

BUSINESS AND THE ENVIRONMENT

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Chapter 4

ENVIRONMENTAL MANAGEMENT SYSTEMS

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For a few decades, due to the dynamic growth of the world population and the accelerated pace of economic growth, we have observed an increased exploitation of the environment and the resultant increasing scale of environmental threats. These phenomena, in turn, have – with some delay – resulted in social changes: people, more and more aware of the relationships between business activities, the state of environment and the quality of life, have begun to expect enterprises to introduce new management modes that would take into account the limitations and needs of the natural environment (Kuna-Marszałek 2011).

Consequently, business management systems are more often preoccupied with environmental protection issues, alongside their usual production, financial and marketing goals. These pro-environment activities, integrated with other tasks and functions performed within a company, have a considerable impact on companies' performance and development outlook (Kuna-Marszałek, Marszałek 2011). Environmentally responsible enterprises may count on measurable benefits from the adoption of such strategies, even if interweaving environmental issues with their business activity is neither easy nor inexpensive. This is because such activities imply the use of appropriate tools and legal solutions, one of them being the introduction of the environmental management system (EMS).

4.1. Definition and philosophy of EMS

EMS is part of the general management system of a company, one which enables the supervision and assessment of the impact of business activities on the environment, together with the assessment of measures undertaken with a view to minimising the negative consequences of the company's impact upon the environment (Maruszak-Flejszman 2007). This notion covers all issues related to the

environmental impact of business activities which bear considerable importance for the company's strategy and its competitiveness in the market.

For the first time, the philosophy of environmental management was formulated in the mid-1980s, in the 'Code of practice for environmental management' adopted by the German Association of Environmental Management. Drawing up and adopting this Code by an association of German businesses was the first initiative of its kind worldwide. The concept of a systemic approach to environmental issues in business activities was formulated in the Business Charter for Sustainable Development, adopted on the initiative of the International Chamber of Commerce in 1991. The Charter sets out 16 priority rules meant to govern industrial development with full respect for the rules of environmental protection and the environment's ecological capacity (Lisowska-Mieszkowska 2007, p. 7).

4.2. Types of EMS

Environmental management systems can be divided into informal (non-certified) ones, based on one's own or an external concept (e.g. Cleaner Production Programme or *Responsible Care*) and formal ones. Formalised EMS date back to the 1990s, when the first standard on environmental management system, the BS 7750 standard, was drawn up in Great Britain. Its structure was based on the international ISO 9000 quality management standard. Almost simultaneously, the European Commission started work on the draft Regulation on voluntary participation by organisations in a Community eco-management and audit scheme. The Regulation was analogous to BS 7750 standard, but it was intended for all Member States of the European Union. It came into force in 1995, and a year later the updated British standard was published by the International Organization for Standardization as the international ISO 14001 standard.

Thus, today, the two most important formal standards for eco-management are: the EMAS system and the ISO 14001 standard. They are based on the Deming cycle, also known as the PDCA (*Plan-Do-Check-Act*) cycle, providing for the continuous improvement of effects achieved by an organisation in the field of its relationship with the environment:

- planning, i.e. defining the processes necessary to deliver the best possible results,
- · implementing the activities according to all procedures planned,

- studying the results of implemented actions, i.e. checking if the plan was
 efficient in order to identify any potential need for improvement
- including the ideas for improvement in the new plan.

Implementation of the above stages enables the spiral effect, in which every subsequent action is better than the previous one, which – in effect – leads to a continuous improvement of results (see: Fig. 4.1).

