

Environmental Management System (EMS): context and challenges - a case study

Ioana Meza

Abstract— The Environmental Management System (EMS) is an important tool towards sustainable development. ISO 14001 for Environmental Management and EU's Eco-management and audit scheme (EMAS) are the most popular standards of EMS. This case study analyzes the practical, institutional, legal, financial and organizational implications of EMS implementation in Romania. The aim of this study is to determine the context, challenges, and make recommendations for improving the status quo. Furthermore this paper evaluates the reasons that make Romania's case interesting. First reason is the scarcity of the academic literature regarding the topic. Second reason is the fact that Romania is one of the best 10 performers worldwide in terms of the number of ISO 14001 certified organizations. The significant gap between ISO 14001 and EMAS standards is evaluated and some recommendations for the future are drawn.

Index Terms— Environmental Management System (EMS), ISO 14001, Romania, standards, sustainable development, EMAS.

1 INTRODUCTION

“Sustainable consumption and production” is one of the key areas of sustainable development and as such received a considerable attention in the recent years. “Business as usual” is not an option anymore since the natural resources are less and less, while our consumerist way of living generates massive amounts of waste every day.

In search of a “greener economy” in line with the desiderate of sustainable development, corporations, small and medium enterprises (SMEs), public institutions and NGOs, in one word - organizations - can implement environmental management systems in order to show their commitment towards that goal and improve the environmental impact of their activity. A renewed focus at the EU level towards resource efficiency, circular economy, sustainable production and consumption, green public procurement, as well as an increased in the level of environmental awareness in some of the EU countries added pressure on the organizations to certify with an environmental management system (EMS). An EMS will dictate the “requirements for the organization's structure, responsibilities, practices, procedures, processes and resources, so that responsible corporate environmental management is institutionalized in the organization”. [1]

The importance of EMS in Romania was recognized through the introduction of an indicator quantifying the number of EMS certificates as part of the sustainable consumption and production theme as one of the measures to implement the progress towards sustainable development according to Romania's National Sustainable Development Strategy.

The aim of this case study is to analyze the context (institutional, legal, financial and organizational) and implementation of EMS (ISO 14001 and EMAS) in Romania. This research offers significant insights into the status quo regarding the implementation of EMS in Romania through the lenses of a policy maker, a topic that hasn't receive a lot of consideration from the academia yet. Furthermore this paper pinpoints the main similarities and differences between the two systems and emphasizes the possible reasons for the existing gap.

Romania is in top 5 performers among the European countries with ISO 14001 certificates. [2] Despite this success Romania is one of the countries with the lowest number of EMAS certificates [3] making Romania one of the countries with the highest gap between the two EMS.

2 METHODOLOGY

Theoretical and methodological basis of the study is structured, systematic and comparative analysis, incorporating the use of statistical methods that allowed us to examine the object and subject of study in complex and dynamic way, to identify its possible causes, their relationships and co-dependence. The first part of this study is dedicated to a literature review performed in order to evaluate the main academic trends regarding the implementation of EMS worldwide and the main benefits. In the second part, the main characteristics and differences between the two most popular environmental standards are analyzed. The last part is dedicated to the analysis of institutional context and results of EMS implementation in Romania. The implementation rate of EMAS and ISO 14001 is compared, analyzed and discussed using secondary data from official sources, statistical office of the European Union (EUROSTAT) and International Organization for Standardization (ISO).

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3 ENVIRONMENTAL MANAGEMENT SYSTEM (EMS)

We can safely say that in the last years, the pressure on companies and organizations to become “greener” increased. This pressure came from various actors. Some of the big companies (Honda, IBM, Xerox....) encouraged their business partners to be ISO certified [1] while in small and medium enterprises (SME) the pressure came from the customers. [4]

Some of the positive effects on the environmental performance of the organization after implementing EMS are the reduction of operating costs due to a more efficient use of available resources, monitoring and correcting negative environmental impacts, awareness raising, improving the organization’s image, improving the processes and train employees in environmental management practices.

