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COMPANIES' PARTICIPATION IN ENVIRONMENTAL MANAGEMENT SYSTEMS Czech Republic

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Author: Michaela Vlnasová

Diploma Thesis Supervisor: Richard Selby, Ph.D.

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MICHAELA VLNASOVA

COMPANIES' PARTICIPATION IN ENVIRONMENTAL MANAGEMENT SYSTEMS
Czech Republic

SCHOOL OF APPLIED SCIENCES
Environmental Management for Business

MSc THESIS
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ABSTRACT

Environmental management systems (EMS) have become a popular self-regulatory tool in the last decades in the field of the environmental regulation. This trend is supported by the many governmental decisions across Europe when the classical command-and-control style has been receding into the background and thus relinquished place for the self-regulation.

The Czech Republic, a post-communist country with economy in transition, entered the European Union in 2004 and thereby joined developed countries of Western Europe and also committed itself to enhance the environmental protection. However, number of participating companies in EMS in the Czech Republic still lags behind in comparison with the figures of Western countries.

This study, based on the questionnaire survey, explores behaviour of the Czech companies in relation to EMS and reveals the rationale behind their negative attitude towards EMS. The results show that the main reason of their negative approach is an anticipated increase in administrative work after the adoption of EMS. Among other relevant barriers towards EMS belong costs related to implementation and maintenance, insufficient governmental grants, and need for qualified employees. Furthermore, the study revealed that the reasons considerably vary among different industries; however, the size of an organization did not prove to have relevant influence.

The study also suggests possible solution to support the development of EMS in the Czech Republic.

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GLOSSARY

BS 7750	British Environmental Management Standard
BSI	British Standards Institution
CENIA	Czech Environmental Information Agency
CO ₂	Carbon dioxide
CZK	Czech crown
EC	European Commission
EEA	European Economic Area
EMAS	Eco-management Audit Scheme
EMS	Environmental Management Systems
env.	environmental
EPD	Environmental Product Declaration
EU	European Union
GOST R	Russian national technical standard
HACCP	Hazard Analysis Critical Control Point
ISO	International Organization for Standardization
LCA	Life-cycle Analysis
ME CR	Ministry of the Environment of the Czech Republic
NO _x	Mono-nitrogen oxide
OPA	Operator Performance Appraisal
OPEI	Operational Programme Enterprise and Innovation
PAH	Polyaromatic hydrocarbons
RCP	Responsible Care Program
SCP	Sustainable Consumption and Production
SEP CR	State Environmental Policy of the Czech Republic
SME	Small and Medium Enterprise
SO ₂	Sulphur dioxide
VEI	Voluntary Environmental Initiative
VOC	Volatile Organic Compound

References to the following ISO standards are used in this study:

ISO 14001	Environmental Management Systems – Specification with Guidance for Use
ISO 14021	Environmental Labels and Declarations – Self-declared Environmental Claims (Type II Environmental Labelling)
ISO 14024	Environmental Labels and Declarations – Type I Environmental Labelling – Principles and Procedures

ISO 14040	Environmental Management – Life Cycle Assessment – Principles and Framework
ISO 9000	Family of standards for quality management systems

1 INTRODUCTION

This part introduces a concept of Environmental Management Systems (EMS), which are set in the context of the study. It describes situation in the Czech Republic in terms of EMS and states aims and objectives of the study.

1.1 Introduction to Environmental Management Systems

As most of organisations try to manage their everyday activities to achieve the success within competition, one of the most important questions that managers all around the world try to answer is how to manage these activities in the most effective and efficient way. Over the years, numbers of different approaches have been identified to help organisations to establish such management systems, which focus on certain functions within organisations, for example quality management or environmental management (Brady, 2005).

British Standards Institution (BSI, 2003) defines EMS as:

“a part of the overall management system that includes organisational structure, planning activities, responsibilities, practices, procedures, processes and resources for developing, implementing, achieving, reviewing and maintaining the environmental policy.”

The study is focusing on the two mostly recognized EMS across Europe, namely ISO 14001, an Environmental Management Standard, established by the International Standards Organization (ISO) and Eco-management Audit Scheme (EMAS), which is based on European environmental management systems by the European Commission (Whitelaw, 2004).

1.2 Introduction to the Situation in the Czech Republic

Environment in the Czech Republic was not until the 1990's, as in any of the other countries belonging to the former communist block, perceived as a concern but rather as a source of valuable natural resources. Many years of intensive growth of heavy industry

production during this period brought on one side prosperity, but on the other side they left their marks in the form of pollution and environmental deterioration (ME CR, 2004). The situation has significantly improved since then. But still more than 20 years after the fall of communism, there are visible consequences of uncontrolled exploitation of the environment.

The approach of people and government to the environment started to change after the Velvet Revolution and this transition was pushed forward by the accession to the European Union in 2004 and by the legal requirements resulting from the membership. The concern for the environment has risen over the last years and people have become more sensitive to environmental issues, which also means increased pressure on companies.

Although the environment is nowadays widely discussed in the Czech Republic, in comparison with Western European countries, it lags behind the common practice in many areas of environmental protection. One of the indicators of such difference could be the number of organisations participating in the Environmental Management Systems.

1.3 Aims and Objectives

This work seeks to explore the attitude of Czech companies toward Environmental Management Systems. The data will be collected through questionnaire survey among organisations in different industrial sectors. The study seeks to reveal reasoning behind the negative approach to EMS. The results can be used as a guide for both governmental and commercial organisations to support environmental awareness, respectively for the protection of the environment.

1.3.1 Aims

The aim of the thesis is to explore participation of Czech companies in EMS and to identify reasons why EMS are not as much adopted as in other European Union countries. The purpose of this study is to identify any aspects of EMS that could be afterwards modified or improved to become more suitable for the Czech territory.

1.3.2 Objectives

- I. To provide comprehensive overview of the two most frequently utilized and recognized EMS, namely ISO 14001 and EMAS, their comparison with stated drivers and barriers.
- II. To critically analysed EMS and to present arguments for and against EMS from the literature.
- III. To deliver a complete image of the situation in the Czech Republic with regard to EMS and to introduce a legal background and governmental initiatives for the support of the implementation of EMS.
- IV. To identify reasoning behind decision-making process with respect to negative approaches towards EMS.
- V. To suggest any possible modification of current EMS that could improve the situation in the Czech Republic.

2 LITERATURE REVIEW

This section reflects arguments presented in the literature concerning EMS and related issues. The current situation and trends in the Czech Republic are explored in this part and the comparison with other European regions is also provided.

The literature review is structured as follows:

- 2.1 EMS and Self-regulation Mechanism
- 2.2 Certified EMS – ISO 14001 and EMAS
- 2.3 Comparison of ISO 14001 and EMAS
- 2.4 Drivers and Barriers to EMS
- 2.5 Situation in the EU
- 2.6 Situation in the Czech Republic
- 2.7 Environmental Management Systems in the Czech Republic

2.1 *EMS and Self-regulation Mechanism*

The establishment of environmental standards and their following development could be considered as the origin of EMS. The first standards in the European Community were created in 1973 and they incorporated marketing, use and labelling of pesticides and the disposal of toxic waste (Lamprecht, 1997). However, the overall impact of these standards was inconsiderable and according to Vogel (1990) the majority of countries even ignored them.

The new trend in environmental standards has emerged in the last decades. Many authors (for example Altham, 1999; or Gunningham, 1995) described this trend as a shift from a command and control style of regulation towards self-regulation. The classical example of command and control style are standards given by the law and thus obligatory for every organisation, and enforced and controlled by competent regulatory bodies (Winter, 1996).

Any *voluntary* action of development and establishment of effective control mechanisms without any form of governmental or regulatory supervision is considered under the concept of a self-regulation (Bell and McGillivray, 2006). Another term that is closely related to self-regulation is Voluntary Environmental Initiative (VEI), which is understood as a tool that organisation could employ to ensure self-regulation (Christmann and Taylor, 2002). EMSs among others are classified as a VEI.

The next part will briefly comment on the development and the main goal of two frequently adopted and recognized EMS – ISO 14001 and EMAS.

2.2 Certified EMS – ISO 14001 and EMAS

EMS can be divided into two basic groups: (1) *certified* EMS, which follow given requirements of national or international standards and they are assessed and certified against these criteria, and (2) *internal* or informal EMS, which are usually developed and adopted by an organisation itself (Brady, 2005). Although EMS can be classified as certified or internal, elements of both are largely the same, but for the purpose of this thesis only certified EMS are considered.

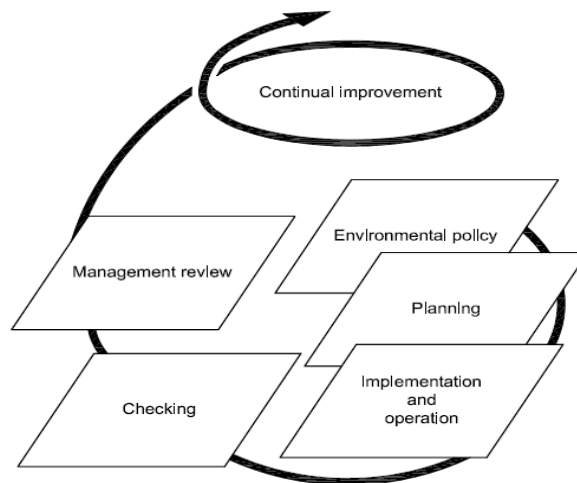
2.2.1 ISO 14001

Environmental Management Standard ISO 14001, developed by International Standards Organization (ISO) in 1996, revised in 2004 specifies “*requirements for an environmental management system to enable an organization to develop and implement a policy and objectives which take into account legal requirements and information about significant environmental aspects*” (ISO, 2004). ISO 14001 was derived mainly from the British Standard BS 7750, which was introduced in 1992 as the first environmental standard in Europe (Edwards, 2004).

The basic principle of ISO 14001, and other EMS, is based on the Denning Cycle *plan-do-check-act*, which aims to support the core process of *continual improvement* (Brady, 2005). *Figure 2-1* shows the ISO 14001 continual improvement process with incorporated steps of the Denning Cycle, where:

- *Plan*: to establish the objectives and processes according to the environmental policy;
- *Do*: to implement the processes;
- *Check*: to monitor and measure processes against environmental policy, objectives, legal and other requirements, and report the results;
- *Act*: to ensure continual improvement of EMS's performance (ISO, 2004).

Figure 2-1 The continual improvement process



Source: ISO (2004)

Implementation of ISO 14001 could be divided into several steps according to given standards (Brady, 2005; ISO, 2004):

I. Establishment of Environmental Policy

The environmental policy is a keystone of EMS and reflects environmental aims and principles with a clear commitment to the continual improvement of performance and to the compliance with environmental, legal and other requirements. The policy communicates environmental objectives to employees and other stakeholders and therefore must be available to public.

II. Identification and Evaluation of Environmental Impacts

Organisation must identify and evaluate the environmental impacts, whether negative or positive, of its activities, products and services, to ensure that EMS is focusing on the most significant ones.