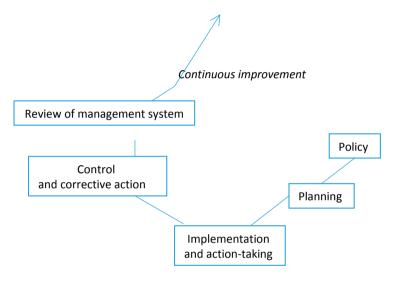


Figure 4.1. Deming Cycle in EMS

Source: own model drawn on the basis of the PN-EN ISO 14001:2005 standard

Both systems set out the requirements to be met by a company if its EMS is to be operational and reliable. The aims behind both systems are also identical: namely, the reduction of the negative effects of a company's activities on the environment. The EMAS system is more complex than the ISO 14001 standard, whose planned reform, however, should make both systems even more similar (Dziennik "Gazeta Prawna" 2015). The additional EMAS standards include: an unconditional obligation to comply with all legal provisions relating to the environment, a commitment to the continuous improvement of pro-environment activities, a focus on personnel involvement and external communication, the obligation to perform environmental reviews and internal audits, the introduction of the EMAS logo and the register of organisations with EMAS system implemented as well as the possibility of derogation for small organisations.

The existence of two regimes means that enterprises can choose to apply either of the foregoing standards. The wide-use of quality management under the ISO 9000 standard would possibly advocate the use of ISO 14001. However, there is a possibility of combining the EMS with an already possessed quality management system, as both contain a number of similar elements, e.g. documented procedures, the issues relating to organisation and personnel, the implementation of control, keeping records, corrective actions, audits and reviews conducted by management (Sałek-Imińska 2004, p. 377). Moreover, the ISO certificates are internationally recognisable hallmarks, which may constitute an additional benefit for companies. The advantages of EMAS, in turn, are: its EU reach, the register of enterprises which facilitates building up commercial relations at home and abroad by the possibility to register in the freely accessible Community database, as well as the logo, providing a company with an attractive communication and marketing tool.

Since EMAS, although based on the ISO standard, is still more complex, below we shall discuss its main assumptions.

4.3. EMS in the light of EMAS Regulations

EMAS – the *Eco-Management and Audit Scheme* – is the EU-wide system for eco-management and auditing. It is provided for by Regulation (EC) No. 1221/2009 of the European Parliament and of the Council of 25 November 2009 on the voluntary participation by organisations in a Community eco-management and audit scheme (EMAS).

4.3.1. Implementation of the system

The first, obligatory phase of EMAS implementation is the environmental review. It consists in the analysis of all of the company's activities relating to the environment. The review is meant to: 1) check if hitherto activities of the company connected with environmental issues have met their objectives, 2) draw up the inventory of legal and other requirements relating to the environment which the company has to and/or wants to fulfil, 3) determine the way in which the company's processes, products or services influence the environment, 4) set up the criteria according to which the significance of this influence will be assessed, and finally 5) collect the data about all the incidents or failures which may provide information on the ecological hazards related to the company's business activities.

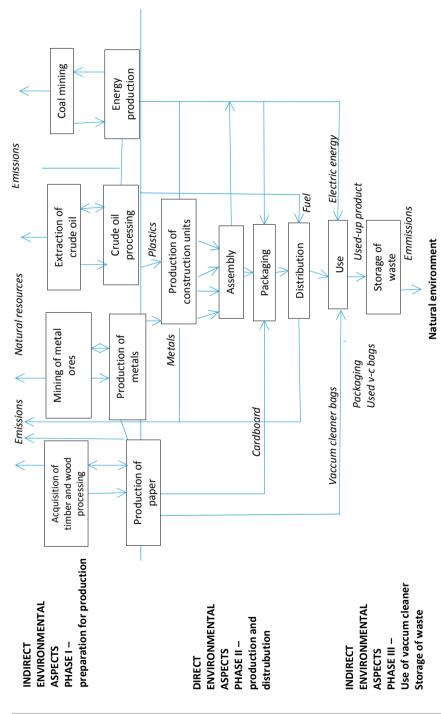


Figure 4.2. Simplified scheme of a vacuum cleaner life cycle on the environment

Source: Marcinkowski et al., p. 50

The key importance here belongs to identifying environmental aspects, i.e. the company's activities, products or services that have an actual or potential impact on the environment – since a company willing to introduce EMAS is obliged to document them. The environmental impact can be either positive or negative, whereas environmental aspect may be direct or indirect. The former concern the kind of impacts a company can control fully, i.e. gas and dust emissions, contamination of soil, waste generation, the impact on biodiversity (e.g. by disturbing ecosystems functioning) or even the consumption of office supplies. The indirect aspects in turn are those that remain outside the full control by the company. They may concern the choice of goods and services the company uses in its processes, shaping ecological awareness or the assessment of practices used by subcontractors or suppliers. These decisions can have a significant impact on the production of waste and wastewater, dust, odours or noise. Figure 4.2 presents a simplified scheme of the environmental impact by a vacuum cleaner producer.