Evaluating the results of implementing EMS divided the academia into supporters of EMS who demonstrate in their research the benefits of implementing the EMS [4]- [8] and skeptics, who questioned the validity of these findings.[9][10]

Analyzing the implementation of ISO 14001 showed that improvements were concentrating on four major lines: employee awareness, operational efficiency, managerial awareness and operational effectiveness [6]. The most commonly associated benefits with the implementation of ISO 14001 certification were saving the energy and reduce wastage, enhance environmental awareness and improve corporate image [7].

The mixed review regarding the benefits of EMS could be attributed to the stringency of domestic regulations [11] or the lack of a common understanding of what environmental performance is how to measure it, or why it is expected to aid performance .[10] Another author remarked the deficiencies in implementing ISO 14001 standard – from the lack of transparency, to the actual lack of environmental performance compared with their uncertified peers, or some ethical issues regarding certification.[12]

In this globalized world, the firms developing their businesses beyond their national borders may discover that international customers require ISO 14001 as a “standardized environmental passport for the exporter” .[1] This finding seems to be supported by another research conducted among 108 ISO 14001 certified companies in China, where the highest scores regarding the motivation for ISO 14001 certification was obtained by the wish to enter the international market or to improve management.[7]

In the context of sustainable development, the transition towards “green economy” and a more efficient use of resources, should EMS made compulsory? The issue was raised in a study and the majority of the respondents (54%) agreed that it should.[7] The risk with this type of approach is a possible adversarial reaction from the companies .[7] However, in Denmark, an environmental management system is compulsory for specific industrial sectors (e.g. waste management companies, enterprising scraping motor cars). [13]

The academic literature focusing on the implementation of EMS in Romania is scarce. In a study exploring the connection between implementing ISO 9001, ISO 14001 and OHSAS 18001 and the financial performance of 67 Romanian companies listed

on the Bucharest stock exchange, the authors showed a positive correlation between the two [14]. Another study presented the positive outcomes after the implementation of the EMS in a Romanian wine company- Vie -Vin Vinju Mare such as: the reduction in raw material and energy consumption, annual savings, a reduction in the amount of packaging and waste and controlled emissions .[15]

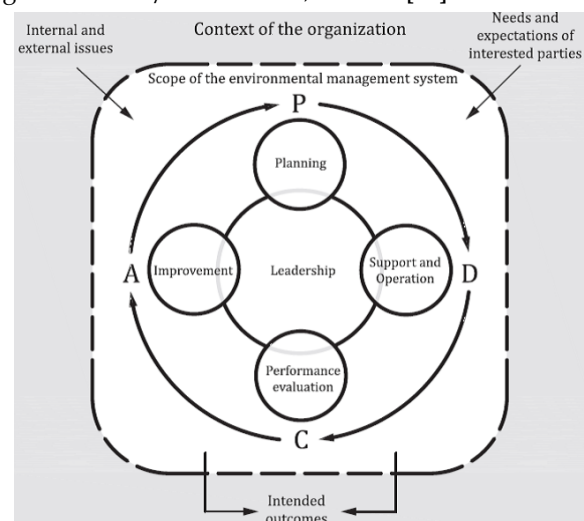
To sum up, most of the analyzed studies proved the existence of benefits acquired as a result of implementing EMS (EMAS of ISO 14001) in an organization. While some of this findings can be questioned, what cannot be questioned is the fact that at least some of the EMS certified organizations had positive outcomes in terms of image, cost reduction, better management, efficient use or resources etc .

4 ISO 14001 AND EMAS

Even though EMAS and ISO 14001 are both designed as voluntary instruments, the standards were developed through different channels. ISO 14001 standard for environmental management was introduced by the International Organization for Standardization (ISO) based in Geneva in 1996. The latest revision of the standard was made in 2015. It is the most popular of the two standards with over 300,000 certificates worldwide in 2015 .[2] ISO 14001 is an internationally agreed standard that sets out the requirements for an environmental management system helping organizations to improve their environmental performance through a more efficient use of resources, reduction of waste and gaining a competitive advantage.[16] ISO 14001 is suitable for organizations of all types and sizes (private, not-for-profit or governmental) and it is part of the same family as ISO 9001 for quality management and ISO 45001 for occupational health and safety.

ISO 14001 re-interprets the classical Plan-Do-Check-Act (PDCA) diagram (Fig.1). The implementation of the environmental management system is seen as a loop which starts with planning, continuing with support and operation, performance evaluation and ends with improvement. The cycle starts again in a continual improvement of the environmental management system.

