activities are carried out concerning the "Assistance to organizations relating to compliance with legal requirements relating to the environment" (Art.32)?

- providing guidance for compliance in specific sectors (e.g. water, waste)
- putting organisations in contact with the applicable enforcement authorities
- providing organisations with information on how to prove legal compliance
- providing organisations with information on tax breaks or funding for EMAS-registered organisations
- environmental inspection authorities verify compliance before registration
- other activities (please specify): _____

How are the Member State's costs for inspection and monitoring affected when a company becomes EMAS -registered?

- increase significantly
- increase slightly
- decrease significantly
- decrease slightly
- stay about the same

5. Section 5 : AWARENESS/IMAGE OF EMAS

5.1 To what extent do EMAS registered organisations serve as a monitoring benchmark for government authorities (e.g. a best practice example, a standard on which to base regulations)?

- to a great extent
- somewhat
- very little
- not at all

5.2 How would you describe the general awareness of EMAS and its purpose in your Member State?

	Very low	Low	Undecided	High	Very high
Among private organisations					
Among public organisations					
Among NGOs					
Among the general public					
Among environmental verifiers and business consultants (i.e. those advising companies on management systems)					
If awareness is only high among certain types of organisations or in certain sectors, please specify which ones					

5.3 Approximately how many enquiries per year do you receive from organisations interested in learning about:

- a. EMAS _____
- b. ISO 14001 _____
- c. ISO 50001 _____

5.4 In your experience, who would be likely to recommend EMAS to an organisation? Why?

6. Section 6 : Future Scenarios for EMAS

6.1

- a. In your opinion, are the means invested appropriate in quantity and quality to achieve the defined objectives of EMAS?
 - o too much is invested
 - o not enough is invested
 - o the right amount is invested and it focuses on the correct areas
 - o the right amount is invested but it does not focus on the correct areas
 - o other (please specify)
- b. In your opinion, which have been the key positive changes in the organisational structure of EMAS in the progression from EMAS I to EMAS II to EMAS III?

6.2 In your opinion, are the means invested in EMAS (considering its relevance and current or potential effectiveness as a voluntary policy tool administered by public authorities) appropriate compared to the means invested in other (private) policy tools (considering their impact, effectiveness, and future potential)?

- o the amount invested in EMAS is appropriate
- o not enough is invested in EMAS
- o too much is invested in EMAS

6.3 What do you see as being most important to the success of EMAS as a policy instrument (e.g. increased EMAS policy promotion, integration with other policy instruments, obtaining more regulatory benefits from EMAS regulation, streamlining EMAS regulation)?

6.4 Please indicate your opinion on the following POSSIBLE options concerning the future of the EMAS scheme, its ability to guarantee a continuous environmental performance improvement, and its contribution to the achievement of EU sustainable consumption and production objectives.

	Yes	No
Keeping EMAS as it is		
Slight modification/improvement of EMAS		
Strong modification/improvement of EMAS		
Making EMAS mandatory		
Phasing out EMAS completely		
Another option (please describe)		
What reasons do you have for your opinion?		

6.5 Please indicate your opinion on the effectiveness of the following possible options to improve the EMAS scheme

	Not effective at all	Slightly effective	Undecided	Effective	Very effective
Enhance the presence of regulatory relief for EMAS registered organisations in EU Directives and Member States laws					
Strengthen the diffusion of EMAS at global level					
Improve the recognition and use of the EMAS logo					
Strengthen the presence of production criteria in indirect environmental aspects					
Strengthen the presence of special conditions for SMEs					
Provide EU guidelines for EMAS environmental verifiers					
Enhance support for the registration of multi-site organisations					
Complete the integration and automatic certification of ISO 14001 when an organisation obtains EMAS					
Complete the integration and automatic certification of ISO 50001 when an organisation obtains EMAS					
Introduce environmental footprinting (OEF) as means for identifying and measuring the most significant environmental impacts					
Enlarge the scope of EMAS by including social requirements					
Increase integration with other SCP tools (e.g. green public procurement, Ecolabel, Ecodesign, etc)					
What reasons do you have for your opinion?					

6.6 If they have not already been covered above, what suggestions do you have for improving EMAS?

10.3. ANNEX III: CASE STUDIES

Case Study one: The EMAS cluster approach

Description of the approach

The aim of this case study in the framework of the EMAS evaluation study is to show an example of EMAS implemented at cluster level.

The case refers to the cluster of Lucca, in central Italy. Before presenting the case study an introduction on the cluster approach and its meaning is provided.

In the European Union the first experiments with taking a territorial approach to Environmental Management were conducted in the late 1990s. These experiments⁶⁸ showed the possibility of a new application of the EMAS requirements to territorial contexts in which many similar SMEs are “aggregated”, and not only to a single organisation or productive site. These experiences were based on a broad interpretation of the concept of “industrial site” (as specified in the original EMAS Regulation CE n.1836/93) taken to mean “extended site” (i.e.: comprising the total number of industrial sites located in a territorial area). This interpretation led to applications in industrial areas (a group of industrial companies located in a limited and constrainable area), but was not applicable as such to a wider territorial cluster (Battaglia et al. 2008).

The peculiarity of the clusters is that the organisations in this kind of territorial contexts are mostly Small and Medium Enterprises (SMEs). Within these territorial agglomerations of industrial activities, there often are significant environmental problems caused by the high concentration of similar pollutant production processes. Consequently, if we consider the relationship between the industrial companies concentrated in a given area and the natural environment, we can see that they undoubtedly share many common problems.

In this perspective, a territorial approach based on EMAS is considered as a new opportunity to pursue the public, private, social and industrial targets and interests emerging in the local context in a synergetic and mutually reinforcing manner. The lack of co-operation in managing these problems between the firms and the other actors operating in a cluster can worsen the environmental impact on the local environment. Therefore, a co-operative approach could encourage an integrated and more effective management of the environmental aspects linked to the local production. Especially in territorial clusters, companies might share infrastructure to treat pollutants (e.g.: the same purification plant) or, in some cases, technical devices conceived to manage certain environmental aspects (such as monitoring networks or unified emergency plans which are co-ordinated at the local level).

In 2001, the EMAS II Regulation (EU Reg. n. 761/2001) widened its application scope to include types of organisation previously not eligible to obtain an EMAS registration (i.e. local authorities, organizations for which a specific site cannot be properly defined, organizations controlling temporary sites, independent organisations operating in a limited area registered as one common organisation and small enterprises operating in a given large territory and producing the same or similar product or services, seeking individual registration)⁶⁹.

68 We can mention the Filago Bayer Production Pole in 1999 and the Bibione Touristic Area in 2001, in Italy; the Gendorf Industrial Area in 1998 in Germany.

69 For details see: EU Commission Decision 681/2001.

Article 37 of the EMAS III Regulation (EU Reg. n. 1221/2009) specifies the cluster and step-by-step approach. This article provides that Member States should encourage local authorities to aid clusters of organisations in complying with the requirements for EMAS registration. Moreover, Member States should encourage organisations to implement a step-by-step approach towards the EMAS registration. Finally, Article 37 establishes that cluster systems should avoid unnecessary costs, especially for small organisations.

The following paragraphs examine some initiatives at the national level related to the cluster approach.

The case study

The case study refers to the industrial paper production cluster of Lucca (Italy). The Lucca cluster represents about 20% of Italian paper production; Italy is the fourth leading paper producer in Europe. In the last 10 years, policies have been developed under a common umbrella of public and private stakeholder networking, including the application of the EU EMAS Regulation at the industrial cluster level. Started in 2003, the Lucca cluster represents the most advanced experience in the application of the EMAS cluster approach in Italy. The Promotion Committee has received important awards and national recognition for the environmental initiatives promoted and managed in the framework of EMAS applied to the cluster (Daddi et al. 2012). Moreover, the Lucca cluster achieved the formal recognition by the Italian Competent Body. The formal recognition includes also the cluster evaluation by the accredited verifier, other than the fulfilment of some specific steps/phases to achieve the recognition.

Since 2002 the Lucca cluster has applied the EMAS cluster approach thanks to the EU co-funded PIONEER project. The EMAS cluster approach aims to create a common basis for all the individual organisations intending to use collective resources and a co-operative approach to achieve an individual EMAS registration. For this purpose, the project provided an initial environmental review at territorial level, a local policy, a program for the sustainable development of the cluster, and effectively what can be described as a “Cluster Environmental Management System” (made up of different resources or procedures that are available for the individual organisations, e.g. training, auditing, monitoring and communicating activities) and, finally, a cluster “environmental statement”. These elements were used by the involved organisations to facilitate environmental improvements.

The initial step was the set-up of an EMAS Promotion Committee for the entire Lucca cluster. This Committee is composed both of public (e.g. Province of Lucca) and private (e.g. Industrial Association of Lucca) actors and is in charge of defining the strategic guidelines for the cluster environmental policies and providing some common resources, in order to guarantee a coordinated and integrated management of environmental issues within the cluster. The Promotion Committee was set up by means of a formal agreement between local authorities and various interested parties that specified the proper rules and responsibilities in the implementation and maintenance of the collective activities and resources for the cluster. The role of the Committee is to coordinate the environmental management initiatives of the different local actors, in order to initiate the actions for environmental improvements.

The second step was the Initial Environmental Review with reference to the whole cluster. This review enabled the identification of the most relevant and critical environmental aspects for the cluster. The aim of the Environmental Review of the cluster was to support the involved organisations in identifying and assessing their own environmental aspects, according to EMAS. This was done, for example, by: identifying the most relevant impacts on the local environment and assessing the “state of the environment” that is affected by the cluster activities; or identifying the significant environmental pressures exerted by the most diffused typologies of production processes and technologies adopted by the organisations belonging to the cluster.

As a third step, the Promotion Committee defined and shared a cluster Environmental Policy that became a reference for the EMAS policies of all the organisations involved in

the cluster. The Environmental Policy for the Lucca cluster sets the guiding principles and general priorities based on the most significant environmental aspects and impacts resulting from the previous review. The Environmental Policy was officially approved by the Promotion Committee and diffused to all the interested parties in the cluster.

From the cluster Policy a collective and co-operative Environmental Program and related improvement objectives and targets were developed, pursuing the principle of continuous improvement. This improvement is pursued in the Lucca cluster also by setting the objective of continuous increase in the number of individual EMAS registrations and/or in the number of licenses for the EU Eco-Label in the area. The cluster Program contains the concrete and measurable commitments for carrying out strategic and high-priority actions and measures for the whole cluster.

The cluster Program is based on a voluntary agreement between all the most representative actors of the EMAS Promotion Committee and is enacted by the same Committee with the co-operation of individual actors. In fact, all the organisations operating in the cluster can easily participate in a collective and co-operative action, just by undertaking it as an EMAS individual program.