One of the techniques used for identification and evaluation of impacts is *Environmental Review*, the main goals of which are: (1) to address an organisation's impacts and determine which are the most important ones, (2) to state which activities, products and services caused them, (3) to identify environmental legislation which is applicable to the organisation's activities and assess the compliance, (4) to evaluate controlling and monitoring measures of significant impacts, and (5) to set objectives and targets for improvement of environmental management and establish additional actions when needed.

III. Assessing Significance

Although, there is no single approach to assessing the significance of environmental impacts, organisation should establish such criteria which take into account environmental matters, legal issues and concerns of internal and external stakeholders. Examples of environmental criteria are size, nature, frequency, likelihood and duration of an impact, and the sensitivity of the receiving environment and the degree to which the impact is reversible.

IV. Operational Control, Targets and Objectives

On the basis of the results obtained from the environmental review, an organisation establishes operational control to minimize impacts. Objectives, based on environmental goals stated in the environmental policy, are set to ensure continual improvement, and also specific targets which contain requirements that need to be met in order to achieve objectives.

V. Environmental Programme

Environmental programme is derived from the identified objectives and targets and specifies actions and measures that should be undergone to improve the organisation's environmental performance.

VI. Structure and Responsibilities

Management representatives are appointed with defined roles, responsibilities and authority to ensure that EMS is maintained according to its requirements. The organisation's management should provide corresponding information, training and development of new skills.

VII. Communication

Internal two-way communication among different levels and functions within the organisation ensures that involved employees are on one hand informed about progress and on the other hand that they are hand able to influence the development of EMS. *External* communication covers receiving, documenting and responding to incentives from the outside.

VIII. Procedures and Documentation

Written documentation and procedures related to EMS must contain environmental policy, objectives and targets, the scope and main elements of EMS, procedures, organisational chart and others.

IX. Monitoring and Auditing

To ensure continual improvement it is necessary to carry out monitoring and auditing of the implemented EMS on a regular basis. The results need to be compared with environmental objectives and targets in order to track the progress. In the case of any insufficiencies, organisation should determine new strategies. One of the most important aspects that must be monitored is compliance with legal requirements.

X. Management Review

As was mentioned at the beginning, EMS are based on the cyclical process of plan-do-check-act, and thus it is vital to periodically review the functions and results of EMS and the environmental performance to ensure its improvements.

Certification

Organisations that implemented the ISO 14001 EMS have had the possibility to certify their EMS but it is not obligatory. The aim of the certification is to prove that EMS fulfils specified requirements, is capable of following stated policy and to achieve its targets, and that it is effectively implemented (ISO, 2006). ISO 14001 can be certified either by external body, or organisations have the choice of self-declaration that they have met all requirements of the standard.

2.2.2 EMAS

The Eco-management Audit Scheme (EMAS) is a voluntary initiative developed to improve organisations' environmental performance. It was originally established by European Council's Regulation 1836/93 in 1993, which set a voluntary system of eco-auditing for industrial installations (Krämer, 2003). European Council published in 2001 a revised version under the Regulation 761/01 and EMAS became open to any type of organisation, not only to those from the industrial sector (EU, 2001).



Source: EU, 2009

The latest version, so called EMAS III, was introduced in November 2009 in the Regulation 1221/09 and came into effect on 11 January 2010. One of the main changes that EMAS III has brought is that it allows participation of organisations located also outside the European Union (EU) and the European Economic Area (EEA), therefore EMAS is open to any organisation worldwide (EU, 2009).

The objective of EMAS is to *“promote continuous improvements in the environmental performance of organisations by the establishment and implementation of environmental management systems by organisations, the systematic, objective and periodic evaluation of the performance of such systems, the provision of information on environmental performance, an open dialogue with the public and other interested parties and the active involvement of employees in organisations and appropriate training.”* (EU, 2009, Article 1)

Organisations which want to participate in EMAS are demanded to implement an EMS which meets the requirements of ISO 14001, therefore ISO 14001 is recognized as a foundation for EMAS (EU, 1997). However, next to the implementation of ISO 14001, organisations are required to fulfil additional conditions (Brady, 2005):

- to demonstrate compliance with legal requirements as a minimum on on-going basis;
- to achieve improvements in environmental performance;
- to publish a publicly available environmental statement;

- to actively involve employees in the process of continual improvement.

From the above mentioned, it is clear that ISO 14001 and EMAS have many elements in common, moreover, ISO 14001 could be understood as a subset of EMAS. The following part introduces the main difference between these two standards of EMS.

2.3 Comparison of ISO 14001 and EMAS

Table 2-1 provides comparison of different aspects of ISO 14001 and EMAS and their requirements.

Table 2-1 Comparison of ISO 14001 and EMAS

	ISO 14001	EMAS
Status	No legal bases	Under legal bases
Environmental policy	Includes commitment to continual improvement of the system	Includes commitment to continual improvement of environmental performance
Initial environmental review	Initial review is recommended, not obligatory	Obligatory for the organisations when setting its environmental status for the first time
Environmental aspects	Procedure for the identification of environmental aspects is required	Identification and evaluation of the environmental aspects are required with the establishment of criteria for assessing their significance
Legal compliance	Commitment to comply with legal requirements, no audit of compliance	Obligatory to demonstrate legal compliance, compliance-audit
External communication	Responding to relevant communication from external interested parties is required	Open dialogue with the public; public environmental statement validated by verifiers
Continual Improvement	Periodical improvement without defined frequency	Annual improvement required
Contractors and suppliers	Relevant procedures are communicated to contractors and suppliers	Influence over contractors and suppliers is required
Employees involvement	No involvement	Active involvement

Internal environmental auditing	System audit against the requirements of the standard	System audit, performance audit, compliance audit
Auditor	Independent auditor is advised	Independent auditor is required
Audits	Checks environmental system performance, no frequency required	Checks improvement of environmental performance, during 3 year cycle all areas are verified at least once
External verification	No	Accredited environmental verifiers
Authorities are informed	No obligation	Obligatory – validation of environmental statement
Logo	No	Yes

Source: EC, 2008

2.4 Drivers and Barriers to EMS

There are a number of reasons, why organisations implement EMS and at the same time, there are reasons, for some organisations relevant enough, not to adopt standardized EMS. The following part discusses these reasons – drivers and barriers to EMS. For the simplification, they are divided into several categories.

2.4.1 Environmental Performance

The adoption of EMS presents a wide range of issues. One of them is a question of improved environmental performance, eventually regulatory relief. Many researchers have studied environmental performance in dependence on EMS but the results have not brought clear answers. Firstly, there is a problem with the definition of *environmental performance* and how it is measured. Nawrocka and Parker (2009) explain that improvements in environmental performance are more or less subjective, because standardized EMS, even though they require the establishment of environmental targets, they do not specify the substantive nature of these targets, therefore the aims and ambition level of different organisations could vary significantly. Moreover, some factors, which influence the performance, e.g. corporate culture, legislative environment and the natural environment, are in most cases different for each organisation and the

interpretations of what constitutes improvement are manifold. Therefore, the outcomes of EMS need to be studied in relation to the context.

Dahlström *et al.* (2003) studied the difference between environmental performance of organisations in the United Kingdom with either no externally validated EMS, or ISO 14001, or both ISO 14001 and EMAS. The results among others have shown that (1) externally validated EMS tend to have higher levels of operator performance¹ (OPA 1 – 5), (2) however, the likelihood of incidents, complaints and non-compliance events (OPA 6) is not lower, and (3) externally validated EMS tend to show more rapid rates of improvement in operator performance. Even though the results of this study imply that organisations with certified EMS have achieved better environmental performance, it cannot be generalized to every organisation.

The European Union in cooperation with the UK Environment Agency and other partners launched the REMAS Project in 2001, which studied the benefits of EMS in the context of regulation. After three years of research, the REMAS Project concluded that there is insufficient evidence that organisations with EMS improved their environmental performance (Environment Agency, 2006). This could be explained by the impossibility of setting up one common proof for significantly different sectors or regions.

Although the mentioned studies reached sceptical results in the relation between EMS and environmental performance, they agreed with other authors (e.g. Brehm and Hamilton, 1996) on the key aspect of EMS – *organisations with certified EMS proved to have better knowledge and they are aware of requirements of their regulator, which decreases a probability of ignorance or non-compliance.*

¹ Operator performance is in this case measured by *Operator Performance Appraisal (OPA)*, which is based on evaluation of 7 attributes: 1. recording and use of information, 2. knowledge and implementation of authorization requirements, 3. plant maintenance, 4. management and training, 5. process operation, 6. *incidents, complaints and non-compliance events*, 7. recognized EMS (ISO 14001 or EMAS). OPA attribute 6 is the only one, which reflects outcomes – environmental performance (Environment Agency, 1997) Nowadays, there is a new version of Environmental Protection Operator and Pollution Risk Appraisal (EP OPRA).

2.4.2 *Economic Benefits*

As long as the basic function of the majority of organisations is to generate profit for their stakeholders, every organisation has to consider and include the financial side into decision-making process whether to implement EMS or not.

A correctly implemented and understood EMS can bring various cost-savings to an organisation. One of the main features of EMS is *monitoring of resources* entering the production, therefore implementation of EMS could lead to *more efficient use of inputs*, such as energy, water, raw materials and others. Moreover, the efficient production is reflected in the decreased amount of waste and related costs. Furthermore, detailed monitoring of processes could lead to better utilization of by-products or waste and material recycling (Porter and van der Linde, 1995).

However, it is essential to consider carefully the current situation, possibilities and organisation's expectations of EMS before the implementation itself. As Aragón-Correa and Rubio-López (2007) mentioned in their work, EMS are sometimes incorrectly seen as a universal tool for achieving lower costs, where organisations approach EMS as a "one-size-fits-all" system. For example, organisations with no environmentally qualified personnel have to face difficulties in achieving high environmental standards. In such a case there is a probability of limited financial returns from environmental progress and outsourcing of expertise can even increase this limitation (Aragón-Correa and Rubio-López, 2007).

Next to the direct financial benefits it is necessary to consider also other economic benefits related to adoption of EMS, among them the most significant are an increase in competitiveness and improved public image, which are discussed in the following part.

2.4.3 *Supply Chain Pressure and Public Image*

As organisations have become aware and more sensitive to environmental issues, some of them demand the same standards to be adopted by their suppliers. Therefore, there is a trend either to audit the environmental performance of suppliers or to choose suppliers which have already adopted EMS. From that point of view, EMS could be understood as a

comparative advantage among competitors, because it increases business opportunities resulting in the higher revenues.

Competitiveness could be also enhanced with so-called “*Resource-based view*” approach, where the quantity and quality of available resources and the capacity to optimize them are the major factors influencing the success of an organisation (Iraldo, 2009). And as it was already mentioned, EMS is a suitable tool for monitoring and optimizing resources.

Another benefit that EMS implementation brings to organisations is better public image. An organisation with externally certified EMS shows to its stakeholders that it is aware of the environment problems and seeks to achieve continual improvement. It is also a signal for customers, which are looking for “green” products and services, which could increase the revenues again.