The next phase of EMAS implementation consists in determining which of the environmental aspects have a significant impact on the environment. This accounts for the adoption of the criteria according to which one can identify the aspects with the most significant impact on the environment. Intensity, scope, time, frequency of impact, environment vulnerability, reversibility of changes and the probability of occurrence can serve this purpose. Each company can set the criteria individually, however, the methodology applied should be tested in practice. The assessment of environmental aspects should take place on a regular basis, according to the approved procedure.

A company implementing EMAS should identify standards relating to environmental protection and keep their register (regularly updated). This is not only about the legal requirements but also good codes of practice or arrangements with relevant stakeholders (clients, NGOs and authorities).

Finally, the company has to draw up and implement its environmental policy. According to the EMAS Regulation, the policy should lay down 'the overall intentions and direction of an organisation relating to its environmental performance (...) including compliance with all applicable legal requirements relating to the environment and also a commitment to continuous improvement of environmental performance' (Art. 2 of the EMAS Regulation). The environmental policy should:

- point out to the name of the organisation and give a short description of its activities,
- be adequate to the nature and scope of the environmental impact of the company's activity,

- · include a commitment to continuous improvement and prevention of pollution,
- include a commitment to comply with applicable legal requirements and with other requirements relating to the identified environmental aspects,
- provide the framework for setting and reviewing environmental objectives and targets,
- be communicated to all persons working for or on behalf of the organization, subcontractors and other collaborating entities,
- be signed by the top management, implemented and updated
- be available to the public.

An example of an environmental policy is presented in Box.

Environmental policy

Environmental policy of Rockwool Polska

"ROCKWOOL Polska, as a producer of stone mineral wool goods, friendly to the environment and favourable to sustainable development, feels particularly obliged to protect the environment at every stage of its activity. We declare that the company takes into consideration the improvement of ecological balance within the entire life cycle of our products and that in our daily practice:

- we fulfil all legal requirements related to environmental protection, and undertake to implement the highest possible standards,
- we develop products and systems made of stone mineral wool so that they would contribute more and more to environmental protection:
 - by improving energy efficiency,
 - by reducing CO₂ emissions,
 - by minimising the consequences of fires thanks to non-flammability and fire-proof characteristics,
 - by minimising noise pollution,
- we minimise the environmental impact further by implementing lowand non-waste technologies,

- we maintain an open dialogue with clients, suppliers, administration, employees and neighbours,
- we see to it that our manufacturing plants are the least burdensome for the environment.

The basis for our activities is the constantly developed and mastered environmental management system that guarantees a comprehensive approach to pro-environment activities, supports the implementation of pollution preventive rules and enables documenting all measure undertaken in this respect.

Management of ROCKWOOL Polska Sp. z o.o"

Environmental policy-Roleski Company

The Roleski Company considers protection of the environment as one of the company's priorities, which is reflected in the Environment Policy adopted and based on the following principles:

- Conducting activities according to the environmental regulations and standards in force.
- Minimising the use of chemicals both in product recipes and in conservation and sanitary processes related to production equipment and facilities, etc.
- Rational use of electric energy, heat and water.
- Introduction and full implementation of internal regulations related to the reduction of waste generation.
- Continuing investment in modern equipment and machinery, with the focus on their energy efficiency and other pro-environmental features.
- Ecological education of employees and involving them in activities promoting environmental protection.
- Maintaining long-term co-operation with reliable suppliers.