By means of a “Cluster Environmental Management System”, the Promotion Committee also provides the local SMEs with many resources and procedures that can be shared and collectively exploited at the cluster level. All these actions are aimed at supporting the development of EMAS on an individual basis by the interested organisations of the cluster.

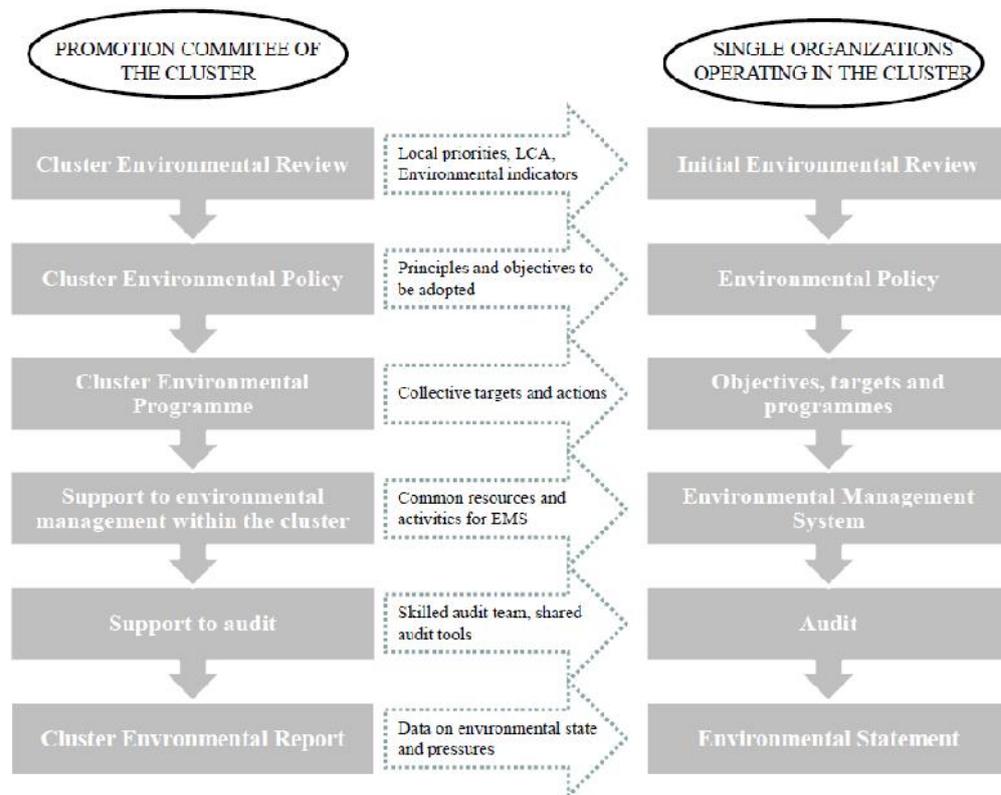
Among these activities and resources, the Lucca Promotion Committee implemented the following:

Searching for common technical, organisational or managerial solutions for solving the environmental problems of the local SMEs; or utilising the same infrastructures for the management of various environmental impacts; or providing assistance to paper producing SMEs in the identification and assessment of the indirect environmental aspects, with particular reference to product-related issues; and other options.

The last step of the EMAS cluster approach applied in Lucca concerned the external communication of initiatives and tools. By means of these initiatives and tools, interested parties, stakeholders and the general public are continuously informed about significant environmental aspects, policy, programs, objectives and targets, activities and resources for environmental management in the cluster and how these change over time.

In 2008 the EMAS cluster approach applied by the Lucca cluster obtained important recognition from the Italian EMAS Committee. In Italy, districts that apply the EMAS cluster approach can achieve this goal after the completion of an environmental audit carried out by an EMAS accredited auditor. Although the European EMAS Regulation n. 1221/2009 in its current version is planning a specific article entitled “Cluster and step-by-step approach”, this type of cluster certification is currently not regulated at the EU level.

Figure 1: Methodological steps of the EMAS cluster approach in Lucca



The benefits of the approach at firm level of the Lucca cluster

Most of the benefits emerging from the adoption of a cluster approach are related to resource savings and to the possibility of relying on a shared set of tools and competencies for the application of EMAS. The following are just a few examples on how the organisations located in Lucca and involved in the cluster approach, benefited from cluster-based common resources made available by the Promotion Committee.

Kartocell (former Kartogroup, now Wepa group) a tissue-paper producer, found it very useful to perform an assessment of its most significant environmental aspects by strongly relying on the cluster initial environmental review, carried out during the project. This company used the results of the cluster initial review to identify the most relevant direct aspects, and defined an assessment methodology based on the relevance that each aspect had for the whole cluster, the capability of influencing the local environment (indicators provided by the cluster review) and the level of importance of each aspect according to the local communities sensitiveness (information provided by the same cluster review, basing on the “in-field” survey). These were simply adopted as assessment criteria by Kartocell.

Delicarta, another tissue-paper producer, carried out the review and assessment of its indirect environmental aspects relying on the LCA that had been carried out on the locally manufactured products. This LCA was performed with a streamlined approach by the Promotion Committee, on both tissue paper and corrugated board (which are the two most important products of the cluster). The data and information deriving from the LCA were included in the cluster environmental review, in such a way as to be easily adopted by any interested paper producer to identify and assess its product-related indirect aspects.

Cartiera Lucchese, the first company to obtain the EU Eco-Label in Italy, also relied on the cluster approach to identify and assess its environmental indirect aspects. In this case, the most useful tool was a scheme for identifying and measuring indicators relating

to the most relevant indirect aspects for the tissue-paper local industry. This tool was prepared by the Promotion Committee and diffused to the interested companies.

SCA Packaging (SCA group), a corrugated board producer, particularly relied on another cluster-based tool that was made available to the local producers: a common audit team. This activity was judged as very effective by the company, especially because it provided a relevant opportunity to rely on external competence and to compare its experience in environmental management with other approaches.

Not only paper producers were able to take advantage of the cluster approach: two interesting examples refer to a connected supplier-sector: the manufacturing of paper-producing machinery. The paper-machinery manufacturer Fosber strongly relied on the environmental training initiatives carried out at the cluster level. Among many other involved companies, Fosber took part in some courses that were organised and managed by the Promotion Committee on: environmental management, external communication, environmental auditing, etc. A second example is that of Toscotec, another machinery producer that strongly relied on an effective managerial tool that was diffused to all the organisations involved in the project. The Toscotec environmental management system, in fact, was built on the basis of a model and easily adaptable procedures referring to the main EMAS elements: identification and assessment of environmental aspects, Non Compliances and Corrective and Preventive actions, Audit, Management Review, Training and Information of personnel, etc.

It has to be noted that, besides direct benefits for the organisations operating in the cluster, some indirect benefits are produced for the whole institutional and social contexts of the interested territorial area, such as:

- A higher level of knowledge-sharing and networking between the EMAS organisations operating in the cluster;
- A significant multiplier effect on all the other organisations of the cluster (higher sensitivity, involvement in improvement actions, stakeholder pressure on the laggards, etc.);
- A wide availability of common resources and tools for environmental management, that can be made available to any interested organisation;

Finally, the application of the cluster approach has allowed to better inform the targeted policy makers and local institutions about the specific characteristics and environmental priorities of the local industrial system.

Case Study two: EMAS Global

Context of EMAS Global

Since numerous services and goods are traded globally, companies with international business interests and operations are increasingly held to comprehensive environmental performance standards by various stakeholders, e.g. governments, consumers, civil society organisations, etc. The introduction of EMAS globally in 2010 focuses exactly on these issues and supports companies all over the world to systematically improve their environmental performance along the supply chain. Through EMAS Global, an organisation is able to individually register its complete corporate company structure or certain plants and/or company sites.

During the first implementation step the organisation contacts the Competent Body of its country and chooses (an) environmental verifier(s) capable of carrying out a verification and validation in a non-EU country. As an additional requirement, the environmental verifier has to be licensed in the particular foreign and in an EU-country. Experience during international registrations has shown that an environmental verifier should ideally

be an environmental professional, with work experience, appropriate language skills and knowledge about environmental laws of the respective country. Further implementation steps comprise: the cooperation of the environmental verifier with a qualified person (e.g. in China an expert of one of the officially licensed certification companies), submission of the environmental verifier's and qualified person's accreditation certificate to the European Accreditation Body and the foreign competent authority, as well as informing the foreign Competent Body about details of the planned audit and registration. During an in-depth environmental compliance check of the site(s), the environmental verifier could ask for consultative support by the local environment authority. Before and during the on-site audit, the environmental verifier has furthermore the responsibility to check documents, reports and records, as well as on-site procedures and operations, to interview employees, to control safety facilities, technologies, etc. of the plant.

In 2012, two precursors - the German automotive supplier Schaeffler and the Finnish pulp and paper company UPM - officially implemented EMAS Global. Schaeffler for example registered plants in China, Brazil, India and South Africa and UPM in Uruguay and also in China.

Feedback through interviews with companies

Despite these aforementioned successful pilots, difficulties appeared in motivating additional organisations to follow these examples. Besides, Schaeffler and UPM encountered not only positive aspects, but also challenges during their EMAS audit and registration. Feedback received from Chinese, as well as German companies with (a) production site(s) in China shows that an interest exists among many companies in the EMAS Global concept itself. The knowledge of EMAS Global and direct contact of the project team to companies often led at least to some extent to in-house discussions inside the German parent companies. This reveals the existence of a potential market and can be interpreted as a possibly growing future demand for internationally applicable premium environmental management instruments.

However, due to some restrictions and concerns, several multinational German companies do not take the final step towards implementation of EMAS Global. The majority of environmental experts and other in-house decision-makers see the market conditions of the respective non-EU country as the main reason hampering the global expansion of EMAS. So far, EMAS is known and accepted in Europe, but barely any non-European foreign authority or stakeholder is aware of the existence of EMAS and the fact that it is globally applicable. Since there is a lack of government incentives and promotion, as well as a lack of supply-chain demand, no market for EMAS was yet able to develop in non-European countries. Most companies and stakeholders (according to the companies' feedbacks) regard the international ISO 14001 as sufficient.

Various non-EU countries just recently enacted stricter legislation and strengthen environmental protection efforts (e.g. China), thus some multinational firms just lately implemented new comprehensive environmental management instruments by themselves in the respective non-EU countries. Additionally, German multinational and Chinese (multinational) companies expect an upgrade of their own environmental management system or ISO 14001 to EMAS Global to be too complex and cost-intensive in a foreign country, with too few returns.