The question which has to be raised is, to which extent organisations are interested in the improvement of environmental performance when they are adopting EMS. According to Milton Friedman (1970), an organisation’s participation in any kind of voluntary mechanism (e.g. corporate social responsibility or EMS) is only *symbolic* and the reason for this behaviour is only to show its goodwill to the public with the aim to increase profitability. Such an attitude has been also observed in the recent research in the USA of the Responsible Care Program (RCP)², where one of the major goals is to convince the general public that the chemical industry is taking all precautionary measures in order to prevent any additional governmental regulation (Givel, 2007) and related legal fees, and to eliminate any negative public image (Evangelinos *et al.*, 2010).

Even though the rationale behind EMS implementation is not only with the intention of improving the environmental performance, many researches (some of them mentioned above) have shown that organisations with externally validated EMS tend to have better

² *Responsible Care Programme* is the self-regulatory scheme in the US chemical industry

environmental performance than those without it (Brehm and Hamilton, 1996; Dahlström *et al.*, 2003; Glachant *et al.*, 2002).

2.5 Situation in the EU

The trend in the environmental regulation for the past decades is the same for the majority of European Union countries – the command-and-control style has been receding into the background and newly opened space has been filling in with self-regulatory mechanisms and the use of flexible voluntary approaches and market-based instruments (Altham, 1999; Glachant *et al.*, 2002), such as environmental performance that goes beyond legal requirements, various agreements and covenants with government or agencies, publication of information about environmental performance, and mainly EMS (Thornton and Beckwith, 2004).

2.5.1 Statistics

Following figures depict the current situation in the European Union in relation to the EMAS standard. The *Figure 2-2* shows the number of registered organisations and sites³ under EMAS in European Union countries. From this figure is evident that the leading country with the highest number of registered organisations is Germany. There are a number of different factors which enhanced the implementation of EMAS. First of all, EMAS was financially supported in all German states, contrary to ISO 14001, in which case subsidies were available only in few states and they were lower than the EMAS. Secondly, some states granted a decrease in reporting obligations and controls and faster licensing procedures (Glachant *et al.*, 2002).

³ Contrary to ISO 14001, EMAS registration is site-specific, which means that an organisation applying for EMAS has to register different sites separately. This procedure ensures that all an organisation's sites meet requirements of EMAS.

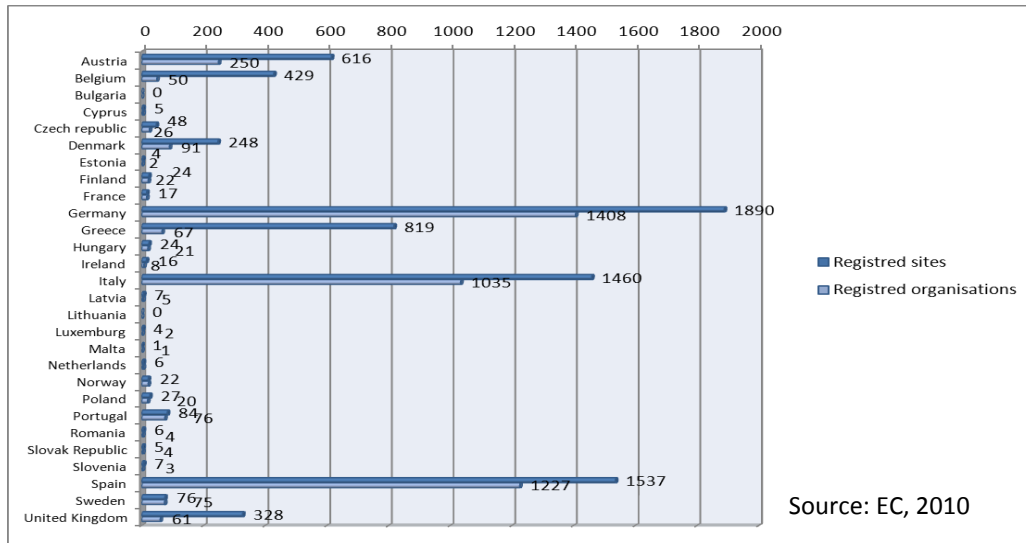


Figure 2-2 No. of EMAS Organisations and sites in selected European countries (6/2010)

The Figure 2-2 also reflects the number of EMAS registered organisations but this time per million inhabitants. In that case it is obvious that the largest number of EMAS registrations in proportion to population occurs in Austria, which followed the example of Germany.

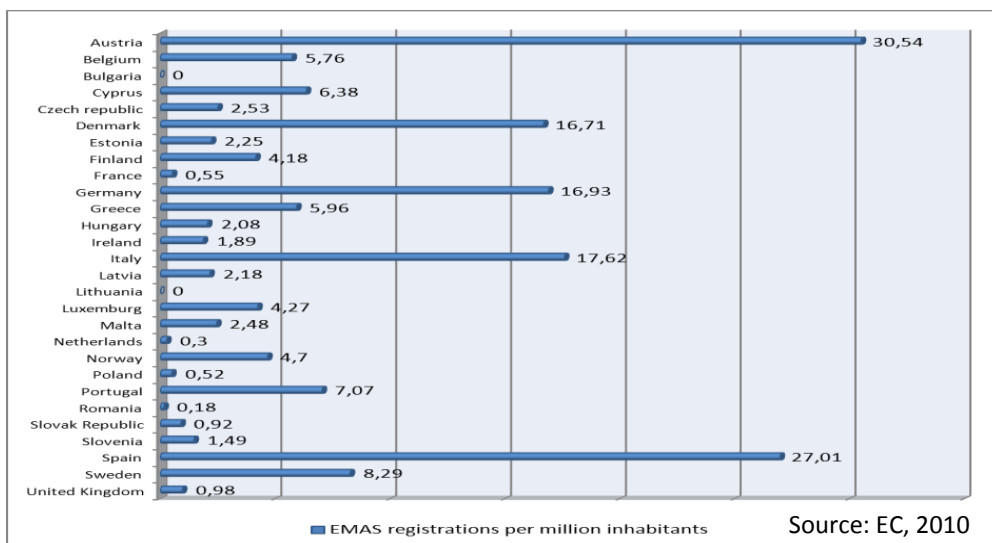
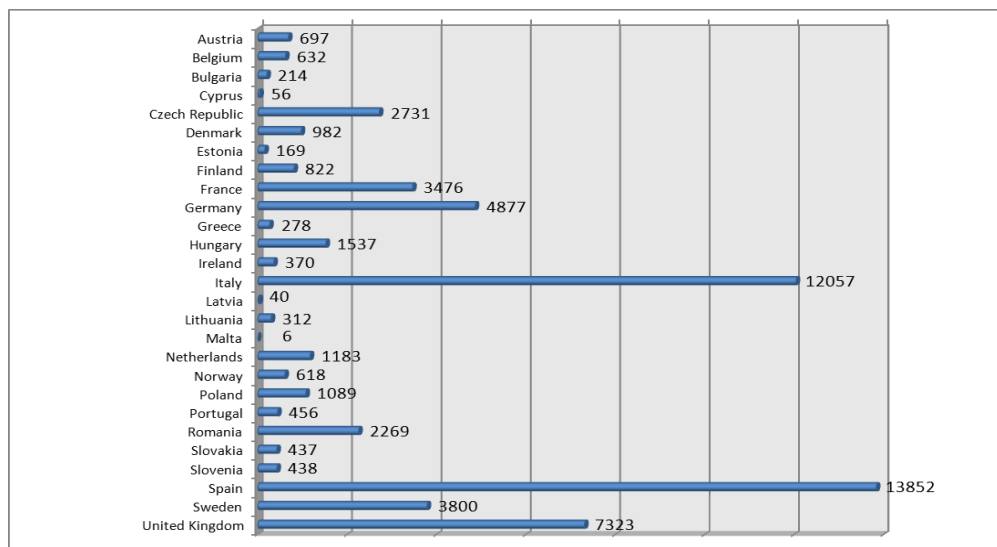


Figure 2-3 EMAS registrations per million inhabitants in selected European countries (6/2010)

What seems to be quite interesting is the case of the United Kingdom, where the participation rate of EMAS is lower in comparison with other countries and mainly in the comparison with ISO 14001 (see Figure 2-3). One of the reasons is that the UK presented

its own environmental management standard BS 7750 in 1992 and when the European Union published EMAS, the UK applied to the European Commission for BS 7750 to be recognized as equivalent to EMAS. Because of German objections the European Commission approved the UK proposal not until 1996. And during this four years gap many organisations took advantage of certification of international standard ISO 14001 (Glachant *et al.*, 2002). Another reason for low participation in EMAS is that the UK government initially did not subsidize EMAS, which changed in 1997, but from total 270 applications only 7 organisations completed the registration process (Eames, 2000).



Source: ISO, 2007

Figure 2-4 No. of ISO 14001 certifications in selected European countries (2007)

In general, the role of EMS and organisations' participation is a part of the national environmental policy and is dependent on it. Although there are some reasons explaining the situation in different countries, to be able to understand various national approaches towards EMS would take much more extensive research, which goes beyond the scope of this study.

2.6 Situation in the Czech Republic

This part of the work addresses the current situation in the Czech Republic. Firstly, there is an introduction to the State Environmental Policy of the Czech Republic, followed by

legal framework and the part dealing with voluntary instruments. The last section concentrates on EMS and statistics.

2.6.1 National Environmental Policy

The State Environmental Policy of the Czech Republic (SEP CR) 2004 – 2010 is for the most part based on requirements arising from various partnerships, in which the Czech Republic is an interested party, and the resulting agreements, namely (ME CR, 2004):

- 6th Environment Action Program of the European Communities,
- OECD Environmental Strategy for the First Decade of the 21st Century,
- European Union Strategy for Sustainable Development,
- Declaration and Implementation Plan (UN World Summit on Sustainable Development, Johannesburg, 2002),
- Declaration of the Ministers of Environment of the region of the UN Economic Commission for Europe from the 5th Pan-European Ministerial Conference: *Environment for Europe*.

Guiding principles of the SEP CR are:

- *“Achieving a further improvement in the quality of the environment as a whole and in the state of its individual components and parts;*
- *Implementing the principles of sustainable development and continue in integration of environmental aspects into sectoral policies;*
- *Improving the economic effectiveness and social acceptability of environmental programs, projects and activities.”* (ME CR, 2004)

The SEP CR next to the guiding principles sets the priority areas aimed at resolving on-going and newly emerging environmental aspects. The priority areas are:

- *“Protection of nature, landscape and biological diversity;*
- *Sustainable use of natural resources, protection of waters and protection against floods, optimisation of material flows and waste management;*
- *Reducing the damage to the environment from human activities, improving environmental standards for the quality of human life;*
- *Protection of the climate system of the Earth and prevention of long-range transport of air pollution.”* (ME CR, 2004)

Even though the state of the environment has improved since the end of communist era, which notably contributed to the strong deterioration by central planning, under-

estimation of scientific knowledge, ignoring of the sustainable principles and mainly complete absence of the legal and institutional framework for the environmental protection, there are still environmental aspects, which need to be resolved or minimized at least. For example: increase in recycling of batteries and their storage, inadequate control of the movement of hazardous waste, high VOC emissions, high emissions of dust microparticulates (PM₁₀), toxic metals, benzene, and PAH, etc. (ME CR, 2004).