The Policy thus formulated is implemented through:

continuous mastering of the Integrated Management System, conformant with the requirements of the EN ISO 14001 standard,

- following the environmental protection regulations and rules in force,
- minimising the amount of solid waste and wastewater generated,
- the use of raw materials and packaging that guarantee production of goods satisfying the Clients' quality expectations,
- mastering technologies and manufacturing processes so that they are environment-friendly and satisfy the needs and expectations of current and future users and other interested parties,
- continuous involvement of employees in activities aimed at constant improvement of quality and systematic upgrading of their competences and knowledge relating to environmental protection,
- securing appropriate working conditions for employees and the resources aimed at the continuous development and modernization of the organization.'

Source: http://www.rockwool.pl/o-firmie/polska/polityka-srodowiskowa, http://republikaroleski.pl/o-firmie/polityka-srodowiskowa (access 25.09.2015).

The environmental policy constitutes the framework for defining specific objectives aimed at minimizing the negative impact on the environment. If possible, these objectives should be measurable and achievable through the implementation of environmental activities. These activities are concrete measures and tools a company should implement in order to achieve environmental policy objectives. A particularly important role in the assessment of objectives and tasks belongs to environmental performance indicators (amounts of emissions, consumption of raw materials or energy) related to a single unit of goods produced.

Examples of correspondence between the contents of the environmental policy, its objectives and the environmental activities adopted are presented in Table 4.1.

Table 4.1. Environmental policy and corresponding environmental objective and activities

Contents of environmental policy	Environmental Objective	Environmental activities
Minimising environmental acidification	Reduction of SO ₂ emission by 50% compared to 2015 emissions	Use of low-sulphur coals

Tab. 4.1. cont.

Minimising the use of non-renewable resources	Reduction of coal consumption by 15% compared to 2015	Introduction of co-incineration of coal and biomass	
	Reduction of solvent consumption compared to 2015	Introduction of closed cycle and regeneration of solvents	
	Introduction of selective collection of waste at 80% of workstands	Purchase and distribution of containers for collecting waste papers, glass, metals plastics and biodegradable wastes	
Optimisation of waste management	Recycling of 100% of used-up toners and cartridges	Introduction of a system for collection and delivery to regeneration plant	
	Recycling of 100% of used-up fluorescent lamps	Introduction of a system for collection and delivery to the distributor	

Souce: Marcinkowski et al. (2010), p. 63.

Companies should also draw up appropriate environmental programmes, including:

- clearly assigned responsibility for the execution of tasks and achieving the objectives by designating relevant persons or organisational units,
- allocation of resources for the execution of environmental tasks,
- deadlines for achieving environmental tasks.

The results of activities undertaken by companies with the aim of reducing the negative impact on the environment are measured with so-called environmental performance indicators, defined by the EMAS Regulation and applicable by all organizations implementing EMS under the EMAS standard. The indicators focus on the following core areas:

- · energy efficiency,
- material efficiency,
- water,
- · waste generation,

- biodiversity,
- · emissions.

Each indicator is composed of figures A, B and R, with R indicating the ratio A/B (R=A/B) where A – input/impact on the environment, B – overall output of the organization. Figure A indicates the total annual input/impact by pollution and consumption of natural resources in the given field. These are: annual consumption of energy, annual consumption of energy from renewable sources, annual consumption of materials and water, total amount of generated waste broken down by types, the total annual amount of hazardous waste, the size of the surface of land used in built-up areas, yearly emissions of greenhouse gases, at least SO_2 , NO_x and PM.

Figure B is the same for all fields and indicates the total annual gross value-added, total annual physical output (expressed in tonnes) or the total annual turnover or the number of employees.

A company does not have to use all indicators if they are not appropriate in the case of a particular organization. Additional ones may, however, be introduced, if they better reflect the specificity of a given enterprise.

The key environmental aspects and related activities should be constantly monitored. To this end, an enterprise should establish a procedure providing for regular monitoring and checks of parameters appropriate for activities with a significant impact on the environment, i.e. the so-called key characteristics. The requirements relating to these parameters result from legal regulations in force, administrative decisions or civil law contracts. They should be measured or are established on the basis of appropriate documentation.