Feedback of the pilot companies Schaeffler and UPM

The pilot companies successfully implemented EMAS globally and perceive various positive impacts, e.g. enhanced credibility on environmental reporting, more resource efficiency and the potential of improved stakeholder relationships. An environmental expert from UPM for example states: "The widening of the EMAS scope to include the first non-European site was a logical step for UPM's environmental management and reporting. UPM's focus is on producing more with less energy, water and waste, and with lower carbon footprint [...]". A specialist of Schaeffler stressed the advantage of EMAS being an effective risk management instrument. Despite the positive impacts of the

implementation, the companies were confronted with challenges during the implementation and registration processes in the non-European country.

Based on interviews and feedback received by the pilot companies and other EMAS officials, it is evident that EMAS Global activities in the non-EU country need a strong involvement of European EMAS actors (environmental verifiers; Accreditation/Licensing Bodies; Competent Bodies) and support from specialists in the non-EU country. A stand-alone EMAS Global system, which transfers administrative procedures to the non-EU country as envisioned is not practicable under the current EMAS legislation.

Due to the strict requirements of EMAS, the pilot companies were faced with relatively higher costs during the EMAS Global processes than during an EMAS registration in the EU. However the companies acknowledged the costs with regard to their international budgets as acceptable. Bigger challenges were a lack of clarity over some requirements, which led to high time investments. Requirements for the foreign law experts were not clearly formulated and a lack of guidelines raises questions about requirements on both the foreign and the EU side (e.g. which documents to hand in etc.) Furthermore, the question arose to what extent the environmental laws of the EU-country of the parent company (and the EU), as well as the non-European country, are playing a role during the EMAS processes.

Basically both pilot companies see a high potential of EMAS Global to improve international stakeholder relationships, including those with suppliers, clients and authorities. Yet, the awareness of EMAS Global in the foreign countries is very low. This is due to the EU's and the foreign countries' lack of promotion of the EMAS scheme. Therefore, the pilot companies would have embraced guidelines for the respective countries in their language and more promotion and support from authorities to strengthen the effect of EMAS Global as a premium environmental management scheme.

10.4. ANNEX IV: CO₂ EMISSIONS INVENTORY STUDY – METHODOLOGY

1. Sample

The original sample size was 200 companies (5% of the total EMAS registered companies). However, we were unable to find the required data for all of the 200 companies, since not all registered companies make their environmental statements publicly available online.

Outliers were also left out. Hence, we ended up with a total sample of 147 companies, of which:

129 companies = 2010 – 2011 reports

18 companies = 2007 – 2011 reports

The smaller sample was taken to serve as a check on whether the annual developments of organisations in the entire sample are relatively stable or whether there can be great variation in reductions over the years. It failed at providing this information since the sample is too small to be representative.

Data sources:

- Environmental Statements of 147 companies, published in 2011 and 2012
- Environmental Statements of 18 companies, published in 2007, 2008 and 2009
- E-Mail correspondence with those companies whose data were not available online
- EMAS Register <http://ec.europa.eu/environment/emas/register/>

2. The Objectives

Key Question: Is EMAS useful in reducing CO₂ emissions?

Specific Objectives:

- By how much were CO₂ emissions reduced from 2010 to 2011 (total amount and efficiency) for the total sample
- For a smaller sample of 18 organisations, to compare CO₂ emissions reductions over a period of four years (2007-2011). The relative CO₂ emissions data found did not allow for an analysis over 5 years, since they were not all represented according to the same indicators (for example, t CO₂/kg of product). Therefore, in the end the analysis of the small sample was carried out on only 5 organisations, first on a randomly chosen sample and then on organisations with the NACE Code 35.

3. The Methodology

Data collation of a total sample of 129 organisations. Data were collected via the EMAS environmental register and the organisations' Environmental Statements on:

- ETS Category of Installation
- NACE Code of Activity
- Number of Employees

- Year of first EMAS Registration
- Country
- Absolute CO₂ emissions output for 2010 and 2011
- Relative CO₂ emissions (efficiency) output for 2010 and 2011
- Reasons for change in CO₂ emissions –when reported - for 2010-2011

For the smaller sample, data were also collected on:

- Absolute CO₂ emissions output for 2007, 2008 and 2009
- Relative CO₂ emissions (efficiency) output for 2007, 2008 and 2009
- Reasons for change in CO₂ emissions – when reported – for 2007 – 2008, 2008-2009 and 2009-2010

Relative CO₂ emissions were calculated by adelphi in 25% of cases. This indicates that ¼ of the companies are failing to accurately provide this information. Without it, it is not possible to determine whether or not the emissions' change is related to the level of production.

The following data were calculated for the analysis:

- Absolute CO₂ emissions reduction for the period 2010-2011
- Percentage of absolute CO₂ emissions reduction for the period 2010-2011
- Relative CO₂ emissions (efficiency) reduction for the period 2010-2011
- Percentage of relative CO₂ emissions (efficiency) reduction for the period 2010-2011

For the smaller sample, the following was also calculated:

- Absolute CO₂ emissions reduction for the period 2007-2008, 2008-2009 and 2009-2010.
- Percent of absolute CO₂ emissions reduction for the period 2007-2008, 2008-2009 and 2009-2010.
- Relative CO₂ emissions (efficiency) reduction for the period 2007-2008, 2008-2009 and 2009-2010.
- Percent of relative CO₂ emissions (efficiency) reduction for the period 2007-2008, 2008-2009 and 2009-2010.

The data Analysis was carried out using Excel tools.

10.5. ANNEX V: ANALYTICAL APPROACH TO ENVIRONMENTAL STATEMENT ANALYSIS (CHAPTER 3.10.5)

After establishing the core indicators and data sets, the project team decided upon the following methodological approach for analysing the data:

1. Using the environmental statements collected according to the process described in Section 2.2.3.1, both the raw data (total emissions and/or consumption) and the calculated performance indicators were recorded for each of the indicators for years n (the most recent year recorded in the statement) and n-2. In a few exceptional cases, the data was taken from years n and n-1.
2. The sample was grouped into two parts: organisations that have had EMAS for more than four years and those that have had EMAS for less than four years at the time of year n. This allowed for an analysis of both EMAS's short and long-term effects on performance.
3. For each core indicator, the performance indicators from the year n were compared from those from the year n-2 for each company in order to identify a positive or negative change in performance.
4. Outliers were eliminated using the median absolute deviation (MAD) method. This analysis excluded all outliers that were 2.5 deviations or more from the median (see below for further details). It was performed separately for the samples from each core indicator. Ultimately, outliers comprised approximately 2% of our sample.
5. For each core indicator, the average improvement/worsening in performance was calculated using an arithmetic average of the changes in the individual companies. The core indicator samples were then each divided into two groups by length of registration (see point 2) and the average performance improvement was calculated for each of the groups.
6. For each core indicator, the percentage of organisations showing performance improvement, worsening and lack of change, respectively, was calculated. The core indicator samples were then each divided into two groups by length of registration (see point 2) and percentages of organisations showing improvement, worsening and lack of change was calculated for each of the groups.

Identification of Outliers

1. Why did we exclude certain numbers?

Some of the numbers in the dataset were so large as make it highly unlikely that they reflect a true trend. Through their size, however, these unrepresentative numbers have a large effect on the average trends for the whole sample. While some companies give reasons for such unusually large changes in performance trends, many do not. Thus there is no reliable way to judge for all numbers if they should be included in ours or not. Examples of reasons why certain indicators are not representative and should be excluded from the sample include large one-time building projects, companies that accepted waste from additional outside sites in one year but not the other, and those that counted different sources of emissions for different years.

2. Decision not to use standard deviation for eliminating outliers

The standard deviation method can fail to detect outliers, particularly in a smaller sample with high variability. The standard deviation is calculated based on the mean of all

numbers in the set. Extreme outliers can thus skew the average to such a degree that all but the highest numbers are considered "normal".

3. Application of the median absolute deviation method:

Unlike the mean standard deviation, the median absolute deviation (MAD) is not affected by the presence of extreme numbers in a dataset. It thus provides a more robust method for detecting and eliminating true outliers.

How we applied the method:

1. The total sample was evaluated, with the values collected separately for each core indicator. Combined performance indicators (for example, one total amount for NO_x, SO_x and PM emissions) were eliminated from the dataset.
2. For each individual indicator, the sample was copied into two different columns in an Excel spreadsheet and sorted according to size of the numbers.
3. In the first column (e.g. A), the sample was changed to reflect only absolute values.
4. The median of the sample was then calculated in cell C2 of the Excel sheet from the absolute values using the formula `MEDIAN(A2:A121)`.
5. The MAD of the sample was then calculated in cell C3 using the formula `MEDIAN(ABS(MEDIAN(A2:A121)-A2:A121))`
6. Using the reference frame of 2-3 deviations from the median, we used the following formula to identify the outliers for the particular indicator's sample: `=WENN((ABS(C$2-E2)>2.5*C$3);"OUTLIER";"NORMAL")`. In this case, the formula identified as "outlier" all numbers further than 2.5 deviations from the median.
7. Steps 2-6 were applied to the samples for each indicator in turn.
8. After determining all outliers, we then referred to the environmental statements containing the identified outliers to determine if the organisation offered an explanation. In the cases in which explanations were found, they confirmed the decision to identify the numbers as outliers because they represented an exceptional situation such as the examples given above.

10.6. ANNEX VI: EMAS EVALUATION STUDY WORKSHOP REPORT

1. Background information

1.1 Main agenda points

- Welcome and introduction
- Presentation of interim report & presentation of focus topics (for forward-looking analysis)
- Group discussions: all participants were divided into four groups, that throughout the course of the workshop part-took in all the following thematic discussions (rotation through all stations):
 - Other standards and approaches for environmental management (Station A)
 - EMAS and competitiveness (Station B)
 - Strengthening the EMAS model (Station C)
 - How effective is EMAS in improving the environmental performance of registered organisations? (Station D)

1.2 Date & Time: 22 October 2014, 9:30 – 17:00

1.3 Location: Building BREY 1, Avenue d'Auderghem 45, 1040 Brussels

2. Welcome and introduction: Bettina Lorz, EMAS Policy Officer, European Commission

- The EMAS evaluation study is taking place in the context of the REFIT (Regulatory Fitness and Performance programme) mandate, and hence aiming to evaluate effectiveness, efficiency, coherence and relevance of the EMAS Regulation.
- While the current project also considers future options, EMAS will be considered within the broader policy approach to foster sustainable consumption and production and the tools available and further policy work developed to this end; Therefore, any future decisions on potential changes to be made to EMAS will not take place in isolation and are not due to take place immediately.
- Important questions include:
 - What is the added value of EMAS as an EU intervention (compared to what could be achieved at national/regional level or through other approaches)?
 - Given this case, how can the tool be developed in future to make it more effective, with the overall objective to bring about broader change in environmental performance of organisations?