2.6.2 Legal Framework

Environmental law is a relatively new branch in the Czech Republic, therefore the majority of environmental regulations are *reactive instruments*, which means that they are dealing with issues that have already arisen. However, a new trend has emerged, which places emphasis on *proactive* side of regulations – prevention.

As was mentioned before, environmental legislation before 1989 was inconsiderable and if there were any regulations, they were not addressing the relevant issues. After 1989, during a rather short period, new laws were issued in those areas that had not been previously regulated (e. g. Act on Protection of Air, Act on Waste, Act on Environmental Impact Assessment) , or laws, which replaced existing regulations (Act on Protection of the Agricultural Land Fund, Act on Protection of Nature and Landscape). In the following years, Czechoslovak and from 1993 Czech environmental law has been shaped by requirements resulting from international conventions (ME CR, 2004).

The milestone for the Czech environmental law was in 1998, when the European Union opened negotiations about accession and during these six years, the Czech Republic had to harmonize environmental legislation with the European Communities. Even though this rapid process significantly contributed to the environmental protection, it also brought negative effects e.g. insufficient interconnection between the legislation in the different areas of environmental protection. Legislation is either overlapping in some areas, or there are gaps. Basically, environmental law is lacking uniformity. According to the ME CR (2004), these problems should have been solved by the new Act on the Environment, which draft should have been finished in 2004. However, to this day, the only valid Act on the Environment is from the year 1992.

2.6.3 *Voluntary instruments*

The SEP CR recognizes the necessity of employment of voluntary instruments as a support to legislation, which could influence behaviour of consumers and producers in favour of environmental protection. Among voluntary instruments belong eco-labelling, green procurement, EMS, cleaner production, various voluntary agreements between the state administration and production associations, life-cycle assessment, eco-design, and reporting (ME CR, 2004).

Currently, there are three voluntary instruments, for which the government have approved national programmes. Namely (ME CR, 2009):

- National Cleaner Production Programme,
- National Eco-labelling Programme,
- National EMAS Programme,

National Cleaner Production Programme

Cleaner Production Programme is a strategy of preventive protection of the environment aimed at eliminating possible sources of environmental degradation at the organisational level. The programme does not address results of environmental pollution (emissions, waste, natural resources depletion), but is looking for solution how to eliminate or minimize this pollution (efficient use of resources, risk minimization) (ME CR, 2009).

In 2008 the project *Partnership for Sustainable Consumption and Production* ended. Its objectives were improving production management, innovation and conscious consumption with the aim of improving environmental protection. The project was promoting sustainable consumption and production (SCP) tools, such as EMS, M&T, cleaner production evaluations, EMA, eco-labelling, designs for sustainable development, and orientation on renewable energy sources and recycled materials (CENIA, 2009).

Although the project encompassed the establishment and implementation of methodologies of potential SCP, only 20 organisations have participated. Therefore, the main benefit of the project was educational training – promotional and educational

materials, tutorials for schools, and the establishment of regional informational centres (ME CR, 2009).

The international project ACT CLEAN (Access to Technology and Know-how in Cleaner Production in Central Europe) was launched in 2008 with the aim of promotion of cleaner production strategy mainly through exchange and better access to relevant information (ME CR, 2009). Partners of the project, next to the Czech Republic, are Slovakia, Poland, Hungary, Austria, Germany, Slovenia, and Italy.

National Eco-labelling Programme

The National Eco-labelling Programme was launched in 1994 and the main idea was *“to create competitive environment in the market among products of comparable qualitative parameters by introducing an additional selection criterion, which includes the specified environmental requirements for the product”* (CENIA, 2006).

The eco-labelling system is divided into 4 steps: (1) establishment of product categories, for which the negative environmental impact can be reduced, (2) development of criteria for individual product categories, which need to be met, (3) award those products that meet the criteria, and (4) verify compliance (CENIA, 2006).

Products that meet all the requirements can use the eco-label trademark, which is subjected to the international standard ISO 14024 – Environmental Labels and Declarations – Type I – Environmental Labelling – Principles and Procedures that ensures the confirmation of the product quality.



Source: CENIA, 2006

The National Eco-labelling Programme was extended by two other labelling types in 2007, respectively Type II Environmental Labelling – “Self-declared Environmental Claim” and Type III Environmental Declarations – “Environmental Product Declaration (EPD)”. Self-declared Environmental Claim is based on a statement that the product in question has specific features, which positively influence impacts on the environment (e. g. toilet paper made from 100 % recycled paper). Even though it is self-declaration, as the name indicates, the reliability is subjected to the international standard ISO 14021

Environmental Labels and Declarations – Self-declared Environmental Claims. On the contrary, EPD is based on measurable data from Life-cycle Analysis (LCA) of a product and the credibility is again ensured by international standard ISO 14040 Environmental Management – Life Cycle Assessment – Principles and Framework. Moreover, the LCA results have to be publicly available and given data has to be verifiable (CENIA, 2007).

Currently, there are more than 350 individual products awarded by Type I environmental label and 15 products with EPD (ME CR, 2009).

2.7 Environmental Management Systems in the Czech Republic

Environmental Management Systems (EMS) belong to voluntary instruments, which are supported by the Czech government as a tool for environmental protection that goes beyond legal requirements. The following part informs about the development and current situation of certified EMS (EMAS and ISO 14001).

2.7.1 Financial Subsidies and Other Forms of EMS Promotion

First projects supporting EMS were solely concentrated on EMAS and they have been realized during years 1997 – 2002. Care for the Environment Programme (*Program péče o životní prostředí*) took place in 1997 and 1998 was dedicated to introducing EMS, in particular EMAS, in the Czech Republic and during that time number of manuals and informative materials have been published. The second Project Phare CZ 9705-05-02 “Support for Implementation of EMAS” was launched in 1999 and during one year 13 companies have adopted EMAS and the manual for SME have been published. In the period of 2000 – 2002 the Project CHEMAS helped 10 companies to implement EMAS (ME CR, 2008).

The European Commission initiated the project EMAS COMPASS+ (EMAS in Local Authorities) in 2006 with the aim to support EMAS adoption at local authorities in countries of EU-10. The priority areas of the project are CO₂ emissions, waste management, green public procurement, and transportation. Two Czech towns – Chrudim and Vsetín - joined the project, however the latter terminated its participation in the

project in 2007. In 2010 Chrudim has become the first town in the Czech Republic registered in EMAS (ME CR, 2009).

The first project supporting both EMS standards EMAS and ISO 14001 focusing on SME was launched in 2006 – Project TRH. This project offered grants for organisations that have achieved EMAS registration or ISO 14001 certification. The financial support covered 50 % of implementation costs, in the case of EMAS the maximum was CZK 200 thousands and CZK 300 thousands for ISO 14001. The project was concluded at the end of the year 2006. However, the CERTIFIKACE Programme, which took place in 2007, offered the same conditions for financial subsidies (BusinessInfo, 2006).

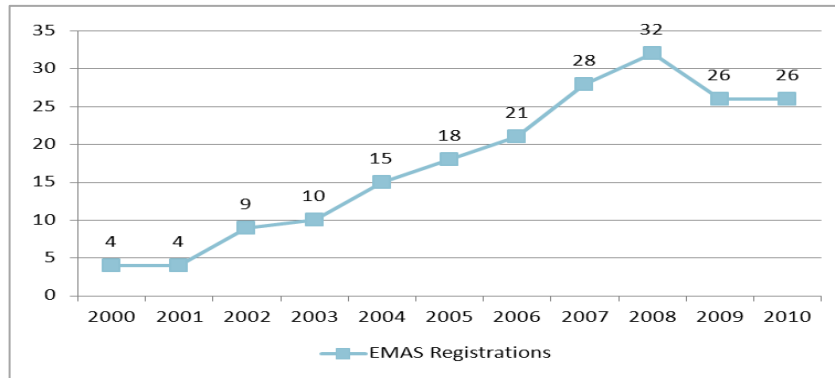
Currently, there is no programme dealing solely with promoting or financing EMS. However an SME could apply for a grant from the Operational Programme Enterprise and Innovation (OPEI) programme financed by European Regional Development Fund, which has been running since 2007 and will be implemented until 2013. The level of grants is assessed according to individual cases (ME CR, 2009).

2.7.2 Development of EMS

The comparison of the numbers of EMAS registrations and ISO 14001 certifications in the Czech Republic results in clear superiority of ISO 14001. That means the Czech Republic follows the same pattern as the rest of Europe.

Figure 2-5 illustrates development of EMAS registrations. From 2000 to 2006 the development is moderate, almost constant. Nevertheless, during years 2006 to 2008, the number of organisations with EMAS has grown more rapidly.

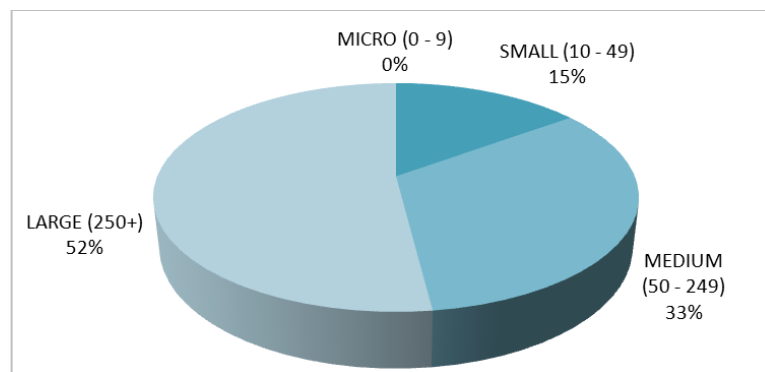
One of the possible explanations is that during these years, organisations had the opportunity to draw financial support from on-going projects specialized in EMS. The last two years reflects stagnation in development, which could be connected to the recent financial crisis and the unwillingness of companies to spend resources, if they are not necessarily needed.



Source: EUROSTAT, 2010

Figure 2-5 Development of EMAS registration in the Czech Republic

Figure 2-6 shows share of EMAS registered organisations according to size. More than 50 % of all registered companies belong to large organisations (with more than 250 employees).



Source: ME CR, 2009

Figure 2-6 Czech organisations with EMAS according to the size (31.12.2008)

Large companies have better financial background, therefore the implementation costs of EMS represents a lower percentage of profit and thereby EMS are becoming more accessible. Moreover, large companies tend to operate in foreign markets, especially European market in the case of the Czech Republic, where their customers could demand verified EMS. On the other hand for companies with less than 10 employees the benefits related to EMS do not surpass the costs. SME are together accountable for nearly a half of the registrations. Although, they do not reach profit as high as large organisations, SME could take advantage of governmental grants. The reason, why majority of subsidies are

distributed among SME is due to their position in the Czech Republic. SME are responsible for 61.52 % of employment and their share on GDP is around 35 % (BusinessInfo, 2008).

EMS according to ISO 14001 standard is a dominating EMS in the Czech Republic as *Figure 2-7* indicates.