Limit values for the key characteristics are the operating criteria, which fall under operational steering. Operational steering means setting up and implementing procedures that identify optimum conditions using operating criteria. Operational steering can cover the following fields of activity:

- production processes,
- · provision of services,
- purchase of materials and resources,
- storage of materials and products,
- · transport,
- packaging,
- equipment maintenance,

- · product design,
- research and laboratory activities,
- concluding of agreements/contracts.

Table 4.2 presents an example of environmental aspect and corresponding operating criteria (for a manufacturing company).

Table 4.2. Environmental aspects and corresponding operating criteria

,	Significant environmen- tal aspect	Source/ process	Actual amount/value	Operation criterion	Monitoring mode	Basis
	Hazardous post-varnish waste	Paint shop	342 Mg/year	800 Mg/year	Waste register	Permit for waste generation

Source: Marcinkowski et al. (2010), p. 70.

Implementation of EMS usually involves a change in the organizational structure of the company. The assignment of tasks, responsibilities and rights, as well as communicating the changes to employees, is indispensable. The person responsible is usually a top management representative in the rank of a pleni-potentiary. Depending on the company's specificity and structures, necessary changes can take various forms, e.g. in small companies the role of plenipotentiary can be assumed by the President (CEO). It is also possible that an external specialist, with appropriate knowledge and skills is hired and consequently there is no need to change the scope of tasks and duties performed by the employees. Finally, one of the members of the management board can take on the responsibilities connected with environmental management.

Effective implementation of EMS implies also providing necessary training to employees, by which each of them could acquire the desired competences relating to environmental protection and his/her workplace. Therefore, identification of training needs is necessary. A part of them should address significant environmental aspects related to the company's business activity, but environmental awareness of staff, the nature and philosophy of eco-management or the consequences of EMS implementation may be also taken into account. EMAS attaches particular attention to the active involvement of all staff members for the sake of the efficient operation of the system.

The implementation of EMS entails drawing up procedures and keeping appropriate records, if necessary. The EMAS documentation covers:

- system documents required by formal EMAS rules: environmental policy, specification of environmental objectives and tasks, description of the scope of EMS as well as the description of the most important elements and their interconnections,
- operational documents resulting from the specificity of a given company's environmental aspects.

Records of outcomes or evidence confirming the execution of various tasks or activities are specific types of documents. They concern in particular: the assessment of regulatory compliance, monitoring and checks as well as supervision over measurement equipment, employees' competences, organised training courses, results of internal audits, preventive and corrective actions undertaken as well as reviews of the management system. Depending on the specificity and needs of an enterprise, the following may also be needed: registers of data concerning raw materials and other resources, products, supplies and subcontractors, equipment maintenance reports, repair reports or records documenting malfunctions or breakdowns as well as hazardous situations. Additionally, the EMAS Regulation requires that the EMAS processes documentation should be supervised.

It was assumed that EMS documentation should not become an additional and unnecessary bureaucratic burden, especially to micro and small enterprises for which the drawing up and maintaining of extended EMS documentation may be too much of an effort, disproportionate to the scale of environmental benefits. Therefore, the EMAS system allows a flexible approach to the documentation required within EMAS processes. Its size and scope should be adequate to the area of the company's activity and its impact on the environment, so not all elements of the system have to be documented.

A company that has introduced the EMS should make all possible efforts to secure its proper functioning. The internal environmental audit serves the purpose of evaluating the performance of the eco-management system. The essence of the audit lies in collecting and verifying the evidence that can prove the conformity of the system and achieved results of environmental activities with legal requirements and the company's environmental policy. Internal audits should be carried out according to the established procedures and the appropriately adopted programme. The audits should take place every three years, although in large companies they are usually performed at yearly intervals. The frequency of audits depends on the nature, scale and complexity of activities, the significance of the environmental aspects relating to the company's activity, the results of previous audits and the history of environmental problems.