3. Results of the backward looking analysis on EMAS (interim report) & presentation of focus topics: Daniel Weiss, adelphi; Fabio Iraldo, SSSUP

Overall, the EMAS Evaluation Study seeks:

- to analyse the strengths and weaknesses of EMAS and thereby to identify elements for improving its operation and a possible review;
- to evaluate – in the context of a REFIT mandate – the EU added value, relevance, coherence, effectiveness and efficiency of the EMAS Regulation; and
- in its first part, to provide key findings for the ex-ante part of the study, which focuses on exploring various possibilities for the development of the scheme (if deemed necessary).

Here, the main results of the backward looking analysis of the Interim Report were presented, in order to inform the discussions taking place on the future of EMAS throughout the remainder of the workshop. Comments were invited on the findings, also in writing by the study's technical working group and all workshop participants.

Thematically, the relevant results were presented and broken down by Station topics, as outlined above (see point 1).

Points raised by participants

- Many SMEs do not feel a reduced frequency of audits with the move from EMAS II to EMAS III; in some Member States the structure for SMEs was even felt to be more flexible under EMAS II
- The big gap in registration numbers between the Member States was mentioned as particular point that needs to be examined
- It was suggested that EMAS may benefit from a sector-based approach, since different sectors with different needs and priorities may need to be treated in different ways
- Several remarks were made concerning budget constraints of EMAS administrative bodies, such as the lack in personnel for Competent Bodies (CBs) in certain Member States, and the lack of budget for travel not allowing CBs from all MS to take part in the CB Forums.

4. Station A – Other standards and approaches

This station dealt with the following three topics: The relationship between EMAS and ISO 14001 & ISO 50001; Does EMAS have a role to include elements of CSR?; Is EMAS Global working and how could it be developed further?

The groups discussed what the relationship should be between EMAS and ISO 14001 and ISO 50001, and whether there is potential for further integration. In particular, the revision of ISO 14001 poses the question of implications for the EMAS regulation.

Another topic examined was whether broadening the scope of EMAS in order to include elements of Corporate Social Responsibility (CSR), with particular reference to ISO 26000 and the Global Reporting Initiative (GRI) Sustainability Reporting Guidelines should be considered.

Furthermore, the success of EMAS Global, introduced through the last revision of the EMAS Regulation, was discussed. Due to the fact that only a few organisations have so far made use of EMAS Global (having registered sites outside Europe), the discussion at this station focused on current barriers and (potential) drivers of EMAS Global.

- Participants generally thought that EMAS should not be seen as a competitor of ISO 14001 but rather as a premium approach for those who are willing to “go the extra mile”.
- Furthermore, participants believe in EMAS as a useful tool to improve the environmental performance of organisations, but identify weaknesses on the policy side, highlighting that there is a lack of policy support in the form of e.g. regulatory relief, financial support, promotion activities.
- Mainly two broad options in the context of EMAS’ relations to ISO 14001 have been discussed:
 - The option of EMAS being a system beyond ISO 14001, but based on the ISO standard (specific option: highlighting EMAS as a “system of excellence”) was supported by the majority of participants
 - ISO 14001 requirements are an integral part of EMAS
 - Open question of how to integrate the revised ISO 14001 requirements
 - Change annex 2 of the EMAS Regulation?
 - Refer to latest ISO 14001 standard for the Environmental Management System (EMS) requirements of EMAS+ explain additional requirements in a separate chapter?
 - ISO 14001 plus (either as a stand-alone scheme or as an ISO option), i.e. keeping the provisions of EMAS as a system that goes beyond ISO 14001, but rebranding it as a standard falling under the ISO umbrella
- A third option that was brought up was to design EMAS as an “umbrella system”, including ISO 14001 and ISO 50001 requirements (and requirements beyond the two ISO standards)
 - In this context, participants discussed the possibility of adding Corporate Social Responsibility (CSR) elements to EMAS
- Majority of participants in favour of maintaining EMAS’s relationship with ISO 14001 as it stands currently, i.e. ensuring that the existing gap between EMAS and ISO 14001 remains also after the ongoing revision of ISO 14001
- No preference for discontinuing/stopping EMAS among participants

ISO 50001

- With reference to ISO 50001, participants emphasised that policy intervention is crucial for the success of a standard (as seen with increasing numbers of ISO 50001 certificates; provisions in German Federal law recognising EMAS-registration as proof of a company having an Energy Management System. Can serve as best practice in this context)
- Some participants said that an EMAS revision could focus on integrating ISO 50001 requirements (albeit acknowledging that EMAS and ISO 50001 already share many features)
- However, most participants thought that EMAS should focus on functional equivalency with ISO 50001 instead of fully integrating all energy management requirements

CSR

- There is a clear preference for not widening EMAS' scope and turning it into a CSR instrument
- Instead participants emphasized that the already existing links of EMAS to CSR instruments like GRI (Global Reporting Initiative), UN Global Compact or ISO 26000 should be highlighted more prominently
- This could be done via the EMAS User Guide or EC policies/guides on CSR
- Another idea presented was to link EMAS stronger to GRI (EMAS as an acknowledged pillar of environmental reporting within GRI framework)

EMAS Global

- Current Regulation asks for the application for registration to be written in the language of the Member State where the organization applies for registration, rather than in a language accessible to stakeholders in the country where the organisation's site to be registered is located. This needs to be addressed according to various participants' feedback
- EMAS application rules should be "less strict" than within the EU in order to encourage wider uptake outside of the EU, whilst not having a negative effect on overall quality of EMAS
- Authorities in "third countries" should be able to act as legal experts (at times, difficult to find legal experts in countries outside of EU)
- Translation error in the EMAS Regulation (Article 4, para.4): in some languages (e.g. German) one requirement is compliance of company sites in "third country" with EU/national law in the MS where they intend to submit an application rather than merely referring to it when checking legal compliance of the site in the "third country"

5. Station B – EMAS and competitiveness

This station dealt with three main topics: EMAS and competitiveness of registered organisations; Barriers faced by small and medium-sized enterprises (SMEs) in the adoption of EMAS and how these can be removed / lowered respectively; the relation between EMAS and innovation practices by registered organisations

The group discussed how EMAS is valorised by organizations and how it is used to improve competitiveness. More specifically, the groups discussed if the benefits and rewards provided by an EMAS registration are able to give registered organisations a real competitive advantage.

In addition, the groups analysed the situation of SMEs and the barriers they currently face when adopting, maintaining and using EMAS. In particular, the groups addressed the question if the simplifications introduced with EMAS III are applied by and effectively working for SMEs, and if they benefit from these simplification measures.

Finally, the last topic discussed was related to the capability of EMAS to stimulate and support innovation processes by registered organisations.

Below, the proposals brought forward during the group discussions are presented for each of these topics.

EMAS and competitiveness

- GPP (Green Public Procurement) is an important aspect regarding the topic of greater competitiveness with EMAS. A better valorisation of the scheme in GPP could allow EMAS registered organisations to increase their market share and turnover thanks to increased orders to public authorities, as well as corresponding knock-on effects. In general, the workshop participants requested a stronger integration of European policies on GPP and EMAS, including corresponding changes to the EU Public Procurement Directive to give greater value to EMAS in that Directive (at the moment EMAS can be used to document the existence of an EMS, but receives no specific attention as a system with very stringent requirements)
- Furthermore, participants proposed to include general requirements leading to EMAS in the general specifications of EU legislation and related to GPP. An example could be the inclusion of criteria in the public tenders requiring participants to produce externally validated reports in order to have access to the public purchasing procedures. In that case EMAS registered organisations would have direct access with their Environmental Statement.
- Another suggestions was working for changes to the public procurement EU Directive to allow a stronger integration and valorisation of EMAS in that Directive (at the moment EMAS can be used to document the existence of an EMS and not as such as a system to award)
- The following further suggestions were made regarding GPP:
 - Establish national targets in terms of GPP and EMAS
 - Establish a thresholds system to valorise EMAS in the GPP procedures over ISO or other informal EMS
- In addition, the following suggestions were made regarding possibilities to better 'publicise' EMAS' use by firms through use of the EMAS logo:
 - Allow for a more flexible use of the EMAS logo, increasing the possibilities of usage of said logo without registration number for general promotion. Abolish the constraints laid out in Article 10(5) on the use of the logo in connection with environmental information taken from the environmental statement (the information to be published currently needs to be validated separately by the environmental verifier)
 - Allow for the use of EMAS logo on products of registered organisations. The logo on the products should be applied close to the name of the organisation connecting clearly EMAS with the organisation. An example could be the current approach followed by the ISO standards that allow the inclusion of sentences such as "this product has been produced in an ISO 14001 plant".

EMAS and SMEs

- Regarding the reduced audit frequency for SMEs, it emerged during the discussion that there is no single clear interpretation of the term "no significant environmental risk" by the different Member States. For example in Italy public administrations (e.g. Municipalities) can never apply for the reduced audit frequency foreseen in the article 7 while in Austria and in other MSs they can obtain that simplification.
- In this regard, the following suggestions were made:
 - Increase the period foreseen within Article 7 for auditing, in particular for SMEs with no significant environmental risk, reducing further the audit frequency
 - Include in Article 7 a criterion in order to identify preliminarily the organisations that can have access to the reduced audit frequency. An example could be to develop a matrix based on the number of employees

and the type of industrial sector, similar to the one developed by the International Accreditation Forum (IAF Mandatory Document 5:2009 “Duration of QMS and EMS Audits”) to establish the number of man days required by auditors before certification with the ISO standard. Accordingly, organisations that are eligible to benefit from a reduced audit frequency could be identified.

Furthermore, participants made the following suggestions with regard to improving the situation for SMEs:

- Enhance the application of EMAS in the industrial cluster specifying better the rules to apply it and the simplifications for SMEs
- Oblige Competent Bodies and Member States to publish, easily accessible, reports on the activities carried out to enhance/ facilitate the uptake of EMAS among SMEs.
- Simplify the elaboration of core indicators (e.g. figure B of the core indicator, referring to total annual output of an organisation) and the manner of drafting the Environmental Statement (e.g. an online system where the data can be uploaded by SMEs)
- Provide technical/legal support for SMEs (e.g. specifically targeted information via the website of the EMAS Helpdesk)

EMAS and innovation

- Several participants remarked that EMAS does not necessarily push innovation (there may be a correlation, but not necessarily a cause and effect relationship)
- Participants encouraged the project team to focus on how EMAS users can be supported to be (more) innovative rather than trying to elaborate on the link between EMAS and competitiveness
- The proposal was made to favor the access to public funds for EMAS organisations, increasing for them the maximum level of State Aids. The increase with respect to the normal threshold should be related to their magnitude of environmental investments

6. Station C – Strengthening the EMAS model

This station was composed of two topics: the EMAS “business model”, (i.e. the organisational structure and resources) and regulatory relief as a tool to encourage the spread of EMAS.