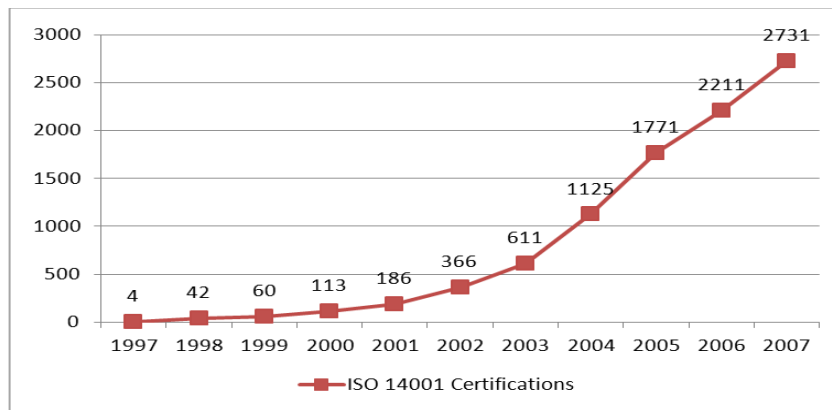


Figure 2-7 No. of ISO 14001 certifications in the Czech Republic

There are many reasons why organisations prefer ISO 14001 to EMAS, nevertheless the majority of them is related to the nature of ISO 14001 and thus can be applied not only in the Czech Republic, among them:

- before EMAS III, which came into force 1. 1. 2010, only ISO 14001 was internationally recognized;
- ISO 14001 is considered as a stepping stone to EMAS, therefore organisations firstly adopt ISO 14001 and then consider implementation of EMAS;
- ISO 14001 is in many respects not as strict as EMAS (see Chapter 2.3 Comparison of ISO 14001 and EMAS).

2.7.3 Cost-Benefit Analysis – Case Study

Implementation costs of EMS could significantly vary according to individual cases and for many organisations it is difficult to identify them. Generally, costs related to the implementation and adoption of EMS range between CZK 250 thousands to 750 thousands. In the case of SME, costs vary from CZK 100 thousands to 500 thousands,

however one third of SME stated that cost did not exceed CZK 250 thousands (Růžička, 2007). Majority of costs are related to:

- consultant services,
- employees' training,
- certification audit,
- initial environmental review (Růžička, 2007).

Case study of Nová Huť, joint-stock company – Rolling-mill (Ostrava)

(source: Zbránková, 2009)

Nová Huť, joint-stock company certified its EMS according to ISO 14001 standard in 1997.

Related costs were:

• Introductory training of top management	CZK 91,000
• Employees' training (middle management)	CZK 22,500
• EMS auditors' training	CZK 15,000
• Consultant services	CZK 525,000
• Certification audit	CZK 273,000

TOTAL **CZK 926,500**

Benefits of EMS after one year from implementation:

- Energy savings of 21,076 MWh/year
- Material savings of steel 6,256 t/year
- Lower emissions -SO₂ by 38 % (303 t/year)
NO_x by 5 % (22 t/year)
CO by 56 % (350 t/year)
- Improvements in waste separation
- **Total amount of savings (energy and material)** **CZK 47 mil./year**

This case study illustrates benefits related to EMS adoption. Initial implementation costs are fractional in comparison to the total savings after one year from realization. Nová Huť, joint-stock company is classified as a large company according to a number of employees, hence the training costs are higher than it would be in case of SME. On the other hand, the cost calculation shows that not all companies can afford such expenditures.

3 RESEARCH METHODOLOGY

This chapter presents data collection methods used in the study. Section 3.1 deals with research framework and questionnaire structure. Section 3.2 describes data analysis.

3.1 Research Framework

3.1.1 Purpose of the Study

The situation in the Czech Republic regarding EMS, as described in the Chapter 2, shows that the number of organisations with implemented EMS lags behind in comparison with western countries of the EU. Therefore, there is a need to uncover the reasons leading to frequent EMS rejection.

3.1.2 Questionnaire Structure

The questionnaire used for the data collection (see Appendix I) has been structured as follows. The first part introduces to respondent the purpose of the questionnaire and briefly describes the EMS concept.

The second part is questionnaire itself, where the first section is dealing with the classification information about respondent, such as industry sector, number of employees (a size of organisation), and gross revenue. The second section of questionnaire is addressing EMS. The focus is on familiarity with EMS concept, experience in other management systems, consideration of EMS implementation, and potentially preferred EMS.

The last question focuses on the reasons, based on the findings from the literature review, leading to EMS rejection. Respondents were asked to evaluate 10 reasons on the scale from 1 to 5 according to their influence on decision-making process in relation to refusal of EMS.

3.1.3 Data Collection Method

Questionnaire survey as a method for data collection was chosen because it is less time-consuming than the face-to-face interview, less intrusive than phone interview, and provides respondents' anonymity. It also provides possibility of standardized interview of all respondents (Brace, 2008).

The majority questions contained in the questionnaire is closed questions with predetermined set of answers. The exceptions are in cases, where a question offers the option "other" and respondents are asked to specify their answer. Closed questions have the advantage of straightforward analysis and the answering is not as much time-demanding as in the case of open questions (Gillham, 2004).

3.1.4 Respondents Sample

The sample of respondents is composed by randomly selected companies, with no criteria of industry or size of organisation. However, all respondents have to satisfy two conditions:

- I. operation on the Czech market,
- II. no externally certified EMS.

The questionnaire has been distributed among 67 companies via e-mail and from them, 35 questionnaires was filled in and retrieved. That represents response rate of 52 %.

3.2 Data Analysis

Raw data from questionnaire survey were processed in MS Office Excel (see Appendix II). Numerical data coding was used for simplification of data processing and analysis. The following table summarizes codes used for each question.

Table 3-1 Coding system for data analysis

I. PART – GENERAL INFORMATION					
1. Industry					
1	Automotive/Aircraft	2	Electrical	3	Chemical
4	Glass	5	Food processing	6	Building
7	Engineering	8	Textile	9	Metal and mineral mining
10	Tourism	11	Financial services	12	Consultancy
13	Other				
2. Employees					
1	Less than 10	2	11 – 50	3	51- 250
		4	More than 251		
3. Revenue					
1	Less than 10 mil.	2	10 mil. – 50 mil.	3	51 mil. – 100 mil.
		4	More than 101 mil.		
4. Position					
1	CEO/Top manager	2	Sales manager	3	Administrative worker
		4	Other		
II. PART – ENVIRONMENTAL MANAGEMENT SYSTEMS					
1. EMS Concept					
1	Yes	2	Yes, but only partially	3	No
2. Experience					
1	Quality management systems		2	Health and safety management system	
3	Energy management systems		4	Other	5
				None	
6	Both quality management systems and Health and safety management system				
3. Implementation					
1	Yes	2	No	3	Not decided
3.1 Preferred EMS					
1	ISO 14001	2	EMAS	3	Non-certified EMS
		4	Not sure		
3.2 Reasoning					
I.	Cost	II.	Qualified workers	III.	Administration
IV.	No pressure	V.	No env. impacts	VI.	Publication of env. Impacts
VII.	EMS/lower expenditures	VIII.	EMS/env. performance	IX.	Non-compatibility
X.	Insufficient grants	XI.	Other		

4 RESULTS

This chapter presents results of a questionnaire based survey. In order to provide a comprehensible view, results are organized into several sections, from general to more specific and the last two sections are dealing with the knowledge of EMS and consideration of EMS implementation.

4.1 General Results

The outcome from all questionnaires without any dependencies is considered as a general result without any dependencies. That means the average of all answers. From this point of view the most significant influence on negative approach towards EMS is expected growth in administrative work. The second most influencing factor is the cost of implementation and maintenance of EMS and in the third place are insufficient governmental grants (see *Figure 4-1*). The least influencing factor is publication of the environmental performance.

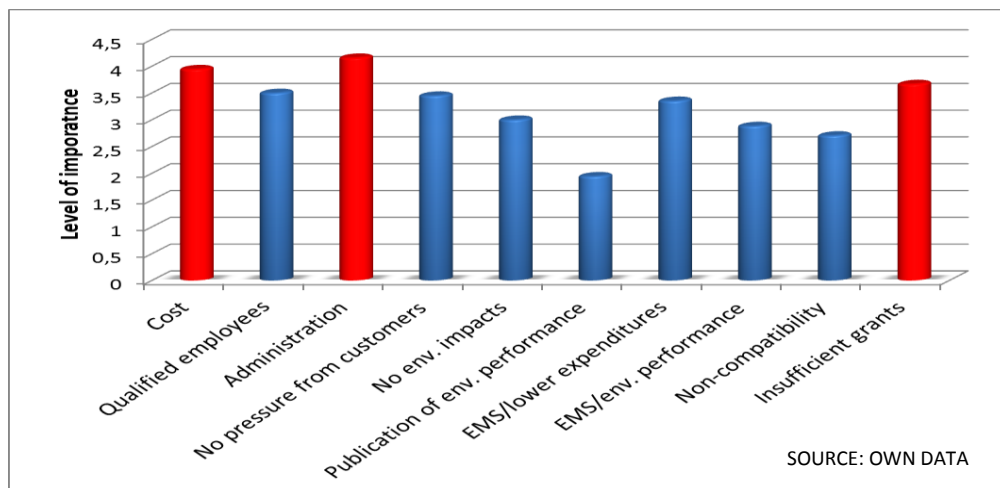


Figure 4-1 Importance of different reasons behind organisations' negative approach towards EMS – general results

4.2 Reasoning According to the Size of Organisations

The more specific view on negative approach towards EMS provides *Figure 4-2*, which illustrates reasoning according to the size of organisations, where size is dependent on the number of employees⁴.

For micro organisations the biggest barrier represents expected increase in administrative work, on the other hand, the least significant factor is the need for publication of environmental performance.

Small organisations perceive the implementation and maintenance costs of EMS together with growth in administrative work as the most important reasons for EMS rejection. Publication of environmental performance and possible non-compatibility of EMS with already implemented management systems is not understood as a barrier by small organisations.

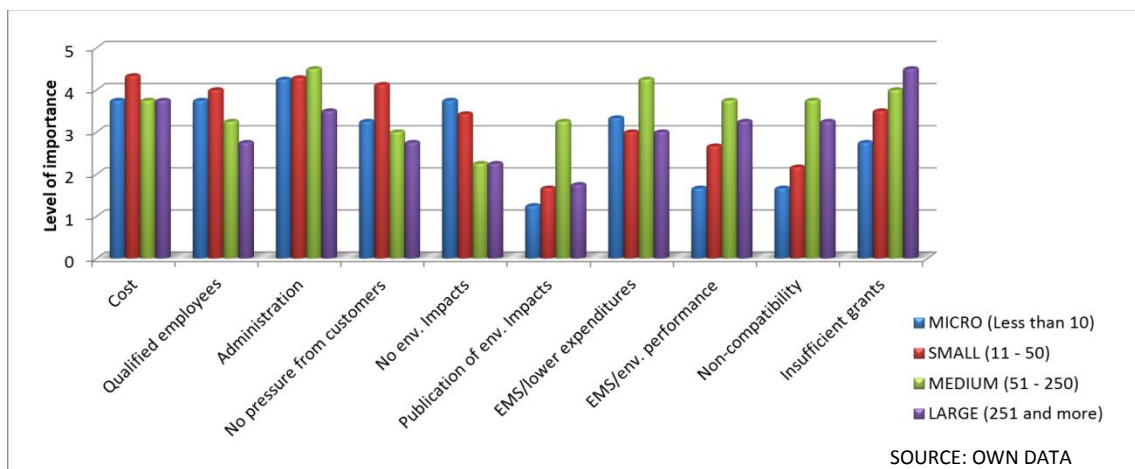


Figure 4-2 Importance of different reasons behind organisations' negative approach towards EMS in dependence on the size of organisations

For medium-sized organisations the biggest barrier is increase in administrative work, followed by unconvincing impacts of EMS on lowering of operational expenditures. On

⁴ Micro organisations: less than 10 employees
Small organisations: 11 – 50 employees
Medium organisations: 51 – 250 employees
Large organisations: 251 and more employees

the other hand, organisations' persuasion that their impact on the environment is irrelevant does not have significant influence on decision-making about EMS. The second least affecting factor is that organisations do not feel pressure from customers.