Internal audits are carried out by an auditor or by a group of auditors, depending on the size of the organisation and complexity of its activities. The choice of auditors should guarantee impartiality and objective judgement, by ensuring, e.g., that a given department is <u>not</u> audited by its own employee. Audits can also be carried out by an external auditor (a physical person or an organisation). The audit covers:

- interviews with employees,
- checks and control of equipment and activities carried out,
- verification of procedures, records, registers and other documents,
- · random on-the-spot checks.

After the audit, a written report is prepared by the auditor(s). It consists in: a description of the scope of the audit, information on conformity with the environmental policy, assessment of the results of pro-ecological measures taken, the evaluation of the monitoring of impact on the environment as well as proposals of preventive and corrective actions, if any irregularities have been found out. In the case when irregularities are detected, the auditing process should end with the adoption of an appropriate plan for corrective action. Formally, the audit is not ended until the identified irregularities have been eliminated by the implementation of a proposed corrective action. Corrective actions are taken in the case of incompatibilities, i.e. irregularities consisting in non-compliance with at least one of the requirements. The identified irregularities have to be removed through corrective actions aimed at the elimination of their causes. Preventive actions, in turn, are meant to eliminate the sources of potential irregularities that could possibly occur in the future. The key issue here is to eliminate the sources of irregularities rather than their consequences only, because only the removal of the source makes it possible to solve the problem completely.

EMAS performance should be subject to regular reviews. The organisation implementing the system according to EMAS rules should also organise a mutual exchange of information with interested parties, including clients, the local community and local authorities, and to publish periodically the current and updated information on the state of the environment. The environmental statement is the key document for proper communication with stakeholders. The statement contains all the detailed information on the organisation's operations, with particular focus on the activities relating to the environment. According to the provisions of the EMAS Regulation, the environmental statement should contain at least the following elements:

- a clear and unambiguous description of the organisation registered under EMAS and a summary of its activities, products and services, and its relationship to any parent organisations, as appropriate;
- a reference to the environmental policy and a brief description of the environmental management system of the organisation;
- a description of all significant direct and indirect environmental aspects which result in significant environmental impacts of the organisation and an explanation of the nature of impacts related to these aspects;
- a description of environmental objectives and targets in relation to significant environmental aspects and impacts;
- a summary of available data on the environmental performance of the organisation against its environmental objectives and targets with respect to its significant environmental impacts. Reporting should be on the core indicators and on other relevant existing environmental performance indicators;
- other factors regarding environmental performance, including performance against legal provisions with respect to their significant environmental impacts;
- a reference to the applicable legal requirements relating to the environment;
- the name and accreditation or licence number of the environmental verifier and the date of validation (Annex IV to the EMAS Regulation).

The environmental statement should be drawn up at regular intervals (at least every three years) and updated every year. The updated environmental statement should contain at least the last four elements pointed out above. Due to the fact that the environmental statement constitutes an instrument for communication between organisations and the external environment, it should provide for the possibility of interaction on the side of stakeholders, e.g., an on-line form to be filled and sent via the organisation's webside.

4.3.2. Maintaining EMS

The EMS must be subject to verification. This is the conformity assessment carried out by an environmental verifier in order to demonstrate whether an organisation fulfils the requirements of the EMAS Regulation. It also covers the validation

of the environmental statement, i.e. the confirmation that the information included in the environmental statement is reliable, credible, correct and appropriate to the organisation's type of activity, and that it meets the requirements of the Regulation.

A verifier is an organisational unit, an institution or a natural person, who has obtained the appropriate licences to carry out conformity assessments. The choice of a verifier must take into account the scope of the verifier's license according to the Statistical classification of economic activities in the European Community (NACE). During the verification, the verifier, reviews documents, interviews employees and performs a sample check of documents submitted by a verified company. The procedure is followed by drafting a verification report. The aim of this report is to document the verification process, to verify – on the basis of the collected evidence – the conformity of an organisation's EMS with the requirement of the EMAS standard, verify whether the environmental statement has been implemented and – if applicable – to point out to any deficiencies of the eco-management system. If no incompatibilities or deficiencies are found, the verifier validates the environmental statement.