Fig.1 ISO 14001/2015 PDCA , Source: [17]



The objective of Eco-management and Audit Scheme (EMAS) is to promote continuous improvements in the environmental performance of organizations [18]. It was introduced by the European Union in 1993 as a compulsory instrument for member states but voluntary for organizations. According to the Regulation no.1836/93 (EMAS I) was originally designed just for the industrial sector. Since then, it was modified twice and the latest version dates back to 2009 - Regulation on the voluntary participation by organizations in EMAS, repealing Regulation (EC) No 761/2001 and Commission Decisions 2001/681/EC and 2006/193/EC .[19]

EMAS is implemented through a more complex Plan/Do/Check/Act framework including the initial environmental review. This framework also includes three supplementary steps at the end of the process, verification and validation of the system by the environmental verifier, registration with the competent body and the promotion of organization's credentials .[20]

One of the EMAS characteristics that make the system more comprehensive is the inclusion of indirect aspects, not directly related to environmental performance such as: administrative and planning decisions, environmental performance of contractors, subcontractors and suppliers or the choice and composition of services, e.g. transport, catering, etc. [21]

The two standards are not "either/or" instruments for improving environmental management. Their complementarity comes from the fact that an ISO 14001 certified organization following a few steps can obtain an EMAS certification. The Regulation no.1221/2009 (EMAS III) specifies some of the differences between the two systems but also gives instructions on how to upgrade an ISO 14001 certified organization to EMAS (as employees' involvement, the need to perform the initial environmental review, better communication etc) [18].

Fig.2 ISO 14001 and EMAS (main points)

ISO 14001 and EMAS (main points)	
Similarities	Differences
✓ voluntary standards	✓ institutional arrangement
✓ global coverage	✓ different focus
✓ flexible framework	✓ mandatory to demonstrate legal compliance (EMAS)
based on Plan-Do-Check-Act - PDCA	✓ initial environmental review (EMAS)
✓ continual improvement	✓ different origin (ISO 14001 - International standards under private law, EMAS -European Regulation No.1221/2009)
	✓ logo (EMAS)
	✓ indirect environmental aspects are taken into consideration (EMAS)
	✓ Environmental Management System audit, Performance audit to evaluate environmental performance and Environmental compliance audit (EMAS)

Source: adapted [22]

In terms of major differences, the two standards have a different focus. EMAS is aiming at the continual improvement of environmental performance of the organization while ISO

14001 is focusing on continual improvement of the Environmental Management System (fig.2).[22]

As an "added value", EMAS is perceived to be more transparent, since EMAS with its 'environmental statement' which can be disclosed to the public, provides a clear and positive signal to stakeholders concerning the commitment of an organization to improvements in its environmental performance.[23] Due to the characteristics already discussed, ISO 14001 is perceived as a "weak sword" instrument due the lack of public disclosure of the audit information compared with EMAS for which the public disclosure is mandatory.[5]

For ISO 14001 the accredited certification is not mandatory. If the organization meets the management system requirements dictated by the ISO 14001 standard, then it can register its conformance with a third party [1]. Another significant difference is the internal environmental auditing. For EMAS three types of audit are performed: environmental management system audit, performance audit to evaluate environmental performance and environmental compliance audit while for ISO 14001 just the auditing of the environmental management system is necessary in order to verify the compliance with the standard.[22]

EMAS is considered to be a more complex standard and organizations have to take an additional effort to make the transition from ISO 14001 in order to become EMAS certified. [5][18][24]

4 EMS IN ROMANIA- CONTEXT AND CHALLENGES

As member of the European Union since 2007, Romania has to transpose (directly or through national legislation) the EU legislation. As such, after the accession to the EU, the EMAS regulation became compulsory. In order to ease the implementation and establish national framework for EMAS, Governmental Decision No.57/2011 was adopted.

In Romania, the designated competent authority in charge of EMAS is the Ministry of Environment. For the registration of the organizations, two organisms were created in order to offer support to the Ministry of Environment: EMAS Committee and the EMAS Bureau (within National Environmental Protection Agency) as a technical secretariat.[25] The EMAS Committee is comprised of 21 members from various fields of activity (business, academia, public authorities, environmental protection control authorities etc.)