The analysis aimed at helping to identify the features of the current “business model” that are working well and should be kept, and on the other hand the elements that should be changed in order to improve the overall effectiveness of EMAS, indicating possible changes to the legal framework where necessary.

An additional topic discussed was the issue of linking EMAS and fulfilment of requirements under (other) legislation. Points covered were: the current state of the art in regulatory relief and fiscal incentives; the opportunities to strengthen regulatory relief and what the role of the European Commission and Member States should be in this respect; the potential for using EMAS in current legislation as a way to prove/document compliance with legal requirements

A general lack of public and institutional recognition of EMAS, and similarly a lack of regulatory relief for both EMAS registered companies and public administrations were identified. Correspondingly, several suggestions have been made:

EMAS “business model”

- Only an EU EMAS Register (no parallel national registers) to be used
- Remove national level (CBs) in the EMAS institutional setting and have a more centralized, EU-led approach (though this could be more feasible for EMAS Global)
- Best practice sharing should be increased (more than what is achieved by the CB Forums) and respectively used as guidelines for all Member States. This could include best practice in promotion
- Key actors like Accreditation and Licensing Bodies, Competent Bodies, environmental verifiers, etc. should feel more responsible for the success of the scheme (key factor for success)
- The actions (or lack thereof) of Member States to promote EMAS could be made public (possibly setting up a reward system). [Could this imply public reporting?]
- Launch of an “EMAS check” whenever new EC policies are developed/existing ones are changed. This could be integrated as an element to consider during Impact Assessments
- Awareness of EMAS should be promoted in other European Commission Directorate Generals/Units, and also in government departments at national/regional/local level; EMAS staff trainings could be duplicated across Member States
- Guidelines/clarification for multi-site registrations (see example of Italian bank which has followed this approach)
- Public sector needs to lead by example (obligatory EMAS registration?), and EMAS community should act as a multiplier for EMAS promotion (to overcome budget constraints)
- Allocate more EC resources to the promotion of EMAS pan-European information campaign; also provide more funds at EU level to Member States to assist EMAS promotion
- To strengthen cost effectiveness: better use of EMAS logo
- Environmental verifiers: make the process/time spent verifying more transparent, collecting data on this across the EU for comparison

Regulatory Relief

- Participants were of the opinion that if research shows that EMAS has added value in terms of improved legal compliance, this should justify regulatory relief (tax breaks, less frequent inspections and audits, etc.)

The following suggestions were made:

- Strengthen the role and powers of the European Commission in this area, to overcome the currently great fragmentation of regulatory relief measures across Europe
- EMAS should be better integrated and recognized in European legislation (currently, if reference is made to EMAS/EMS it is very generic)

- “Fast track” has been suggested for the administrative procedures related to environmental issues (EMAS registered organizations should benefit from easier and quicker procedures when applying for permits, etc.)
- EU funding programs regarding environmental projects could also provide extra-points when there are EMAS registered organisations within the consortiums delivering a proposal
- GPP: priority could be given to elements that form part of EMAS (such as reporting, collection of core indicators), not explicitly to EMAS

7. Station D – Performance improvements with EMAS

This station dealt with questions around the following two topics: How effective is EMAS in improving and communicating organisations’ environmental performance?; Is there potential to further integrate EMAS with other Sustainable Consumption and Production (SCP) tools, in particular to strengthen the product dimension within EMAS?

In particular, the following issues were discussed in detail: the monitoring and communication of EMAS environmental performance; role of the EMAS environmental statement; Sectoral Reference Documents; OEF/PEF; EMAS, product dimension and integration with other SCP tools; GPP

EMAS and environmental performance (monitoring and communication)

- Participants mentioned that the current set of core indicators is not flexible enough, however should not be “watered down”. It was therefore suggested that an organisation should be allowed to deviate from the core indicators (focus on relevant indicators that characterise the activity/sector), provided that they add a justification which needs to be validated by a verifier. In addition the Regulation should allow sectoral flexibility/link the indicators with the Sectoral Reference Documents (SRDs)
- In addition, the following suggestions were made:
 - Better link and guidance on how to integrate other indicators such as GRI and carbon footprint
 - Communicate on the “value” of indicators when they are used as incentives in certain Member States /regions (e.g. tax reduction if energy indicators are monitored and communicated)

Environmental statement

- Some participants voiced that environmental statements are often too long and difficult to read/understand for many stakeholders. Another issue raised was the problem of stakeholders not finding environmental statements
- The following suggestions were made:
 - A separate summary of the environmental statement could be one approach to make this communication tool more appealing. It was recommended that in the frame of a possible EMAS revision guidance could be provided on the summary of the environmental statement (incl. the set of minimum information that shall be presented in the summary). However, providing a summary of the environmental statement should not be a mandatory requirement

- Finding the environmental statement online should be facilitated (e.g. all statements should be published/uploaded/hyperlink on EU register)

Sectoral reference documents (SRDs)

- Workshop participants highlighted the valuable information on best practice for the priority sectors available in the SRDs, which also fosters building and maintaining in-house expertise (less reliance on consultants). Appreciated the involvement of expert stakeholders in the development of the SRDs.
- Participants noted that no SRDs have been adopted yet, 5 years after the revision of the Regulation: work is ongoing but only covering a limited number of sectors if the objective is a correct application of the Regulation
- Participants also felt that clarifying the legal implications of SRDs is necessary, i.e. the interpretation of the obligation to "take into account". This should be done at the level of the Regulation itself, rather than in the text of each SRD. This would make it clearer for EMAS users and especially newcomers.
- Participants pointed out that large organisations do not need SRDs because they have inside expertise (they know best practices).. SRDs should target SMEs/ smaller organisations and be disseminated through appropriate information channels for dissemination (Business support organisations, Federal Associations of cities and towns, etc.), and in more user-friendly formats, also beyond EMAS users. EMAS consultants and verifiers should be made aware of adequate SRD implementation and the interpretation of related EMAS obligations

Participants also made the following suggestions:

- Need an updating strategy for the SRDs
- It would be beneficial to develop a good practice approach of how to make use of the SRDs⁷ in an organization and how to report on it in the environmental statement.
- The development of cross sectoral reference documents on specific environmental aspects (e.g. biodiversity) would be helpful.

OEF/PEF

- In the discussions, participants concluded that since the OEF/PEF are at a pilot stage, it is too early to discuss the links. However: participants voiced a strong preference that OEF/PEF should not be mandatory for EMAS registrations
- Besides its possible role as a core indicator, it was pointed out that it is necessary to clarify the value of OEF versus EMAS

EMAS, product dimension and integration with other SCP tools

- A revision of the incentives related to the registration fees of EU Ecolabel when the organisation is already EMAS registered was suggested. Participants voiced a preference for a percentage reduction of the total sum paid for the Ecolabel fees and to make these reduced fees also applicable to other Type I labels (Blue Angel, Nordic Swan, Organic agriculture, etc.)
- Participants said that in some Member States there is no connection between the EMAS CBs and the Ecolabel department; they suggested to increase synergies
- The following open questions remained:
 - Need for more research with regard to improved use of EMAS logo (e.g. on products)

- Use of EMAS within companies that fall under Ecodesign Directive, how many EMAS registered organisations use the EU Ecolabel? Case studies, special focus on SMEs needed

GPP

With regard to promoting EMAS among suppliers: the recommendation was made that suppliers should be asked to provide information on certain indicators (e.g. minimum requirements for a simplified reporting of relevant performance indicators; this can bring them closer to EMAS).

8. List of participants

No	Stakeholder group	Organisation	Title	Last name	First name	Country
1	European Commission	A1 - Eco-innovation and Circular economy	Head of Unit	Schally	Hugo	Austria
2	European Commission	A1 - Eco-innovation and Circular economy	Policy officer	Lorz	Bettina	Germany
3	European Commission	A1 - Eco-innovation and Circular economy	Assistant	Van Mulders	Dina	The Netherlands
4	European Commission	C3 - Air & Industrial Emissions	Policy officer	Hoeve	Rolf-Jan	The Netherlands
6	Member State representative Belgium	Bruxelles Environnement - IBGE		Doat	Jean-Francois	Belgium
7	Member State representative Italy	ISPRA - Servizio Certificazioni Ambientali		Capra	Bertrand	Italy
9	Member State representative Slovakia	Slovak Environment Agency		Kaufman	Peter	Slovakia
10	Member State representative Spain	Competent Body Pais Vasco		Armolea	Jose Antonia	Spain
11	Member State representative Sweden	Swedish Environmental Protection Agency		Segrell	Lina	Sweden
12	State/regional authorities	State Environment Ministry Thuringia		Hirsch	Andreas	Germany
13	State/regional authorities	Landesamt für Umwelt, Messungen und Naturschutz Baden-Württemberg		Sprösser	Kristin	Germany

14	State/regional authorities	Emilia-Romagna Valorizzazione Economica Territorio		Cancila	Enrico	Italy
15	EU level authorities	European Commission	EMAS Unit	Rourke	Michael	Belgium
16	EU level authorities	European Commission	EMAS Unit	Gregou	Sofia	Belgium
17	EU level authorities	European Commission	EMAS Unit	Sanchez Martinez	Celso	Belgium
18	EU level authorities	Joint Research Centre - IPTS		Canfora	Paolo	Spain
19	EU level authorities	Joint Research Centre - IPTS		Gaudillat	Pierre	Spain
20	EU level authorities	Joint Research Centre - IPTS		Antonopoulos	Ioannis	Spain
21	EU level authorities	Joint Research Centre - IPTS		Dri	Marco	Spain
22	Technical Working Group - core members	21 Solutions	Managing director	Van Meesche	Marcel	Belgium
23	Technical Working Group - core members	Stockholm Environment Institute Tallinn Centre (SEI Tallinn)	Programme director	Moora	Harri	Estonia
24	Technical Working Group - core members	Club EMAS Catalonia	Director	Passalacqua	Maria	Spain
25	Technical Working Group - core members	Ecosystem Europe	Chairman of the Board	Chipev	Kamen	Bulgaria