Successful verification constitutes the basis for the application to register in the EMAS system. To this end, a company should submit an application (together with the validated environmental statement) to the appropriate regional director for environmental protection. If the application meets all the requirements, an organisation is informed about the positive result of the application process. After the company in question has paid all applicable fees, it is provided with a registration number and from then on it can use the EMAS logo (Fig. 4.3).



Figure 4.3. EMAS Logo

Source: http://emas.gdos.gov.pl/stosowanie-logo-emas (access: 25.09.2015)

The EMAS logo was created to provide enterprises with an additional tool for shaping a positive image of the company in its environment. Only companies with a valid registration can use the EMAS logo, in compliance with the following rules:

- the logo must be always accompanied by the organisation's registration number, with the exception of promotional or marketing activities related to the EMAS system itself,
- · only the official logo is valid,
- if the organisation comprises several sites, with only part of them registered, the use of the EMAS logo is restricted only to the registered sites and its use cannot suggest that the whole organisation is registered,
- preferably, the logo should be also present on the environmental statement.

The EMAS logo cannot be used on product packaging and in conjunction with comparative claims concerning other activities and services or in a way that may create confusion with environmental product labels.

4.4. Costs and benefits of EMS

An efficient environmental management system enables an organisation to reap measurable benefits, not only in the area of economy and finance. Ejdys (2007, p. 294) suggests that the benefits related to EMS implementation can be divided into internal and external ones (generated in the company's environment). The first category includes:

- lowering operational costs by minimising the consumption of raw materials, water and energy,
- minimising the costs, by reducing environmental fees for using the environment (thanks to reduced amount of solid waste, waste water and emissions as well as an increased amount of recycled waste) or minimising the risk of penalties for non-compliance with environmental standards,
- minimising the risk of breakdown or accident occurrence and their potential consequences thanks to previously prepared emergency response procedures,
- lowering the costs of insurance for companies whose activities may lead to serious breakdowns,
- access to preferential loans for pro-ecological investments,

- improved competitiveness in markets that attach importance to an environmentally-friendly approach in business,
- the possibility of providing services to principals requiring their subcontractors comply with high environmental standards, or possibilities of submitting bids in tenders where having an operating EMS is one of the selection criteria.

Among the internal non-economic benefits, we can name:

- improved quality and safety at work, through increased awareness of employees and their involvement in the organisation's activities,
- more effective management of a company (precisely defined objectives, tasks and implementation procedures, responsibilities assigned to each workplace, supervision and control over undertaken activities),
- · acting in accordance with binding legal regulations,
- faster and easier access to permits or decisions relating to the activities of an organisation,
- increased self-control, responsibility and ecological awareness of employees (they will identify themselves more easily with an entrepreneur known for his/her environmentally-friendly approach).

A number of benefits of implementing EMS can also be identified in a company's environment, namely:

- improvement of the company's image and increased credibility in stakeholders' eyes, e.g., investors, business partners or public authorities, resulting from its ability to demonstrate that it operates in accordance with the laws in force,
- better chances to build sustainable commercial relations,
- better relations with clients, local communities and public administration through maintaining an open dialogue with all interested parties.

The introduction of EMS in a company implies a need to incur certain costs. This concerns companies which decide to implement the system on their own and those who decided to use consultancy services alike. These costs may include: allocation of appropriate resources for tasks related to the implementation

of the system or hiring appropriately qualified staff, co-operation with external consultants and the costs of adjustments to environmental regulations, if the organisation has not met them before. Depending on the size and specificity of the company, the costs may vary considerably. Additionally, an implemented EMS involves further costs connected with the environmentally-friendly modernisation of the company and the functioning of the eco-management system itself. Therefore, they should be taken into account in the company's economic calculations of its pro-ecological activities (Lisowska-Mieszkowska 2007, p. 14).