Large organisations see insufficient grants as the most relevant reason for rejection of EMS, which is related to EMS implementation and maintenance costs, which is the second most influential factor. The least important aspect of EMS is the need for publication of environmental aspects.

4.3 Reasoning According to the Industry

This part is focusing on specific industries and their reasons for negative approach towards EMS. The three industries that are presented here, namely glass industry, engineering and textile industry, are those, which were the most frequently represented in the survey and all three of them are also traditional industries in the Czech Republic.

Organisations in the glass industry do not consider as a relevant reason for rejection of EMS the fact that their activities have no impact on the environment. Publication of environmental performance is not understood as a barrier as it is visible from *Figure 4-3*. On the other side, three factors are perceived as very important. These are implementation and maintenance costs, insufficient governmental grants and non-compatibility of EMS with other already implemented management systems.

The engineering industry apprehends the non-compatibility of EMS with other management systems together with the need of publication of environmental performance as the least significant reason for non-acceptance of EMS. However, the fact that engineering companies do not experience the pressure for regulating their activities by EMS from customers is the most relevant factor in decision-making process regarding the implementation of EMS.

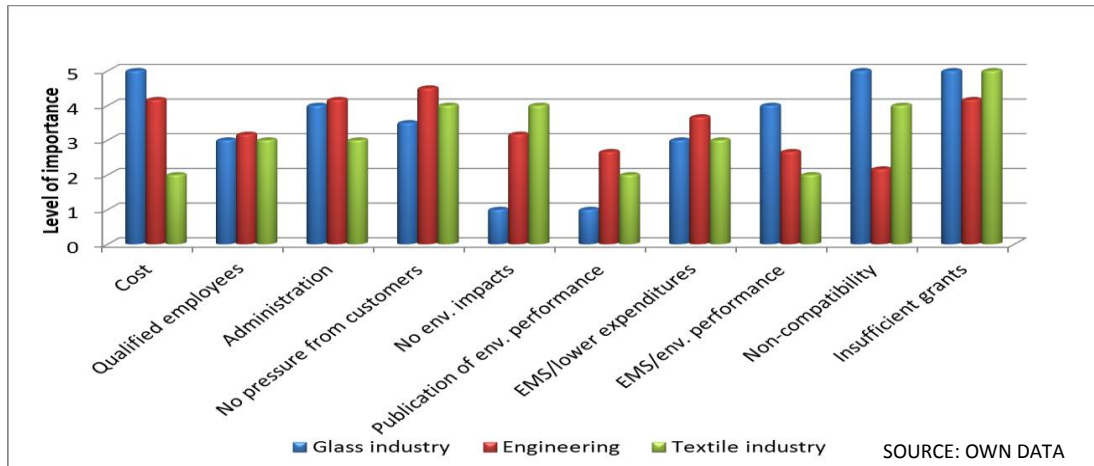


Figure 4-3 Importance of different reasons behind organisations' negative approach towards EMS in dependence on the industry

Companies in the textile industry see insufficient grants as the most significant barrier towards EMS, however in contradiction they have ranked the implementation and maintenance cost as the least influencing factor together with the need for publication of environmental performance and the indistinct relationship between EMS and environmental performance.

4.4 Reasoning in Dependence on the Size and Industry

The detailed analysis of reasons behind negative approach towards EMS shows that large companies of the three different industries – glass industry, engineering and textile industry have the same most relevant factor for rejection of EMS – insufficient governmental grants (see Figure 4-4). Moreover, companies in the glass industry and engineering perceive that the cost of implementation and maintenance of EMS imposes the most important barriers to EMS. Large companies in the glass industry have identified the factor of non-compatibility, next to the implementation cost and insufficient grants, as the most influencing aspect of EMS refusal.

The least critical factors behind decision-making process significantly vary according to the industry. Companies in the glass industry do not consider the fact that their activities have no impact on the environment as a relevant reason in contrast with the textile industry, in which this factor ranks as the second most important.

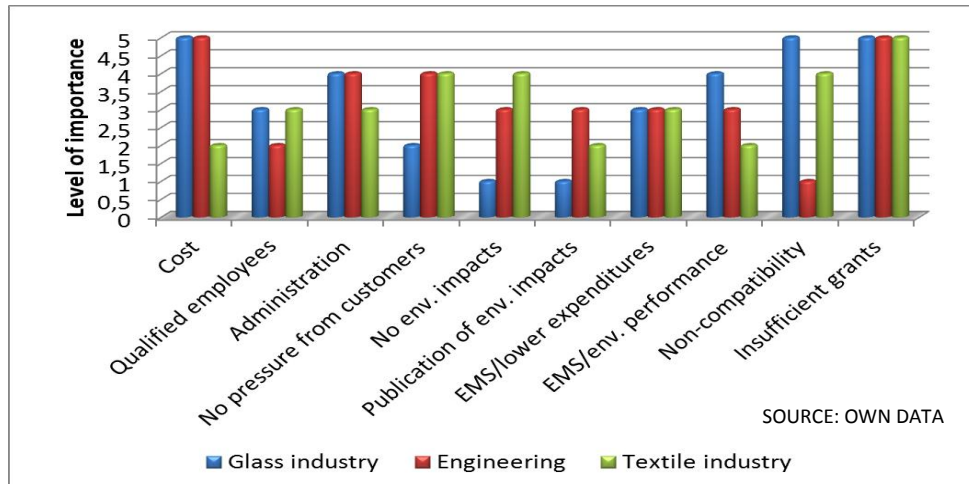


Figure 4-4 Importance of different reasons behind large organisations' negative approach towards EMS in dependence on the industry

Large companies of the engineering industry consider as the least significant barriers possible non-compatibility of EMS with already implemented management systems along with the need for qualified employees.

Large organisations operating in textile industry are the only one, which perceive the implementation and maintenance cost of EMS as an irrelevant reason for EMS rejection. Moreover, these companies also identified the need for publication of environmental performance and the unclear relationship between EMS implementation and improvements in environmental performance as the least influencing factors.

Figure 4-5 illustrates the rationale of companies in engineering industry in dependence on the size⁵. Small companies indicate as the most important reason for rejection of EMS the fact that they do not experience any pressure from their customers to regulate their activities according to EMS. On the other hand, the publication of environmental performance is the least influencing factor.

⁵ Size is dependent on the number of employees.

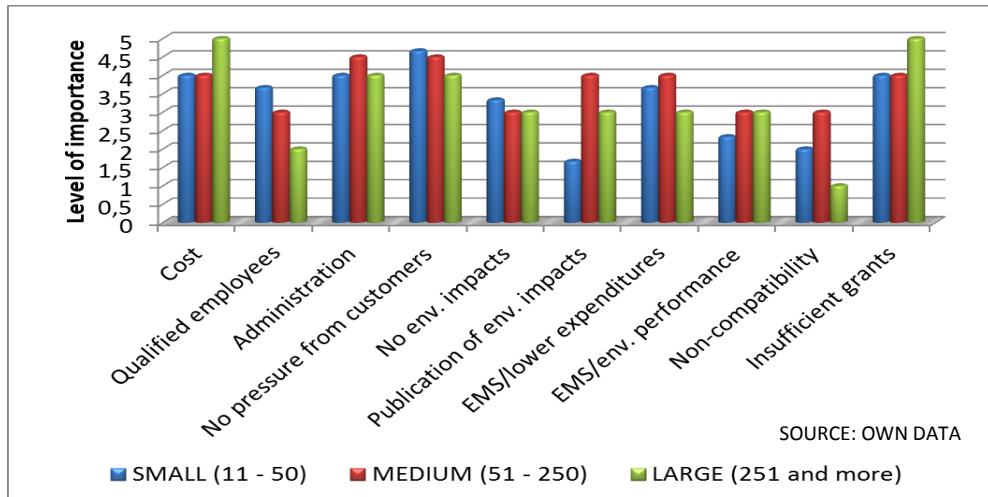


Figure 4-5 Engineering industry - Importance of different reasons behind organisations' negative approach towards EMS in dependence on the size

Medium-sized organisations of engineering industry have also identified the fact that they do not feel any pressure from their customers as the most relevant for EMS rejection together with expected increase in administrative work. Even though medium-sized organisations have not indicate any of the given reasons as the least influencing, which means that none of factors ranked under 3, four reasons have come to the same score of 3, namely the need for qualified employees, apprehension of environmental impacts, questionable influence of EMS implementation on environmental performance, and non-compatibility with other management systems.

Large organisations operating in engineering industry perceive as the main barriers to EMS implementation of the initial and maintenance cost and also insufficient governmental subsidies. On the other side of the spectrum the least influential factors are possible non-compatibility with other management systems and the need for qualified employees.

4.5 Familiarity with EMS concept and Other Management Systems

Next to the reasoning behind the negative approach towards EMS, the survey also explored a general knowledge of EMS. The results show that the research sample is almost evenly distributed among all three possible answers (see Figure 4-6). However, slightly predominating share of 35 % has the answer indicating no knowledge of EMS

concept. The same percentage shares (32 %) have answers “yes” and “yes, but only partially”.

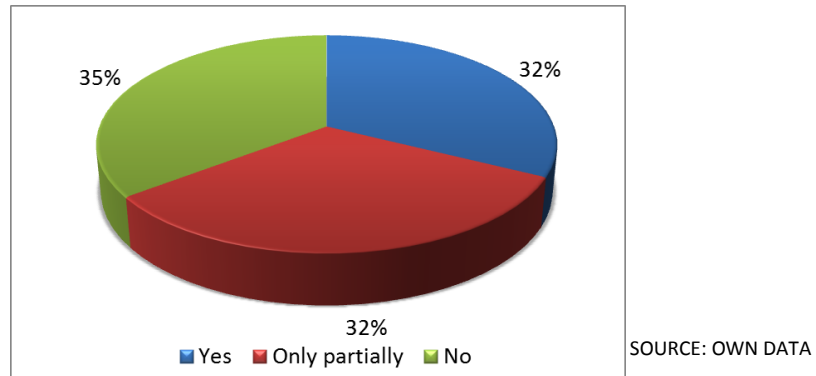


Figure 4-6 Familiarity of organisations with EMS concept

The only industries, from which organisations proved to have complete knowledge of EMS are the automotive and aircraft industries. Respondents representing engineering industry showed that over 70 % have basic knowledge of EMS concept.