The institutional framework for the implementation of EMAS includes also the Romanian Accreditation Association (RENAR) which is the only national accreditation body for environmental verifiers. Their role in the framework is to verify and validate the environmental performance of an organization and the functioning of the system before the registration.

By contrast, for ISO 14001 certification there are a significant number of alternatives. In the recent years, third party organizations offering consultancy, training, auditing and certification for ISO 14001 standard started to appear (e.g. Romanian Association for Quality Assurance, TUV Karpát, SGS Group, Global Group etc). The environmental auditors for ISO

14001 can get certified by any of these organizations.

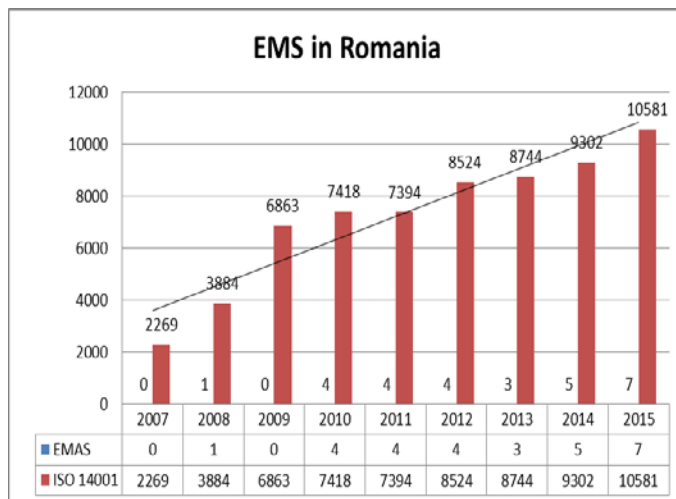
For the Romanian organizations willing to implement an EMS apart from knowing the institutional framework, they need also to estimate the costs involved in the process of certification. The cost is closely connected to the gained benefits as the organizations will implement ISO 14001 if they believe that the potential transaction cost of acquiring certification is less than the benefits they can possibly get.[23]

Discussing the financial aspects of implementing EMAS, the cost will be higher in the first year of implementation, ranging from 22,000 euro for a micro enterprise to up to 67,000 euro for a large organization.[21] The potential of saving can be considerable though, especially for medium and large organization, from up to 10,000 euro potential savings per year to up to 400,000 respectively. [26] Hence the implementation of the EMAS could not only lead to an improvement of the environmental performance of the organization but also as an added bonus, to financial gains. The cost of implementing ISO 14001 is lower; as generally EMAS is perceived as being more costly due to the fact that is more demanding.[24]

In a proactive approach, European Union offered financial support to organizations willing to implement EMAS or ISO 14001 in Romania. The Operation Programme Administrative Capacity Development (2007-2013) and the Operational Programme "Competitiveness and Economic Growth" (2007-2013) are just two examples of grants dedicated to different types of beneficiaries that aimed at implementing environmental management systems. The Regional Operational Programme under the new programming period 2014-2020 has an open call for SME and medium size enterprises in rural areas wishing to implement EMS. [27]

With the financial resources available, the number of EMS certificates grew significantly (Fig.3).

Fig.3 EMS in Romania



Source:[2][3]

Compiling data from the official sources (Eurostat and ISO) the distribution of the number of certificates shows a very uneven implementation. Among the European countries, Roma-

nia is in top 5 performers with 10,581 ISO 14001 certificates in 2015[2]. On the other hand, Romania is also one of the countries with the lowest number of EMAS certificates 7 and one of the countries with the highest gap (in Romania the proportion is 1 EMAS certificate for approximately 1,511 ISO 14001 certificates in 2015)[3]. The existence of a considerable gap between the two EMS is not uncommon in European countries.

Worldwide, according to the latest ISO survey, East Asia and Pacific region surpassed European countries with the highest number of ISO 14001 certifications. China has the highest number in absolute terms (114,303 certificates in 2015) followed by Japan 26,069 [2].

Taking a look back, in December 2005, the number of organizations with ISO 14001 certificates was 10 times higher than EMAS registered organizations in the EU-15.[24] 10 years later the gap between EMAS and ISO 14001 in Europe increased considerably. The motivation for these results can be found in the institutional and organizational arrangements of these two standards, on what set them apart from one another. The existence of a gap is normal, because as we already discussed EMAS is more demanding than ISO 14001.