26	Technical Working Group - larger group	Umweltbundesamt	Deputy Head of Unit Sustainable Development (Chair of the EMAS Forum of Competent Bodies)	Brom	Monika	Austria
27	Technical Working Group - larger group	Schaeffler	Director Management System Environmental Protection & Safety	Schleicher	Lennart	Germany
28	Environmental verifiers	AIB Vincotte		Bruyr	Dominique	Belgium
29	Environmental verifiers	Peter Fischer Managementberatung	Management consultant	Fischer	Peter	Germany
30	Environmental verifiers	CERTIND		B loiu	Paula	Romania
31	Environmental verifiers	CERTIND		B loiu	Daria Elena	Romania
32	Representatives from organisations	UPM	Director, Ecolabels and Reporting	Lundgren	Sami	Finland
33	Representatives from organisations/Representatives of EMAS Clubs, offices	Bombardier Transportation/German EMAS Advisory Board	Director/Chairman	Schemmer	Dr. Michael	Germany
34	Representatives of EMAS Clubs, offices	Office of the German EMAS Advisory Board	Project manager	Lodigiani	Mario	Germany

35	Interest groups/civil society	CONFORMA - National Association of verifiers	Director	Giuiuzza	Paolo	Italy
36	Interest groups/civil society	European Environmental Citizens Organisation for Standardisation	Pollution Control Officer-Standardisation	Cristofaro	Dania	Belgium
37	Project team	adelphi	Senior Project Manager	Weiss	Daniel	Germany
38	Project team	adelphi	Research Analyst	Smyth	Maeve	Germany
39	Project team	Scuola Superiore Sant'Anna in Pisa	Associate Professor of Management	Iraldo	Fabio	Italy
40	Project team	Scuola Superiore Sant'Anna in Pisa	Assistant Professor of Management	Daddi	Tiberio	Italy
41	Project team	Scuola Superiore Sant'Anna in Pisa		Melis	Michela	Italy

10.7. ANNEX VII : WORKSHOP "PERSPECTIVES OF AN EMAS REVISION"



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Agenda

Workshop "Perspectives of an EMAS Revision"

Friday, 07.11.2014, 10.30 am – 16.30 pm

Venue: Deutsche Umwelthilfe, Entrance: Neue Promenade 3, 10178 Berlin

1 10:30	Welcome by Ministry and UGA (Annette Schmidt-Räntsch and Dr. Michael Schemmer)
2 10:40	Brief introduction of participants (Veit Moosmayer)
3 10:55	Adoption of draft agenda
4 11:00	Results of the EMAS Evaluation Study Information from Commission workshop, October 22 nd , Brussels (Bettina Lorz, EU Commission, Daniel Weiß, adelphi)
5 11:30	Input UGA: Position paper (attachment) + Opinions + other aspects (Lennart Schleicher)
6 12:00	Discussion Each topic will have a short input and about 10-15 min of discussion <ul style="list-style-type: none"> • Communication on EMAS and its advantages (Dr. Michael Schemmer) • How to increase EMAS registrations in Member States (Annette Schmidt-Räntsch) • EMAS core indicators (Peter Fischer) • Adequate incentives in European law (Georg Schmid-Drechsler) • EMAS in multisite organisations (Lennart Schleicher) • Derogation for small organisations (Article 7) (Veit Moosmayer)
13:30	Lunch break
6 14:30	Discussion (continue) <ul style="list-style-type: none"> • Increase the transparency between Member States in terms of advertising and promotion activities (Lennart Schleicher) • EMAS Global: how to reduce the administrative burdens

	<p>(Lennart Schleicher)</p> <ul style="list-style-type: none"> • Article 8 to be deleted (Peter Fischer) • How to improve the use of the EMAS logo (Lennart Schleicher) • Future relevance of sector specific reference documents (SRD) (Lennart Schleicher) • Accreditation and Licensing of Environmental Verifiers
<p>7 16:00</p>	<p>Attempt to formulate common positions</p> <p>Input for future discussions and actions</p>
<p>8 16:30</p>	<p>Any other business</p>

Event: Workshop EMAS-Revision, 7 November 2014

Location: Deutsche Umwelthilfe (DUH), Berlin

Date: 7 November 2014 10.30 am

List of Participants

Fischer, Peter	Peter Fischer Managementberatung
Hirsch, Andreas	Thüringer Ministerium für Landwirtschaft, Forsten, Umwelt und Naturschutz
Moll, Gerhard	Ministerium für Umwelt, Klima und Energiewirtschaft Baden-Württemberg
Nibbe, Dr. Joachim	NaturFreunde Deutschlands
Pape, Prof. Dr. Jens	NABU - Naturschutzbund Deutschland e. V.
Schemmer, Dr. Michael	Bombardier Transportation GmbH
Schleicher, Lennart	Schaeffler Technologies GmbH & Co. KG
Schmid-Drechsler, Georg	Bayerisches Staatsministerium für Umwelt und Verbraucherschutz
Schmidt-Räntsch, Annette	Bundesministerium für Umwelt, Naturschutz, Bau und Reaktorsicherheit
Racke, Dr. Markus	DAU - Deutsche Akkreditierungs- und Zulassungsgesellschaft für Umweltgutachter mbH
Moosmayer, Veit	UGA-Geschäftsstelle
Lodigiani, Mario	UGA-Geschäftsstelle
Schröder, Ricarda	UGA-Geschäftsstelle

Lorz, Bettina	European Commission
Peschi, Monika	Lebensministerium Österreich
Brom, Monika	Umweltbundesamt Österreich
Passalacqua, Maria	Club EMAS Cataluna
Sarria, Maria José	Catalan Government
Steyrer, Theresa	Arqum Gesellschaft für Arbeitssicherheits-, Qualitäts- und Umweltmanagement mbH
Smyth, Maeve	adelphi, EMAS Helpdesk
Weiss, Daniel	adelphi, EMAS Helpdesk
Meinecke, Lisa	BMUB
Huckestein, Burkhard	UBA

10.8. ANNEX VIII: COMPLETE LIST OF REGISTRATION DATA

Total Organisations										
Country	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Austria	253	261	257	252	259	255	261	249	254	249
Belgium	32	35	37	42	49	49	49	47	53	42
Bulgaria	0	0	0	0	4	0	0	3	3	3
Cyprus	0	0	0	0	0	5	5	5	51	51
Czech Republic	19	18	26	28	34	26	25	24	24	25
Denmark	120	121	113	93	94	92	92	72	63	54
Estonia	0	1	2	2	2	2	3	3	4	6
Finland	41	43	42	41	42	24	24	8	6	4
France	20	17	17	13	12	17	20	21	26	19
Germany	1619	1499	1490	1443	1402	1337	1296	1240	1205	1229
Greece	6	27	51	56	62	67	72	44	42	39
Hungary	1	2	8	14	18	21	20	20	22	23
Ireland	8	8	8	6	7	8	6	5	4	4
Italy	258	412	570	779	965	1035	1103	1190	1124	1017
Latvia	0	0	0	8	8	5	5	5	1	0
Lithuania	0	0	0	0	0	0	0	10	10	9
Luxembourg	1	1	1	1	2	2	1	2	2	1
Malta	1	1	1	0	1	1	1	1	1	1
Netherlands	25	22	13	11	10	7	7	4	4	5
Norway	28	18	27	27	23	21	22	21	20	18
Poland	0	1	6	10	12	20	20	26	36	45
Portugal	25	43	52	60	78	76	76	68	59	58
Romania	2	2	0	1	0	4	4	4	3	5

Slovak Republic	0		3	5	6	4	5	5	2	2
Slovenia	1	1	1	1	2	3	3	3	1	1
Spain	445	528	666	924	1060	1217	1217	1258	992	1072
Sweden	118	100	84	71	75	75	75	76	57	19
United Kingdom	61	64	62	69	69	62	56	59	51	48
TOTAL	3084	3225	3537	3957	4296	4435	4468	4473	4120	4049

Total Sites										
Country	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Austria	333	349	375	492	505	620	645	613	769	779
Belgium	178	229	332	336	428	428	428	426	355	154
Bulgaria	0	0	0	0	4	0	0	3	3	3
Cyprus	0	0	0	0	0	5	5	5	51	51
Czech Republic	21	20	27	30	36	28	70	68	59	58
Denmark	263	289	279	229	235	248	248	455	442	394
Estonia	0	1	2	2	4	4	5	5	24	45
Finland	49	48	50	48	49	28	27	21	25	23
France	20	17	17	13	12	17	20	21	26	20
Germany	2048	1967	2021	1923	1918	1904	1874	1836	1832	1882
Greece	6	27	54	59	462	819	814	795	800	786
Hungary	1	2	11	17	21	24	23	23	25	26
Ireland	8	8	8	6	11	16	14	9	4	4
Italy	331	485	743	1106	1355	1460	1588	1705	1605	1605
Latvia	0	0	0	13	13	7	7	7	1	0
Lithuania	0	0	0	0	0	0	0	10	10	21

Luxembourg	1	1	1	1	4	4	1	4	4	2
Malta	1	1	1	0	1	1	2	1	1	1
Netherlands	29	26	17	15	16	7	7	4	4	5
Norway	28	18	27	27	23	21	23	21	20	19
Poland	0	1	6	10	12	27	27	33	100	123
Portugal	28	48	57	65	83	84	92	103	115	118
Romania	2	2	0	1	0	6	6	6	3	7
Slovak Republic	0	0	3	5	7	5	6	5	2	2
Slovenia	1	1	1	1	6	7	7	7	1	1
Spain	573	669	831	1122	1284	1527	1527	1568	1283	1289
Sweden	133	115	85	72	76	76	76	134	114	76
United Kingdom	62	338	362	369	366	329	286	289	263	62
TOTAL	4116	4662	5310	5962	6931	7702	7828	8177	7436	6826

10.9. ANNEX IX: REASONS GIVEN FOR LEAVING EMAS – ANONYMIZED FEEDBACK FROM EMAS REGISTERED ORGANISATIONS IN GERMANY

Reasons
Organisation wants to continue to work with the ISO9001 certifier. Because he is not an EMAS verifier, they will just reduce down to ISO14001.
ISO 14001 more accepted by customers and having both ISO and EMAS requires a great deal of effort. They would like to stay on the EMAS standard informally. (have an Energy Management System too)
ISO 14001 is accepted worldwide and they don't want any extra certifications
The EMAS core indicators would have published sensitive company information which they were not prepared to share out for reasons of competition. Instead they are doing ISO-14001, ISO-9001 and OHSAS 18001. The company's main headquarters have also moved to France.
A merger occurred and now they have other priorities. However, they will continue to have an uncertified EMS and may return to EMAS later.
They are restructuring and want to take a break from EMAS.
They had severe budget cuts and can no longer meet the resource requirements for documentation, etc. They are trying to continue on their own in a reduced fashion.
After three rounds of verifying they did not see any more potential for improvement. The effort required for documentation was also too high.
Costs for the verifier were too high, so they are continuing only with ISO 14001.
Required cost and effort too high.
The parent company is adopting ISO 14001. Customers only requesting ISO 14001, so they do not see any advantage of EMAS.
Company closed.
Company bought out, new parent company only wants ISO 14001
Article 7 for small companies is no longer as beneficial. They are not getting any more financial incentives from their state. They also don't see any advantage with customers.
Very positive experience with EMAS and have accomplished a lot. However, they don't need all the restrictions anymore and want to continue on their own.
Company switching to ISO 14001 and ISO 50001 so that they can produce a more flexible sustainability report.
Company felt the changes in EMAS III led to significantly higher costs.
Environmental performance improvements have become smaller and more difficult to obtain. EMAS III, particularly the indicators, also significantly increased the requirements. It was difficult to meet them with limited personnel.
Company merged with another firm. They may return to EMAS later.
Switching to only ISO 14001 and ISO 9001

Requires too much work and it was too difficult to find additional targets.