Another area, which the survey studied was companies’ experience with other management systems next to EMS. The results (see *Figure 4-7*) indicate that only 12 % of respondents do not have any experience with any kind of management systems. On the other hand, the majority of 56 % has experience with quality management systems. 3 % of companies answered that the only experience they have is in health and safety management systems. Moreover, 24 % of respondents stated that they have experience in both quality and health and safety management systems.

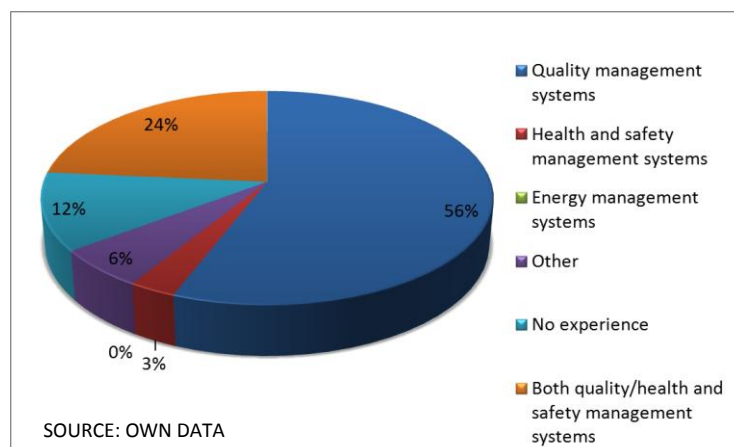


Figure 4-7 Organisations' experience with other management systems

None of respondents has an experience in energy management systems. 6 % of organisations have implemented other management systems, usually related to specific activities, such as Hazard Analysis Critical Control Point (HACCP) in the food industry and Russian national technical standard GOST R in glass industry.

Organisations, which have the experience in both quality and health and safety management systems are mainly from the engineering industry, production of health and sanitary equipment and chemical industry. The size of organisation, as shown by the survey, is not decisive factor in that case, because companies that have experienced both management systems range from small to large organisations and none of them is prevailing.

4.6 Consideration of EMS Implementation

Figure 4-8 represents the current situation regarding the consideration of EMS implementation. 73 % of all respondents do not intend to adopt any kind of EMS and 6 % not decided whether to implement EMS or not. The remaining 21 % of responding organisations are considering adopting EMS.

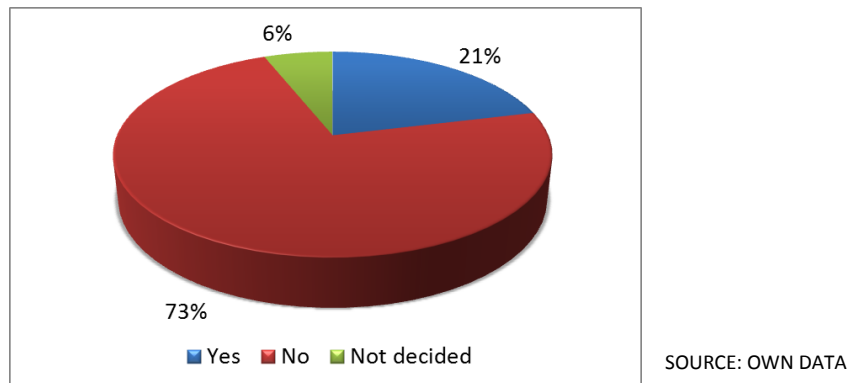


Figure 4-8 Organisations' consideration of EMS implementation

36 % of organisations, which are considering implementation of EMS, would prefer ISO 14001 and the remaining 64 % is not sure about which EMS they would give priority to. None of respondents considering implementation would choose EMAS, neither informal EMS.

5 DISCUSSION

This chapter discusses results presented in the previous Chapter 4 and compares them with the findings of the literature review. The chapter is divided into similar sections as the Chapter 4, however in this case the emphasis is placed on the factors, which caused diversity of the reasoning and on the rationale, which stands behind these reasoning. Sections that follow are:

- 5.1 Size of Organisations
- 5.2 Industry
- 5.3 EMS concept

The limitations of the study are presented at the end of discussion.

5.1 Size of Organisations

Except of large companies, the size of organisation seems to have rather low influence on the reasoning behind negative approach towards EMS implementation.

5.1.1 Administrative Work

Organisations of almost all sizes (except large companies), consider the increase in administrative work as the biggest barrier to EMS implementation. Administration work related to the EMS in the form of the establishment of environmental policy, environmental review, operational control, targets and objectives, environmental programme, division of responsibilities, internal and external communication and majority of these in the written form signify time-consuming burden for organisations. And together with the lack of pressure from customers' side for managing organisation's activities in accordance to EMS, companies are not willing to overcome this barrier.

5.1.2 Implementation and maintenance cost

The implementation and maintenance costs of EMS also are another significant factors for all companies no matter the size. On the contrary to what Aragón-Correa and Rubio-López (2007) stated in their work, respectively that many organisations approach EMS as a universal tool for lowering operational cost and they do not include cost-benefit analysis and suitability of EMS into their decision-making process, the Czech companies perceive the costs of EMS as so substantial that in many cases these costs prevent them from the adoption.

5.1.3 Insufficient Grants

Even though the implementation costs of EMS have been evaluated as the critical factor by all organisations in disregard of their size, the significance of insufficient governmental grants and subsidies graduates according to the size of organisation – the larger an organisation is, the more important factor it is (for illustration see *Figure 4-2*). This phenomenon could be explained by governmental strategy for administration and provision of grants. All projects supporting the implementation of EMS are intended for SME. Moreover, there are a number of other projects supporting new organisations entering the market for the first time (BusinessInfo, 2008).

5.1.4 Need for qualified employees

The importance of need for qualified employees as a factor in decision-making process in relation to EMS implementation decreases as the size of organisations grows. This is caused by the fact that for smaller companies the ratio of cost spent on additional employee to profit is higher than for large companies on the assumption that small companies are generating lower profit margins than larger companies. Organisations in need of qualified employees have also the option of training of current employees or outsourcing. However, in that case it is also valid that the ratio of cost to profit is higher for smaller organisations.

5.1.5 *Publication of Environmental Performance*

Publication of environmental performance under EMS is perceived as an irrelevant factor in EMS rejection. Arimura *et al.* (2008) explain that publishing of environmental reports firstly enhances communication with stakeholders and secondly, if an organisation reports improvements in environmental performance it can positively affect the image. This can also have positive impact on competitiveness, for example consumers may purchase organisation's products or improvements in environmental performance may attract investors. Therefore, the publication of environmental performance is seen as a drive to EMS, rather than barrier.

Only medium-sized organisations marked this aspect of EMS as a relatively important compared to other organisations. This is related to unconvincing results of EMS regarding environmental performance, which medium-sized organisations identified as a significant factor. In other words, medium-sized organisations do not believe that EMS can improve their environmental performance and thus they rather avoid publication of EMS. And structure of the Czech market, where the majority of supply side is represented by medium-sized organisations, supports this behaviour because companies do not want to lose their competitiveness due to unfavourable environmental performance, which has to be published in accordance to EMS requirements.

5.1.6 *Non-compatibility with Other Management Systems*

The reason of potential non-compatibility of EMS with already implemented systems gathers importance with the growing size of organisations. The possible explanation is that the larger an organisation is the more implemented management systems it has.

Nevertheless, potential non-compatibility of EMS with already implemented systems is perceived rather as a less important reason for rejection of EMS in relation to the size of organisation.

5.2 Industry

Industry, in which is an organisation operating notably influences the reasoning behind negative approach towards EMS implementation. As in the Chapter 4, also this section is focusing on three industrial branches, which were the most frequent in the survey and which are traditional industries in the Czech Republic. Three examined industrial branches are:

- glass industry,
- engineering industry,
- textile industry.

5.2.1 Glass Industry

Companies operating in the glass industry indicated as the most relevant factors preventing them from EMS implementation costs of EMS implementation and maintenance, insufficient grants and possible non-compatibility with already implemented management standards.

The majority of companies responding in the survey were large companies. Therefore, their attitude has the same pattern as was described above. Perception of implementation and maintenance cost as a barrier is connected to the high importance of insufficient grants, which are mainly intended for SME.

Potential non-compatibility of EMS with already implemented management systems is also understood as a considerable reason for negative approach towards EMS. This barrier arises from the nature of industry itself. The glass industry is specific for a number of national and international technical norms and standards (Glass Institute, 2009). Thus, organisations are not willing to risk possible non-compatibility.

Moreover, companies do not experience any significant pressure from customers' side to manage their activities according to EMS, which considerably contributes to overall reluctance against EMS implementation.

Companies' beliefs that they have no impact on the environment are perceived as the least significant reasons for EMS rejection. This reflects that companies are aware that their business activities have impact on the environment, and especially in the case of the glass industry, which uses a large quantity of non-renewable resources for the production, which is also energy-demanding.

Analysis of data obtained from the questionnaire survey disclosed relationship between the perception of organisation's environmental impacts and imposed requirements on EMS related to improvements in environmental performance. Those companies, which marked the perception of no environmental impact as a less influencing reason for the EMS rejection, have indicated that unconvincing effect of EMS on improvements in environmental performance is important factor for EMS rejection. In other words, organisations that are aware that their activities have impact on the environment expect that EMS will improve their performance.

The similar behaviour was observed not only in the case of companies operating in the glass industry but also in other industries with no dependencies on the size of organisation.

The fact that publication of environmental performance is not understood as a barrier towards EMS reflects that organisations are not afraid of competition in the case of reporting unfavourable results. Moreover, in the case when improvements are reported, it can attract investments and positively influence their public image. Additionally, the glass industry in the Czech Republic is highly specialized production with nearly no competition, thus even though an organisation reports unfavourable results, customers have not many choices where else to go.

5.2.2 Engineering Industry

The possible non-compatibility of EMS with other already implemented management systems is for companies operating in the engineering industry the least relevant factor for EMS rejection. The survey shows that nearly 90 % of respondents from engineering industry have experience with quality management systems and because the most

widespread quality management system in the Czech Republic is international standards belonging to the family of ISO 9000, they do not apprehend the potential non-compatibility, mainly in the case of ISO 14001, which is preferred to EMAS according to the survey.

The largest barriers represent the implementation and maintenance cost of EMS and insufficient grants. This is largely caused by the structure of the respondents from engineering industry where the majority of them are large companies, which do not have as many possibilities to obtain grants as SME.

Another significantly influencing factor is the fact that companies do not experience the pressure from customers for regulating their activities according to EMS standards, thus they have nearly no motivation to EMS adoption. And together with rather strong confidence that their business activities do not have impact on the environment their attitude towards EMS is negative.

As it was mentioned before, the perception of environmental impacts is strongly related to impact of EMS on environmental performance, which also corresponds to the behaviour of companies in engineering industry. Since they are convinced that their activities have minimal or no impact on the environment, their decision-making is less influenced by ambiguous results of EMS regarding improvements in environmental performance.