4.5. EMS in practice

According to European Commission data, 9,794 sites²⁴ and 2,928 organisations are registered under EMAS in the EU. Data for Poland are 129 and 46²⁵ respectively. In industry, the largest number of registrations was recorded in waste management, energy and gas supply, chemical production as well as in the food production sector. In the services sector, the largest number of entities operating EMS under the EMAS standard are those in public administration, accommodation and education. An interesting observation can be drawn from the data on the structure of EMAS registrations by organisation size (comp. Fig. 4.4). A similar level of interest in EMAS can be observed among large and medium, as well as small and micro enterprises.

What is interesting is that in the EU, by far the most popular are EMS based on the ISO 14001 standard. According to the Eco-Innovation Observatory data, over 105,000 organisations had them in 2012²⁶. In Poland, the standard was granted to almost 1,800 companies. The ISO statistics indicated that 301,000 entities had ISO certificates in 2013²⁷, most of them being based in China, Italy and Japan.

²⁴ A 'site' means geographically separated areas subject to the management control of an organisation, with control covering activities, products and services, including the entire infrastructure, equipment and materials; a site is the smallest unit taken into account for the purposes of registration (Article 2 of EMAS Regulation).

²⁵ Data accessible at http://ec.europa.eu/environment/emas/register/reports/reports.do (accessed on: 14.09.2015).

²⁶ http://database.eco-innovation.eu/indicators/view/99/1 (accessed on: 14.09.2015).

²⁷ Data from ISO Survey of Management System Standard Certifications, http://www.iso.org/iso/ iso survey executive-summary.pdf (accessed on: 14.09.2015).

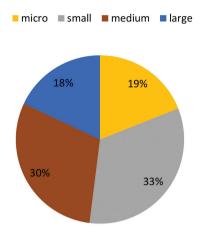


Figure 4.4. EMAS registration by organisation size

Source: http://ec.europa.eu/environment/emas/register/reports/reports.do (accessed on: 14.09.2015)

The majority of entities implementing ISO in Poland are manufacturing companies²⁸, which results from the scale of environmental hazards connected with industrial activities. Most of them are relatively large organisations, that is the ones employing over 250 staff. Almost all companies implementing formalised eco-management systems recognise these systems' role in minimising the negative impact of business activities on the environment through the reduction in amounts of waste generated, minimising the harmful emissions to the atmosphere, and lowering the demand for natural resources. The majority of companies also stress the positive effects of EMS on their market standing, their competitiveness and the reduction of operational costs due to lower consumption of resources. It seems that the Polish market does not offer incentives for EMAS or ISO holders in the form of lower insurance premiums or easier access to financing. At least, Polish entrepreneurs do not seem to perceive that implementation of EMAS or ISO sufficiently translates into such benefits.

The years to come will no doubt bring a variety of environmental management systems. Even though environmental management systems are optional now, in the future they might be a prerequisite to many companies. This is because environmental management systems are part of the widely accepted and important concept of sustainable growth.

²⁸ The following section based on: Matuszak-Flejszman (2009).

Questions and assignments

- 1. What are environmental aspects? Formulate a map of impacts on the natural environment for a selected company.
- 2. Design a few environmental performance indicators for a chosen company.
- 3. What are the mandatory elements of the environmental statement? Find an example of the statement by any company and verify its conformity with the provision of the EMAS Regulation.
- 4. Name the benefits and costs of EMS introduction.

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Considering environmental protection requirements in business operations may, in the long run, determine if a lasting comparative advantage can be achieved. That is why our textbook, rich in case studies, identifies not only the threats a business may pose to the environment but stresses the ways of reducing its negative impact. It discusses, among other things, the concept of corporate social responsibility, environmental management systems, methods and the importance of eco-labelling goods and the so called green public procurement in the private and public sectors. The book is addressed primarily to students of courses in economics and management. We hope it will also make interesting reading for entrepreneurs, representatives of business environment organisations and the staff of public administration at different levels.





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