Company added new sites that did not have EMAS and did not want differences among them. They will first do a low-threshold scheme for the new sites and then perhaps come back to EMAS in the future.

Very high documentation costs, the mandatory indicators, and the need to continually improve were all reasons. There were not enough active employees to make it worth it. Contact at CB was very helpful but now the position has been eliminated and so the support is now missing. EMAS was just no longer useful for the school.

Company felt the new requirements for EMAS III were too difficult, but they will continue to evaluate environmental performance internally in a similar manner. A return to EMAS is not out of the question if EMAS itself is improved.

The management now has other priorities. Costs are too high and there is no personnel replacement that works on environmental topics. It's a non-profit organisation that has recently seen a decline in membership.

Customers only want a "private label", so they are only doing ISO 9001. They are also leaving ISO 14001 and OHSAS 18001.

None of their customers is interested in EMAS, and neither are regulators, government agencies or hospitals. It hasn't helped them at all to win public contracts.

The environmental statement and verifier are too costly and time-consuming.

Continuing with ISO 14001, ISO 9001 and OHSAS 18001. However, they also want to leave 14001 because they don't see a positive cost-benefit balance with EMS. Environmental aspects are already contained in other obligatory certifications that they have. Additionally, they are short-staffed and can only focus on the basic services.

Company closed.

Documentation too costly and time-consuming.

Not enough personnel.

No capacity.

Costs of verifier too high. Company is frustrated that financial incentives are not paid in a timely manner.

Substantial restructuring took place and the company was therefore faced with staff shortages.

No benefits could be identified from the often very theoretical basis. The company deems the effort for data collection to be too high.

There are too many obligatory certificates in the sector that require enough effort. They are now going to do IFS to satisfy everyone. They still feel a connection to EMAS, though, and want to continue to use EMAS information.

Clients only want ISO 9001 and 14001. EMAS effort is too high. No general interest in environmental statement. Difficulties with goals/targets.

Could no longer see any additional benefits, therefore now focusing only on ISO 14001.

Company no longer existent.

Local political and public interest is too low. Not suitable for a local government.

It was a difficult decision after more than 15 years. However, they had very few

remaining opportunities for improvement after such a long time. Acceptance has disappeared for the high effort necessary. Due to EMAS III, effort and costs became too high (more visits of environmental verifiers). EMAS became “exotic” - not as widespread in Germany.

Implementation by staff too time-consuming, environmental verifier too expensive. Too few benefits considering the effort.

Will continue EMS with ISO-14001. For EMAS, the effort was too high for the environmental statement and indicators, no external impact (no positive improvement of external image)

Bankruptcy, taken over by holding. Individual sites were shut down, for other sites environment no longer a priority.

No time for data management/processing, poor cost-benefit ratio

High costs and very time-consuming for a small team. Publicity from EMAS did not help attract clients.

Merged into a corporation that prefers ISO14001. EMAS is too much effort for a large branch and not known amongst clients.

Cost consideration. They are doing ISO 9001, ISO 14001, ISO 50001, OHSAS 18001 instead.

Joining EMAS was sponsored by the government, own resources are invested in sports activities rather than certificates. Now it's too much effort and too expensive.

Only joined EMAS because of one important client. The client is now only asking for ISO-14001.

Financial reasons; environmental verification. Are continuing with „Green Rooster“ (EMAS-based EMS for churches)

Costs of environmental verifier. Are continuing with „Green Rooster“.

Organisation closed.

No longer any support from parish council. Environmental team has shrunk significantly, so they no longer have enough resources.

Environmental activities were on a voluntary basis, no longer sufficient resources.

Staff resources. New development of nursery school takes priority in volunteer activities. But would like to join EMAS again afterwards.

Costs of environmental verification, did not receive any positive feedback/reaction for having EMAS. Are continuing with “Green Rooster”.

Staff resources, critical view of using a certificate. However, they are continuing with the environmental activities.

Effort required from volunteers too high. The organisation also needs all its resources for renovation activities. Return to EMAS is a possibility.

Costs, due to staff cuts, they no longer have the resources/support.

Internal reasons.

EMAS III is very excessive, too bureaucratic, too expensive and too labour-intensive. Are continuing with „Green Rooster“.

Too much effort for small gain. This certificate is excessive.

Bureaucratic effort not affordable when done on a voluntary basis. High costs of environmental verifier visiting every two years.

Outside workload increased due to new development of nursery school (80% on voluntary basis)

Bureaucratic effort is too high. Consultant and environmental verifier are much too expensive.

10.10. ANNEX X: REGRESSION ANALYSIS

The “Supply chain management capability” has been created through a linear combination of the following questions included in the section 5.4 of the questionnaire:

- Have you encouraged your suppliers to adopt environmental measures/certifications?
- Do suppliers that are also EMAS registered obtain a ‘preferred supplier’ status?
- Are you increasing the rate of sustainable materials used in your production process (green procurement procedures)?
- Are you monitoring and assessing your suppliers through the collection of data in periodic questionnaires?
- Are you carrying out environmental on-site audits at the plants of your suppliers?
- Have you ever stopped ordering from a supplier for environmental reasons?

To create the variable “Company’s satisfaction with EMAS” we used a question included in the section of the questionnaire related to the future policy scenarios. In particular, the interviewees indicated if the future policy solution of “Keeping EMAS as it is” was effective or not effective, using a scale of values that range from 1 (not effective at all) to 5 (very effective).

The variable “Innovation” has been constructed through a linear combination of process innovations, product innovations and organisational innovations items (included in the section 8 of the questionnaire).

The EMAS maturity has been created considering the date of first EMAS registration of the interviewed organisation.

Table 1: Linear regression for the valuation of the relation between EMAS and competitiveness

EMAS and competitiveness		
	Coeff.	Robust Std. Err.
Supply chain management capability	0.031	0.043
Employees (log)	-0.017	0.036
Innovation	0.553***	0.065
Company’s satisfaction with EMAS	0.096	0.062
Country category (high registration, middle registration, low registration countries)	0.336***	0.104
EMAS maturity (number of years since registration was acquired)	0.009	0.011
Examination number	133	
R square	0.5084	

***; **; * The correlation is significant to 99%; 95% 90% respectively

Table 2: Linear regression for the valuation of the relation between EMAS and competitive advantages on reputation

EMAS and competitive advantages on reputation		
	Coeff.	Robust Std. Err.
Supply chain management capability	0.094	0.036
Employees (log)	-0.010	0.027
Innovation	0.498***	0.066
Company's satisfaction with EMAS	0.100	0.054
Country category (high registration, middle registration, low registration countries)	0.268***	0.074
EMAS maturity (number of years since registration was acquired)	0.004	0.008
Examination number	208	
R square	0.4563	

***; **; * The correlation is significant to 99%; 95% 90% respectively

Table 3: Linear regression for the valuation of the relation between EMAS and competitive advantages on the market

EMAS and competitive advantages on the market		
	Coeff.	Robust Std. Err.
Supply chain management capability	0.039	0.039
Employees (log)	-0.054	0.032
Innovation	0.366***	0.057
Company's satisfaction with EMAS	0.029	0.055
Country category (high registration, middle registration, low registration countries)	0.257**	0.108
EMAS maturity (number of years since registration was acquired)	0.016	0.010
Examination number	213	
R square	0.2641	

***; **; * The correlation is significant to 99%; 95% 90% respectively

We studied the relation between scale of values that range from 1 (not effective at all) to 5 (very effective) and the answers given in the section related to the innovation options.

The variables on ISO9001 and OHSAS18001 adoption have been created using the answers related to the integration of those management systems with EMAS.

Table 4: Linear regression for the valuation of the relation between EMAS and innovation

EMAS and Innovation		
	Coeff.	Robust Std. Err.
Supply chain management capability	0.251***	0.044
Employees (log)	-0.066*	0.036
EMAS maturity (number of years since registration was acquired)	-0.024*	0.013
Country category (leading countries, followers, laggards)	-0.028	0.011
Company's satisfaction with EMAS	0.223***	0.068
ISO9001 adoption (integrated with EMAS)	0.059	0.057
OSHAS18001 adoption (integrated with EMAS)	-0.075	0.056
Examination number	208	
R square	0.2469	

***; **; * The correlation is significant to 99%; 95% 90% respectively

10.11. ANNEX XI : THE OPINION OF EMAS REGISTERED ORGANISATIONS ON POLICY OPTIONS

A specific part of the questionnaire filled in by the surveyed EMAS registered organisations aimed to investigate their opinion on the future path of EMAS. Options ranged from keeping it as it is over modifying the scheme in order to increase its effectiveness with regard to its two principal objectives to phasing out the scheme. The results of this section of the questionnaire and feedback given on the workshop have been taken into account in the assessment of the various in this chapter.

The section on policy options was included in the questionnaire at the beginning in order to ensure that as many EMAS registered organisations as possible give their feedback on this important matter. In fact, the sample of EMAS organisations that filled in this part of the survey is larger than the sample related to the ex-post analysis – the section on policy options has been filled in by 484 EMAS registered organisation while the section of the ex-post analysis has been filled in by 467 organisations.

The first question of this section (Table 1) was aimed to collect the opinion of EMAS registered organisations on the general scenarios that can influence the future of EMAS. In the next table you can find the results. Similar to the results of the survey of ex-post analysis described in the previous sections of this report the score was able to range from 1 (not effective at all) to 5 (very effective).