5.2.3 Textile industry

Organisations operating in the textile industry perceive the implementation and maintenance cost of EMS the least influencing factor for EMS rejection. This can be caused by the fact that all responding companies are large organisations (251 and more employees) and their annual revenues are above CZK 100 mil. Therefore, the EMS implementation costs compared to revenues represents smaller amount.

However, the largest barriers are understood to be insufficient governmental grants, which again are connected to the size of organisations. Since all responding companies are large organisations and their access to grants and subsidies is therefore limited.

The perception of no environmental impacts ranked highest in comparison with other industries and thus the influence of inconvincible EMS impacts on environmental performance is the lowest – it does not represent a barrier towards EMS implementation. This observation confirms the theory about interconnection of perception of environmental impacts and demanded requirements of EMS in terms of improvements in environmental performance.

Moreover, the motivation to EMS adoption is lowered due to the experiencing no pressure from customers' side to regulate their everyday activities according to requirements of EMS standard.

5.3 EMS Concept

5.3.1 Familiarity with EMS Concept

The results from the section exploring familiarity with EMS concept have shown that 35 % of all respondents do not have any knowledge of EMS. This reflects insufficient promotion and spread of information mainly from the governmental side. Even though, there were some governmental projects aiming at education and promotion of EMS (ME CR, 2008), they were realized at the end of 90's when the environment and its protection were not in the centre of discussion as it is nowadays.

5.3.2 Experience with Other Management Systems

The survey showed that 80 % of all respondents have experience in quality management systems, such as the family of standards ISO 9000, which are the most widespread quality management systems in the Czech Republic. They are well-established since the first version of ISO 9000 was published in 1987 (ISO, 2007). The popularity of ISO 9000 is enhanced due to its direct relation to revenues and better public image.

Nearly 30 % of respondents have experience in health and safety management systems, which are also well-established and the requirements of these systems are usually closely connected to the legal requirements.

None of respondents experienced the energy management systems, which are to some degree related to EMS. Their aim is to improve energy efficiency and to achieve continual improvement through the set of required procedures and methods (Andreassi *et al.*, 2009). Even though, they are aimed at energy-savings followed by cost-savings, which is sensitive issue for all companies, respondents are not familiar with such systems. There is no promotion of energy management systems in the Czech Republic from the governmental side, which would provide educational training to organisations.

5.3.3 Consideration of EMS Implementation

Only 21 % of all responding organisations are considering implementation of EMS. This supports the fact that Czech companies have negative approach towards EMS, and the rationale behind this attitude is the major subject of this study.

More than one third of companies, which are considering adoption of EMS, prefer ISO 14001 to EMAS. Although for both EMS standards are offered grants at the same level and under the same conditions, ISO 14001 is the most widespread EMS standard in the Czech Republic (ISO, 2007). There are a number of reasons, for example the characteristic features, which are less strict than EMAS; it is published by International Organization for Standardization, which standards are internationally recognized and many organisations in the Czech Republic have experience in ISO 9000 quality management systems, which provides to the some degree guarantee of compatibility with ISO 14001.

5.4 Limitations of the Study

One of the main barriers that the study had to face was respondents' insufficient knowledge of EMS concept, which significantly influenced and limited the scope of the questionnaire survey. It has considerably affected the depth to which the questionnaire went, because included questions had to be simple enough for respondents to understand them and at the same time, the questionnaire had to deliver the desired data.

The time-constraint has mainly limited the methodology of primary data gathering. If there would be more time for data gathering, the more suitable way would be for

example face-to-face interview. In that case, even if respondents do not have sufficient knowledge, the interviewer can present and explain problems directly and thus get more comprehensive and detailed answers.

6 CONCLUSION

The main aims of the study were to explore participation of Czech companies in Environmental Management Systems (EMS) and to identify reasoning behind their decision-making process in relation to the negative approach towards EMS. Next to that, the study also aimed at finding any recommendations, which would help to improve the situation in the Czech Republic.

Even though the Czech Republic ranked in the top ten EU countries according to the number of ISO 14001 certifications countries and on 11th place according to the number of EMAS registrations, the overall number of organisations with externally validated EMS still lags behind in comparison with western countries of the EU. Moreover, the findings of the questionnaire survey demonstrated that more than a third of all respondents do not have any knowledge of the EMS concept and none of them have experienced energy management systems, which are closely related to EMS and share the same goal of improving environmental performance.

The most influencing factors in companies' decision-making process related to EMS refusal are the perceived cost of EMS implementation and maintenance, insufficient governmental grants and expected increase in administrative work. The least affecting factor is obligation to publish environmental performance. However, there were some differences in reasoning among the researched industries, the barriers to EMS implementation are the same no matter the size of organisation or industry, in which is operating.

Although the perception of companies' impacts on the environment and experienced pressure from customers' side were identified as indirect factors influencing organisation's decisions, they are the most important factors affecting the motivation to EMS implementation.

To improve the situation in the Czech Republic, it is necessary firstly, to promote EMS implementation, which is to the large extent the responsibility of government. Secondly,

to enhance EMS adoption through governmental incentives, such as subsidies, grants or guarantee of regulatory relief.

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APPENDIX I QUESTIONNAIRE

ENVIRONMENTAL MANAGEMENT SYSTEMS

QUESTIONNAIRE SURVEY

To whom it may concern

I am a student of CULS (Czech Republic) and at the same time of Cranfield University, United Kingdom, my specialization is in Environmental Management for Business. I would like to ask you to fill in the enclosed questionnaire regarding Environmental Management Systems (EMS). This survey is completely anonymous and overall results will be presented only in the Diploma Thesis, without any particular details of respondents.

The introductory part provides a brief description of EMS concept. The first part of questionnaire is focusing on general information about your organization. The second part is concerning on EMS itself.

Even though the implementation of EMS brings many kinds of benefits for the organizations, the Czech Republic still lags behind in the number of organization with certified EMS in comparison with Western European countries. The aim of this questionnaire is to explore the rationale behind the decision-making process, especially why Czech companies refuse to participate in EMS.

Thank you very much for your time.

Michaela Vlnasová

INTRODUCTION - ENVIRONMENTAL MANAGEMENT SYSTEMS

The term “Environmental Management Systems (EMS)” covers structured framework, which is focused on managing an organization’s significant environmental impacts on everyday basis. EMS allows identification and optimization of processes, which have the most significant impacts on the environment, and therefore EMS also improves an organization’s environmental performance.

EMS is a voluntary tool, where an organization sets its own limits and targets, which will be reached, except the legislation. Organizations have an opportunity to certify their EMS by third independent party. The certification’s main aim is to assess the established EMS according to requirements of standard. There are two main environmental standards, that is international standard ISO 14001 and EMAS, which is based on European Union Standards.

Many researchers have proved that the adoption of certified EMS brings number of benefits; among them is improved environmental performance, better compliance with regulations, improved image of organization and competitiveness, and also decrease in fines and expenditures for energy and raw materials.

QUESTIONNAIRE - ENVIRONMENTAL MANAGEMENT SYSTEMS

I. PART – GENERAL INFORMATION

1. Which industry sector is your organization operating in?

<input type="checkbox"/> <i>Automotive/Aircraft industry</i>	<input type="checkbox"/> <i>Electrical</i>	<input type="checkbox"/> <i>Chemical</i>
<input type="checkbox"/> <i>Information and communication technologies</i>	<input type="checkbox"/> <i>Food processing</i>	<input type="checkbox"/> <i>Building</i>
<input type="checkbox"/> <i>Engineering</i>	<input type="checkbox"/> <i>Textile</i>	<input type="checkbox"/> <i>Metal and mineral mining</i>
<input type="checkbox"/> <i>Tourism</i>	<input type="checkbox"/> <i>Financial services</i>	<input type="checkbox"/> <i>Other services</i>
<input type="checkbox"/> <i>Other (please specify)</i>		

2. How many employees do you have?

less than 10 *11 – 50* *51 – 250* *251 and more*

3. What is your annual gross revenue? (in CZK)

less than 10 mil. *11 mil. – 50 mil.* *51 mil – 100 mil* *101 and more*

4. Please, specify your position in organization.

CEO/Top manager *Sales manager* *Administrative worker*
 Other (please specify)

II. PART – ENVIRONMENTAL MANAGEMENT SYSTEMS

1. Have you ever meet with the EMS concept?

Yes *Yes, but only partially* *No*

2. Do you have any experience in other management systems?

Quality management systems (e.g. ISO 9001)
 Health and safety management system (e.g. OHSAS 18001)
 Energy management systems
 Other (please specify)
 No experience

3. Have you considered the implementation of EMS?

Yes *No* *Not decided*

3.1. If yes, what type of EMS do you prefer?

ISO 14001 *EMAS* *Non-certified EMS* *Not sure*

If no, or you are not decided yet, what is your reasoning?

(Evaluate the significance on the scale from 1 to 5, where 1 = irrelevant and 5 = very important)

	1	2	3	4	5
<i>I. Unreasonable costs of implementation and maintenance</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>II. Need for training or outsourcing of qualified employees</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>III. Growth in administrative work</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>IV. There is no pressure from your customers for environmental accountability</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>V. Products or activities of organization do not have any impacts on the environment</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>VI. Need for publishing of your environmental performance</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>VII. Unconvincing results of EMS in terms of lower expenditures</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>VIII. Unconvincing results of EMS in terms of environmental performance</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>IX. Non-compatibility with already implemented management systems</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>X. Insufficient governmental grants</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>XI. Others (please, specify)</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

APPENDIX II RAW DATA

Questionnaire ID	Industry	Employees	Revenue	Position	EMS Concept	Experience	Implementation	Preferred EMS	Reasoning												
									I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	X.	XI.		
1	8	1	1	4	3	2	2														
2	8	3	3	1	1	1	1	1													
3	10	1	3	1	2	1	2														
4	13	2	4	2	3	5	2														
5	8	4	4	1	1	1	2														
6	13	1	2	4	3	5	3	4													
7	5	2	3	2	2	4	2														
8	7	2	3	2	3	6	2														
9	13	2	2	1	3	1	2														
10	7	3	4	2	2	6	2														
11	7	3	4	4	1	1	2	1													
12	7	2	2	2	2	1	1	4													
13	4	2	2	1	2	4	2														
14	5	1	3	1	3	5	2														
15	1	2	2	2	1	1	1	1													
16	1	2	2	2	1	1	1	4													
17	10	2	3	3	3	1	2	1													
18	7	3			3	5	2	4													
19	13	3	3	1	1	6	2														
20																					
21	7	4	4	2	1	1	1	4													
22	3	3	4	2	3	6	2	4													
23	2	4	4	2	2	6	2														
24	7	2	3	1	2	1	2	4													
25	7	4	4	2	1	1															5
26	7	4	4	2	3	1	3	4													
27	7	4	4	4	2	1	2														
28	7	2	4	2	2	1	2														
29	13	2	4	2	1	6	2														
30	4	4	4	2	2	1	2														
31	4	4	4	2	1	1	1														
32	2	2	2	1	3	1	2	4													
33	13	2	2	2	3	6	2														
34	1	4	4	2	1	6	1														
35	13	1	4	2	2	1	2														