Related to the motivation, a study tackling the factors influencing the quality of EMS implementation in Romanian organizations, reached an interesting conclusion that seems to explain also the gap between implementing ISO and EMAS. The study shows that EMS is seen as a "necessary burden" and not a system for improving environmental management.[28] This may lead to the adoption of a formalized EMS, because the managers and the employees don't see the rationale of implementing the system other than conforming to external pressure. External pressure combined with an easier framework seems to be accountable for the unbalanced implementation of the two standards in Romania. Also the financial resources available, without any given preference towards EMAS will propagate the same trend in the years to come.

Seen as the strength of the system by some, the flexibility of ISO 14001 framework was regarded as the root of the problem by others, as the cause for not delivering what is expected from it. [29] Without the supplementary checks introduced by EMAS, ISO 14001 standard is in the risk of being just an empty shell, a system that looks good on paper. As one author remarked, if in the implementation of the standard the organization doesn't really make any significant changes in the working practice but the organization receive the certification, it means that the ISO framework was adapted to the existing situation and not the other way around, leading to minimum to none results.[9]

Another possible explanation for the low rate of EMAS certifications can be attributed to the institutional arrangement. In Romania, all the institutions involved in the certification process are located in the capital city, which can make some organizations to reconsider their options. Germany, one of the European countries with the highest numbers of EMAS certificates found a way to bring the certification body close to businesses. [23] The government asked and it was granted, a decentralization and transfer of attribution from the central authority in charge with EMAS to 44 Chambers of Industry and Commerce and 21 Chambers of Skilled Craftsman designated

as EMAS competent bodies in the territory. [23] Following Germany's example of good practice, the competent authority for EMAS could be transferred at the county level, in the Environmental Protection Agencies.

National policies can become an important instrument in increasing the number of EMAS certificates, while the organizations improve their environmental performance of the organization. Through policy, EMAS could become compulsory for specific type of businesses (normally the ones polluting the most) like waste management companies, manufacturing industries, etc. This strategy is already implemented in Denmark for years (for EMS).[13]

In Romania the official data showed the existence of a considerable gap between the two EMSs. The almost exclusive preference of Romanian organization towards ISO 14001 seems to validate Bansal and Bogner's observation who considered that a wide applicability of a standard is an indicator for less stringent requirements. [1]

Romanian organizations don't seem to be willing to take the next step and register EMAS. Taking as an assumption Neugebauer finding regarding the German automotive and engineering industry, that ISO 14001 appears to be implemented as a response to external pressure and EMAS tends to be motivated internally, in Romania organizations appear to be almost exclusively motivated by external pressure. [30]

5 CONCLUSION

In the context of sustainable development, how relevant is the discussion between the two standards? Being more stringent, from a procedural point of view, EMAS seems to deliver more environmental benefits as it is focused on continual improvement of environmental performance.

ISO 14001 for environmental management appears to be the "low hanging fruit" for the Romanian organizations with a simpler framework (no indirect impacts, no initial comprehensive environmental review) and heaving at least some the benefits discussed above. However, this assumption doesn't necessarily mean that all the ISO 14001 certified Romanian organizations have an environmental management system with lesser results than the organizations that implemented EMAS. The framework allows that a responsible ISO 14001 certified organization can have the same benefits as EMAS certified organization, even though the EMAS standard is more demanding. Looking at the two types of EMSs from the perspective of sustainable development, their effect on "greening" the economy and increasing the environmental performance of the organizations is dependent on how the managerial team of an organization sees this EMS and how high or low they set the targets for the environmental performance. It is also dependent on the degree of implication of the people involved and the motivation for implementing the EMS.

Another possible justification of the discrepancy existent between the two apart from what we already discussed is that EMAS suffers from an "image deficit", or that ISO 14001 certificate is more renowned. In response, raising awareness campaigns at the national and local level focusing on the promotion of EMAS certification could bring an increase in numbers of certified organizations. What is the rationale behind this

strategy? EMAS is considered an improved version of ISO 14001, a superior standard, an upgraded system that can take organizations one step closer to sustainable development.

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