Table 1: Effectiveness of future options

Please indicate your opinion on the effectiveness of the following possible options concerning the future of the EMAS scheme, its ability to guarantee a continuous environmental performance improvement, and its contribution to the achievement of EU sustainable consumption and production objectives	Value	Standard deviation
Include simplified requirements of an EMS in future Directives where applicable	3.6	1.2
Slight modification/improvement of EMAS	3.4	1.0
Making EMAS mandatory (e.g. for specific sectors and industries with relevant environmental impacts, such as companies in the scope of the Industrial Emissions Directive)	3.4	1.4
Keeping EMAS as it is	3.0	1.1
Strong modification/improvement of EMAS	3.0	1.2
Phasing out EMAS completely and focusing resources and effort on other EU policy tools	1.8	1.0

The most effective option on the future of EMAS scheme according to respondent's opinions is to include requirements of an EMS in future European Directives to simply and ease the use of EMS. This result is coherent with the related section related in the ex-post analysis. For instance the option Lack of EMAS recognition by public institutions (including regulatory relief or other measures such as tax breaks) has been identified as one of the main barriers to adopt EMAS. Unexpected is the consensus on the option to

make EMAS mandatory for companies with high environmental impact. This answer was given mainly by micro organisations. Finally this table reveals clearly that according to the EMAS organisations' opinion the EMAS Regulation should not be phased out – the score of 1.8 is one of the lowest score of the entire survey.

In the following table (Table 2), the results related to the future scenarios classified according to the size of organisations are displayed.

Table 2: Effectiveness of future options: by size of organisation

Please indicate your opinion on the effectiveness of the following possible options concerning the future of the EMAS scheme, its ability to guarantee a continuous environmental performance improvement, and its contribution to the achievement of EU sustainable consumption and production objectives. Analysis per size of organisations	Micro	Small and medium	Large	Aggregate value
Keeping EMAS as it is	3.0	3.0	3.1	3.0
Slight modification/improvement of EMAS	3.5	3.4	3.5	3.4
Strong modification/improvement of EMAS	3.2	3.1	2.8	3.0
Phasing out EMAS completely and focusing resources and effort on other EU policy tools	1.7	1.9	1.6	1.8
Making EMAS mandatory (e.g. for specific sectors and industries with relevant environmental impacts, such as companies in the scope of the Industrial Emissions Directive)	3.6	3.5	3.2	3.4
Include simplified requirements of an EMS in future Directives where applicable	3.9	3.7	3.4	3.6

There is a higher level of agreement on the highest rated option (include simplified requirements of an EMS in future Directives where applicable) in micro organisations compared to medium-sized and large organisations. One reason could be that for micro organisations perceiving managing administrative processes or bureaucracy has a bigger impact harder than for large organisation due to their lack of financial and human resources. Similarly, micro organisations are more in favour of strong modifications of the scheme than small and medium-sized and large organisations. This result could indicate that micro organisations have more difficulties meeting the requirements than larger organisations and are thus in favour of major changes.

One of the aspects investigated in the ex-ante survey was related to the possible extension of core indicators to further direct and indirect environmental aspects (Table 3).

Table 3: Possible extension of core performance indicators

Please indicate your opinion on the possible extension of core performance indicators to the following direct and indirect environmental aspects.	Value	Standard deviation
Wastewater emissions	3.5	1.1
Product life-cycle related issues	3.3	1.2
Noise emissions	3.2	1.1
Environmental performance of contractors, subcontractors and suppliers	3.1	1.3
Administrative and planning decisions (e.g. indicators related to environmental issues taken into account in the institutional planning documents of a public authority)	3.1	1.2
Choice and composition of services, e.g. transport, catering	2.9	1.1
Capital investment (e.g. indicators related to financial participation of the registered company in firms with relevant environmental impacts)	2.9	1.2

Wastewater emission is the environmental aspect with the highest score. Currently Annex IV of the EMAS Regulation includes requirements related to water consumption while it does not include any requirements related to the performance on wastewater pollutants. The option with the second highest score is related product life-cycle issues. This survey result is interesting in that currently no indicator is linked to indirect environmental aspects. The result is also in line with the current draft ISO 14001:2015, which includes provisions on life-cycle aspects.

The following table (Table 4) addresses specific modification options.

Table 4: Options to improve EMAS

Please indicate your opinion on the effectiveness of the following possible options to improve the EMAS scheme.	Value	Standard deviation
Complete the integration and automatic certification of ISO 14001 when an organisation obtains EMAS	4.3	0.9
Enhance the presence of regulatory relief for EMAS registered organisations in EU Directives and Member States' laws	4.2	1.0
Strengthen the diffusion of EMAS at the global level	4.1	0.9
Improve the recognition and use of the EMAS logo	4.0	1.1
Strengthen the presence of special conditions for SMEs	3.9	1.0
Complete the integration and automatic certification of ISO	3.9	1.0

50001 when an organisation obtains EMAS		
Enhance support for the registration of multi-site organisations	3.6	0.9
Provide EU guidelines for EMAS environmental verifiers	3.5	1.0
Increase integration with other SCP tools (e.g. green public procurement, Ecolabel, Ecodesign, etc)	3.4	1.1
Introduce Organisation Environmental Footprint (OEF) as means for identifying and measuring the most significant environmental impacts	3.3	1.1
Strengthen the presence of production criteria in indirect environmental aspects	3.3	1.0
Enlarge the scope of EMAS by including social requirements	3.2	1.3

According to our results, EMAS registered organisations would like become ISO 14001 certified automatically upon obtaining their EMAS registration. Effectively, in practice, if an organisation has already obtained an EMAS registration and applies to request ISO14001 certification (it usually is vice versa), environmental verifiers do not request additional technical information or data. The issuing of an ISO certification is rather connected with fulfilling internal administrative requirements. The request of surveyed EMAS registered organisations to benefit from regulatory reliefs we already discussed. The results confirm the importance of this aspect when designing and assessing policy options. The answers on strengthen the diffusion of EMAS at the global level and improve the recognition and use of the EMAS logo are coherent with a key barrier identified in the ex-post analysis – the lack of recognition of EMAS. EMAS Global and the recognition of the EMAS logo are seen as opportunities to improve the awareness of EMAS among external stakeholders and actors.

Finally, the last question of the questionnaire asked for opinions on phasing out options.

Table 5: Options for stopping EMAS

Please indicate your opinion on the effectiveness of the following options for possibly stopping the EMAS scheme	Value	Standard deviation
The EU should phase out the EMAS Regulation and propose to transfer (some) key elements of EMAS to an improved ISO14001 standard (e.g. suggesting additional requirements on performance improvement, legal compliance, external communication, employees involvement, and indirect environmental aspects)	2.7	1.4
The EU should phase out the EMAS Regulation without transferring elements of it to other policies or policy areas	1.8	1.0

Our results clearly show that EMAS registered organisations do not wish the scheme to be phased out. On the one hand, we can infer that EMAS users trust in the scheme's ability to help them improve performance. On the other hand, we also need to emphasise that those using the scheme have already invested in it and may be thus attached to

options which maintain EMAS. Hence, in our assessment of options, we took into account not only opinions of stakeholders in the “EMAS community” but also views of stakeholders which are not using the scheme (e.g. interviewed ISO 14001 certified organisations, organisations which have left EMAS).

Finally, a survey section addressed the (potential) links of EMAS with other instruments and their contribution to strengthening the effectiveness of EMAS. The results – shown in Table 6 below – include five options directly related to the relationship of EMAS with other tools.

- “Complete the integration and automatic certification of ISO 50001 when an organisation obtains EMAS”;
- “Complete the integration and automatic certification of ISO 14001 when an organisation obtains EMAS”;
- “Increase integration with other SCP tools (e.g. green public procurement, Ecolabel, Ecodesign, etc.)”;
- “Introduce OEF as means for identifying and measuring the most significant environmental impacts”;
- “Enlarge the scope of EMAS by including social requirements”.

Table 6: Effectiveness of future policy scenarios to improve EMAS

Please give your opinion on the effectiveness of potential future policy scenarios to improve EMAS	Value	Standard deviation
Complete the integration and automatic certification of ISO 14001 when an organisation obtains EMAS	4.3	0.9
Enhance the presence of regulatory relief for EMAS registered organisations in EU Directives and Member States’ laws	4.2	1.0
Strengthen the diffusion of EMAS at the global level	4.1	0.9
Improve the recognition and use of the EMAS logo	4.0	1.1
Strengthen the presence of special conditions for SMEs	3.9	1.0
Complete the integration and automatic certification of ISO 50001 when an organisation obtains EMAS	3.9	1.0
Enhance support for the registration of multi-site organisations	3.6	0.9
Provide EU guidelines for EMAS environmental verifiers	3.5	1.0

Increase integration with other SCP tools (e.g. green public procurement, Ecolabel, Ecodesign, etc.)	3.4	1.1
Introduce OEF as means for identifying and measuring the most significant environmental impacts	3.3	1.1
Strengthen the presence of production criteria in indirect environmental aspects	3.3	1.0
Enlarge the scope of EMAS by including social requirements	3.2	1.3

The results show a preference for strengthening the integration and automatic certification of ISO 14001 – and, to a lesser extent, ISO 50001 – when an organisation obtains an EMAS registration. At the same time, a deeper integration of EMAS with other SCP tools (namely GPP, EU Ecolabel and Ecodesign) is not perceived as contributing to the effectiveness of EMAS. As regards EMAS's potential links with matters of social responsibility, survey respondents are undecided. The high standard deviation indicates that this topic is discussed controversially, which is also the case, as outlined in the ex-post analysis, on Member State level.

Some considerations have to be given to the possible introduction of the OEF as a means for identifying and measuring significant environmental impacts. This new tool of the European Commission – currently in its testing phase – is a multi-criteria measure of the environmental footprint of organisations based on a life-cycle perspective, whose relationship with EMAS could take many different forms. For instance, it could be applied in the context of EMAS reporting requirements and/or in the context of the identification and measurement of organisations' environmental impacts. Our results indicate that survey respondents are unsure about the links, which is logical given that the OEF approach is currently in a testing phase and not much information is available on experiences so far on potential links. Interviews with Member State representatives show that the topic is debated controversially. While one representative stated that "it is important to link tools and methodologies on footprint and LCA with EMAS" in order to strengthen EMAS and its core objectives, another one showed doubts by remarking that "it would be a mistake to integrate EMAS further with the OEF and PEF methods" as this would make the scheme even more prescriptive, adding indicators that "would make EMAS too complex, and organisations would lose interest in it". Another Member State representative pointed out that "so much time and effort is being invested into developing many different environmental instruments on EU level, but not enough time is being spent making sure that existing instruments are given support and publicity."

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